ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

Name of Sub-Project : **Rehabilitation and Improvement of San Roque-Bahay Farm to Market Road**

Location : Liloan, Southern Leyte

Implementing LGU : Province of Southern Leyte

Estimated No. of Beneficiaries : 10,532 population; M = 5,180, F = 5,352 2,203 Households

Rehabilitation or New : Rehabilitation of Existing Road

Estimated Total Cost : Php 232,951,799.24

A. Site and Design Consideration

The road does not encroach or traverse any declared protected area or natural habitat.

The subproject will not displace, disfigure or render inoperable/inaccessible any monument or physical structure of known cultural and historical significance.

B. Environmental Issues and Mitigation Measures

ENVIRONMENTAL AND SOCIAL MANAGEMENT MITIGATION PLAN

Issue (Potential Impact)	**Assessment**	**Mitigation Measure**	**Schedule/Duration of the Mitigation Measures**	**Instrument of Implementation (POW, Contract, IDP, or O&M Plan)**	**Respon-sible Unit**
A. Pre-construction Phase					
1. Possible illegal or unauthorized sourcing of construction materials	Procure construction materials from sources with valid environmental sources, i.e. for sand and gravel, from those with DENR-MGB/EMB permits; for timber resources, from those with valid DENR-FMB/EMB permits	Approval, issuance and validity of environmental permits and/or license of sources of construction materials: to be monitored prior to award to every contractor	Prior to construction	Standard Operating Procedure in the GOP Procurement Guidelines	PLGU
2. Delivery of construction materials; transport of mechanical equipment to site.	Construction wastes (e.g. sacks, cans, plastic, scrap lumber and steel will create a moderate impact to the environment. Dust and Noise create moderate impact to the environment	a. Segregation at source and regular disposal of discarded construction materials to the City dumpsite. b. Provide segregation box/trashcan and scrap site in the project site. c. Collect cement sacks, excess steel bars and lumber for disposal to MRF or sell the reusable waste materials to the local licensed recycler. d. Strict prohibition of (waste) littering within the project site. a. Observe operating hour limitation between 6:00 a.m. and 7:00PM. b. Set up speed limit near busy intersections and narrow streets. c. Cover loaded trucks with canvass or any equivalent coverings.	Pre-operation phase	By administration	Contractor, Supplier
3. Grievance during	Complaints and Issues can	Establish Grievance Redress	Implementation Phase	Grievance &	MLGU,

construction	hamper the implementation of the project	Mechanism		Redress Mechanism	PLGU, RPCO
4. Possible loss of economic trees during construction	A number of fruit-bearing and forest trees will be cut prior and during construction.	a. The LGU will be responsible for the cutting of trees and the lumber will be given to the owner. b. A notarized waiver of quite claim was signed by the owner of the affected trees. c. A cutting Tree Permit was issued by the CENRO with all the requirements for compliance included.	Prior, during and after construction	Notarized waiver of quit claim signed by the owner of trees.	MLGU/ PLGU
5. Demolition of affected structures	Portions of temporary and concrete structures will have to be demolished during road construction.	Owners will be given assistance but not in financial.	Prior to implementation	Waiver of rights/Quit Claim	Contractor
B. Construction Phase					
1. Domestic wastes	The wastes generated by construction workers contribute moderate impact to the nearby places.	a. Segregation at source and regular disposal of discarded construction materials to the City dumpsite. b. Provide segregation box/trash can and scrap site in the project site.	Construction Phase	By administration	PEO
2. Temporary increase in sedimentation during construction	The proposed horizontal alignment necessitates substantial earthmoving and disposal of loose topsoil	Proper disposal and compaction of soils. The earth and top soil materials will be disposed to the designated areas of the construction site. Construct ditches and sedimentation/stilling ponds as an enclosure of muddy particulates caused by constant earthworks on affected areas during wet season to prevent siltation of the immediate surroundings; i.e. rivers, lakes, agri-land and likes.	During construction	DED, POW & Contract	Contractor
3. Potential contamination of surface and groundwater with oil and grease	Waste oil and grease from equipment could contaminate surface water	Provide oil and grease trap on runoff path directing out from the equipment base. Construct ring ditch around motor pool to prevent oil from escaping outward. Contractor to install a pit where all oil, grease and like materials will be disposed. This will be of sufficient capacity and made of concrete to avoid therein from direct soil penetration. Waste and used oil should be kept in the container and sell it to a licensed recycler.	During construction	DED, POW & Contract	Contractor
4. Potential contamination of human waste	Workers would be mostly local and are expected to go home to their respective houses after work. Other non-resident workers will be temporarily housed in a base camp	Set-up adequate latrine/toilet facility at the base camp	During construction	Contract	Contractor
5. Destabilization of slopes and soil erosion due to earthworks. River banks erosion due to earthworks along rivers.	Soil saturation due to constant heavy rains would cause soil erosion on slopes. Erosion induced by the construction works.	a. Schedule the construction works during the relatively drier months. b. Implement appropriate erosion control, slope stabilization and protection measures or other equivalents that are resilient to extreme weather condition and prolonged disturbance of earthworks.	During construction	Contract	Contractor

6. Potential changes of river morphology due to construction of bridges and bypass routes	Narrowing of water channel increases flowing speed, it thus results scouring of sediment materials and banks, after which interposes another new silt-forms accumulation at the downstream channel.	Temporary bypass bridges must allow free flow of water. The abutment bearing should at least within the farthest span width of channel to ensure no contraction of watercourse. Install silt barriers. Undertake total restoration of the bank original condition and complete removal of bridging materials once the need of their service has ceased.	During construction	DED, POW & Contract	Contractor
7. Obstruction of natural water paths due to redirected flow of water during construction	Ground saturation and ponding due to uncontrolled and fractious directions of water	Apply diligent observation by following the natural drainage paths in constructing road canals and culvert installations	During construction	DED/POW and contract	Contractor
8. Potential disruption of traffic flow	The road is a vital need to the daily activities of the residents and motor vehicles and need to be kept open to traffic during construction	a. Keep the road open to traffic flow and minimize disruptions along the construction area. For safety to the commuting public, adequate warning signs and traffic personnel when necessary will be provided. b. Road warning signs shall be installed in the station that shows high requirement of road user's attention and awareness.	During construction	DED, POW & Contract	Contractor
9. Potential dust/mud nuisance during construction	Roads could become dusty during dry days and muddy during rainy days of the construction period; Construction passes through a populated area	a. Undertake sprinkling of road during dry season and patching of potholes when necessary. Set up speed limits for vehicles within the residential areas b. Set up speed limits	During construction	Contract	Contractor
10.Landslide/ erosion of exposed road sides resulting in sedimentation of waterways	The road will pass through a section that is of loose materials on the mountainside.	Gabions and slope protection structure will be installed in section14+510 to 14+640 to prevent landslide and erosion.	During construction	DED, POW & Contract	Contractor
11. Inadequate drainage resulting in flooding or ponding	There are sections that needs drainage structures	Drainage structures will be installed in the following stations:0+412.94; 4+195.5; 5+717; 5+847.4; 5+986.35; 8+089; 8+651; 8+753; 8+929; 9+173; 9+448; 10+149; 11+830; 12+790; 13+518; 14+550; 14+590; 15+955; 18+204.60; 19+333	During construction	DED/POW and contract	Contractor
12. Local employment	Construction will provide local employment opportunities	Hiring priority shall be given to qualified local residents particularly those who will be affected	During construction	Contract	Contractor
13. Damage to standing crops	Standing crops that encroached in the 2.5 shoulder & canal will be affected	Replanting of trees in the same barangays with trees affected	After construction	ESMP	MLGU/ BLGU
14. Damage to structures	Structures that encroached in the 2.5 shoulder and canal will be affected	Although persons affected signed a waiver, as agreed during the meetings, they will be given assistance but not financially.	During construction	ESMP	MLGU/ Contractor
15. Potential Damage to Marine Sanctuary	Roadway runoff during construction should be prevented from flowing directly into water course that would result to water pollution which threatens marine biodiversity and production	Implementation of engineering structures that trap or filter impurities out of runoff water (e.g. riprap, silt fences)	Before and During Construction	ESMP	Contractor
16. Conversion of Land-use/Natural habitat due to quarry	Designate quarry site has substantial source and had been declared by (DPWH) as accredited to standard quality source of materials	Quarry materials will be procured from existing site (The Lawigan River) which is in a distance of 50 k.m. from the subproject site.	During implementation	Certificate	Contractor
17. Potential damage to existing road due to hauling of quarry materials	Transportation of quarry materials from source to FMR will cause damage to existing roads.	Regular maintenance and repair of existing road by the contractor	During implementation	Contract	Contractor
18. Presence of dangerous road	Horizontal and vertical road alignments in general are laid in	Provide adequate guard rails to all stations that need with blocking	During project implementation	POW	Contractor

sections due to road topography and elevation	moderate curves and slopes	protection. Install road signs in station that necessitates road user's awareness. Set up speed limit (to be observed) in the proven accident prone areas			
19. Possible discovery of artifacts, bones and other objects of interests during road construction	Discovery of Archaeological finds and other objects of interests within 10 meters radius	Cease the field operations and immediately report to the PLGU and RPCO SES Focal Person.	During project implementation	Finds Procedures	Contractor
20. QUARRY SITES: a)Nuisance in operation	Excavation and milling operation of raw materials with machineries, impact of loading, crushing/screening of aggregates and transportation of finished products within the site or roads exposed to the community areas emit nuisance to people.	Earth mounds connected around the excavating and crushing area can reduce permission of nuisance to public receptors. It can also serve acoustic and provide visual screening from daily quarrying activity. Cultivation of woodlands and fields next to the buffer zone can be sometimes useful by some degree to a long-term quarrying in absorbing tough milling sounds from the plant. Sound-reduction improvisation attached/fitted /framed-up to the equipment such as conveyor, breaking chamber and other moving parts can minimize mechanical nuisance.	During operation	Contract	Contractor
20: b) Impacts on Extraction of Aggregates in river.	Long term aggregates extraction in the river will reduce to a modified river form Increase rates of channel incision, causing damage to bridge and other structures due to reduction of sediment supply.	a. Refer to the river extraction plan of DPWH b. Follow the river dredging plan of DPWH	During operation	Contract	Contractor
20: c) Disturbance of Water source/ Groundwater	Topsoil stripping and removal of aggregates in the quarry sites may eradicate the permeable properties of soil in collecting rainwater above a watershed. Excavation reached below the groundwater table may lead to dewatering the nearby water paths, wells and springs. Washing water from the conveyor and chewing chamber which carries dirt and sludge particles contaminates and silts the receiving water source and land surface. Oil, fuel and grease escaping from equipment and storage may have to contact with the ground and penetrate to the water table.	The planning authorities should conform to the Department of Environment about the alterations of existing surface water courses, nearby river paths, lakes, wetland and any water forms and discharges. In case, where it is proposed to excavate below the water table or aquifer, it is recommended to investigate the groundwater system in the area connected to wells and springs on immediate surroundings. Motor pool, equipment base and storage within the operating area should be required with secondary containment like bund flooring, or any flat forms that can provide prevention of oil from direct penetration to the ground whereby water table can be somewhere situated underground.	During operation	Contract	Contractor
20: d)Threatening of biodiversity/ natural heritage	Poor Management of site restoration endangers plants and wildlife. Geological formation of natural habitat may suffer or lost entirely as it turns out normally by excessive and long- term extraction on quarrying. Such features like hedgerows, rocks and trees hedging on the edge and banks of lakes/rivers	Designated conservation areas for valuable habitat within the probable source should be declared under protection (to be retained) when it is situated cleared from the river channel or out from lakes. Construction of buffer zone is appropriate in the adjacent of existing trees, woodlands and around the protected habitat of sensitive species. Construct earth heaps to cease river	During operation	Contract	Contractor

	into which wildlife, small creatures and living organism lived and depend thereto, can be damaged or totally destructed. Prolonged high turbidity due to dredging works on the river channel mobilizes mud particles and heavy metal pollutants that forming dirt deposits downstream, turning it a place infeasible to marine species.	water from passing the dredging work area to ensure no current running within the sediments being stirred up by moving equipment that would result to severe agitation of water and oil-spilling on river. Original formation and condition of stones as home to valuable species striving therein, being disturbed by such human activity, should be restored in full manner.			
21. Batching Plant Requirement	The contractor of the road construction will be setting up one- concrete batching plant within the vicinity of project site	Contractor will be complying with the succeeding requirements as applicable to the construction of batching plant	During implementation	Contract	Contractor
21: a) Land acquisition for the batching plant	The proposed site for the batching plant is owned by LGU department	Contractor to lease the site of the batching plant	Prior to start of construction of the batching plant	Contract of lease	Contractor
21: b) Conditions on the plant Site	The batching Plant is not situated in a hazardous area	The proponent LGU to determine suitable sites for setting up of the batching plant. The site should be selected on zone off to flooding. The site should be situated away from critical slopes and erodible areas.	In the planning Period	Contract	Contractor
21: c) Disturbance to wildlife due to vegetation clearing	The setting up of the Batching Plant will not necessitate major clearing of vegetation or cutting of trees	Select for available wide open space within the proximity of the site. Construct temporary fencing enclosure to vegetation which declared to be retained. Replace the destroyed vegetations by replanting other equivalents.	Prior to start of Batching Plant construction	Contract	Contractor
21: d) Temporary increase of solid waste during construction of batching plant	There are isolated open spaces within the vicinity of the sub project, which means, from this point, there is less solid wastes derived from cutting of trees and earth sludge.	The Plant site is proposed to be located on wide open flat ground, thus, solid wastes during construction can be minimal. However, proper management of wastes disposal is always required.	During Plant construction period	Contract	Contractor
21: e) Hazardous wastes	Improper handling and disposal of hazardous wastes such as waste oil, batteries and accumulators contact soil within the site and immediate proximities.	Hazardous wastes should be kept in hard enclosure temporary storage surrounded with fence and rain shower shelter. Hazardous wastes should be collected by licensed collection companies.	During Plant construction and operation	Contract	Contractor
21: f) Potential heavy equipment hazard; i.e. dump trucks, concrete mixers, pay loaders etc. in transporting aggregates and fresh concrete	Batching Plant is proposed to be constructed with a proper distance to community areas. Nonetheless, the roads used in transportation of materials would pass through public areas.	Provide improvisation of exhaust mufflers of heavy equipment vehicles and observe operating hour limitation between 6:00AM. and 7:00PM. Under the appearance of warm, dry and windy weather condition, working sites and roads should be watered. Aggregates loaded in the vehicles should be covered while running at low speed limit. Undertake regular repair and reshaping of access roads to retouch the dropped out particles and suspended liquid cement and particulates. Recondition the access routes to become resilient from intensive passage of loaded equipment	During Plant operation	O&M	Contractor
21: g) Potential hazard and risk to the community/ plantation during batching plant operation	Batching Plant Site poses risk to the community or plantation due to suspended particulates, alkaline wastewater and noise.	Construct peripheral fence or trees cultivation on earth heaps/buffers to minimize suspended particulates from spreading. Construct temporary stilling/sediment pond to hold contaminated runoff or	During Plant operation	O & M	Contractor

		waste water from direct flowing outward nearby surroundings.			
21: h) Occupational health hazards to workers	Batching plant operators and construction workers will be exposed to unsafe and hazardous condition	All workers should be required to strictly observe safety standard measures and wearing of personal protective equipment. Install safety and warning signs at the zone dangerous in contact of people inside the Plant.	During Plant operation	O & M	Contractor
21: i) Accumulation of excess materials during operation	The Batching Plant generates considerable volume of excess raw materials	Impose proper handling and disposal of excess materials. Vacate suitable site for dumping of excess materials.	During Plant operation	O & M	Contractor
21: j) Increased siltation and water quality degradation due to project activities	Creek is the nearest receiving water body which is approximately measured 1.85 km. from the Batching Plant. The water from the creek had been used for domestic consumptions in the barangay(s). The distance of the nearest well used from the Batching Plant is approximately 2 KM.	Strictly observe proper waste water management. Construct stilling/sediment pond to trap the contained liquid particulates and silt residuals on water before draining to the water corridor dropping to water bodies.	During Plant operation	O & M	Contractor
21: k) Dust Emissions	Dust generates and suspended within the fall-out areas due to cement loading and unloading into the storage, motions of heavy equipment and concrete batching in the plant. Visual impacts, water pollution, incremental contents of mineral nutrients, altered plant species composition, contamination of soils and plants, dust accumulation on properties and respirable dust particles (affecting human health) contribute wide range of potential impacts to the environment.	To minimize dust emissions, the location of plant site should not be open from the high prevailing winds, likewise, the conveyors and other moving components should be towards downwind direction to minimize the effects of winds. Construction of earth heaps/buffers planted with trees in the open space (at the peripheral line) that would stand as a blockade next to the sensitive areas/receptors can help to control dust emissions. Install dust suppressor or any device systems that can eliminate dust from heavy exposure during concrete batching. Emissions from the exhaust of machineries should regularly be monitored by the authorized agency.	Durig Plant operation	O & M	Contractor
C. Post-Construction Phase					
1. Potential increase in the use of pesticides due to intensification of cash crop production in the area	There is an ongoing IPM program of DA in the service area	DA to continue to support IPM program	After construction	O & M plan	MLGU
2. Potential increase in encroachments of human activities into the nearby public forest	The proposed road does not improve access to a public forest	No measure required	N/A	N/A	N/A

Chance Finds Procedures

A) Archaeological Finds

The following procedures are to be executed in the event that archaeological material/paleontological feature is discovered:

1) All construction activity in the vicinity of the find/feature/site will cease immediately.

2) Delineate the discovered find/ feature/ site.

3) Record the site location with ground references and all remains are to be left in place and free from any alterations.

4) Secure the area to prevent further damage or loss of removable objects.

5) Immediate notification of the site engineer/officer who in turn will consult and inform the project archaeologists/paleontologists (if available), local or national statutory authorities and (National Museum Service) to take the appropriate course of action.

6) The on-site officer will assess record and photograph the find/feature/ site.

7) The on-site officer will undertake the inspection process in accordance with all project health and safety protocols under direction of the Health and Safety Officer.

8) Provide sub-site office and finds storage, keeping the recovered artifacts and other archeological objects stored or undisturbed during the process.

9) In the case of human skeletal remains discovery, the osteoarchaeologist or other in-charge authority will conduct treatment and examination of remains.

10) In the case of animal skeletal, fossils and plants fossils remains discovery, the paleontologist will conduct inspection and examination of remains.

11) For conservation issue, a conservator is available to the project, if required.

12) Once the authorization has been given by the responsible statutory authorities, the contractor will be informed when operations can resume.

B) Paleontological Finds

The following procedures are to be executed in the event that paleontological material is discovered despite of the fact that the land regions subject therein have known no physical features ever recorded for such kind:

1. Cease all earth moving activities in the site;
2. Contingency of the physical cost to be paid with the paleontologist in handling the finds study and methodology if fossils are unearthed in the course of excavation during road construction will be shouldered by LGU;

3. The field team will be supervised by a paleontologist qualified to deal whether there are high potential significant resources contained in the area;

4. Salvage of unearthed fossil remains and traces (e. g. trails, burrows etc.);

5. A field survey prior to resume earthmoving activity;

6. Identification, cataloging, sorting of artifacts, and provision for repository storage of prepared fossil specimens;

7. A final report of the finds and their significance;

8. Wait for the authorization when works can resume.

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