Community Based Infrastructure Manual

NATIONAL COMMUNITY DRIVEN DEVELOPMENT PROJECT

KALAHI-CIDSS
KAPIT-BISIG LABAN SA KAHIRAPAN
COMPREHENSIVE AND INTEGRATED
DELIVERY OF SOCIAL SERVICES

Republic of the Philippines
DEPARTMENT OF SOCIAL WELFARE AND DEVELOPMENT

Department of Social Welfare and Development
NATIONAL COMMUNITY DRIVEN DEVELOPMENT PROGRAM

COMMUNITY BASED INFRASTRUCTURE MANUAL VOLUME ONE

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PREFACE

LIST OF ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
AC	Area Coordinator
ACT	Area Coordination Team
ADSDPP	Ancestral Domain Sustainable Development Protection Plan
AIT	Audit and Inventory Team
BA	Barangay Assembly
BAC	Bids and Awards Committee
BC	Barangay Council
BDC	Barangay Development Council
BHS	Barangay Health Station
BLGU	Barangay Local Government Unit
BRT	Barangay Representation Team
BAWASA	Barangay Waterworks and Sanitation Association
BOM	Bill of Materials
BOQ	Bill of Quantities
BSPMC	Barangay Subproject Management Committee
BUB	Bottom Up Budgeting
CAF	Certificate of Availability of Funds
CBFM	Community Based Finance Manual
CBIM	Community Based Infrastructure Manual
CBPM	Community Based Procurement Manual
CDA	Cooperative Development Authority
CDD	Community Driven Development
CEAC	Community Empowerment Activity Cycle
CEF	Community Empowerment Facilitator
CIDSS	Comprehensive and Integrated Delivery of Social Services
CIM	Community Infrastructure Manager
CIO	Community Infrastructure Officer
CIP	Communal Irrigation Project
CIS	Communal Irrigation System
CNC	Certificate of Non- Coverage
COA	Commission on Audit
CPP	Community Procurement Plan
CSW	Criteria Setting Workshop
DANA	Damage Assessment and Needs Analysis
DAO	DENR Administrative Order
DC	Direct Cost
DENR	Department of Environment and Natural Resources
DENR-EMB	Department of Environment and Natural Resources- Environmental Management Bureau
DepEd	Department of Education
DILG	Department of the Interior and Local Government
DOLE	Department of Labor and Employment
DOST	Department of Science and Technology
DPWH	Department of Public Works and Highways
DSWD	Department of Social Welfare and Development
DTI	Department of Trade and Industry
ECA	Environmentally Critical Area
ECC	Environmental Compliance Certificate
EDC	Estimated Direct Cost
EIA	Environmental Impact Assessment
ESMF	Environmental and Social Management Framework

ESSC	Environmental and Social Safeguard Checklist
GIDA	Geographically Isolated and Disadvantaged Areas
GOP	Government of the Philippines
IA	Irrigators' Association
IC	Indirect Costs
IEE	Initial Environmental Examination
IP	Indigenous People
IPP	Indigenous People Plan
KALAHI	Kapit Bisig Laban Sa Kahirapan
LARRP	Land Acquisition, Resettlement and Rehabilitation Plan
LCC	Local Counterpart Contribution
LGU	Local Government Unit
LWUA	Local Water Utilities Association
MAC	Municipal Area Coordinator
MCEF	Municipal Community Empowerment Facilitator
MCT	Municipal Coordinating Team
ME	Municipal Engineer
M&E	Monitoring and Evaluation
MFA	Municipal Financial Analyst
MHO	Municipal Health Office
MIAC	Municipal Inter-Agency Committee
MIBF	Municipal Inter-Barangay Forum
MIT	Monitoring and Inspection Team
MLGOO	Municipal Local Government Operations Officer
MLGU	Municipal Local Government Unit
MO	Municipal Orientation
MOA	Memorandum of Agreement
MPDC	Municipal Planning and Development Coordinator
MRB	Municipal Roving Bookkeeper
MSWDO	Municipal Social Welfare and Development Officer
MTF	Municipal Technical Facilitator
NCDDP	National Community Driven Development Project
NGA	National Government Agency
NGO	Non-Government Organization
NIA	National Irrigation Administration
NOL	No Objection Letter
NPMO	National Project Management Office
NWRB	National Water Resources Board
O&M	Operation and Maintenance
OMT	Operation and Maintenance Team
PCR	Project Completion Report
PDC	Project Development Committee
PDW	Project Development Workshop
PE	Project Engineer
PIT	Project Implementation Team
PO	People's Organization
POW	Program of Work
PPA	Plans, Projects, Activities
PPT	Project Preparation Team
PSA	Participatory Situational Analysis
PT	Procurement Team
RCDS	Regional Community Development Specialist
RCIS	Regional Community Infrastructure Specialist
RFR	Request for Fund Release
RIO	Regional Infrastructure Officer

RP	Resettlement Plan
RPMO	Regional Project Management Office
RPMT	Regional Project Management Team
SET	Sustainability Evaluation Test
SI	Social Investigation
SRPMO	Sub Regional Project Management Office
SRPMT	Sub Regional Project Management Team
TA	Technical Assistance
TAF	Technical Assistance Fund
TEMS	Thematic Environmental Management System
TF	Technical Facilitator
TOR	Terms of Reference
WB	World Bank
WBS	Work Breakdown Structure

Chapter One: General Provisions for Community Based Infrastructure

1.1. Purpose
1.2. Scope and Coverage
1.3. Relation to Other NCDDP Manuals
1.4. Principles for Community Based Infrastructure Planning and Implementation

1.1. Purpose

This Community Based Infrastructure Manual provides guidelines in the planning and implementation of small infrastructure subprojects funded under the KALAHI-CIDSS National Community Driven Development Program (KC-NCDDP). The Manual aims to guide community based officials and volunteers, local government officials, local contractors and service providers, project managers, and KC-NCDDP technical staff (Regional Community Infrastructure Engineers and Technical Facilitators) with a set of clear and concise procedures and tools for subprojects that will be identified, prioritized, evaluated, approved for financing, and implemented by various communities.

This also serves as source book of information and procedures that can be used by the technical staff and community volunteers in preparing the detailed subproject engineering plans, estimates and Program of Works. It provides them with ideas and guidance on how the community should undertake the implementation of subprojects. Subproject supervision, including operation and maintenance of completed subprojects under the KC-NCDDP is also discussed.

The manual helps ensure the attainment of the overall objectives of the KC-NCDDP Component One by:

a. providing stakeholders with a uniform understanding of the KC-NCDDP rural infrastructure component;
b. enhancing the participatory approach in subproject planning and implementation through the involvement of community members, local government officials, NGO partners and other stakeholders of the subproject;
c. providing a road map for the smooth ground implementation of approved community subprojects, ensuring maximum efficiency and achieving planned economic gains;
d. providing a clear delineation of the roles and responsibilities of project implementers at various levels of subproject implementation;
e. providing guidelines in ensuring the sustainability of approved subprojects in terms of its operation and maintenance throughout its subproject life;

1.2. Scope and Coverage

This Manual shall apply to the planning and implementation of community based infrastructure subprojects under the KC-NCDDP. The guidelines and procedures shall cover the identification, prioritization, evaluation, plan preparation, review, implementation, monitoring, operation and maintenance, and post evaluation activities of rural infrastructure under the accelerated and standard Community Empowerment Activity Cycle (CEAC). As the KC-NCDDP has adopted an “open menu” system, communities can propose almost any type of subprojects to construct infrastructure such as vertical structures (Day Care Centers, School Buildings, Barangay Health Stations), rural access roads, bridges, potable water supply systems, environmental protection structures, and sanitation facilities. The types of works may involve new construction, improvement, upgrading, rehabilitation, demolition, repair, restoration, retrofitting, or maintenance of small scale infrastructure.

The infrastructure subprojects covered under this Manual include but may not be limited to the following examples:

1.2.1. Construction, Repair, Improvement, Upgrading of Small Scale Infrastructure

1. Access/Barangay roads;
2. Bridges (footbridge, reinforced concrete, cable foot, rural road bridge);
3. Pathways and Pathwalks for pedestrians;
4. School buildings/classrooms for basic education (elementary and high school);

5. Day Care Centers;
6. Barangay Health Stations;
7. Domestic potable water supply systems;
   a. Level I
   b. Level II
8. Rural electrification (on-grid, off-grid, renewable energy);
9. Small-scale communal irrigations;
10. Public sanitation facilities (toilets);
11. Flood control facilities;
12. Piers and wharfs

1.2.2. Environment Protection and Conservation Structures

i. Seawall;
ii. Slope protection;
iii. River control;
iv. Drainage;
v. Waste/sanitation management facility

1.2.3. Disaster Recovery Operations[1]

i. Repair of rural and local roads, and repair/reconstruction of small bridges with a maximum span of up to 15m;
ii. Backfill, reshaping and landscaping of areas affected by erosion;
iii. Repair of riverbank protection systems and earth-fill dykes up to 5m height, subject to risk assessment, if supervised by a qualified engineer;
iv. Construction of temporary bypass roads up to 500 m length, if not located in sensitive habitats and land acquisition that follows the provisions of the main ESMF and that bypasses are completely removed and the alignment restored to its original conditions once the need for their service has expired;
v. Repair / reconstruction of communal irrigations and potable water supply systems and of facilities that have been completed with subproject funding;
vi. Collection and removal of technogenic debris (building parts, mixed waste, unsuitable materials, timber) as uprooted trees and plant debris from public infrastructure, public spaces and agricultural areas, and its deposition in pre-existing waste management facilities that are operating under national licensing and regulations and comply with normal practice in the country;
vii. Repair of public buildings (including barangay halls, school buildings, day care centers, government offices, tribal halls, meeting hall, multi-purpose centers and places of congregation used as administrative spaces for disaster and relief operations and information dissemination) and infrastructure (e.g. transmission lines, street lighting, traffic signs, bus stops);
viii. Shelter, including emergency and transitional shelter and temporary housing, and support for permanent shelter repair in safe areas;
ix. Setting up of temporary facilities to deliver basic service needs of affected communities, such as field schools, temporary health facilities, and water facilities
x. Collection and removal of earth, mud and plant debris from public infrastructure and spaces as well as agricultural areas and its deposition, landscaping and greening at appropriate locations.

[1]Please refer to NCDDP Disaster Response Operations Manual

1.2.4. Negative List

The negative list excludes the following infrastructure subprojects that are not eligible for funding:

i. Construction or repair of government offices, meeting halls and places of worship unless the emergency response Disaster Risk Management (DRM) has been triggered);
ii. Road construction into protected areas;
iii. Dams higher than 5 meters;
iv. Sacred grounds and burial sites of indigenous communities[2];
v. Identified international and local cultural and heritage sites;
vi. Critical areas identified or reserved by the ICCs/IPs for special purposes, and;
vii. Other areas specifically identified by ICCs/IPs in their Ancestral Domain Sustainable Development Protection Plan (ADSDPP);
viii. Repair of facilities storing hazardous substances (e.g. fuel depots), except simple clearing of debris or landslide materials on access roads and perimeters;
ix. Major repair or reconstruction of damaged waste management facilities, except the collection of spilled and dispersed waste from the facility and returning it to its original position on the facility, or a safe temporary repository on the perimeter;
x. Repair of privately owned production facilities;
xi. Construction of new temporary or permanent infrastructure to bypass devastated areas which have a segment length of > 500 m, and a cumulative length of 2,000 m within a corridor of 10 km or less;
xii. Construction of new, or substantial expansion of existing flood protection works, especially when this involves the conversion of floodplains or riverine forests;
xii. Activities that have alternative prior sources of committed funding;
xiv. Maintenance and operation of infrastructure built from subproject funds;
xvi. Other activities with environmental or social impact as governed by ADB/WB safeguard policies.

Other rural infrastructure that does not fall under any of the earlier classifications shall also follow the procedures discussed in this Manual. In the course of subproject implementation and when needed, user-friendly resource materials (facilitators field guides) or “mini-manuals” shall be developed on various related topics to provide guidance and clarification.

When communities need technical assistance to plan and implement the abovementioned subprojects, the guidelines on the Technical Assistance Fund (TAF) shall be used for the availment and selection of service providers/consultants.

1.3. Relation to Other KC-NCDDP Manuals

The guidelines and procedures under this Manual shall be used in coordination and complementation with other manuals under the KC-NCDDP such as: CEAC Accelerated and Standard Activity Matrix, Community Based Finance Manual (CBFM), Community Based Procurement Manual (CBPM), Environment and Social Safeguards Management Manual, Thematic Environmental Management Systems (TEMS) Manual, among others. Users of this manual shall refer to these other manuals for clarification and guidance on matters not discussed here.

[2] For items v-viii, please refer to NCIP Administrative Order No. 3 series of 2012

1.4. Principles for Community Based Infrastructure Planning and Implementation

Community based infrastructure planning and implementation shall be guided by the following principles:

1. ***Community Participation*** – All community members participate in subproject implementation through their elected representatives in the subproject preparation, implementation and management teams. Different teams in the barangay are formed (e.g. Project Preparation Team, Barangay Representation Team, Barangay Subproject Management Committee, Project Implementation Team, and Operation and Maintenance Groups) to take the lead in community decision-making at different stages of subproject implementation. During subproject implementation, specialized committees will be formed for procurement, monitoring and inspection, audit and inventory. Women shall be strongly encouraged to participate in the barangay processes. Institutions working in the locality - LGUs, NGOs, media, POs and NGAs – shall be involved in subproject implementation.

2. ***Community Prioritization*** – All procedures and standard subproject formats are kept to the minimum, and serious attempts have been made to make them simple for community members. Eligibility to access project funds is open to all barangays within a municipality but actual fund allocation as decided by the Municipal Inter-Barangay Forum (MIBF) will go to subproject proposals that will meet the following criteria: address priority needs of poverty groups, have high community cash or in-kind contribution, technically feasible and environmentally sound, will involve direct community participation during implementation, and is sustainable in the long run.

3. ***Localized Decision-Making*** – Proposed subprojects of proponent communities are presented, verified, prioritized and approved locally by the MIBF. Prioritization follows a set of criteria and mechanics to be adopted during the MIBF. The role of project management is to ensure that the process is being observed before the release the funds.

4. ***Empowerment*** – Communities shall drive the process of needs identification and approval of subprojects. As owners of the subproject, they will have control over the identification, planning and execution of subproject implementation activities. During the process, community members may engage the expertise of local service providers for technical proposal preparation and will benefit from hands on procurement process for goods and works during construction. Monitoring and reporting implementation progress will also be done by the community members, who will learn and gain lessons from their experience in subproject implementation and contribute to strengthening community organization and mobilization.

5. ***Transparency*** – The processes and mechanics for subproject identification, selection, prioritization, implementation, monitoring and operation will be discussed among, and agreed upon, by community members and representatives in the inter-barangay forum. During subproject implementation, the approved subproject plans, cost estimates, bill of materials, quality control checklist, construction timetable, status reports on subproject resource usage (labor, materials and equipment), periodic subproject physical and financial reports prepared by the committees, and subproject operation and maintenance reports shall be posted in community bulletin boards and updated regularly for understanding of the community and the general public. A subproject signboard will also be installed. Subprojects will be open to external monitoring by NGOs and media groups.

6. ***Accountability*** – community officials and service providers (contractors and consultants) directly or indirectly involved in the planning and implementation of rural infrastructure shall be held accountable for action that may not be in accordance with this Manual and other related

manuals. These officials and private individuals or firms when needed shall undergo investigation and if found guilty shall be held liable for any unfavorable actions and decisions. Participating communities that violate the prescribed policies, methods and procedures shall be accountable first to the community, to the local government unit and the project organization and will face possible sanctions and penalties. Depending on the degree of violation, the sanctions can range from disallowance, suspension of further fund releases, and withdrawal of the community project. If there are anomalous transactions, persons responsible will be charged with civil and/or criminal cases.

7. ***Sustainability*** – Proponents of subprojects will be required to present viable long-term plans for operation and maintenance. Presentation of the operation and maintenance (O&M) plan shall be done upfront during the proposal-making stage. Specifically, project proponents will be required to show their resource generation and organizational plans to operate and maintain the subproject after completion. Feasibility of the O&M plan will be one criterion for subproject selection by the inter-barangay forum. Program staff will also verify actual performance of the community on subproject operation and maintenance. Community groups who will take over the actual operation and maintenance of completed subprojects will be provided training to improve their technical and organizational capabilities. At the municipal level, local governments shall have strong participation in the subproject to ensure buy-in and eventual pick-up of the participatory and community-driven planning approaches.

Chapter Two: Organization for Community Based Infrastructure

2.1. Organizational Structure at the Community Level
2.2. Organizational Structure at the Subproject Level
2.3. Capacity Building for Community Based Infrastructure Groups

2.1. Organizational Structure at the Community Level

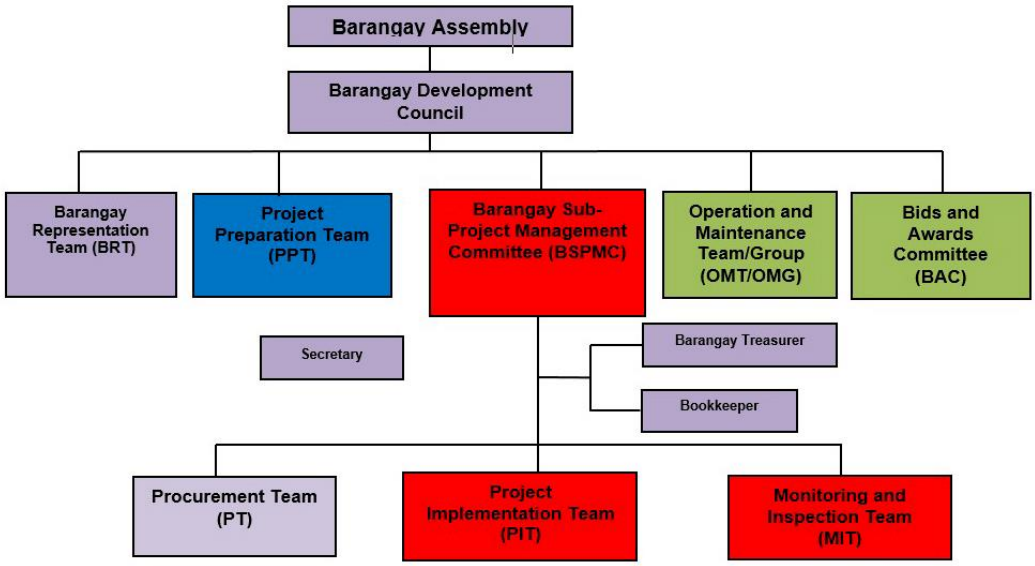


Figure 1: Barangay Subproject Organization Structure

In the KC-NCDDP, communities play a direct role in implementing key subproject activities at the community and municipal level. Community volunteers (CV), who are members of the community, are popularly elected during the Barangay Assembly to lead and implement project planning and implementation.

There are two groups formed under the supervision of the Barangay Development Council for the purpose of planning and implementing infrastructure subprojects. These are: (i) the Project Preparation Team (PPT); and (ii) the Barangay Subproject Management Committee (BSPMC). Members of the team and committees are elected by all the members of the Barangay Assembly present in the meeting held for this purpose.

For infrastructure subprojects, the following committees composed of community volunteers are actively involved:

A. Project Planning

2.1.1. Project Preparation Team (PPT) - the Project Preparation Team (PPT) is responsible for developing subproject ideas decided upon as priority by Barangay Assembly members into subproject plans. It is responsible for preparing the subproject proposal with the assistance of professionals or persons with technical skills in the community, or the technical staff of the LGUs, KC-NCDDP Staff or service providers and identifying subproject requirements. The PPT acts as the community planning unit for the subproject. It is composed of a minimum of three (3) community volunteers per barangay, at least one of which should be a woman.

B. Subproject Implementation

2.1.2. Barangay Subproject Management Committee (BSPMC)

The Barangay Subproject Management Committee (BSPMC) provides overall management of the community based subprojects and oversees subproject implementation, monitoring, completion, maintenance, and sustainability. The BSPMC is the policy making and decision making body for the subproject.

The Barangay Subproject Management Committee (BSPMC) has the following functions and responsibilities:

i. Acts for and in behalf of the barangay as subproject management entity;
ii. Establishes the respective committees such as the Project Implementation Team (PIT), Bids and Awards Committee (BAC), Procurement Team (PT), Monitoring and Inspection Team (MIT) and other relevant teams and committees and ensures that members give priority to their assignments until the subproject requirements are completed;
iii. Ensures that the contract implementation and procurement procedures and requirements are in accordance with the CBPM and the CBIM;
iv. Acts on the recommendations of the PIT, BAC and other committees, approves or disapproves the award of contracts and purchase orders, request for fund release, approval of payments, issuance of change orders, suspension orders and other relevant contract implementation requirements;
iv. Imposes the necessary administrative sanctions on errant members of the PIT, MIT, BAC, PT and service providers in accordance with appropriate rules and regulations.

The BSPMC represents the Barangay in the Municipal Inter-Barangay Forum (MIBF). Specifically, the representatives to the MIBF are the BSPMC Chair and other members chosen by the Barangay Assembly. The BSPMC has a Treasurer, Secretary, and a Bookkeeper responsible for the management and disbursement of funds and records related to the subproject. The Barangay Treasurer is automatically the Treasurer of the BSPMC. The Secretary and Bookkeeper are elected based on the qualifications set by the Barangay Assembly.

The BSPMC, depending on the nature of the Project or as decided upon by the Barangay Assembly, can create several teams but three teams are prescribed, namely: (i) Procurement Team, (ii) Project Implementation Team (PIT) and (iii) Monitoring and Inspection Team (MIT). The composition, qualifications and functions of the Procurement Team are discussed in great detail in the Community Based Procurement Manual and will no longer be explained in this manual.

2.1.2.1. Project Implementation Team (PIT) - is in charge of the day-to-day activities in the implementation of the subproject. The PIT Head is expected to be able to devote most of his/her time for the subproject. In electing this person, the Barangay Assembly should consider his/her experience and technical skills on the subproject to be implemented, and his/her willingness to devote time as this may require full-time work. Since working full time will deprive the person from earning for the family, the community may decide to provide an honorarium or a salary. This can form part of the local counterpart contribution.

2.1.2.2. Monitoring and Inspection Team (MIT) – is involved in monitoring the progress of subproject implementation and validating the physical accomplishment reports prepared by the

Project Implementation Team (PIT). It is also responsible for inspecting deliveries of all items procured under the subproject. The MIT is formed after the Participatory Situational Analysis (PSA).

2.1.2.3. Operations and Maintenance Team (OMT) and Group (OMG) - There are two groups involved in the operation and maintenance activities for the Project. The Operations and Maintenance Team (OMT) is an ad-hoc team composed of community volunteers responsible for identifying the operation and maintenance requirements of the proposed subproject at the project prioritization stage and for determining whether the community has the capacity to manage the project after completion. The OMT assesses the subprojects during the development and implementation stage to ensure its sustainability after project completion. The Operations and Maintenance Group (OMG) is a regular group of community volunteers responsible for the actual operation and maintenance of a subproject. The OMG could be in the form of an association (e.g. BAWASA or Barangay Water and Sanitation Association for water systems, PTCA or parent teacher and community associations for school buildings), a committee under the LGU, or a partnership of community volunteers and LGUs. In addition, Community Associations for Operation and Maintenance may be formed during subproject implementation to manage the operation and maintenance of completed community subprojects. The composition of the associations will vary depending on the type of subproject being operated and maintained.

2.1.3. Others

2.1.3.1. Barangay Treasurer - has custody over the funds and properties of the subproject. He/she is the disbursing officer of the subproject. Together with the Project Preparation Team, the Treasurer prepares the detailed cost estimates.

2.1.3.2. Bookkeeper - records all financial transactions and prepares financial reports. He/ she also takes custody of all supporting documents of financial transactions.

2.1.3.3. BSPMC Chairperson– as head of the all the committees created to implement the subproject, he is responsible for approving the Program of Work (POW), Community Procurement Plan (CPP), signing contracts and purchase orders, issues change orders, suspension orders and other requirements related to procurement and contract implementation in accordance with the procedures outlined in the specific manuals for this purpose, among others, and imposes the necessary administrative sanctions on errant members of the PIT, MIT, BAC, PT and service providers in accordance with appropriate rules and regulations.

2.1.3.4. Other Committees – the Barangay Assembly can create additional committees as may be needed in project planning and implementation. Examples of group involvement may include: information and dissemination, clean-up volunteers, logistics committees, and so on.

2.2. Organizational Structure at the Subproject Level

2.2.1. Municipal

The main mechanisms and structures for local government engagement under the KC-NCDDP that are also involved in rural infrastructure planning and implementation are the Municipal Inter-Agency Committee (MIAC) and the Municipal Coordinating Team (MCT).

2.2.1.1. Municipal Inter-Agency Committee (MIAC)

The Municipal Inter-Agency Committee (MIAC) is a gathering of all the heads of the various offices, bureaus, and services of the municipal local government unit (LGU). The MIAC is an ad-hoc structure formed through Executive Order by the Municipal Mayor as part of the requirements for entry of the municipality into the KC-NCDDP. The MIAC is chaired by the municipal or city mayor and is composed of the following members: Municipal Social Welfare and Development Officer

(MSWDO), Municipal Health Officer (MHO), Department of Health (DOH) Representative, Department of Education (DepED) Supervisor, Municipal Local Government Operations Officer (MLGOO), Municipal Agriculturist, Municipal Engineer, Municipal Accountant, Community Environment and Natural Resources Officer (CENRO), Municipal Planning and Development Coordinator (MPDC), Basic Sector Representatives, NGO and PO Representatives from Non-Government Organizations (NGO) and People's Organizations (PO), Representatives from other government projects (e.g. NHTS-PR and 4Ps). The MPDC and the Municipal Engineer plays the most important role in the case of rural infrastructure subprojects.

In the planning and implementation of rural infrastructure, the MIAC functions include the following:

a. Provide directions in planning based on development goals and priorities emanating from the national or municipal level;
b. Provide technical assistance in project planning, design, and proposal writing; and
c. Monitor ongoing barangay subprojects.

2.2.1.2. Municipal Coordinating Team (MCT)

The Municipal Coordinating Team (MCT) is a composite team formed by the Municipal Local Government Unit (MLGU) in a KC-NCDDP municipality to support implementation of the Program. It is formed through Executive Order as part of the requirements for enrollment of a municipality into the Project. The MCT observes and assists the Area Coordinating Team (ACT) in implementing activities along the CEAC, gradually takes over the facilitation of the selected activities in the KC-NCDDP process, and facilitates integration of community driven development (CDD) processes into the local planning and budgeting process of the LGU. The MCT is composed of the following staff seconded or specifically hired by the LGU for the Project: Municipal Area Coordinator (MAC), Municipal Technical Facilitator/Engineer (MTF), Municipal Financial Analyst (MFA), Municipal Community Empowerment Facilitator (MCEF), Municipal Gender Focal Person and Municipal Encoder.

The functions of the MCT in relation to rural infrastructure planning and development are:

a. Mobilize local government support (staff, structures, systems, and resources) for key municipal and barangay activities along the CEAC;
b. Coordinate MLGU Technical Assistance provision to Barangay Local Government Unit (BLGUs) and community volunteers;
c. Monitor MLGU compliance to commitments in the MOA;
d. Ensure the systematic use and management of Monitoring and Evaluation (M&E) data generated from the Project; ensure that appropriate reports and other subproject documents are shared and made publicly available
e. Facilitate the development and implementation of the KC Sustainability Plan.

2.2.1.3. Municipal Engineer (ME) – the Municipal Engineer serves as the local government counterpart involved in the planning and implementation of infrastructure subprojects and provides technical assistance, together with the Technical Facilitator (TF) to community volunteers in the preparation, development, and implementation of community subprojects, procurement and implementation of environmental safeguards, among others;

2.2.2. Area Coordinating Team (ACT)

The Area Coordinating Team (ACT) is the KC-NCDDP hired project staff organized and deployed within a municipality to implement the KC-NCDDP subprojects. They serve as frontline workers in the field and assume the crucial role of managing and facilitating subproject planning and implementation by working directly with the community and other project stakeholders. The ACT works closely with the MIAC and the MCT of the LGU. It is composed of an Area Coordinator (AC),

a Technical Facilitator (TF), a Municipal Finance Analyst (MFA), and Community Empowerment Facilitators (CEF). The composition of an ACT varies depending on the number of barangays in a municipality as follows: AC (1 per municipality), TF (1 for every 25 barangays), MFA (1 for every 25 barangays) and CEF (1 for every 5 barangays**).**

The main functions of the ACT in relation to the planning and implementation of rural infrastructure are as follows;

a. Facilitate the effective implementation of KC-NCDDP development processes along the CEAC;
b. Build and strengthen the capabilities of community members and volunteers, and LGU stakeholders, to identify, design, select, and implement community subprojects using the CDD strategy;
c. Ensure the transfer of the CDD facilitation technology to the municipal and barangay local government unit;
d. Facilitate the formation and strengthening of community-based structures and grassroots organizations to engage in participatory, transparent, and accountable governance;
e. Ensure that the M&E data generated by the subprojects are correct, complete, and consistent with Project standards, and are shared with the LGU.

2.2.2.1. Community Empowerment Facilitators (CEFs) – are responsible for providing guidance to the BSPMC in community organization and the application of procedures under the CEAC cycle and the specific manuals particularly those involved in the planning and implementation of infrastructure subprojects.

2.2.2.2. Technical Facilitators (TFs) – together with the municipal engineer, provides technical support and training on subproject planning, implementation, procurement and other matters such as the preparation of the Program of Work (POW), technical design and plans, cost estimated, community procurement plan (CPP), attending meetings, and other related functions.

2.2.2.3. Service Providers (SP) – service providers include private individuals or contractors who deliver services required by the community either in the form of professional advice and services as consultants or in the actual construction of the subproject as contractors. Service providers are expected to have taken steps in understanding all conditions affecting the planning and implementation of the subproject and to comply with their responsibilities and relevant subproject and local rules and regulations that may affect the delivery of the specific services that they are engaged in.

2.2.3. Sub-Regional

The Sub-Regional Project Management Office (SRPMO) is a project based office of the KC-NCDDP at the provincial level in strategic locations organized for the purpose of supervising the requirements of a group of ACTs within the area. A SRPMO is created when there are more than ten (10) eligible municipalities covered by the KC-NCDDP. The Regional Infrastructure Officer (RIO) acts as focal person for infrastructure at the Sub-Regional Project Management Office (SRPMO) and is assisted by the Community Procurement Officer (CPO). The RIO is responsible for assisting the TFs and community volunteers in the planning, implementation/execution and monitoring and evaluation of the subprojects; providing technical guidance on infrastructure and procurement policies/guidelines and activities; spearheading the preparation of engineering requirements i.e. project program of works, detailed estimates, specifications and plans; coordinating and facilitating compliance with requirements on the request of fund release (RFR); providing technical assistance and recommendations on the resolution of subprojects implementation issues and subproject completion; and review and recommend appropriate actions on No Objection Letter (NOL) requests, if applicable.

2.2.4. Regional

The Regional Project Management Office (RPMO) is the KC-NCDDP field office at the regional level responsible for the management and implementation of the subproject. The RPMO is headed by the Department of Social Welfare and Development (DSWD) Assistant Regional Director/Regional Project Manager. Among the staff involved in the planning and implementation of rural infrastructures are: the Regional Community Development Specialist (RCDS), and the Regional Community Infrastructure Specialist (RCIS). The RCIS is responsible for providing technical assistance to the ACTs/MCTs through but not limited to on-the job-training, coaching, supervision and providing inputs on the preparation of program of works (POWs) and plans, consolidating activities related to infrastructure planning and implementation in the region.

The major functions of the RPMO in relation to infrastructure planning and implementation are:

a. Implement national policies and regional directives and strategies;
b. Supervise the work and performance of the ACTs and direct and coordinate subproject planning and implementation in municipalities;
c. Ensure optimum utilization of subproject funds and resources;
d. Provide technical assistance to the Area Coordinating Teams in planning and implementation;
e. Conduct monitoring meetings to examine progress in social processes and subproject planning and implementation;
f. Discuss and resolve problems, issues, needs, and concerns arising from process and program implementation;
g. Receive and process reports from the SRPMOs and ACTs; prepare and submit the required reports to the NPMO;
h. Facilitate the generation and dissemination of knowledge and learning;

2.2.5. National

National Program Management Office (NPMO) is responsible for the overall management of the KC-NCDDP. The NPMO is composed of DSWD organic staff (who shall be seconded from other department units), contracted consultants, and staff. The NPMO is headed by a National Program Director and for the planning and implementation of rural infrastructure subprojects is assisted by professional engineering staff with various engineering, finance, procurement and other related disciplines.

The major functions of the National PMO in relation to the planning and implementation of rural infrastructure are:

a. Plan, direct, and coordinate project implementation across all regions and agencies, including LGUs;
b. Prepare progress reports to the Program Director, National Steering Committee, national oversight agencies, and donor agencies of the project;
c. Coordinate the efforts of LGUs, NGOs, media and other partner agencies to monitor barangay subprojects, in accordance with the procedures instituted by the Program Director and the Project Steering Committee; and
d. Recommend to the Program Director any administrative and management issues for resolution.

2.3. Capacity Building for Community Based Infrastructure Groups

Capacity building for community volunteers and program staff involved in the planning, management and implementation of the community subproject shall be based on the national training program designed for the KC-NCDDP. Upon selection and appointment as representatives of community based groups (PPT, PIT, MIT, OMT) discussed above, the volunteers shall undergo capacity building activities to perform their tasks more effectively. The community volunteers and staff involved in the planning and implementation of community based infrastructure shall be trained on the general principles and procedures discussed under this manual and from time to time or when needed shall undergo specialized training. The general scope of the capacity building activities for community volunteers and program staff involved in the planning and implementation of rural infrastructure include the following:

2.3.1. Skills Training

At the subproject identification, selection and planning stage, the planning and implementation group members are exposed to the key processes and tools to identify, select, and design appropriate solutions to address community problems and are trained on the salient provisions of the CBIM. This is to enable team members to plan and package community requirements based on the identified community proposals for subprojects proposed for KC-NCDDP funding. At the end of the training, team members are expected to prepare the subproject technical design, program of works and estimated budgets for contracts.

2.3.2. Job Coaching and Mentoring

In the course of subproject planning and implementation, the specific technical assistance requirements of the teams are identified and where needed, practical on-the job training, job coaching and mentoring are provided to help them carry out their tasks. During this period, team members are advised on how to resolve issues and challenges faced by the procurement at hand. Job coaching is generally provided. The Technical Facilitator (TF) provides technical assistance to the community volunteers relative to matters relating to the planning and implementation of rural infrastructure with assistance from the Community Infrastructure Officer (CIO) and the Regional Community Infrastructure Specialist (RCIS) who also provides coaching and on-the-job training.

Chapter Three: Planning of Community Infrastructure

3.1. Infrastructure Planning and its Importance
3.2. Community Empowerment Activity Cycle for Infrastructure Subprojects
3.3. Stage One: Social Preparation
3.4. Stage Two: Community Planning and Subproject Proposal Development

3.1. Infrastructure Planning and its Importance

Infrastructure (commonly referred to as works) refers to the physical structures such as roads, bridges, school buildings, water supply, irrigation, electrification, and other facilities that provide the goods and services needed to enable, sustain and enhance the living conditions of a community. It facilitates the production of goods and services, the distribution of finished products to markets and the provision of basic social services. A plan on the other hand is a detailed proposal for doing something or achieving an objective. Briefly, therefore, an infrastructure plan is a detailed proposal for an infrastructure subproject that includes all the requisites to design, manage, implement and maintain the facility.

Infrastructure planning is the "road map" for the delivery of a community's vision of a subproject that can address its needs under the KC-NCDDP and for bringing the resources and the stakeholders to deliver it. Planning for community based infrastructure is the process of identifying the specific subproject, and the needed resources and requirements, as well as building the capacity of community volunteers to plan, manage and maintain the subproject. A well prepared infrastructure plan supports efficient procurement, contract implementation, assists decision making and serves as a valuable tool for managing infrastructure delivery.

Preparing worthwhile infrastructure plans will need the involvement of a wide range of community volunteers, subproject and municipal officials, service providers (from both public and private sectors) and other stakeholders. For it to be effective as a delivery mechanism, it must be accepted by those involved in its preparation and approval as a valued strategic document as well as the basis of their decision making processes. Planners will not be able to produce infrastructure plans with the levels of commitment and influence needed by working on their own. The community needs to contribute information and be convinced of the value of the process if it is to have the force to influence the strategic processes and investment decisions.

This Manual discusses a uniform set of procedures to be followed by all involved in infrastructure delivery to provide guidance in the preparation of infrastructure plans.

3.2. Community Empowerment Activity Cycle (CEAC) for Infrastructure Subprojects

The Community Empowerment Activity Cycle (CEAC) is the primary community development process utilized under the KC-NCDDP that enables control of community groups over planning and investment resources for the planning, allocation, implementation and management of local development projects. As a process, it creates opportunities for local people to work together in a purposively progressive manner, guides communities through a comprehensive and systematic problem solving process and covers such major activities as: clarifying local situations to identify issues, developing solutions to address these issues, carrying out activities to implement the solutions, and monitoring solutions' contributions to improving local conditions. The KC-NCDDP is implemented in four cycles, depending on the performance of the local government unit with each community undergoing the CEAC four times, one for each cycle of the program. The CEAC has five major stages: Stage 1: Social Preparation; Stage 2: Community Planning and Subproject Proposal Development; Stage 3: Community Managed Implementation and Organization Formation and Development; Stage 4: Community Monitoring and Evaluation; and Stage 5: Transition to the Next Cycle. Figure 2 shows the major infrastructure planning and implementation activities under the CEAC.

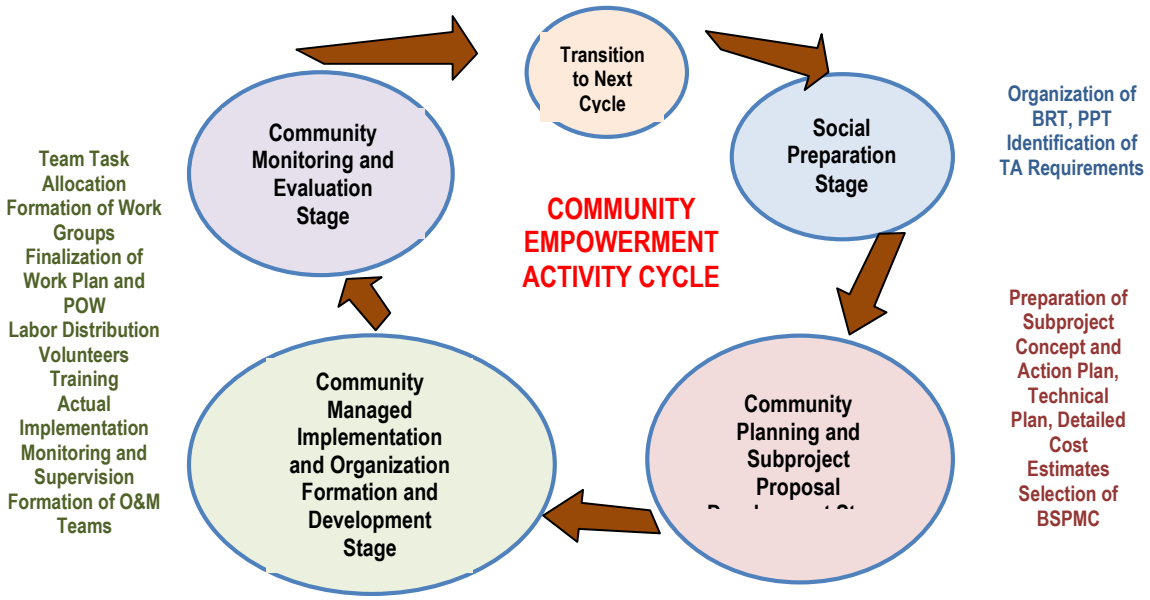


Figure 2. Subproject Planning and Implementation Activities under the CEAC Process

There are two types of CEAC implemented under the KC-NCDPP. These are: the accelerated CEAC and the standard CEAC.

The Accelerated CEAC is used for communities that have undergone disasters and utilizes disaster response operations procedures. It covers all municipalities affected by Typhoon Yolanda, all municipalities with a declaration of calamity still in force at the time of KC-NCDDP enrollment and subsequent areas to be covered by the declaration of a state of calamity. Under Accelerated CEAC, grant allocation is increased and local counterpart contribution is waived; emergency procurement procedures are applied, procedures for needs analysis, planning and implementation and monitoring and reporting are simplified. In terms of time frame, each stage of the CEAC is fast-tracked, some activities and sub-activities are waived or modified to hasten the process of approval of subprojects and project identification to project implementation is intended to take about one to two months.

The Standard CEAC is applied for all other eligible communities under the KC-NCDDP process. The usual grant allocation requirements and procedures are followed and local counterpart contributions are required, regular procedures for needs analysis, planning, procurement, implementation, monitoring and reporting are used. Stage 1: Social Preparation takes about four months, Stage 2: Community Planning about two months, Stage 3: Community Managed Implementation and Organization Formation about six to eight months, Stage 4: Monitoring about 4 days and Stage 5: Transition takes about six days. A regular cycle covering five stages takes about twelve to 15 months.

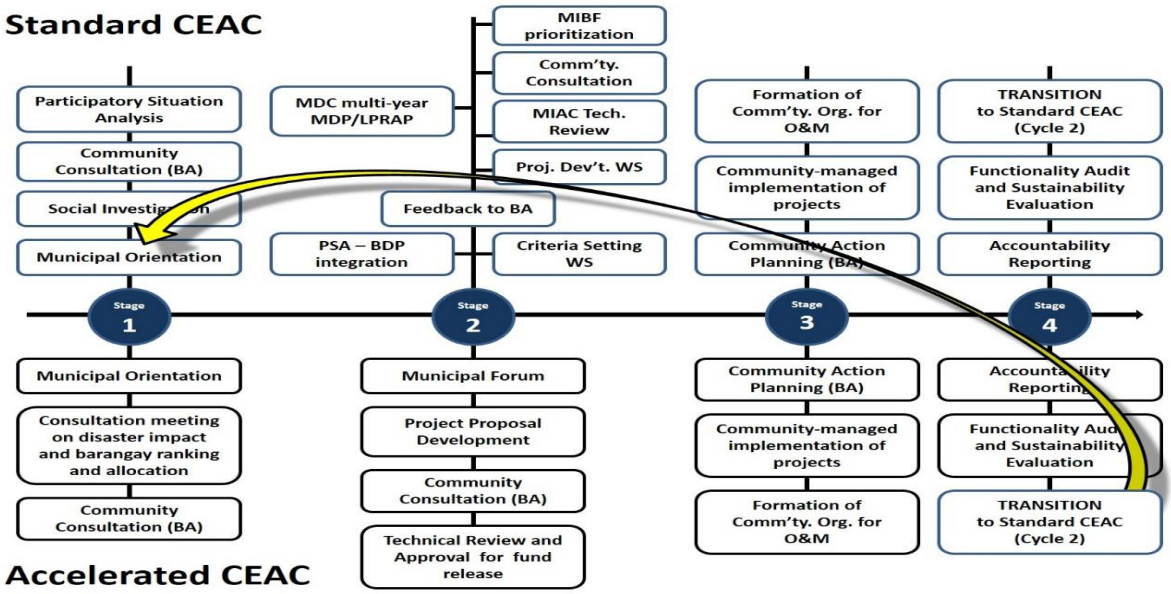


Figure 3. General Process Flow of Activities for Standard and Accelerated CEAC

The processes and procedures for the planning and implementation of infrastructure subprojects are shown in Figure 3 for both accelerated and standard CEAC.

3.3. Stage One: Social Preparation

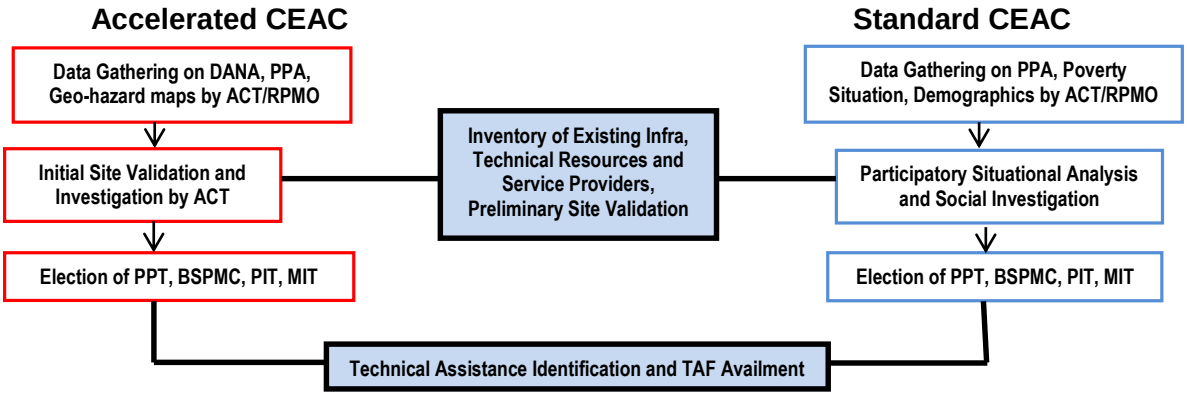


Figure 4. Social Preparation Activities for Infrastructure Subproject Identification and Selection

At the social preparation stage, the following are generally undertaken to provide inputs to the identification and selection of infrastructure subprojects as shown in Figure 4.

Table 1 summarizes the requirements for the social preparation stage of subproject identification.

Table 1. Expected Outputs of Subproject Identification Stage for Community Infrastructure

Major Activities	Expected Outputs
Team Courtesy Call with Local Chief Executive (LCE) and other municipal officials	Municipal Profile and Municipal Maps Municipal Development Plan, CLUP DANA, PPA, geo-hazard maps, poverty and other demographic data
Data gathering on Existing Situation	Inventory of existing infrastructures Inventory of available technical staffs and resources

	Inventory of available service providers Prevailing unit cost for labor rates and equipment adopted
Municipal and Barangay Orientation activities Social Investigation, Community Consultation, Participatory Situational Analysis Selection of Community Volunteers	Data Gathering results Preliminary site investigation and environmental Scanning/validation reports NCIP Certification* List of community volunteers List of prioritized need and proposed intervention Identification of Technical Assistance Requirements and TAF Availment
Signing of Memorandum of Agreement with community	Signed and Notarized Memorandum of Agreement

* For communities with indigenous people

3.3.1. Data Gathering on Existing Situation

In preparation for the Municipal Orientation (MO), the Regional Program Management Office (RPMO) gathers data on (i) Damage Assessment and Needs Analysis (DANA); (ii) matrix of Local Government Unit (LGU) and National Government Agency (NGA) Programs, Projects and Activities (PPA) to address early recovery and rehabilitation needs; (iii) geo-hazard maps, and; (iv) other relevant information for communities covered under the accelerated CEAC. For those under the standard CEAC, the Regional Program Management Office (RPMO) gathers data on (i) National Government Agency (NGA) programs, projects and activities (PPA) to address poverty; (ii) geo-hazard maps; (iii) poverty data from the National Household Targeting System for Poverty Reduction (NHTS-PR); (iv) demographic data, and; (v) other relevant information on the municipality. The above information is provided to the Area Coordinating Teams (ACT) for further validation.

During the municipal orientation, the results of the Damage Assessment and Needs Analysis (DANA) and matrix of LGU and NGA PPA commitments are presented by the Municipal Disaster and Risk Reduction Management Council (MDRRMC) chairperson to address early recovery needs for communities covered by accelerated CEAC. For standard CEAC, Social Investigation (SI), Community Consultation and Participatory Situational Analysis (PSA) activities are held at the municipal and community level to identify the subprojects to be proposed for KC-NCDDP support.

After the municipal orientation, the Area Coordinator Teams (ACT), with the assistance of the municipal engineer, schedule field visits and conduct an initial investigation and validation of the data provided by the RPMO on the ground that includes an inventory of existing infrastructure, available technical resources and service providers, and preliminary site investigation. The CEF then prepares a report on the actual situation in the community.
The same activities are followed for communities covered by the standard CEAC, together with other Social Investigation (SI) and integration activities.

The following information are obtained and validated in the community:

3.3.1.1. Inventory of Existing Infrastructure

The Inventory of Existing Infrastructure is conducted jointly by the Technical Facilitators (TFs) at the municipal and ACT level to determine the availability and condition of rural infrastructure within the municipality and the community. This includes the length and type of municipal and barangay roads, the length and type of bridges and other rural access structures, the number of barangays with rural health units, barangay health stations, day care centers, school buildings, potable water supply systems, post-harvest facilities, warehouse or storage facilities, evacuation centers, training centers, and markets/trading centers, among others. The Inventory is submitted by the Technical Facilitator (TF) with the assistance of the Municipal Engineer (ME) to the SRPMO for consolidation by the RPMO before or after the Municipal Orientation (MO) for the KC-NCDDP. In the case of the

accelerated CEAC, the inventory may be replaced by the Damage Assessment and Needs Analysis (DANA) Report highlighting the condition of damaged and remaining infrastructure within the community. The Form is found in Annex A as CBIM Form A-1.

3.3.1.2. Inventory of Available Technical Resources

The Inventory of Available Technical Resources is conducted jointly by the Municipal Technical Facilitator and the Municipal Engineer to determine the availability of heavy equipment (type, current condition, capacity per hour, rental rates), technical and skilled manpower and barangay labor force, prevailing labor rates and equipment rentals within the municipality or community for planning purposes. For both accelerated and standard CEAC, the inventory is done during the validation exercise conducted by the ACT as part of the secondary data to be obtained. The inventory can be done in coordination with the market survey done by the Procurement Team (refer to Section 3.4.1. of the Community Based Procurement Manual) to find out which items are available in the local market. The inventory should also check the availability of construction materials with the appropriate PS mark that may be needed for the subproject. The Form is found in Annex A as CBIM Form A-2.

If there are no available equipment and manpower within the municipality, the TEF may inquire from other possible sources in the area near the municipality or the province. They can also refer to the ACT (Area Coordinating Team) and RPMT (Regional Program Management Team) inventory of resource institutions, technical assistance (TA) providers and suppliers for a possible list of suppliers and the prevailing prices.

3.3.1.3. Inventory of Available Service Providers

The Inventory of Available Service Providers is conducted jointly by the Municipal Technical Facilitator and the Municipal Engineer to determine the availability of engineers, architects, contractors and construction materials suppliers within the municipality or its vicinity as part of the secondary data requirements prior to or after the municipal orientation. The activity can also be conducted in conjunction with the market survey of the Procurement Team as discussed above. The results of the inventory can be used to support the request for technical assistance under the TAF. The Form is found in Annex A as CBIM Form A-3.

3.3.1.4. Preliminary Investigation or Site Validation

The preliminary investigation and environmental scanning or site validation is conducted to determine the proposed location of infrastructure subprojects, the surrounding conditions around the area, the ownership status of the land where the subprojects are to be constructed such as road right of way, the accessibility of bringing materials, equipment and other needed subproject requirements and the availability of construction materials including accredited quarry areas (filling materials, sand, gravel, etc.) within the area. For water supply subprojects, this includes validation of water source. This is conducted by the Technical Facilitator with the assistance of the community volunteers comprising the Project Preparation Team (PPT). Several sample site reports (for rural roads, bridges/spillways and culverts, buildings, post-harvest facilities, irrigation and water supply system) are found in Annex a (CBIM Forms A-4 to A-11). The BSPMC must ensure that the land or right of way where the proposed subproject will be constructed belongs to the community. It must secure the appropriate Deed of Donation or similar legal documents before any construction commences. The procedures found in Annex G of the Environmental and Social Management Framework (ESMF) on Land Acquisition, Resettlement and Rehabilitation Framework/Resettlement Framework shall be followed in the acquisition of these sites.

During the conduct of subproject preliminary or site validation, geotag photos will be taken on the proposed subproject sites and will capture critical aspect or condition of the proposed subproject like the road alignment for roads, irrigation canal and water line alignment including location of water

source and concrete reservoirs. All geotag photos will be uploaded to the KC-NCDDP website to provide the historical photo documentation of the subproject.

3.3.2. Selection of Community Volunteers

At the Social Preparation Stage, community volunteers who will compose the Barangay Representation Team (BRT), the Project Preparation Team (PPT), Barangay Subproject Management Committee (BSPMC) and its respective teams (Procurement Team (PT) and Bids and Awards Committee (BAC), Project Implementation Team (PIT); Monitoring and Inspectorate Team (MIT), and others) are elected using the criteria agreed upon by the barangay assembly. The community based committees and teams shall perform the respective functions discussed in 2.1. of this Manual.

3.3.3. Identification of Technical Assistance Requirements and TAF Availment

3.3.3.1. Technical Assistance Fund (TAF)

The Technical Assistance Fund (TAF) is a fund under planning grants of the KC-NCDDP that allows communities (a Barangay or lead Barangay in case of joint communities) or the Regional Program Management Office (RPMO) to hire necessary technical service providers to a) develop viable proposals for complicated subprojects; b) prepare feasibility studies, pre-engineering works including plans, designs and drawings, and other similar activities; c) conduct supervision of subproject implementation, and; d) provide training for operation and maintenance of subprojects (e.g. organizational development and management). The TAF may also be used for orientation, consultation, participatory priority-setting, action planning, review and approval processes for different community subprojects at barangay and inter-barangay (municipal) levels. Information on the Technical Assistance Fund can be found in the Guidelines on the Use of Technical Assistance Fund (TAF) for KALAHI – CIDSS NCDDP subprojects.

The Technical Assistance Fund can be used in two (2) ways: (a) Community Managed and (b) Regionally Managed. Under community managed TAF, communities requiring technical assistance may draw resources from TAF municipal allocation which is equal to Php15,000 multiplied by the total number of barangays per cycle in the municipality. This is managed directly by local communities guided by the provisions set in the Community-Based Financial Manual (CBFM) and the Community-Based Procurement Manual. The Community-managed TAF scheme is appropriate in municipalities implementing KC-NCDDP using the standard Community Empowerment Activity Cycle (CEAC). For regionally-managed TAF, communities may avail of a pool of funds for technical services available in the region and computed as Php15,000 multiplied by the total number of KC-NCDDP covered barangays in the region. The fund is managed directly by the regional offices following the KC-NCDDP Program Procurement and Program Finance guidelines. The regionally-managed TAF scheme may be used for municipalities implementing KC-NCDDP using the disaster response operations procedures and the accelerated CEAC. TAF will support the first cycle of KC-NCDDP implementation in 'Yolanda' affected areas (i.e. 554 municipalities). The fund shall be managed by the RPMO. This arrangement shall also apply to future disaster affected areas. The scheme may likewise be used for municipalities implementing the standard CEAC, under the following conditions; a) where upon consultations and assessment during the Barangay Assembly (BA) after the Participatory Situational Analysis (PSA), it is deemed best to undertake regional procurement capacity due to the technical complexity required based on the assessment of the TF, CIO and RCIS; b) service providers are not available or limited within or adjacent municipalities.

3.3.3.2. Uses of TAF

The TAF may be used to support needed technical assistance (TA) requirements of communities in preparing and implementing community subprojects, including relevant capability building activities

to develop technical competencies for operation and maintenance (O&M) in order to ensure sustainability of implemented community subprojects.

Eligible expenditures include the following;

i. Payment of professional services for the preparation of survey works, feasibility and other similar studies, technical plans, designs and drawings, technical specifications, preparation of proposals, preparation of detailed cost estimates and detailed program of works, engineering supervision, and/or technical training for operation and maintenance, among others;

ii. Reimbursement of transportation expenses of service provider in case he/she is not charging professional fees; purchase of materials and supplies for the preparation of technical plans such as engineering survey, feasibility studies, proposals and detailed estimates;

iii. Reproduction and printing of plans and other technical documents;

iv. Other expenses related to subproject preparation, quality assurance and quality control (QA/QC) activities.

3.3.3.3. Identification of Technical Assistance Requirements

During the municipal orientation, the Community Empowerment Facilitator (CEF) explains the availability of the Technical Assistance Fund (TAF) for subproject preparation activities along with its purpose, procedures and mechanics with the assistance of the TEF and Municipal Engineer. The TAF is also explained to the community during the Barangay Assembly and the steps and other details of processing TAF requirements are discussed.

For communities under the accelerated CEAC, the range of potential TAF requirements is determined as a result of the Damage Assessment and Needs Analysis (DANA) report review. The actual request for technical assistance takes place after the municipal forum where all the disaster response proposals are validated and confirmed. A resolution shall be passed by the MIBF containing the prioritized list of subprojects requiring technical assistance. This shall be reviewed by the Community Infrastructure Officers (CIO) and Community Procurement Officers (CPO), grouped according to technical assistance requirements and endorsed to the SRPMO and RPMO for approval. The RPMO shall conduct a final review and grouping of the technical assistance requirements. The Regional Procurement Officer (RPO) shall prepare the procurement packages based on the needed technical assistance and the terms of reference (TOR) finalized.

For communities under standard CEAC whether availing of the community managed or regionally managed TAF, technical assistance requirements are determined after the subproject has been selected through the Participatory Situational Analysis (PSA). The Area Coordinator (AC) and the Technical Facilitator (TF) facilitate the identification of potential TAF service providers, in coordination with the local government and other private groups and stakeholders based on the subproject ideas proposed by the community. If the proposed subproject is eligible for TAF, the proposal will be endorsed to the MIBF for the Criteria Setting Workshop (CSW). The Technical Facilitator (TF) fills up the TAF Eligibility Checklist (CBIM Form A-12) and prepares the proposed Terms of Reference (TOR) for the required service provider. At the MIBF, the identified technical assistance requirements for all barangays shall be deliberated upon and allocated, a resolution passed containing the list of barangays with eligible subprojects for TAF, and the lead Barangay designated for this purpose. For regionally managed TAF, the justification for utilizing regionally managed TAF shall also be discussed.

3.3.3.4. Availment and Processing of Technical Assistance Fund

For regionally managed TAF using accelerated CEAC, upon identification and approval of the technical assistance requirements utilizing the Technical Assistance Fund (TAF), the RPMO shall invite potential service providers for a conference to discuss the KC-NCDDP, the terms of reference, deliverables, and conditions for engagement and procedures for contract management and payment, among others. The service providers shall be selected in accordance with the Program Procurement Guidelines for NPMO and RPMO on consultancy services. Payment and bookkeeping procedures shall follow requirements under the Program Finance manual.

For community-managed TAF using Standard CEAC, the elected lead barangay shall secure a Barangay Council Resolution authorizing the PPT Head, BSPMC Chairperson, Barangay Treasurer and AC to open a checking account with the nearest Land Bank of the Philippines branch. The account name must be under the name of: "DSWD KC-NCDDP/Name of Barangay". The lead barangay with the assistance of ACTs/MCTs will invite the potential service providers for a conference at the municipal level to discuss the overview of KC-NCDDP, terms of reference (TOR) deliverables, conditions for engagement and procedures for contract management and payment, among others. The service providers shall be selected in accordance with the procedures for consultancy services under the Community Based Procurement Manual (CBPM). The Project Preparation Team (PPT) shall gather all required documents to support requests for fund release for submission to the ACT. Payment of services shall follow the requirements set in Section 2.6.A of the Community-Based Finance Manual (CBFM). Procurement and financial documents should be filed for review and audit and recorded in the TAF journal or logbook.

The TAF guidelines may be revised from time to time for any enhancement; thus, the latest guidelines shall be used.

3.4. Stage Two: Community Planning and Subproject Proposal Development

Figure 5 provides an overview of the community planning and project proposal development process for community based infrastructure subprojects.

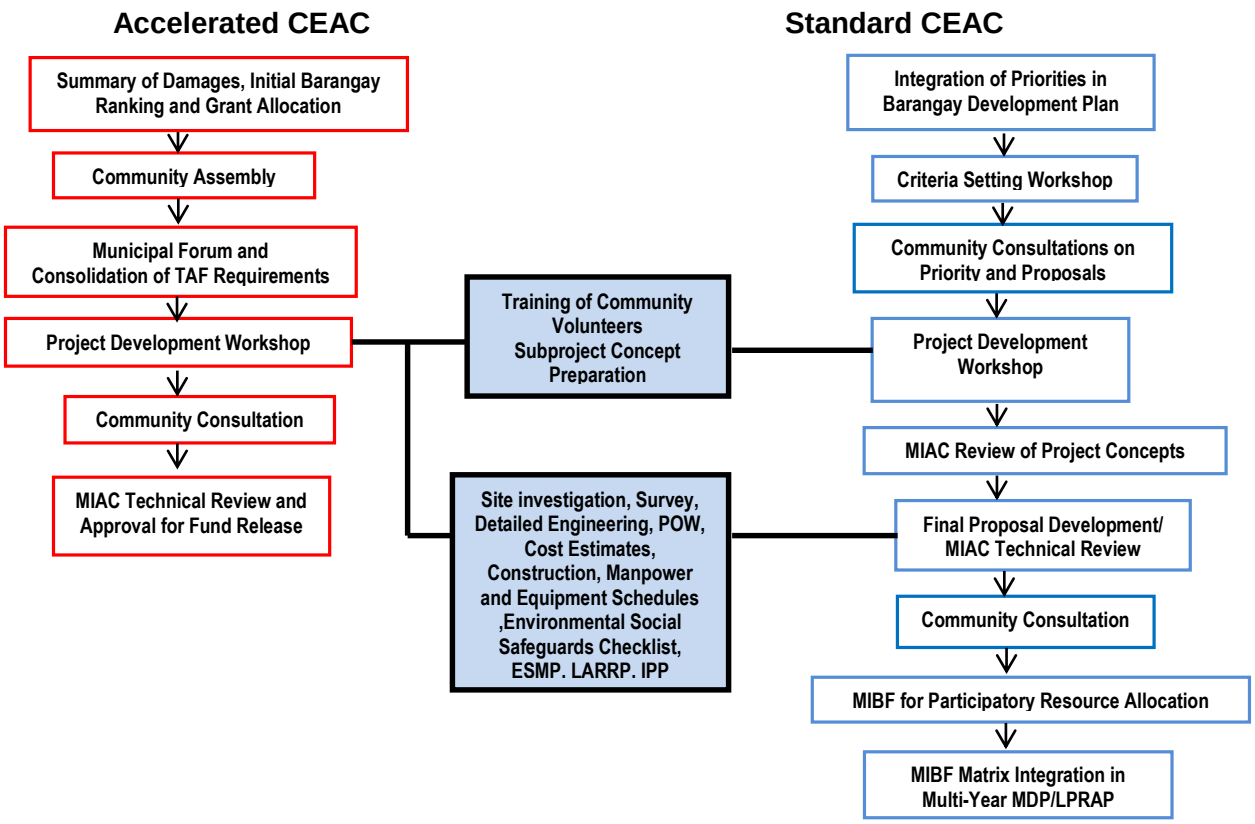


Figure 5. Community Planning and Subproject Proposal Development Process for Infrastructure Subprojects

Table 2 presents the requirements under the community planning and subproject proposal development stage.

Table 2. Expected Outputs of the Community Planning and subproject Proposal Development Stage

Major Activities	Expected Outputs
MIBF Criteria Setting Workshop	Alignment of MDP to the identified needs of the barangays Grant allocation using criteria set Lead barangay for TAF request
Municipal Forum/Community Consultation	Consolidated map of municipality List of proposed subprojects
Project Development Workshop	Training of community volunteers Subproject concept developed Operation and maintenance inputs
MIAC Review of Subproject Concept	Inputs on subproject concept
Full Proposal Development	Site Investigation and Field Survey Design Plans and Analysis Technical Specifications Program of Work, Quantity and Cost Estimates Construction, Manpower and Equipment Schedules Environmental and Social Safeguards Requirements Contract Documents
Community Consultation and MIAC Technical Review MIBF Participatory Resource Allocation	Approved subproject proposal Request for Fund Release

3.4.1. Subproject Proposal Identification and Prioritization

Under the accelerated CEAC, subproject proposal identification and prioritization commences with the consolidation of the summary of damages and remaining unmet needs of each barangay. The AC with municipal officials conducts an initial ranking of barangays and determines the grant allocation for each barangay using the criteria set under the KC-NCDDP guidelines. Validation teams are formed to conduct community consultations on problems and needs, commitments and proposed subprojects to be funded under the KC-NCDDP. The ACT consolidates the data obtained during the community consultation into a municipal map showing the extent of KC-NCDDP funding and involvement to address early recovery and rehabilitation needs.

A Municipal Forum is conducted to present the criteria for ranking, the amount of grants for each barangay based on the community consultation and revisions or refinements on allocation as agreed upon. The MPDO presents a consolidated map of the municipality showing (i) validated needs; (ii) agency PPA commitments, and; (iii) proposed subprojects for NCDDP grant support for each barangay. The proposed subprojects are screened against the list of prohibited and allowed activities. Discussions are conducted among adjoining barangays on the possibility of undertaking joint projects to address common priority needs and to prepare preliminary project concepts with indicative costs. The process, activities, and mechanics for preparing and clearing detailed proposals is explained, and the requirements for release of funds, and the general timeline for implementation are presented, discussed, and agreed upon. A Municipal Forum resolution is passed indicating (i) the barangays or group of barangays proposing subprojects; (ii) the title of the subprojects proposed; (iii) the indicative amount of grant proposed for the project, based on the

grant allocations for each barangay, either singly or as aggregated in cases of joint, inter-barangay subprojects, and; (iv) the process, rules, and mechanism for final review and clearing of detailed proposals. In preparation for the project development workshop, the AC shall ensure that adequate technical staff support is available either through service providers, local government or project staff to provide technical assistance to the PPT as well as the needed data, funds and other logistical requirements.

For the standard CEAC, subproject proposal identification and prioritization initially takes place when the CEF and the Municipal Local Government Operations Officer (MLGOO) meet with community officials to integrate the matrix of priorities of the BA-approved LGU-NGA PPA into the multi-year development plans of the barangays. The Barangay Council (BC) meets to approve the multi-year development plan, and to endorse the plan to the municipal development council (MDC) for inclusion into the municipal development plan. A Criteria Setting Workshop (CSW) is held to identify and agree on the criteria, process, and procedure to be used and followed for prioritizing subprojects proposed to be funded by the NCDDP during the Municipal Inter-Barangay Forum (MIBF) for prioritization. This is followed by a community consultation to discuss the agreements reached during the CSW and to review the priority problem to be addressed, and solution to be proposed for NCDDP support and to prepare the PPT to gather information needed for the preparation of detailed subproject proposals. Barangays are grouped by type of proposed subprojects and workshops are conducted to prepare preliminary subproject concepts with indicative costs. The MIAC reviews the subproject concepts, and provides inputs and guidance in preparing the final proposal. Where technical assistance support is needed, the AC meets with the SRPMO and RPMO to mobilize such support or group barangays with similar technical support requirements under the community managed TAF.

3.4.2. Project Development Workshop

A Project Development Workshop (PDW) is a training activity among barangays where subproject planning and implementation teams are taught the key processes and tools to identify, select, and design appropriate solutions to address problems and the subproject concept is prepared. During the PDW, an overview of the proposal development process, the environmental and social safeguards guidelines and other documentary requirements for the Request for Fund Release (RFR) are discussed. Barangays are grouped together by type of proposed subproject and members of the ACT, MCT, MIAC, NGA representatives and TAF service providers provide technical assistance inputs to community volunteers that will aid them in drafting community proposals for subprojects which will be proposed for NCDDP funding.

The Project Development Workshop will involve the following: CEF with support from other ACT members, PPT, MIAC, MCT, MLGOO, Basic Sector Representative, and NGA Representatives with the MIAC and NGA representatives providing technical assistance and acting as resource persons. The CEF will mobilize and prepare the PPT participants. ACT leads in facilitation of project development activities. MCT and MIAC assist the ACT in TA provision.

3.4.2.1. Training of Community Volunteers

Community volunteers comprising the Project Preparation Team (PPT), Barangay Subproject Management Committee (BSPMC), Procurement Team (PT), Bids and Awards Committee (BAC), Project Implementation Team (PIT), Monitoring and Inspection Team (MIT), Finance Team (FT), and others are trained on community procurement, finance, environmental and social safeguards and subproject implementation during the PDW using the training modules (based on the community based manuals) developed and prepared for the purpose. Barangays are grouped together by type of proposed subproject (type 1: vertical structures; type 2: rural access infrastructure; type 3: water and sanitation subprojects; type 4: common service facilities and livelihood support subprojects, type 5: environmental protection structures, and type 6: other

subprojects not falling within the five previous categories. The Technical Facilitator (TF), Municipal Financial Analyst (MFA) and TAF service providers are largely responsible for conducting the training. During the training, community volunteers are given actual work situations on subproject concept preparation based on proposals submitted by their barangays. The Procurement Team is also trained to prepare the initial Community Procurement Plan (CPP) and to familiarize themselves with the procurement requirements for the proposed subproject. The lessons and tools learned by community volunteers during the PDW can also help them in developing proposals for other subprojects that can be proposed to other funding groups specifically for municipalities covered under the Bottom Up Budgeting (BUB)[3].

3.4.2.2. Project Concept Development

In addition to training community volunteers, the principal objective of a PDW is to assist PPTs in preparing preliminary subproject concepts with indicative costs. The Subproject Concept should define the needs that the proposed subproject is expected to address, a brief technical description of the proposed subproject (scope of work, manpower, equipment and other requirements), the indicative breakdown of costs to be shared by the KC-NCDDP and the local counterpart contribution (LCC), safeguard concerns (site acquisition, permits and licenses, mitigating measures for possible negative environmental impact) and subproject sustainability. The PC is prepared by the PPT with the assistance of the TF. The proposed for this purpose is found in CBIM Form A-11.

During the PDW, proposed members of the Operation and Maintenance Team (OMT) should provide inputs on possible operation and maintenance (O&M) requirements that need to be considered during the preparation of the design plans and technical specifications, the support commitments for operation and maintenance, possible sources of funding, capacity building needs and action plan for O&M. These shall serve as inputs and guidance in the preparation of the final proposal.

3.4.2.3. MIAC Review of Subproject Concepts

Upon completion of the Subproject Concepts, the MIAC shall review the submissions, discuss requirements and support commitments for O&M, and provide inputs and guidance in preparing the final proposal. The PPTs shall prepare an action plan to finalize the full proposal, technical plans and detailed cost estimates, and other RFR requirements with the assistance of the ACT and TAF service providers.

3.4.3. Full Proposal Development

After the approval of the subproject concept by the MIAC, the following requirements need to be prepared for the development of the full infrastructure subproject proposal:

3.4.3.1. Site Investigation and Field Surveys

Site investigation and validation refers to the process of gathering information at the proposed subproject site on surface or subsurface conditions prior to the preparation of design plans and technical specifications. The information to be obtained is essential for the design of the structures and for planning construction techniques. It may also include the identification of possible routes for roads and bridges, or drainage systems.

Site investigation is done to acquire information useful for the type and depth of any foundation that is to be constructed for the structure, the bearing capacity of the soil, an estimate of the probable

[3] Bottom Up Budgeting (BUB) is an approach to formulating the budget proposal of national government agencies taking into account the development needs of poor cities and municipalities with strong participation of basic sectors and civil society organizations, also known as Grassroots Participatory Budgeting (GPB).

maximum and differential settlement of the soil, the ground water level and properties of water, to predict the lateral earth pressure against retaining walls and abutments, to select the suitable construction techniques, to predict and solve potential foundation problems, ascertain the suitability of soil as construction materials and to investigate the safety of existing structures and to suggest remedial works in the case of structures damaged by calamities. It is also needed to foresee and provide against difficulties that may arise during construction due to ground and other local conditions, and to investigate the occurrence or causes of all natural and man-made changes in conditions and the results arising from such changes. The different types of site investigation may include: road and bridge inventory (characteristics of the terrain, horizontal and vertical alignments), surface drainage investigation, soils and materials investigation, hydrologic investigation, right of way survey, among others.

The design and scope for each site investigation will depend upon site-specific circumstances such as the anticipated geology, previous use of the site and the construction proposals. There are a variety of techniques and procedures that may be used, and each service provider may adopt a different approach for any particular subproject. However, it is usual for the investigation to be carried out as a phased exercise:

Phase 1 — desk study and reconnaissance survey
Phase 2 — intrusive investigation, sampling, analysis and report
Phase 3 — design of remediation strategy (if required)
Phase 4 — validation and monitoring of remediation during the construction works

It is essential that the information obtained from each phase is assessed to ensure that the original objectives of the investigation are satisfied. Changes to the scope of the investigation, or even the design proposals and construction works, might be needed in the light of any unexpected findings.

The RPMO, in consolidating the requirements for technical assistance under the TAF, shall ensure that the appropriate site investigation and validation requirements for the type of structure to be constructed are undertaken. For highly technical and complex projects, other field surveys and investigations such as topographic, hydrologic, sub-surface, monumenting and other surveys shall be carried out in accordance with the design guidelines, criteria and standards set under the appropriate annexes of this manual, whatever is applicable and necessary for the subproject. The Municipal Engineer and Technical Facilitator shall ensure that all survey and investigation works shall be prepared in a manner satisfactory to carry out accurate design and production of plans. In case there is no capacity within the ACT or the municipal office to undertake the site validation and investigation, a TAF service provider may be employed to conduct this activity.

Field surveys refer to the set of technical tests made on a subproject site to collect data necessary for the planning, and designing of structures. The nature of engineering surveys depends on the type of infrastructure subproject and the extent to which the site under investigation has already been studied. Field surveys may include topographic, geologic, hydrologic, and hydraulic surveys, among others.

In the case of complex, exceptional or highly technical subproject proposals that will require further site investigation, feasibility or detailed engineering requirements, the PPT may prepare a full blown proposal for a feasibility/detailed engineering study as a first subproject for approval and review by the MIAC. The outputs of the feasibility/detailed engineering study shall be used to prepare the technical plans and specifications for the subsequent subproject to be implemented by the community under the next cycle. Examples of these include geotechnical investigations or boring tests for roads, bridges and water supply subprojects.

A topographic survey is conducted to identify and capture important features of the subproject site such as: exact centerline and edges of roadway pavement, top and toe of embankment (cut & fill cross section), exact location and configuration of waterways, manmade structures, and natural

landmarks, road crossings and other obstructions, location of the centerline of approaches of the bridge to include dimensions of the different components of the existing structures. A detailed survey of the selected route and the staking of the centerline on the ground at accuracy levels, the establishment of monuments and the preparation of topographic maps conclude this phase of the study.

A hydrologic survey involves data collection on such subjects as rainfall intensities for various durations, stream flow, sediments, discharge, run-off, infiltration groundwater records, maps showing water-table levels, existing or proposed water resources subprojects with particular attention to irrigation and water supply subprojects and available hydrological reports.

3.4.3.2. Design Plans and Analysis

A design plan is a plan for the construction of an infrastructure subproject that may include among others: architectural blueprints and engineering drawings based on sound architectural and engineering principles and practices. For KC-NCDDP subprojects, design standards shall be in accordance with the appropriate standards and acceptable detailed engineering practice found in Annexes 1-3 of this manual. Design standards for structures shall take into account, among other things, the seismicity of the area to determine the optimum safety of structures and to minimize possible earthquake damage. The applicable design criteria and restrictions, technical plans (traverse, profile, cross sections, topographic), technical specifications, and other necessary plans shall be prepared by the TF, municipal engineer (where there is sufficient capacity to undertake such) or the service provider prior to construction.

A typical design plan shall include the following:

a. Site development plan and vicinity map;
b. Plan and profile sheet;
c. Typical sections and details;
d. Drainage details, where applicable;
e. Structural plans at appropriate scales indicating all details necessary in order that the complete structure can be set out and constructed; and
f. Other details which may be required by the TF or municipal engineer.

The KC-NCDDP has modified the national design standards for community based subprojects. For roads and bridges, the modified standards for roads and bridges used by the Department of Public Works and Highways (DPWH) shall be used (Annex 1) or any engineering appropriate standard and references that maybe applicable on the site, for water supply subprojects, the standards set in the Water Supply Design Manual of the National Water Resource Board (NWRB) shall be followed (Annex 2), for school buildings, the standard design plans for school buildings of the Department of Education (Dep-Ed) and the DPWH shall be adopted, for day care centers, the standards and basic amenities prescribed by the Department of Social Welfare and Development shall be utilized and for barangay health stations, the standards set by the Department of Health (DOH) shall be followed. For other community subprojects without the prescribed national standards, the RPMO Infrastructure Officer (IO) and the NPMO Infrastructure Officer shall decide on the appropriate design and quality control standards to be used.

3.4.3.3. Technical Specifications

Technical specifications refer to the detailed description of technical requirements (materials, equipment, standards and workmanship), usually with specific acceptance criteria that are used for the actual design and construction of an infrastructure subproject. Technical specifications vary depending on the type of structure to be constructed and are based on the national standards discussed above. The technical specifications must be attached to the design plans and program of

work as this will be used in the procurement of subproject requirements, in monitoring of work accomplishment, and in compliance with quality control programs during subproject implementation.

The TF should explain the technical specifications to the community volunteers in layman's terms for them to appreciate it. If the technical specifications do not apply to the area, the TF should prepare specifications that will suite the condition of the area. The subproject acknowledges that some localities will encounter difficulties in complying with the standard specification provided by the applicable government agency. Some of these situations involve barangays located in an island where access to equipment is too difficult and expensive, or in far flung areas where mobilization of necessary equipment is too expensive.

The TF or service provider who will prepare the technical plans and POWs must ensure that work items used under the subproject are the standards set by the applicable government agency. Technical Facilitators are encouraged to read and understand the technical specifications to be aware of the details of the work items. In the case of roads and bridges, the list of work items in the latest Edition of DPWH Standard Specifications for Roads and Bridges shall be referred and adopted. However, considering the nature of CDD implementation, adopt what is best applicable including the appropriate technology in the area. For water supply, the work items discussed in Annex 2 shall be used as guide. For buildings, the specified work items provided by the DepEd, DSWD and DOH shall be followed. Similarly, KC-NCDDP subprojects will take reference to applicable issuances of relevant agencies.

In all cases, the method of measurement of the work item and well as the basis for payment must be properly identified.

3.4.3.4. Program of Work

The Program of Work (POW) is a document that contains information on the proposed subproject, such as: the subproject description, duration, scope of work/work items, quantities, estimated subproject cost and sources of funds, physical target, mode of implementation, minimum technical manpower and equipment requirements. The POW must cover all the important items of work to complete the subproject. It shows the relationship of major work items to minor work items based on the percentage weight of each pay item. Percentage share per work item will depend on the total direct item cost divided by the total direct cost. All identified work items must total 100% percentage weight. Bigger percentage weight is considered for major work items while smaller percentage weights are for minor work items.

No proposed subprojects will be approved and implemented unless the POW is properly prepared, reviewed and approved by the BSPMC chairperson and noted by the regional technical staff. In line with the program's local governance goal, the Barangay Chairman and Municipal Mayor must sign the document to acknowledge the subproject works requirement and the cost sharing arrangement.

The cost sharing arrangement must also be reflected in the POW. The regional cost parameters shall be observed before finalizing the POW as established by the region based on the prevailing costs and rates in the area. Grant amount requirement and the distribution of Local Counterpart Contribution can easily be determined from this document. Breakdown of total direct cost in the form of materials, equipment rentals/POL products, skilled and unskilled labor cost can be identified. Likewise, the breakdown of indirect cost and the stakeholder who committed the particular item will also be known.

Instructions to fill-up the POW are found in CBIM Form A-15. The TF shall review and make sure that all information in the POW is accurate and correct to enable him to prepare recommendations on the appropriate technology to be adopted by the community. It is also important that the proper documentation (reports on site validation and investigation, design plans, technical specifications,

quantity or cost estimates, construction, equipment and manpower schedules, and other required) and supporting photos of the proposed site are included in the submission to the MIAC and the SRPMO and RPMO for review.

3.4.3.5. Quantity and Cost Estimates

A quantity take off is an itemized list of materials, labor and equipment (including technical description) based on subproject specific measured quantities of the items of work derived from the architectural or engineering drawings, plans and technical specifications. The quantity take-off is used to calculate the detailed cost estimate of the subproject and to determine the appropriate procurement packages and strategies and the community procurement plan (CPP) needed to implement the subproject. It is also used to determine the budget for the subproject. This is also known as the Bill of Quantities (BOQ) or a Bill of Materials (BOM). The quantities may be measured in number, length, area, volume, weight or time. Preparing a bill of quantities requires that the design is complete and the technical specifications have been prepared. The BOQ is issued to contractors or bidders under any of the procurement methods discussed in the Community Based Procurement Manual (CBPM) to prepare a price for each work item using the same set of quantities and for calculating construction costs or bids. It is also useful for the Procurement Team to determine the quantity and costs of materials to be purchased, equipment to be leased or rented and for the Bids and Awards Committee (BAC) to compare and evaluate price quotations or financial bids for each work item and for the total price. The Bill of Quantities can also be used in evaluating progress payments and measurement of work accomplishment, and in preparing the final subproject cost.

In order to do this, works are itemized in the Bill of Quantities in sufficient detail to distinguish between the different classes of works, or in other circumstances which may give rise to different considerations of cost. Consistent with these requirements, the layout and content of the Bill of Quantities are required to be as simple and brief as possible. This helps avoid any ambiguities or misunderstandings and so helps avoid disputes arising through different interpretations of what has been priced. In the KC-NCDDP, all construction quantities shall be computed to a reasonable accuracy of plus or minus ten percent (10%) based on the result of engineering plans. Please refer to CBIM Form A-16 for the sample bill of quantities that is to be prepared using an Excel spreadsheet.

A unit price is the price or amount of an item or work (materials, labor or equipment) in the bill of quantities that is based on prevailing market costs. The prevailing cost adopted shall be in accordance to the DOLE Regional Wage Board or what is prevailing in the area supported by Approved Sanggunian Bayan Resolution or certification from the Municipal Engineer. The unit price is used to calculate the total contract cost estimate. In the case of the KC-NCDDP, the unit cost or prices should be based on reasonable approved current prices as projected over the proposed construction period. The RPMO shall prepare a data base on prevailing market prices of materials, labor wages and equipment rental rates to assist the TF or service provider in calculating unit prices and estimated contract costs. The estimated contract cost is the budget for the subproject which shall be approved by the BSPMC Chairperson based on the approved grant allocation for the community, community consultations and MIAC and MIBF Technical Review.

For purposes of the KC-NCDDP, the following guidelines shall cover the preparation of estimated contract costs:

The estimated contract cost shall be composed of the Direct Cost (DC) and Indirect Cost (IC). These shall be used in the computation of the estimated contract cost for subprojects to be undertaken by contract or by force account, where applicable:

A. Direct Cost shall consist of the following:

i. Cost of materials to be used in doing the work item, which shall include:

a. Cost at source, including processing, crushing, stockpiling, loading, etc.;
b. Expenses for hauling to subproject site;
c. Handling and storage expenses;
d. Allowance for waste and/or losses, not to exceed 5% of materials requirement.

ii. Cost of Labor:

a. Salaries and wages (in accordance with the minimum wage requirements set by the Regional Wage Board);
b. Local wage rates adopted by the LGU including salaries of unskilled and skilled workers and subproject supervisor (supported by a SB Resolution), whichever is applicable.

iii. Equipment Expenses

a. Rental of equipment shall be based on the prevailing rental rates in the municipality or region supported by Sanggunian Bayan Resolution in its absence of the "Associated Construction Equipment Lessors, Inc." (ACEL) rental rates approved for use by the DPWH (Presently it is the 2009 ACEL Rates), whichever is lower. For simplicity in computation, the operated rental rates (operator's wages, fuel, and oil) are
preferred over the bare rental rates, the make, model and capacity of the equipment should be indicated in the detailed unit cost analysis.

B. The Indirect Cost shall consist of the following:

i. Administrative and Overhead Expenses - 5% of the EDC, which includes: engineering and administrative supervision (salaries of project supervisor (for pakyaw contracts), project engineer, timekeeper, bodegero, where applicable), transportation allowances, office expenses, among others.

ii. Contingencies - up to 5% of the EDC for community force account and up to 10% of the EDC for contracts. These include expenses for other unforeseen events. This may also include any cost variations during the course of subproject implementation.

iii. Miscellaneous Expenses - 5% of the EDC. This may cover expenses for materials testing (laboratory and field tests) before and during construction, the purchase of hand tools and personal protective equipment (PPE) and other items not covered in the estimate. The hand tools should be properly used and turned over to O&M groups during the inauguration of completed subproject. These will help the O&M group maintain the structure for sustaining the services of the finished infrastructure.

iv. Contractor's Profit Margin - 10% of the EDC for subprojects above P 2 Million and 12% for projects P 2 Million and below for subprojects to be undertaken by contract.

v. Taxes, Permits and Licenses (VAT or others) - up to 12% of the sum of the EDC for subprojects to be undertaken by contract.

Instructions to fill up the form for the preparation of Bill of Quantities and Estimated Contract Cost are found in CBIM Form A-16.

3.4.3.6. Construction Schedule

A construction schedule is a list of the important milestones, activities and time duration to complete a work item, organizing these into an order of action to be taken to finish the job. The main goal of a construction schedule is to determine the total duration of the subproject. A construction schedule will depend on the items of work to be done, availability of materials, manpower and equipment and other requirements to complete the work. It is essential that the construction schedule is properly coordinated with the community procurement plan and the request for fund release (RFR). There are three important elements that the TF or service provider needs to consider in the preparation of the construction schedule. These are:

A. Work Breakdown Structure (WBS)

A **work breakdown structure** (**WBS**) is a flow chart where critical work elements, called tasks, are shown to portray their relationships to each other and to the subproject as a whole. A WBS allows the project team to plan a subproject by means of a hierarchical structure, by identifying the elements and sub elements. When completed, a well-structured WBS resembles a flowchart in which all elements are logically connected, redundancy is avoided and no critical elements are left out. The WBS defines what tasks will be performed, how it will be performed, what is the sequence for performing the work and who will perform the task. This can assist program staff in the effective allocation of resources, cost estimating and financial management, procurement, scheduling, quality assurance and quality control, risk management, among others. Where there are predefined items of work in the POW or Bill of Quantities, these shall substitute for the work breakdown structure. For complex community subprojects, the TF or service provider may prepare a PERT/CPM diagram to define all the work items, schedule and critical path. In training community volunteers during the Project Development Workshop, it is important that the TF or other resource persons show the actual preparation of a work breakdown structure using actual projects similar to or the same as the proposed subprojects to enable them to appreciate and understand the critical activities that need to be undertaken to complete the subproject.

B. Bar Chart

A Bar Chart, commonly referred to as the Gantt Chart, is a list of the activities derived from the WBS that shows the planned start and planned finish of each activity in a time grid and connected as a bar. The bar therefore represents the duration of the activity. The Bar Chart can be used to show estimated timing and duration of activities, or to record actual progress. It does not require computers or special software and can be drawn easily by hand. Experience shows that it is the most natural representation of activities used by engineers and project managers. The types of activities are not limited in any way, since the Bar Chart is simply a diagrammatic representation of the time characteristics of an activity. If an activity is started later than shown on the Bar Chart, it simply shows that an activity started later than planned. Similarly if an activity requires a longer duration than shown on the Bar Chart, this only shows that an activity took longer than estimated. A Bar Chart can be used as a simplified mode of presenting the construction schedule for the subproject. Figure 6 shows a typical bar chart for a building.

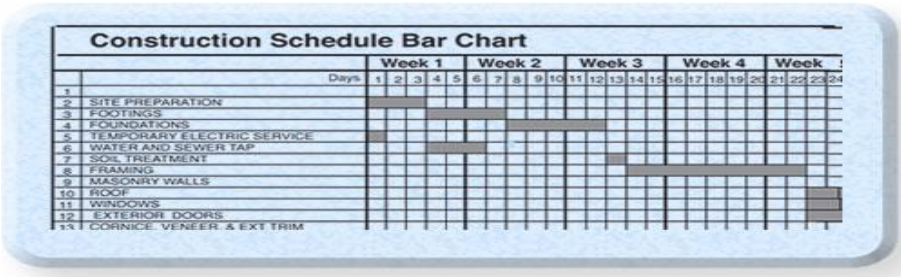


Figure 6. Typical Bar Chart for a Building Project

C. S - Curve

S - curve is a diagram of cumulative costs plotted against time, which typically follows the shape of a letter “S”. The beginning shows a slow but accelerating start, while the end represents a deceleration of activities as the subproject comes to an end. An S - curve is important as it allows the progress of a subproject to be tracked visually over time, and form a historical record of what has happened to date. Analyses of S-curves allow community volunteers and program personnel to quickly identify subproject growth, slippage, and potential problems that could adversely impact the subproject if no remedial action is taken. Using an Excel spreadsheet, the TF or service provider can prepare an S curve by plotting the subproject costs over time showing the estimated cash requirements over the construction schedule.

Figure 7 is an example of an S - curve for a construction subproject.

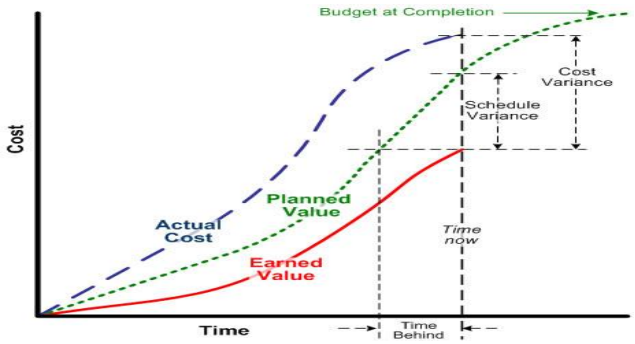


Figure 7. Typical S Curve Showing Costs over Time

The TF or the service provider is expected to assist the PPT in the preparation of Construction Schedule and S - Curve for the proposed subproject. Please refer to CBIM Form A- 16. This is done upon completion the list of activities under the Work Breakdown Structure (WBS). The estimated number of days to complete each identified activity is provided, the cumulative value for all activities is calculated, and the proposed start date is included. Upon completion of these data, the Bar/Gantt Chart is prepared based on the data on construction schedule provided in the Table. The cost for each activity as well as the cumulative value of costs is also obtained. The S-Curve is then plotted against the Bar Chart using the columns on cumulative value. During Project Implementation, an additional row after each activity is added to plot data based on actual schedule and costs. This shall serve as the basis for reporting physical and financial accomplishment for the subproject. The S-Curve for the actual subproject schedule and costs is also plotted alongside the planned data.

3.4.3.7. Manpower Schedule

A manpower schedule in construction is a list of the required manpower complement and the number of labor man-days required to complete various activities for a subproject. This is used in determining the number of personnel required for each item of work, and the period and duration of deployment for scheduling and cost estimation purposes. The schedule may also identify the direct labor requirements (those that will be used directly for the subproject) and the indirect labor requirements (those personnel who will support the direct labor whether administratively or technically). The manpower schedule can also show the skilled and unskilled labor requirements for the subproject, those to be supplied by the contractor and those coming from the community as local counterpart contribution or under pakyaw contracts. It can also provide the prevailing wages and salary rates of these laborers to serve as inputs in calculating manpower costs in the estimated subproject cost. The manpower schedule shall also be based on the Inventory of Available Technical Resources discussed in Section 3.3.1.2.

The TF or the service provider shall provide the required manpower complement for the subproject based on the design plans and technical specifications. The TF or service provider shall also determine whether the skilled workers are available for the scheduled duration of the subproject within the community or its vicinity. They shall also compare the manpower schedule against the construction and equipment schedules to determine if these are consistent with each other. As part of the subproject enhancement, women are encouraged to participate in actual construction of the subproject and given equal opportunity (i,e. mason, carpenter, plumber) as long as they are physically fit and capable of doing the work.

3.4.3.8. Equipment Schedule

An equipment schedule is a list of all needed equipment (heavy or light equipment and hand tools) that will be used to complete activities during subproject construction. The equipment schedule should also identify the number of equipment needed, whether these are to be leased, rented, owned by the contractor, provided by the municipality or purchased by the community, and the expected number of days of use of the equipment. The schedule shall also identify whether equipment owned by the municipality shall form part of the local counterpart contribution. The equipment schedule shall be used in calculating subproject cost estimates and shall be compared with the manpower, and construction schedules to ensure consistency and complementation.

The TF or service provider in preparing the equipment schedule (Please refer to CBIM Form A-18) shall ensure that these items are available within the municipality or its vicinity. Where it is more economical, hand tools may be leased or purchased as goods or off-the shelf goods as defined in the Community Based Procurement Manual. The same equipment shall be turned over to the operations and maintenance (O&M) groups who shall be responsible for its upkeep and maintenance. In the case of small equipment (concrete mixers, plate compactor, etc.) and hand tools costing P 50,000 and below that shall be used by one or several communities, the TF must work with the Procurement Team (PT) to determine the required duration of use and assess whether it is more economical to rent or to purchase such items. The purchased equipment shall be turned over to the respective O&M groups who shall be responsible for setting up the appropriate tariffs or rental rate and maintenance rules for those who want to use/hire the equipment. For pakyaw contracts where the community through the BSPMC shall supply the hand tools, the TF shall ensure that the procedures for safekeeping and maintenance of these hand tools are followed.

3.4.3.9. Environmental and Social Safeguards Processing Requirements

The environmental and social safeguard requirements for the NCDDP are found in the Environmental and Social Management Framework (ESMF) and the Thematic Environmental Management System (TEMS) Technical Manuals for roads and bridges, water systems, vertical structures and environmental protection structures. The ESMF introduces the social and environmental safeguards screening procedures, management principles and monitoring that must be considered for every project proposed and implemented by the community. Its primary purpose

is to ensure that the Government of the Philippines' (GOP), the World Bank (WB) and Asian Development Bank (ADB) policies on environmental and social safeguards assessment are met and all subprojects undertaken by the community are environmentally and socially sound and sustainable.

Noting the minimal environmental and social impacts of subprojects implemented under the previous KALAHI CIDSS (KC) process, the environmental and social safeguards procedures and guidelines have been simplified and streamlined under the ESMF. This also applies to subprojects financed under the NCDDP disaster response operations procedures to facilitate effective response by the NCDDP in the aftermath of a natural disaster that may affect operations.

There are three steps in the processing of safeguards requirements:

First step – Eligibility Screening

This involves eligibility screening of all proposed subproject concepts against the negative list, to determine eligibility of subprojects for support under NCDDP. The ACT shall be responsible for the conducting the screening at the Subproject Concept Phase (Please refer to Section 3.4.2.2. and CBIM Form A-11). At the Social Investigation (SI) and Participatory Situational Analysis (PSA) stages, each beneficiary community must also include an assessment of the possible land acquisition and resettlement concerns and the presence and situation of Indigenous People (IP) with the objective of evaluating the subproject's potential effects on them.

Second step – Safeguards Screening.

If the subproject is deemed eligible, the subproject is screened using the Environmental and Social Safeguards Checklist or ESSC (CBIM Form A-19) to determine potential safeguards risks, and categorization. The ESSC provides a series of questions relating to the environmental and social safeguards policies triggered under the NCDDP. Through this review and screening, the appropriate safeguards instruments, if any, are identified for preparation under the subproject. The subproject is also assessed whether it is covered under the Philippine EIA system, using the DENR threshold of subprojects found in Annex E of the ESMF. Subprojects not covered under the Philippine EIA do not need to secure a Certificate of Non-Coverage (CNC) since a CNC is optional under the law. Instead, subproject proponent/community shall be provided with additional resources, such as the Thematic Environmental Management System (TEMS) Manual developed under the Millennium Challenge Corporation (MCC), and/or the Illustrated Environmental Technical Planning Guidelines developed by WB, to assist them in developing their subproject proposals. An Environmental Assessment (EA) may be required depending on the scale and nature of the subproject.

Third Step – Preparation of Safeguards Instrument

All infrastructure subprojects will prepare an Environmental and Social Management Plan (ESMP) based on the screening results. The ESMP identifies safeguards risks and corresponding mitigating measures related with the location and nature of the proposed subprojects. If the subproject is covered under the Philippine EIA system, it is important to determine whether (i) an Initial Environmental Examination (IEE) report or an IEE checklist needs to be completed to secure the Environmental Clearance Certificate (ECC), or; a Project Description (PD) is needed, particularly for non-covered subprojects. When necessary, subprojects requiring the preparation of safeguards instruments such as EA, ESMP et al., may be deferred to implementation, but must be completed before beginning actual civil works. The PPT shall prepare the ESMP and, if needed, other required safeguards instruments as part of their subproject proposal. They shall be assisted by the Community Empowerment Facilitator (CEF) and other members of the Area Coordinating Team (ACT) under the supervision of the designated regional safeguards officers and other technical staff and specialists of the RPMO. The ESMP template is found in CBIM Form A-21.

Subprojects need to be screened during preparation stage for likelihood of land acquisition and its subsequent impacts in terms of loss of shelter, loss of assets or access to assets, and loss of livelihood. If the subproject needs additional safeguard instruments such as a Land Acquisition, Resettlement, and Rehabilitation Plan (LARRP)/ Resettlement Plan (RP) or an Indigenous People Plan (IPP) (addressing land and IP issues), these are drafted and approved before the start of any civil works. RPMO and NPMO safeguards teams shall ensure that all land and asset acquisition requirements stipulated in the ESMF have been fully complied with before any civil works start.

Some NCDDP subproject sites may be inhabited by Indigenous Peoples (IP) and subproject activities may negatively affect their identity, cultures and customary practices, and in the process further marginalize them. As such, measures shall be adopted to (a) avoid potentially adverse effects on the IP communities, or (b) when avoidance is not feasible, minimize, mitigate, or compensate for such effects. When IPs are the sole or overwhelming subproject beneficiaries and when only positive impacts are identified, the elements of an IP Plan would be addressed in the project design (given the participatory nature of the NCDDP). Therefore, a separate IP Plan is not required. However, RPMO and NPMO IP specialists shall ensure that IP Plans are prepared for communities where IPs are not the sole or overwhelming beneficiaries of the subprojects or where potential adverse impacts are identified. The Resettlement Plan (RP) and Indigenous People Plan (IPP) are found in CBIM Form A-22.

3.4.3.10. Preparation of Contract Documents

Contract documents refer to the written documents that define the roles, responsibilities and the work to be done under the contract and is legally binding on the parties, in this case, the community (through the BSPMC) and the contractor. Technically, the design plans, technical specifications, program of work, cost estimates, construction, manpower and equipment schedules form part of these documents. In addition to these requirements discussed earlier, however, the Technical Facilitator and Municipal Engineer must ensure that the following additional documents are prepared prior to final subproject approval. These are: the Contract Agreement (for subprojects procured through community shopping, direct contracting or bidding (CBIM Form A-24), the pakyaw contract (for subprojects procured through pakyaw), the standard forms for community shopping, direct contracting and bidding, the conditions of contract (general or specific) for subprojects procured through community bidding, and the forms of performance security, among others. These are all found in the Community Based Procurement Manual (CBPM). The PPT shall work closely with the Bids and Awards Committee (BAC) and the Procurement Team (PT) to ensure that all contract documents are prepared in accordance with the appropriate guidelines. The contract documents shall be reviewed and approved by the BAC and the BSPMC. For subprojects procured through community bidding, special provisions shall be prepared for specific items of work or methods of construction, measurement and payment under the contract.

3.4.4. Community Consultation and MIAC Technical Review

Upon completion of the full proposal requirements, a community consultation is conducted to present the details of the final subproject proposal documents, elect the members of the finance committee, the Bids and Awards Committee (BAC), and the BSPMC; and discuss the mechanics for the opening of the community account and signatories.

For subprojects under the accelerated CEAC, the PPT presents the final subproject proposal and Request for Fund Release (RFR) to the MIAC for technical review, approval of fund release, comments and recommendations. The MIAC endorses the proposal to the municipal Mayor, who endorses the same to the KC-NCDDP RPMO. The SRPMO reviews the RFR and transmits these

to the RPMO for funding. RPMO staff conducts final review of proposals and downloads funds to community accounts.

For subprojects covered by the standard CEAC, a Municipal Inter-Barangay Forum (MIBF) for participatory resource allocation is held to prioritize community proposals using the criteria, process, procedures, and rules approved during the CSW. A Municipal Forum resolution is passed on (i) the amount of grant allocation per barangay; (ii) the process, rules, and mechanism for final review and clearing of detailed proposals; (iii) the list of subprojects to be supported by KC-NCDDP; and (iv) the local counterpart contribution. The Municipal Development Council (MDC) meets to integrate the MIBF approved matrix of priorities in the multi-year municipal development plan (MDP) or the local poverty reduction action plan (LPRAP), approves the revised multi-year plan and endorses the plan to the Municipal Mayor and the Sangguniang Bayan for adoption.

Upon approval of the subproject, the Procurement Team and the BAC shall commence procurement activities, select a contractor and sign the contract with the winning contractor. The subproject is then ready for implementation.

Chapter Four: Implementation of Community Infrastructure

4.1. Subproject Implementation and its Importance
4.2. Subproject Implementation Arrangements
4.3. Stage Three: Community Managed Implementation of Infrastructure Subprojects
4.4. Contract Implementation Procedures for Infrastructure Subprojects

4.1. Subproject Implementation and its Importance

Subproject implementation (or subproject execution) is the process of putting together all the elements identified in the subproject concept and proposal development stage to complete the infrastructure subproject. After procurement of the subproject requirements, the Project Implementation Team (PIT) and the winning contractor or service provider with the assistance of the TF, sit together to define roles, responsibilities, deliverables and procedures to ensure that the subproject is implemented properly and in accordance with the subproject goals and objectives. It is important as it harnesses community participation and involvement in mobilizing community resources such as manpower in executing the work items and in monitoring accomplishments based on plans.

There are two important components of construction subproject implementation. These are contract management or administration and construction management. While both can be used interchangeably, the focus of activities of each differs slightly. Contract administration refers to the management of the various terms and conditions of the contract to ensure that the winning contractor executes the subproject according to plans and specifications. It also involves documenting and agreeing on changes that may arise during actual construction and is generally the responsibility of the project owner, in this case, the BSPMC through the PIT. Construction management refers more to the management of the five (5) M's of construction resources (money, materials, manpower, machinery or equipment and methodology) to complete the subproject. This is usually the responsibility of the contractor or the labor subcontractor (in the case of pakyaw contracts).

4.2. Subproject Implementation Arrangements

Proponent communities, through the PIT, and assisted by the TEF, LGU engineers and/or community-hired service providers shall be responsible for the supervision of subproject implementation. In situations where communities and LGU engineers need specialized advice, specialists from government agencies like the National Irrigation Administration (NIA), Bureau of Soils and Water Management (BSWM), Department of Public Works and Highways (DPWH) and Provincial Engineering Offices (PIO) may be engaged as advisers. For major civil works, communities may contract the services of local-based small private contractors.

There are two types of subproject implementation arrangements under the KC-NCDDP:

4.2.1 Community Force Account

Community force account refers to the implementation of the infrastructure subproject directly by the community. The community shall procure the materials, rent the equipment, hire local manpower and other needed resources to complete the subproject. Community force account is usually resorted to when the community wants to maximize the use of its grant allocation for the subproject. This is possible for simple infrastructure subprojects and only if the community has the resources and capacity to perform the works. If the community does not have capability and resources to undertake specialized work items, portions of the work items maybe contracted out through local contractors. Community force account is enforced and sealed through the commitment of MLGUs, through their Municipal Engineering Office (MEO), to supervise and monitor the implementation.

4.2.2. Community Contracting

Where the community does not have sufficient capacity to implement the subproject through community force account, it shall hire the services of a licensed contractor through the procurement methods discussed in the Community Based Procurement Manual. This may be done for joint subproject proposals requiring larger fund allocations, or for highly technical subprojects requiring specialized equipment and manpower where it is more economical to hire a local contractor. The

LGU engineer will help the community prepare the working plans and estimates that will form part of the contract documents and in contract management and technical supervision.

The community may employ one or a combination of these subproject implementation arrangements where appropriate and applicable. In addition to the technical assistance provided by the TF and the municipal engineer, RPMO engineers shall closely monitor contracted subprojects to check on the progress and quality of the works accomplished. Engineers from the NPMO shall also inspect the subproject periodically.

4.3. Stage Three: Community Managed Implementation of Infrastructure Subprojects

Figure 6 shows the general process flow for community managed implementation of community based infrastructure subprojects under the accelerated and standard CEAC.

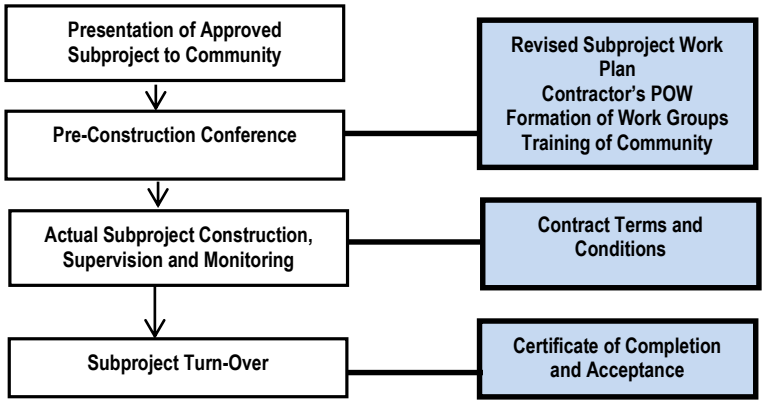


Figure 6. Process Flow for Community Managed Implementation of Infrastructure Subprojects

Table 3 shows the expected outputs under the community managed implementation stage.

Table 3. Expected Outputs of the Community Managed Implementation Stage

Major Activities	Expected Outputs
Presentation of Approved Subproject to Community	Approved Subproject Documents
Pre-Construction Conference/Action Plan Workshop	Revised Subproject Work Plan , Contractor's Work Plan Formation of Work Groups, Training of Community Volunteers
Actual Subproject Construction	Contract Terms and Conditions, Environmental and Social Safeguards Monitoring
Subproject Turn-Over	Certificate of Completion and Acceptance

The procedures and processes for community managed implementation for both the accelerated CEAC and the standard CEAC are generally the same. The activities vary only in terms of time frame and schedule requirements.

After the review and approval of the subproject proposal submitted by the community to the MIAC, the CEF works with the Barangay Chairperson to plan for a community assembly to present the approved budgetary allocation and subproject documents. Area visit and ground work are conducted with special emphasis on IP leaders, conflict areas, GIDAs[4], and households headed by women. Where additional technical assistance is required, service providers are tapped using the TAF to provide support to the committees involved in project implementation.

[4] Geographically Isolated and Disadvantaged Areas

4.3.1. Pre-Construction Conference

Prior to actual subproject implementation, a Pre-Construction Conference is conducted where the results of the MIAC Technical Review/MIBF for Participatory Resource Allocation, the subproject implementation schedule structure, mechanics for opening of community account, and the tasks of the specific committee involved in subproject implementation under the BSPMC (Procurement Team, Project Implementation Teams; Monitoring and Inspectorate Team; Audit and Inventory Teams; and others), and the community-level subproject committees, such as the Bids and Awards Committee (BAC), the Finance Team, and the Operation and Maintenance (O&M) committee are discussed.

The Pre-Construction Conference is called by the BSPMC Chairperson with the assistance of the Technical Facilitator and the Municipal Engineer for the following purposes:

i. Planning the works and assigning people to do the task – this involves identifying and documenting the specific activities that must be performed in order to produce delivery of works. There is the need to maximize the labor force available and to provide employment opportunities at the community level. The TF/ME has to be ready with the revised work and manpower schedules to manage the distribution of workers. Matching of available skilled workers to the works to be established undertaken has to be analyzed by the TF/ME. If required skills are not available within the community, the BSPMC may decide secure it from other barangays or municipalities. The CEF can assist the PIT and TF/ME by mobilizing the interested volunteers/workers during implementation.

ii. Organizing the work – activities must be accurately sequenced in order to support later development of a realistic and achievable schedule. In most cases, there will be item of works to be simultaneously undertaken to meet the desired timeline for completion. It is therefore necessary for the TF/ME to manage the level of complexity during this period. Ensuring that required resources and manpower are available will expedite completion of the work. The timing of weather conditions has also to be factored-in during the scheduling in order to come up with a realistic completion date.

The CEF, together with the TF, facilitates the formation/organization of work groups and the preparation of the work plan, based on the approved Program of Works (POW), guidelines on subproject implementation, and environmental and social safeguards, specified in various manuals and other documents, and, agreements on labor distribution and rates, and other community counterpart arrangements.

If the work groups or teams have not been selected prior to this activity, the community shall elect among themselves, the respective work groups and committees. The ACT in coordination with the SRPMO shall then conduct community volunteer trainings on subproject implementation, community procurement and community finance, organization formation and development for community volunteers, and other needed capability building activities. For the PIT, it is important that the procedures to be observed during subproject implementation, d the reporting requirements and schedule for submission are well understood. The AC shall plan with the Municipal Planning and Development Office (MPDO), municipal engineer and other members of the MIAC to discuss their roles and to enlist their support in the conduct of monitoring and technical support provision activities during subproject implementation. Where additional training for community volunteers or technical assistance providers are required, the TF shall ensure that this is provided.

For subprojects to be undertaken by contract, a similar pre-construction conference shall be conducted with the winning contractor to set the direction of activities to be undertaken.

Discussions shall focus on explaining the contract implementation procedures discussed in this manual, the work items and its subsidiary works to be accomplished including but not limited to; (i) duration to complete the work items, (ii) manpower and equipment utilization requirements, (iii) construction methods, (iv) timing of delivery of materials and storage facilities, (v) quality control program and materials testing requirements, (vi) delivery of local counterpart contribution, (vii) safety measures during construction stage, and (viii) reporting requirements. It is important that the Contractor himself, his duly authorized representative, and TF/ME be present during the conference. Important provisions of the contract should be discussed including the corresponding attachments for payment of progress billings.

4.3.2. Actual Subproject Construction

During actual construction and monitoring, the ACT, CEF, TF, and FA, together with their municipal counterparts, shall conduct monitoring and supervision activities, including (i) site visits; (ii) periodic meetings with CVs; (iii) coaching sessions, and; (iv) fiduciary reviews. The TF shall assist the PIT in the preparation of the following forms for submission to the ACT on a monthly basis: (a) Guide during Supervision and Monitoring of Infra Projects (CBIM Form B-1); (b) Construction Logbook (CBIM Form B-2); and (c) Work Schedule and Physical Progress Report (CBIM Form B-3). The monitoring forms shall be submitted to the AC in three copies at the end of each month.

The Physical Progress Report (CBIM Form B-3) shall be accompanied by geotag photos taken on strategic position to reflect or provide the visual representation of the physical progress of the subproject. The ACT shall then immediately upload the subproject progress geotag photos to the NCDDP website on a regular basis to ensure the continuing historical photo documentation of the subproject. The same set of geotag photos will also be used as proof of physical accomplishment

in the request of fund release.

In terms of Environmental and Social Safeguards monitoring, the procedures discussed in the ESMF shall be followed. Members of IP communities shall be given priority in benefiting from labor and remuneration for work attendant to the implementation of subprojects in IP areas. IP community volunteers involved in managing all aspects of subproject implementation, from procurement to implementation and construction (for infrastructure subprojects), to managing finances, shall be provided with training to equip them with bookkeeping, simple accounting, procurement, and resource management skills during the implementation stages. Should indirect, and/or unanticipated impacts on IPs manifest during subproject implementation, the NPMO shall ensure that a social impact assessment will be conducted resulting to an updated IPP or formulation of a new IPP covering all applicable requirements specified in the ESMF.

The following major activities shall be observed during actual subproject construction:[5]

i. Directing activities – this is the critical stage of the implementation. Technical instructions or activities to be undertaken by the community volunteers and workers must be explained very clearly and must be understood by them. Engineers must be specific on the instruction and be very explicit in explaining the possible outcome, implications of the works and as well as expected completion dates.

ii. Controlling subproject execution - this process provides the subproject with necessary flexibility to update schedules, make revisions, install corrective actions and document the lessons or experiences learned. The PIT, TF or the Municipal Engineer has to learn to control the time of implementation, cost of investment, the quality of the execution and managing the risks involved. The risks could be either in the aspect of procurement

[5] CEAC Field Guide, Section 3.1 Project Implementation Stage

process, financial transactions or environmental impacts from the work activities. Mitigating measures have to be executed promptly to minimize further damage.

iii. Tracking progress and reporting system – for effective management, this activity shall establish a system for tracking progress of implementation and a tool for regular reporting. In KC-NCDDP, simple progress and monitoring reports are submitted regularly as required. The Subproject Physical Accomplishment Report (CBIM Form B-4) needs to be discussed with the PIT for their understanding and appreciation. Posting of reports at the ACT and BSPMC offices are essential for examining the performance during implementation. This activity practices the transparency principle and fosters responsibility sharing among community members. Weather Chart and periodic progress of implementation must be posted at the BSPMC office. Likewise, the financial status must be readily available at the community level.

iv. Analyzing the results – generated reports must be analyzed as to whether the accomplishment or performances are within the expected timelines and parameters. Once a subproject incurs delays, the causes are analyzed and solutions and collective actions are agreed upon. A common cause is the timing on the delivery and releases of funds. This delay must be anticipated and addressed with appropriate actions during the pre-construction conference.

The TF and BSPMC shall then be guided by the contract implementation procedures for infrastructure subprojects discussed in the Community Based Procurement Manual.

4.3.3. Subproject Billboard

As part of the transparency initiative of the KC-NCDDP, all community based subprojects shall install subproject billboards to inform the general public on the existence and status of the subprojects. It shall be placed **at least 5 meters away** from the subproject site and shall provide information on the name of the subproject, subproject description, subproject cost, name of contractor, subproject physical targets, project timetable (duration, start and completion date), and physical and financial status of accomplishment to be updated on a regular basis during project implementation. The subproject billboard shall not include the names of any politicians. The A/MCT shall remind the BSPMC to update the billboard and report on accomplishments on a monthly basis for transparency purposes. Likewise, A/MCT shall coach the volunteers on how to present the rates of accomplishment for better understanding of all community members and the public. The dimensions and design of the prototype subproject billboard is found in CBIM B-15. The signboard and markings should remain even after the subprojects' completion and shall be designed to last for several years.

4.3.4. Subproject Turnover

Upon completion of project implementation, the CEF shall prepare the community for subproject turn-over.

4.4. Contract Implementation Procedures for Infrastructure Subprojects

Contract implementation commences when the winning contractor mobilizes its laborers, equipment and materials on the subproject site in accordance with the provisions of the contract, technical specifications and other requirements. Contract implementation covers the following important milestones: contractor's performance of his contractual obligations; BSPMC's performance of its contractual obligations, as specified in the Contract; final acceptance or subproject sign-off; all other related activities; and payment by the BSPMC. Generally, a contract becomes effective upon receipt by the winning contractor of the Notice to Proceed. In determining the contract implementation

period, the winning contractor shall be given ample time to undertake any preparatory activities necessary for it to comply with the conditions of the contract.

4.4.1. Contractor's Obligations and Responsibilities

It is important for the Contractor to understand his duties and responsibilities under the contract, to wit. The Contractor shall carry out the Works properly and in accordance with the Contract. The Contractor shall provide all supervision, labor, materials, plant and equipment, which may be required. The Contractor shall commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program of Work. He shall be responsible for the safety of all activities on the Site.

During Contract implementation, the Contractor and his subcontractors shall abide at all times by all labor laws, and other relevant rules which may be applicable to the works. Among such regulations or laws are:

i. Employment of unskilled local labor. 100% unskilled labor force shall come from the barangay where the community subproject is located. The contractor shall also comply with the rules on hours and conditions of work, general health regulations, and safety and health precautions.
ii. Traffic regulations, including provision of adequate warning signs and traffic barriers.
iii. Environmental protection. The Contractor shall carefully plan and conduct his works in a manner, which will minimize the negative impact on the environment. In particular, the Contractor shall not interfere with or pollute in any way irrigation channels or watercourses. Borrow pits shall only be worked at the location and in particular, the pits shall be left in a condition that it is not a safety or a health hazard due to stagnant water collection.

During the execution of the works, the contractor must keep the site reasonably free from all unnecessary obstruction. It must also store or dispose of any equipment and surplus materials and clear away and remove from the site any wreckage, rubbish or temporary works that are no longer required.

Upon the issuance of the Certificate of Acceptance, the contractor shall remove from that part of the site to which the certificate relates all equipment, surplus material, rubbish and temporary works of every kind. It must leave such part of the site and works clean and in a workmanlike condition to the satisfaction of the TF or the Municipal Engineer. However, it is entitled to retain until the end of the defects liability period such materials, equipment and temporary works he may need to fulfill his obligations in relation to the subproject.

Unless otherwise provided for in the contract, the contractor must turn-over to the BSPMC all excess, used, unused and/or reusable materials paid for in the contract such as, formworks, safety gadgets and devices, etc.

4.4.2. Possession of Site:

On the contract start date, the BSPMC shall grant the Contractor possession of so much of the Site as may be required to enable it to proceed with the execution of the Works. If the Contractor suffers delay or incurs cost from failure on the part of the BSPMC to give possession, the Contractor shall be given a Contract Time Extension. The Contractor shall bear all costs and charges for special or temporary right-of-way required by it in connection with access to the Site. The Contractor shall also

provide at his own cost any additional facilities outside the Site required by it for purposes of the Works.

4.4.3. Contractor's Program of Works

Within seven (7) days of the written notification of award, the Contractor shall submit to the Technical Empowerment Facilitator and the BSPMC for approval a Program of Work showing the general methods, arrangements, order, and timing for all activities of the Works based on those documents approved by the MIAC for purposes of implementation. The same planning formats in the Annexes may be used. The BSPMC approval of the Program shall not change the Contractor's obligations. The Contractor may revise the Program of Work and submit it to the Technical Facilitator and the PIT again at any time. A revised Program of Work will show the effect of the changes.

The Contractor shall provide updated Activity Schedules within ten (10) days of being instructed by the Technical Facilitator and the PIT. The activities on the Activity Schedule will be coordinated with the activities of the Program of Work. The Contractor shall carry out and complete all the activities in accordance with the scope of works specified in the Contract.

4.4.4. Subcontracting

Generally, a contractor may be allowed to subcontract a material or significant portion of the contract or subproject, which must not exceed fifty percent (50%) of the total subproject cost. The bidding documents must specify what are considered as significant/material component(s) of the subproject.

Except if otherwise provided by the contract, the contractor shall not subcontract any part of the works without the prior consent of the BSPMC Chairperson. However, this consent shall not relieve the contractor of any liability or obligation under the contract. The contractor will be responsible for the acts, defaults and neglects of any subcontractor, his agents, servants or workmen as fully as if these were its own acts, defaults or neglects, or those of its agents, servants or workmen.

All subcontracting arrangements must be disclosed at the time of bidding or submission of quotation, and subcontractors must be identified in the bid/quotation submitted by the bidder. For them to be allowed to do so, subcontractors should also pass the eligibility check for the portions of the contract that they will undertake for contracts procured through community bidding.

4.4.5. Inspection and Tests

To ensure the quality implementation of the subproject, the TF and/or the Municipal Engineer shall strictly monitor the compliance of quality control processes and procedures. This would make certain for an efficient and effective implementation of the subproject.

All materials, plant/s and workmanship shall be of the kind described in the technical specifications and in accordance with the instructions of the TF or the Municipal Engineer. To ensure that this is the case, these materials, plant/s and workmanship will be subjected, from time to time, to such tests as the TF or the Municipal Engineer may require. These tests must be at the place of construction, fabrication, or on site or at such other place or places as may be specified in the contract, or at all or any of such places.

The TF or the Municipal Engineer must, at all reasonable times, have access to the site and to all workshops and places where materials or plant are being manufactured, fabricated or prepared for the works. The contractor, for its part, shall afford every facility for, and every assistance in obtaining the right to such access.

The TF or the Municipal Engineer shall be entitled, during manufacture, fabrication or preparation of materials to be used in the subproject, to inspect and test these materials and the plant or plants where these materials are being manufactured, fabricated, and/or prepared. If the materials are being manufactured, fabricated or prepared in workshops or places other than those of the contractor, the contractor must obtain permission for the TF or the Municipal Engineer to carry out inspection and testing in those workshops or places. Such inspection or testing will not release the contractor from any obligation under the contract.

If, at the time and place agreed above, the materials or plant are not ready for inspection or testing, the TF or the Municipal Engineer may reject these materials or the plant and must notify the contractor of such rejection immediately. He/she must also do so if, as a result of the inspection or testing, he/she determines that the materials or plant are defective or otherwise not in accordance with the contract. The notice must state the TF or the Municipal Engineer's objection and the reasons for the objection. The contractor, for its part, must then promptly make good the defect or ensures that rejected materials or plant comply with the contract. If the TF or the Municipal Engineer so requests, the test of rejected materials or plant shall be made or repeated under the same terms and conditions.

The TF or the Municipal Engineer will, after consultation with the contractor, determine all the costs incurred in the repetition of the test or tests. These costs are recoverable from the contractor by the BSPMC and may be deducted from any monies due to the contractor. The TF or the Municipal Engineer must notify the contractor accordingly, with a copy being furnished the BSPMC.

To help ensure the quality of materials being used in infrastructure subprojects, the Bureau of Research and Standards (BRS) of the DPWH, the Department of Science and Technology (DOST) or the Department of Trade and Industry (DTI) shall accredit the testing laboratories that can be used in BSPMC works subprojects within the respective areas. All BSPMCs implementing infrastructure subprojects must use only these laboratories. Only tests done by these laboratories shall be recognized and accepted, except for the testing of new materials to be undertaken through procedures approved by the DPWH Secretary.

4.4.6. Dayworks

If applicable, as indicated in the contract, the dayworks rates in the contractor's bid shall be used for small additional amounts of work, only when the TF or the Municipal Engineer has given written instructions in advance for additional work to be paid for in that way.

All works to be paid for as day works shall be recorded by the contractor on forms approved by the TF or the Municipal Engineer. Each completed form shall be verified and signed by TF or the Municipal Engineer within two (2) days of the work being done. The contractor shall be paid for dayworks subject to obtaining signed dayworks forms.

4.4.7. Measurement of Works:

The quantities set out in the Bill of Quantities are the estimated quantities for the works. They should not therefore be taken as the actual and correct quantities of the works to be executed by the contractor in fulfillment of his obligations under the contract. They can vary to up to ten percent (10%) of the contract price to account for variation orders.

The TF or the Municipal Engineer must, except if otherwise stated in the Quantities of the Detailed Designs, measure the value of the works actually in-place in accordance with the contract. This measurement will be the basis for the payment that will be made to the contractor in accordance with the Statement of Work Accomplished. The TF or the Municipal Engineer must, when he/she needs to measure any part of the works, give reasonable notice to the contractor's authorized agent, who must:

i. Attend or send a qualified representative to assist the TF or the Municipal Engineer in making such measurement; and
ii. Supply all particulars required by the TF or the Municipal Engineer.

4.4.8. Contract Price and Payment

The method and conditions of payment shall be specified in the contract. Generally, payment for works can be made in two ways: unit price or lump-sum payment. Unit price payments are made based on the unit prices of specific items as applied to actual quantities accomplished according to the Statement of Work Accomplished (SWA). Lump-sum payments, on the other hand, are based on the value of actual accomplished work in proportion to total contract cost.

Any kind of payment, including advance and progress payments, must be made by the BSPMC as soon as possible, but in no case later than thirty (30) days after the submission of an invoice or claim by the contractor, accompanied by documents submitted pursuant to the contract, and upon fulfillment of other obligations stipulated in the contract. The BSPMC must also ensure that all accounting and auditing requirements are met prior to payment. The BSPMC should commence inspection within twenty-four (24) hours after receiving the Request for Inspection from the contractor.

Price escalation is generally not allowed. For the given scope of work in the contracts awarded, the price must be considered as a fixed price.

4.4.8.1. Advance Payment

The contractor can request for advance payment which must not exceed fifteen percent (15%) of the total contract price, and must be made in lump sum or, at the most, two (2) installments according to a schedule specified in the ITB and other relevant bidding documents. Moreover, it must be made only upon the submission by the contractor of a written request. The contractor must also submit to the BSPMC a bank guarantee equal in value to the advance payment and must be accepted by the BSPMC.

The BSPMC must recover the advance payment by deducting from the progress payments until the advance is fully liquidated within the duration of the contract, and before full payment is made to the contractor.

4.4.8.2. Progress Payment

The first progress payment may be paid by the BSPMC to the contractor after 30% of the work had been accomplished. Thereafter, payments can be made once a month, provided that the latter submits a Progress Billing or a request for payment for work accomplished. Payments shall be released within seven (7) calendar days upon submission of complete documents verified and approved by the PIT, BSPMC Chairperson and the TF or Municipal Engineer. Such request for payment, including the Statement of Work Accomplished by the contractor, must be verified and approved by the TF or Municipal Engineer. Except as otherwise stipulated in the ITB, materials and equipment delivered on the site but not completely put in place shall not be included for payment.

The BSPMC has the right to deduct from the contractor's progress billing such amount as may be necessary to cover third party liabilities. It must not process any progress payment unless the discovered defects are corrected.

4.4.8.3. Retention Money

"Retention money" refers to the amount equal to ten percent (10%) of the progress payments, before deductions are made, that is withheld by the BSPMC to cover the uncorrected discovered defects and third party liabilities. It is collected from all progress payments until works equivalent to fifty percent (50%) of the value of works, as determined by the BSPMC, is accomplished. If, after fifty percent (50%) completion, the work is satisfactorily done and on schedule, no additional retention shall be made; otherwise, the ten percent (10%) retention shall continue to be imposed.

The total "retention money" shall be due for release after the defects liability period, upon final acceptance of the works. The contractor may request the BSPMC that, instead of retention money being withheld from each progress billing, it issues in favor of the BSPMC, a bank guarantee in an amount equivalent to the retention money substituted for. They must also be valid for a duration to be determined by the BSPMC and will answer for the purpose for which the ten percent (10%) retention is intended.

4.4.8.4. Final Payment

The contractor may request for final payment upon one hundred percent (100%) completion of the work. This payment will be reduced by whatever balance remains of the amount that is needed in order to return to the BSPMC the fifteen percent (15%) advance payment previously made.

4.4.9. Variation Orders

A Variation Order refers to any increase/decrease in quantities within the general scope of the subproject as awarded, in any of the following aspects:

i. Introduction of new work items that are not included in the original contract; or
ii. Reclassification of work items that are either due to change of plans, design or alignment to suit actual field conditions resulting in disparity between the preconstruction plans and the "as staked plans" or construction drawings prepared after a joint survey by the contractor and the BSPMC after award of the contract, or during actual construction.

A Variation Order may either be in the form of a **Change Order** or **Extra Work Order**.

A Change Order covers any increase/decrease in quantities of ***original*** work of items in the contract. An Extra Work Order covers the ***introduction of new work*** necessary for the completion/improvement or protection of the subproject which are not included as items of work in the original contract. As an example, there may be subsurface or latent physical conditions at the site that differ materially from those indicated in the contract. There might also be duly unknown physical conditions at the site of an unusual nature that differ materially from those ordinarily encountered and generally recognized as inherent in the work or character provided for in the contract. The addition/deletion of works should be within the general scope of the subproject as bid and awarded, and the deletion of the work should not affect the integrity and usefulness of the structure.

The issuance of a Variation Order must conform to the following:

i. That there will not be any short changes in the original design;
ii. That it will not affect the structural integrity and usefulness of the structure;
iii. That it is covered by a Certificate of Availability of Funds (CAF), if necessary and
iv. That, if applicable, the subproject would still be viable and feasible after incorporating the adjustments in cost. This could be done by the re-computation of economic analysis (EIIR, ENVP and BCR)

Under no circumstances can a contractor proceed to commence work under any Change Order or Extra Work Order unless the BSPMC Chairperson has approved the order on the recommendation of the TF or Municipal Engineer. Please refer to CBIM Form B-4.

The BSPMC Chairperson, may, subject to the issuance of the CAF, authorize the immediate start of work under any Change or Extra Work Order, subject to any or all of the following conditions:

i. In the event of any emergency where the prosecution of the work is urgent to avoid any detriment to public service, or damage to life and/or property; and/or
ii. When time is of the essence, for works in the critical path based on the approved GANTT Chart;

However, the approval is valid on work done up to the point where the cumulative increase in value of work on the subproject which has not yet been fully approved does not exceed five percent (5%) of the adjusted original contract price, whichever is less. Furthermore, immediately after the start of work, the corresponding Change Order or Extra Work Order must be prepared and submitted for approval in accordance with the above rules herein set. Payments for works satisfactorily accomplished on any Change Order or Extra Work Order may be made only after approval of the same by the BSPMC Chairperson.

For a Change Order or Extra Work Order involving a cumulative amount exceeding five percent (5%) of the original contract, no work may be commenced unless said Change Order or Extra Work Order has been approved by the BSPMC Chairperson on the recommendation of the TF or the Municipal Engineer and a clearance from the RPMO has been issued.

Variation Orders may be issued by the BSPMC at any time during contract implementation. However, the adjustment provided for in these orders must be necessary to fully meet the requirements of the subproject.

The net cumulative amount of the Variation Order should not exceed more than ten percent (+10%) of the original subproject cost.

If the adjustments provided for in a Variation Order costs more than ten percent (10%) of the original subproject costs, these shall be the subjects of another contract to be procured out if the works are separable (not part of the work to complete the original scope of work) from the original contract. However, if these adjustments are urgently necessary to complete the original scope of work, the BSPMC Chairperson, on the recommendation of the TF or the Municipal Engineer, may authorize the Variation Order beyond ten percent (10%) but not more than twenty percent (20%). Clearance from the RPMO is required prior to commencement of any variation orders.

The payment to the contractor for additional work under Variation Orders must be derived based on the following:

i. For additional/extra works duly covered by Change Orders involving work items which are exactly the same or similar to those in the original contract, the applicable unit prices of work items in the original contract shall be used.
ii. For additional/extra works duly covered by Extra Works Orders involving new work items that are not in the original contract, the unit prices will be based on the direct

unit costs used in the original contract (e.g., unit cost of cement, rebars, form lumber, labor rate, equipment rental, etc.). All new components of the new work item shall be fixed prices, provided the same is acceptable to both the BSPMC and the contractor. The direct unit costs of new components must also be based on the contractor's estimate as validated by the BSPMC. The BSPMC must validate these prices through a documented canvass among three eligible suppliers in accordance with existing rules and regulations. The direct cost of the new work item must then be combined with the mark-up factor (i.e. taxes and profit) used by the contractor in his bid/quotation to determine the unit price of the new work item.

The request for payment by the contractor for any extra work must be accompanied by a statement of work accomplished, with the approved supporting forms, giving a detailed accounting and record of amount for which he claims payment. This request for payment must be included in the contractor's statement for progress payment.

The following must be undertaken in issuing a Variation Order:

i. Within seven (7) calendar days after the contractor discovers that there is a need for variation order, the said contractor must communicate the same to the BSPMC by giving it notice of the findings. Afterwards, the contractor has twenty-eight (28) days to submit a full documentation of the variation order. Failure to provide either of such notices in the time stipulated shall constitute a waiver by the contractor for any claim.
ii. If the TF or Municipal Engineer finds that a Change Order or Extra Work Order is justified, he/she must prepare the proposed order, accompanied with the following:

    a. Notices submitted by the contractor;
    b. The plans to effect the adjustments;
    c. The contractor's computations as to the quantities of the additional works involved per item indicating the specific stations where such works are needed, the date of his inspections and investigations thereon, and the logbook thereof; and
    d. A detailed estimate of the unit cost of such items of work, together with his justifications for the need of such Change Order of Extra Work Order.

iii. The TF or Municipal Engineer, upon receipt of the proposed Change Order or Extra Work Order shall immediately conduct an on-the-spot investigation to verify the need for the work to be prosecuted.
iv. After being satisfied that such Change Order or Extra Work Order is justified and necessary, the TF or Municipal Engineer shall review the estimated quantities and prices.
v. If, after review of the plans, quantities and estimated unit cost of the items of the work involved, the TF or Municipal Engineer finds that the Change Order or Extra Work Order is in order and covered by the CAF, the same shall be approved.
vi. The BSPMC shall notify the contractor to proceed with the work/delivery of items in accordance with the amendment.
vii. The contractor shall proceed with the work/delivery of items in accordance with the amended contract.

4.4.10. Suspension of Work

The BSPMC has the authority to suspend the work wholly or partly by written order due to the following:

i. Force majeure or any fortuitous event; or
ii. Failure on the part of the contractor to:

a. Correct bad conditions which are unsafe for workers or for the general public;
b. Carry out valid orders given by the TF or the Municipal Engineer;
c. Perform any provisions of the contract; or
d. Adjustment of plans to suit field conditions as found necessary during construction.

The PIT through the BSPMC shall issue a Suspension Order (CBIM Form B-5) and state the reasons for the suspension as discussed above including the duration covered. The Suspension Order shall specify a period of seven (7) calendar days from date of receipt of the written order or notice, after which the said order may take effect and thus bind the contractor to immediately comply. The order/notice shall specify the period deemed necessary for its effectivity. A Weather Chart is very important document in case there is a need to justify work suspension due to unfavorable weather conditions.

The contractor has the right to suspend work operation on any or all subprojects/activities along the critical path of activities due to any of the following:

i. There exist right-of-way problems, that prohibit the contractor from performing work in accordance with the approved construction schedule;
ii. Peace and order conditions make it extremely dangerous, if not impossible, to work, such conditions having been certified in writing by the PNP station which has responsibility over the affected area;
iii. There is a failure on the part of the BSPMC to deliver government–furnished materials and equipment as stipulated in the contract; or
iv. The non-payment of the contractor's claim for progress billing beyond forty-five (45) calendar days from the time the claim has been certified by the BSPMC Chairperson as having been supported by complete documentation, unless there are justifiable reasons which shall be communicated in writing to the contractor.

The contractor may suspend work fifteen (15) calendar days after the BSPMC Chairperson has received a written notice of the suspension of work. Please refer to CBIM Form B-5.

Only in cases when the suspension of activities along the critical path is not due to the fault of the contractor may the suspension of work be considered in the extension of time. In such cases, the elapsed time between the effective order suspending operation and the order to resume work shall be allowed the contractor by adjusting the contract time accordingly.

No payment can be made to the contractor for any standby time expense during the suspension period, except when prior clearance is secured from the BSPMC Chairperson and for justifiable reasons.

In the event the situation merits favorable conditions to continue the work, the PIT through the BSPMC shall issue a Resumption Order as a notice for the lifting of the suspension. Please refer to CBIM Form B-6. The number of days covered by the approved suspension order should not be counted as part of total contract duration and necessary adjustments on the completion date have to be made.

The following steps are undertaken in the issuance of a suspension order by the BSPMC:

i. The PIT determines the existence of any of the grounds for suspension enumerated above.
ii. The PIT drafts the suspension order for the approval of the BSPMC Chairperson.
iii. The suspension order is issued to the contractor, stating the grounds therefor.

iv. Prior to the expiration of the suspension order, the PIT shall determine whether or not the grounds for suspension still exist.
v. If such grounds continue to exist, or if it is no longer practicable to continue with the work, it shall terminate the work subject of the order or cancel the delivery of the items subject of such suspension.
vi. If, however, the grounds for suspension no longer exist, and continuation of the work is practicable, the PIT, with the approval of the BSPMC Chairperson, shall lift the suspension order, issue a Resumption Order and notify the contractor to proceed with the work/delivery of items in accordance with the amended contract.

4.4.11. Contract Time Extension

The contracts may be extended under the following conditions:

i. There are additional works or other special circumstances that would entitle the contractor to an extension of its contract;
ii. The affected activities fall within the critical path of the Gantt chart;
iii. The contractor shall have notified the BSPMC that the amount of additional work or the occurrence of the special circumstance merits the extension of its contract, and that it had done so before the expiration of the contract and within thirty (30) calendar days after the start of the additional work or of the special circumstance has arisen; and
i. The BSPMC, after due investigation and on the recommendation of the TF and the Municipal Engineer find the request justified, determines the appropriate extension period, and approves the request of the contractor for contract extension.

If the contractor fails to notify the BSPMC within the time period provided for, it waives any claims to contract extension. The form for contract time extension is found in CBIM Form B-8.

No contract extension must be given to a contractor due to:

i. Ordinary unfavorable weather conditions, in that such weather conditions had already been taken into consideration and anticipated in the computation of the unworkable days; and
ii. In - excusable failure or negligence of contractor to provide the required equipment, supplies or materials.

Some special circumstances to be considered for contract time extension:

i. Major calamities such as exceptionally destructive typhoons, floods and earthquakes, and epidemics;
ii. Non-delivery on time of materials, working drawings, or written information to be furnished by the BSPMC;
iii. Non-acquisition of permit to enter private properties within the right-of-way resulting in complete stoppage of construction activities;
iv. Region-wide or nationwide shortage of construction materials, as certified by the DTI Secretary;
v. Region-wide or nationwide general labor strikes, as certified by the DOLE Secretary; and
vi. Serious peace and order problems as certified by the Municipal Chief of Police.

If a contractor incurs a delay and wishes to request for an extension of the completion of construction period:

i. It must submit a written request to the PIT for an extension of the completion or construction period, citing the reason/s for such delay.
ii. The PIT shall either approve or disapprove the request for extension.
iii. If the extension is granted, the liquidated damages shall not be imposed and the contractor will be so informed in writing.
iv. If, however, the request for extension is denied, the PIT shall inform the contractor in writing of such denial, and ensure that the said notice or communication is received by the latter within a reasonable time from receipt of the request for extension. The BSPMC then imposes the liquidated damages in accordance with the provisions of the contract and the procedures outlined below.

If the Contractor incurs a delay and there is no request for extension:

i. The PIT shall, within a reasonable time from the first day of delay, inform the contractor that the BSPMC will impose the liquidated damages agreed upon by the parties.
ii. Upon contract completion, the PIT and the MIT with the assistance of the TEF or Municipal Engineer shall record the delay in the inspection documents, noting the amount of the liquidated damages imposable on the contractor.
iii. The amount of liquidated damages due shall be deducted from the total amount payable to the contractor, and the same shall be reflected in the disbursement vouchers. Or, if the contract provides that the liquidated damages shall be collected from the performance bond posted by the contractor, the PIT shall so inform the ACT to call on the guarantee about the delay and the corresponding liquidated damages imposable.

4.4.12. Delays in Work Completion and Liquidated Damages

The contractor must complete the work procured within the period prescribed by the BSPMC as specified in the contract.

If delays are likely to be incurred, the contractor must notify the BSPMC in writing, stating the duration and causes of the expected delay. The BSPMC may grant time extensions, at its discretion, if such extensions are meritorious, with or without liquidated damages.

In all cases, the request for extension shall always be filed before the expiry of the original completion date. Maximum allowable extension shall not exceed the original construction period.

4.4.12.1. Liquidated Damages

Liquidated damages are damages agreed upon by the parties to a contract, to be paid in case of breach.

When the contractor refuses or fails to satisfactorily complete the works under the contract within the specified contract duration, plus any time extension duly granted, and is thus considered in default under the contract, it will be liable for liquidated damages for the delay. The contractor must pay the amount equal to one-tenth (1/10) of one percent (1%) of the contract cost of the delayed works for every day of delay. The liquidated damages will be imposed until such works are finally delivered or performed and accepted by the BSPMC.

The BSPMC need not prove that it has incurred actual damages to be entitled to liquidated damages from the contractor, and the same shall not be by way of penalty. Such amount shall be deducted from any money due or which may become due the contractor under the contract and/or from the retention money or other securities posted by the contractor, whichever is convenient to the BSPMC.

In no case shall the sum of liquidated damages exceed ten percent (10%) of the contract amount. If it does, the contract shall be deemed automatically terminated by the BSPMC, without prejudice to other courses of action and remedies available to it. The BSPMC may also take over the contract or award the same to qualified constructor through direct contracting. In addition to the liquidated damages, the erring contractor's performance security shall also be forfeited.

4.4.13. Contract Termination

4.4.13.1. Termination of Contract for Default

The BSPMC Chairperson may terminate a contract for default when any of the following conditions attend its implementation:

i. Due to the contractor's fault and while the subproject is on-going, it has incurred negative slippage of fifteen percent (15%) or more, without acceptable justification;
ii. Due to the contractor's fault and after the contract time has expired, it has incurred a negative slippage of ten percent (10%) or more in the completion of the work, without acceptable justification; or
iii. The contractor:

    a. Abandons the contract works, refuses or fails to comply with a valid instruction of the BSPMC or fails to proceed expeditiously and without delay despite a written notice by the BSPMC ;
    b. Does not actually have on the subproject site the minimum essential equipment listed on the bid/quotation necessary to prosecute the works in accordance with the approved work plan and equipment deployment schedule as required for the subproject;
    c. Does not execute the works in accordance with the contract or persistently or flagrantly neglects to carry out its obligations under the contract;
    d. Neglects or refuses to remove materials or to perform a new work that has been rejected as defective or unsuitable; or
    e. Sub-lets any part of the contract works without approval by the BSPMC.

The rescission of the contract shall be accompanied by the confiscation by the BSPMC of the contractor's performance security. The contractor will also be recommended for blacklisting in all KC-NCDDP procurements. The contractor shall be paid on a quantum merit basis.

4.4.13.2. Termination of Contract for Unlawful Acts

The BSPMC may terminate the contract in case it is determined prima facie that the contractor has engaged, before or during the implementation of the contract, in unlawful deeds and behaviors relative to contract acquisition and implementation. Unlawful acts include, but are not limited to, the following:

i. Corrupt, fraudulent, collusive and coercive practices;
ii. Drawing up or using forged documents;
iii. Using adulterated materials, means or methods, or engaging in production contrary to rules of science or the trade; and
iv. Any other act analogous to the foregoing.

The contractor shall be paid on a quantum merit basis.

4.4.13.3. Termination of Contract by Reason of Insolvency

The BSPMC Chairperson should terminate the contract if the contractor is declared bankrupt or insolvent as determined with finality by a court of competent jurisdiction. In this event, termination will be without compensation to the contractor, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the BSPMC and/or the contractor.

4.4.13.4. Termination of Contract at the Instance of the Contractor

The contractor may terminate its contract with the BSPMC if the works are completely stopped for a continuous period of at least sixty (60) calendar days through no fault of its own, due to any of the following reasons:

i. Failure of the BSPMC to deliver, within a reasonable time, supplies, materials, right-of-way, or other items it is obligated to furnish under the terms of the contract; or
ii. The prosecution of the work is disrupted by the adverse peace and order situation as certified and approved by the Municipal Chief of Police.

The contractor must serve a written notice to BSPMC of its intention to terminate the contract at least thirty (30) calendar days before its intended termination. The contract is deemed terminated if it is not resumed in thirty (30) calendar days after the receipt of such notice by the BSPMC Chairperson.

In cases of termination, the BSPMC shall return to the contractor its performance security and shall pay unpaid claims on a “quantum meruit” basis.

4.4.13.5. Termination of Contract for Convenience

The BSPMC Chairperson, by written notice sent to the contractor, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that the termination is for the BSPMC’s convenience, the extent to which performance of the contractor under the contract is terminated, and the date upon which such termination becomes effective.

Any of the following circumstances may constitute sufficient grounds to terminate contract for convenience:

i. If physical and economic conditions have significantly changed so as to render the subproject no longer economically, financially or technically feasible, as determined by the BSPMC Chairperson;
ii. The BSPMC Chairperson has determined the existence of conditions that make subproject implementation impractical and/or unnecessary, such as, but not limited to, fortuitous event/s, changes in laws and government policies;
iii. Funding for the subproject has been withheld or reduced by higher authorities through no fault of the BSPMC ;
iv. Failure of the BSPMC to acquire the necessary right-of-way; or
v. Any circumstance analogous to the foregoing.

4.4.13.6. Termination of Contract due to Force Majeure:

Either party may terminate the Contract by giving a thirty (30) day notice to the other for events beyond the party’s control, such as wars and acts of God such as earthquakes, floods, fires, etc.

4.4.14. Contract Completion

Once the subproject reaches an accomplishment level of ninety percent (90%) of the total contract amount and/or prior to the release of the last tranche, the Contractor or the Technical Empowerment Facilitator shall request the BSPMC Chairperson for a joint inspection. The BSPMC Chairperson shall create a Joint Inspection Team (JIT) (composed of the Municipal Engineer, Technical Empowerment Facilitator, PIT Representative, Bookkeeper, and Area Coordinator, among others) to conduct preliminary inspection, prepare a joint inspection report, and submit a punch-list within a period of fifteen (15) days. The Joint Inspection Report shall highlight the findings of the JIT as to the condition of the subproject with the form found in CBIM Form B-9. The punch-list will contain, among others, the remaining works, work deficiencies for necessary corrections, and the specific duration/time to fully complete the subproject considering the approved remaining contract time. The Contractor shall complete the items in the punch-list in preparation for the final turnover of the subproject. If the Final Account is still unsatisfactory after it has been resubmitted, the TF or the Municipal Engineer shall decide on the amount payable to the Contractor and issue a payment certificate.

The Contractor shall request the BSPMC to issue a certificate of completion and acceptance of the Works upon completion of the punch-list (CBIM Form B-14). The TF or Municipal Engineer will recommend the issuance of such a certificate when he determines that the work is satisfactorily completed. The BSPMC shall take possession of the site within seven (7) days upon issuance of certificate of completion and acceptance of the Works.

The Contractor shall supply the TF or Municipal Engineer with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The TF or Municipal Engineer shall issue a Defects Liability Certificate after the Contractor has fulfilled its obligation under the Contract and certify any final payment that is due to the Contractor within fifteen (15) days of receiving the Contractor's account if it is correct and complete.

Upon issuance of the certificate of completion and acceptance and the possession of the subproject site, the BSPMC Chairperson with the assistance of the CEF and the TF shall submit a Subproject Completion Report (CBIM Form B-15) to the AC to certify to the completion of the subproject.

4.4.15. Warranty and Defects Liability Period

A warranty is required to ensure that the Contractor will correct structural defects and failures. A one-year period after the completion of the subproject, called the defects liability period, is observed until final acceptance by the BSPMC.

The Contractor shall assume full responsibility for the contract work within the defects liability period and shall be held responsible for any damage or destruction of the works except those occasioned by force majeure. During this period, the Contractor shall undertake the repair works, at his own expense, of any damage to the infrastructure subprojects on account of the use of materials of inferior quality within ninety (90) days from the time the BSPMC Chairperson has issued an order to undertake repair.

The Defects Liability Period shall be extended for as long as defects remain uncorrected. Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified.

In case of Contractor's failure or refusal to correct a defect within the time specified by the order, the BSPMC shall undertake such repair works and shall be entitled to full reimbursement of expenses incurred upon demand at the cost of the contractor. The TF or Municipal Engineer will assess the cost of having the defect corrected. The BSPMC shall recover these amounts by deducting from the amounts due to the Contractor.

Any Contractor who fails to comply with the preceding paragraphs shall suffer perpetual disqualification from participating in any KC-NCDDP subprojects.

After final acceptance of the subproject, the Contractor shall be held responsible for structural defects and/or failure of the completed subproject within the warranty period from final acceptance, except those occasioned by force majeure and those caused by other parties.

4.4.15.1. Warranty Period

After final acceptance of the subproject by the BSPMC, the contractor shall be held responsible for structural defects and/or failure of the completed subproject within the following warranty periods from final acceptance, except those occasioned by force majeure and those caused by other parties:

i. Permanent Structures: Fifteen (15) years
   Buildings of types 4 (steel, iron, concrete, or masonry construction with walls, ceilings, and permanent partitions of incombustible fire resistance) and (steel, iron, concrete, or masonry construction), steel and concrete bridges, and other similar structures;

ii. Semi -Permanent Structures: Five (5) years
   Buildings of types 1 (wooden), 2 (wood with 1 hour fire resistance), and 3 (masonry and wood construction), concrete roads, asphalt roads, river control, drainage, irrigation and drainage canals, municipal ports and river landing, deep wells, rock causeway, and other similar structures; and

iii. Other Structures: Two (2) years
   Bailey and wooden bridges, shallow wells, spring developments, and other similar structures.

In cases where structural defects and/or failures arise during the warranty period, the following persons/parties shall be held liable individually or solidarily, as the case maybe:

i. Contractor – Where structural defects and/or failures arise due to faults attributable to improper construction use of inferior quality/substandard materials, and any violation of the contract plans & specifications, the contractor shall be held liable;
ii. TF/Municipal Engineer/Service Provider – the appropriate officer concerned shall be held liable in cases where the structural defects/failures are due to his/their willful intervention in altering the designs and other specifications; negligence or omission in not approving or acting on proposed changes to noted defects or deficiencies in the design and/or specifications; and the use of substandard construction materials in the subproject;
iii. Users - In cases where structural defects/failures are due to abuse/misuse by the end user of the constructed facility and/or non–compliance by a user with the technical design limits and/or intended purpose of the same, then the user concerned shall be held liable.

The term “structural defects” shall mean major faults/flaws/deficiencies in one or more key structural elements of the subproject which may lead to structural failure of the completed elements or structure. The term “Structural Failures” is defined as an occurrence where one or more key structural elements in an infrastructure facility fails or collapses, thereby rendering the facility or part thereof incapable of withstanding the design loads, and/or endangering the safety of the users or the general public.

In case of structural defects/failures occurring during the applicable warranty period provided above, the BSPMC shall undertake the necessary restoration or reconstruction works and shall be entitled to full reimbursement by the parties found to be liable, of expenses incurred upon demand, without

prejudice to the filing of appropriate administrative, civil, and/or criminal charges against the responsible persons as well as the forfeiture of bank guarantee posted in favor of the BSPMC.

4.4.16. Settlement of Disputes:

The BSPMC and the Contractor shall make every effort to resolve amicably by direct negotiations any disagreement or dispute arising between them under or in connection with the Contract. The disagreement may also be presented to appropriate Grievance Officer/Unit of KC-NCDDP. In case of further disagreement either party can take the matter to arbitration in accordance with the Law governing the Contract.

Chapter Five: Operation and Maintenance of Community Infrastructure

5.1. Operation and Maintenance and its Importance
5.2. Stage Three: Community Managed Organization Formation
5.3. Operation and Maintenance Plan
5.4. Implementation of Operation and Maintenance Activities

5.1. Operation and Maintenance and its Importance

The operation and maintenance of community infrastructure refers to activities that are undertaken to protect, care for, fix or repair any defects or damage in the infrastructure with the objective of retaining or restoring it into a state where it can perform its required function and intended subproject life. Maintenance refers to the regular upkeep of facilities and structures to sustain its proper functioning for the delivery of services. Operation refers to the proper and appropriate management and utilization of facilities and structures. Operation and Maintenance (O&M) refer to the regular running and management of the subproject after its completion to sustain the proper working condition of the facility. In the case of irrigation, water supply or electrification subprojects, operation and maintenance activities are critical as it prevents the rapid deterioration of the facility, ensures that the community has adequate supply of the water or power and involves recovery of operations and maintenance costs.

There are generally three types of maintenance activities. These are: routine, preventive maintenance or corrective maintenance. Routine maintenance refers to the simple small scale activities undertaken on a regular basis (weekly, monthly, annually) for the general upkeep of the works to respond to normal wear and tear. Preventive maintenance, on the other hand, is maintenance performed to preserve and restore the infrastructure by replacing sections before they deteriorate or get destroyed. Corrective maintenance is maintenance required when the facility is destroyed or has failed to perform its normal functions and needs improvement or upgrading.

All NCDDP funded and completed subprojects shall ensure that the community can sustain its operations and meet its purpose through its design subproject life. Hence, as early as the planning stage, the community volunteers are required to prepare an operations and maintenance action plan. The plan includes the organizational and institutional arrangement, initial tariff set and the other financing schemes to support O&M activities. Under the Local Government Code, local government units (LGUs) have the responsibility to maintain completed infrastructure subprojects or may employ other operation & maintenance arrangements that may be applicable at the local area.

5.2. Stage Three: Community Managed Organization Formation

Figure 7 shows the general process flow for community managed organization and formation under the accelerated and standard CEAC.

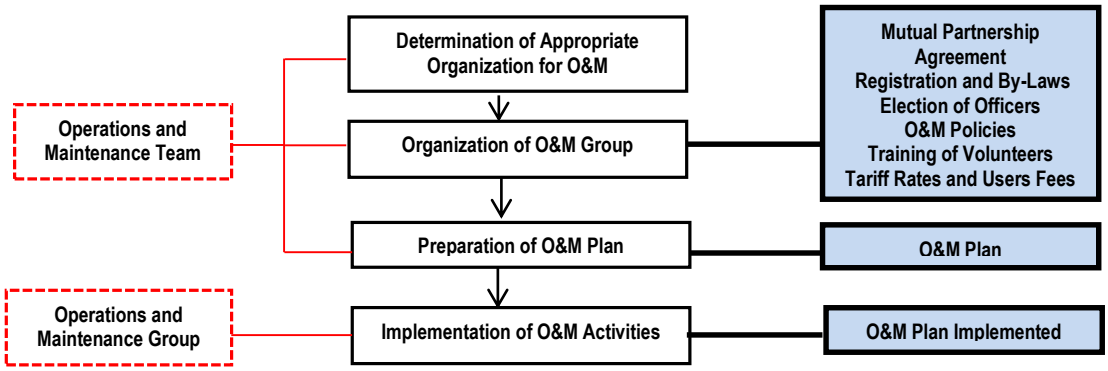


Figure 7. Process Flow for Community Managed Maintenance Organization and Formation

Table 4 displays the expected reports or outputs required under the community managed organization and formation stage.

Table 4. Expected Outputs of the Community Managed Organization and Formation Stage

Major Activities	Expected Outputs
Determination of Appropriate O&M Organization	Registration/Accreditation Requirements and Documents
Organization of O&M Group	Association By-Laws and Registration Election of Officers O&M policies Mutual Partnership Agreement Training of O&M group Ordinance on Tariff or Users Fee
Operation and Maintenance Plan Preparation	Operation and Maintenance Plan
Implementation of O&M Activities	O&M Plan Implemented

5.2.1. Determination of Appropriate Community Organizations for Operation and Maintenance

The community with the assistance of the CEF and the TF shall determine the appropriate community association for operation and maintenance of the completed infrastructure subproject such as: Barangay Road and Bridge Operation and Maintenance (BROM) Group; Parent-Teachers-Community Association or PTCAs for school buildings and daycare centers; Barangay Water Association or BAWASA for water systems; Irrigator's Association (IA) for communal irrigations, community health board for health stations, community enterprise groups for post-harvest facilities; users associations for other basic service facilities; peoples organizations for environmental protection subprojects; among others. The CEF shall also find out about the processes and requirements for forming and formalizing these groups for accreditation/registration purposes and shall assist the community based organization (CBO) in obtaining such accreditation/registration. In coordination with the RPMO and the SRPMO, the ACT shall plan for the conduct of organizational formation and development training for these groups.

5.2.2. Establishment of Organization for Operation and Maintenance

The CEF (with the municipal counterparts) conducts a general orientation on operation and maintenance, and the community elects the volunteers for the O&M groups identified. The composition of the O&M organization may vary depending on the type of subproject being operated and maintained. The O&M group may or may not be registered based on the decision of the community. If it decides to register, the legal personality is acquired from the Securities and Exchange Commission (SEC), CDA, DOLE, DSWD, and other authorized Agency as maybe appropriate. The registration is needed to protect their operations and assets/properties. It is also required for its accreditation and membership to Local Development Councils (LDC) - Special Bodies. Accreditation, on the other hand, means that the O&M organization is duly accredited by the Sangguniang Bayan. It is envisioned that O&M groups (as People's Organization) be part of the Local Development Councils (LDC) - Special Bodies so they can continue to participate in Community Development and Local Governance. Depending on the availability of O&M funds, the O&M group may open a separate bank account. However, the existing bank account of the LGU can be used. In this case, the fund intended for O&M of the subprojects will be a Trust Fund with separate bank and book of accounts.

A Barangay Assembly/General Assembly is conducted to: pass the organizational by-laws; discuss and approve the operation and maintenance (O&M) policies, and; elect leaders of the O&M group. A planning workshop is conducted to plan the operation and maintenance activities, facilitate the tasks to be performed by the O&M groups such as but not limited to house to house visits, small meetings, preparation of O&M policies and guidelines, CV meetings with accrediting NGAs, and general assemblies. A Mutual Partnership Agreement (MPA) shall be signed among the Barangay

Captain, Head of the O&M Group, Municipal Mayor and the DSWD Regional Director to carry out operation and maintenance activities for the subproject (CBIM Form C-1).

The CEFs, together with the MIAC, shall conduct coaching, supervisions, and additional training activities (management, financial or technical), as needed, to further guide community volunteers in organizational development activities. The CEF shall link the O&M groups to civil society organizations (CSOs), national government agencies (NGAs) and other relevant institutions for support and organizes inter-organization learning fora to encourage exchange of experiences and learning and collective problem solving and support. The AC shall ensure that the barangay local government unit (BLGU) and the municipal local government unit (MLGU) shall provide support to the O&M needs of the organization and include the O&M group in the Barangay Development Council (BDC) and the Municipal Development Council (MDC). The BDC or the MDC has to pass an ordinance to approve the tariff or user's fee, where applicable, or the collection of the maintenance fund from the community according to their level of affordability.

5.3. Operation and Maintenance Plan

An operation and maintenance plan is the principal document used by the O&M group to maintain and preserve the subproject in accordance with its subproject cycle. The O&M plan should define the major types of activities to be undertaken (cleaning, repair, maintenance), the frequency of inspections and surveys to be conducted, the procedures for collecting maintenance fees or tariffs, the uses and management of these funds and some general procedures to maintain the subproject in accordance with the OMG by-laws and operation and maintenance policies. The O&M plan may be prepared with the assistance of the Technical Facilitator or service provider responsible for assisting the community in preparing the design plan and technical specifications during the proposal development stage or after subproject completion. A copy of the O&M plan is found in CBIM Form C-3.

The following procedures shall be observed in the preparation of the O&M plan:

i. The Technical Facilitator shall conduct a Workshop with members of the O&M Group to identify possible defects that may arise out of the subproject;
ii. Upon identification of the possible defects, risk mitigation measures and maintenance activities shall be identified and agreed upon with the O&M Group;
iii. The O&M Group shall then proceed to determine the maintenance costs to carry out the maintenance activities, the sources of funds and the responsible persons or decision makers in case the funds are not sufficient to carry out these activities;
iv. The O&M Group shall then agree on the schedule for the conduct of routine, preventive and corrective maintenance activities;
v. The appropriate policies and procedures for O&M activities such as rates of fess and tariffs, schedule of collection of fees, management of fees, responsibilities of users of the facility, among others, shall be formulated;
vi. Interface activities and coordination with other project related activities such as monitoring of the ESMP shall be defined;
vii. Where applicable, a resolution for the expansion of the Barangay Development Committee (BDC) to include the O&M Group head shall be prepared

In addition to the O&M plan, the O&M organization should also maintain a logbook or record of all reported defects, the dates of periodic inspection, findings and results, maintenance work carried out (corrective, emergency, routine, or preventive), including a description of the work, date of completion, estimated and actual cost of maintenance (differentiating between costs to be shouldered by the community and those by the municipality). The O&M activities shall be reported to the community during the Barangay Assembly.

The Operation and Maintenance Plan has to be fully observed by the O&M group and community members in order to minimize the cost of unnecessary repairs.

5.4. Implementation of Operation and Maintenance Activities

After establishing and training the O&M group and preparing the O&M plan, the community is now ready to utilize the infrastructure facility and to conduct operation and maintenance activities. All KC-NCDDP funded subprojects shall ensure that community subprojects have viable Operation and Maintenance (O&M) arrangements built in the process of subproject planning and implementation. Participating communities are taught to imbibe a culture of Operation and Maintenance in development undertakings. Operation and Maintenance performance and the consequent sustainability of subprojects is an important indicator of community empowerment.

The following is a list of proposed maintenance activities that need to be undertaken by the O&M group by type of subproject. The O&M group may include additional items to be used in their regular inspection. The proposed mini-manuals to be developed for the Program shall include suggested remediation measures and activities for different types of defects. The same set of maintenance activities are also to be reviewed during Sustainability Evaluation. The community may also decide to collect a minimal amount from its members for O&M activities through the establishment of an O&M fund.

LIST OF MAINTENANCE ACTIVITIES BY TYPE OF SUBPROJECT

1. Road/Access Trail/Footpath

Maintenance Item	Findings/Remarks	Recommendations
1) GRAVELED OR EARTH ROAD SURFACE	▪ Presence of potholes ▪ Canals on road carriage way ▪ Road blocks	
2) SIDE DITCHES/CANAL	▪ Silted ▪ Too much scouring	
3) ROAD SHOULDER	▪ Overgrown vegetation ▪ Stockpiles & other obstruction ▪ Washed-out ▪ Not enough protection	
4) CROSS DRAINS	▪ Inlet/outlet silted ▪ Crack on Headwalls ▪ Crack on Wingwalls	
5) CONCRETE PAVEMENT	▪ Cracks ▪ Scaling ▪ Scouring or settlement of base	
6) SLOPE PROTECTION	▪ Cracks ▪ Settlement	
7) OTHERS, specify	▪	

2. Box Culverts (Structural

Maintenance Item	Findings/Remarks	Recommendations
1). MAIN STRUCTURE	▪ Structural stability; cracks on structures ▪ Condition of top, sides and bottom slab ▪ Vandalism ▪ Deflections and deformations	
2). INLET	▪ Accessibility of flow ▪ Condition of apron, scouring ▪ Wing walls, dissipaters ▪ Siltation	
3) OTHERS, specify	▪	

3. RCDG Bridge

Maintenance Item	Findings/Remarks	Recommendations
1) SUB-STRUCTURES	▪ Pier ▪ Waterway Upstream and down stream	
2) SLOPE PROTECTION	▪ Slope Surface ▪ Stability of foundation ▪ Abutment Support structures	
3) SUPER STRUCTURES	▪ Surface ▪ Condition of abutment	
4) ROAD CARRIAGE-WAY & SIDE WALK	▪ Carriageway Surface ▪ Condition of asphalt sealer	
5) RAILINGS	▪ Condition of Railing, cracks, scaling ▪ Condition of painting	
6) OTHERS, specify	▪	

4. Drainage (CHB, Stone Masonry)

Maintenance Item	Findings/Remarks	Recommendations
1). Main structure	▪ Structural stability; cracks on walls and flooring ▪ Cracks on Headwalls of RCPC ▪ Cracks on RCPC, outlets and outflows ▪ Deflections and deformations on Flooring ▪ Obstruction in the Drainage Canal and	

	RCPC ▪ Siltation in the Drainage Canal, RCPC and Catch basins	
2) OTHERS, specify	▪	

5. Slope Protection/Riprap/Seawall/Flood Control

Maintenance Item	Findings/Remarks	Recommendations
1) Foundation	▪ Settlement ▪ Scouring	
2) Stone Masonry/Concrete Structures	▪ Cracks ▪ Separation of Grout ▪ Settlement	
3) Top Bank	▪ Cracks ▪ Scaling	
4) OTHERS, specify	▪	

6. Gravity-type Water System

Maintenance Item	Findings/Remarks	Recommendations
1) Intake Box/Source	▪ Walls, Top Slab & Foundation ▪ Pipe Fittings; Over Flow, Valves ▪ Perimeter Diversion canal ▪ Perimeter fence ▪ Tree planting within the Surcharge Area	
2) Reservoir	▪ Walls, Top Slab & Foundation ▪ Pipe Fittings; Over Flow, Valves, Vents ▪ Perimeter Diversion canal ▪ Perimeter fence	
3) Pipelines (Transmission & Distribution)	▪ Exposure/Soil covering for HDPE & uPVC pipeline, Supports and fittings for GI Pipes, ▪ Presence of Leaks and other defects.	
4) Tap Stand	▪ Stability of pedestal ▪ Condition of Faucets ▪ Stability of Concrete flat form ▪ Diversion canal ▪ Flow of Water supply	
5) OTHERS, specify		

7. Pump-Driven Water System

Maintenance Item	Findings/Remarks	Recommendations
1) Intake Box/Source	▪ Walls, Top Slab & Foundation ▪ Pipe Fittings; Over Flow, Valves Valves ▪ Perimeter Diversion canal ▪ Perimeter fence ▪ Tree planting within the Surcharge Area	
2) Reservoir	▪ Walls, Top Slab & Foundation ▪ Pipe Fittings; Over Flow, Valves, Vents ▪ Perimeter Diversion canal ▪ Perimeter fence	
3) Pipelines (Transmission & Distribution)	▪ Exposure/Soil covering for HDPE & uPVC pipeline, Supports and fittings for GI Pipes, ▪ Presence of Leaks and other defects	
4) Tap Stand	▪ Stability of pedestal ▪ Condition of Faucets ▪ Stability of Concrete flat form ▪ Diversion canal ▪ Flow of Water supply	
5) Tap Stand	▪	
6) Others, specify	▪	

8. Irrigation – Concrete lined/Piped

Maintenance Item	Findings/Remarks	Recommendations
1) Intake / Diversion weir	▪ Condition of intake Weir ▪ Condition of upstream ▪ Stability of Apron	
2) Concrete lined canal	▪ Condition of Concrete Lining ▪ Stability of Back slope	
3) Piped Section	▪ Piping condition ▪ Piping fittings and suspension	
4) Turn Out Structure	▪ Piping condition ▪ Piping fittings and suspension	
5) Others, specify	▪	

9. Electrification

Maintenance Item	Findings/Remarks	Recommendations
1) Electrical posts	▪ Condition of Electrical Posts ▪ Condition of Cable Support ▪ Presence of Street light	
2) Primary Power line (Post to Post)	▪ Condition of Transformer ▪ Condition of Power lines	
3) Secondary power line	▪ Condition of power lines	

4) Household Connection	▪ Condition of Electric meters ▪ Condition of Wiring installation ▪ Presence of illegal flying connections	
5) Others, specify	▪	

10. School Building, Day Care Center, Barangay Health Station, Multi-Purpose Building, Rice Mill/Corn Mill

Maintenance Item	Findings/Remarks	Recommendations
1) Columns, Beams, Walls	▪ Structural stability; cracks on structures ▪ Condition of painting ▪ Vandalism ▪ Deflections and deformations	
2) Doors and Windows	▪ Functionality/appearance of door knobs; ▪ Conditions of doors & Jambs, fittings ▪ Condition of window frames, panels, hinges, locks ▪ Paintings	
3) Roofing	▪ Condition of painting ▪ Condition of roofing panels ▪ Gutters, ridge rolls ▪ Deformations	
4) Ceiling	▪ Condition of painting ▪ Condition of ceiling panels ▪ Deformations ▪ Stability of joist and hangers	
5) Electrical System	▪ Availability of Power Supply ▪ Serviceability of Lights ▪ Condition of Switches and outlets ▪ Safe electrical wiring system	
6) Plumbing and sanitation	▪ Availability of Potable water supply ▪ Condition of lavatory and pantry ▪ Condition of comfort room ▪ Condition of water pipes and drain pipes	
7) Amenities	▪ Condition of chairs ▪ Condition of tables/desks ▪ Condition of writing boards ▪ Condition of other amenities	
8) Sign Boards	▪ Visibility of signboard-Readable Policies ▪ Condition of Signboard	
9) Other structures per approved design	▪ _____ ▪ _____ ▪ _____ ▪ _____	

The O&M group shall decide on the frequency of inspections for routine, periodic and corrective maintenance, the tests that need to be undertaken, the budget for each of the maintenance activities and other items needed.

Chapter Six: Monitoring and Evaluation of Community Infrastructure

6.1. Importance of Monitoring and Evaluation

6.2. Monitoring and Evaluation of Infrastructure Subprojects

6.3. Stage Four: Community Monitoring and Evaluation

6.4. Functionality Audit and Sustainability Evaluation

6.1. Monitoring and Evaluation and its Importance

Monitoring refers to the continuing function of providing information on an ongoing subproject to determine progress, or lack thereof, in the achievement of results. Monitoring helps the subproject and its stakeholder track achievements by a regular collection of information to assist timely decision making, ensure accountability, and provide the basis for evaluation and learning. Evaluation, on the other hand, is the systematic and objective assessment of an on-going or completed subproject and its design, implementation and results. The aim is to determine the relevance and fulfillment of objectives, development efficiency, effectiveness, impact, and sustainability. Monitoring and evaluation (M&E) are processes that helps subproject stakeholder in improving performance and achieving results. For monitoring, data and information collection for tracking progress is gathered periodically while for evaluation information collection is happens during or after the subproject is completed. The monitoring is a short term assessment and does not take into consideration the outcomes and impact unlike the evaluation process which also assesses the outcomes and impact. This impact assessment occurs sometimes after the end of a subproject to determine whether the subproject is responsible of the observed results.

KC-NCDDP has established monitoring and evaluation processes in various stages of the CEAC to ensure that subproject objectives are met, communities are empowered, lessons learned are documented and used for the succeeding cycles of subproject planning and implementation within the communities. These monitoring and evaluation activities are discussed in the different subproject manuals and instructions. The final stage of the CEAC process involves community monitoring and evaluation.

6.2. Monitoring and Evaluation of Infrastructure Subprojects

For infrastructure subprojects implemented under the KC-NCDDP, monitoring and evaluation are built into the subproject planning, implementation and maintenance activities. Table 5 provides a summary of some of the monitoring and evaluation activities for infrastructure subprojects under the CEAC process.

Table 5. Community Monitoring and Evaluation of Infrastructure Projects under the CEAC

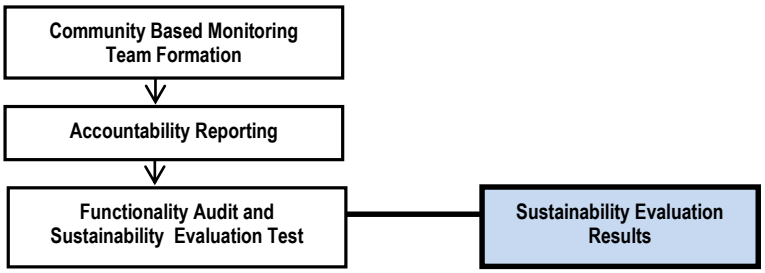
CEAC Stages	Monitoring and Evaluation Activities
Social Preparation	Formation of Monitoring and Inspection Team
Community Planning and Subproject Proposal Development	Guide for the Technical Review of Proposed Infra Subproject (Form A-20)
Community Managed Implementation and Organization Formation	Guide During Supervision and Monitoring of Infra Project (Form B-1) Barangay Subproject Work Schedule and Physical Progress Report (Form B-3) Joint Inspection Report (Form B-9) Final Inspection Report (Forms B-10 to B-13) and Subproject Completion Report (Form B-15) Approved Variation Order (Extra Works Order/Change Order Community Association Formation Tracking Report (Form C-2)
Community Monitoring and Evaluation	Functionality Audit and Sustainability Evaluation Report (Forms D-1 to D-14)

After the Participatory Situational Analysis (PSA), the Monitoring and Inspection Team (MIT) is formed to identify critical activities that need to be monitored. During the planning and proposal development stage, the guide for the technical review of the proposed infrastructure subproject is used by the MIAC and the MIBF to determine whether the subproject meets all the requirements for approval and fund allocation. At the subproject implementation stage, various reports including the

logbook, weather chart, orders (variation, resumption, time extension, etc.), and physical and financial progress are submitted to support the release of funds and to measure accomplishment. Community volunteers through various committees conduct regular meetings and assemblies to report the status of the subproject for both physical and financial accomplishments. The reports include documentation of problems encountered, including delays, and recommended courses of action.

6.3. Stage Four: Community Monitoring and Evaluation

Figure 8 presents the general process flow for community monitoring and evaluation under the CEAC.



In the final stage of the CEAC process, accountability review and reporting is undertaken at the community and municipal levels to inform the community on the status of subproject implementation activities, review and assess commitments made and delivered, surfaces problems, issues and gaps and recommendations to address these gaps and issues, identify lessons learned from the first cycle and recommendations improving activities and processes for the next cycle. Commitments for the operation and maintenance of the completed subproject and support for the next cycle of implementation are also obtained.

At the municipal level, a historical review of activities is conducted, together with an update of the subproject implementation activities of communities, problems, issues and gaps encountered and recommendations to address the existing gaps and issues and for improving activities and processes in the next cycle. The respective teams are then formed to conduct the Functionality Audit (FA) and the Sustainability Evaluation Test (SET).

6.4. Functionality Audit and Sustainability Evaluation

The final stage of the CEAC process involves the conduct of a functionality audit and sustainability evaluation to assess the functionality and utilization of completed subproject, and quality of community sustainability activities including organizational effectiveness, financial management, physical-technical conditions, and benefits of subprojects. A functionality audit is a mechanism to ensure that the subproject investments are utilized by the communities based on its original intent and purpose. While a sustainability evaluation (SE) is a mechanism to determine the degree to which communities and O&M groups adhered to O&M arrangements developed during subproject planning stage. The seeds for sustainability are planted during the early social preparation activities, intensify and mature as the CEAC activities take place.

Ensuring sustainability of subprojects lies in the capability of the beneficiary community to manage their completed subproject. A Sustainability Evaluation is carried out for the following purposes: (a) to assess completed subproject utilization and sustainability performance; (b) evaluate the quality of community sustainability program that includes organizational effectiveness, financial management system, impact & benefits, and the physical/technical condition of subprojects; (c) provide technical assistance among community Operation and Maintenance Groups on observed gaps to ensure functioning of subprojects. Subproject sustainability performance, based on the evaluation result

shall be presented in the Municipal Inter Barangay Forum (MIBF) of succeeding cycles, and may form part of the criteria of subproject prioritization.

The Sustainability Evaluation Tool (SET) is used in evaluating completed subprojects, and includes an evaluation of compliance and performance of communities, LGUs and other stakeholders. The SET evaluates the completed subprojects in terms of its Organizational/ Institutional component, Financial Management System, and Physical/Technical, Operation and Maintenance condition. It also assesses impacts and benefits generated from the subproject. It is administered for completed subprojects every six months. The first evaluation is conducted six months after subproject completion and every six months. Focus Group Discussions/Dialogue (FGD), plenary and meetings are used to collect data, information, and to verify observations made. Record review shall also be done to check the soundness and responsiveness of required documents; such as the organizational Constitution and By-laws, operational policies, ordinance; financial records, O&M plan, and other pertinent documents as maybe applicable. Actual inspection of all structures and sub-structures of the subproject is conducted to assess its physical-technical condition. For roads, water systems and other subprojects that are long, the team may be divided into small groups to conduct the physical-technical evaluation. The final activity of the SET evaluation is an exit conference and action planning based on the findings, observations and recommendations.

GLOSSARY OF TERMS

APPROPRIATE TECHNOLOGY – In the selection of subprojects, locally available technologies, skills, spare parts, materials and other resources including the capacity of community to implement such technology as well as managing the operation and maintenance of the subproject are strictly considered in the design.

BARANGAY ASSEMBLY (BA) – one of the transparency and accountability mechanisms of the Program is the conduct of the BA. The executive Council of the BSPMC reports to the Assembly the status of subproject implementation. Issues are presented and collective resolutions are agreed upon for action. The minutes of the meeting of this assembly is an output required for the release of succeeding tranches.

BSPMC OFFICE – A space provided by the Barangay to the BSPMC, in most cases at the Barangay Hall or any Barangay facility available. All subproject documents need to be properly filed and record keeping is expected to be observed for easy accessing during monitoring activities. Specifically, procurement and financial documents must be properly secured in the office.

FINAL INSPECTION REPORT (FIR) – Submitted together with the Subproject Completion Report (SPCR) to signify that the whole works are done based on plans and specifications. All "In-place" works including the approved variation orders should be reflected on the final report. This will signify that the subproject is 100% complete in accordance to approved plans and specifications.

FUNCTIONALITY AUDIT (FA) –functionality audit is a snapshot of subproject functionality at a given time. Functionality Audit is a sustainability 'red flag' system of the Program. This tool can be administered by community volunteers, MCT/MIAC and DSWD staff. It determines the functionality of completed subprojects based on the planned benefits of objectives. There are three ratings; 1) functional – meaning the subproject is delivering the intended benefits; 2) weak in functionality – portion of the subproject is not functional or it is not delivering the planned benefits; and, 3) non-functional – the subproject is not functional based on plan. Photos showing the subproject functionality and non-functionality are taken during the conduct of FA and will be attached to the FA form. Like the SET, the results of FA are addressed to ensure that subprojects will continue to deliver its full benefits.

JOINT INSPECTION REPORT (JIR) – submitted to support the release of the final tranche. Inspection is conducted when the subproject has reached substantial completion of at least 90% physical accomplishment. This report is prepared to check the acceptable works and assess the remaining works, and to give time for rectification of unacceptable works.

KC-NCDDP STANDARD PLANS AND SPECIFICATION – These are technical plans and specifications prepared for KC-NCDDP subprojects. Most of these were adopted from the standard plans of partner agencies implementing or mandated to such programs/services. This includes Barangay Health Station (BHS) from the Department of Health (DOH), School Building from the Department of Education (DepEd) and structures, Sections and profiles of rural roads and bridges from the Department of Public Works and Highways (DPWH). KC-NCDDP however made some modifications to suit the local conditions and requirement of KC-NCDDP, hence the KC standard plans and specifications.

OPERATION AND MAINTENANCE (O&M) – This refers to the regular/every day running and handling of the subproject including physical activities such as preventive maintenance and repairs for the upkeep and sustain the proper working condition of the system/facility. O&M is critical criteria in the selection of subproject to ensure the feasibility and viability of subproject. In the

conceptualization and planning of any proposed KALAHI-CIDSS subproject, a careful study is conducted. An O&M plan is prepared as part of the proposal.

OPERATION AND MAINTENANCE GROUP (OMG) – This is the group or committee responsible for the operation and maintenance of a subproject. This could be in form of an association (e.g. BAWASA or Barangay Water and Sanitation Association for water systems, PTCA or parent teacher and community association for school buildings), a committee under or the Local Government Unit (LGU) or a partnership of community volunteers and LGUs. Whatever the management arrangements, it is properly assessed during the project development and implementation to ensure the sustainability of the subprojects.

O&M groups are encouraged to be registered to an appropriate agency e.g. SEC, DOLE, CDA, and others. This means that O&M group/organization possesses Legal Personality authorized by Law to transact business and operate to deliver its mandate. Registration is acquired from the Securities and Exchange Commission (SEC), CDA, DOLE, DSWD, and other authorized Agency as maybe appropriate.

Registration of O&M groups mainstreamed (Committees) under LGUs do not need to be registered separately because LGUs already possess the legal requirements. Separate bank account is an option the concerned LGU and community shall consider. This depends on the availability of O&M fund and frequency of deposit. However, the existing bank account of the LGU can be used. In this case, the fund intended for O&M of the subprojects will be a Trust Fund with separate book of account.

PROGRAM OF WORKS (POWs) refers to the complete schedule and plan of works, materials, equipment, labor and other resources needed to implement the subproject. It contains the POW summary, detailed estimates, technical plans/drawings, specifications, implementation schedule (Gantt/Bar chart or PERT CPM) and other supporting documents.

a. POW Summary – It contains the summary of requirements for the subproject such as; basic subproject information, direct cost, indirect cost, sources of funds and cost sharing and stakeholders' signatures.

i. Direct cost means the fund for materials, equipment, labor, construction and supervision;
ii. Indirect cost refers to the "buffer" funds for the subproject. This includes contingency and administrative cost.
iii. For details, refer to the POW summary form attached to the community infrastructure manual.

b. Detailed estimates – part of the POW that contains the breakdown of estimates such as quantity take-off, derivations, capability outputs on labor, materials and equipment.

c. Technical plans – contains the physical detailed drawings, dimensions, sections and other technical requirements drawn on a standard 20" x 30" drawing papers.

d. Signatories– the preparer shall be the project preparation team (PPT) with the assistance of the engineers (TF, Service Provider or LGU); it will be checked and reviewed by engineers (TF or LGU); approved by the Barangay Subproject Management Committee (BSPMC); and, noted by the regional community infrastructure specialist (RCIS). Local chief executives (B/M/PLGU) will sign the POW to conform their local counterpart contribution.

PROGRAM - refers to the KC-NCDDP program. It aims to empower communities, improve local governance and reduce poverty.

SUBPROJECT (SP) - refers to the community projects generated through the KC-NCDDP planning and implementation process. It is a set of development Activities or interventions designed,

implemented, maintained by a partner community in Barangay/s in order to respond/address a need/s or problem/s identified.

There are 4 major categories:

1. Public Goods – These are infrastructure subprojects with the primary intent of providing access. These can be classified as CONSTRUCTION or IMPROVEMENT. Construction refers to an implementation of new facility, while Improvement means repair or rehabilitation of existing facility to improve/increase effectiveness of service. Improvement of existing facilities should not have ongoing or current commitment of interventions.

Types:

a. RURAL ROADS – Small scale (low volume) access road intended for motorcycles and four wheeled vehicle to facilitate transport/delivery of basic commodities and services, farm inputs and produce in communities in the rural areas. It is considered a low-volume road with less than 50 vehicles per day. It connects barangays, sitios, farmlands and serves as the main thoroughfare from farm to market or vice versa. In KC-NCDDP, there is no 'absolute' standard in terms of width and structures to be built. However, rural road subprojects will be technically designed to be responsive to the need of the community. Carriageway ranges from 3 to 4 meters depending on the volume of traffic and use of the road (e.g. if tricycle, motorcycle and small vehicles are the common transportation, a 3 meter carriageway may suffice). It is designed with sufficient drains (line ditches and cross drains) and passing bays. For details, refer to the manual.

Basic structures that may be included are the following:

- Cross Drainage
- Reinforced Concrete Pipe Culvert (RCPC) with wing walls and head walls
- Reinforced Concrete Box Culvert (RCBC) with wing walls and head walls
- Spillway – two kinds are the plain concrete spillway and the vented spillway. Plain concrete spillway is a pavement designed to directly drain water crossing a road and protect the road from scouring. Vented spillway is provided with concrete pipes under the pavement. Water will drain through these RCPCs; when volume increases that RCPs could no longer accommodate the flow, the flow will then spill over the concrete pavement.
- Line Ditch – constructed using various materials most available in the area like concrete, ruble/grouted masonry or an earth canal.
- Portland Cement Concrete Pavement (PCCP) – constructed on road sections with more than 5 % grade, or swampy sections. Thickness – 150 mm; Width – 3-4 meters.
- Tire path – concrete pavement similar with PCCP but with width of 1.0 meters constructed on wheel sides only.
- Slope protection – various type of structures including grouted riprap, rubble masonry, concrete and gabion

b. RURAL BRIDGES – A small scale structures spanning and providing passage for vehicles and pedestrian over a gap or barrier, such as a river/creek or gullies. This is to connect or maintain accessibility of rural roads or pathways. Two sub-categories are footbridge and rural road bridge

1. Footbridge – transportation access intended for human pedestrian with width ranging from 0.60m to 1.20m. Footbridges could be designed to accommodate a motorcycle.
2. Reinforced Concrete Foot Bridge (RCFB) - structural components are mainly concrete reinforced with steel bars.
3. Cable Foot Bridge (CFB) – Foot Bridge is suspended with high tensile cable wire.
4. Rural Road Bridge (RRB) – Three to four meters width, commonly used is the Reinforced Concrete Deck Girder (RCDG) Bridge.

c. PATHWAYS – A 0.50m to 2.0 meters width access intended mainly for human pedestrian. It could also be designed to accommodate motor/tricycles.

d. SCHOOL BUILDING – A facility intended for basic education such as high school and elementary levels. Standard is adopted from the Department of Education (Dep-Ed); 7.0 m x 9.0 m (63 sq.m.) floor area per class room. Basic amenities including armchairs/desks, teacher table and writing board are part of the standard in order for the facility to function upon completion.

The standard plan for school building includes comfort rooms for males and females.

Various materials can be used depending on what is available and appropriate in the area. For roof framing, wooden or steel frames; roof can be corrugated GI sheets or long span; ceiling can be plywood or fiber cement (ficem) board on wooden or aluminum frames; windows can be jalousie or steel framed; wall shall be CHB or wood planks on wooden studs; completely painted

e. DAY CARE CENTER – A facility intended for preparatory education. Standard floor area is 6 meters x 8 meters (48 sq.m). Similar with the school subproject, basic amenities are provided. These include chairs, tables, shelves, writing board and others. Comfort rooms (male & female) and lavatory are also provided. Locally available materials are considered. For details, refer to the standard plan.

f. BARANGAY HEALTH STATION – A facility intended for basic health services in a Barangay/s. Standard floor area is 6 m x 8 m (48 s-m) adopted from the Department of Health (DOH). Basic amenities are integrated in the standard design. These include delivery table, consultation table, medicines kits, weighing scales and other basic equipment.

g. WATER SYSTEM – A facility technically designed to convey potable water to communities. Two common types are gravity and pump driven systems. Systems using renewable energies such as ramp pump, wind mill, rain collectors and solar panels are encouraged, however, viability of any proposed system must be considered. A thorough study including hydraulic analysis must be conducted to ensure technical viability of any proposed water system.

There are three levels of a water system.

1. LEVEL 1 – Direct supply is drawn from the source; no transmission/distribution line e.g. hand pump, dug wells, springs.
2. LEVEL II – Water supply is conveyed to the users/communities through transmission/distribution pipe line. Common tap stand are strategically shared by 7 – 10 households.
3. LEVEL III – Similar with level II only that households are connected directly to the distribution lines.

h. RURAL ELECTRIFICATION – Subprojects that brings electrical power to rural areas.

1. On – Grid Electrification – electrical power is supplied by electric cooperatives such as BOHECO in Bohol, DANECO in Davao provinces, QUEZELCO in Quezon province, etc.
2. Off-Grid – electrical power is supplied using generators not greater than 10 KVA. Power supply is intended for lighting and small electrical equipment such as radio. This is advisable for small communities or household groupings of not greater than 30 households. The load limit is recommended considering operation and maintenance capacity of rural communities.
3. Renewable Energy – electrical power is supplied by natural resources such as sunlight, wind, waterfalls, and others. While this is encouraged, technical study must be made to ensure the functionality of the subproject upon completion.

i. MULTI-PURPOSE BUILDING – This subproject is intended for community trainings or any capability building activities, storage of agricultural produce, and any community purpose not under

the Program negative list. Floor area ranges from 48 sq.m. (6m x 8 m) to 63 sq.m. (7m x 9m). Similar with the other building subprojects, the materials to be used varies on the available local resource.

j. SMALL SCALE IRRIGATION – Similar with other subprojects, this is a community managed communal irrigation project (CIP) with irrigable area not to exceed 100 ha. Gravity fed through concrete line canal or pipes. Pumps may be used for smaller areas not exceeding 10ha. High maintenance pumps are not encouraged.

2. Enterprise – These are facilities (Infrastructure or Infrastructure with Capacity building component) with the primary intent of generating income after completion. Similar to Public Good, these can be classified as Construction or Improvement. e.g. of Subproject type like Meat Processing Facility, Corn mill, Rice mill.

3. Human Resource Development– These are 'soft ' Subprojects with the primary intent of providing Capability to the community e.g. Skills Training, Literacy Programs and others.

4. Environmental Protection and Conservation

a. SEAWALL – a structure to protect the community near the coast. It is constructed at the inland part to reduce/stop the effect of waves in scouring the shoreline where human settlement is located. It is constructed from a variety of construction materials like reinforced concrete, rubble masonry and gabions.

b. SLOPE PROTECTION – structures to protect the earth grade from eroding/collapsing. Common structures are rubble masonry, grouted riprap, gabion and reinforced concrete.

c. RIVER CONTROL – structure constructed to confine stream flow and protect scouring/damages of river banks. Similar with the seawall subproject, it is constructed from a variety of construction materials like reinforced concrete, rubble masonry and gabions.

d. DRAINAGE – subprojects intended to remove or discharge surface water. These are constructed in communities to drain run-off to avoid flooding. Drainage structures include reinforced concrete pipes (RCPCs), reinforced concrete box culvert (RCBCs), spillways, concrete and earth canals. Similar structures subprojects implemented on existing roads shall be classified under road improvement.

e. WASTE/SANITATION MANAGEMENT FACILITY – These are subprojects intended to promote a healthy environment. However, any proposed facility should be prepared with a study to ensure relevance to the goals of KC-NCDDP.

SUBPROJECT COMPLETION REPORT (SPCR) – Milestones, important undertakings and information of the subproject are captured in this document. The SPCR must be prepared in advance before the date of the inauguration to serve as the highlight of the event together with the Mutual Partnership Agreement (MPA).

SUBPROJECT FEASIBILITY AND VIABILITY – KALAHI-CIDSS subprojects undergo the process of feasibility and viability check. At the minimum, subproject shall satisfy the cost effectiveness analysis (CEA) with benefit cost ratio of ≥ 1.0. This runs from participatory situational analysis (PSA) to project development stage to ensure that any subproject proposed by a community is responsive to their need/s and could be sustained by the same community or in partnership with their local government. Aside from being responsive, appropriate technology, operation and maintenance capability of communities are ensured/assessed during these stages for the sustainability of services and subprojects.

SUSTAINABILITY EVALUATION TOOL (SET) – this is the evaluation tool used to assess the sustainability of the completed subprojects. Six months after subprojects completion and six months thereafter, a regular monitoring and evaluation is conducted by a composite team called the multi-stakeholders inspectorate team (MSIT). MSIT is composed of municipal representatives (MIAC and Local Officials) and Community representatives (Barangay officials and O&M groups). This activity provides the venue for Communities both at the Municipal and Barangay level to jointly assess the subproject sustainability, operation and maintenance performance. Gaps identified during this evaluation will be discussed and provided with recommendations to the O&M group. Action Plan is developed as guide for the community O&M group performs the recommendations; likewise, the Municipal Inter Agency Committee (MIAC) shall continue to monitor the implementation of the recommendations and provides technical assistance. A SP sustainability evaluation (SET) is used for this activity.

VARIATION ORDER – refers to the approved change in the program of works (POW). Variation order is prepared due to the need to add or reduce the quantities, cost or scope of works in order to complete and ensure the functionality of the subproject. The changes (scope of works) should be within the physical target (coverage) of the subproject and the cost should be within the original total estimated subproject cost (TEPC). Should there be additional cost; implementing community shall be responsible in mobilizing the cost required. Project staff shall guide the community volunteers in preparing the necessary requirements. Cost of variation order shall not exceed 10% of the direct cost.

Variation order is prepared by the subproject implementation team with the assistance of the Project Engineer (Technical Empowerment Facilitator, Municipal Engineer or service provider), and approved by the Barangay Subproject Management Committee Chairman (BSPMC).

ANNEX 1
TECHNICAL GUIDELINES FOR ROADS AND BRIDGES

Most of the covered rural communities need roads access or the rehabilitation of existing roads which give access to the municipality, including access roads and bridges to reach certain barangays. In most rural development subprojects, particularly community driven development, rural access is frequently identified as the pressing need of the communities. Once the rural access subproject is in place, economic activities increases and progress is felt by the target communities together with its neighboring barangays.

This annex will discuss subproject procedures in implementing rural access. It covers: identification; design consideration and plans preparation; presentation of detailed cost estimates and program of works; procurement packaging and construction methods adoptable to the locality. Standard work items[6] will also be discussed to ensure common understanding and terminology between technical points of view and layman's terms.

Investments for horizontal subprojects such as roads usually require a significant amount of financial resources. The technical staff involved in the selection process and in the designing of the road section must set certain criteria to be able to recommend an appropriate design for a particular location or situation. The following should be taken into consideration for the construction of rural roads.

1. Minimum selection criteria

1.1 Road Access **-** the criteria and requirements for the selection of rural access in the subproject area are the following:

- Priority road networks are those which are improvements to existing roads;
- Any road section selected for development/improvement that would link the community to existing all weather roads or to other barangays within the road network (village access road).
- Any road subproject section selected for development would link from farm to barangay center within target communities (farmland access roads)
- Improvements to critical access points outside the barangay.
- All proposed rural access improvements (both barangay roads and farm access tracks) would generate an economic rate of return.
- Subproject beneficiaries and community volunteers are willing to support the pre-implementation activities such as traverse and profile surveys, land holding identification, traverse by the road section and negotiation or settlement of right of way (ROW).
- Less environmental impact is expected along the proposed road sections. Otherwise, environmental impact can be mitigated and must be clearly stated in the Environmental and Social Management Plan.
- Provision of adequate drainage structures and slope protections and other similar structures that will protect and support the road.
- Road route shall not traverse swampy, log over and flood prone areas and in all cases earthworks (e.g. excavation and embankment) pay item shall be minimal.
- Proposed road segment shall be limited to barangay roads and avoid funding road sections classified as provincial and national.[7] These are considered within the mandate of provincial government and DPWH.

[7]November 2004 RIE & RFA Fiduciary Workshop Agreements

- LGU and community are willing to provide the required equity either in cash or in kind.

1.2 Bridges – the requirements for this subproject type are the following:

- A component of road segment, or a standalone proposal in the development/improvement of village access roads, farmland access and or road access leading to the target barangay or where the demand is required.
- Project beneficiaries and volunteers are willing to support pre-implementation activities such as surveys, land holding identification traverse by the section and settlement of right of way.
- Hanging Bridge design must be reviewed and approved by technical staff of the NCDDP/DPWH/PEO/Municipal Engineer.
- No quarrying within 1 kilometer of upstream and downstream side of the bridge site.
- All design for bridges must not fall short of the technical requirements used by DPWH and engineering standards.
- Sufficient and adequate protection works or structures must be provided so as not to endanger the structural quality of the bridge
- Bridges on critical river beds such as swamp, log overs, and other soft river bed areas must be provided with geo-technical evaluation.
- LGU and community members are willing to provide the required equity either in cash or in kind.

2. Selection of appropriate design and technology application

The selection of proposed road sections for development must pass the minimum criteria mentioned above. Initial data gathering of barangays and municipal profiles are undertaken as basis for Team planning on the appropriate approaches during field activities.

For proposed road sections for improvement or construction, the Technical Facilitator (TF) and other municipal technical staff have to make an initial site validation and gather data necessary for design considerations during the social preparation stage. A Site Validation Report for road access has to be filled-up by the validating team for this purpose. Photo documentation (geo-tagged) is necessary to determine the extent of possible work items to be incorporated in the program. The photos must be taken from one vantage point as reference for the next stages of subproject implementation. The same vantage point will be the reference in order to document the changes or improvement of the proposed intervention. After the validation, an initial analysis has to be made by the staff in order to assist the community in deciding what appropriate design can be derived based from gathered data.

During the conduct of the said subproject preliminary or site validation, geotag photos will be taken on the proposed subproject sites and will capture critical aspect or condition of the proposed subproject like road alignment for roads, irrigation canal and water line alignment including location of water source and concrete reservoirs. All geotag photos will be uploaded to the KC-NCDDP website to provide the historical photo documentation of the subproject.

Other factors to consider are: a) the socio-cultural practices of the area and, and b) the capacity of the community to undertake operation and maintenance activities after the completion of the road. The design should also consider: a) the existing and potential agricultural produce, and, b)

available types of transportation that will use the road, so as to limit the width and materials to be adopted.

The available equipment which will be needed during the implementation stage has to be identified, including other alternatives. If the municipality has available equipment to be utilized during implementation, an inventory of the pool of equipment has to be undertaken by the TF. The pro-forma for inventory of available resources at the municipality is accomplished during the social investigation stage.

3. Preparation of detailed engineering requirements

Once the selection has been finalized and proposed interventions prioritized, initial activities for the preparation of required engineering documents will commence immediately.

If the community members decide to make use of the TAF[8], a barangay assembly resolution has to be passed asking the subproject to release funds to pay service provider/s. The ACT, through the TFs, should be ready with the inventory list of service providers. The ACT will assist the Project Preparation Team in processing Request for Fund Release (RFR). They should validate the request for TAF using the Eligibility Checklist.

Once the service providers are engaged, they should be asked to attend the Project Development Workshop where an orientation on the KC NCDDP subproject technical requirements, as well as the selection and approval process, will be given. Their involvement in community development activities will emphasize the importance of their outputs, and help ensure the completion of the subproject.

Some of the technical requirements needed for a road and bridge subprojects are listed and discussed below. The technical preparations should be carried out by the service providers hired or by the municipal engineering office. The TF, from time to time, will assess and monitor the progress of the technical preparation. When there is a need for a respective agency to be involved in the preparation of technical proposal, the ACT will assist the volunteers in the coordination activity.

The schedule of detailed engineering activities shall include the following but should not limited to;

a. Site Investigation
b. Survey
c. Foundation Investigation
d. Soils and Materials Investigation
e. Preparation of Design
f. Preparation of Specifications
g. Preparation of Quantity and Cost Estimates
h. Preparation of Program of Work
i. Preparation of Proposed Construction Schedule (and estimated cash flow for subprojects with schedule over six months)

3.1. Site investigation

This activity includes, but is not limited to, identification of possible routes for roads and bridges, or drainage systems. It may cover relevant areas that maybe useful for decision-making during the detailed planning of the subproject. The involvement of the community members/volunteers is very important as they are more knowledgeable of the area.

[8] Technical Assistance Fund in the amount of P15,000 per barangay is granted to communities for paying the technical services provided by competent service provider/s hired by the Project Preparation Team.

The decision on the choice of routes, structures that are to be built is dependent on the following information: information given by the local people; information from the field data; and information gathered using the validation form of the subproject.

In all cases, decision in choosing the site location for the subproject must be anchored on the following:

1. Cost of subproject implementation must be economical
2. Less environmental impact and or environment impact can be mitigated
3. Availability of construction materials with in the area.
4. That the technical/design requirement of the subproject is technically feasible and implementable.

3.2. Surveys

Field surveys are conducted when the possible routes for roads, bridges or other applicable structures have been chosen and identified. The common activity includes traverse, profile, cross-section and site surveys. For some critical routes that will require topographic and soil survey, the proponent should ask the service provider to perform the work needed. Also, survey of lots that will be affected during the implementation stage should be simultaneously undertaken. This will give lead time for the communities to negotiate with affected landowners for the acquisition of property.

The involvement of the community members and recognized local leaders is crucial at this stage of the detailed engineering process as well as the identification of lot owners affected.

The following types of survey will guide the designer on what needs to be done based from the actual situation of the proposed site. Some of the surveys may not be required for the specific subproject proposal.

3.2.1. Traverse survey - In road subprojects, this can be undertaken simultaneously with topographic survey. This survey is conducted to identify the proposed location of the road on the ground. Likewise, location of permanent structures and water ways are mapped out including the establishment of horizontal and vertical controls, right of way limits and limits of ROW for every lot owner. The result of this survey will provide information whether to continue the proposed road alignment or to choose another route. The survey results will also determine if there are lot owners affected by the subproject.

3.2.2. Profile survey – This survey will determine the actual ground elevation of any required location, based on the alignment established during the traverse survey. The result of this type of survey will provide information on: levels of cut and fill in every road sections; existing river bed elevation beneath the longitudinal centerline of the bridge; the level of excavation of pipe cross-drains. For road rehabilitation or improvement, it is better to follow the grade of the existing road elevation to minimize major earth moving activities.

3.2.3. Cross-section survey – This survey will be conducted on road subprojects to determine the relationship between the present surface/road section to that of the designed roadway cross sections. This shall be conducted perpendicular from the centerline of the roadway using cross section level at every 5 meters interval of the centerline of the proposed road progressing to the left and to the right for a maximum of 15 meters. The result of this type of survey will provide information of every

specific road section's earthworks quantity cut or fill. For bridge subprojects, this type of survey will determine the behavior of the water flow and river bed elevations within 200 meters, upstream and downstream, of the proposed centerline of the bridge. Cross section survey should be taken perpendicular and longitudinal to the centerline of the bridge.

3.2.4. Topographic survey - this shall be conducted for roads that are located in critical slopes and for bridge subprojects. The result of this type of survey will provide the required information on ground elevations within the subproject site and the surrounding area, including the location of the natural drainage. Reference maps from NAMRIA can be used for this purpose and are useful for mountainous and very rugged terrain.

3.2.5. Land Use survey – this type of survey identifies the present land use of the selected area for the subproject will be located. This activity will be undertaken simultaneously with traverse/topographic survey. The volunteer members of the survey team will assess and conduct inventory of the present usage of land within the influence area of the proposed road section. Result of this survey will minimize the damage to crops and prevent intrusion to areas declared as national reserve, and will provide initial inputs to agriculture planners.

3.2.6. Hydrologic survey – this type of survey is conducted to determine the flood data, water velocities, sediment load, river or creek morphology, scour depth, and flood discharge. This is normally conducted on rivers and creeks where bridge, spillways and other river crossing will be constructed. Results of this type of survey will provide information on the type of structure to be constructed in a given river, creek or channel. Information taken from the residents of nearby rivers can provide an accurate frequency of flooding per year and the maximum height of flood water. Technically, this survey needs the expertise of DPWH personnel. If information is already gathered by the concerned agency, there is no need to conduct the said survey.

3.3. Foundation investigation (For Bridges)

Foundation investigation is the process of determining the subsurface materials underneath the location of a structure such as a bridge or dam. Due to the complexity of the process and the required data needed for a given problem, different methods may be applied such as: soil exploration, borings or drillings and load test, to name a few. The subsurface soil investigation is used to determine the capacity of the underlying earth structure to support in any given loads. The most common method used in foundation investigation is soil exploration. If information is available in an infrastructure agency like DPWH and Provincial Engineering Office, the survey need not be conducted.

3.3.1. Soil exploration – this is the type of survey which is normally conducted at the proposed location of a bridge structure, specifically, a bridge abutment and pier. This will determine the soil strata beneath the earth surface where structures will be erected to avoid costly redesigning and probable scour depth at the bridge abutments and piers. The result of this type of survey will determine the type of bridge foundation to be constructed in relation to its soil foundation and the load that it can carry. The BITs can provide additional information such as; the type soil of the river bed, structures constructed if any; and other information that is substantial to the safety of the structure.

3.4. Soil and materials investigation

Soil and materials investigation are conducted along the proposed road route thru several methods. One common method is the use of bored holes or test pits at identified locations to verify the type of soil or earth materials beneath the surface of the earth.

3.4.1. Soil survey – This is conducted by extracting earth samples at several locations, which are then brought to the laboratory for analysis. The analysis results determine whether the type of soil beneath the existing surface will determine on what sub-structure (i.e., spread footing, reinforced concrete piles) is appropriate. However, due to the limited depth of the boring equipment, earth subsurface beyond reach cannot be determined.

This type of survey is expensive and time-consuming for use under the Program, and thus, can be impractical and expensive on the part of the communities. Other simpler methods should be explored such as: assessing the present land use and vegetative cover in the area; analyzing exposed earth structures near or adjacent to the proposed subproject; and information gathered from the nearby residents or lot owners in the area.

4. Preparation of design and technical plans

Depending on the actual field condition of the area, the following basic design criteria may be adopted in the design for barangay roads. It is noteworthy to consider in the design the cost effectiveness for the investment.

4.1. Basic Design Considerations for Gravel Roads:

Criteria	Limits
Road Category	Barangay
Type of Road	Gravel surface
Roadway width	6.00 meters
Road Carriage Width	4.00 meters
Road Shoulder Width	1.00 meter both sides
Sub-base thick and width	0.15 meters & 4.00 meters
Base course thick and width	0.15 meters & 4.00 meters
Max. Grade	10.00%
Acceptable Grade (limited)	10.00%-15.00% (PCCP required)
Grade Design	As much as possible grade lines must follow the existing terrain specially for improvements
Design Speed for: 1. flat terrain 2. rolling 3. mountainous	 60 kms/hr. 40 kms/hr. 30 kms/hr.

4.1.1 Design Restrictions

a. Roads should not be located in swampy, log over, and flood prone areas.
b. Steep slopes must be avoided.
c. Large volumes of excavation must be avoided or should only be minimal.
d. “Thru cut” section must be avoided as much as possible.

e. The project design should cover only barangay and farm access roads; improvement of provincial and national roads are not within the scope of the Program.

4.1.2 Alternative Designs

a. For road improvements, the road profile of the existing road should be followed, where possible. This will minimizes the earthmoving activities of the proposed subproject.
b. Tire-Path can be adopted as an alternative design in critical slope areas or concreting of portions, but with limited width.
c. The road width may vary depending on the type of vehicular traffic plying the proposed road section. In areas where the standard width is not applicable, then the design must suite the field condition. Always consider the capacity of the community for operating and maintaining the road once it is completed.

d. In areas where the above-mentioned design considerations are not cost effective, the technical staff should closely coordinate with the local engineering office/s for other applicable alternate designs.
e. In areas where scarcity of surface material is experienced, other technology like soil stabilization maybe introduced using the in-situ materials. This is proven to be cost effective particularly during the operation and maintenance period.

4.2. Basic Design Considerations for Bridge(s):

Criteria	Limits
Type of Bridge	RCDG
Number of lanes	Single lane
Width of Deck slab	4.00 meters
Shoulder Width	.36 meter both sides
LOADINGS : Live Load Dead Load Impact	MS 18 Conc. + wearing course = 1.054 kPA I = 15.28/L+3S I=.3max
Other Considerations: 1. Bridge Abutment and pier must rest on concrete piles	

4.2.1. Design Restrictions:

1. Bridge structure(s) must not be located in river beds.

2. In all cases where bridge length ranges from 20 meters to 40 meters, no pier shall be provided in the middle of the river.
3. Avoid constructing bridges on fault lines or frequently eroded areas.

4.2.2. Technical Plans (Road Access)

All engineering plans for roads shall be prepared in accordance with the above-mentioned design requirements. These shall support the project proposals presented by the various communities. It is the responsibility of the local government unit, thru its engineering office, to assist the communities in the preparation of the required technical plans. In some cases, the Project Preparation Team may hire a service provider/s to prepare the technical plans for road segments that require complex work like excavation and other earthmoving pay items.

Measurements and computations in the preparation of engineering plans shall be in metric system and shall be prepared and submitted with the following:

1. Cover Page of the plans
2. Title of the proposed subproject
3. Location of the proposed subproject (region, province, municipality).
4. Size of the drawing sheets for roads and bridges should be 50 cms. (width) x 100 cms. (length) or A3 size with larger and readable scale
5. For road rehabilitation/improvement proposals with minimum earthworks that will not require survey works, schedules of pay items and a straight line diagram may be prepared by the proponent. This should also be drawn in the drawing sheet.
6. Detailed drawings for component structures like cross-drains and headwalls and canals.

Contents of the engineering plans:

1. **Traverse Plan or Road Plan** - The plan must be drawn in a half rolled tracing paper on top of the half rolled cross-section paper or in A3 size with dimensions as indicated above. This shall include, but is not limited to, the following:

    a. The plan must show the centerline of the road subproject; the width of the roadway, the shoulders and the right of way limits;
    b. Azimuth, distance, elements of curve, coordinates super elevation and widening of every curve and design speed shall be specified.
    c. Elevation of bench marks with accurate descriptions of reference points and controlling points with azimuth and distance shall be shown.
    d. Information and data of existing roads, intersections, railways, rivers, waterways, dwelling units and other structures must be indicated in the plan.
    e. Existing and proposed structures such as: concrete pavements, bridges, box culverts, pipes and other drainage structures must be indicated.
    f. Location of lined canals, protection work structures and other similar structures must likewise be indicated.
    g. The scale to be adopted must be 1:100M or larger scale if in A3 size of paper

2. **Profile Plan -** shall be drawn below the traverse and road plan. Stationing on the profile plan must start with the same station limits as that of the road plan or traverse plan and likewise shall end at the same station limits. The profile plan must indicate, but is not limited to, the following:

    a. Elements of the parabolic curve;
    b. Grade lines shall be indicated: (+) for ascending and (-) for descending;

c. Provide station limits for existing and proposed structures including concrete pavements, box culverts, pipe culverts, riprap, bridges and others.
d. Designed grade corresponds to the finished grade line, including top of pavements, slab and road surface.
e. The bottom side of the profile sheet shall indicate the full twenty (20) meters station limits, including the original and design elevations.
f. Maximum, ordinary and highest water elevation of river, creeks and canals shall be indicated.
g. Scale must be 1:100m vertical and 1:1000 horizontal.

3. **Cross-section Plan –** This plan shall be drawn in the cross section paper for every 20 meters of the proposed road. This indicates the type of cross section such as: cut sections, embankment sections, and cut and fill sections. With this plan, the area of cut and fill for every 20 meters full station can be identified and computed.

    a. Actual ground elevation shall be indicated and inked.
    b. Designed ground elevation shall be indicated and penciled.
    c. Scale must be 1:100m horizontal and vertical.
    d. Design of cut and fill must be clearly reflected on the plan
    e. Indicate the elevations of pavements, box culverts, pipe culverts, side slope protections and other relevant structures.

4. **Typical Roadway Designs** for roads cross section cut, fill, and cut and fill showing the dimensions of the roadway, carriageway, road shoulders, thickness of pavements, aggregate base course, sub-base course. Plans should be drawn to scale.

5. **Reinforced Concrete Box Culverts & Pipe Culverts(RCBC)**

    a. Plan of RCBC & RCPC
    b. Section, details and the concrete and bar bending schedules
    c. Schedules and or location of RCBC & RCPC
    d. All plans must be drawn to an appropriate scale

6. **Gabions, Grouted Riprap and Stone Masonry**
    a. Plan for Gabions, canals, grouted riprap and stone masonry
    b. Sections and Details
    c. Schedules and or Locations
    d. Specifications of materials to be used
    e. All plans must be drawn to an appropriate scale

For road section improvements that will not require a significant volume of earthworks (excavation and embankment) or following existing grade lines or just concreting, a straight-line diagram is acceptable and must be prepared to indicate the station limits of the proposed works (surface materials, cross-drains and drainage structures). Structures must be drawn in appropriate scale.

4.2.3. Bridges

1. **Topographic Plan–** the plan should be prepared in ink and drawn to scale 1:500m to 1:1000m, depending on the width of the river, and showing the following:
    a. Contours drawn shall use fine brown or black ink. Contours in multiples of five shall be slightly heavier and properly labeled at such intervals.

b. Highway alignment with at least two (2%) percent markers and points on each bank of the river properly described and referenced, with horizontal curves and elements shown.
c. Each bank of the river should have a benchmark which is clearly and properly described and referenced at least once.
d. The river course which shows the direction of flow drawn in blue or black ink.

2. **Profile Plan** - shall be plotted in following scale depending on the width of the river:

Width of the River	Scale
Up to 30 m	1:80m
30 to 60m	1:100m
60 to 120m	1:2000m
120 to 200m	1:333 1/3m.
200 to 250m	1:400m
Over 250m	1:500m

a. The maximum flood level experienced, ordinary flood level and lowest flood level should always be indicated in the plan
b. Must extend 100 meters to 200 meters upstream and downstream and shall be superimposed on the profile of the road centerline in order to determine the relative drop of riverbed within the distance of the section.
c. If the river has more than one channel, the profile of the streambed, along with the centerline of the channels, shall be considered.
d. Location, depth of riverbed and other boring data, if available, shall be shown in the profile.

3. **Other Plans**

a. Table of Bench Marks
b. Plan of the Bridge and Bridge profile
c. Standard Pile Drawings (if piles used), including General Notes and Pile schedules and quantities.
d. Abutment Plan, including protection structures and details
e. Plan of the Diaphragm and Details
f. Plan of concrete coping indicating the connection between girders and slab, including the details.
g. Foundation and Footing Plan, including details
h. Plan of the Shaft including details
i. Typical Plan of Girders (center and end girders), including details.
j. Plan of the Slab, including details (center and end slab) showing connections to end structures.
k. Back wall and Girder seat plans and details.
l. Plan and Details of Railings and Sidewalk, indicating their connections and the details of the two (2) structures.
m. Plan and Details of Bridge approaches, including profile, plan, cross sections and the design of protection works and drainage structures, if any.

n. All plans shall be drawn to scale with references indicated to check elevation and measurements.
o. Design assumptions and computations shall be provided in a bond paper including quantity computations.

4.3. Technical specifications for proposed work items

The "Technical Specifications for Roads and Bridges" sample lists in a simplified manner the specifications taken from the standards of Department of Public Works and Highways. The specifications that are commonly used for rural roads and bridges are given emphasis on the sub-manual. This list should be attached to the plans and program of works using the latest edition. The TF should explain the technical specifications to the community volunteers in layman's terms for them to appreciate it. Specifications are important during the procurement of materials, preparation and monitoring quality control programs during subproject implementation.

If the technical specifications do not apply to the area, the Engineer may prepare specifications that will suite the condition of the area. The subproject acknowledges that some localities would have difficulty complying with the standard specification provided by the DPWH. Some of these situations involve barangays located in an island where access to equipment is too difficult and expensive, or far flung areas where mobilization of necessary equipment is too expensive.

The Engineer who will prepare the technical plans and POWs must ensure that work items used under the subproject are the standards set by the government. Technical Facilitators are encouraged to read and understand the technical specifications to be aware of the details of the work items.

The list of some work items, as listed on the DPWH Standard Specifications for Roads and Bridges, are discussed below. Detailed descriptions of work items are provided to guide field Engineers in the design for the proposed subproject. This will facilitate selection of appropriate work items.

4.3.1. Earthwork Pay Items

Item 100 Clearing and Grubbing - This item refers to clearing, grubbing, removing and disposing of all vegetation and debris, as designated in the Contract, except those objects designated to remain in place or are to be removed in consonance with other provisions of this Specification. The work shall also include the preservation from injury or defacement of all objects designated to remain. Unit of measurement should be in Hectares (ha.) or Square Meter (sq.m.).

Item 101 Removal of Existing Structures and Obstructions - This Item refers to the removal, wholly or in part, and satisfactory disposal of all buildings, fences, structures, old pavements, abandoned pipe lines, and any other obstructions which are not designated or permitted to remain, except for the obstructions to be removed and disposed of under other items in the Contract. It shall also include the salvaging of designated materials and backfilling the resulting trenches, holes, and pits. Unit of measurement should be in Cubic Meter (cu.m.).

Item 102 Excavation - This Item refers to roadway, drainage and borrow excavation, and the disposal of material in accordance with this Specification and in conformity with the lines, grades and dimensions shown on the Plans or established by the Engineer. Unit of measurement should be in Cubic Meter (cu.m.).

Item 103 Structure Excavation - This Item refers to the necessary excavation for foundation of bridges, culverts, under drains, and other structures not otherwise provided for in the Specifications. Except as otherwise provided for pipe culverts, the backfilling of completed structures and the disposal of all excavated surplus materials, shall be in accordance with these Specifications and in reasonably close conformity with the Plans or as established by the Engineer.

This Item shall include necessary diverting of live streams, bailing, pumping, draining, sheeting, bracing, and the necessary construction of cribs and cofferdams, and furnishing the materials therefore, and the subsequent removal of cribs and cofferdams and the placing of all necessary backfill. Unit of measurement should be in Cubic Meter (cu.m.).

Item 104 Embankment- This Item shall refer to the construction of embankment in accordance with this Specification and in conformity with the lines, grades and dimensions shown on the Plans or established by the Engineer. Unit of measurement should be in Cubic Meter (cu.m.).

Item 105 Sub-grade Preparation - This Item shall consist of the preparation of the sub-grade for the support of overlying structural layers. It shall extend to full width of the roadway. Unless authorized by the Engineer, sub-grade preparation shall not be done unless the Contractor is able to start immediately the construction of the pavement structure. Unit of measurement should be in Cubic Meter (cu.m.).

4.3.2 Sub-base and Base Course Items

Item 200 Aggregate Sub-base Course - This item shall refer to furnishing, placing and compacting an aggregate sub-base course on a prepared sub-grade in accordance with this Specification including the lines, grades and cross-sections shown on the Plans, or as directed by the Engineer.

Aggregate for sub-base shall consist of hard, durable particles or fragments of crushed stone, crushed slag, or crushed or natural gravel and filler of natural or crushed sand or other finely divided mineral matter. The composite material shall be free from vegetable matter and lumps or balls of clay, and shall be of such nature that it can be compacted readily to form a firm, stable sub-base. Unit of measurement should be in Cubic Meter (cu.m.).

Item 201 Aggregate Base Course - This Item shall refer to furnishing, placing and compacting an aggregate base course on a prepared subgrade/sub base in accordance with this Specification, including the lines, grades, thickness and typical cross-sections shown on the Plans.

In some areas where the conventional base course materials are scarce or non-available, the use of 40% weathered limestone blended with 60% crushed stones or gravel shall be allowed, provided that the blended materials meet the requirements of this Item.

There are other sub base materials that can be adopted if applicable to the area. But the items listed above are the most common pay items used. Unit of measurement should be in Cubic Meter (cu.m.).

4.3.3. Surface Course Item

Several surface materials that can be applied like Bituminous Macadam Pavement or Bituminous Concrete surface, but the most common is the Portland Cement Concrete pavement.

Item 311 Portland Cement Concrete Pavement - This Item shall refer to a pavement made of Portland Cement Concrete, with or without reinforcement, constructed on the prepared base in accordance with this Specification and in conformity with lines, grades, thickness and typical cross-section shown on the Plans. Unit of measurement should be in Square Meter (sq.m.).

4.3.4 Bridge Construction

There are several pay items listed under the bridge construction works. Most of these work items refer to the construction of concrete bridges. In the KC Project, most of the bridge subprojects are hanging and foot bridges which require only important pay items, such as those listed below.

Item 404 Reinforcing Steel - This Item shall refer to the furnishing, bending, fabricating and placing of steel reinforcement which is of the type, size, shape and grade required in accordance with this Specification and in conformity with the requirements shown on the Plans or as directed by the Engineer. Unit of measurement should be in Kilograms (kg.)

Item 405 Structural Concrete - This Item shall refer to the furnishing, bending, placing and finishing of concrete in all structures except pavements, in accordance with this Specification and conforming to the lines, grades, and dimensions shown on the Plans. Concrete shall consist of a mixture of Portland Cement, fine aggregate, coarse aggregate, admixture when specified, and water mixed in the proportions specified or approved by the Engineer. Unit of measurement should be in Cubic Meter (cu.m.).

4.3.5 Drainage and Slope Protection Structure Items

Item 500 Pipe Culverts and Storm Drains - This item shall refer to the construction or reconstruction of pipe culverts and storm drains, hereinafter referred to as “conduit”, in accordance with this Specification and in conformity with the lines and grades shown on the Plans or as established by the Engineer. Unit of measurement should be in Linear Meter (ln.m.).

Item 505 Riprap and Grouted Riprap - This Item shall refer to the furnishing and placing of riprap, with or without grout, as the case may be, with or without filter backing, furnished and constructed in accordance with this Specification, and to the lines and grades and dimensions shown on the Plans.

Stones for riprap shall consist of rock, as nearly as rectangular in section as is practical, except that riprap of Class A which may consist of round natural stones. The stones shall be sound, tough, durable, dense, resistant to the action of air and water, and suitable in all respects for the purpose intended. Unit of measurement should be in Cubic Meter (cu.m.).

Item 506 Stone Masonry - This Item shall refer to stone masonry in minor structures, in headwalls for culverts, in retaining walls at the toes of slopes, and at other places called for on the Plans, constructed on the prepared foundation bed, in accordance with this Specification and in conformity with the lines, grades, sections, and dimensions shown on

the Plans or as ordered in writing by the Engineer. Unit of measurement should be in Cubic Meter (cu.m.)

Item 507 Rubble Concrete- This item shall refer to the construction of rubble concrete in accordance with this specification and in conformity with the lines, grades, slopes and dimensions shown in the Plans.

The stone shall be cleaned, hard, and durable and shall be subject to the Engineer's approval. Adobe stone shall not be used, unless otherwise specified. Stones to be used shall be more than 0.015 cubic meter in volume and not less than 75 percent of the total volume of rock embankment and shall consist of stones 0.03 cubic meter in volume as described in Item 506.2. Stones obtained from excavation performed under this contract may be used. Unit of measurement should be in Cubic Meter (cu.m.)

Item 511 Gabions and Mattresses - This Item shall refer to the furnishing, forming wire mesh baskets, and placing rocks installed at the locations designated, in accordance with this Specification and in conformity with the lines, grades, dimensions, and arrangements shown on the Plans or as directed by the Engineer. Unit of measurement should be in Cubic Meter (cu.m.).

5. Preparation of quantity take-off and detailed estimates

Quantity take-off preparation should be based on the result of engineering plans. Cross-sections at 20.00 meters interval of the road profile should be clearly indicated on the plans to determine the volume required for excavation and embankment. Computation of the area and volume can be done using the conventional End-area Method (strip method) or by any computer-aided software available.

Volume computation for base materials (Item 200 & 201) should be a compacted volume. An additional of 15% shrinkage factor should be added to the computed loose volume requirement. The hauling distance and equipment required to haul materials should be properly derived to determine the duration and number of required equipment to complete the subsidiary work items. Embankment and road surface materials also must have a shrinkage factor of 15-20% depending on the type of borrow materials to be used. Examples are provided for guidance:

For 1.0 km of road section: (item 200 surface materials)
Length = 1000 m
Carriage width = 4.00 m
Thickness = 0.15 m
Compacted volume = 600 cubic meters (to be used as the required quantity)

Loose volume = 600 x 1.15 = 690 cubic meters (quantities to be procured)

For computing the quantity of volume required for concrete works and reinforcing steel, a suggested matrix will help the estimator to systematically prepare the estimates.

After identifying all work items its accompanying subsidiary works and corresponding quantities needed, the preparation of detailed cost estimates will follow. Manpower capability output for respective activities including subsidiary works should be derived, specifying number of manpower required and the duration to complete the work item. Capability outputs for manual and equipment

works, including the duration, manpower and equipment requirements, are provided in the Annex [9] for guidance. The example below shows how to make use of the manpower capability output.

> A common excavation will usually require 60 cubic meters. How many days and laborers are required to complete the work? (Capability output is 1.50 cu.m/manday)
>
> 60 cu.m / 1.50 cu.m/manday = 40 Man-days (divide by the number of planned laborers to determine the number of days to accomplish the work), say 10 workers:
>
> 40 MD / 10 laborers = 4 days (to complete the works)

The duration of each work item, including specific work items must be computed properly to fully complete the said item of work. The programmer must consider the construction methods to be applied in order to come up with the desired completion schedule per work item. The construction method has to be written by the engineer in local dialect for easy reference of the volunteers in the absence of the technical staffs.

Presentation of detailed estimates using percentage of labor cost from material cost is definitely not acceptable to KC-NCDDP.

Similarly, in computing the cost of equipment rentals, estimated duration, either in terms of hours or days of operation, should be based from the capability output of the equipment to be used. Information on the prevailing rentals rates of equipment should be available at the ACT office through the TFs. Salary of the equipment operator and fuel consumption can either be included in the rental rates depending on the area and arrangement. Common construction materials should also be established and monitored for price changes. ACT and regional level should maintain a database of said information for establishing unit cost analysis and subproject cost parameters.

Also, during social preparation stage, it is expected that the clear outputs of the Technical Facilitators are the inventory of potential performing Contractors and Suppliers available in the locality and nearby market centers. Prevailing market prices of construction materials and rental rates of equipment should be established to include the labor rates at the locality. Likewise, the Community Empowerment Facilitator (CEF) will also inform the TF on the results of assemblies regarding the community commitment in terms of labor manpower.

For road improvements that will include pay items for clearing and grubbing, the geotagged photo documentation of the specific stations were the proposed item is required should be attached. This will control the over-estimation of the proposed subproject and placing inappropriate pay items in the proposed road subproject. Likewise, the most common lapse is the cost derivation for embankment pay item. If the volume of excavation is greater than the embankment volume required, embankment materials may no longer be needed and the sub-grade preparation can handle the compaction works for this pay item.

Indirect costs like pre-engineering, contingency, hand tools, payment for material testing, supervision cost, contractor's profit, overhead, administrative, and environmental mitigating cost will from part of the total estimated subproject cost.

6. Preparation of Program of Works (POW)

The Program of Works is a document that contains information for identifying every proposed subproject, like: the specific location, name, summary of work items to be undertaken and its corresponding costs. It also contains the physical target, a brief description of the subproject, its

[9] Memorandum dated 30 April 2007

mode of implementation, duration, and the minimum technical manpower and equipment requirements.

The POW shows the relationship of major work items to minor work items based on the percentage weight of each pay item. Percentage share per work item will depend on the total direct item cost divided by the total direct cost. All identified work items must total 100% percentage weight. Bigger percentage weight is considered for major work items while smaller percentage weights are for minor work items.

The cost sharing arrangement must also be reflected in the POW. Grant amount requirement and the distribution of Local Counterpart Contribution can easily be determined from this document. Breakdown of total direct cost in the form of materials, equipment rentals/POL products, skilled and unskilled labor cost can be identified. Likewise, the breakdown of indirect cost and the stakeholder who committed the particular item will also be known.

Though the manual discusses the technical aspects of the design preparations, experiences show that factors affecting the poor implementation of approved subprojects come from the planning stage. For a detailed discussion of this aspect, please refer to the section on Project Development, CEAC Manual.

Pitfalls in Project Implementation (from Planning Stage):

- Inadequate job site information
- Poor definition of materials and technical specifications
- Poor allocation of resources
- Poor cost data and man-hour gathering
- Poor formulation of the tasks per work item
- Poor financial estimates
- Improper scheduling
- Poor communication and client relations

7. Sample Quality Control Program

Minimum quality testing should be conducted to ensure the quality of the work. The following recommended minimum quality tests shall be required per work item.

Work Item/Material	Min. Laboratory Test Required	Field Test
1. Embankment (Item 104) Material which is acceptable and which can be compacted. It can be common or rock.	Grading – 1 (soil of such gradation that all particles will pass a sieve with 75mm (3 in) square openings and not more than 15% will pass the 0.075mm (No. 200) sieve.	Field Density Test (FDT) should meet the minimum compaction of 95%.
	Plasticity Index – 1 (not more than 6)	
2. Sub base Materials (Items 200 & 201) Aggregate sub-base shall consist of hard, durable particles or fragments of crush stone, crushed slag or natural gravel and filler of natural sand.	Grading – 1 (The fraction passing the 0.075mm (No.200) sieve shall not be greater than 0.66 (two thirds) of the fraction passing the 0.425mm (No.40) sieve.	Field Density Test (FDT) should meet the minimum compaction of 100%.
	Plasticity Index – 1 (the fraction	

	passing No.40 sieve shall not be more than 12)	
4. Concrete Works (Item 311) (Item 405)	Beam sample (150mm x 150mm x 525mm) (Compression Test) Cylinder sample (150mm x 300mm) Minimum compressive strength of 20.7 mpa/m2 or 3000 psi at 28 days for Class "A".	
5.Steel Reinforcing Steel (Item 404)	Bending – 1 (for every size of rebars)	
	Tensile Stress – 1 (for every size of rebars)	
6. RCPC	Compression Test per batch of culverts if fabricated on site.	Certification from the supplier that materials delivered passed the test.

8. Measurement of Work

The quantities set out in the Bill of Quantities are the estimated quantities for the works. They should not therefore be taken as the actual and correct quantities of the works to be executed by the contractor in fulfillment of his obligations under the contract. They can vary to up to ten percent (10%) of the contract price to account for variation orders.

The TF or the Municipal Engineer must, except if otherwise stated in the Quantities of the Detailed Designs, measure the value of the works actually in-place in accordance with the contract. This measurement will be the basis for the payment that will be made to the contractor in accordance with the Statement of Work Accomplished.

Sample computation for determining work accomplishments:
Subproject Name: *Improvement of 1.76 kilometers Barangay San Miguel Road:*

Work Items	Qty.	% to total	Qty. Accomp.	Compute % of Accomplishment
Roadway Excavation	1,200 cu.m	13.66%	1,000 cu.m	$\frac{1,000}{1,200}$ x 13.66 x 100 = 11.38%
Structural Excavation	45.00 cu.m	0.91%	30.00 cu.m	$\frac{30.00}{45.00}$ x 0.91 x 100 = 0.61%
Sub-grade preparation	10,560 sq.m	10.47%	7,200 sq.m	$\frac{7,200}{10,560}$ x 10.47 x 100 = 7.14%
Agg. Sub-base Course	1,584 cu.m	69.60%	500 cu.m	$\frac{500}{1,584}$ x 69.60 x 100 = 21.97%
RC Pipe Culverts	21.00 ln.m	5.36%	7.00 ln.m	$\frac{7.00}{21.00}$ x 5.36 x 100 = 1.79%
Total		100%		**= 42.89%**

The quantity considered as accomplished are those that are within the design lines and grades, and are in-place. For roadway excavation, you may refer to the cross section plans and validate the volume excavated from the actual site per station. The 30.00 cu.m represents the excavated volume intended for pipe culverts on the designated stations. For sub-grade preparation, the 7,200 sq.m is already on grade and compacted, while the 500.00 cu.m of sub-base course materials are also on grade and compacted. The 7.00 ln.m of Pipe Culverts are in-placed on the designated station based on the plan and with appropriate collar on the joints.

As presented on the sample computation, the cumulative accomplishment on the cut-off date in preparing the monthly accomplishment report is 42.89%.

For subprojects undertaken by contract, the TF and the Municipal Engineer must conduct an inspection and validate the works accomplished as stated in the Statement of Work Accomplished (SWA) by the contractor. Corresponding test results must be also be secured before payment is made.

9. Maintenance of Roads and Bridges

The barangay and the municipality are generally responsible for the routine maintenance of roads and bridges in their respective areas. Where there is a need to use equipment during maintenance activities, the barangay captains may ask the MEOs/PEOs for the use of road maintenance equipment for maintaining barangay roads and bridges.

Typical road maintenance activities consist of the following activities:

Road Cleaning
Pavement Maintenance and Repair
Vegetation Control
Drainage Cleaning and Repair

Road cleaning is undertaken as a maintenance activity in roads to remove dust, debris and other obstructions from the road surface and road verges. Any obstruction may cause a motorist to swerve into the path of a following vehicle or cause damage from a collision of the vehicle with the debris. This is to ensure safe and smooth traffic for the road users by maintaining the road functions, keeping the road and roadside environment satisfactory, and preventing obstructions to traffic flows, and traffic accidents attributable to dust, dirt, debris or any forms of obstructions on the road.

Road inspection must be done periodically particularly during the rainy season to determine debris accumulation in drainage gutters and ditches to prevent the incidence of flooding, the submergence of the road surface or disaster on the slope during and after rainfall.

Dirt & debris on the road surface and facilities vary depending on the traffic volume, proportion of large vehicles, geometric construction of the road, topographic conditions, meteorological conditions, and roadside condition. The main activity is to collect loads dropped from trucks and debris on road surface which may be hazardous to traffic. Collected waste is transported away in trucks. The frequency of cleaning operations must be determined on the basis of the condition of road and roadside, and quantity and content of dust. During removal of these materials,
a vehicle (truck, etc.) runs along on the shoulder and collected materials are loaded on the truck for transport to a selected dump later.

The roadside facilities include safety devices, signs and drainage facilities such as buried drainage pipes; drainage ditch in the shoulder; vertical drainage; ditch in the slope; drainage ditch in the toe and in benching. Cleaning activities include: cleaning of fences; surfaces of guard rails (painted type only) and posts of hand rails; surfaces of guide signs; regulatory signs, delineators.

After heavy storms accumulated silt, leaves and other materials must be removed from drains so that the facility will be effective. Frequency is traffic volume or weather related. For low height posts guard rails, etc. within splash height of passing vehicles cleaning may be weather related but above splash height would be traffic volume related. Generally once a year for all other facilities is the absolute minimum.

ANNEX 2
TECHNICAL GUIDELINES FOR RURAL WATER SUPPLY SYSTEM

"Safe drinking water and basic sanitation is of crucial importance to the preservation of human health, especially among children. Water-related diseases are the most common cause of illness and death among the poor of developing countries. According to the World Health Organization, 1.6 million deaths of children per year can be attributed to unsafe water, poor sanitation, and lack of hygiene. The WHO/UNICEF Joint Monitoring Program evaluated that meeting the MDG Target 10 would avert 470 000 deaths per year."

World Water Council, Water at a Glance

The original design for water is to sustain life. Without water, life will be impossible. With the onset of development, the demand has evolved from mere domestic use to irrigation, industry, power generation, transportation and recreation.

Although water is abundant, 97% is on the oceans and only 3% is fresh water. The ratio of freshwater is unevenly distributed globally causing water scarcity in some areas. This quantity problem is further exacerbated by unregulated water usage and the population brought by man's activities. Uncontrolled wastes have found their way of degrading the quality of water.

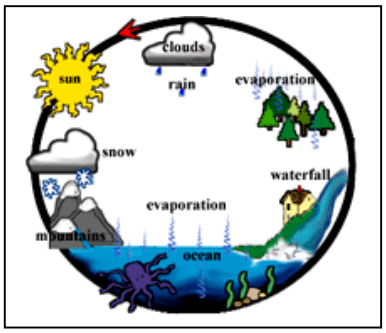
Many areas covered by the Program are generally in need of access to safe potable water supply system. Appropriation and usage of the water are identified as provided for by Law, PD 1067-Water Code of the Philippines. Uses of water for domestic purposes include drinking, washing, bathing, cooking and other household needs, home gardens, and watering of lawns or domestic animals.[10] Potable water is suitable for drinking and cooking purposes as defined by the Philippine National Standard for Drinking Water of 1993. The water must be free of microorganisms or disease-producing bacteria (pathogens). In addition, the water should not possess undesirable tastes, odors, color, level of radioactivity, turbidity or chemicals.

Throughout the years of developing rural areas, more of government and private investments went to the delivery of potable water supply system. But still, access to safe drinking water remains an agenda of the government and is included in the blueprint of the Millennium Development Goals (MDGs). Various experiences in implementing rural water systems are shared by several agencies in the water sector. Planning methodologies, design options, operation and maintenance activities, but the most important aspect is the participation of the community in all stages of implementing water supply system.

Under the KC - NCDDP, water supply subprojects ranked second in terms of number approval. For the Designer to come up with a plan, the need to understand some information related to water cycle and various sources. Project requirements from criteria for selections, application of appropriate technology, preparation of engineering plans will be discuss in this chapter.

[10] Art. 10; P.D. 1067, *Water Code of the Philippines*

1. Water Cycle



The water cycle is also known as the hydrologic cycle. There is the same amount of water on the Earth now as there was when the Earth began. The water cycle is how the earth's water recycles itself.

The cycle includes precipitation, evaporation, condensation, and transpiration. Earth's water keeps changing from liquid water to vapor and then back again. This cycle happens because of the sun's heat and gravity.

2. Water Sources

Types of water sources are classified as Surface, Ground and Atmospheric or simply rainwater.

2.1. Surface water - is the easiest water to understand because we see it every day. It is any water that travels or is stored on top of the ground. This would be the water that is in rivers, lakes, streams, reservoirs, even the oceans--even though we can't drink salt water. Surface water is treated before it becomes drinking water. This is done because things like leaves, fish, animal droppings, and boat fuel can easily get into bodies of water mentioned.

2.2. Ground Water - Any water that is underground is groundwater. In the water cycle, some of the precipitation sinks into the ground and goes into watersheds, aquifers and springs. Groundwater as a source can be extracted through the following:

i. Wells – groundwater can be tapped by digging a hole or sinking pipes into the ground and installing water-drawing equipment such as pumps. Wells can be classified as follows:

Deep Well – are wells with depths greater than 20 meters constructed in areas characterized by aquifers generally located at a depth of more than 20 meters below ground surface.

Shallow Well – wells with depth of not more than 20 meters and are recommended for rural water supply development, particularly level I services. Static water level in these areas are generally within 6 meters below ground surface.

Dug Well – normally, a circular or rectangular in shape with a diameter from 1.0 to 1.50 meters. After the well is dug, it is necessary to put a lining made of permanent materials like masonry, brickworks or reinforced concrete to serve as protection against surface or outside contamination.

ii. Springs – occurs when water in water-bearing stratum reaches the surface of the ground. A spring is the result of an aquifer being filled to the point that the water overflows onto the land surface. Spring can be developed by enlarging the water outlet and constructing an intake structure for water catchment and storage. There are various types of springs as enumerated below:

Depression Spring – formed when the water reaches the surface

Contact Spring– occurs when permeable rock units overlay rocks of much lower permeability. It may result from the water table or perched water table. Another would be where permeable zone occurs between basalt flows in permeable basalt.

Fault Spring – occurs where a faulted rock unit that is impermeable is juxtaposed adjacent to an aquifer water to discharge at the surface.

Sinkhole Spring – water carried through fractures or conduits in limestone may discharge in a low area or sinkhole. Such water is usually under artesian pressure.

Joint and Fracture Spring – occurs when joints, shear and fracture zones develop in low permeability rock and water conducted through these opening appears at the ground surface.

Karst Spring – occurs where sinkholes develop from collapsed caverns.

3. Minimum Selection Criteria

The following are important information needed to analyze the possible water supply situation in the area. This can be done during the environmental scanning or social investigation stage of the technical staff in the barangays.

1. Existing water system used by the community members (e.g. hand pumps or dug wells, level II tap stand etc.). Analyze the causes why the barangay has a problem of access to water if there are existing water system structures.
2. Determine the total number of households of the target service area with, and without, access to water supply system.
3. As much as possible, the water source must be reliable and sufficient to supply the consumption of the target area.
4. Spring source is preferred over underground water source as a water source, particularly if not reliable at the area.
5. Avoid constructing an elevated tank if a ground tank is possible, unless it is necessary and more appropriate.
6. Appropriate construction materials to be used for the system must be carefully selected depending on the type of ground surface, e.g., a rocky terrain might require G.I. pipes, while embedded plastic pipes can be designed for suitable ground surfaces.
7. If the water source is far away from the target area and it will not be economical to construct a piped water system, a design level I or other alternative design, such as rain water collector, can be resorted to, as the case maybe.

The site validation report will help capture the information required to come up with an initial assessment of the subproject area. Technical staffs have to analyze the information to come up with recommended design for the proposed water supply system.

The sanitary conditions and practices of the barangay should also be analyzed. Proposed subproject interventions may not be effective in addressing the health problems of the community if this aspect is ignored.

4. Selection of Appropriate Design and Technology Application

Various forms of technology have already been adopted in rural communities, from conventional hand pumps to modern technology, like solar-powered pump and others. Selection of appropriate technology for water and sanitation subprojects is anchored on the following related concerns at the local level;

i. Institutional support
ii. Technical support
iii. Financial capability
iv. Environmental aspect, and

v. Socio-cultural practices.

The most appropriate technology is the one that delivers the most benefits at the least cost. Thus, one important way of determining the most appropriate combination is through the cost-benefit ratio.[11]

4.1. Levels of service – For a common understanding on the types of water supply systems, the government's definition based on NEDA Board Resolution No. 12, Series of 1995 will be adopted;

Level I – Point Source; a protected well or developed spring with an outlet, but without a distribution system, generally adaptable for rural areas where the houses are thinly scattered. A Level I facility normally serves an average of 15 households. The farthest user is not more than 250 meters from the facility to have an access.

Level II – Communal faucet or water tapstand; a system composed of a source, a reservoir, a piped distribution network and communal faucets. Usually, 1 faucet serves 4-10 households. Generally suitable for rural and urban fringe areas where houses are clustered densely to justify a simple piped system. To have an access, the farthest house is not more than 250 meters from communal faucet.

Level III – Waterworks system or individual house connections, a system composed of a source, a reservoir, a piped distribution network and household taps. It is generally suited for densely populated urban areas.

4.2. Design Considerations – technical and socio-cultural practices need to be considered during the subproject planning and development stage. Based from the results of field/site validation of water sources, observations of the existing water system in the area, the DAC or Service Provider is expected to come up with possible alternative designs.

4.3. Alternative Design – in areas where scarcity of potable water is experienced, like in island communities, an option to construct a rain water collector maybe suggested to the community. This has to be explained to the community as to the rate of consumption per capita.

The technology using the Ferro Cement can also be adopted in the construction of small reservoir.

4.4. Considerations on the Final Design

During the Project Development Workshops at the community level, the Technical Facilitator has to explain the recommended procedures for the selection of water supply system. This must be presented and explained to the community members before finalizing the engineering plan.

Steps	Considerations
1. Choice of technology	✓ Existing and potential water sources

[11] pp. 39, *Water and Sanitations Services for All*, LGSP

	✓ User preference by gender ✓ Service level ✓ Cost ✓ Reliability
2. Initial degree of community management	✓ Skills availability ✓ Capacity to organize & integrate functions ✓ Cost of management ✓ Risk of management failure
3. Division of cost	✓ User's ability and willingness to pay tariff ✓ Availability of subsidies
4. Sustainability	✓ Is service level manageable, affordable and agreed by the community/ies

4.5. Technical Design Considerations[12] - several factors have to be considered in the technical design of water supply system (WSS) in order to be functional and sustainable:

i. Volume of discharge of the proposed water source, either spring or underground source (for level II).

ii. Number of Households, current and projected population.
Projected Population = [1 x (growth rate x design years)] current population
(Used as the design population)

iii. Water consumption rate per level type;
Level I – at least 20 liters per capita per day (lpcd)
Level II – at least 60 lpcd
Level III – at least 100 lpcd

iv. Average Day Demand (ADD) = design population x water consumption
(Used as basis for the design of reservoir size. Only 1/4 volume of the ADD)

v. Maximum Day Demand (MDD) = 1.30 x Ave. Day Demand
(Used as basis for the design of pump)

vi. Maximum Hour-Demand (MHD) =

$$\frac{3.0 \times \text{Ave. Day Demand}}{24}$$ *; if population less than 100 to 600*

$$\frac{2.5 \times \text{Ave. Day Demand}}{24}$$ *; if population more than 600*

(Used as basis in the design of pipe sizes)

vii. Elevations and ground distance of water source to water tanks and to the target area. An absolute minimum static head or elevation difference of 20ft or 6.0meters between water tank and service area is necessary for satisfactory gravity flow, even though less area may be covered. The Hydraulic Grade Line (HGL) along the transmission line should be greater than 10 meters above the ground at all points in the system, except when unavoidable. Never allow the HGL to go underground.

[12]Based from the Water Supply Design Manual of National Water Resource Board (NWRB)

viii. Location of households to determine the distribution pipe system. Clustering of households in order to design the location of tap stands and the distribution system.

ix. Availability of power source and distance to the nearest connection. This is important should the design require the use of a water pump. If the community cannot afford to pay the power charge, recommend an alternative design like solar power pump, particularly for far-flung barangays.

x. Available materials at the community level. The designer must come up with an appropriate design and specifications to include the capacity of the community to provide counterpart resources for them to own the system.

xi. Delivery and type of access route for materials to be hauled to site. Double or triple handling of construction materials to be procured should be considered especially for difficult and far-flung areas.

xii. Availability of skilled workers at the community and nearby locality. This will determine the procurement method to be adopted and whether the community has the capability or capacity to construct the system. Previous experiences demonstrated that communities are capable of implementing systems with proper guidance and supervision.

xiii. Type of users of the communal faucets (e.g. men, women and children). If applicable, the designer can make necessary revisions on the standard KC design to suit the intended users. Additional structures such as a wash area, away from the tap stands, can be constructed, depending on the socio-cultural practices of the community.

4.6. Validation of Water Source – this is a compulsory activity to be conducted by the technical staff during the identification stage. For spring sources, water yield has to be measured to determine if the source is sufficient to supply the target area. During source verification, the project's field engineers will provide technical information, according to the community's level of comfort, as basis for any decision. A table matrix showing the water yield against the target number of households will illustrate if the water source is sufficient or there is a need to look for another source. If in case the only available potable water source yield is not sufficient to cover the design requirement of 60lpcd, further discussions on the water usage will have to be done and the design adjusted. Agreements have to be presented and agreed upon by the community members with proper documentation. This will guide the technical staff to immediately make a recommendation on whether the water source in sufficient or need to look for additional source.

5. Preparation of Detailed Engineering Requirement

5.1. Survey and Diagrams

Traverse survey - For water supply system subprojects, this can be undertaken simultaneously with the topographic survey. This survey is conducted to identify the proposed route of the transmission and distribution lines. Likewise, location of permanent

structures to be constructed (intake box, reservoir, tap stands) and water ways are mapped out including the identification of lot owners along the proposed traverse.

Profile survey – This survey will determine the actual ground elevation at any required location, based on the alignment established during the traverse survey. The result of this type of survey will provide information on: difference of elevation from the source to the target area (for gravity driven system); difference of elevation from proposed location of reservoir to service area; and elevation of proposed location of tap stands. This will help the designer check the Hydraulic Grade Line (HGL) of the proposed system.

Both surveys results have to be drawn in Half-roll cross section paper with a suggested dimension of 50 cm x 80 cm. The proposed location/station of structures and the target households to be served should be indicated in the plan. It is important to indicate the stations in order to determine the length of pipelines and the sizes, type and specification for the proposed waterlines. Scale to be adopted must be 1:100 m.

Schematic plan – a diagram showing the elevation and distances of water source, reservoir, pipes directions, location of tap stands, and the number of target households to be served by each tapstand. This will guide the designer in the analysis of hydraulic design of the proposed water supply system.

Connection Details – critical pipe connections must be drawn in a drawing sheet (50 cm x 80 cm) to provide the details showing the support required. Design for pipes crossing river or stream has to be shown in the drawings. Likewise, if the system is to be driven by pump, technical specifications of the designed water pump including the pump house has to be reflected on the shop drawings.

5.2. Structural Plans, Designs and Technical Specifications

The structural design plans for intake or collection tank, reservoir will be decided on based on the technical considerations from previous inputs. Plans, details and corresponding specifications (type of materials to be used and dimensions) must be drawn in a 50 cm x 80 cm tracing paper. Appropriate scale (1:20, 1:40) must be adopted to show the dimension of the structures depending on the design size of proposed structures. A standard design of a tapstand is provided to have a commonality and same image for KC-NCDDP water supply subprojects.

Shown below are tables to guide the field engineers in determining the capacity of the water source to meet the demand of the community (number of households) during the conduct of water source validation.

5.2.1. Design of Water Reservoir

It is necessary to determine the supply and demand side of the proposed water supply system. From the result of surveys and plotted plans, determine the elevations of water source (for spring source) and the target area.

The capacity of the reservoir tank can be done mathematically as shown in the matrix below:

Design Criteria: Example 1

Particular	Description	Data	Unit
Number of Household	Actual number of household beneficiaries	250	HH
Average Household Member	6 members	6	No.

Total Population	(No. of HH)(Ave. HH Member)	1,500.00*	No.
Average Population Growth Rate	Percent annually	3	%
Design Lifespan	No. of years	10	Years
Design Population	(No. of HH)(1.03)^15	2,336.95	No.
Average Daily Water Demand per Capita per Day	60 liters per capita per day	60	Liter
Average Daily Demand (ADD)	(Design population)(60 liters/capita/day)	140,217	Liter
Average Demand per Second	ADD/(24x60x60)	1.623	lps

* = more appropriate if actual figure is provided

If the volume of supply is less than the demand volume there is a need to construct a storage tank. On the other hand, if the supply is greater than the demand, the need to construct a storage is necessary during maintenance period. This is to avoid service interruption during cleaning period.

As a rule of thumb, the size of the proposed storage tank is one-fourth (1/4) of the Average Daily Demand (ADD). The dimensions of the tank may be computed from the volume requirement. Bear in mind that the derived size considers only inside dimensions and there is further need to consider the free-board of at least 0.30 meters from the elevation of the outlet pipe and the top slab.

5.2.2. Design of Water Pipelines

In the design of water pipelines or the Hydraulic Analysis, the table below will guide the user on how to make use of the engineering plans for checking the assumptions on the pipes' diameter to be used for the transmission and distribution lines.

Pipeline Design – Input/ Output Data

Sec	**Nodes**		**Sec Length** (m)	**HH Served**	**Peak Flow** (lps)	**Node Elev Diff.** (m)	**Total Available Head (m)**	**Pipe Dia.** (mm)	**Pipe Dia.** (Option, mm)	**Head Loss per 100 m**	**Actual Head Loss** (m)	**Residual Heads** (m)
	1	**2**										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7a)	(8)	(9)	(10)	(11)	(12)

Columns	**Represent:**
1	Pipe section under consideration. Use lower case letter (a b, c…)
2, 3	Pipe section and nodes. Use numerical figures (9, 8, 7…) Put node elevations preferably using masl as datum
4	Section Length
5	Total number of households served by the pipe section considered
6	Peak flow or maximum hour demand (mhd) by the total number of household served by the pipe section under consideration. For the transmission, ADF should be used in sizing the transmission pipe. mhd = 2.5 x GRF x N x ave HH Size x PCWC/86, 400 where: GRF = Growth rate factor (for __ years @ growth rate %, GRF)

N = Total number of households served by the pipe section (col 5)
PCWC = Per capita water consumption
mhd = N/_____

7 Difference of elevation between the nodes of the section being considered

7a Summation of node elev. Diff. (col. 7) and residual head, Rh (col. 12)

8 Approximate pipe diameter as determined by the Darcy-Weisbach formula
Dˆ5 = 0.00165 x L x Qˆ2/Hf
where: f = 0.02 (approximation only)
L = Length of pipe section (Col 4)
Q = Peak flow in pipe section (col 6)
Hf = Max gravity head for the pipe section (col 7a)

9 Nominal pipe diameter available nearest to the approximate pipe diameter

10 Enter table 9.1 or 9.2. Friction head Losses in GI or plastic Pipes. Interpolate if necessary

11 Compute actual head loss for the pipe section length

12 Pressure (Residual head) = 7a-11
P = F/A
where:
P = pressure
F = Weight of water x specific weight of water
(1 kgf/liter or 1000 kgf/m³ or 9.807 KN/m³
A = area

Branches Nodes	Sitio or Cluster Served	Number of HH	ADD (lps)	Total Headloss	Remarks		
					Elevation		

Site development plan must also be drafted to indicate the location of the proposed water supply system in the locality.

All engineering plans must be drawn to scale in 50cm width and 80 cm length drawing sheets or in A3 size with acceptable and readable scale. Title blocks must follow the format provided by the KC-NCDDP including the Logo. The designer will affix his signature including the PRC license number and the Professional Tax Receipt (PTR).

Spring Yield	**0.25-0.49 lps**			**0.50-0.74 lps**			**0.75-0.99 lps**			**1.0-1.24 lps**			**1.25-1.49 lps**		
Daily Supply (l)	**21,600.00**			**43,200.00**			**64,800.00**			**86,400.00**			**108,000.00**		
Max water qty that can be stored during night time (l)	**9,720.00**			**19,440.00**			**29,160.00**			**38,880.00**			**48,600.00**		
Projected Total Supply (l)	**31,320.00**			**62,640.00**			**93,960.00**			**125,280.00**			**156,600.00**		
Projected or future HH beneficiaries	**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**	
		⅓ ADU	**D-S**		**⅓ ADU**	**D-S**		**⅓ ADU**	**D-S**		**⅓ ADU**	**D-S**		**⅓ ADU**	**D-S**
50 or less hh	18,000.00	6,000.00	**7,200.00**	18,000.00	**6,000.00**	(3,600.00)	18,000.00	**6,000.00**	(14,400.00)	18,000.00	**6,000.00**	(25,200.00)	Not necessary		
51-75 hh	27,000.00	9,000.00	**9,720.00**	27,000.00	**9,000.00**	5,400.00	27,000.00	**9,000.00**	(5,400.00)	27,000.00	**9,000.00**	(16,200.00)	27,000.00	**9,000.00**	(27,000.00)
76-100 hh	36,000.00	12,000.00	**9,720.00**	36,000.00	12,000.00	**14,400.00**	36,000.00	**12,000.00**	3,600.00	36,000.00	**12,000.00**	(7,200.00)	36,000.00	**12,000.00**	(18,000.00)
101-125 hh	Optional			45,000.00	15,000.00	**19,440.00**	45,000.00	**15,000.00**	12,600.00	45,000.00	**15,000.00**	1,800.00	45,000.00	**15,000.00**	(9,000.00)
124-150 hh	Optional			54,000.00	18,000.00	**19,440.00**	54,000.00	18,000.00	**21,600.00**	54,000.00	**18,000.00**	10,800.00	54,000.00	**18,000.00**	-
151-175 hh	Optional			63,000.00	21,000.00	**19,440.00**	63,000.00	21,000.00	**29,160.00**	63,000.00	**21,000.00**	19,800.00	63,000.00	**21,000.00**	9,000.00
176-200 hh	not recommended			Optional			72,000.00	24,000.00	**29,160.00**	72,000.00	24,000.00	**28,800.00**	72,000.00	**24,000.00**	18,000.00
201-225 hh	not recommended			Optional			81,000.00	27,000.	**29,160.0**	81,000.0	27,000.	**37,800.0**	81,000.0	**27,000.**	27,000.0

				00	**0**	0	00	**0**	0	**00**	0
226-250 hh	not recommended	Optional	90,000.00	30,000.00	**29,160.00**	90,000.00	30,000.00	**38,880.00**	90,000.00	30,000.00	**36,000.00**
251-275 hh	not recommended	Optional	Optional			99,000.00	33,000.00	**38,880.00**	99,000.00	33,000.00	**45,000.00**
276-300 hh	not recommended	Optional	Optional			108,000.00	36,000.00	**38,880.00**	108,000.00	36,000.00	**48,600.00**
301-325 hh	not recommended	Optional	Optional			117,000.00	39,000.00	**38,880.00**	117,000.00	39,000.00	**48,600.00**
326-350 hh	not recommended	Optional	Optional			126,000.00	42,000.00	**38,880.00**	126,000.00	42,000.00	**48,600.00**
356-375 hh	not recommended	not recommended	Optional			Optional			135,000.00	45,000.00	**48,600.00**
376-400 hh	not recommended	not recommended	Optional			Optional			144,000.00	48,000.00	**48,600.00**
401-425 hh	not recommended	not recommended	Optional			Optional			153,000.00	51,000.00	**48,600.00**
426-450 hh	not recommended	not recommended	Optional			Optional			Optional		
451-475 hh	not recommended	not recommended	Optional			Optional			Optional		
476-500 hh	not recommended	not recommended	Optional			Optional			Optional		

Spring Yield	**1.50-1.74 lps**			**1.75-1.99 lps**			**2.0-2.24 lps**			**2.25-2.49 lps**			**2.50-2.74 lps**		
Daily Supply (l)	**129,600.00**			**151,200.00**			**172,800.00**			**194,400.00**			**216,000.00**		
Max water qty that can be stored at night time (l)	**58,320.00**			**68,040.00**			**77,760.00**			**87,480.00**			**97,200.00**		
Projected Total Supply (l)	**187,920.00**			**219,240.00**			**250,560.00**			**281,880.00**			**313,200.00**		
Projected or future HH beneficiaries	**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**	
		⅓ ADU	**D-S**		**⅓ ADU**	**D-S**		**⅓ ADU**	**D-S**		**⅓ ADU**	**D-S**		**⅓ ADU**	**D-S**
50 or less hh	n/n			n/n			n/n			n/n			n/n		
51-75 hh	27,000.00	**9,000.00**	(37,800.00)	n/n			n/n			n/n			n/n		
76-100 hh	36,000.00	**12,000.00**	(28,800.00)	36,000.00	**12,000.00**	(39,600.00)	n/n			n/n			n/n		
101-125 hh	45,000.00	**15,000.00**	(19,800.00)	45,000.00	**15,000.00**	(30,600.00)	45,000.00	**15,000.00**	(41,400.00)	45,000.00	**15,000.00**	(52,200.00)	n/n		
124-150 hh	54,000.00	**18,000.00**	(10,800.00)	54,000.00	**18,000.00**	(21,600.00)	54,000.00	**18,000.00**	(32,400.00)	54,000.00	**18,000.00**	(43,200.00)	54,000.00	**18,000.00**	(54,000.00)
151-175 hh	63,000.00	**21,000.00**	(1,800.00)	63,000.00	**21,000.00**	(12,600.00)	63,000.00	**21,000.00**	(23,400.00)	63,000.00	**21,000.00**	(34,200.00)	63,000.00	**21,000.00**	(45,000.00)
176-200 hh	72,000.00	**24,000.00**	7,200.00	72,000.00	**24,000.00**	(3,600.00)	72,000.00	**24,000.00**	(14,400.00)	72,000.00	**24,000.00**	(25,200.00)	72,000.00	**24,000.00**	(36,000.00)
201-225 hh	81,000.00	**27,000.00**	16,200.00	81,000.00	**27,000.00**	5,400.00	81,000.00	**27,000.00**	(5,400.00)	81,000.00	**27,000.00**	(16,200.00)	81,000.00	**27,000.00**	(27,000.00)
226-250 hh	90,000.00	**30,000.00**	25,200.00	90,000.00	**30,000.00**	14,400.00	90,000.00	**30,000.00**	3,600.00	90,000.00	**30,000.00**	(7,200.00)	90,000.00	**30,000.00**	(18,000.00)

251-275 hh	99,000.00	33,000.00	**34,200.00**	99,000.00	**33,000.00**	23,400.00	99,000.00	**33,000.00**	12,600.00	99,000.00	**33,000.00**	1,800.00	99,000.00	**33,000.00**	(9,000.00)
276-300 hh	108,000.00	36,000.00	**43,200.00**	108,000.00	**36,000.00**	32,400.00	108,000.00	**36,000.00**	21,600.00	108,000.00	**36,000.00**	10,800.00	108,000.00	**36,000.00**	-
301-325 hh	117,000.00	39,000.00	**52,200.00**	117,000.00	39,000.00	**41,400.00**	117,000.00	**39,000.00**	30,600.00	117,000.00	**39,000.00**	19,800.00	117,000.00	**39,000.00**	9,000.00
326-350 hh	126,000.00	42,000.00	**58,320.00**	126,000.00	42,000.00	**50,400.00**	126,000.00	**42,000.00**	39,600.00	126,000.00	**42,000.00**	28,800.00	126,000.00	**42,000.00**	18,000.00
356-375 hh	135,000.00	45,000.00	**58,320.00**	135,000.00	45,000.00	**59,400.00**	135,000.00	45,000.00	**48,600.00**	135,000.00	**45,000.00**	37,800.00	135,000.00	**45,000.00**	27,000.00
376-400 hh	144,000.00	48,000.00	**58,320.00**	144,000.00	48,000.00	**68,040.00**	144,000.00	48,000.00	**57,600.00**	144,000.00	**48,000.00**	46,800.00	144,000.00	**48,000.00**	36,000.00
401-425 hh	153,000.00	51,000.00	**58,320.00**	153,000.00	51,000.00	**68,040.00**	153,000.00	51,000.00	**66,600.00**	153,000.00	51,000.00	**55,800.00**	153,000.00	**51,000.00**	45,000.00
426-450 hh	162,000.00	54,000.00	**58,320.00**	162,000.00	54,000.00	**68,040.00**	162,000.00	54,000.00	**75,600.00**	162,000.00	54,000.00	**64,800.00**	162,000.00	**54,000.00**	54,000.00
451-475 hh	171,000.00	57,000.00	**58,320.00**	171,000.00	57,000.00	**68,040.00**	171,000.00	57,000.00	**77,760.00**	171,000.00	57,000.00	**73,800.00**	171,000.00	57,000.00	**63,000.00**
500 hh	180,000.00	60,000.00	**58,320.00**	180,000.00	60,000.00	**68,040.00**	180,000.00	60,000.00	**77,760.00**	180,000.00	60,000.00	**82,800.00**	180,000.00	60,000.00	**72,000.00**

Spring Yield	**2.75-2.99 lps**			**3.0-3.24 lps**			**3.25-3.49 lps**			**3.50-3.74 lps**			**3.75-3.99 lps**		
Daily Supply (l)	**237,600.00**			**259,200.00**			**280,800.00**			**302,400.00**			**324,000.00**		
Max water qty that can be stored at night time (l)	**106,920.00**			**116,640.00**			**126,360.00**			**136,080.00**			**145,800.00**		
Projected Total Supply (l)	**344,520.00**			**375,840.00**			**407,160.00**			**438,480.00**			**469,800.00**		
Projected or future HH beneficiaries	**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**		**Aver. Daily Use (l)**	**Computed Reservoir Capacity (l)**	
		⅓ ADU	**D-S**		**⅓ ADU**	**D-S**		**⅓ ADU**	**D-S**		**⅓ ADU**	**D-S**		**⅓ ADU**	**D-S**
50 or less hh	n/n			n/n			n/n			n/n			n/n		
51-75 hh	n/n			n/n			n/n			n/n			n/n		
76-100 hh	n/n			n/n			n/n			n/n			n/n		
101-125 hh	n/n			n/n			n/n			n/n			n/n		
124-150 hh	54,000.00	**18,000.00**	(64,800.00)	n/n			n/n			n/n			n/n		
151-175 hh	63,000.00	**21,000.00**	(55,800.00)	63,000.00	**21,000.00**	(66,600.00)	63,000.00	**21,000.00**	(77,400.00)	n/n			n/n		
176-200 hh	72,000.00	**24,000.00**	(46,800.00)	72,000.00	**24,000.00**	(57,600.00)	72,000.00	**24,000.00**	(68,400.00)	72,000.00	**24,000.00**	(79,200.00)	n/n		
201-225 hh	81,000.00	**27,000.00**	(37,800.00)	81,000.00	**27,000.00**	(48,600.00)	81,000.00	**27,000.00**	(59,400.00)	81,000.00	**27,000.00**	(70,200.00)	81,000.00	**27,000.00**	(81,000.00)
226-250 hh	90,000.00	**30,000.00**	(28,800.00)	90,000.00	**30,000.00**	(39,600.00)	90,000.00	**30,000.00**	(50,400.00)	90,000.00	**30,000.00**	(61,200.00)	90,000.00	**30,000.00**	(72,000.00)
251-275 hh	99,000.00	**33,000.00**	(19,800.00)	99,000.00	**33,000.00**	(30,600.00)	99,000.00	**33,000.00**	(41,400.00)	99,000.00	**33,000.00**	(52,200.00)	99,000.00	**33,000.00**	(63,000.00)
276-300 hh	108,000.	**36,000.**	(10,800.	108,000.	**36,000.**	(21,600.	108,000.	**36,000.**	(32,400.	108,000.	**36,000.**	(43,200.	108,000.	**36,000.**	(54,000.

	00	**00**	00)	00	**00**	00)	00	**00**	00)	00	**00**	00)	00	**00**	00)
301-325 hh	117,000.00	**39,000.00**	(1,800.00)	117,000.00	**39,000.00**	(12,600.00)	117,000.00	**39,000.00**	(23,400.00)	117,000.00	**39,000.00**	(34,200.00)	117,000.00	**39,000.00**	(45,000.00)
326-350 hh	126,000.00	**42,000.00**	7,200.00	126,000.00	**42,000.00**	(3,600.00)	126,000.00	**42,000.00**	(14,400.00)	126,000.00	**42,000.00**	(25,200.00)	126,000.00	**42,000.00**	(36,000.00)
356-375 hh	135,000.00	**45,000.00**	16,200.00	135,000.00	**45,000.00**	5,400.00	135,000.00	**45,000.00**	(5,400.00)	135,000.00	**45,000.00**	(16,200.00)	135,000.00	**45,000.00**	(27,000.00)
376-400 hh	144,000.00	**48,000.00**	25,200.00	144,000.00	**48,000.00**	14,400.00	144,000.00	**48,000.00**	3,600.00	144,000.00	**48,000.00**	(7,200.00)	144,000.00	**48,000.00**	(18,000.00)
401-425 hh	153,000.00	**51,000.00**	34,200.00	153,000.00	**51,000.00**	23,400.00	153,000.00	**51,000.00**	12,600.00	153,000.00	**51,000.00**	1,800.00	153,000.00	**51,000.00**	(9,000.00)
426-450 hh	162,000.00	**54,000.00**	43,200.00	162,000.00	**54,000.00**	32,400.00	162,000.00	**54,000.00**	21,600.00	162,000.00	**54,000.00**	10,800.00	162,000.00	**54,000.00**	-
451-475 hh	171,000.00	**57,000.00**	52,200.00	171,000.00	**57,000.00**	41,400.00	171,000.00	**57,000.00**	30,600.00	171,000.00	**57,000.00**	19,800.00	171,000.00	**57,000.00**	9,000.00
500 hh	180,000.00	60,000.00	**61,200.00**	180,000.00	**60,000.00**	50,400.00	180,000.00	**60,000.00**	39,600.00	180,000.00	**60,000.00**	28,800.00	180,000.00	**60,000.00**	18,000.00

5.2.3. Technical Specifications

Excavation - This item shall consist of the necessary excavation for removal of all foundation of materials of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the work.

Pipeline Trench Excavation - Unless otherwise shown on the approved Plans and Specifications or ordered by the Engineer, excavation for pipeline shall be open-cut trenches. The bottom of the trench, including any shoring shall have a minimum width equal to the outside diameter of the pipe plus 300 mm and a maximum width equal to the outside diameter of the pipe plus 600 mm except when otherwise shown or ordered by the designated/assigned Engineer, the bottom of the trench shall be excavated uniformly to the grade of the bottom of the pipe. The trench bottom shall be given a final trim using a string line for establishing grade, such that each pipe section when first laid will be wholly in contact with the ground or bedding along the extreme bottom of the pipe. Rounding out the trench to form a cradle shall not be required. The maximum amount of open trench permitted at any one time and in one location shall be 300 meters of the length necessary to accommodate the number of pipes installed in one day, whichever is greater. Barricades and warning lights satisfactory to the designated/assigned Engineer shall be provided and maintain for all trenches left open overnight except at intersections and driveways in which case heavy steel plates, adequately braced bridges or other type of crossing capable of supporting vehicular traffic shall be furnished as directed by the Engineer.

Backfill and Fill **-** This item shall consist of all operations required to replace excavated and unsuitable materials to fill up depression to grade or to be built up low areas in accordance with the approved Plans and Specifications.

Method of Measurement

The quantity to be paid for shall be the volume of the materials excavated in cubic meter calculated by multiplying the horizontal area of the bottom of the structure or open-cut trench by the average depth. The average depth shall be calculated from the finished surface of the grade shown on the drawing or the original ground level, whichever is the lowest.

Basis of Payment

Payment for all work under this item shall be made at the contract unit price per cubic meter for earthwork which price and payment shall be full compensation for furnishing all materials, labor, equipment, tools and incidentals necessary to complete all work.

Installation of Pipeline - This item shall consist of furnishing and installation of all pipes, fittings, closure pieces, bolts, nuts, gaskets, joints/unions, materials and appurtenances as shown and specified on the drawings, and as required by the designated/assigned Engineer for a complete and workable piping system.

Method of Measurement

The quantity to be paid under this item shall be the length in meters of pipe in place completed and accepted, measured from end to end of the pipeline.

Basis of Payment

The quantity determined as provided above, shall be paid for or the contract price per meters for pipe actually installed and payment shall constitute full compensation for furnishing and installation of all pipes, fittings, closure pieces, bolts, nuts, gaskets, jointing materials and for all labor, equipment, tools, and incidentals necessary to complete the work.

6. Preparation of Quantity and Cost Estimates

Computation of quantity take-off must be based from the engineering plans. Similar principles as discussed in the road section will apply for the preparation of quantity and cost estimates for water and other subproject types. Derivation of unit pay items must adopt the manual capability outputs provided in this manual to determine the manpower requirement, duration of particular pay item. Water system subproject is a labor intensive type so the programmer must be aware of the capability output per subsidiary works in order to avoid miscalculation.

The programmer must be aware of the current commercial prices for the procurement of construction materials particularly for the water pipes. The quantity estimates must not be excessive as to the required in order to be cost effective. You may hardly miss the quantity as the length of water pipeline is direct counting based from the plan.

It is important to determine the station where changes in the size of pipes occur in order to compute the ground distance of the required pipes for easy computation.

Fittings and valves like gate valves, blow-off valves, globe valves and others, must be carefully analyzed in the detailed estimates as reflected from the plans.

7. Preparation of Program of Works

The KC-NCDDP has listed appropriate descriptions and pay item numbers for water supply system based on DPWH specifications as maybe applicable to the site. The Program will allow the current practice provided that proper description and appropriate unit of measurement will be adopted for the proposed water supply system. To establish a more comparable unit cost per item, it is suggested that the work items adopt the following units of measurement;

Structure Excavation - for the preparation of foundation works for intake box and reservoir. The unit of measurement must be in Cubic Meter (cu.m.).

Trench Excavation – this includes excavation for all water pipelines. The unit of measurement must be in Cubic Meter (cu.m.).

Structural Concrete – all necessary concrete works for intake box and reservoir. This includes subsidiary work items and materials for concrete pouring. The unit of measurement must be in Cubic Meter (cu.m.) of concrete in-place. Sometimes the volume of the tanks is mistakenly used as quantity for measurement.

Reinforcing Steel – all reinforcing bars required for the construction of all structures. This includes fabrication and installation of specified reinforcing bars. The unit of measurement must be in Kilograms (kg.).

Transmission Line – piping works from source to water reservoir. This includes laying of pipes and backfilling works. Required fittings are included in the pay items. The unit of measurement must be in Linear Meter (ln.m.).

Distribution Lines - piping works from water reservoir to tap stands. This includes laying of pipes and backfilling works. Required fittings are included in the pay items. The unit of measurement must be in Linear Meter (ln.m.).

Pump and accessories – installation of water pump including the required accessories. The unit of measurement can be in Unit.

Pump house – construction of the pumping house. The unit of measurement must be in Square Meter.

Tapstand– construction and installation of fittings for the communal faucet in strategic locations in the community. The unit of measurement can be in Unit.

8. Derivation of Tariff Rates

Before the finalization of plans and specifications, it is important to discuss with community members and potential water consumers the operation and maintenance arrangement after completion particularly for tariff collections. The designer and facilitator must emphasize and understand the affordability and willingness of the community members to pay tariff for the possible design of water system. From these discussions, the engineering plans can now be finalized provided that the initial tariff was agreed and properly documented.

A sample procedure for deriving tariff is show in the Annex of this manual_ to guide the facilitator in discussing with community members. The complexity of a pump driven type of system is provided so that simplification to other type of system may be derived.

For spring source water system, it is also recommended that the tapstand be provided with water meter in order to check the volume of water consumption. The tariff arrangement may vary depending on the agreement made by the consumers. It could either be shared equally by the household consumers or any other acceptable arrangement. It is important that the arrangements are discuss, agreed and properly documented.

9. Review System

For water supply system, engineering plans and cost estimates maybe prepared by the municipal engineering office or by hired service provider. The TF and the regional technical staff must review the technical outputs especially the hydraulic analysis. The plans, cost estimates must conform to subproject requirements and related engineering practices. Request for fund release will not be process at the national level unless the acceptable plans and appropriate analysis were properly reviewed at the field level.

10. Implementation stage

Similar to the discussion in the road section, implementation strategies for water supply may vary depending on the type of the system and water level design, i.e., level I and level II. Construction method has to be discussed during the pre-construction conference including the schedule of labor work force. Timing and delivery of required construction materials must be considered in the work schedules.

It is equally important to discuss with the community members the type of works which are significant and less numbers of labor force required. This approach will reduce the common problem encountered before. Most of the community members wanted to work for the whole duration of the construction to augment their income. At some point, this creates divergence among BSPMC volunteers and community members who are interested to do construction works.

Engineering plans must be made available at the subproject office at all times for easy reference during construction and inspection of the works in-placed.

For underground supply of water, ensure first the development of well before constructing the structures such as reservoir and tap stands.

Before pouring of concrete mix, make sure that inspection of the steel reinforcing works is properly done and ascertain that form works, scaffoldings, braces are a line based on the approved technical plans. Pipe fittings and control valves required for the structure must also be inspected prior to the pouring of concrete.

No concrete works will be executed without the presence and supervision of an engineer especially on critical structures such as intake box and reservoirs.

Laying of pipes must follow the proper engineering practices. Depending on the type of materials use for water pipe, sand bedding, proper inspection of joint connections must be supervised by a technical person before the backfilling works.

11. Post Implementation stage

There are several operation and maintenance arrangements established at the community level. The most common for water supply subproject is the Barangay Waterworks and Sanitation Association (BAWASA). This is a formal organization which manages the operation of completed water system. Officers are elected by member consumers and they craft operational policies and set of By-Laws which are presented to the General Assembly for approval. Another form of O&M arrangement is for the Barangay Council to take full responsibility for the day to day operation of the system. Institutional and financial support is provided by the Council for the maintenance of the completed system. It is expected that the agreed tariff collections will be sufficient to finance repair works and replacement of worn-out materials in the long run.

ANNEX 3
TECHNICAL GUIDELINES FOR SOCIAL INFRASTRUCTURE BUILDINGS

"Imagination is more important than knowledge." Albert Einstein

The need to improve the social services at the rural areas is one of the government's objectives. School buildings and health facilities are the primary infrastructure to address the quality of education and improving the health condition at the community level. Other vertical structures that cater the need of the communities such as training centers for capability building activities are also essential for their livelihood activities.

The KC-NCDDP provides these facilities depending on the need of the communities. This could be an improvement and repairs, expansion and construction of new buildings.

During the social investigations stage, it is expected that the ACT staff have conducted data gathering (both primary and secondary), and an in-depth analysis made to support the identified needs along social services.

1. Selection of Appropriate Design and Technology Application

1.1. Day Care Center

Republic Act 6972, an Act known as the "Barangay-Level Total Development of Children Act", mandates establishing a Day Care Center in every Barangay. The Day Care facility and its services are intended to be availed by children up to six years of age, with parental consent. Section 5 of the Act directs the Department of Social Welfare and Development to formulate the criteria for the selection, qualifications, trainings and accreditation of day care workers and the standards for the implementation of the total development and protection of the children program. Hence, Administrative Order No 29, series of 2004 was issued by the department for the establishment of standards for day care center, other ECCD centers and service providers.

The Standards Bureau of the department has a set design which the project has adopted. The standard floor area is 6.0 by 8.0 meters, which is enough to accommodate the standard indoor environment of 1 child: 1 sq. meter. Toilets, and wash basin are part of the design.

Minimum amenities such as shelves, table and chairs, both for the children and day care workers are provided also by the subproject. These are the "must" for the day care center to be accredited as level 1 or One Star.

If the barangay is located in a very far flung area, where the hauling of the construction materials such as cement, sand and gravel will be a big problem during implementation, the subproject allows a revision of the materials specifications, so that locally available materials in the barangay or municipality can be used. However, the floor area and other standards set in A.O 29 must still be observed.

1.2. School Buildings

The 1987 Philippine Constitution under Article XIV provides a clear mandate on the obligation of the state to protect and promote the right of all citizens to quality education at all levels, and shall take appropriate steps to make such education accessible to all. Section 2 of same article discloses that "the State shall establish and maintain a system of free public education in the elementary and high school levels. Without limiting the rights of parents to rear their children, elementary education is compulsory for children of school age."

Following this mandate, the subproject, which primarily caters the need of the rural areas, is eligible to implement and fund the construction and/or rehabilitation of school buildings in elementary and high school levels.

Since the Department of Education has already established their engineering designs for school buildings, the subproject also adopted the same plans. The floor area for a single classroom is 7.0 by 9.0 meters (63.00 sq. m). Depending on the needs of the community, the subproject allows the construction and /or rehabilitation of several classrooms in one school building. Most of these buildings are one-storey design.

The proposed school building must be located and constructed in an existing school campus. The School Principal or District Supervisor must issue a certification allowing the subproject to construct or rehabilitate a school building in their school campus. For classrooms to be constructed in a community where there is no existing school campus, an acquisition document for the proposed site must conform to KC-NCDDP policies on social and environmental safeguards.

1.3. Barangay Health Station

The State shall adopt an integrated and comprehensive approach to health development which shall endeavor to make essential goods, health and other social services available to all the people at affordable cost.[13] Health stations provide medical services at the barangay level through medical consultation, delivery of pregnant women, immunization, and first aid to injuries for some emergency cases. The Department of Health has specific designs for their health facilities, i.e., rural health unit, barangay health station. The KC project, has adopted the latter considering that it operates at the barangay level.

The structure has an area of 6.0 by 6.4 meters which serve as treatment area, pre-natal/delivery room for pregnant women, consultation area and toilet facility. Additional waiting area coupled with ramp for the persons with disabilities

[13] Article XIII of the 1987 Constitution

form part of the total design. The total 51.00 sq. meters comprises the whole structure.

1.4. Other Building Structures

With the implementation of the KC-NCDDP project, other vertical structures may be funded as long it does not fall on the negative list (non-eligible proposals). In the past, communities have proposed the construction of training facilities. This enables them to synergize some of their livelihood activities to augment their income. However, the context of providing training building must be based on the current situation on the locality if it warrants constructing such facility.

Depending on the intended usage of the proposed structures, the project allows the building of reinforced concrete buildings or semi-concrete (mixed with hard wood materials). The floor area will range from 70 square meters to maximum of 80 square meters.

All public building structures including the day care centers, school buildings and barangay health stations, should also comply with the Batas Pambansa Bilang 344, Accessibility Law by providing ramp, railings, hand grab for toilets and the like.

1.5. Amenities

The project ensures the functionality of these social infrastructures by providing limited minimum amenities such as[14]:

i. For Health Station - table and chairs for the Midwife and patients; inexpensive pre-natal table and weighing scales for infants and adults.

ii. For School Building – table and desks or arm chair for the students and teacher, writing board.

iii. For Day Care Center – tables and chairs both for toddlers and day care worker, shelves, storage racks and writing board.

Other amenities that the community may want to provide can be procured once the subproject is handed-over to the BLGU and to the O&M group. These will be charged to their LCC and not to the proposed estimated cost. This is one way for KC-NCDDP to establish the cost parameter per subproject type.

2. Design Restrictions

While KC-NCDDP supports constructing these social infrastructure, the need to ensure the sustainability and continued functionality of the services must be envisioned. The following must be observed during the planning stage and prior to the approval of the proposals:

i. Building sites shall not be located in low-lying areas susceptible to flooding. Similarly, no structures will be constructed on areas prone to landslides or identified as hazard zone or unsafe areas.

[14] June 1, 2006 RIE Conference Agreements

ii. The proposed site has to be far from the river or other bodies of water to ensure the safety of the barangay populace.
iii. For communities located in typhoon prone areas, a re-design of the roofing using concrete slab is allowed.

iv. The proposed site must be treated with anti-termites. This cost must be incorporated in the estimates and program.

v. Ensure that O&M arrangement, including personnel/staff, are clearly established before the subproject approval, i.e., teachers for school buildings, health workers for BHS and day care workers for the center.

vi. The structural design must conform to the national building codes.

3. Preparation of Detailed Engineering Requirements

Since most of the common social infrastructures have adopted designs and standards from the concerned agencies, the engineering plans and the materials quantity computations for these subprojects types have already been prepared. The community will reproduce the engineering plans and prepare the cost estimates by providing the prevailing unit market price for each of the construction materials. The indirect cost will follow the same table discussed in the road access section. The program of works will also follow the same subproject template. Electronic copies of the standard plans can be provided by the regional field office through the engineering unit.

The Technical Facilitator will closely coordinate with the municipal engineering office for the review of the community proposal, particularly the cost estimates. In case the total estimated cost exceeds that of the regional and national cost parameter, justification has to be prepared citing the reasons for the estimates. The option to consider an alternative design is given to the field and regional engineers. The geographical location and availability of indigenous materials is assumed to have been considered in the finalization of the design.

4. Technical Specifications for the Proposed Work Items

Similarly, the technical specifications for constructing buildings were already prepared by the subproject following the national building code. The proponent barangay will ask a copy of these specifications from their Technical Facilitator and subsequently attach it to their technical proposal. The specifications will guide the Procurement Team in preparing their procurement plan and quotations.

5. Implementation stage

Like other subproject types, the implementation stage for building construction starts with the pre-construction conference. Volunteers, workers and technical staffs will discuss the construction activities, implementation schedule coupled with the corresponding manpower requirement, quality control measures, reporting system, environmental management and safety measures. It is expected from the technical staff that the construction method to be adopted for erecting the building will be clearly discussed to everyone who will actively participate.

Depending on the subproject sites and the weather condition, options of constructions methods should be explored in order to meet the work schedules. The need to explain the construction forms required by the subproject such as the construction logbook, the weather chart, procurement monitoring is also expected and agreed by the community members.

It is also important for the BSPMC to agree on the schedule of construction meeting in order to discuss the progress of the construction and possibly resolve issue that may arise. The meeting can be held on the designate BSPMC office.

ANNEX 4
GUIDANCE NOTE ON COMMUNITY FACILITY FOR DRRM PURPOSE

Department of Social Welfare and Development
KALAHI CIDSS–NCDDP
Kapit-Bisig Laban sa Kahirapan
Comprehensive and Integrated Delivery of Social Services
National Community-Driven Development Program

July 14, 2015

FOR : **THE REGIONAL DIRECTORS**
FIELD OFFICES CAR, I, III, IV-A, IV-MIMAROPA, V, VI, VII, VIII, IX, X, XI, XII, CARAGA

ATTENTION : **ALL DRPMs, RCISs, RCDs, RFAs**

FROM : **THE ASSISTANT SECRETARY FOR PROMOTIVE PROGRAM AND DEPUTY NATIONAL PROGRAM DIRECTOR**
KC-NCDDP

SUBJECT : **GUIDANCE NOTE ON DESIGN CONSIDERATIONS FOR COMMUNITY FACILITIES THAT ARE ALSO USED FOR DISASTER RESPONSE AND MANAGEMENT**

I. Introduction:

The National Community Driven Development Program (NCDDP) is the scaling up of CDD operations of KALAHI CIDSS to 846 poor municipalities. Of this number, 554 municipalities were affected by Typhoon Yolanda (Haiyan).

Experiences in program implementation in these areas raise the need for policy guidance on the planning, design, implementation, review and monitoring of community facilities intended for disaster response and other uses. To ensure consistency with government rehabilitation efforts, the KC-NCDDP adopts the provisions of the Joint DENR-DILG-DND-DPWH-DOST Memorandum Circular (JMC), in (i) determining suitable locations for community subprojects to be proposed for KC-NCDDP support, and; (ii) providing guidance to Area Coordinating Teams (ACT) in assisting communities to make decisions on subprojects, as well as appropriate subproject design options, to address hazards.

These guidelines are intended to help program staff undertake the following; (i) if a facility that will also be used for disaster response and management is proposed, facilitate in-depth assessment by the community of the need for these facilities, and; (ii) facilitate community decision-making on the features needed to ensure sound technical design that will be responsive to assessed needs related to these kinds of facilities proposed for funding support under the KC-NCDDP.

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KC-0400

II. Objectives, Scope and Coverage:

This document aims to provide guidance to the Area Coordinating Team (ACT) in assisting communities in decision-making in determining appropriate locations, and responsive subproject designs for community facilities intended for disaster response and other uses.

III. Specific Guidelines

All RPMOs are directed to follow the general guidelines enumerated in this guidance note.

A. On the SELECTION OF SUITABLE SITES for community facilities intended for disaster response and other uses.

The following should be considered in selecting suitable sites for community facilities intended for disaster response;

1. **SITE SELECTION CRITERIA** - The regional and local context should be considered in selecting the location for the facility. The structure intended for the subproject should be within suitable sites for housing, and outside potential hazard prone and protection areas. To this effect, the Mines and Geosciences Bureau (MGB) of the Department of Environment and Natural Resources (DENR) issue "MGB certification" and "Landslide and Flood Threat Advisory" (a sample is attached as Annex A) to inform barangay and municipal LGUs of the degree of exposure to hazard of a given location. The MGB certification is used by the municipal local government unit (MLGU) as a key reference in issuing locational clearance, which in turn is a needed pre-requisite to the issuance of a building permit. Program staff assisting local communities are advised to facilitate access and use of this information by community volunteers in making decisions on the choice of locations for proposed projects of this nature, as well as on structure design and other mitigation measures.

2. **ACCESSIBILITY TO MAJOR TRANSPORTATION FACILITIES** – The site should have an existing legal road right of way from a major thoroughfare, and should be accessible to the general public at all times.

3. **ZONING AND LAND USE CLASSIFICATION** - The site must fall under residential zone in the updated and approved CLUP. Program staff should ensure that zoning clearance is secured from the MLGU zoning officer.

4. **TOPOGRAPHY AND SOIL CHARACTERISTICS** - The terrain of the proposed site should be relatively flat, without the need for major embankment and slope protection structures. In cases where the site has a rolling terrain, the slopes should not exceed 15% max gradient. For high density situations, the slope should be below 5%. The site soil characteristics should conform to the suitability standards for construction by DENR MGB. Backfill and cutting above 1 meter should be avoided as much as possible.

B. On the PREPARATION of RESPONSIVE and APPROPRIATE DESIGNS

The following should be considered in designing the facility;

1. **USE OF THE FACILITY** – How the community intends to use the facility should be a key factor in deciding the design of the structure. The historical experience of community residents of the disaster events that have affected them should be considered in determining how the facility will be used. For example, if the community intends to use the facility for evacuation, the Program staff should assist CVs in analyzing (i) the history of disaster events that has happened in the community in recent memory, and whether these events involved evacuation of populations; (ii) the length of the evacuation period (i.e. *Did the evacuation last for only a few hours? Less than a day? More than a day/s?*); (iii) facilities that were used during the evacuation period (i.e. *Were kitchens needed and set-up? Toilets and baths? etc.*). These are further described in no. 4 below.

2. **HOUSEHOLD BENEFICIARIES –** The number of persons (disaggregated by sex) and/or HHs (if the facility will also be used for evacuation) projected to use the facility should also be considered in designing the facility. If the facility is will also be used as an evacuation area, the area provision should be based on a space allocation of between twelve (12) to fifteen (15) sqm. per family with five (5) members, or on a space allocation appropriate for the purpose, as determined by the LDRRMC and the municipal engineer.

3. **WATER and POWER SUPPLY FACILITIES –** Source of potable water should be identified, and the system for collecting, storing, and use should be clearly established in the design. This is particularly critical if the facility will also be used for evacuation. Water may be sourced from the local water company, from the ground, or other alternative source. These should be clearly detailed in the subproject design. Similarly, sources of electrical power should be determined (i.e. utility company power connections, power generators, solar energy, etc.), that will serve the needs of the facility in the event of a disaster.

4. **BASIC AMENITIES TO BE CONSIDERED –** If the community intends to also use the facility for evacuation, Program staff should help facilitate discussion by community members of the basic amenities that the community thinks should be provided in the design. These should likewise be based on the historical experience of the community of disaster events, and their assessment of what may be needed in the event of a disaster requiring evacuation. These amenities may include the following;
    a. Shelter and Accommodation Area.
    b. Separate Toilet and Bath Areas for Men and Women located at opposite areas of the structure, including accessibility for senior citizens and persons with disabilities (PWD), located outside. The septic vault should be located 10 meters away from the source of drinking water (i.e. ground water sources), which may also be located outside the community

center. If this is not feasible, the septic vault design should be secured so as not to contaminate the water source.

c. Laundry area outside the community center
d. Temporary Health Station/Clinic
e. Women Friendly Spaces
f. Storage Areas for relief goods and other supplies, with appropriate ventilation, which may also serve as distribution area for relief goods.
g. Community Kitchen and dining facility
h. Water Supply Spaces
i. Materials Recovery Facility or Waste Disposal Areas located outside the facility, and at a safe distance to prevent flies and other insects infecting the community center itself.
j. Space for Livestock and other Animals, located outside the community center
k. Camp Management Operations Area

C. On considerations in SITE PLANNING

Program staff assisting communities prepare and develop proposals for facilities intended for disaster response and related uses should help facilitate community discussions on the following considerations in site planning;

1. Where feasible, adoption of "green infrastructure" design and construction methods and approaches that preserve existing natural assets of the land (e.g., trees, ground cover, vegetation, natural waterways and outfalls), which promotes the development of "walkable communities."

2. Design and development of appropriate community facilities that (i) are compliant to all applicable laws, rules, and regulations in site development, particularly on housing, including accessibility (BP 344); (ii) are aligned with the cultural practices and activities of the community, especially if these are to be located within ancestral domains, and; (iii) are linked with existing disaster risk reduction (DRR) and environmental management programs of the local government unit.

3. The Technical Facilitators together with the Municipal Engineers and the MDRRMO shall set the minimum requirements for community facilities that are applicable in the local context.

D. On required documents for processing of proposals

The following should be observed in the preparation and processing of proposals

1. Site Validation report

The site validation report should contain a brief explanation on the results of the assessment conducted on (i) the need for the facility, as well as (ii) the design

features agreed upon by the community, based on the guidance provided for in this guidance note.

2. **Detailed Estimates and Program of Work (POW)**

   The standard Program of Works (POW) should be prepared. The detailed estimate should present the working quantities derived from the quantity take off. It should also show capability/productivity rates/ outputs used in the calculations. As a guide in detailed estimate, standard or prevailing capability outputs/rates in the area shall be used.

3. **Technical Plans and Drawing Details** drawn in a standard size; ideally on a 20" x 30" drawing sheets but A3 or A4 size may be used provided that standard scale shall be adopted i.e. 1:100, 1:200 or larger for spot details/sections.
   a. Cover/Title Sheet
   b. Drawing Index
   c. Legend, Abbreviation and General Notes
   d. Location plan and vicinity Map (Country, Province, Municipality and Barangay)
   e. Brgy. Physical Development Map (Indicating existing and proposed subprojects in the area)
   f. Building Plans
      i. Perspective
      ii. Vicinity Map
      iii. Floor and Foundation Plan
      iv. Roof Framing Plan
      v. Electrical Layout Plan
      vi. Plumbing Layout Plan
      vii. Plan Elevations for the Building
      viii. Section and Details
   g. As applicable, Structural Design and Analysis for Footing, Columns, Beams and Roofing.

4. **Pictures** showing the site location of the subproject (geotagged)

5. **Permits** and **Clearances** are secured and available;
   a. Building Permit issued by the MLGU Building Official/Municipal Engineer before SPI including locational clearance from the Zoning Officer of the MLGU
   b. Applicable NOL. For NPMO, the RCIS must conduct technical review prior to endorsement to NPMO.

For your reference and guidance.

CAMILO G. GUDMALIN