CHAPTER 5

ROAD/BRIDGE CONDITIONS AND DEVELOPMENT LEVEL

5.1 ROAD ADMINISTRATION SYSTEM

5.1.1 Road Administration System

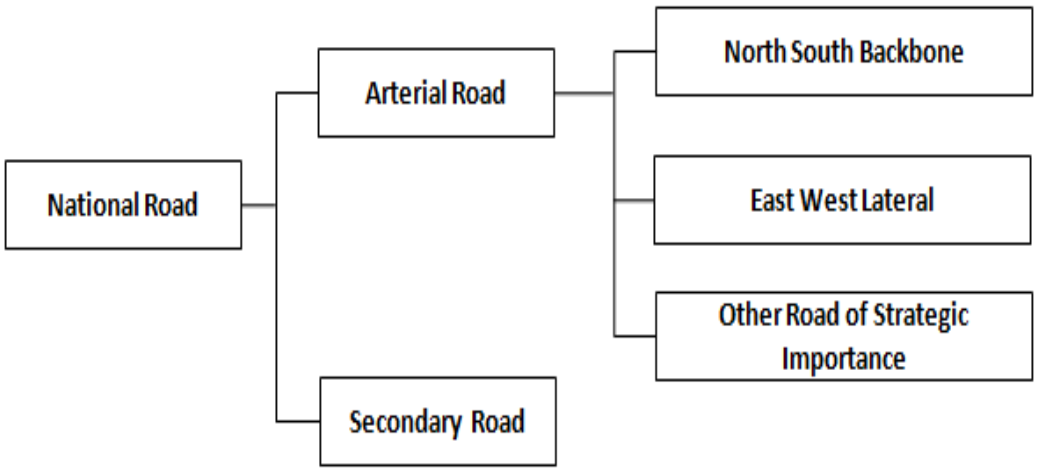
Roads in the Philippines are administratively classified into 5 categories and responsible agencies are as shown in **Table 5.1.1-1**.

TABLE 5.1.1-1 ADMINISTRATIVE ROAD CLASSIFICATION

Classification	Responsible Agency
National Road	DPWH-National (except ARMM) DPWH-ARMM (within ARMM)
Provincial Road	Provincial Government
City Road	City Government
Municipal Road	Municipal Government
Barangay Road	City/Municipal Government

5.1.2 Functional Road Classification

DPWH-National classified national roads by function into 4 categories as follows;



Functional road classification in Mindanao by DPWH-National is shown in **Figure 5.1.2-1**.

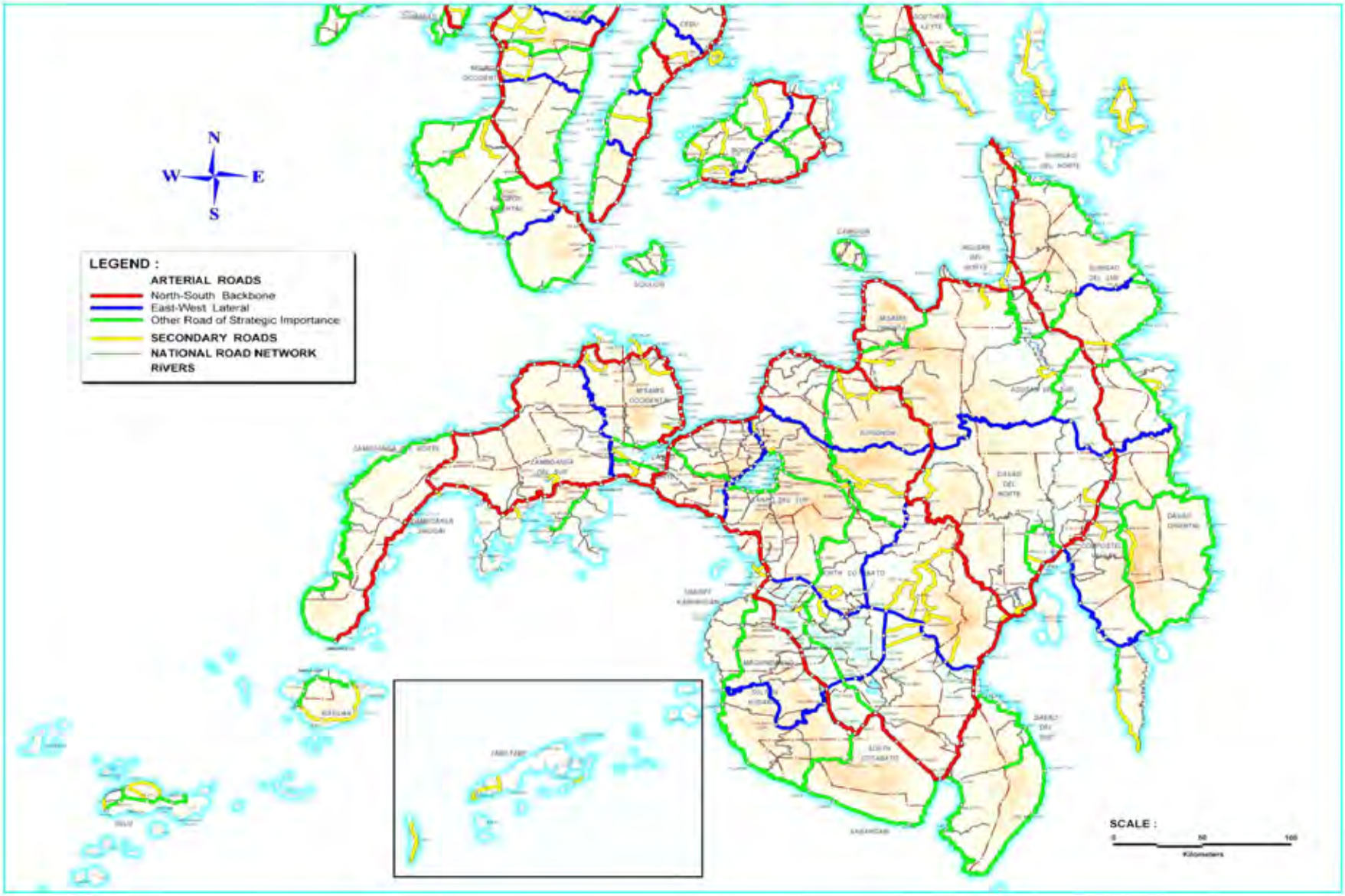


FIGURE 5.1.2-1 DPWH FUNCTIONAL ROAD CLASSIFICATION MAP

5.2 ROAD/BRIDGE SURVEY UNDERTAKEN

Road/Bridge Inventory and Condition Survey was conducted for 1,068 km (891 km of National Roads and 177 km of Provincial Road) length within ARMM area. For national roads in Regions X and XII, data obtained by DPWH-National were utilized, thus no survey was undertaken.

5.2.1 Items Surveyed

(1) Road Inventory and Condition Survey

Following items were recorded by site survey according to the format shown in **Table 5.2.1-1**. Each item was confirmed by visual inspection and sketching. Technical guidance and test-run for the survey was provided by JICA Study Team to ARMM-DPWH and local consultant for smooth and precise data collection before the implementation of the survey. Photographs at 500m interval have been also taken to record the site condition.

- Station Number
- Type of Pavement
- Defect of Pavement
- Shoulder Width and Type
- Side Ditch Width and Type
- Type of slope Condition
- Junction availability
- Land Use
- Condition of Cross Section
- Terrain
- Horizontal Alignment
- Vertical Alignment

(2) Bridge Inventory and Condition Survey

Following items were recorded by site survey according to the format shown in **Table 5.2.1-2**. Each item was confirmed by visual inspection and sketching. Technical guidance and test-run for the survey was provided by JICA Study Team to ARMM-DPWH and local consultant for smooth and precise data collection before the implementation. Photographs of each bridge have been also taken to record the bridge condition.

General Information

- Year Built:
- Station No.
- Load Limit (tons) :
- Coordinate:
- Terrain :
- Alternative Route:
- Structures/Houses in ROW
- Land use:
- Utilities on Bridge :

Data of Super-structure

- Structure Type :
- Each Dimensions
- No. of Lanes :
- Bearing Type :
- Surfacing Type:
- Exp.Joint Type :
- Railing Type :

Data of Sub-structure

- Abutment Type :
- Pier Type :
- Foundation:
- Protection :

Hydraulic Condition

- Max. Flood Level
- River Alignment at the Bridge
- Debris Flow:
- River-bed Variation
- Navigation Clearance :

Bridge Condition

- Super Structure
- Sub Structure
- Approach Road

TABLE 5.2.1-1 (1/4) SURVEY FORMAT FOR ROAD INVENTORY AND CONDITION SURVEY

SUMMARY OF ROAD INVENTORY AND CONDITION SURVEY

	A	B	C	D	E	F	G	H	I	K	N	O				P
1	**ROAD CONDITION SURVEY SHEET**															
2	Sheet Number	:														
3	ROAD NAME	:				Road NO./ID	:							Inspection Date :		
4	PROVINCE NAME	:				MUNICIPARITY	:							Inspected by	:	
5	District Engineering Offic	:				Admin. Road Class	:							Checked by	:	
6	Total Length	:		km		Date	:									
7																
8					Carriageway Pavement			Shoulder			Land Use					
9	Sub Section No.	Length (km)	Station Beginning (kp)	Station Ending (kp)	Type	Width (m)	Condition	Type	Width (m)	Terrain	A,F,W,R/C		Cross Section Type	Horizontal Alignment	Vertical Alignment	Remarks
10																
11					C,A,G,E		G,F,B,V	C,A,G,E		F,R,M	L	R	F,C,E,C/E	S,SC	F,SS	
12	1															
13	2															
14	3															
15	4															
16	5															
17	6															
18	7															
19	8															
20	9															
21	10															
22	11															
23	12															
24	13															
25	14															
26	Total															

TABLE 5.2.1-1 (2/4) SURVEY FORMAT FOR ROAD INVENTORY AND CONDITION SURVEY

LIST OF RCPC / RCBC

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**ROAD CONDITION SURVEY SHEET**																
2	Sheet Number	:															
3	ROAD NAME	:				Road NO./ID	:										
4	PROVINCE NAME	:				MUNICIPARITY	:							Inspection Date :			
5	District Engineering Offic	:				Admin. Road Class	:	N						Inspected by	:		
6	Total Length	:		km		Date	:							Checked by	:		
7																	
8																	
9	Sub Section No.	Station (kp)	Height (m)	Width (m)	Diameter (m)	Length (m)	Type	Remarks		Sub Section No.	Station (kp)	Height (m)	Width (m)	Diameter (m)	Length (m)	Type	Remarks
10																	
11																	
12	1									21							
13	2									22							
14	3									23							
15	4									24							
16	5									25							
17	6									26							
18	7									27							
19	8									28							
20	9									29							
21	10									30							
22	11									31							
23	12									32							
24	13									33							
25	14									34							
26	15									35							
27	16									36							
28	17									37							
29	18									38							
30	19									39							
31	20									40							

TABLE 5.2.1-1 (3/4) SURVEY FORMAT FOR ROAD INVENTORY AND CONDITION SURVEY

ROAD FIELD SURVEY SHEET-1

Straight Road Diagram

ROAD NAME :		Road NO./ID :	
PROVINCE NAME :		MUNICIPARITY :	
District Engineering Offic :		☐National Road ☐Provincial Road	

Sheet No. of the day	(/)
Inspection Date :	
Inspected by :	
Checked by :	

Baranggay Name										
Type of Land Use										
Junction Indicator										
Type of slope Condition										
Side Ditch Width and Type										
Shoulder Width and Type										
Pavement Width (km → 100m 200m 300m 400m 500m 600m 700m 800m 900m 1,000m)										
Type Defects										
Shoulder Width and Type										
Side Ditch Width and Type										
Type of slope Condition										
Junction Indicator										
Type of Land Use										
Type of Cross Section										
Type of Terrain										
Type of Horizontal Alignment										
Type of Vertical Alignment										

TABLE 5.2.1-1 (4/4) SURVEY FORMAT FOR ROAD INVENTORY AND CONDITION SURVEY

ROAD FIELD SURVEY SHEET-2

Photographs

ROAD NAME :		Road NO./ID :	
PROVINCE NAME :		MUNICIPARITY :	
District Engineering Offic :		☐National Road ☐Provincial Road	

Sheet No. of the day	(/)
Inspection Date :	
Inspected by :	
Checked by :	

Road Link No. Distance km ~ km

Photos		
SECTION	Section (0 m)	Section (500 m)

photograph direction

TABLE 5.2.1-2 (1/5) SURVEY FORMAT FOR BRIDGE INVENTORY AND CONDITION SURVEY

SUMMARY OF BRIDGES

Name of District Engineering Office : _____

Road No.	Name of Road	Bridge No.	Bridge Name	Bridge Location (Km Post)	Bridge Length (m)	No. of Spans	Span Arrangement (m)	Bridge Width (m)			Type of Super-Structure	Year Built	Load Limit (ton)	Hydraulic Condition				Defects						Overall Evaluation
								Total	*Carriage-way*	*Sidewalk*				*Flood Level*	*River Alignment*	*River Bed*	*Debris Flow*	*Main Girder*	*Deck Slab*	*Bridge Surface*	*Abut-ment*	*Pier*	*Approach Road*	

TABLE 5.2.1-2 (2/5) SURVEY FORMAT FOR BRIDGE INVENTORY AND CONDITION SURVEY

BRIDGE FIELD SURVEY SHEET-1

Bridge Inventory Data

BRIDGE NAME: _____

Inspection Date :		Inspected by :		Checked by :	

GENERAL:								
District Engineering Office:			ROAD NAME :			YEAR BUILT :		
MUNICIPALITY :			Station No. :			LOAD LIMIT (tons) :		
BARANGAY :			NAME OF RIVER :			COORDINATE :	X:	Y:
ENVIRONMENT :								
Terrain :	☐Flat	☐Rolling	☐Mountainous					
Alternative Route:	☐Yes	☐No	Land use:	☐Residential/Commercial		☐Agricultural Use	☐Forest	☐Waste Land
Structures/Houses in ROW? :	☐Yes	☐No	Utilities on Bridge :	☐Water	☐Sewerage	☐Electricity	☐ Telephone	
SUPER-STRUCTURE :								
Structure Type :	☐Bailey	☐Steel Girder	☐Steel Truss	☐RC Slab	☐RC Girder	☐PC Girder	☐Others;	
	( )-( )Span;	_____	( )-( )Span;	_____	( )-( )Span;	_____		
Bridge Length (m) :		No. of Lanes :		Bearing Type :	☐Elastomeric Pad	☐Steele Plate	☐Others;	
Span Arrangement:		Total Width (m) :		Surfacing:	☐Concrete	☐Asphalt		
No. of Girders :		Carriageway Width (m) :		Exp.Joint Type :	☐None	☐Steel Plate Type	☐Finger Joint	☐Rubber Type
Skew (deg):		Sidewalk Width (m) :		Railing Type :	☐RC	☐Steel		
SUB-STRUCTURE								
Abutment Type :	☐Pile Bent	☐Cantilever	☐Gravity	☐Others:		☐Unknown		
Abutment Foundation Type :	☐Spread Footing	☐PC/RC Concrete Pile	☐CIP Conc. I Pile	☐Others :		☐Unknown :		
Abutment Protection :	☐Gabion	☐Grouted Riprap	☐ None	☐Others :				
Pier Type :	☐Pile Bent	☐Wall Type	☐1-Column	☐Rigid Frame	☐Others :			
Pier Foundation Type :	☐Spread Footing	☐PC/RC Concrete Pile	☐CIP Conc. I Pile	☐Others :		☐Unknown :		
Pier Protection :	☐Gabion	☐Riprap	☐ None	☐Others :		☐Unknown		
HYDRAULIC CONDITION								
Max. Flood Level	☐Overflowed	☐At the Girder Level	☐Under the Girder Level (Approx._____m from the bottom of Girder)			REMARKS;		
River Alignment at the Bridge	☐Straight	☐Curve	River Width (m):					
Debris Flow:	☐Many	☐Few	☐None					
River-bed Variation	☐Rising	☐Lowering	☐Unvaried					
Navigation Clearance:	☐Not Required	☐Insufficient	☐Sufficient					

Reference No. _____

TABLE 5.2.1-2 (3/5) SURVEY FORMAT FOR BRIDGE INVENTORY AND CONDITION SURVEY

BRIDGE FIELD SURVEY SHEET-2

Bridge Condition & Evaluation

BRIDGE NAME: _____

SUPER-STRUCTURE :					
MAIN GIRDER / MAIN STRUCTURES OF STEEL BRIDGE	1. Deterioration of Painting?	☐Heavy Loss of Painting		☐Light Loss	☐None
	2. Corrosion at Girder or Main Structures?	☐Loss of Meber	☐Heavy Corrosion	☐Light Corrosion	☐None
	3. Break or Crack at Main Structure?	☐Yes, where; (_____)		☐No	
MAIN GIRDER OF CONCERT BRIDGE	1. Flexural Crack at the Center of Girder Bottom?	☐Many	☐Few	☐None	
	2.Shear Crack at the Edge of Girder?	☐Many	☐Few	☐None	
	3. Exposure of Re-bar at the Girder?	☐Many	☐Few	☐None	
DECK SLAB	1. Linear Crack at the Bottom of Slab?	☐Many	☐Few	☐None	
	2. Water Leakage w/ Isolated Lime at the Bottom of Slab?	☐Many	☐Few	☐None	
	3. Alligator Crack at the Bottom of Slab?	☐Many	☐Few	☐None	
	4. Exposure of Re-bar at the Bottom?	☐Many	☐Few	☐None	
BRIDGE SURFACE FACILITIES	1. Cracks and Depression at Deck Surfacing?	☐Many	☐Few	☐None	
	2. Damage at Railing	☐Many	☐Few	☐None	
	3. Sign of Settlement of Pier/Abutment?	☐Yes, what; (_____)		☐No	
SUB-STRUCTURE					
ABUTMENT:	1. Tilting the Abutment?	☐Yes	☐No		
	2. Settlement of Abutment?	☐Yes	☐No		
	3. Exposed Foundation?	☐Yes	☐No		
	4. Damage at Abutment Protection?	☐Much	☐Few	☐None	
	5. Cracks at the Abutment?	☐Many	☐Few	☐None	
	6. Exposure of Re-bar?	☐Many	☐Few	☐None	
PIER:	1. Tilting Column?	☐Yes	☐No		
	2.Settlement of Pier?	☐Yes	☐No		
	3. Local Scoring?	☐Yes	☐No		
	4. Exposed Foundation?	☐Yes	☐No		
	5. Cracks at the Pier?	☐Many	☐Few	☐None	
	6. Exposure of Re-bar?	☐Many	☐Few	☐None	
APPROACH ROAD					
1. Scoring or Washout at the behind of Abutment?		☐Much	☐Few	☐None	
2. Any Depression of Road Surface at the behind of Abutment?		☐Much	☐Few	☐None	
OVERALL EVALUATION				☐A:Good ☐B:Fair ☐C:Poor ☐D:Bad	

Reference No. _____

1. For Condition Ratings: H: Serious deterioration/damage endangering traffic and requiring urgent rehabilitation/replacement
   M: Moderate deterioration/damage, requiring minor repair/remedial measures
   S: Sound condition/small deterioration, only routine maintenance needed
   N: Not applicable
2. For Overall Ratings: (A)Good: Bridge free of defects affecting bridge performance, durability and integrity
   (B)Fair: May have defects that affects bridge durability
   (C)Poor: Bridge may have defects that affect bridge performance and structural integrity
   (D)Bad: Bridge has major defects that require major rehabilitation/strengthening or bridge replacement

TABLE 5.2.1-2 (4/5) SURVEY FORMAT FOR BRIDGE INVENTORY AND CONDITION SURVEY

BRIDGE FIELD SURVEY SHEET-3

Sketch of the Bridge

BRIDGE NAME: _____

SIDE ELEVATION	**PIER SECTION**
PLAN LAYOUT	**ABUTMENT SECTION**

Reference No. _____

TABLE 5.2.1-2 (5/5) SURVEY FORMAT FOR BRIDGE INVENTORY AND CONDITION SURVEY

BRIDGE FIELD SURVEY SHEET-4

Photographs

BRIDGE NAME: _____

Photos			
Scene	Deck Slab	Side View	Bridge to Downstream of River
Photos			
Scene	Under the Girder	Bridge to Upstream of River	Others ( )

(3) Survey Method

During the course of the site survey, the survey method was changed for the road sections where peace and order situation was not favorable.

Original Method: the local consultant was required to undertake the site survey as described below;

For Road Inventory and Condition Survey, the survey team members riding on a slow moving vehicle (at about 20-30 km/hour) record the road inventory features and road condition at every 100m interval for paved roads and at every 500m for gravel/earth road. For bridges, the survey team members investigate bridge inventory features, defects and sketching, consuming about 2-3 hours at one bridge site.

Revised Method: for road sections and bridges located in an un-safe area (which was based on the advice of CCCH), the interview method was adopted. The local consultant staff visited the District Engineering Office (DEO) for national roads or the Provincial Engineer's Office (PEO) for provincial roads, then interviewed DEO or PEO staff to fill up the survey formats. In case that they could not answer properly, the local consultant requested them to make a quick inspection of the subject roads and bridges including taking photographs. Based on their inspection, the survey formats were accomplished.

5.2.2 Some Examples of Survey Forms Accomplished

Some examples of survey forms accomplished are presented in **Table 5.2.1-3** for a road and in **Table 5.2.1-4** for a bridge.

5.2.3 Establishment of Road/Bridge Database

Road/bridge database was established in May 2009 by compiling collected date by above surveys.

TABLE 5.2.1-3 (1/3)

ROAD FIELD SURVEY SHEET-1
Straight Road Diagram

		Sheet No. of the day	(24/33)
ROAD NAME :	MARBEL - ALA - COT. ROAD	Road NO./ID : M - 1	Inspection Date : 24-Nov-08
PROVINCE NAME :	MAGUINDANAO	MUNICIPALITY : GUINDULUNGAN	Inspected by :
District Engineering Office :	MAGUINDANAO	National Road Provincial Road	Checked by :

Barangay Name/Sta. No.										
Type of Land Use	RC	RC	A	A	A	A	A	A	A	A
Junction Indicator										
Type of Slope Condition	CSF	NONE	CSF	ESF	ESF	ESF	NONE	NONE	NONE	NONE
Side Ditch Width	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Side Ditch Type	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Shoulder Width	3	3	3	3	3	3	3	3	3	3
Shoulder Type	C	C	C	C	C	C	C	C	C	C
Width/Type: 3.35/C										
STA. 1812+285 Defects										
Width/Type: 3.35/C										
Shoulder Type	C	C	C	C	C	C	C	C	C	C
Shoulder Width	3	3	3	3	3	3	3	3	3	3
Side Ditch Width	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Side Ditch Type	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Type of Slope Condition	CSF	NONE	CSF	ESF	ESF	ESF	NONE	NONE	NONE	NONE
Junction Indicator										
Type of Land Use	RC	RC	RC	A	A	A	RC	A	A	RC
Type of Cross Section	C	F	C	E	E	E	F	F	F	F
Type of Terrain	M	R	R	R	R	R	R	F	F	F
Type of Horizontal Alignment	S	S	S	S	S	GL	GL	GL	GL	S
Type of Vertical Alignment	G	G	G	G	G	G	G	F	F	F

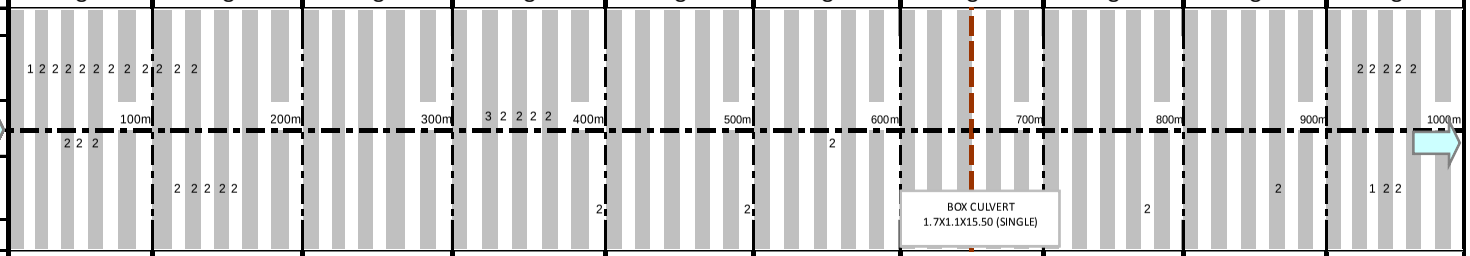


TABLE 5.2.1-3 (2/3)

ROAD FIELD SURVEY SHEET-2
Photographs

Attachment - 2

ROAD NAME :	MARBEL - ALA - COT.	Road NO./ID :	M - 1
PROVINCE NAME :	MAGUINDANAO	MUNICIPALITY :	GUINDULUNGAN
District Engineering Office	MAGUINDANAO	☐National Road	☐Provincial Road

Sheet No. of the day	(24/33)
Inspection Date :	
Inspected by :	
Checked by :	

Road Link No. _____ Distance km ~ km

Photos		
SECTION	Section (0 m)	Section (500 m)

photograph direction

Reference No.-

TABLE 5.2.1-3 (3/3)

Attachment - 3

SUMMARY OF ROAD INVENTORY AND CONDITION SURVEY

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
ROAD CONDITION SURVEY SHEET															
Sheet Number :			(24/33)												
ROAD NAME :			MARBEL - ALA - COT. ROAD			Road NO./ID	: M - 1							Inspection Date :	
PROVINCE NAME :			MAGUINDANAO			MUNICIPALITY	: DATU SANGKI							Inspected by :	
District Engineering Office :			MAGUINDANAO			Admin. Road Class :								Checked by :	
Total Length :			km			Date :									
Sub Section No.	Length (km)	Station Beginning (kp)	Station Ending (kp)	Carriageway Pavement			Shoulder		Terrain	Land Use		Cross Section Type	Horizontal Alignment	Vertical Alignment	Remarks
				Type	Width (m)	Condition	Type	Width (m)		A,F,W,R/C					
				C,A,G,E		G,F,B,V	C,A,G,E		F,R,M	L	R	F,C,E,C/E	S,SC	F,SS	
231	0.10	1812+ 285	1812+ 385	C	6.70	B	C	3	M	RC	RC	C	S	G	
232	0.10	1812+ 385	1812+ 485	C	6.70	B	C	3	R	RC	RC	F	S	G	
233	0.10	1812+ 485	1812+ 585	C	6.70	G	C	3	R	A	RC	C	S	G	
234	0.10	1812+ 585	1812+ 685	C	6.70	B	C	3	R	A	A	E	S	G	
235	0.10	1812+ 685	1812+ 785	C	6.70	F	C	3	R	A	A	E	S	G	
236	0.10	1812+ 785	1812+ 885	C	6.70	F	C	3	R	A	A	E	GL	G	
237	0.10	1812+ 885	1812+ 985	C	6.70	G	C	3	R	A	RC	F	GL	G	
238	0.10	1812+ 985	1813+ 85	C	6.70	F	C	3	F	A	A	F	GL	F	
239	0.10	1813+ 85	1813+ 185	C	6.70	F	C	3	F	A	A	F	GL	F	
240	0.10	1813+ 185	1813+ 285	C	6.70	B	C	3	F	A	RC	F	S	F	
Total															

TABLE 5.2.1-4 (1/4)

BRIDGE FIELD SURVEY SHEET-1

Bridge Inventory Data

BRIDGE NAME:	BAGAN BRIDGE 1	Inspection Date :	24-Nov-08	Inspected by :		Checked by :	

GENERAL:								
District Engineering Office:	**MAGUINDANAO 2ND DISTRICT**		ROAD NAME :	**MARBEL-ALA-COTABTO ROAD**		YEAR BUILT :	**1958**	
MUNICIPALITY :	**GUINDULUNGAN**		Station No. :	**1809+539**		LOAD LIMIT (tons) :		
BARANGAY :			NAME OF RIVER :			COORDINATE :	**X: 0654709**	**Y: 0768786**
ENVIRONMENT :								
Terrain :	☑Flat	□Rolling	□Mountainous					
Alternative Route:	□Yes	☑No	Land use:	☑Residential/Commercial		□Agricultural Use	□Forest	□Waste Land
Structures/Houses in ROW? :	□Yes	☑No	Utilities on Bridge :	□Water	□Sewerage	□Electricity	□ Telephone	NONE
SUPER-STRUCTURE :								
Structure Type :	□Bailey	□Steel Girder	□Steel Truss	□RC Slab	☑RC Girder	□PC Girder	□Others;	
No of Spans:	**3**							
Bridge Length (m) :	**32**	No. of Lanes :	**2**	Bearing Type :	□Elastomeric Pad	□Steele Plate	☑Others; None	
Span Arrangement:	**8.25-15-8.25**	Total Width (m) :	**8.94**	Surfacing:	☑Concrete	□Asphalt		
No. of Girders :	**4**	Carriageway Width (m) :	**7.4**	Exp.Joint Type :	☑None	□Steel Plate Type	□Finger Joint	□Rubber Type
Skew (deg):		Sidewalk Width (m) :	**0.47+0.47**	Railing Type :	☑RC	□Steel		
SUB-STRUCTURE								
Abutment Type :	☑Pile Bent	□Cantilever	□Gravity	□Others:		□Unknown		
Abutment Foundation Type :	□Spread Footing	☑PC/RC Concrete Pile	□CIP Conc. I Pile	□Others :		□Unknown :		
Abutment Protection :	□Gabion	☑Grouted Riprap	□ None	□Others :				
Pier Type :	□Pile Bent	☑Wall Type	□1-Column	□Rigid Frame	□Others :			
Pier Foundation Type :	□Spread Footing	☑PC/RC Concrete Pile	□CIP Conc. I Pile	□Others :		□Unknown :		
Pier Protection :	□Gabion	□Riprap	☑None	□Others :		□Unknown		
HYDRAULIC CONDITION								
Max. Flood Level	□Overflowed	□At the Girder Level	☑Under the Girder Level (Approx. 4.00 m from the bottom of Girder)				REMARKS;	
River Alignment at the Bridge	□Straight	☑Curve	River Width (m):	**15**				
Debris Flow:	☑Many	□Few	□None					
River-bed Variation	□Rising	☑Lowering	□Unvaried					
Navigation Clearance:	☑Not Required	□Insufficient	□Sufficient					

Reference No.

TABLE 5.2.1-4 (2/4)

BRIDGE FIELD SURVEY SHEET-2
Bridge Condition & Evaluation

BRIDGE NAME: BAGAN BRIDGE 1

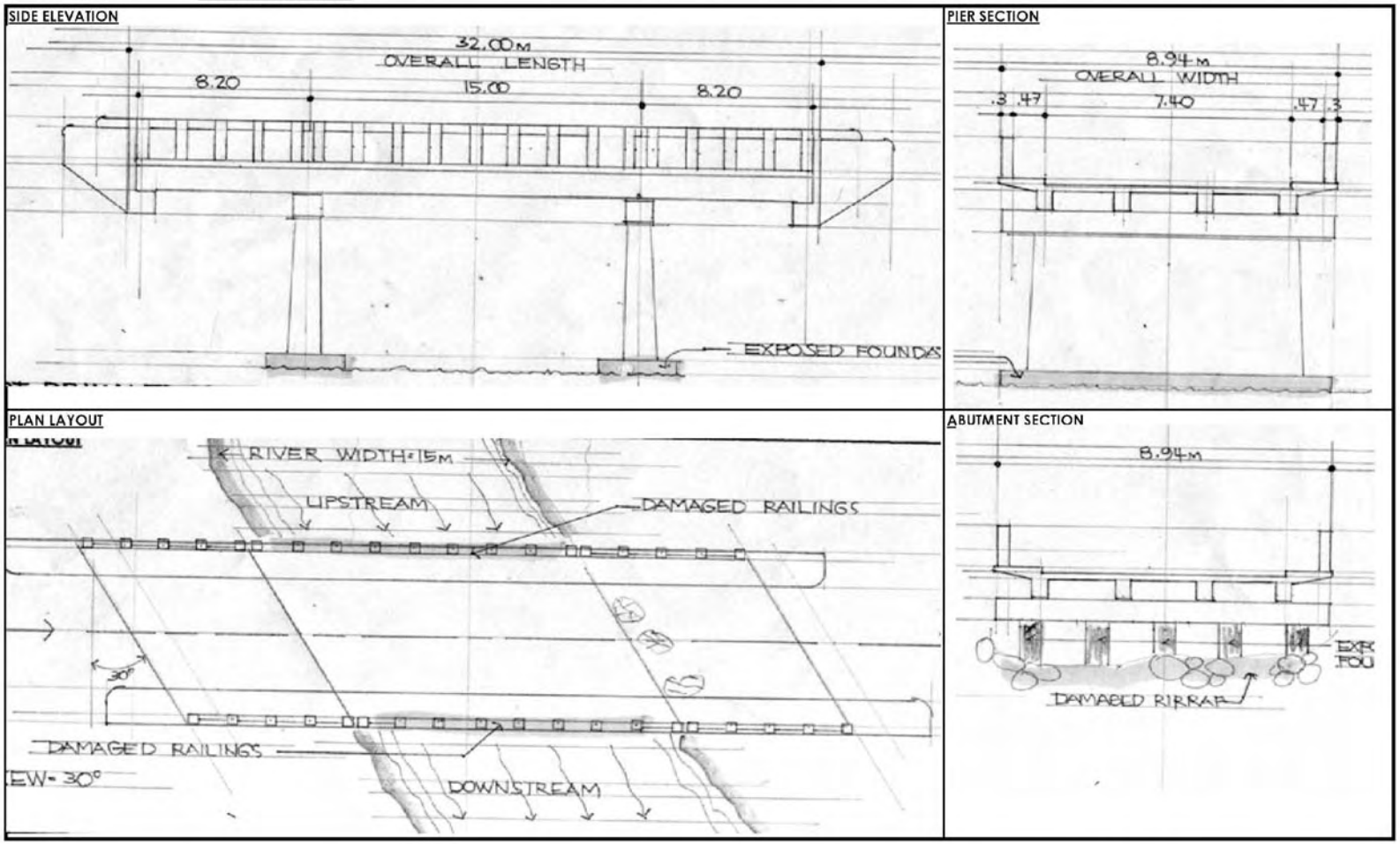
SUPER-STRUCTURE :					
MAIN GIRDER / MAIN STRUCTURES OF STEEL BRIDGE	1. Deterioration of Painting?	□Heavy Loss of Painting		□Light Loss	□None
	2. Corrosion at Girder or Main Structures?	□Loss of Member	□Heavy Corrosion	□Light Corrosion	□None
	3. Break or Crack at Main Structure?	□Yes, where; ( )		□No	
MAIN GIRDER OF CONCRETE BRIDGE	1. Flexural Crack at the Center of Girder Bottom?	□Many	☑Few	□None	
	2.Shear Crack at the Edge of Girder?	□Many	☑Few	□None	
	3. Exposure of Re-bar at the Girder?	☑Many	□Few	□None	
DECK SLAB	1. Linear Crack at the Bottom of Slab?	□Many	☑Few	□None	
	2. Water Leakage w/ Isolated Lime at the Bottom of Slab?	□Many	☑Few	□None	
	3. Alligator Crack at the Bottom of Slab?	☑Many	□Few	□None	
	4. Exposure of Re-bar at the Bottom?	□Many	□Few	☑None	
BRIDGE SURFACE	1. Cracks and Depression at Deck Surfacing?	□Many	☑Few	□None	
	2. Damage at Railing	☑Many	□Few	□None	
	3. Sign of Settlement of Pier/Abutment?	□Yes, what; ( )			☑No
SUB-STRUCTURE					
ABUTMENT	1. Tilting the Abutment?	□Yes	☑No		
	2. Settlement of Abutment?	□Yes	☑No		
	3. Exposed Foundation?	☑Yes	□No		
	4. Damage at Abutment Protection?	□Much	☑Few	□None	
	5. Cracks at the Abutment?	□Many	☑Few	□None	
	6. Exposure of Re-bar?	□Many	☑Few	□None	
PIER	1. Tilting Column?	□Yes	☑No		
	2.Settlement of Pier?	□Yes	☑No		
	3. Local Scouring?	☑Yes	□No		
	4. Exposed Foundation?	☑Yes	□No		
	5. Cracks at the Pier?	□Many	□Few	☑None	
	6. Exposure of Re-bar?	□Many	□Few	☑None	
APPROACH ROAD					
1. Scoring or Washout at the behind of Abutment?		□Much	□Few	☑None	
2. Any Depression of Road Surface at the behind of Abutment?		□Much	□Few	☑None	
OVERALL EVALUATION					**BAD**

Reference No.

TABLE 5.2.1-4 (3/4)

BRIDGE FIELD SURVEY SHEET-3
Sketch of the Bridge

BRIDGE NAME: **BAGAN BRIDGE 1**



Reference No.

TABLE 5.2.1-4 (4/4)

BRIDGE FIELD SURVEY SHEET-4

Photographs

NAME OF BRIDGE BAGAN BRIDGE 1

Photos			
Scene	Deck Slab	Side View	Bridge to Downstream of River
Photos			
Scene	Under the Girder	Bridge to Upstream of River	Others ( )

Reference No.

5.3 SUMMARY OF ROAD/BRIDGE SURVEY RESULTS

5.3.1 Road Condition in ARMM

Survey results by each road are shown in **Table 5.3.1-1**.

(1) Pavement Type

Pavement type of national roads and selected provincial roads is shown in **Table 5.3.1-2**.

TABLE 5.3.1-2 PAVEMENT TYPE

		Road Type		*National Road*			*Prov. Road*		
		National Road	Prov. Road	PCC	Asp.	Gravel& Earth	PCC	Asp.	Gravel& Earth
Mainland	Lanao del Sur I	133.7	8.0	94.7	0.0	39.0	6.0	0.0	2.0
	Marawi City	27.1	0.0	27.1	0.0	0.0	0.0	0.0	0.0
	Lanao del Sur II	161.5	19.0	138.0	0.0	23.5	14.2	0.0	4.8
	Maguindanao-I (Shariff Kabunsuan)	146.0	113.3	125.6	0.0	20.4	13.9	0.0	99.4
	Maguindanao-II	98.5	37.2	65.4	12.4	20.7	25.5	0.0	11.7
	Sub Total	566.8	177.5	450.8	12.4	103.6	59.6	0.0	117.9
				(79.5%)	(2.2%)	(18.3%)	(33.6%)	(0%)	(66.4%)
Island	SULU-1	91.6	0.0	82.0	0.0	9.6	-	-	-
	SULU-2	45.2	0.0	25.2	6.0	14.0	-	-	-
	Tawi-Tawi	42.9	0.0	26.8	0.0	16.1	-	-	-
	Basilan	144.2	0.0	80.2	0.0	64.0	-	-	-
	Sub Total	323.9	0.0	214.2	6.0	103.7	-	-	-
				(66.1%)	(1.9%)	(32.0%)			
GRAND TOTAL		890.7	177.5	683.4 (76.7%)		207.3 (23.3%)	59.6 (33.6%)		117.9 (66.4%)
		1068.2		890.7			177.5		

Pavement ratio is as follows;

Pavement Ratio

	National Roads	***Selected Provincial Roads***
Mainland Provinces	81.7%	33.6%
Island Provinces	68.0%	-
TOTAL	76.7%	33.6%

TABLE 5.3.1-1 SUMMARY OF NATIONAL ROAD & PROVINCIAL ROAD IN ARMM

District Engineering Office	No.	Road Name	Station No. Bigining (kp)	Station No. Ending (kp)	National Road Length (km)	Prov. Road Length (km)	Pavement Type (km) Portland Cement Concrete Pavement (C)	Pavement Type Asphalt Concrete Pavement (A)	Pavement Type Gravel Surface (G)	Pavement Type Earth Road (E)	Pavement Width (km) Type C,A W= 6.7m	Type C,A W= 6.0m	Type C,A W≦ 5.0m	Pavement Condition (km) Paved (Type C,A) Good (G)	Paved Fair (F)	Paved Bad (B)	Paved Very Bad (V)	Un-Paved (Type G,E) Good (G)	Un-Paved Fair (F)	Un-Paved Bad (B)	Un-Paved Very Bad (V)	Total Good (G)	Total Fair (F)	Total Bad (B)	Total Very Bad (V)	Shoulder Type (km) Concrete (C)	Shoulder Asphalt (A)	Shoulder Gravel (G)	Shoulder Earth (E)	Shoulder NONE (NONE)	Horizontal Alignment (km) Straight (S)	Gentle Left Curve (GL)	Gentle Right Curve (GR)	Sharp Left Curve (SL)	Sharp Right Curve (SR)	Vertical Alignment (km) Flat (F)	Gentle (～4 %) (G)	Steep (5～8 %) (S)	Very Steep (over 8%) (VS)	Type of Side Ditch (L) (km) Concrete (C)	Grouted Rip Rap (RP)	Earth (E)	NONE (NONE)	Type of Side Ditch (R) (km) Concrete (C)	Grouted Rip Rap (RP)	Earth (E)	NONE (NONE)
Lanao Del Sur I	L1-1	Iligan-Marawi Road	1554+222	1558+483	4.200		4.20	0.00	0.00	0.00	4.20	0.00	0.00	0.00	0.10	1.40	2.70	0.00	0.00	0.00	0.00	0.00	0.10	1.40	2.70	4.20	0.00	0.00	0.00	0.00	4.20	0.00	0.00	0.00	0.00	3.00	0.00	1.20	0.00	3.40	0.00	0.00	0.80	0.00	0.00	0.00	4.20
	L1-2	Marawi-Marantao Road	1565+640	1574+940	9.300		9.30	0.00	0.00	0.00	9.30	0.00	0.00	2.00	4.10	3.00	0.20	0.00	0.00	0.00	0.00	2.00	4.10	3.00	0.20	3.00	0.00	0.00	0.00	6.30	7.10	0.60	1.40	0.00	0.20	8.90	0.40	0.00	0.00	0.30	0.00	0.00	9.00	0.00	0.00	0.00	9.30
	L1-3	Marawi-Masiu Road	1570+004	1603+004	33.000		33.00	0.00	0.00	0.00	33.00	0.00	0.00	22.30	1.60	6.60	2.50	0.00	0.00	0.00	0.00	22.30	1.60	6.60	2.50	7.40	0.00	0.00	25.60	0.00	28.70	1.40	2.50	0.10	0.30	33.00	0.00	0.00	0.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00	33.00
	L1-4	Wao-Mulondo (Mulondo-Maguing sect)	1582+952	1590+752	7.800		7.80	0.00	0.00	0.00	7.80	0.00	0.00	5.80	0.80	1.20	0.00	0.00	0.00	0.00	0.00	5.80	0.80	1.20	0.00	0.00	0.00	0.00	7.80	0.00	3.90	1.30	1.80	0.60	0.20	6.80	1.00	0.00	0.00	0.00	0.00	0.00	7.80	0.00	0.00	0.00	7.80
			1590+752	1596+732	5.980		0.00	0.00	0.00	5.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.98	--	--	--	--	5.98	--	--	--	--	--	--	--	--	--	--	--	--	5.98	--	--	--	5.98
		Wao-Mulondo Road (Bumbaran-Wao sect)	1603+744	1614+644	10.900		10.90	0.00	0.00	0.00	10.90	0.00	0.00	10.60	0.00	0.30	0.00	0.00	0.00	0.00	0.00	10.60	0.00	0.30	0.00	0.00	0.00	10.90	0.00	0.00	5.50	2.40	2.00	0.60	0.40	3.40	7.10	0.40	0.00	0.00	3.60	0.00	7.30	0.00	3.90	0.00	7.00
			1614+644	1639+044	24.400		0.00	0.00	0.00	24.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Mulondo-Wao Road (Wao-BRD.North COT)	1602+944	1623+344	20.400		17.30	0.00	3.10	0.00	17.30	0.00	0.00	11.60	2.90	2.30	0.50	0.00	0.00	0.00	0.00	11.60	2.90	2.30	0.50	0.00	0.00	20.40	0.00	0.00	14.50	2.50	2.30	0.70	0.40	11.30	8.30	0.80	0.00	0.00	1.70	0.00	18.70	0.00	1.70	0.00	18.70
		Wao-Mulondo Road (Bumbaran-Talakag sect)	1617+744	1623+444	5.700		0.50	0.00	0.00	5.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	L1-5	MARAWI-KAPAI	1563+936	1575+936	12.000		11.70	0.00	0.30	0.00	11.70	0.00	0.00	4.10	0.60	3.90	3.10	0.00	0.00	0.00	0.30	4.10	0.60	3.90	3.40	0.00	0.00	3.00	9.00	0.00	8.60	1.10	1.30	0.50	0.50	12.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	12.00
	L1p-1	BALINDONG-PANTAO-RAGAT	0000+000	0008+000		8.000	6.00	0.00	2.00	0.00	2.80	3.20	0.00	1.50	3.80	0.70	0.00	0.20	0.60	1.20	0.00	1.70	4.40	1.90	0.00	0.00	0.00	0.00	8.00	0.00	3.40	1.30	1.90	0.90	0.50	0.00	8.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	8.00
	Total				**133.680**	**8.000**	**100.70**	**0.00**	**5.40**	**35.58**	**97.00**	**3.20**	**0.00**	**57.90**	**13.90**	**19.40**	**9.00**	**0.20**	**0.60**	**1.20**	**0.30**	**58.10**	**14.50**	**20.60**	**15.28**	**14.60**	**0.00**	**34.30**	**50.40**	**12.28**	**75.90**	**10.60**	**13.20**	**3.40**	**2.50**	**78.40**	**24.80**	**2.40**	**0.00**	**3.70**	**5.30**	**0.00**	**102.58**	**0.00**	**5.60**	**0.00**	**105.98**
Marawi City	MC-1	Bito-Marawi Road	1558+444	1562+544	4.100		4.10	0.00	0.00	0.00	4.10	0.00	0.00	0.10	1.60	2.40	0.00	0.00	0.00	0.00	0.00	0.10	1.60	2.40	0.00	4.10	0.00	0.00	0.00	0.00	1.50	1.10	1.20	0.30	0.00	2.20	1.80	0.10	0.00	0.00	0.00	0.00	4.10	3.90	0.00	0.00	0.20
	MC-2	Marawi-Bacung Road	1562+487	1565+987	3.500		3.50	0.00	0.00	0.00	3.50	0.00	0.00	0.90	2.30	0.10	0.20	0.00	0.00	0.00	0.00	0.90	2.30	0.10	0.20	3.50	0.00	0.00	0.00	0.00	2.60	0.40	0.50	0.00	0.00	3.40	0.00	0.10	0.00	0.50	0.00	0.00	3.00	2.50	0.00	0.00	1.00
	MC-3	Marawi-Landing Road	1561+945	1562+745	0.800		0.80	0.00	0.00	0.00	0.80	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.80
	MC-4	Marawi-Cadre Road	1562+860	1563+760	0.740		0.74	0.00	0.00	0.00	0.74	0.00	0.00	0.14	0.10	0.20	0.30	0.00	0.00	0.00	0.00	0.14	0.10	0.20	0.30	0.74	0.00	0.00	0.00	0.00	0.34	0.10	0.10	0.20	0.00	0.20	0.54	0.00	0.00	0.40	0.00	0.00	0.34	0.50	0.00	0.00	0.24
	MC-5	Marawi-Msu Road	1565+550	1566+550	1.000		1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.70	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.30	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.50	0.40	0.10	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.50	0.00	0.00	0.50
	MC-6	Marawi-Pugaan Road	1562+487	1569+987	7.500		7.50	0.00	0.00	0.00	7.50	0.00	0.00	1.00	0.80	3.50	2.20	0.00	0.00	0.00	0.00	1.00	0.80	3.50	2.20	7.50	0.00	0.00	0.00	0.00	4.40	0.90	0.80	0.50	0.90	4.20	1.20	2.10	0.00	1.60	0.00	0.00	5.90	1.60	0.00	0.00	5.90
	MC-7	MARAWI-KAPAI	1563+936	1570+536	6.600		6.60	0.00	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MC-8	Marawi-Marcos Blvd Road	1561+065	1562+865	1.800		1.80	0.00	0.00	0.00	1.80	0.00	0.00	0.40	0.40	1.00	0.00	0.00	0.00	0.00	0.00	0.40	0.40	1.00	0.00	1.80	0.00	0.00	0.00	0.00	1.50	0.20	0.10	0.00	0.00	0.90	0.80	0.10	0.00	0.40	0.00	0.00	1.40	0.80	0.00	0.00	1.00
	MC-9	Bito-Marawi-Agus	1561+645	1562+745	1.100		1.10	0.00	0.00	0.00	1.10	0.00	0.00	0.20	0.40	0.30	0.20	0.00	0.00	0.00	0.00	0.20	0.40	0.30	0.20	1.10	0.00	0.00	0.00	0.00	0.60	0.00	0.50	0.00	0.00	0.10	1.00	0.00	0.00	0.00	0.00	0.00	1.10	1.10	0.00	0.00	0.00
	Total				**27.140**		**27.14**	**0.00**	**0.00**	**0.00**	**19.54**	**0.00**	**1.00**	**4.24**	**5.90**	**7.50**	**2.90**	**0.00**	**0.00**	**0.00**	**0.00**	**4.24**	**5.90**	**7.50**	**2.90**	**19.54**	**0.00**	**0.00**	**0.00**	**1.00**	**12.24**	**3.10**	**3.30**	**1.00**	**0.90**	**11.80**	**6.34**	**2.40**	**0.00**	**2.90**	**0.00**	**0.00**	**17.64**	**10.90**	**0.00**	**0.00**	**9.64**
Lanao Del Sur II	L2-1	Cotabato -Malabang-Lanao del Norte Road	1095+680	1970+180	64.500		64.50	0.00	0.00	0.00	64.50	0.00	0.00	49.40	4.10	10.20	0.80	0.00	0.00	0.00	0.00	49.40	4.10	10.20	0.80	9.90	0.00	0.00	54.60	0.00	42.50	4.00	8.80	3.70	5.50	25.10	30.90	7.60	0.90	0.00	0.00	0.00	64.50	8.30	0.00	2.30	53.90
	L2-2	Marawi-Marabang Road	1574+000	1630+000	56.000		56.00	0.00	0.00	0.00	56.00	0.00	0.00	45.40	1.90	4.30	4.40	0.00	0.00	0.00	0.00	45.40	1.90	4.30	4.40	0.00	0.00	0.00	56.00	0.00	12.90	12.80	10.10	9.50	10.70	0.00	56.00	0.00	0.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00	56.00
	L2-3	Masiu-Ganassi Road	1601+000	1631+000	30.000		12.30	0.00	17.70	0.00	12.30	0.00	0.00	5.80	1.30	5.10	0.10	3.90	11.10	2.70	0.00	9.70	12.40	7.80	0.10	0.00	0.00	2.00	28.00	0.00	13.60	6.10	6.70	1.50	2.10	0.40	29.60	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00	30.00
	L2-4	Ganassi Tubod Road	1596+540	1607+540	11.000		5.20	0.00	5.80	0.00	5.20	0.00	0.00	2.90	1.30	1.00	0.00	1.60	3.80	0.40	0.00	4.50	5.10	1.40	0.00	0.00	0.00	11.00	0.00	0.00	6.20	2.00	1.50	0.60	0.70	0.00	11.00	0.00	0.00	0.00	0.00	0.00	11.00	0.00	0.00	0.00	11.00
	L2p-1	SK BORDER-BUTIG-LUMBAYANAGU	0000+000	0006+000		6.000	6.00	0.00	0.00	0.00	0.00	6.00	0.00	1.30	0.20	2.00	2.50	0.00	0.00	0.00	0.00	1.30	0.20	2.00	2.50	0.00	0.00	3.00	3.00	0.00	3.40	0.70	1.30	0.30	0.30	1.60	4.40	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	6.00
	L2p-2	Malabang-Marogong-Tubaran-Bayang	0000+000	0007+000		7.000	2.20	0.00	4.80	0.00	2.20	0.00	0.00	1.80	0.00	0.20	0.20	0.30	2.70	1.10	0.70	2.10	2.70	1.30	0.90	0.00	0.00	4.00	3.00	0.00	4.40	0.70	1.90	0.00	0.00	2.00	4.50	0.50	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	7.00
	L2p-3	MADALUM-MUNAI	0000+000	0006+000		6.000	6.00	0.00	0.00	0.00	0.00	6.00	0.00	1.90	0.80	0.30	3.00	0.00	0.00	0.00	0.00	1.90	0.80	0.30	3.00	0.00	0.00	0.00	6.00	0.00	3.80	1.30	0.70	0.10	0.10	0.00	4.30	1.70	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	6.00
	Total				**161.500**	**19.000**	**152.20**	**0.00**	**28.30**	**0.00**	**140.20**	**12.00**	**0.00**	**108.50**	**9.60**	**23.10**	**11.00**	**5.80**	**17.60**	**4.20**	**0.70**	**114.30**	**27.20**	**27.30**	**11.70**	**9.90**	**0.00**	**20.00**	**150.60**	**0.00**	**86.80**	**27.60**	**31.00**	**15.70**	**19.40**	**29.10**	**140.70**	**9.80**	**0.90**	**0.00**	**0.00**	**0.00**	**180.50**	**8.30**	**0.00**	**2.30**	**169.90**
Muguindanao-I (Shariff Kabunsuan)	SK-1	Davao-Cotabato Road	1716+050	1724+850	8.800		8.80	0.00	0.00	0.00	8.80	0.00	0.00	0.80	3.90	4.10	0.00	0.00	0.00	0.00	0.00	0.80	3.90	4.10	0.00	4.00	0.00	4.80	0.00	0.00	4.20	2.10	1.90	0.50	0.10	2.10	6.00	0.70	0.00	0.00	0.00	0.10	8.70	0.00	0.00	1.20	7.60
	SK-2	WYE Length Davao-Cotabato Road	1724+503	1724+879	0.376		0.376	0.00	0.00	0.00	0.376	0.00	0.00	0.00	0.376	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.376	0.00	0.00	0.00	0.00	0.376	0.00	0.00	0.376	0.00	0.00	0.00	0.00	0.376	0.00	0.00	0.00	0.00	0.00	0.00	0.376	0.00	0.00	0.00	0.376
	SK-3	Cotabato-Lanao Road	1854+502	1865+302	10.800		10.80	0.00	0.00	0.00	10.80	0.00	0.00	0.90	8.90	1.00	0.00	0.00	0.00	0.00	0.00	0.90	8.90	1.00	0.00	0.00	0.00	10.70	0.10	0.00	6.50	2.20	1.90	0.10	0.10	6.80	3.80	0.20	0.00	0.00	0.00	0.00	10.80	0.00	0.00	0.00	10.80
			1876+351	1906+011	29.660		29.66	0.00	0.00	0.00	29.66	0.00	0.00	8.10	21.06	0.50	0.00	0.00	0.00	0.00	0.00	8.10	21.06	0.50	0.00	1.60	0.00	2.40	25.66	0.00	11.00	4.70	4.70	4.36	4.90	0.00	14.06	15.60	0.00	0.60	0.00	0.00	29.06	1.40	0.00	0.80	27.46
		Cotabato-Lanao Road/BALUT BUDAKAN Section	1865+103	1876+503	11.400		6.00	0.00	5.40	0.00	6.00	0.00	0.00	1.70	2.60	1.70	0.00	0.00	0.00	5.40	0.00	1.70	2.60	7.10	0.00	0.00	0.00	5.70	0.00	5.70	6.40	2.60	1.50	0.40	0.50	6.40	5.00	0.00	0.00	0.00	0.00	0.00	11.40	0.00	0.00	0.00	11.40
	SK-4	Salimbao-Delta Bridge Road	1855+283	1855+720.8	0.438		0.438	0.00	0.00	0.00	0.00	0.00	0.438	0.00	0.438	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.438	0.00	0.00	0.00	0.00	0.00	0.438	0.00	0.228	0.00	0.10	0.00	0.00	0.438	0.00	0.00	0.00	0.00	0.00	0.00	0.438	0.00	0.00	0.00	0.438
	SK-5	Lamsan-Simuay Jct. Road	1862+750	1863+750	1.000		1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.10	0.60	0.30	0.00	0.00	0.00	0.00	0.00	0.10	0.60	0.30	0.00	0.00	0.00	1.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
	SK-6	Simuay-Landsan-Parang Road	1865+553	1878+453.4	12.900		12.90	0.00	0.00	0.00	12.90	0.00	0.00	7.50	5.40	0.00	0.00	0.00	0.00	0.00	0.00	7.50	5.40	0.00	0.00	0.00	0.00	12.90	0.00	0.00	5.30	3.10	4.50	0.00	0.00	6.50	4.40	0.00	0.00	4.10	0.00	0.00	8.80	3.30	0.00	0.00	9.60
	SK-7	Landsan-Polloc Road	1873+000	1876+649	3.649		3.649	0.00	0.00	0.00	3.649	0.00	0.00	0.00	2.949	0.70	0.00	0.00	0.00	0.00	0.00	0.00	2.949	0.70	0.00	0.00	0.00	1.00	2.649	0.00	1.749	0.70	1.20	0.00	0.00	1.649	2.00	0.00	0.00	0.00	0.00	1.10	2.549	0.00	0.00	0.80	2.849
	SK-8	Parang Wharf Road	1879+450	1880+250	0.800		0.80	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.60	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.20	0.00	0.00	0.00	0.20	0.60	0.00	0.40	0.00	0.20	0.20	0.00	0.20	0.10	0.50	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.80
	SK-9	Marbel-Ala-Cotabato Road	0000+000	0027+200	27.200		27.20	0.00	0.00	0.00	27.20	0.00	0.00	6.60	7.60	10.70	2.30	0.00	0.00	0.00	0.00	6.60	7.60	10.70	2.30	6.00	0.00	5.10	16.10	0.00	16.40	5.00	5.60	0.00	0.20	8.40	18.20	0.60	0.00	0.00	0.00	0.00	27.20	1.10	0.00	0.00	26.10
	SK-10	Awang-Upi-Lebak Road	1845+215	1883+415	38.200		23.20	0.00	15.00	0.00	38.20	0.00	0.00	10.50	3.90	5.60	3.20	3.70	5.70	4.70	0.90	14.20	9.60	10.30	4.10	0.00	0.00	0.40	37.80	0.00	16.40	10.20	9.00	1.00	1.60	11.80	22.40	2.50	1.50	0.00	0.00	0.00	38.20	0.00	0.00	0.00	38.20
	SK-11	Awang Airport Road	1845+282	1846+082	0.800		0.80	0.00	0.00	0.00	0.80	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.60	0.20	0.00	0.00	0.00	0.40	0.30	0.10	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.80
	SKp-1	Parang-Buldon	0000+000	0029+000		29.000	6.60	0.00	22.40	0.00	4.00	1.00	1.60	2.90	1.50	1.80	0.40	0.90	5.00	16.10	0.40	3.80	6.50	17.90	0.80	0.00	0.00	4.00	2.60	22.40	22.50	3.40	2.10	0.50	0.50	10.40	17.70	0.40	0.50	0.00	0.00	0.00	29.00	0.00	0.00	0.00	29.00
	SKp-2	Tamontaka-Tapian	0000+000	0020+100		20.100	4.80	0.00	15.30	0.00	4.80	0.00	0.00	2.60	0.70	1.10	0.40	8.60	1.20	2.30	3.20	11.20	1.90	3.40	3.60	0.00	0.00	0.00	4.80	15.30	14.30	2.70	2.50	0.50	0.10	14.80	5.30	0.00	0.00	0.00	0.00	0.00	20.10	0.00	0.00	0.00	20.10
	SKp-3	Diang-Upi ROAD	0000+000	0021+500		21.500	0.30	0.00	15.20	6.00	0.30	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.40	9.70	11.10	0.30	0.40	9.70	11.10	0.00	0.00	0.30	0.00	21.20	12.60	2.40	4.40	0.90	1.20	5.10	10.30	5.80	0.30	0.00	0.00	0.00	21.50	0.00	0.00	0.00	21.50
	SKp-4	Diang-Upi ROAD PHASE II	0000+000	0022+200		22.200	0.60	0.00	11.40	10.20	0.60	0.00	0.00	0.60	0.00	0.00	0.00	0.50	2.60	4.70	13.80	1.10	2.60	4.70	13.80	0.00	0.00	0.80	0.00	21.40	13.10	2.90	4.40	1.00	0.80	2.40	15.70	4.10	0.00	0.00	0.00	0.00	22.20	0.00	0.00	0.00	22.20
	SKp-5	PINARING-SIMSIMAN	0000+000	0020+450		20.450	1.60	0.00	18.85	0.00	0.00	1.30	0.30	0.30	0.40	0.90	0.00	0.00	0.10	18.75	0.00	0.30	0.50	19.65	0.00	0.00	0.00	1.60	0.00	18.85	14.35	2.50	3.00	0.50	0.10	11.15	8.10	1.20	0.00	0.00	0.00	0.00	20.45	0.00	0.00	0.00	20.45
	Total				**146.023**	**113.250**	**139.52**	**0.00**	**103.55**	**16.20**	**149.89**	**2.30**	**2.34**	**43.70**	**60.92**	**28.60**	**6.30**	**13.70**	**15.00**	**61.65**	**29.40**	**57.40**	**75.92**	**90.25**	**35.70**	**11.60**	**0.00**	**51.28**	**91.55**	**104.85**	**146.90**	**45.20**	**47.00**	**9.96**	**10.10**	**89.41**	**133.86**	**31.70**	**2.30**	**4.70**	**0.00**	**1.20**	**253.37**	**5.80**	**0.00**	**2.80**	**250.67**
Muguindanao-	M-1	Marbel-Ala-Cotabato Road	1789+285	1822+185	32.900		32.10	0.80	0.00	0.00	32.90	0.00	0.00	14.60	9.70	5.90	2.70	0.00	0.00	0.00	0.00	14.60	9.70	5.90	2.70	4.70	0.00	28.20	0.00	0.00	22.10	5.60	5.10	0.10	0.00	18.60	14.30	0.00	0.00	0.00	0.00	0.00	32.90	0.00	0.00	0.00	32.90
	M-2	Awang-Upi-Lebak Road	1822+200	1852+815	30.600		9.90	0.00	20.70	0.00	5.70	4.20	0.00	9.90	0.00	0.00	0.00	7.10	8.20	2.70	2.70	17.00	8.20	2.70	2.70	0.00	0.00	0.00	10.10	20.50	15.90	6.30	7.90	0.50	0.00	1.00	29.60	0.00	0.00	0.00	0.00	0.00	30.60	0.00	0.00	0.00	30.60
	M-3	Dulawan-SSB-Marbel Road	1722+523	1715+523	7.000		7.00	0.00	0.00	0.00	7.00	0.00	0.00	6.80	0.00	0.20	0.00	0.00	0.00	0.00	0.00	6.80	0.00	0.20	0.00	0.00	0.00	7.00	0.00	0.00	6.60	0.20	0.20	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	7.00
	M-4	Kidapawan-Ala Jct. Road	1644+758	1659+018	14.260		2.66	11.60	0.00	0.00	3.26	11.00	0.00	2.60	1.06	4.20	6.40	0.00	0.00	0.00	0.00	2.60	1.06	4.20	6.40	0.00	0.00	0.26	14.00	0.00	12.96	0.00	1.30	0.00	0.00	13.26	1.00	0.00	0.00	0.00	0.00	0.00	14.26	0.00	0.00	0.00	14.26
	M-5	KABACAN-PAGALUNGAN	1653+634	1667+334	13.700		13.70	0.00	0.00	0.00	13.70	0.00	0.00	1.00	1.00	2.90	8.80	0.00	0.00	0.00	0.00	1.00	1.00	2.90	8.80	1.00	0.00	12.70	0.00	0.00	11.70	0.90	1.10	0.00	0.00	13.30	0.40	0.00	0.00	0.00	0.00	0.00	13.70	0.00	0.00	0.00	13.70
	Mp-1	Maganoy-Sultan sa Barongis	0000+000	0022+200		22.200	15.20	0.00	7.00	0.00	15.20	0.00	0.00	12.30	2.00	0.90	0.00	0.70	0.50	5.80	0.00	13.00	2.50	6.70	0.00	0.40	0.00	14.10	0.00	7.70	21.20	0.20	0.80	0.00	0.00	22.20	0.00	0.00	0.00	0.00	0.00	0.00	22.20	0.00	0.00	0.00	22.20
	Mp-2	Datu Saudi Ampatuan	0000+000	0009+000		9.000	9.00	0.00	0.00	0.00	9.00	0.00	0.00	8.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	8.90	0.10	0.00	0.00	0.00	0.00	9.00	0.00	0.00	8.70	0.30	0.00	0.00	0.00	7.70	0.70	0.60	0.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00	9.00
	Mp-3	MAGANOY-LEBAK	0000+000	0006+000		6.000	1.30	0.00	4.70	0.00	1.30	0.00	0.00	1.20	0.00	0.10	0.00	0.00	0.00	1.70	3.00	1.20	0.00	1.80	3.00	1.30	0.00	0.00	0.00	4.70	3.90	0.70	1.30	0.10	0.00	1.10	2.00	2.80	0.10	0.00	0.00	0.00	6.00	0.00	0.00	0.00	6.00
	Total				**98.460**	**37.200**	**90.86**	**12.40**	**32.40**	**0.00**	**88.06**	**15.20**	**0.00**	**57.30**	**13.86**	**14.20**	**17.90**	**7.80**	**8.70**	**10.20**	**5.70**	**65.10**	**22.56**	**24.40**	**23.60**	**7.40**	**0.00**	**71.26**	**24.10**	**32.90**	**103.06**	**14.20**	**17.70**	**0.70**	**0.00**	**84.16**	**48.00**	**3.40**	**0.10**	**0.00**	**0.00**	**0.00**	**135.66**	**0.00**	**0.00**	**0.00**	**135.66**
SULU-1	S1-1	Romandier Camp Andres Road	0000+000	0001+200	1.200		1.20	0.00	0.00	0.00	1.20	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	1.20	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	1.20
			0001+200	0004+700	3.500		3.50	0.00	0.00	0.00	3.50	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.00	0.00	0.00	3.50	0.00	--	--	--	--	--	3.50	0.00	0.00	0.00	0.00	0.00	0.00	3.50	0.00	0.00	0.00	3.50
	S1-2	Jct. Timbangan-Romandier Road	0000+000	0013+600	13.600		13.60	0.00	0.00	0.00	13.60	0.00	0.00	9.80	1.00	1.70	1.10	0.00	0.00	0.00	0.00	9.80	1.00	1.70	1.10	0.00	0.00	0.00	13.60	0.00	12.20	0.80	0.60	0.00	0.00	10.80	2.20	0.60	0.00	0.00	0.00	0.00	13.60	0.00	0.00	0.00	13.60
	S1-3	Jolo-Indanan-Parang-Silangkan Road	0000+000	0025+400	25.400		24.60	0.00	0.60	0.20	0.00	23.60	1.00	19.80	1.10	2.40	1.30	0.70	0.10	0.00	0.00	20.50	1.20	2.40	1.30	0.00	0.00	0.00	25.40	0.00	22.40	1.20	1.60	0.00	0.20	17.40	7.60	0.40	0.00	0.00	0.00	0.00	25.40	0.00	0.00	0.00	25.40
			0025+400	0029+890	4.490		4.49	0.00	0.00	0.00		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	S1-4	Jolo Airport Road	0000+000	0000+400	0.400		0.40	0.00	0.00	0.00	0.40	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.20	0.40	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.40	0.00	0.00	0.00
	S1-5	Jolo Cadre-New Captiol Road	0000+000	0002+400	2.400		2.40	0.00	0.00	0.00	2.40	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.40	0.00	0.00	0.00	2.40	0.00	0.00	0.00	0.00	2.40	0.00	0.00	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	2.40	0.00	0.00	0.00	2.40
	S1-6	Joro Port-Bud Daho-Rom Road	0000+000	0011+000	11.000		9.60	0.00	1.40	0.00	9.60	0.00	0.00	4.80	1.20	1.40	2.20	0.90	0.40	0.10	0.00	5.70	1.60	1.50	2.20	0.00	0.00	0.00	11.00	0.00	8.80	1.40	0.70	0.10	0.00	10.00	0.60	0.40	0.00	0.00	0.00	0.00	11.00	0.00	0.00	0.00	11.00
			0011+000	0017+600	6.600		2.27	0.00	4.33	0.00				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	S1-7	Jolo-Taglibi-Tipitipon Road	0000+000	0012+600	12.600		12.60	0.00	0.00	0.00	12.60	0.00	0.00	11.30	0.20	0.50	0.60	0.00	0.00	0.00	0.00	11.30	0.20	0.50	0.60	0.00	0.00	0.00	12.60	0.00	11.70	0.00	0.50	0.30	0.10	12.20	0.00	0.40	0.00	0.00	0.00	0.00	12.60	0.00	0.00	0.00	12.60
			0012+600	0022+990	10.390		7.32	0.00	3.07	0.00	10.39	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total				**91.580**		**81.98**	**0.00**	**9.40**	**0.20**	**53.69**	**23.60**	**1.00**	**49.70**	**3.50**	**6.00**	**5.20**	**1.60**	**0.50**	**0.10**	**0.00**	**51.30**	**4.00**	**6.10**	**5.20**	**2.80**	**0.00**	**0.00**	**67.30**	**0.00**	**58.90**	**3.40**	**3.40**	**0.40**	**0.50**	**57.90**	**10.40**	**1.80**	**0.00**	**0.40**	**0.00**	**0.00**	**69.70**	**0.40**	**0.00**	**0.00**	**69.70**
SULU-2	S2-1	Romandier Camp Andres Road	0000+000	0011+600	11.600		10.40	0.00	0.00	1.20	1.40	9.00	0.00	7.60	0.60	0.80	1.40	0.20	0.10	0.00	0.90	7.80	0.70	0.80	2.30	0.00	0.00	0.00	11.60	0.00	10.60	0.30	0.50	0.00	0.20	10.10	0.80	0.70	0.00	0.20	0.00	0.00	11.40	0.00	0.00	0.00	11.60
			0011+600	0029+220	17.620		4.41	6.00	7.21	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	S2-2	Seit-Tayuagan Camp Andres Road	0036+000	0046+400	10.400		10.40	0.00	0.00	0.00	0.00	10.40	0.00	7.40	0.40	0.90	1.70	0.00	0.00	0.00	0.00	7.40	0.40	0.90	1.70	0.00	0.00	0.00	10.40	0.00	10.40	0.00	0.00	0.00	0.00	10.40	0.00	0.00	0.00	0.00	0.00	0.00	10.40	0.00	0.00	0.00	10.40
	S2-3	Jolo-Taglibi-Tiptipon Road	0022+580	0028+180	5.600		0.00	0.00	5.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.30	1.00	0.80	0.50	3.30	1.00	0.80	0.50	0.00	0.00	0.00	5.60	0.00	5.60	0.00	0.00	0.00	0.00	5.60	0.00	0.00	0.00	0.00	0.00	0.00	5.60	0.00	0.00	0.00	5.60
	Total				**45.220**		**25.21**	**6.00**	**12.81**	**1.20**	**1.40**	**19.40**	**0.00**	**15.00**	**1.00**	**1.70**	**3.10**	**3.50**	**1.10**	**0.80**	**1.40**	**18.50**	**2.10**	**2.50**	**4.50**	**0.00**	**0.00**	**0.00**	**27.60**	**0.00**	**26.60**	**0.30**	**0.50**	**0.00**	**0.20**	**26.10**	**0.80**	**0.70**	**0.00**	**0.20**	**0.00**	**0.00**	**27.40**	**0.00**	**0.00**	**0.00**	**27.60**
Tawi-Tawi	T-1	Bongao-Pahut Road	0000+000	0010+100	10.100		10.00	0.00	0.10	0.00	9.80	0.20	0.00	6.20	0.90	1.50	1.40	0.00	0.00	0.10	0.00	6.20	0.90	1.60	1.40	1.80	0.00	0.00	8.30	0.00	6.70	1.70	1.70	0.00	0.00	9.60	0.20	0.30	0.00	0.00	0.00	0.00	10.10	0.20	0.00	0.00	9.90
	T-2	Bongao-Nalil Road	0000+000	0004+000	4.000		4.00	0.00	0.00	0.00	4.00	0.00	0.00	2.80	0.10	0.80	0.30	0.00	0.00	0.00	0.00	2.80	0.10	0.80	0.30	3.20	0.00	0.00	0.80	0.00	2.40	0.20	0.90	0.20	0.30	3.40	0.20	0.40	0.00	0.60	0.00	0.00	3.40	0.00	0.00	0.00	4.00
	T-3	Bato-Bato-Sanga-Sanga Road	0000+000	0005+000	5.000		0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	4.40	0.00	0.00	0.60	4.40	0.00	0.00	0.00	0.00	5.00	0.00	3.70	0.90	0.40	0.00	0.00	3.20	0.00	1.80	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	5.00
			0005+000	0017+800	12.800		4.60	0.00	0.00	8.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	T-4	Bato-Bato-Tarawakan Road	0000+000	0011+000	11.000		8.20	0.00	2.80	0.00	0.00	8.20	0.00	7.20	0.00	0.40	0.60	1.80	0.30	0.70	0.00	9.00	0.30	1.10	0.60	0.00	0.00	0.00	11.00	0.00	9.80	0.80	0.40	0.00	0.00	4.40	3.90	2.70	0.00	0.00	0.00	0.00	11.00	0.00	0.00	0.00	11.00
	Total				**42.900**		**26.80**	**0.00**	**2.90**	**13.20**	**13.80**	**8.40**	**0.00**	**16.20**	**1.00**	**2.70**	**2.30**	**1.80**	**0.90**	**5.20**	**0.00**	**18.00**	**1.90**	**7.90**	**2.30**	**5.00**	**0.00**	**0.00**	**25.10**	**0.00**	**22.60**	**3.60**	**3.40**	**0.20**	**0.30**	**20.60**	**4.30**	**5.20**	**0.00**	**0.60**	**0.00**	**0.00**	**29.50**	**0.20**	**0.00**	**0.00**	**29.90**
BASILAN	B-1	Isabela-Lamitan Wharf Road	0000+000	0021+400	21.400		21.40	0.00	0.00	0.00	21.40	0.00	0.00	20.60	0.70	0.10	0.00	0.00	0.00	0.00	0.00	20.60	0.70	0.10	0.00	0.00	0.00	11.00	10.40	0.00	13.60	3.60	4.10	0.00	0.10	13.40	7.40	0.60	0.00	0.60	0.00	0.00	20.80	8.40	0.00	0.00	13.00
	B-2	Lamitan-Tipo-Tipo-Tumahubong Road	0000+000	0014+100	14.100		12.50	0.00	1.60	0.00	12.50	0.00	0.00	11.10	0.20	1.10	0.10	0.40	0.00	0.80	0.40	11.50	0.20	1.90	0.50	0.00	0.00	0.00	14.10	0.00	10.80	1.60	1.40	0.00	0.30	6.20	7.90	0.00	0.00	1.20	0.00	0.00	12.90	0.20	0.00	0.00	13.90
			0014+100	0039+285	25.185		6.59	0.00	18.60	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	B-3	Lamitan-Tuburan Road via Campo Uno (None D	0000+000	0018+090	18.090		3.77	0.00	14.32	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	B-4	Isabela-MalusoWharf Road	0000+000	0001+400	1.400		1.40	0.00	0.00	0.00	1.40	0.00	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	1.40	0.00	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.80	0.00	0.00	0.60	1.20	0.00	0.00	0.20
	B-5	Isabela Maluso Sumisip Road	0000+000	0064+000	64.000		34.50	0.00	29.50	0.00	30.50	4.00	0.00	32.40	2.50	4.20	0.40	15.80	1.40	5.20	2.10	48.20	3.90	9.40	2.50	3.00	0.00	4.00	57.00	0.00	39.20	9.70	13.10	0.20	1.80	11.40	49.00	3.60	0.00	8.00	0.00	1.00	55.00	8.50	0.00	1.00	54.50
	Total				**144.175**		**80.16**	**0.00**	**64.02**	**0.00**	**65.80**	**4.00**	**0.00**	**65.50**	**3.40**	**5.40**	**0.50**	**16.20**	**1.40**	**6.00**	**2.50**	**81.70**	**4.80**	**11.40**	**3.00**	**3.00**	**0.00**	**15.00**	**82.90**	**0.00**	**65.00**	**14.90**	**18.60**	**0.20**	**2.20**	**32.40**	**64.30**	**4.20**	**0.00**	**10.60**	**0.00**	**1.00**	**89.30**	**18.30**	**0.00**	**1.00**	**81.60**
Grand Total					**890.678**	**177.450**	**724.57**	**18.40**	**258.78**	**66.38**	**629.38**	**88.10**	**4.34**	**418.04**	**113.08**	**108.60**	**58.20**	**50.60**	**45.80**	**89.35**	**40.00**	**468.64**	**158.88**	**197.95**	**104.18**	**73.84**	**0.00**	**191.84**	**519.55**	**151.03**	**598.00**	**122.90**	**138.10**	**31.56**	**36.10**	**429.87**	**433.50**	**61.60**	**3.30**	**23.10**	**5.30**	**2.20**	**905.65**	**43.90**	**5.60**	**6.10**	**880.65**

(2) Road Condition of Paved Roads

Road condition of paved roads is shown in **Table 5.3.1-3**.

TABLE 5.3.1-3 ROAD CONDITION OF PAVED ROADS

		National Road			*Provincial Road*		
		Good/Fair	Bad/Very Bad	Unknown	Good/Fair	Bad/Very Bad	Unknown
Mainland	Lanao del Sur I	66.5	27.7	0.5	0.8	1.2	4.0
	Marawi City	10.1	10.4	6.6	0.0	0.0	0.0
	Lanao del Sur II	112.1	25.9	0.0	6.0	8.2	0.0
	Maguindanao-I (Shariff Kabunsuan)	95.3	30.3	0.0	9.3	4.6	0.0
	Maguindanao-II	46.7	31.1	0.0	24.5	1.0	0.0
	Sub Total	330.7	125.4	7.1	40.6	15.0	4.0
		(71.4%)	(27.1%)	(1.5%)	(68.1%)	(25.2%)	(6.7%)
Island	SULU-1	53.2	11.2	17.6	0.0	0.0	0.0
	SULU-2	16.0	4.8	10.4	0.0	0.0	0.0
	Tawi-Tawi	17.2	5.0	4.6	0.0	0.0	0.0
	Basilan	68.9	5.9	5.4	0.0	0.0	0.0
	Sub Total	155.3	26.9	37.9	0.0	0.0	0.0
		70.5%	12.2%	17.2%	-	-	-
GRAND TOTAL		486.0 (71.1%)	152.3 (22.3%)	45.0 (6.6%)	40.6 (68.1%)	15.0 (25.2%)	4.0 (6.7%)
		683.4			59.6		

Note: "Unknown" means that pavement condition could not be surveyed due to security condition.

Table 5.3.1-3 can be summarized as follows:

Percentage of Roads in Good/Fair Condition

	National Roads	*Selected Provincial Roads*
Mainland Provinces	71.4%	68.1%
Island Provinces	70.5%	-
TOTAL	71.1%	68.1%

5.3.2 Bridge Condition in ARMM

Summary of condition of each bridge is shown in Annex 5-A.

(1) Bridge Type

Type of bridges along national roads and provincial roads is shown in **Table 5.3.2-1** (**1/2**) and (**2/2**), respectively.

TABLE 5.3.2-1 (1/2) BRIDGE TYPE (NATIONAL ROADS)

		No. of Bridge	RC	PC	STEEL	BAILEY	UNKNOWN
MAINLAND	Lanao del Sur	35	27	1	3	4	0
	Marawi City	5	0	2	1	2	0
	Lanao del Sur-II	26	24	0	1	1	0
	Maguindanao-I (Shariff Kabunsuan)	23	15	1	3	4	0
	Maguindanao-II	32	25	1	4	2	0
	Subtotal	121	91	5	12	13	0
INLAND	Basilan	20	7	3	4	6	0
	Sulu-I	24	11	0	5	2	6
	Sulu-II	4	4	0	0	0	0
	Tawi-Tawi	4	2	1	0	1	0
	Sub-total	52	24	4	0	9	6
TOTAL		173	115 (66.5%)	9 (5.2%)	9 (12.1%)	22 (12.7%)	6 (3.5%)

Note: "Unknown" means that bridge type could not be surveyed due to security condition.

TABLE 5.3.2-1 (2/2) BRIDGE TYPE (PROVINCIAL ROAD)

		No. of Bridge	RC	PC	STEEL	BAILEY	UNKNOWN
MAINLAND	Lanao del Sur	0	0	0	0	0	0
	Marawi City	0	0	0	0	0	0
	Lanao del Sur-II	0	0	0	0	0	0
	Maguindanao-I (Shariff Kabunsuan)	16	4	0	0	12	0
	Maguindanao-II	0	0	0	0	0	0
	Subtotal	16	4	0	0	12	0
INLAND	Basilan	0	0	0	0	0	0
	Sulu-I	0	0	0	0	0	0
	Sulu-II	0	0	0	0	0	0
	Tawi-Tawi	0	0	0	0	0	0
	Sub-total	0	0	0	0	0	0
TOTAL		16	4 (25.0%)	0 (0.0%)	0 (0.0%)	12 (75.0%)	0 (0.0%)

Note: "Unknown" means that bridge type could not be surveyed due to security condition.

(2) Year Built

Year built of bridges along national roads is shown in **Table 5.3.1-4**. Year built of all bridges along provincial roads was not obtained due to no record.

TABLE 5.3.1-4 YEAR BUILT OF BRIDGES

		No. of Bridge	*<1960*	*<1980*	*<2000*	*2000<*	*UNKNOWN*
MAINLAND	**Lanao del Sur-I**	35	1	21	11	0	2
	Marawi City	5	0	2	0	3	0
	Lanao del Sur-II	26	7	12	5	0	2
	Maguindanao-I (Shariff Kabunsuan)	23	5	3	1	2	12
	Maguindanao-II	32	6	11	4	1	10
	Sub-Total	121	19	49	21	6	42
ISLAND	**Basilan**	20	2	6	5	6	1
	Sulu-I	24	14	0	2	2	6
	Sulu-II	4	0	0	0	0	4
	Tawi-Tawi	4	0	2	2	0	0
	Sub-Total	52	16	8	9	8	11
Total		**173**	**35 (20.2%)**	**57 (32.9%)**	**30 (17.3%)**	**14 (8.1%)**	**37 (21.4%)**

Note: "Unknown" means that no data obtained due to no record.

(3) Structural Soundness

Structural soundness of bridges along national roads and provincial roads is shown in **Table 5.3.1-5** (**1/2**), and (**2/2**), respectively.

TABLE 5.3.1-5(1/2) STRUCTURAL SOUNDNESS (NATIONAL ROAD)

		No. of Bridge	*GOOD*	*FAIR*	*POOR*	*BAD*	*UNKNOWN*
MAINLAND	Lanao del Sur-I	35	0	20	12	1	2
	Marawi City	5	0	3	2	0	0
	Lanao del Sur-II	26	0	21	2	3	0
	Maguindanao-I (Shariff Kabunsuan)	23	3	15	3	2	0
	Maguindanao-II	32	1	21	4	6	0
	Sub-Total	121	4	80	23	12	2
ISLAND	Basilan	20	2	10	5	3	0
	Sulu-I	24	2	16	0	0	6
	Sulu-II	4	0	3	1	0	0
	Tawi-Tawi	4	0	3	1	0	0
	Sub-Total	52	4	32	7	3	6
Total		**173**	**8 (4.6%)**	**112 (64.7%)**	**30 (17.3%)**	**15 (8.7%)**	**8 (4.6%)**

Note: "Unknown" means that no data obtained due to no record.

TABLE 5.3.1-5 (2/2) STRUCTURAL SOUNDNESS (PROVINCIAL ROAD)

		No. of Bridge	*GOOD*	*FAIR*	*POOR*	*BAD*	*UNKNOWN*
MAINLAND	Lanao del Sur-I	0	0	0	0	0	0
	Marawi City	0	0	0	0	0	0
	Lanao del Sur-II	0	0	0	0	0	0
	Maguindanao-I (Shariff Kabunsuan)	16	0	16	0	0	0
	Maguindanao-II	0	0	0	0	0	0
	Sub-Total	16	0	16	0	0	0
ISLAND	Basilan	0	0	0	0	0	0
	Sulu-I	0	0	0	0	0	0
	Sulu-II	0	0	0	0	0	0
	Tawi-Tawi	0	0	0	0	0	0
	Sub-Total	0	0	0	0	0	0
Total		**16**	**0 (0.0%)**	**16 (100.0%)**	**0 (0.0%)**	**0 (0.0%)**	**0 (0.0%)**

Note: "Unknown" means that no data obtained due to no record.

(4) Bridges To Be Replaced or Rehabilitated

Number of bridges to be replaced or rehabilitated is shown in **Table 5.3.1-6**. In addition to above, bridges of which structural soundness was evaluated to be in "poor" condition and needs "major repair", amounted to 24 bridges.

TABLE 5.3.1-6 BRIDGES TO BE REPLACED OR REHABILITATED

Factors which Suggest Replacement or Rehabilitation	National Road			Provincial Road			TOTAL
	Mainland Provinces	*Island Provinces*	*Total*	*Mainland Provinces*	*Island Provinces*	*Total*	
1) Temporary Bridge (like a bailey bridge)	13	9	22	12	0	12	34
2) Structural Soundness is "bad"	12	3	15	0	0	0	15
3) 1-lane bridge	1	1	2	1	0	1	3
4) Load limit of 10 tons or less imposed	7	1	8	0	0	0	8
5) Over Flow or at Girder Level	7	1	8	0	0	0	8
Number of bridges which have one of above defects	35	14	49	12	0	12	61
Bridges Needed Major Repair	18	6	24	-	-	-	24

5.4 ROAD DEVELOPMENT LEVEL

5.4.1 Road Length and Road Density

National road length and road density by Region is shown in **Table 5.4.1-1**. National road density of ARMM is the lowest in the country and less than ½ of national average. ARMM needs more national road network.

TABLE 5.4.1-1 NATIONAL ROAD LENGTH AND ROAD DENSITY OF EACH REGION (2008)

Region		Population in Thousand (2007)	Land Area (sq.km.)	Road Length (km)	Road Density
Philippines (DPWH-National)		88,545	309,771	29,370	0.177
LUZON	NCR	11,553	620	1,032	0.386
	CAR	1,521	19,422	1,846	0.340
	Region I	4,546	13,013	1,610	0.209
	Region II	3,051	28,229	1,765	0.190
	Region III	9,721	22,015	2,032	0.139
	Region IV-A	11,743	16,873	2,404	0.171
	Region IV-B	2,560	29,621	2,185	0.251
	Region V	5,110	18,156	2,197	0.228
VISAYAS	Region VI	6,844	20,794	2,880	0.241
	Region VII	6,399	15,886	2,036	0.202
	Region VIII	3,913	23,251	2,372	0.249
MIN-DANAO	Region IX	3,230	17,047	1,218	0.164
	Region X	3,952	20,496	1,682	0.187
	Region XI	4,157	20,357	1,447	0.157
	Region XII	3,829	22,513	1,304	0.140
	Region XIII	2,293	21,478	1,358	0.194
	ARMM (DPWH-ARMM)	4,121	33,511	891	0.076

Note: $\text{Road Density} = \frac{L}{\sqrt{P \times A}}$

L : Road Length (km)
P : Population in 1,000
A : Land Area in sq. km

5.4.2 Pavement Ratio

Pavement ratio of national roads by Region is shown in **Table 5.4.2-1**. ARMM's pavement ratio is slightly higher than the national average, and the highest among Regions in Mindanao.

TABLE 5.4.2-1 PAVEMENT RATIO OF NATIONAL ROAD

Region		Total Road (km)	Paved Road (km)	Unpaved Road (km)	Pavement Ratio
Philippines		29,370	21,006	8,364	71.5%
LUZON	NCR	1,032	1,032	0	100.0%
	CAR	1,846	659	1,187	35.7%
	Region I	1,610	1,449	161	90.0%
	Region II	1,765	1,227	538	69.5%
	Region III	2,032	1,771	261	87.2%
	Region IV-A	2,404	2,063	341	85.8%
	Region IV-B	2,185	1,008	1,177	46.1%
	Region V	2,197	1,587	610	72.2%
VISAYAS	Region VI	2,880	2,176	704	75.6%
	Region VII	2,036	1,745	291	85.7%
	Region VIII	2,372	1,929	443	81.3%
MIN-DANAO	Region IX	1,218	836	382	68.6%
	Region X	1,682	1,170	512	69.6%
	Region XI	1,447	910	537	62.9%
	Region XII	1,304	814	490	62.4%
	Region XIII	1,358	629	729	46.3%
	ARMM (DPWH-ARMM)	891	684	207	76.8%

$$\text{Pavement Ratio} = \frac{\text{Paved Road Length (km)}}{\text{Total Road Length}}$$

Map of pavement type of national roads in ARMM and in Regions X & XII is shown in **Figure 5.4.2-1**.

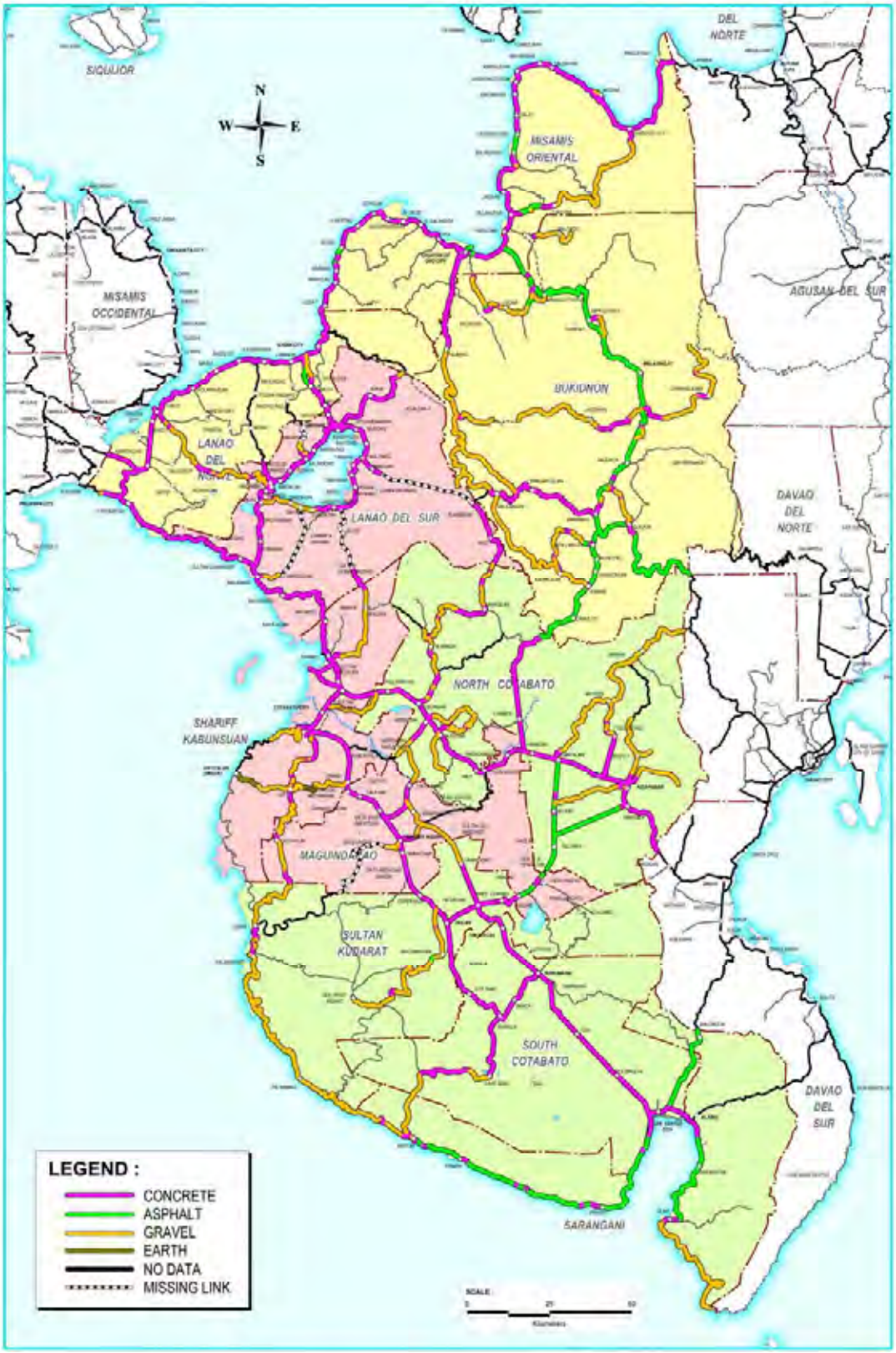


FIGURE 5.4.2-1 (1/2) PAVEMENT TYPE OF NATIONAL ROADS – MAINLAND PROVINCES

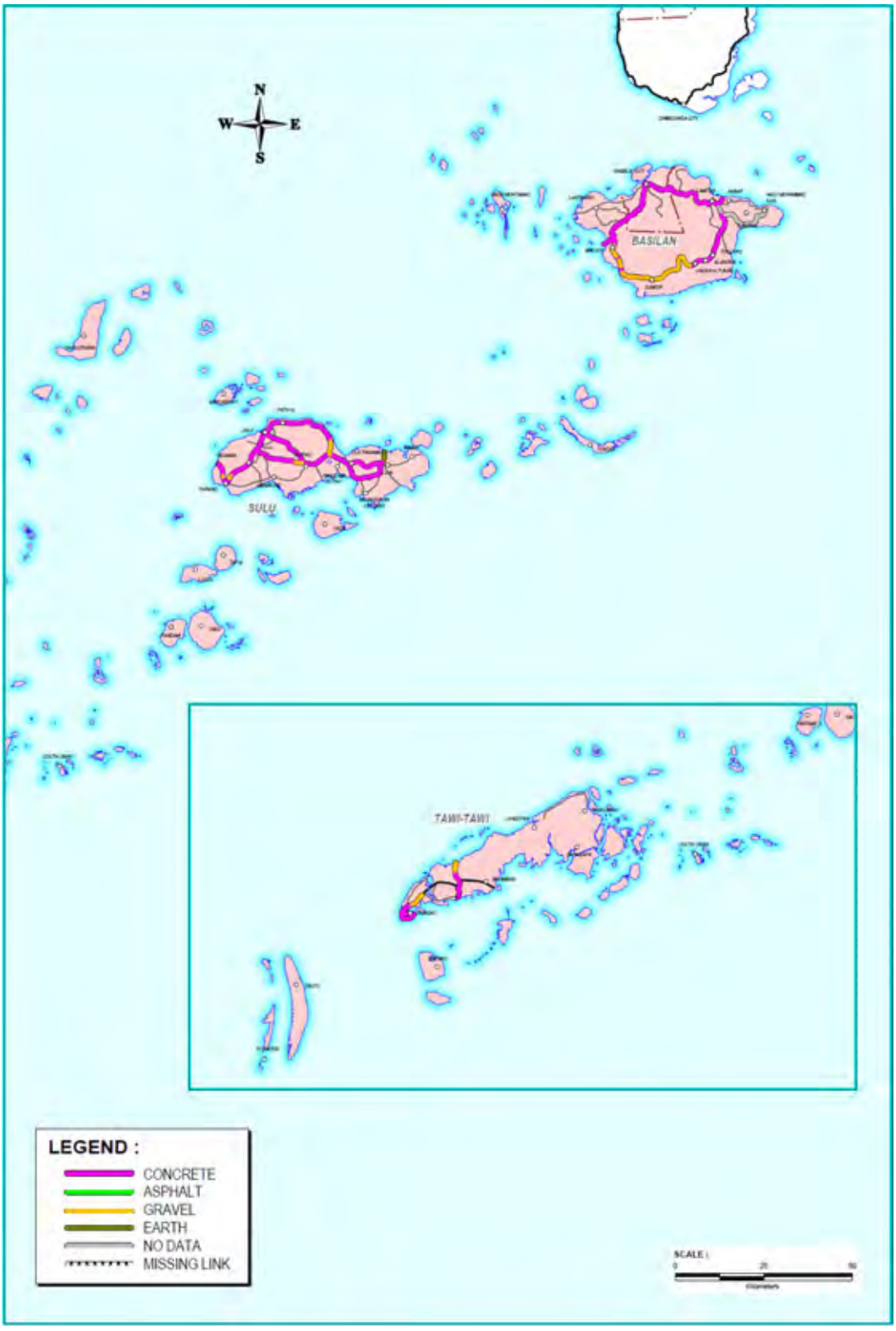


FIGURE 5.4.2-1 (2/2) PAVEMENT TYPE OF NATIONAL ROADS – ISLAND PROVINCES

5.4.3 Road Condition

Road condition of paved roads is shown in **Table 5.4.3-1**.

Map showing road condition in ARMM and Regions X & XII is shown in **Figure 5.4.3-1**.

TABLE 5.4.3-1 ROAD CONDITION (PAVED ROAD)

		Good	*Fair*	*Poor*	*Bad*	*No Assessment*	*Total*	*% Poor and Bad*
Philippines (DPWH-National)		5,025 (23.9)	6,014 (28.6)	3,205 (15.3)	5,075 (24.2)	1,687 (8.0)	21,006 (100.0%)	39.5
LUZON	**NCR**	-	-	-	-	1,032	1,032	-
	CAR	102 (15.5)	183 (27.8)	130 (19.7)	240 (36.4)	4 (0.6)	659 (100.0%)	56.1
	Region I	305 (21.1)	504 (34.8)	260 (17.9)	368 (25.4)	12 (0.8)	1,149 (100.0%)	43.3
	Region II	190 (15.5)	422 (34.4)	222 (18.1)	380 (31.0)	13 (1.0)	1,227 (100.0%)	49.1
	Region III	362 (20.4)	414 (23.4)	324 (18.3)	635 (35.9)	36 (2.0)	1,771 (100.0%)	54.2
	Region IV-A	1,016 (49.2)	451 (21.9)	243 (11.8)	305 (14.9)	48 (2.2)	2,063 (100.0%)	26.7
	Region IV-B	181 (18.0)	409 (40.6)	171 (17.0)	225 (22.3)	21 (2.1)	1,008 (100.0%)	39.3
	Region V	393 (24.8)	346 (21.8)	277 (17.5)	428 (27.0)	142 (8.9)	1,587 (100.0%)	44.5
VISAYAS	**Region VI**	484 (22.0)	666 (30.6)	372 (17.1)	653 (30.0)	1 (0.1)	2,176 (100.0%)	47.1
	Region VII	633 (36.3)	511 (29.3)	245 (14.0)	266 (15.2)	89 (5.2)	1,745 (100.0%)	29.2
	Region VIII	224 (11.6)	591 (30.6)	(23.9)	561 (29.1)	280 (14.5)	1,929 (100.0%)	43.3
MIN-DANAO	**Region IX**	195 (23.4)	348 (41.7)	(23.9)	134 (16.0)	8 (1.0)	836 (100.0%)	33.5
	Region X	277 (23.7)	411 (35.2)	(23.9)	327 (27.9)	1 (0.1)	1,170 (100.0%)	41
	Region XI	318 (34.9)	226 (24.8)	(23.9)	256 (28.2)	- (-)	910 (100.0%)	40.3
	Region XII	220 (27.0)	284 (34.9)	(23.9)	161 (19.8)	- (-)	814 (100.0%)	38.1
	Region XIII	124 (19.7)	245 (39.0)	(23.9)	136 (21.6)	- (-)	629 (100.0%)	41.3
	ARMM (DPWH-ARMM)	486.0 (71.1%)		152.3 (22.3%)		45.0 (6.6%)	683.4 (100.0%)	22.3

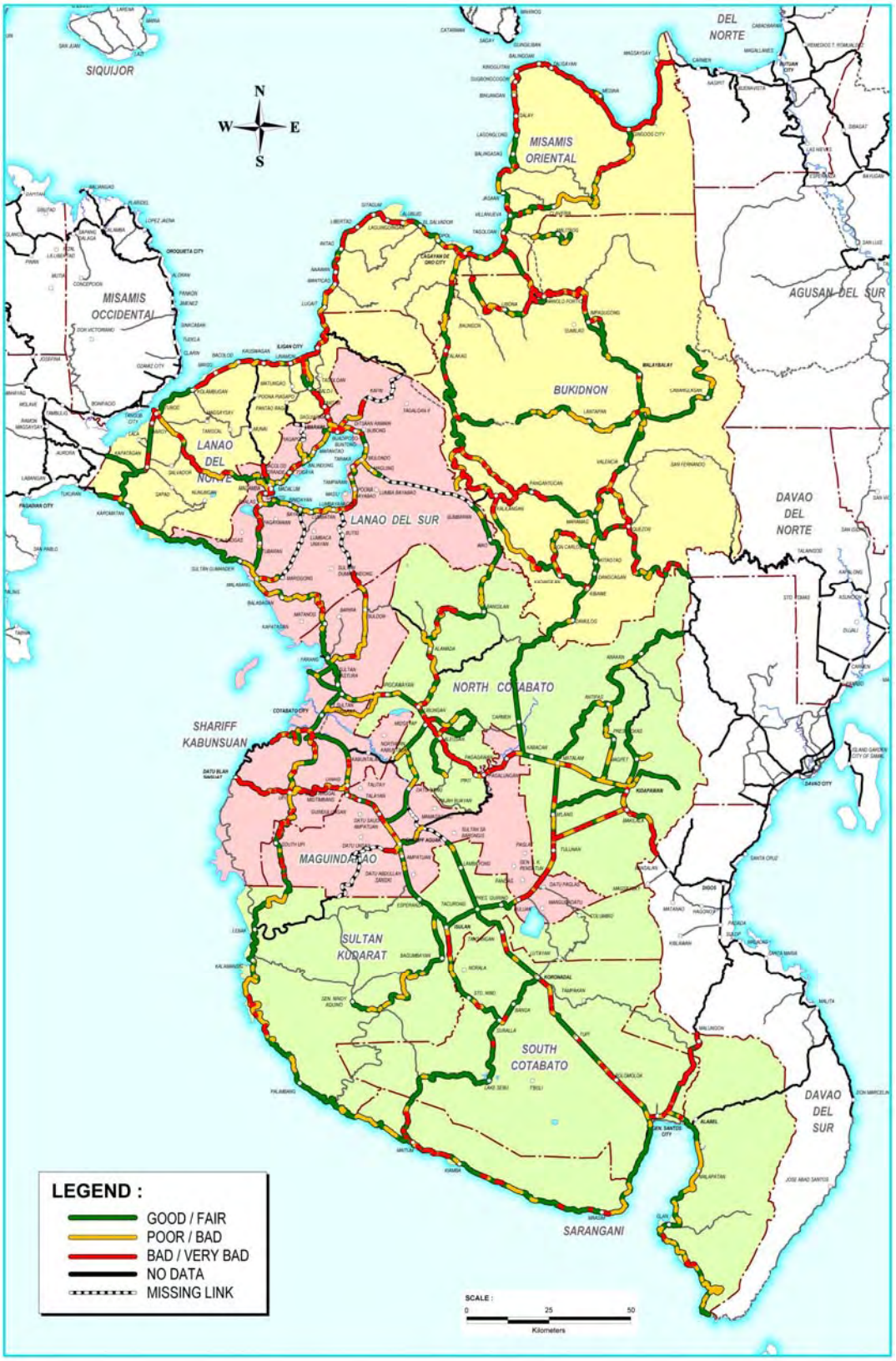


FIGURE 5.4.3-1 ROAD CONDITION MAP (1/2)

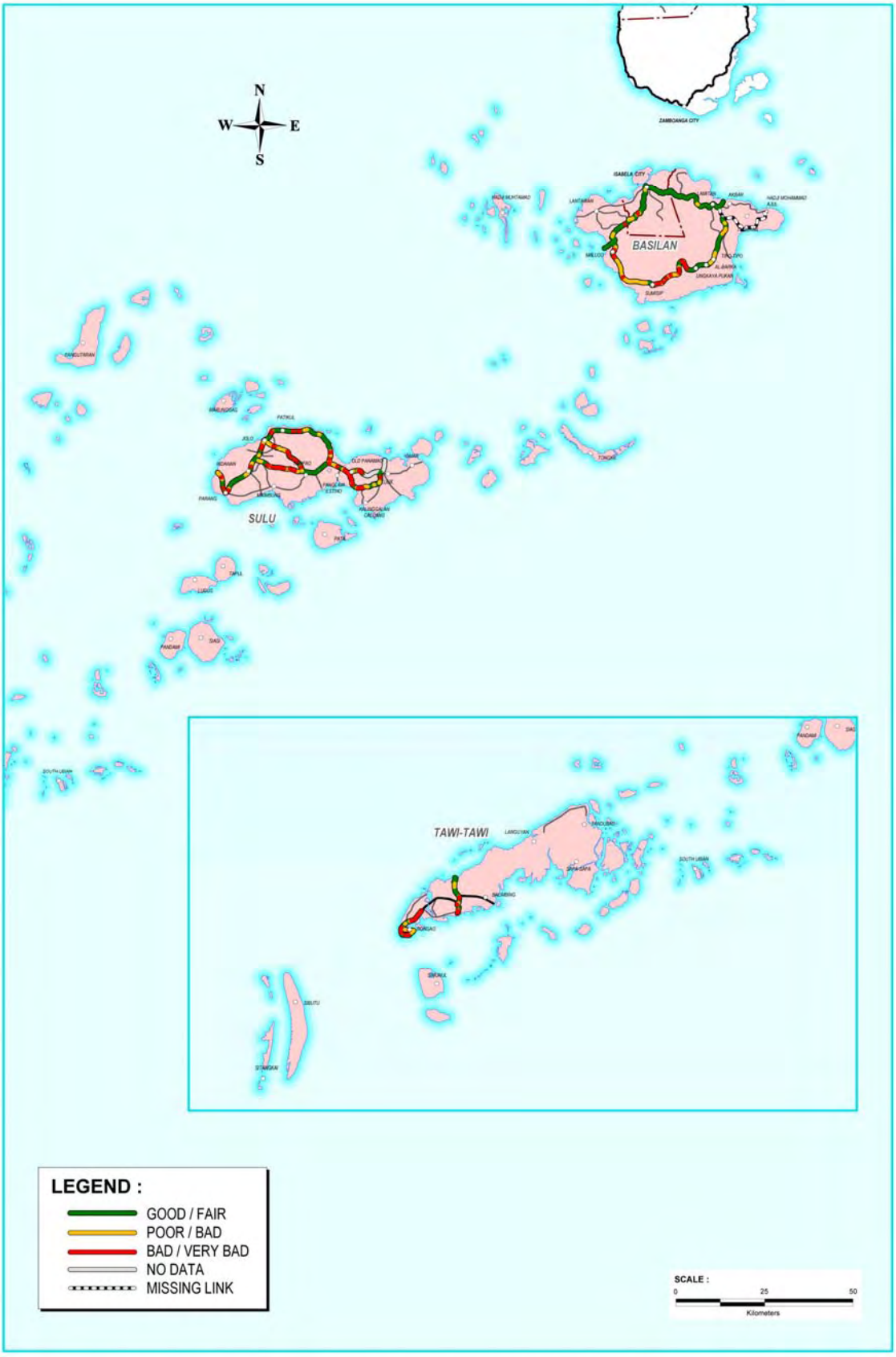


FIGURE 5.4.3-1 ROAD CONDITION MAP (2/2)

CHAPTER 6

ARMM ROAD SECTOR OVERVIEW

6.1 LEGAL FRAMEWORK OF ARMM AND DPWH-ARMM

6.1.1 ARMM

The Autonomous Region in Muslim Mindanao (ARMM) was established by Republic Act (RA) No. 6734, dated 1 August 1989, also known as the Organic Act for ARMM. ARMM originally consisted of the four provinces of Lanao del Sur, Maguindanao, Sulu, and Tawi-Tawi. RA 6734 was amended by RA 9054, dated 31 March 2001, to strengthen and expand the Organic Act. Under RA 9054, the province of Basilan and the city of Marawi were added to ARMM. The Regional Assembly of ARMM, through its Muslim Mindanao Act No. 201, dated 24 October 2005, created the province of Shariff Kabunsuan, segregating it from the mother province of Maguindanao. In a decision dated 17 July 2008 which was affirmed in January 2009, however, the Supreme Court declared the creation by the Regional Assembly of the province of Shariff Kabunsuan as void and unconstitutional. Accordingly, Shariff Kabunsuan has been re-integrated into the province of Maguindanao. Presently, therefore, ARMM is composed of the five provinces of Basilan, Lanao del Sur, Maguindanao, Sulu, and Tawi-Tawi, and the city of Marawi.

Under its Organic Act (RA 9054, Article III, Section 1), ARMM remains an integral and inseparable part of the national territory of the Republic of the Philippines as defined by the Constitution and existing laws. ARMM is governed by the Regional Government (Article I, Section 1). The region shall be governed and administered in accordance with the Organic Act and the laws enacted by the Regional Assembly.

The Regional Government shall exercise the powers and functions expressly granted to it in the Organic Act, or necessary for or incidental to the proper governance and development of all the constituent units within ARMM consistent with the policy on regional and local autonomy and decentralization (Article IV, Section 1). The Regional Government may enact its own regional administrative code and local government code consistent with the Constitution. ARMM is a corporate entity with jurisdiction over all matters devolved to it by the Constitution and the Organic Act (Article IV, Section 2).

The Regional Assembly may exercise legislative powers in ARMM for the benefit of the people and the development of the region, except on the following: (a) foreign affairs; (b) national defense and security; (c) postal service; (d) coinage and fiscal and monetary policies; (e) administration of justice, but it may legislate on matters covered by the Shariah; (f) quarantine; (g) customs and tariff; (h) citizenship; (i) naturalization, immigration, and deportation; (j) general auditing; (k) national elections; (l) maritime, land and air transportation and communications, but the autonomous government has the power to grant franchises, licenses, and permits to transportation plying

routes within the region, and communication facilities whose frequencies are confined to the region; (m) patents, trademarks, trade names, and copyrights; and (n) foreign trade (Article IV, Section 4).

The Regional Government is mandated to adopt a policy of local autonomy whereby regional power shall be devolved to local government units (LGUs), particularly in the areas of education, health, human resources, science and technology, and people empowerment. Until a law implementing this provision is enacted by the Regional Assembly, the provisions of the Local Government Code shall apply to all LGUs (provinces, cities, municipalities and barangays) within the region (Article III, Section 3).

The Regional Government shall provide the delivery of basic and responsive health programs, quality education, appropriate services, livelihood opportunities, affordable and progressive housing projects, and water resources development (Article III, Section 11).

The Regional Government shall give priority to the establishment of transportation and communication facilities to expedite the economic development of the region (Article XII, Section 12). This provision indicates the emphasis placed on the provision of road facilities and services, among others, in the region.

The national government shall provide ARMM a proportionate and equitable share in the annual national budget and foreign-assisted projects in addition to other financial assistance, support, and subsidies to accelerate its development (Article III, Section 13).

The President of the Republic shall exercise general supervision over the Regional Governor to ensure that his acts are within the scope of his powers and functions. The power of supervision of the President over the Provincial Governors and Mayors of the highly urbanized cities is to be exercised through the Regional Governor; over the Mayors of component cities and municipalities through the Provincial Governor; and over the punong barangay through the City or Municipal Mayor (Article III, Section 1).

The legislative power of the Regional Government is vested in the Regional Assembly (Article VI, Section 1). Among other things, the Regional Assembly shall enact the annual budget of the Regional Government. It shall also appropriate, through a Regional Assembly Public Works Act, funds for infrastructure in ARMM allocated by the national government. Unless approved by the Regional Assembly, no public works funds allocated by the national government for ARMM or by the Regional Government from its own revenues may be disbursed, distributed, realigned or used in any manner (Article VI, Section. 20).

The executive power of the Regional Government is vested in the Regional Governor as chief executive. He shall be assisted by a cabinet not exceeding ten members (Article VII, Sections 1 and 2). This includes the Secretary of the Department of Public Works and Highways for ARMM (DPWH-ARMM).

The Regional Governor is required to submit to the Regional Assembly, within two months before the beginning of every regular session, as a basis of the regional appropriations bill, a budget of expenditures and sources of financing, including receipts from existing and proposed revenue measures (Article VII, Section 21(a)). He shall approve the budget of ARMM within one month from its passage by the Regional Assembly (Article VII, Section 23).

RA 9054 established a Regional Economic Development Planning Board (REDPB). The Board is chaired by the Regional Governor and is composed of all Provincial Governors and City Mayors within the region, the Speaker and two members of the Regional Assembly, and five representatives elected by the private sector. The Board shall serve as the planning, monitoring, and coordinating agency for all development plans, projects, and programs intended for ARMM. It shall evaluate and recommend for approval of the Regional Assembly, the annual work programs and comprehensive plans of the region; once approved, the Regional Governor shall ensure the proper implementation of these programs and plans. The Board shall formulate a master plan for the systematic, progressive, and total development of the region. The master plan shall take into account the development plans of the LGUs concerned as mandated by the Local government Code (Article XII, Section10).

6.1.2 DPWH-ARMM

The powers and responsibilities of ARMM pertaining to infrastructure programs and projects within the ARMM territory may be gleaned from the provisions of RA 9054 (Organic Act) as well as other existing laws, including Executive Orders (EO) No. 426, dated 12 October 1990, EO 125, dated 16 September 2002, and EO 125-A, dated 29 November 2002, of the President of the Philippines, and the Local Government Code (LGC). These powers and responsibilities are exercised by DPWH-ARMM headed by the Department Secretary under the supervision of the Regional Governor.

Pursuant to EO 426, DPWH-ARMM is responsible for highways, flood control and water resource development systems, and other public works within ARMM and shall perform the following responsibilities:

a. Undertake and evaluate the planning, design, construction and works supervision for the infrastructure projects whose location and impact are confined within ARMM.

b. Undertake the maintenance of infrastructure facilities within ARMM and supervise the maintenance of such local roads and other infrastructure receiving financial assistance from the national government.

c. Ensure the implementation of laws, policies, programs, rules and regulations regarding infrastructure projects as well as all public and private physical structures within ARMM.

d. Provide technical assistance related to their functions to other agencies within ARMM, especially LGUs.

e. Coordinate with other National and Regional Government departments, agencies, institutions, and organizations, especially LGUs within ARMM in the planning and implementation of infrastructure projects.

f. Conduct continuing consultations with the local communities, take appropriate measures to make the infrastructure services of the Regional Government responsive to the needs of the general public and recommend such appropriate actions as may be necessary.

g. Perform such other related duties and responsibilities within ARMM as may be assigned or delegated by the Regional Governor or as may be provided by law.

The scope of infrastructure projects that ARMM may undertake is indicated in the General Appropriations Act (GAA) of the national government, particularly under the ARMM budget therein, where Special Provision No. 3 prescribes that the ARMM appropriations for infrastructure projects *shall be used for the construction, development, upgrading, operation or maintenance of roads, highways, bridges, water supply, flood control, ports, airports, and other infrastructure projects, excluding buildings.* It may be noted that this GAA provision authorizes ARMM to undertake a wide range of infrastructure facilities, including roads and bridges irrespective of classification, i.e., both national roads and local (provincial, city, municipal and barangay) roads.

In accordance with the abovementioned EO 125, as amended by EO 125-A, *locally-funded infrastructure programs and projects being undertaken and programmed to be implemented within ARMM are (hereby) devolved to and (heretofore) shall be implemented by the* (Autonomous Regional Government) *ARG of ARMM, except:*

(a) When Congress provides in the GAA or special laws which government agency shall implement a particular program or project, or

(b) When, in the judgment of the ARMM Regional Governor, ARG does not have the capacity to implement the program and/or project, in which case he may request a national agency to implement the same.

DPWH-ARMM is, of course, the implementing arm of ARG for infrastructure programs and projects.

With respect to the exception in item (a) above, under the DPWH-National budget in the GAA, Special Provision No. 1 provides, in effect, that DPWH-National shall implement all projects under its budget, including those located in ARMM, unless DPWH-National designates other agencies, including LGUs with demonstrated capability to implement the projects by themselves upon consultation with the Representative of the legislative district concerned. In accordance with this provision, therefore, DPWH-National may designate

ARMM, though DPWH-ARMM, or any of its component LGUs, to implement infrastructure projects in ARMM funded from the DPWH-National budget in the GAA, within the limits of the DPWH-ARMM implementing capability and subject to consultation with the concerned Congressman. So far, however, DPWH-National has not designated DPWH-ARMM to implement any of the regular infrastructure projects of the former.

Moreover, pursuant to EO 125, *programs and projects funded by Official Development Assistance (ODA) specifically intended for ARMM only shall be implemented by* ARG (through DPWH-ARMM). *Programs and projects funded by ODA implemented on a nationwide basis, but with an ARMM component, shall be implemented by the concerned national agency, with ARG implementing the component within ARMM. On-going programs and projects in ARMM funded by ODA and covered by loan agreements shall be devolved to and implemented by ARG, subject to renegotiation and amendment of the loan agreements covering said programs and/or projects.*

In this regard, DPWH-National is implementing two ODA-funded projects involving national roads in ARMM – viz., (a) Central Mindanao Road Project including Awang-Upi Road in Maguindanao, which is assisted by JICA (formerly Japan Bank for International Cooperation or JBIC), and (b) Cotabato City Diversion Road, Lake Lanao Circumferential Road, and Basilan Circumferential Road, which are assisted by the Saudi Fund. Notwithstanding the provisions of EO 125, there has been no concrete move to devolve the implementation of these projects from DPWH-National to ARG/DPWH-ARMM, or to renegotiate and amend the loan agreements to designate ARG/DPWH-ARMM as the implementing agency or even as a co-implementing agency for the projects.

In the case of infrastructure programs and projects funded from revenues of LGUs, the concerned LGUs will continue to implement them in accordance with the provisions of the Local Government Code and Section 3 of RA 9054.

6.2 ORGANIZATIONAL STRUCTURE AND FUNCTIONS OF DPWH-ARMM

6.2.1 Overall Structure

The organizational structure of DPWH-ARMM is shown in **Figure 6.2.1-1**.

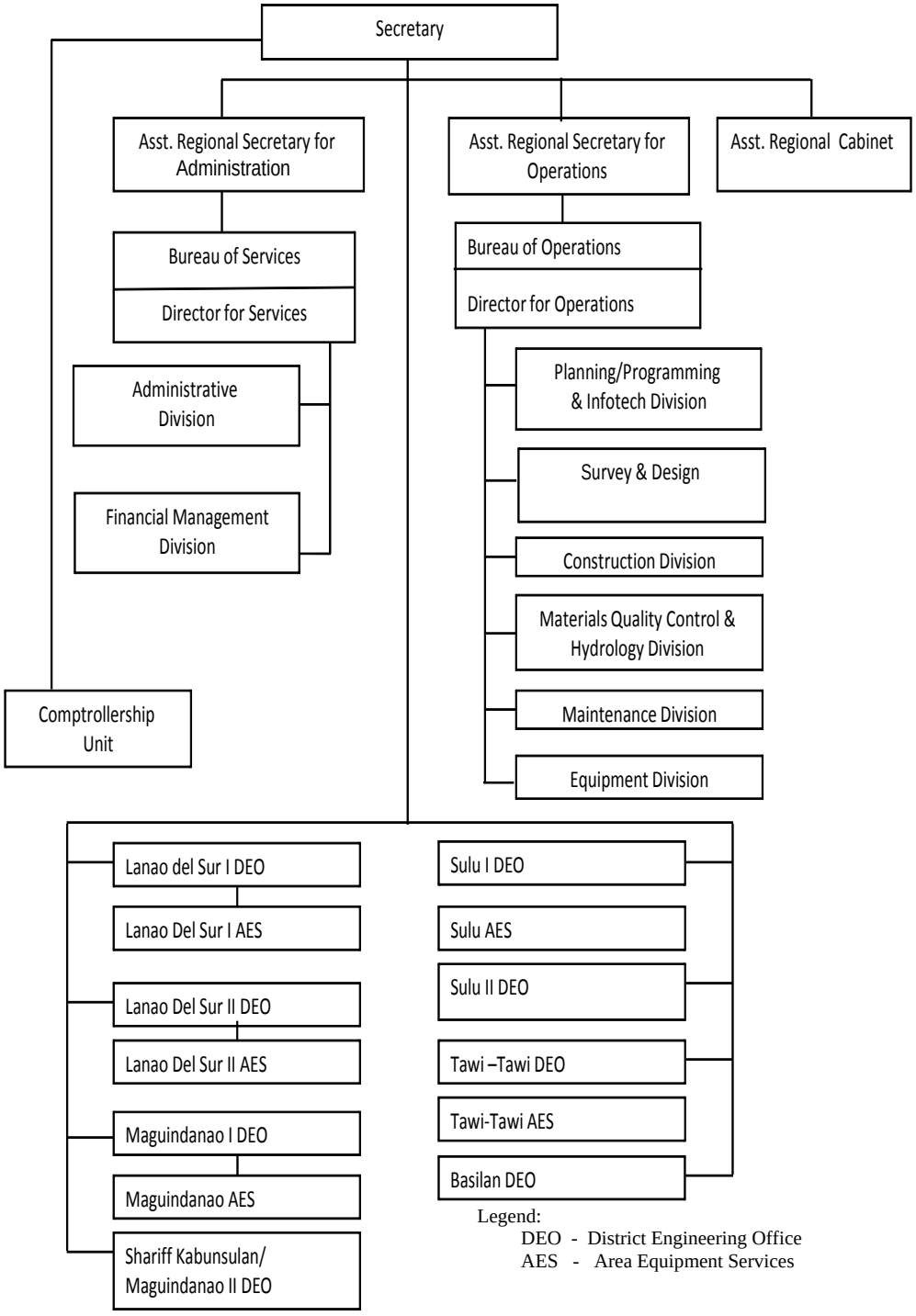


FIGURE 6.2.1-1. DPWH-ARMM ORGANIZATIONAL STRUCTURE

Detailed organizational charts of the entire DPWH-ARMM and its District Engineering Offices and Area Equipment Services are shown in **Annex 6-1.**

DPWH-ARMM is headed by a Regional Secretary who is responsible to the ARMM Governor. The organizational set-up consists of the following:

- The Office of the Regional Secretary, or Regional Office proper, composed of the Secretary and three Assistant Regional Secretaries - with their respective Bureaus - who report directly to the Secretary, as follows:

    - Assistant Regional Secretary for Operations, in charge of the Bureau of Operations
    - Assistant Regional Secretary for Administration, in charge of the Bureau of Services
    - Assistant Regional Cabinet Secretary

- The field offices, particularly the eight District Engineering Offices (DEOs), each headed by a District Engineer, who reports directly to the Secretary, as follows:

    - Lanao del Sur I
    - Lanao del sur II
    - Maguindanao
    - Shariff Kabunsuan/Maguindanao II
    - Sulu I
    - Sulu II
    - Tawi-Tawi
    - Basilan

Attached to the DEOs are five Area Equipment Services (AESs), as follows:

- Lanao del Sur I
- Lanao del sur II
- Maguindanao I
- Sulu I
- Tawi-Tawi

While the organizational chart does not show any direct line of command from the Assistant Secretaries to the field units – i.e., DEOs - in practice the Assistant Secretaries exercise, on behalf of the Secretary, supervision and control over the DEOs insofar as their respective functions are concerned. The two Bureaus and its Divisions in the Regional Office proper mainly perform staff functions for the Secretary, through the Assistant Secretaries concerned; they also exercise technical oversight over the DEOs on matters relating to their respective functions. The exception is the Construction Division under the Bureau of Operations which, aside from its staff and oversight functions, sometimes performs line functions by implementing actual infrastructure construction works by administration or by supervising construction works under contract.

The Bureau of Operations under the Assistant Secretary for Operations is the technical group in the Regional Office proper that is directly involved in infrastructure development, mainly through staff and oversight functions. The Bureau discharges these functions through its six Divisions, as follows:

- Planning/Programming and Infotech Division
- Survey and Design Division
- Construction Division
- Materials Quality Control and Hydrology Division
- Maintenance Division
- Equipment Division

The Bureau of Services under the Assistant Secretary for Administration provides the administrative and financial services in support of the regional operations. This is done through the following Divisions:

- Administrative Division
- Financial Management Division (which includes the Accounting, Budget, and Cash Sections)

The Comptrollership Unit reports directly to the Regional Secretary.

6.2.2 Personnel Complement

DPWH-ARMM has a total of 605 permanent personnel, as of 1 October 2008. Of these, 127 personnel are located in the Regional Office proper, while 478 are deployed in the field offices - 345 in the eight District Engineering Offices (DEOs) and 133 in the five Area Equipment Services (AEs), as shown in **Table 6.2.2-1**.

TABLE 6.2.2-1 PERMANENT PERSONNEL, DPWH-ARMM

Offices	Number	%
Regional Office Proper (Central Office)	**127**	**21.0**
Field Offices	**478**	**79.0**
District Engineering Offices (DEOs) – 8	345	57.0
Area Equipment Services (AES) - 4	133	22.0
Total	**605**	**100.0**

Source: DPWH-ARMM, October 2008

The proportion of central office (Regional Office proper) personnel to field personnel (DEOs and AESs in DPWH-ARMM is 21-to-79. In comparison, as shown in **Table 6.2.2-2,** DPWH-National has a more decentralized set-up as reflected in a central-to-field personnel proportion of 13-to-87 under the existing structure, which is proposed to be reduced to 11-to-89 under the rationalization plan of the Department.

TABLE 6.2.2-2 PROPORTION OF CENTRAL-TO-FIELD PERSONNEL, DPWH-NATIONAL

Offices	Existing Organization	Rationalization Plan
Central Office	12.6%	10.8%
Field Offices (Regional, District, and Project Offices)	87.4%	89.2%
Total	100.0%	100.0%

Source: DPWH-National, October 2008

As reference, in many infrastructure entities, public and private, the usual benchmark for effective decentralized operations is to have not more than 10 percent of the total personnel located in the central office.

The foregoing observations suggest that there could still be room in DPWH-ARMM to further decentralize its functions and personnel from the Regional Office proper to the field units.

In the Regional Office proper alone, the 127 permanent personnel are distributed into the component organizational units as shown in **Table 6.2.2-3.** This is based on the plantilla as of 30 September 2008 which is attached as **Annex 6-2.**

TABLE 6.2.2-3 PERMANENT PERSONNEL, REGIONAL OFFICE PROPER, DPWH-ARMM

Office	Number
Office of the Regional Secretary	**10**
Services Group	**70**
Office of the Director for Services	4
Administrative Division, Office of the Chief	2
General Services Section	28
Supply Section	6
Human Resource Management and Records Section	8
Financial and Management Division, Office of the Chief	2
Accounting Section	7
Cash Section	7
Budget Section	6
Operations Group	**47**
Director for Operations	4
Survey and Design Division	10
Planning and Programming Division	7
Materials Quality Control and Hydrology Division	6
Construction Division	9
Maintenance Division	7
Equipment Division	4
Total	**127**

Source: DPWH-ARMM, September 2008

The personnel of the Services Group outnumber those of the Operations Group by a proportion of 60-to-40. This proportion is considerably higher than that of the DPWH-National central office which has a Support Services-to-Technical Offices personnel proportion of 41-to-59 under the current set-up, and 45-to-55 under the rationalization plan.

The 478 personnel in the field offices of DPWH-ARMM are distributed among the District Engineering Offices (DEOs) and Area Equipment Services (AESs) as shown in **Table 6.2.2-4**.

TABLE 6.2.2-4 PERMANENT PERSONNEL, FIELD OFFICES, DPWH-ARMM

District	Number
District Engineering Offices (DEOs)	**345**
Lanao del Sur I and II	93
Maguindanao I and II	73
Sulu I	75
Sulu II	45
Tawi-Tawi	59
Basilan	-
Area Equipment Services (AESs)	**78**
Lanao del Sur I and II	37
Maguindanao	41
Sulu I	41
Tawi-Tawi	14
Total, Field Offices	**78**

Source: DPWH-ARMM, 1 October 2008

The 605 permanent employees of DPWH-ARMM are categorized into technical and non-technical personnel as shown in **Table 6.2.2-5**. A further breakdown into the Regional Office proper, DEOs and AESs is given in **Annex 6-3** (DPWH-ARMM Inventory of Technical and Non-Technical Personnel).

TABLE 6.2.2-5 TECHNICAL AND NON-TECHNICAL PERSONNEL, DPWH-ARMM

Category	Number	%
Technical Personnel	**347**	**57.4**
Engineers	147	24.3
Civil Engineers	122	20.2
Architects	9	1.5
Mechanical Engineers	16	2.6
Technicians	200	33.1
Non-Technical Personnel	**258**	**42.6**
Professionals	75	12.4
Non-Professionals	183	30.2
Total, Tech. and Non-Tech. Personnel	**605**	**100.0**

Source: DPWH-ARMM, October 2008

Thus, out of 605, about 57 percent or 374 are technical personnel, and 43 percent or 258 are non-technical personnel. Engineers alone number 147 or 24 percent of the total staff. DPWH-ARMM has a higher percentage of technical staff than DPWH-National whose technical staff constitutes only 39 percent of its total staff.

6.2.3 Regional Secretary

According to the functional statements issued by DPWH-ARMM, the Regional Secretary shall be responsible for efficiently and effectively carrying out the inherent duties and responsibilities of the Regional Office. He shall exercise functional and administrative supervision over the District Offices and Area Equipment Services within the region. He shall also perform other related duties assigned or delegated by the Regional Governor or required by law.

The caretaker of the office of the Regional Secretary of DPWH-ARMM is presently Engr. Razul K. Abpi.

6.2.4 Assistant Regional Secretary for Operations and Bureau of Operations

From the DPWH-ARMM functional statements, the Assistant Regional Secretary for Operations has the following responsibilities:

a. Advises and assists the Regional Secretary in the formulation and implementation of Department policies, plans, programs, and projects.

b. Supervises all operational activities of the Bureaus and Divisions in the Department, for which he is responsible to the Regional Secretary.

c. Represents the Secretary in conferences, meetings, and other official functions.

d. Performs other duties assigned or delegated by the Regional Secretary.

The incumbent Assistant Regional Secretary for Operations is Engr. Guialoson A. Mamogkat.

As mentioned, the Assistant Regional Secretary directly supervises the Bureau of Operations, headed by a Director. Engr. Mamogkat is concurrently the Director of this Bureau. The Bureau of Operations is assigned the following tasks:

a. Formulates policies pertaining to construction management and contract administration, maintenance of infrastructure projects and facilities, and management of infrastructure equipment and ancillary facilities.

b. Reviews and evaluates programs, estimates and tender documents for construction, maintenance and equipment.

c. Inspects, supervises, and monitors construction directly implemented by the Regional Office.

d. Inspects and monitors construction and maintenance activities including equipment utilization of field offices to ensure that such activities are conduce/implemented in accordance with the standard policies and guidelines.

e. Provides support to field offices on construction management and contract administration, maintenance of infrastructure projects and facilities and equipment management.

f. Performs such other related duties and responsibilities as may be assigned or delegated by the Regional Secretary or as may be provided by law.

6.2.5 Planning/Programming and Infotech Division

According to the functional statements of DPWH-ARMM, the Planning/ Programming and Infotech Division has the following responsibilities:

a. Provides overall coordination, direction and supervision of all activities undertaken by the different sections in the Division.

b. Coordinates with the Survey and Design Division for the purpose of attaining engineering economy in the use of project funds.

c. Participates in professional and technical activities to keep abreast with the latest developments in planning related to its area of responsibilities.

d. Recommends, for approval, technical matters initiated for the betterment of the Division.

e. Submits periodic reports.

f. Performs such other duties and responsibilities as may be assigned or delegated by higher authorities or as may be prescribed by law.

Presently, most of the work of the Planning/Programming and Infotech Division involves the preparation of programs of work and estimates of specific projects, particularly the Regional Impact Projects (RIPs), Provincial Impact Projects (PIPs), and District Impact Projects (DIPs) identified by the Office of the Governor and the members of the Regional Assembly, according to the Regional Comprehensive Development Plan, with funding from the General Appropriations Act (GAA) through the Regional Public Works Act (PWA). This is discussed further in Sections 3.3.3 and 9.2.

Unlike its counterpart offices in DPWH-National (viz., Planning Service and Regional Planning and Design Division), the Planning/Programming and Infotech Division of DPWH-ARMM apparently is not undertaking, on a

regular basis and to a significant degree, the following activities as part of its core planning functions:

a. Preparation of long-term, medium-term and annual infrastructure plans and programs for ARMM consisting of prioritized projects for national roads/other facilities with their fund allocations within budget constraints.

b. Conduct/review/supervision of pre-feasibility/feasibility studies of potential projects identified in the infrastructure plans and programs.

c. Conduct/supervision of road traffic surveys and collection and processing of traffic data for planning purposes.

d. Maintenance of a database for National Roads in ARMM suitable for planning of road investment and asset preservation works.

The DPWH-ARMM Planning/Programming and Infotech Division, however, has prepared a "list of programs, projects and activities to be implemented as visualized/enumerated in the Medium-Term Philippine Development Plan (MTPDP)/Medium-Term Public Investment Program (MTPIP)" with budgetary requirements for 2007-2010. The list includes national roads, as well as provincial roads, water supply, flood control, and buildings. An extract of such a list is shown in **Annex 6-4**. This multi-year list is intended to be used by the Regional Economic Development Planning Board (REDPB), through its Regional Infrastructure Development Committee (RIDC), in preparing the Regional Development Investment Program (RDIP) and in drawing up the annual list of projects to be funded by GAA-ARMM appropriations through the Public Works Act for the coming budget year.

The Planning/Programming and Infotech Division consists of seven personnel – five Engineers, one Draftsman, and one Engineering Assistant.

6.2.6 Survey and Design Division

The Survey and Design Division is assigned the following responsibilities according to the DPWH-ARMM functional statements:

a. Provides overall coordination, direction and supervision of all activities undertaken by the different sections of the Division.

b. Coordinates with the Planning/Programming and Infotech Division for the purpose of attaining engineering economy in the use of project funds.

c. Participates in professional and technical activities to keep abreast with the latest developments in planning related to its area of responsibilities.

d. Recommends, for approval, technical matters initiated for the betterment of the Division.

e. Submits periodic reports.

f. Performs such other duties and responsibilities as may be assigned or delegated by higher authorities or as may be prescribed by law.

Once the annual list of projects is approved by REDPB, the Survey and Design Division is responsible for undertaking the engineering investigations and preparation of plans for the projects. Since it has only one total station surveying instrument, the Survey and Design Division explained that it cannot handle the survey requirements of all the numerous road projects, but only a few major ones that involve new roads or significant changes in road alignment. For most of the smaller farm-to-market road projects, the Survey and Design Division prescribes typical cross-sections only. The DEOs assist the Division in the survey activities. The Survey and Design Division apparently does not have the capability to do detailed soil investigations. The Division performs design analyses and prepares engineering plans for some major roads, bridges and buildings, usually with the use of computer-aided design (CAD) software; the survey data used, however, are not always complete or accurate.

The Survey and Design Division is composed of ten personnel – six Engineers, one Architect, two Draftsmen, and one Engineering Assistant.

6.2.7 Construction Division

The Construction Division is responsible for the following tasks under the DPWH-ARMM functional statements:

a. Formulates plans, programs and policies pertaining to the construction of infrastructure projects, such as roads, bridges, buildings, ports and flood control works and other structures and recommend the same to the Director for Operations.

b. Reviews and evaluates plans, programs of work, and estimates, including reports submitted by DEOs, and forwards the same to the Director for Operations for appropriate action.

c. Supervises all construction directly implemented by the Regional Office proper.

d. Inspects and monitors construction activities of the DEOs to ensure that they are implemented in accordance with approved plans and specifications.

e. Performs such other duties and responsibilities as may be assigned or delegated by higher authorities or as may be prescribed by law.

The Construction Division undertakes or supervises the construction works for the approved projects using different modes of implementation – by administration, by contract, and through the LGUs under Memoranda of Agreement.

The Construction Division is composed of nine personnel – seven Engineers and two Engineering Assistants.

6.2.8 Maintenance Division

The Maintenance Division has the following tasks based on the DPWH-ARMM functional statements:

a. Formulates plans, programs, strategies and policies pertaining to the repair and maintenance of government infrastructure projects, such as roads, bridges, buildings, ports and flood control works and other structures and recommend the same to the Director for Operations for appropriate action.

b. Reviews and evaluates plans, programs of work, and estimates, including reports submitted by DEOs, and forwards the same to the Director for Operations for appropriate action.

c. Inspects and monitors repair and maintenance activities of the DEOs to ensure that they are implemented in accordance with approved plans and specifications.

d. Performs such other duties and responsibilities as may be assigned or delegated by higher authorities or as may be prescribed by law.

The Maintenance Division recommends, for approval of the Regional Secretary/Assistant Secretary for Operations, the allocation of maintenance funds to DEOs based on the Equivalent Maintenance Kilometer (EMK) formula, and reviews maintenance programs submitted by DEOs. As a staff unit, it does not undertake actual maintenance works, but is responsible for technical supervision of the maintenance works undertaken by the DEOs.

The Maintenance Division is composed of seven personnel – five Engineers and two Engineering Assistants.

6.2.9 Material Quality Control and Hydrology Division

The Material Quality Control and Hydrology Division has the following tasks under the DPWH-ARMM functional statements:

a. Provides overall coordination, direction and supervision of all activities undertaken by the different sections in the Division.

b. Coordinates with the Construction Division for the purpose of attaining engineering economy in the use of project funds.

c. Participates in professional and technical activities to keep abreast with the latest developments in planning related to its area of responsibilities.

d. Recommends, for approval, technical matters initiated for the betterment of the Division.

e. Performs such other duties and responsibilities as may be assigned or delegated by higher authorities or as may be prescribed by law.

The Material Quality Control and Hydrology Division consist of six personnel – four Engineers and two Laboratory Technicians.

6.2.10 Equipment Division

The Equipment Division has the following responsibilities based on the DPWH-ARMM functional statements:

a. Formulates plans, programs, strategies and policies pertaining to equipment operations, both at regional level and Area Equipment Services, and recommend the same to the Director for Operations for appropriate action.

b. Reviews and evaluates programs of work and estimates for the purchase of spare parts on preventive maintenance, rehabilitation, repair and maintenance of heavy equipment and service vehicles, both at regional level and Area Equipment Services, and forwards the same to the Director for Operations for appropriate action.

c. Inspects and monitors the operations of repair and maintenance activities of Area Equipment Services including equipment utilization.

d. Prepares and submits to the Director for Operations the allocation and use of equipment subject to Equipment Rental Request Orders.

e. Conducts periodic inventory of all heavy equipment and service vehicles of DPWH-ARMM.

f. Prepares and submits, for appropriate action of the Director for Operations, the Annual Parts Procurement Program.

g. Performs such other duties and responsibilities as may be assigned or delegated by higher authorities or as may be prescribed by law.

The Equipment Division is composed of four personnel – three Engineers and an Electrician.

6.2.11 District Engineering Offices

The eight District Engineering Offices (DEOs) serve as the main implementing units of DPWH-ARMM.

Each DEO is headed by a District Engineer who has the following responsibilities according to the DPWH-ARMM functional statements:

a. Administers, supervises and inspects all administrative and technical phases of the Engineering District.

b. Checks and supervises the survey and design of civil engineering facilities and both horizontal and vertical structures, including the execution and implementation thereof.

c. Notes other engineering programs involving the determination of feasibility of proposed projects.

d. Performs such other duties and responsibilities as may be assigned or delegated by higher authorities or as may be prescribed by law.

Each DEO has a personnel complement ranging from 28 in Shariff Kabunsuan/ Maguidanao II to 93 in Lanao del Sur I, or an average of 58 personnel. This average is slightly higher than the average of 54 personnel for DEOs in DPWH-National. Details of the organization and personnel of the DPWH-ARMM DEOs are given in **Annex 6-1: Organizational Charts** and **Annex 6-3: Inventory of Technical and Non-Technical Personnel**.

Technical personnel constitute about 65 percent of the DPWH-ARMM DEO staff, with engineers comprising about 29 percent and technicians 36 percent. Non-technical personnel represent 35 percent of the District staff, with professionals accounting for 10 percent and non-professionals 25 percent. Thus, the DEOs at DPWH-ARMM have a higher percentage of technical personnel (65 percent) than the Regional Office proper (36 percent), and even DPWH-National (39 percent).

Each DEO has the following technical sections:

- **Construction Section** responsible for implementing infrastructure projects by administration and for supervising projects under contract. This Section has personnel ranging from six (Shariff Kabunsuan/Maguidanao II and Tawi-Tawi) – of whom two are Engineers – to 14 (Lanao del Sur) – of whom six are Engineers.

- **Maintenance Section** responsible for the maintenance of national roads, which is mainly done by administration. This Section has staff ranging from eight (Shariff Kabunsuan/Maguindanao II) – of whom one is an Engineer – to 26 (Lanao del Sur I) – of whom eight are Engineers.

- **Planning and Design Section** responsible for surveys, design, and programming of infrastructure. This Section has a staff ranging from six (Shariff Kabunsuan/Maguindanao II) – of whom two are Engineers and one is an Architect – to 14 (Lanao del Sur) – of whom five are Engineers and one is an Architect.

- **Materials and Quality Section** responsible for testing of construction materials. This Section has personnel ranging from two (Shariff

The DEO has also a Comptrollership Section and an Administrative Section.

6.2.12 Area Equipment Services

Supporting the DEOs, especially in their maintenance works, are five Area Equipment Services (AESs) –Lanao del Sur I, Lanao del Sur II, Maguindanao I, Sulu,and Tawi-Tawi. The AES is responsible for the repair and maintenance of the heavy equipment used mainly for road maintenance. The AESs are directly under their respective DEOs.

Each AES is headed by an Area Equipment Engineer who has the following tasks under the DPWH-ARMM functional statements:

a. Directs, plans, designs, supervises and coordinates the repair and maintenance of equipment used in various infrastructure projects.

b. Supervises and coordinates the functions relating to administrative, accounting, transportation, procurement of parts, supplies and materials, building maintenance and utility services.

c. Conducts inspection of road construction and maintenance equipment assigned in the field.

e. Supervises the preparation of equipment utilization reports and equipment rental billings, reviews and initiates equipment rental collection reports.

f. Supervises the maintenance of up-to-date equipment records and the submission of periodic equipment and financial reports.

g. Advises the Secretary on all matters related to the technical equipment problems in the locality and the type of equipment to be considered for the construction and maintenance of roads and bridges.

h. Performs such other duties and responsibilities as may be assigned or delegated by higher authorities or as may be prescribed by law.

DPWH-ARMM has a total of 71 pieces of heavy equipment, of which 36 are operational and 35 are non-operational. These are spread over the five AESs, and service the road maintenance requirements of the eight DEOs. Obviously, this equipment fleet is not sufficient to maintain the 974 km of national roads in ARMM.

The AESs have an average of 40 personnel each, except for Tawi-Tawi which has 14. With the very few pieces of equipment at hand, the AESs appear overmanned and underutilized.

6.3 BUDGETARY FRAMEWORK OF ARMM AND DPWH-ARMM

6.3.1 Main Sources of ARMM Funds

The Regional Government has the power to create its own sources of revenues and to levy taxes, fees and charges, subject to the provisions of the Constitution and the Organic Act (RA 9054, Article IX, Section 1). It shall enjoy fiscal autonomy in generating and budgeting its own sources of revenue, its share of the internal revenue taxes and block grants and subsidies remitted to it by the national government or any donor (Article IX, Section 2).

The sources of revenues of the Regional Government include, but are not limited to, the following (Article IX, Section 8)):

a. Taxes, except income taxes, imposed by the Regional Government.
b. Fees and charges imposed by the Regional Government.
c. Taxes, fees or charges for the registration of motor vehicles and for the issuance of licenses and permits for driving, except tricycles which shall be registered with the city/municipality.
d. Shares and revenues generated from the operation of public utilities within the region.
e. Appropriations, shares in the internal revenue taxes, block grants, and other budgetary allocations, coming from the national government.
f. Block grants from economic agreements or conventions entered into or authorized by the Regional Assemble, donations, endowments, foreign assistance, and other forms of aid, subject to the pertinent provisions of the Constitution.

The collections of a province or city from national internal revenue taxes, fees and charges, and taxes imposed on natural resources, shall be distributed as follows (Article IX, Section 9):

a. 35 percent to the province or city.
b. 35 percent to the Regional Government.
c. 30 percent to the national government.

Fifty percent of the share of national government of the yearly incremental revenue from tax collections under Sections 106, 108, and 116 (pertaining to value added taxes) of the National Internal Revenue Code shall be shared by the Regional Government and the LGUs within ARMM as follows (Article IX, Section 15):

a. 20 percent to the city or municipality where the taxes are collected.
b. 80 percent to the Regional Government.

The Regional Governor may be authorized by the Regional Assembly to contract foreign or domestic loans in accordance with the provisions of the Constitution (Article IX, Section 14).

Fifty percent of the revenues, taxes, or fees derived from the use and development of strategic minerals shall accrue to the Regional Government; the other 50 percent shall accrue to the national government. The 50 percent share of the Regional Government shall be apportioned as follows (Article IX, Section 5):

a. 30 percent to the Regional Government.
b. 20 percent to the provinces.
c. 15 percent to the cities
d. 20 percent to the municipalities.
e. 15 percent to the barangays.

In accordance with the GAA provisions, the shares of ARMM from the national internal revenues mentioned above, as authorized in Article IX, Sections 9 and 15, are used to fund part of the Maintenance and other Operating Expenses (MOOE) in ARMM under the GAA, which includes the maintenance of roads and other infrastructure.

From the above menu of authorized sources of funds for ARMM, so far the main sources of funds for infrastructure programs and projects have been appropriations and other allocations from the national government – i.e., item e, second paragraph above. This is amplified in Section 3.3.2. It appears that the other potential fund sources cited above have not been significantly explored or mobilized for infrastructure in ARMM.

6.3.2 National Government Funds for Infrastructure in ARMM

Thus, ARMM derives most of its funds for infrastructure programs and projects from the National Government – particularly from (a) the General Appropriations Act (GAA) which is authorized yearly by Congress and (b) the Special Funds from the Motor Vehicle User's Charge (MVUC) under RA 8794. These funds are used capital outlays and maintenance expenditures as summarized in **Table 6.3.2-1**.

TABLE 6.3.2-1 NATIONAL GOVERNMENT SOURCES OF FUNDS FOR INFRASTRUCTURE IN ARMM

	Capital Outlays	Maintenance Funds
1. GAA		
1.1 Under ARMM Budget	Lump-sum for various public works projects, subject to enactment of Regional Public Works Act (PWA).	Lump-sum for maintenance of various infrastructure under "Maintenance and Other Operating Expenses" (MOOE)
1.2 Under DPWH-National Budget	a. Line items for regular infra-structure program – mainly national roads – including foreign-assisted projects (FAPs) b. Congressional allocations (CA) for various infra projects	
2. MVUC – under DPWH-National		a. Regular funds for routine maintenance of national roads b. Funds for preventive maintenance of national roads

With regard to the GAA funds under the ARMM budget (item 1.1 in **Table 6.3.2-1**), **Table 6.3.2-2** summarizes the appropriations from 2006 to 2009, broken down into the main categories of Personal Services (PS), Maintenance and Other Operating Expenses (MOOE), and Capital Outlays (CO). Also shown (in parentheses) are the appropriations for the infrastructure components of MOOE and CO.

TABLE 6.3.2-2 TOTAL APPROPRIATIONS UNDER ARMM BUDGET IN THE GAA, 2006-2009, IN PHP MILLION

Category	2006	2007	2008	2009	2009 Break down	2009/ 2008
Personal Services (PS)	4,456.4	5,075.1	5,144.7	6,173.6	66.7%	20.0%
Maint. & Other Operating Expenses (MOOE)	1,338.0	2,148.7	2,164.0	1,893.4	20.5%	-12.5%
Out of which MOOE for infrastructure	(180.6)	(210.2)	(215.2)	(221.7)	(2.4%)	(3.0%)
Capital Outlays (CO)	846.8	1,420.5	1,022.7	1,182.0	12.8%	15.6%
Out of which CO for infrastructure	(650.0)	(650.0)	(650.0)	(1,000.0)	(10.8%)	(53.8%)
Total	6,691.2	8,644.3	8,331.5	9,249.0	100.0 %	11.0%

Sources: GAAs for 2006 to 2009; and DPWH-ARMM, October 2008

The total appropriations have increased from Php 6,691.2 million in 2006 to Php 8,644.3 million in 2007, then declined slightly to Php 8,331.57 million in 2008, and rebounded to Php 9,249.0 million in 2009. For 2009, PS constitutes the bulk of the appropriations at 66.7 percent of the total, followed by MOOE at 20.5 percent, while CO receives only 12.8 percent. CO for infrastructure alone rose substantially from Php 650.0 million in 2008 to Php 1,000.0 million in 2009, which comprises 11.0 percent of the total 2009 appropriations. MOOE funds for infrastructure, however, increased marginally from Php 215.2 million in 2008 to Php 221.7 million in 2009, which represents only 2.4 percent of the total 2009 appropriations.

From 2008 to 2009, while the total appropriations increased by 11.0 percent, CO for infrastructure rose by 53.8 percent, but MOOE for infrastructure increased by only 3.0 percent.

This budgetary pattern shows the heightened emphasis on infrastructure construction, but at the same time indicates the inadequate attention given to infrastructure maintenance. This is discussed further in the succeeding sections.

6.3.3 Capital Outlays for Infrastructure under the GAA

As shown in **Table 3.3.2-1**, Capital Outlays authorized in the GAA for infrastructure projects in ARMM fall under two categories: (a) those under the budget of ARMM and (b) those under the budget of DPWH-National.

1) GAA Capital Outlays under the ARMM Budget

Under the ARMM budget in the GAA, regular lump-sum appropriations have been authorized yearly from 2006 to 2009 for "Infrastructure Projects for the Implementation of DPWH-ARMM" as shown in **Table 6.3.3-1.** These amounted to Php 650.0 million yearly from 2006 to 2008, but expanded sharply to Php 1,000.0 million in 2009.

TABLE 6.3.3-1 INFRASTRUCTURE FUNDS UNDER THE GAA BUDGET FOR ARMM

Year	Appropriations in Php Million
2006	650.0
2007	650.0
2008	650.0
2009	1,000.0

Sources: GAAs for 2006 to 2009

Special Provision No. 3 of the ARMM budget in the GAA provides that the lump sum appropriations shown in **Table 6.3.3-1** shall be used for *the construction, development, upgrading, operation or maintenance of roads, highways, bridges, water supply, flood control, ports, airports, and other infrastructure projects, excluding buildings: PROVIDED, That the same shall be identified and implemented pursuant to R.A. No. 6734, as amended by R.A. No. 9054: PROVIDED, that the release and use thereof shall be subject to the enactment of a Public Works Act by the Regional Legislative Assembly.*

As required by RA 9054 and the GAA, the Regional Assembly has enacted Public Works Acts (PWAs) to utilize these GAA appropriations. **Annex 6-5** shows the Regional Public Works Act (PWA) of 2008 as passed by the Regional Assembly under Muslim Mindanao Autonomy Act No. 213 and approved by the Regional Governor.

Section 2 of the PWA for 2008 provides that out of the appropriation of Php 650 million in the GAA:

- Php 400 million is appropriated for Regional Impact Projects (RIPs) and Provincial Impact Projects (PIPs) to fund infrastructure projects in the five provinces and one city of ARMM, and
- Php 250 million is appropriated for District Impact Projects (DIPs) to fund infrastructure projects in the eight legislative districts of ARMM.

The projects are to be identified by the Office of the Regional Governor and the Members of the Regional Assembly according to the Regional Comprehensive Development Plan, otherwise known as the ARMM Master Plan.

The PWA provides that the RIPs and DIPs shall be used for *road and bridge repair, rehabilitation and improvement, road opening, construction of new*

projects, feasibility studies, materials and labor services, management and supervision of project implementation.

Section 4 of the PWA provides that *the amount appropriated for RIPs shall be equitably distributed to the five provinces and one city of the region according to the projects identified by the Regional Governor as may be recommended by the local executives concerned. The appropriations for the DIPs shall be equally allocated to the legislative districts according to the projects identified by each Member of the Regional Assembly.*

As provided in Section 9 of the PWA, there shall be a listing of projects, their locations and funding requirements to be submitted by the project proponents. The infrastructure projects authorized in the PWA shall be based on the development policies and strategies of the Regional Government and shall include the following:

1. *Construction, improvement and rehabilitation of vital road-links connecting to poblacion and capital towns in the province;*
2. *Construction, improvement and rehabilitation of farm-to-market roads, bridges and feeder roads linking rural areas in the countryside to municipal and provincial centers;*
3. *Construction, improvement and rehabilitation of facilities such as communication and electric power;*
4. *Construction, improvement and rehabilitation of airports, ports, rock-causeways, fishlandings, and wharves;*
5. *Construction, improvement and rehabilitation of water systems or deep wells or the like;*
6. *Construction, improvement and rehabilitation of sports facilities/town plazas;*
7. *Construction, improvement and rehabilitation of schools/multi-purpose buildings, government centers, health centers, and market facilities;*
8. *Construction, improvement and rehabilitation of post-harvest facilities like solar dryers; and*
9. *Other similar public works projects.*

The menu of eligible projects listed above for funding under the PWA is broad: it includes major or vital road links (item 1 above) as well as farm-to-market roads (item 2); it also covers other transport facilities and public works.

Although not specifically provided in the PWA, DPWH-ARMM has divided the Php 400 million authorized in Section 2 equally between RIPs and PIPs, or Php 200 million each.

In practice, DPWH-ARMM programs Php 195 million each for RIPs and PIPs, and Php 260 million. This translates into the following distribution of the PWA appropriations:

- 30 percent for RIPs
- 30 percent for PIPs
- 40 percent for DIPs

According to officials of DPWH-ARMM and the Regional Planning and Development Office (RPDO), the proposed projects for funding under the PWA are generally identified or initiated as follows:

- RIPs are mainly the larger projects of regional impact identified by the Office of the Regional Governor through DPWH-ARMM.
- PIPs are recommended by the respective Provincial Governors, in consultation with their respective Mayors, to the Regional Governor.
- DIPs are identified by the respective ARMM Assemblymen.

The identified projects are subject to the review and approval of the Regional Economic and Development Planning Board (REDPB). The Regional Planning and Development Office (RPDO) serves as the secretariat of REDPB.

According to the RPDO Director, the following factors are considered by REDPB in the identification of projects for funding under the annual GAA assistance to ARMM through the PWA:

- The bigger projects in the Regional Development Investment Program (RDIP) are to be considered for inclusion in the RIP and PIP. The RDIP is formulated through a planning workshop conducted by RPDO where the different sectoral agencies, including DPWH-ARMM, discuss and coordinate their identified projects.
- A combination of technical and political criteria is used in allocating RIP and PIP funds to the different provinces, such as land area, population, and infrastructure scarcity or needs.
- Eligible projects may include any of those listed in Section 9 of the PWA.

Assisting the REDPB is its Regional Infrastructure Development Committee (RIDC), chaired by the DPWH-ARMM Secretary. RIDC assists the Board in infrastructure plan formulation, project development, and implementation. Its secretariat is the Infrastructure Planning Division of RPDO.

Annex 6-6 gives the list of the projects funded in the PWAs based on the GAA appropriations for 2006-2008. These are summarized in **Tables 6.3.3-2 to 6.3.3-4**.

TABLE 6.3.3-2 INFRASTRUCTURE PROJECTS FUNDED FROM ARMM BUDGET UNDER GAA, 2006, IN PHP MILLION

	NR	LR	FC	WS	SB	OB	OP	Total
Regional Impact Projects								
Basilan						20.0		20.0
Lanao del Sur		4.0	1.0	1.0		14.0		20.0
Maguindanao		68.0				18.0		86.0
Sulu	10.0	2.0				8.0		20.0
Tawi-Tawi		17.0				3.0		20.0
Marawi			10.0		5.0			15.0
Regionwide		1.0		0.5		12.5		14.0
Total – RIPs	10.0	92.0	11.0	1.5	5.0	75.5	0.0	195.0
Provincial Impact Projects								
Basilan		27.0						27.0
Lanao del Sur		33.0	2.0	5.0	2.0	2.0		44.0
Maguindanao		20.0	9.0			15.0		44.0
Sulu	12.5	16.5				5.0		34.0
Tawi-Tawi		13.0		5.0		6.0	3.0	27.0
Marawi		12.0	4.0			3.0		19.0
Total – PIPs	12.5	121.5	15.0	10.0	2.0	31.0	3.0	195.0
District Impact Projects								
Basilan		27.2			2.0	3.3		32.5
Lanao del Sur I		23.0		3.0		6.5		32.5
Lanao del Sur II		31.5				1.0		32.5
Maguindanao I		30.2				2.3		32.5
Maguindanao II		23.8				7.9	0.8	32.5
Sulu I		13.7		1.2		8.6	9.0	32.5
Sulu II		27.9		0.7	1.0	1.9	1.0	32.5
Tawi-Tawi		22.7		0.8		8.0	1.0	32.5
Total – DIPs		200		5.7	3	39.5	11.8	260.0
Grand Total - RIPs,PIPs,DIPs	22.5	413.5	26.0	17.2	10.0	146.0	14.8	650.0
Total Number of Projects	3	309	6	15	9	79	10	431

Source: DPWH-ARMM, October 2008

Note: NR - National Roads
LR - Local Roads
FC - Flood Control
WS - Water Supply
SB – School buildings
OB - Other Buildings
OP - Other Public Works

TABLE 6.3.3-3 INFRASTRUCTURE PROJECTS FUNDED FROM ARMM BUDGET UNDER GAA, 2007, IN PHP MILLION

	NR	LR	FC	WS	SB	OB	OP	Total
Regional Impact Projects								
Maguindanao		93.5				62.0	1.5	157.0
Shariff Kabunsuan		19.0						19.0
Sulu	10.0					5.0		15.0
Regionwide		1.0				3.0		4.0
Total - RIPs	10.0	113.5				70.0	1.5	195.0
Provincial Impact Projects								
Basilan		27.0						27.0
Lanao del Sur	12.0	12.0			13.0	7.0		44.0
Maguindanao			24.0			20.0		44.0
Sulu		34.0						34.0
Tawi-Tawi		17.0				10.0		27.0
Marawi					19			19.0
Total - PIPs	12.0	90.0	24.0	0.0	32.0	37.0	0.0	195.0
District Impact Projects								
Basilan		26.5					6.0	32.5
Lanao del Sur I		20.8		0.3	0.3	11.1		32.5
Lanao del Sur II		32.5						32.5
Maguindanao		25.7				3.0	3.8	32.5
Shariff Kabunsuan		32.5						32.5
Sulu I		31.5				1.0		32.5
Sulu II		29.5				3.0		32.5
Tawi-Tawi		32.5						32.5
Total - DIPs		231.5		0.3	0.3	18.1	9.8	260.0
Grand Total - RIPs,PIPs,DIPs	22.0	435.0	24.0	0.3	32.3	125.1	11.3	650.0
Total Number of Projects	2	115	1	1	32	41	4	196

Source: DPWH-ARMM, October 2008

Note: NR - National Roads WS - Water Supply OP - Other Public Works

LR - Local Roads SB-Schoolbuildings

FC - Flood Control OB - Other Bldgs

TABLE 6.3.3-4 INFRASTRUCTURE PROJECTS FUNDED FROM ARMM BUDGET UNDER GAA, 2008, IN PHP MILLION

	NR	LR	FC	WS	SB	OB	OP	Total
Regional Impact Projects								
Basilan						10.0		10.0
Lanao del Sur						10.0		10.0
Maguindanao		83.0				47.0		130.0
Sulu		10.0				5.0		15.0
Tawi-Tawi		10.0				5.0		15.0
Marawi					5.0			5.0
Total - RIPs		103.0			5.0	77.0		185.0
Provincial Impact Projects								
Basilan		18.0				17.0		35.0
Lanao del Sur		3.0			2.0	36.0	1.0	42.0
Maguindanao		30.0				13.0		43.0
Shariff Kabunsuan		0.5				19.5		20.0
Sulu						32.0		32.0
Tawi-Tawi						25.0		25.0
Marawi		3.0	4.0			11.0		18.0
Total - PIPs		54.5	4.0		2.0	153.5	1.0	215.0
District Impact Projects								
Basilan		29.8				1.4		31.2
Lanao del Sur I		31.3						31.3
Lanao del Sur II		31.2						31.2
Maguindanao		29.4				1.9		31.3
Shariff Kabunsuan		20.4				9.4	1.4	31.2
Sulu I		27.3					4.0	31.3
Sulu II		16.9			1.0	7.0	6.4	31.3
Tawi-Tawi		31.2						31.2
Marawi								
Total - DIPs		217.5			1.0	19.7	11.8	250.0
Grand Total - RIPs,PIPs,DIPs		375.0	4.0		8.0	250.2	12.8	650.0
Total Number of Projects		107	1		5	148	9	270

Source: DPWH-ARMM, October 2008

Note: NR - National Roads WS - Water Supply OP - Other Public Works
LR - Local Roads SB-Schoolbuildings
FC - Flood Control OB - Other Bldgs

Tables 6.3.3-2 to 6.3.3-4 and **Annex 6-6** show that the projects funded from the ARMM budgets in the GAA from 2006 to 2008, through the PWAs, are practically all local projects, particularly farm-to-market/barangay roads, multi-purpose buildings, school buildings, flood control, water supply, and the like. Even the RIPs which are supposed to include the bigger projects with regional impact found in the RDIP – e.g., national and inter-provincial roads - are actually composed mainly of local projects. Out of a total of 897 infrastructure projects costing Php 1,950.0 million in the ARMM budget over the last three years, only five were national road projects costing Php 44.5 million or 2.3 percent of the total.

According to DPWH-ARMM and RDPO officials, this is because the amounts provided in the ARMM budget under the GAA are intended only as national government assistance over and above the regular national programs involving ARMM which are still handled by national government agencies, including DPWH-National. Hence, these ARMM officials opted to use the limited ARMM budget for numerous small projects which will immediately meet urgent needs in many communities, even as their impact is localized.

There is a significant disconnect between the ARMM medium-term plan and program for infrastructure on the one hand, and its annual PWA program and budget for infrastructure, on the other. The medium-term plan consists mainly of large projects, including national and provincial roads, as shown in the "List of Programs, Projects and Activities to be Implemented as Visualized in the MTPDP/MTPIP" (**Annex 6-6**) which are reflected in the RDIP. On the other hand, the annual PWA program funded by the yearly GAA-ARMM budget consists mostly of local projects, as noted above. Very few projects in the medium term plan are incorporated in the annual PWA program/budget.

Apparently, ARMM relies on DPWH-National to fund the large and capital-intensive projects involving the construction/maintenance of national roads. As mentioned earlier, there is yet no definite plan for DPWH-National to devolve to ARMM the funding and implementation of on-going and proposed national road projects located in ARMM, in conformance with the provisions of the abovestated EO 125. This situation serves as a disincentive for ARMM to provide its own funding for national roads in the region.

In addition to the regular appropriations under the ARMM budget in the GAA for infrastructure projects, as indicated in **Table 6.3.3-1**, ARMM received special or supplemental lump-sum allotments from the national government, through the GAA, for infrastructure totaling Php 500.0 million in 2006 and Php 100.0 million in 2008. These were reportedly approved by the President, upon the request of the ARMM Governor, to augment the limited regular ARMM appropriations. The funds were also mostly allocated for local projects, predominantly school buildings and farm-to-market roads, with a large Php 128-million flood control project in Kabulnan and a Php 50-million sports center at Shariff Aguak, Maguindanao.

It would appear desirable to eventually consolidate in the ARMM budget the programming, funding and implementation of all national road projects

located in ARMM. This would include on-going and proposed projects, both locally-funded and foreign-assisted. This scheme would entail the devolution of such projects from DPWH-National, as envisioned in EO 125. In this case, the budget cover for the national roads should be included in the DPWH-ARMM appropriations in the GAA, just like the ARMM Social Fund for Peace and Development.

If realized, this devolution would require substantial capacity building at DPWH-ARMM in the planning, construction and maintenance of national roads and other roads of regional significance.

2) Capital Outlays under DPWH-National Budget in GAA

For 2006-2009, DPWH-National has provided funding under its budget in the GAA for infrastructure projects in ARMM, as summarized in **TABLE 6.3.3-5**.

TABLE 6.3.3-5 INFRASTRUCTURE FUNDS FOR ARMM UNDER THE GAA BUDGET FOR DPWH-NATIONAL, 2006-2009, IN PHP THOUSAND

	2006	2007	2008	2009
1. Maguindanao 1st District	**49,398**	**168,619**	**437,592**	**247,387**
a. Locally-funded				
National Roads		20,000		150,105
Local Roads	17,800			
Flood Control				
Water Supply	500			
Other Projects	1,700	15,000	20,000	40,000
b. Foreign-assisted				
National Roads	29,398	133,619	417,592	77,282
2. Maguindanao 2nd District	**41,133**	**146,018**	**427,949**	**358,024**
a. Locally-funded				
National Roads		20,000		
Local Roads	10,000		10,000	60,000
Water Supply	10,000			
Other Projects		15,000	40,000	40,000
b. Foreign-assisted				
National Roads	21,133	111,018	377,949	258,024
3. Lanao del Sur, 1st District	**24,631**	**37,775**	**134,423**	**125,358**
a. Locally-funded				
National Roads		20,000		
Other Projects	20,000	15,000	40,000	40,000
b. Foreign-assisted				
National Roads	4,631	2,775	94,423	85,358
4. Lanao del Sur, 2nd District	**277,675**	**141,675**	**343,596**	**162,872**
a. Locally-funded				
National Roads		121,900	209,172	4,389
Other Projects	20,000	17,000	40,000	40,000
b. Foreign-assisted				
National Roads	257,675	2,775	94,424	118,483
5. Basilan	**35,265**	**56,050**	**450,090**	**425,692**
a. Locally-funded				
National Roads		20,000	50,000	40,000
Local Roads	6,700		40,000	
Other Projects	3,300	15,000	21,500	40,000
b. Foreign-assisted				
National Roads	15,265	21,050	360,090	345,692

6. Sulu, 1st District	**20,000**	**35,000**	**50,000**	**40,000**
a. Locally-funded				
National Roads		20,000	30,000	
Local Roads	10,000			
Other Projects	10,000	15,000	20,000	40,000
7. Sulu, 2nd District	**20,000**	**75,000**	**40,000**	**40,000**
a. Locally-funded				
National Roads		55,000	20,000	
Local Roads	10,000			
Flood Control		5,000		
Other Projects	10,000	15,000	20,000	40,000
8. Tawi-Tawi	**20,000**	**35,000**	**40,000**	**140,000**
a. Locally-funded				
National Roads		20,000		100,000
Local Roads	7,500		3,000	
Flood Control	1,500			
Other Projects	11,000	15,000	37,000	40,000
Total, ARMM	**478,102**	**695,137**	**1,923,650**	**1,559,333**
National Roads	328,102	568,137	1,653,000	1,179,333
Local Roads	62,000		33,000	60,000
Flood Control	1,500	5,000		
Water Supply	10,500			
Other Projects	76,000	122,000	237,000	320,000

Source: DPWH-National, October 2008

Under its regular infrastructure program funded from the GAA, DPWH-National has been providing funds for, and is directly implementing, the construction/improvement of national roads in ARMM. This involves mainly foreign-assisted projects which are partly financed by loans from the Japan Bank for International Cooperation or JBIC (now merged into the new JICA), Kuwait Fund, and Saudi Fund, where the loan agreements specified that DPWH-National would be the implementing agency. DPWH-National has also provided funding for locally-funded national road construction projects in ARMM, mostly through Congressional Allocations (CA) which also financed local roads, flood control, water supply, and other local projects identified by the Congressmen concerned.

As pointed out earlier, DPWH-National has not fully devolved to ARMM its programs and budgets involving national roads and other projects. DPWH-National continues to finance and implement foreign-assisted and locally-funded national roads projects funded under its GAA budget. DPWH-ARMM officials hope that these national roads projects will eventually be devolved to DPWH-ARMM, together with the corresponding additional funds on top of the current budget of ARMM.

3) Maintenance Funds for Infrastructure in ARMM

The maintenance of national roads and other infrastructure in ARMM is funded from two sources: (a) ARMM budget in the GAA and (b) DPWH-National budget from the MVUC special funds.

4) Maintenance Funds under ARMM Budget in GAA

Under the ARMM budget in the GAA, funds for the maintenance of roads and other infrastructure are provided under the item for Maintenance and Other Operating Expenses (MOOE) for the "implementation of infrastructure programs and projects (RDPWH)." These amounted to Php 180.6 million in 2006, which modestly increased to Php 221.7 million in 2009, as shown in **Table 6.3.3-6.**

TABLE 6.3.3-6 MOOE FOR INFRASTRUCTURE UNDER THE GAA BUDGET FOR ARMM, IN PHP

Year	MOOE for Infrastructure	Capital Outlays for Infrastructure	MOOE: Capital
2006	180,609,000	650,000,000	22 : 78
2007	210,214,000	650,000,000	24 : 76
2008	215,230,000	650,000,000	25 : 75
2009	221,701,000	1,000,000,000	18 : 82

Sources: GAAs for 2006 to 2009

While the ARMM capital outlays for infrastructure have risen by a hefty Php 350.0 million or 53.8 percent from Php 650.0 million in 2008 to Php 1,000.0 million in 2009, the MOOE for infrastructure has increased only slightly by Php 6.5 million or 3.0 percent from Php 215.2 million in 2008 to Php 221.7 million in 2009. The proportion of MOOE to capital outlays has declined from 25-to-75 in 2008 to 18-to-82 in 2009. All this appears to reflect the low priority given to the maintenance of existing infrastructure or asset preservation, compared to the construction of infrastructure.

With the total MOOE appropriations, DPWH-ARMM has prepared programs for the repair and maintenance of infrastructure by project category. These are summarized in **Table 6.3.3-7**.

TABLE 6.3.3-7 MAINTENANCE OF INFRASTRUCTURE UNDER THE DPWH-ARMM MOOE BUDGET IN THE GAA, IN PHP

	2006	2007	2008	2009
Total GAA for ARMM	6,691.2 M	8,644.3 M	8,331.5 M	9,249.0 M
Out of which: Total MOOE	180,609,000	210,214,000	215,230,000	221,701,000
Of which: Maintenance of Infrastructure (Net)	171,320,000	188,452,000	188,452,000	188,452,000
1. National Roads	110,581,600	110,581,600	110,581,600	110,581,600
2. Portshore Protection	12,983,300	16,645,400	16,645,400	16,645,400
3. Flood Control	14,900,400	19,103,200	19,103,200	19,103,200
4. Office Buildings	10,616,400	13,610,900	13,610,900	13,610,900
5. School Buildings	20,137,900	25,818,000	25,818,000	25,818,000
6. Water Supply	2,100,400	2,692,000	2,692,000	2,692,000

Sources: GAAs for 2006 to 2009; and DPWH-ARMM, October 2008

Out of the total MOOE appropriations for ARMM infrastructure, the net amount for actual maintenance works has remained constant at Php 188.5 million from 2007 to 2009, despite the increase in total ARMM budget by Php 917.5 million from 2008 to 2009. In particular, the DPWH-ARMM maintenance budget for national roads has been static from 2006 to 2009 at Php 110.6 million. These have taken place amidst the huge magnitude of maintenance needs for national roads – roughly estimated at more than Php

600 million a year (see Section 9.1.3 below) - which dwarf the current maintenance budget level of Php 110.6 million a year.

Moreover, the distribution of the meager maintenance budget for national roads of Php 110.6 million a year among the eight districts has remained the same from 2006 to 2009, as shown in **Table 6.3.3-8**.

TABLE 6.3.3-8 DPWH-ARMM ANNUAL ALLOCATION FOR MAINTENANCE OF NATIONAL ROADS FROM GAA-ARMM, 2006-2008

District	Allocation, Php	EMK
Maguindanao	14,162,000	206.2
Shariff Kabunsuan	19,677,000	286.4
Lanao del Sur I	18,807,100	273.8
Lanao del Sur II	25,435,250	370.3
Marawi City	2,204,350	32.1
Sulu I	11,239,550	163.6
Sulu II	5,357,350	78.0
Tawi-Tawi	13,699,000	199.4
Total, ARMM	110,581,600	1,609.8

Source: DPWH-ARMM, October 2008

According to DPWH-ARMM, the total amount of Php 110.6 million was allocated to the districts based on the traditional equivalent maintenance kilometer (EMK) formula which had been used by DPWH-National. This formula assumes a standard road which is paved, less than 7.5 m width and carries a given volume of annual average daily traffic (AADT). If the actual road characteristics differ from this standard, an EMK adjustment factor is introduced. The actual road length multiplied by the EMK factor gives the EMK. DPWH-ARMM staff said that they have been using the original EMK derived from DPWH-National since the creation of ARMM in 1991. The total funding of Php 110.6 million for ARMM divided by the total EMK for the region of 1,609.8 km gives Php 68,691 as the unit cost per EMK. Up to now, DPWH-ARMM has been using this unit cost per EMK to apportion the total maintenance fund among the different Districts as shown in **Table 6.3.3-8.** This is despite the fact that the EMK method does not adequately reflect maintenance needs, the road condition is not considered, the factors are outdated, and the road characteristics and maintenance requirements have changed over the years at varying degrees in the different districts.

DPWH-ARMM explained that its maintenance funds for national roads for each DEO are apportioned as follows:

- 70 percent is supposed to go to works under maintenance by contract (MBC) works. Actually, however, these works are now almost completely done through maintenance by administration (MBA). This involves repair or maintenance works with major activities which require the use of equipment and in-house DEO staff - e.g., extensive patching of potholes, shoulder regrading, etc. Equipment is supplied by the DPWH-ARMM

- Of the 40 percent balance, 60 percent is to be used for routine maintenance works and 40 percent for periodic maintenance works.

The DPWH-ARMM DEOs prepare the work programs for the maintenance of national roads. These are reviewed and cleared by the DPWH-ARMM Maintenance Division before funds are allotted to the DEOs.

5) Maintenance Funds under DPWH Budget from MVUC

DPWH-National provides funds from the Motor Vehicle User's Charge or MVUC (RA 8794) for the maintenance of national roads in ARMM as well as in the regular regions of DPWH-National. These funds are of two categories - routine maintenance and preventive maintenance. DPWH-National allocates the routine maintenance funds based on its calculated EMK for national roads in ARMM using the latest DPWH-National inventory for national roads in ARMM as of 2001, as shown in **Table 6.3.3-9**. This EMK is multiplied by the unit maintenance cost per EMK. DPWH-National has computed EMK values which are smaller than those calculated by DPWH-ARMM because of differences in basic data used: the total EMK for ARMM calculated by DPWH-National is 1,204.0 compared to that calculated by DPWH-ARMM which is 1,609.8.

TABLE 6.3.3-9 EMK FOR ARMM NATIONAL ROADS, BASED ON DPWH-NATIONAL DATA

	Physical Length, km	EMK
Lanao del Sur I	120.4	140.9
Lanao del Sur II	152.1	162.7
Sulu	134.9	181.2
Tawi-Tawi	136.0	166.0
Maguindanao I	142.9	122.9
Maguindanao II	102.7	133.4
Marawi City	28.1	33.0
Basilan	132.2	237.5
Total, ARMM	959.2	1,204.0

Source: DPWH-National, September 2008

DPWH-National has been increasing the MVUC allocation for routine maintenance in ARMM. This allocation, however, does not seem to be based on needs, since it is merely derived from the residual MVUC at the national level after deducting the total allocations for roadside maintenance and preventive maintenance.

In addition, the Road Board has released to DPWH-National MVUC funds for the preventive maintenance of selected national road sections in ARMM. According to the DPWH planning system and the Road Board Operating Manual, the preventive maintenance funds are supposed to be allocated to

national road projects based on needs and economic impact as indicated by the net present value of economic benefits over cost (NPV/C) using the Highway Development and Management Version 4 (HDM-4) planning tool developed by the World Bank (WB). The actual allocations for preventive maintenance shown in **Table 6.3.3-9** do not appear to be based on the HDM-4 runs, however, but seem to be arbitrarily apportioned to selected districts without considering their relative maintenance needs.

In summary, DPWH-National has allotted MVUC funds for routine and preventive maintenance of national roads (NR) in ARMM from 2006 to 2008 as shown in **Table 6.3.3-10**.

TABLE 6.3.3-10 DPWH-NATIONAL ALLOTMENT OF MVUC FUNDS FOR MAINTENANCE OF NATIONAL ROADS IN ARMM, 2006-2008

	Amount in Php 1,000		
	2006	**2007**	**2008**
Basilan			
Routine Maintenance	6,556	8,819	10,693
Preventive Maintenance	25,000		
Total	31,556	8,819	10,693
Sulu			
Routine Maintenance	2,659	7,960	8,784
Preventive Maintenance	40,000	10,000	20,000
Total	42,659	17,960	28.784
Maguindanao I			
Routine Maintenance	2,581	8,275	6,977
Preventive Maintenance	15,000	15,000	
Total	17,581	23,275	6,977
Maguindanao II			
Routine Maintenance	1,887	6,940	6,535
Preventive Maintenance			
Total	1,887		6,535
Lanao del Sur I			
Routine Maintenance	2,924	6,937	7,405
Preventive Maintenance	25,000	10,000	10,000
Total	27,924	16,937	17,405
Lanao del Sur II			
Routine Maintenance	2,634	7,951	8,700
Preventive Maintenance			10,000
Total	2,634	7,951	18,700
Tawi-Tawi			
Routine Maintenance	2,691	8,780	9,010
Preventive Maintenance	5,000	15,000	10,000
Total	7,691	23,780	19,010
Marawi City			
Routine Maintenance	503	1,603	1,642
Preventive Maintenance			
Total	503	1,603	1,642
Total, ARMM	**132,435**	**107,265**	**109,746**
Routine Maintenance	22,435	57,265	59,746
Preventive Maintenance	110,000	50,000	50,000

Source: DPWH-National, Bureau of Maintenance, October 2008

DPWH-National has released the MVUC routine maintenance funds to its Regional Offices IX, X and XII. In turn, these DPWH-National Regional Offices have transferred the funds for routine maintenance to the DPWH-ARMM District Engineering Offices (DEOs) for implementation by administration. This is done through Memoranda of Agreement (MOAs) directly concluded between these two parties.

With regard to the MVUC funds for preventive maintenance, however, DPWH-National Regional Offices usually transferred the money to the special DPWH-National offices in the area – e.g., sub-office in Maguindanao, task force in Lanao del Sur, etc. – and occasionally to the LGUs and the DPWH-ARMM DEOs through MOAs. The choice of the implementing office often depends upon the preference of the project proponents who are mainly the Congressmen.

According to DPWH-ARMM officials, they have not been officially informed of the allocation and use of the MVUC funds since the MOAs are directly transacted between the DPWH-National Regional Offices and the DPWH-ARMM DEOs, bypassing the DPWH-ARMM Regional Office proper. Thus, they cannot monitor or supervise the works. Neither can they check any duplication between the maintenance works funded by DPWH-ARMM and those funded by DPWH-National through the MVUC.

6.4 ROAD PROJECT IMPLEMENTATION SYSTEM

The general rule in implementing road and other infrastructure projects of ARMM is provided in Section 6 of the Regional Public Works Act (PWA) which prescribes that all projects funded from appropriations authorized in the PWA shall be implemented by *either administration, public bidding, negotiated contract, or memorandum of agreement with local government unit, at the option of the project proponent, but the awards shall, in all cases, be made in a manner most advantageous to the government.*

Section 6 further provides that *the implementation of projects by administration in this Act is by the District Engineering Offices having jurisdiction of the area with the prior consent of the project proponent. In the case of project implementation by memorandum of agreement, the same shall be entered into between the DPWH-ARMM Secretary and the Provincial Governor, City or Municipal Mayor or the Barangay Chairman concerned authorizing the local government unit concerned to undertake the construction with the prior consent of the project proponent. The project that is fully completed shall be certified by the Monitoring and Inspection Team for acceptance by the local executives in the area.* According to DPWH-ARMM staff, the Monitoring and Inspection Team is composed of representatives from the Construction Division and DEOs.

Hence, as indicated in the list of accomplished RIPs, PIPs, and DIPs for 2006 to 2008 in **Annex 6-6,** the mode of implementation varied depending upon the recommendations of the project proponents – viz., ARMM officials for Regional Impact Projects (RIPs), Provincial Governors with Municipal

Mayors for Provincial Impact Projects (PIPs), and ARMM Assemblymen for District Impact Projects (DIPs). The implementation modes included the following:

- RIPs were implemented:

  (1) by administration by the DPWH-ARMM Construction Division, which, in some cases contracted private firms to provide portions of the required equipment, materials, and labor; or

  (2) through MOAs with Provincial/Municipal Governments. In turn, these LGUs undertook the work by administration or by contract.

- PIPs were carried out mostly through MOAs with Provincial/Municipal Governments, which undertook the work by administration or by contract.

- DIPS were implemented:

  (1) by contract supervised by the DPWH-ARMM Construction Division or DEO;

  (2) by administration by the DPWH-ARMM Construction Division, which sometimes contracted private firms to provide portions of the required equipment, materials, and labor; or

  (3) through MOAs with Provincial/Municipal Governments, which undertook the work by administration or by contract.

- Supplemental Projects (2006 and 2008) of ARMM funded by the National Government were implemented through a combination of contracts by DPWH-ARMM, MOAs with LGUs, and work by administration (through the Construction Division/DEO).

- Some Congressional Development Fund projects (2008) were implemented by administration by the DPWH-ARMM Construction Division or DEO at the instance of the Congressman concerned.

Under Section 5 of the PWA, before the implementation of any project funded under the PWA, a program of work approved by the DPWH-ARMM Secretary or DPWH-DEO concerned or its authorized representative, as the case may be, is required. The approved program of work shall be the basis for the expenditure of funds.

According to the Construction Division Chief, the DPWH-ARMM Construction Division and DEOs intend to jointly inspect and supervise the projects implemented by LGUs through MOAs; because of their limited personnel, however, they are able to sporadically cover only a few projects.

In the case of projects funded by DPWH-National in the GAA, Special Provision No. 1 of the GAA provides that *the implementation of the projects*

guided herein shall not be delegated to other agencies, except those projects to be implemented by the Armed Forces of the Philippines Corps of Engineers, and inter-departmental undertakings to be undertaken by other offices and agencies, including local government units (LGUs) with demonstrated capability to actually implement the projects by themselves upon consultation with the Congressman concerned. In all cases, the Department of Public Works and Highways (DPWH-National) *shall exercise technical supervision over the projects.*

While Special Provision 1 allows DPWH-National to delegate the implementation of its GAA-funded projects to DPWH-ARMM including its DEOs, DPWH-National has not done so yet. Furthermore, to comply with the provisions of EO 125 stated above, DPWH-National has yet to devolve the implementation of its foreign-assisted projects to DPWH-ARMM. DPWH-National has thus been implementing its foreign-assisted national road projects located in ARMM - such as those currently assisted by JICA and Saudi Fund and those completed with Kuwait Fund - through its national Project Management Offices. For its locally-funded projects, DPWH-National usually designates its regular Regional Offices, special sub-offices and task forces, located in or near the ARMM area, as implementing offices. In some cases, in accordance with Special Provision No. 1 in the GAA mentioned above, upon consultation with the Congressmen concerned, DPWH-National may designate the concerned LGUs to implement the projects through MOAs. DPWH-National usually considers the concerned Congressman's preference for the implementing entity of locally-funded projects situated in ARMM.

To conform with the government policy towards greater decentralization and autonomy of ARMM, and to comply with the provisions of EO 125, it is essential to revisit the current system as described above, with the view to significantly expanding and strengthening the role of DPWH-ARMM in the implementation of infrastructure projects affecting the region. This calls for a definite plan to devolve to ARMM the DPWH-National functions on the implementation of ARMM national roads. As mentioned, this will also require a corresponding build-up in the capacity of DPWH-ARMM to implement and supervise the huge portfolio of national road projects.

6.5 ROAD MAINTENANCE IMPLEMENTATION SYSTEM

6.5.1 Road Maintenance Bodies in ARMM

The governmental structure in ARMM is composed of five (5) categories; i) Regional Government, ii) Provincial Government, iii) City Government, iv) Municipal Government, and v) Barangay Unit. Under the Regional Government, there are six (6) Provincial governments, namely: i) Shariff Kabunsuan, ii) Maguindanao, iii) Lanao del Sur, iv) Tawi-Tawi, v) Sulu and vi) Basilan. At present, Marawi City is classified as one special City Government.

Administrative classification is as shown in **Table 6.5.1-1.** Responsible organizations for the road maintenance of each road classification are also presented in **Table 6.5.1.-1**.

TABLE 6.5.1-1 ROAD CLASSIFICATION AND RESPONSIBLE ORGANIZATION

Road Maintenance Classification	Responsible Organization for Road Maintenance
1) National Road	DPWH-ARMM
2) Provincial Road	Provincial Government
3) City Road	City Government
4) Municipal Road	Municipal Government
5) Barangay Road	City or Municipal Government

DPWH-ARMM has full responsibility for the maintenance of national roads and bridges. The total road length of the National Road by the pavement type in the area of ARMM is shown in **Table 6.5.1-2**. The total road length of the National Road is about 951 km long, and about 600 km (63% of total) is paved by the Portland Cement Concrete (PCC). Only 18 km length (2% of total) is paved by Asphalt Cement Concrete (AC) and about 320 km long (34% of total) is still gravel/earth surface.

TABLE 6.5.1-2 NATIONAL ROAD LENGTH BY PAVEMENT TYPE IN ARMM

District/City	Total Road Length (Km)	Road Length by Pavement Type (Km)			
		Concrete	Asphalt	Gravel	Earth
Maguindanao (I+II)	246.46	164.72	11.80	61.80	7.30
Lanao del Sur (I)	119.48	78.14	0	41.34	0
Lanao del Sur (II)	161.59	132.05	0	29.54	0
Sulu (I)	90.99	66.33	6.52	18.14	0
Sulu (II)	78.54	28.61	0	49.93	0
Tawi-Tawi	93.72	47.29	0	46.43	0
Basilan	133.79	58.73	0.40	74.66	0
Marawi City	27.23	27.23	0	0	0
Total	951.80(100%)	603.92(63%)	18.72(2%)	321.85(34%)	7.3(1%)

Source: DPWH-ARMM

The road length by pavement type of the Provincial Roads, the Municipal Roads, and the Barangay Roads are presented in **Table 6.5.1-3**.

Only about 10% of the Provincial Roads are paved PCC. About 90% are still unpaved.

Only 4% of Municipal Roads are paved and the remaining 96% are still unpaved.

TABLE 6.5.1-3 LOCAL ROAD LENGTH BY PAVEMENT TYPE

Road Classification	Type of pavement				Total Length (Km)
	Concrete(km)	Asphalt(km)	Gravel(Km)	Earth(Km)	
Provincial Road	130.24 (10%)	0.25	784.01 (62%)	344.94 (28%)	1,259.43 (100%)
Municipal Road	21.72 (4%)	0	388.15 (73%)	122.80 (23%)	532.67 (100%)
Bayangay Road	9.51 (1%)	0	4,970.46 (99%)	0	4,979.97 (100%)

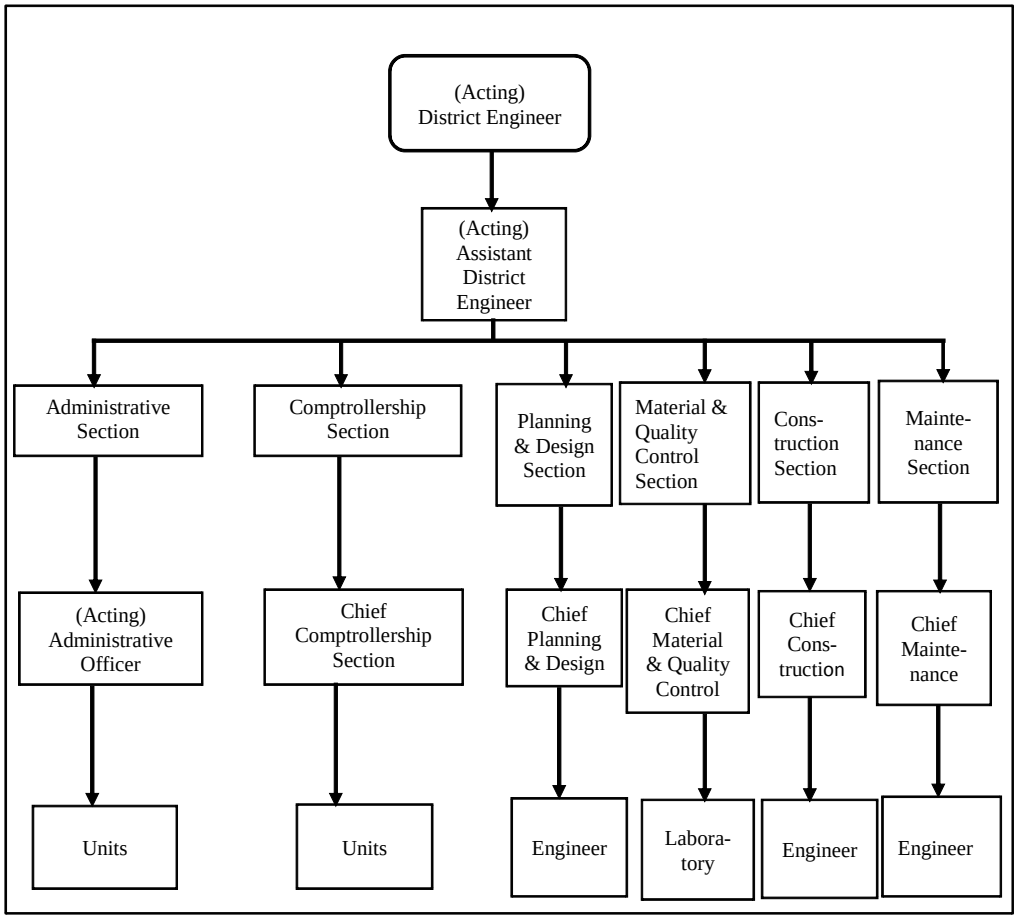
Source: DPWH-ARMM

6.5.2 Organizational Structure of District Engineering Office (DEO)

(1) Organizational Structure of DEO

There are eight (8) DEOs in ARMM. The organizational structure of the Maguindanao DEO is shown in **Figure 6.5.2-1** as the representative of the DEO, and the organizational structure of other seven (7) DEOs have almost the same organizational structure.

District Engineer (DE) is the top of organization of the DEO, and six (6) Sections i) Administrative Section, ii) Comptrollership Section, iii) Planning & Design Section, iv) Material & Quality Control Section, v) Construction Section, and vi) Maintenance Section are organized under the DE.



Source: DPWH-ARMM

FIGURE 6.5.2-1 ORGANIZATIONAL STRUCTURE OF MAGUINDANAO DEO

(2) Major Functions of District Engineering Office (DEO)

The major functions of the DEO are summarized as follows;

1) Administers, supervises and inspects all administration and technical phases of activities of DEO,

2) Checks and supervises the survey and design of civil engineering facilities and structures including the execution and implementation thereof,

3) Notes other engineering programs involving the determination of feasibility of proposed projects; and

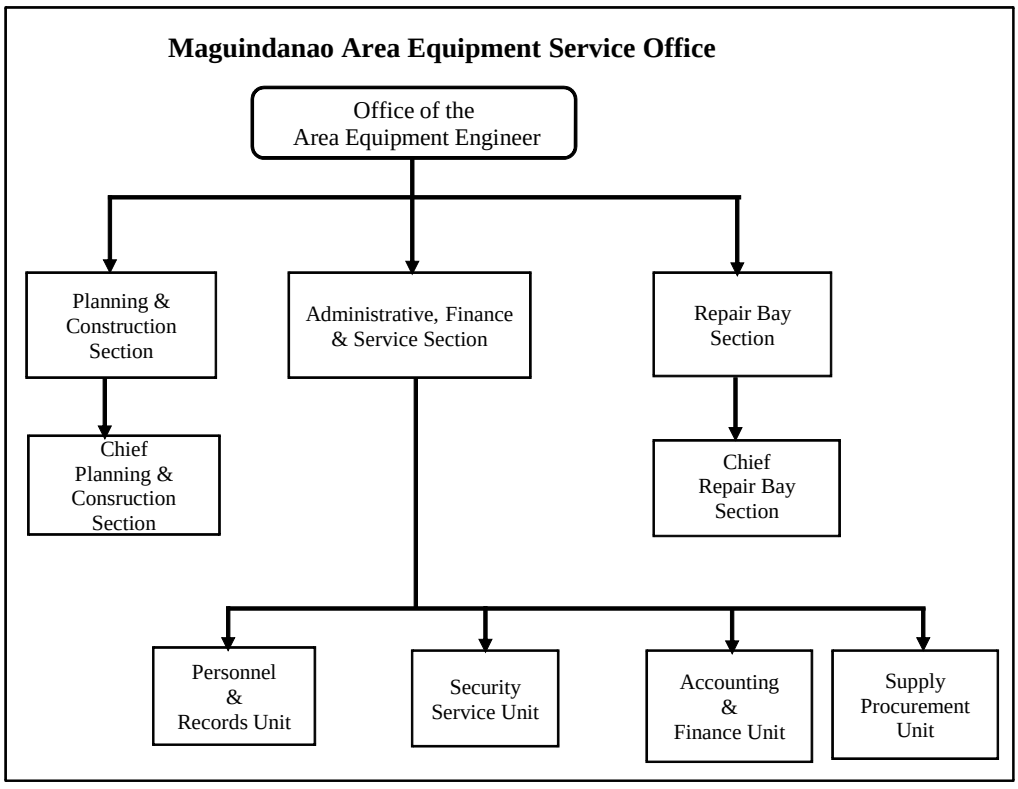
4) Perform such other related duties and responsibilities as may be assigned or delegated by the Regional Secretary or may be provided by law.

6.5.3 Organizational Structure of Area Equipment Service Office (AESO)

(1) Organizational Structure of AESO

There are five (5) Area Equipment Service Offices (AESO) in ARMM. The organizational structure of Maguindanao AESO is shown in **Figure 6.5.3-1** as the representative of AESO, and organizational structure of the other four (4) offices of AESO are almost the same as Maguindanao AESO.

There are three (3) Sections, i.e. i) Planning & Construction Section, ii) Administrative Section, and iii) Repair Bay Section which are organized under the Office of Area Equipment Engineer. Some inspectors, engineers, mechanics are working under the Planning Section, and some mechanics and electricians are working under Chief Repair Bay Section.



Source: DPWH-ARMM

FIGURE 6.5.3-1 ORGANIZATION STRUCTURE OF AREA EQUIPMENT SERVICE OFFICE

(2) Major Functions of Area Equipment Service Office (AESO)

The major functions of the AESO are summarized as follows;

1) Directs, plans, designs, supervises and coordinates the repair and maintenance of equipment used in various infrastructure projects,

2) Supervises and coordinates the functions relating to the administrative, financial, accounting, transportation, procurement of parts, supplies and materials, building maintenance and utility services,

3) Conditions and inspects road construction and maintenance equipment assigned in the field,

4) Supervises the preparation of utilization reports and equipment rental billings and also reviews and initiates equipment rental collection reports,

5) Supervises the maintenance of up-to-date equipment records and the submission of periodic equipment and financial reports,

6) Advises the Regional Secretary on all matters related to the technical equipment problems and maintenance of roads and bridges, and

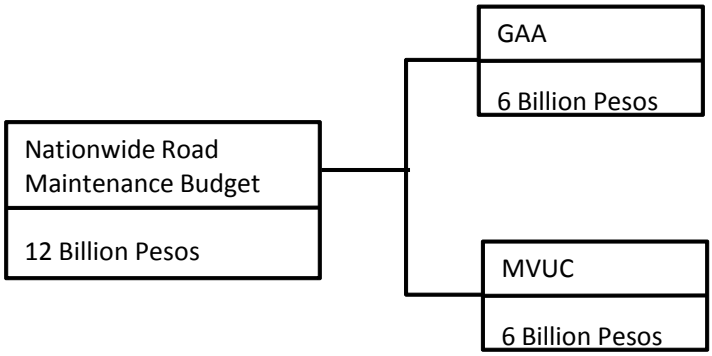
7) Perform such other related duties and responsibilities as may be assigned or delegated by the Regional Secretary or as maybe provided by law.

6.5.4 Road Maintenance Budget and Budget Allocation System

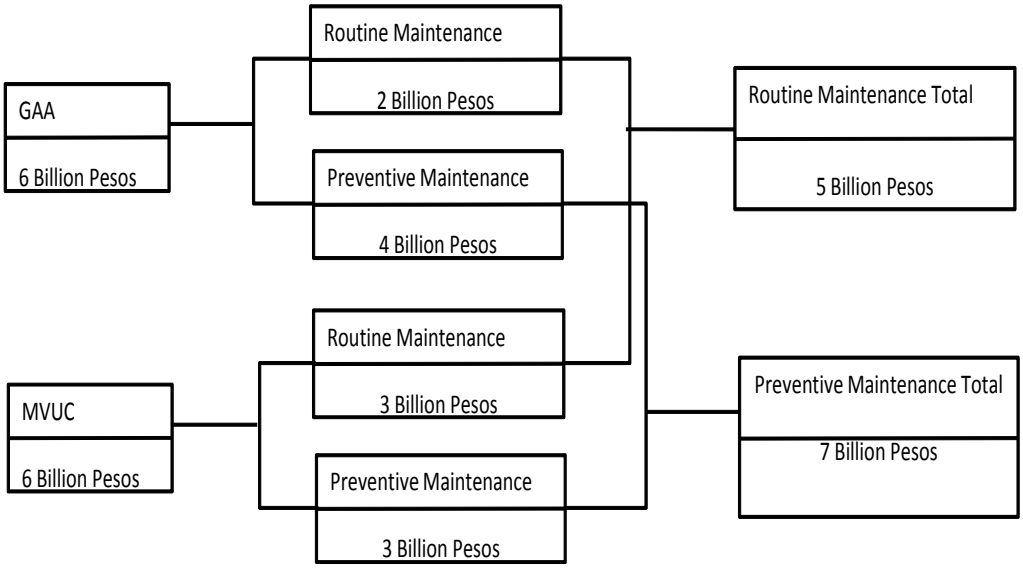
1) Fund Source

There are two (2) fund sources, for the road maintenance budget, one is from the General Appropriations Act (GAA) and the other is from the Motor Vehicle Users Charge (MVUC), majority of which come from additional charge to vehicle registration fee.

The magnitude of nationwide annual road maintenance budget by fund source is as follows:



Utilization of budget is specified by type of maintenance works as follows;



Routine maintenance and periodic maintenance includes the following maintenance activities;

Routine Maintenance Activities:

i) Pothole patching, sealing of cracks on pavement.
ii) Grading and patching of shoulders.
iii) Drainage cleaning and clearing.
iv) Roadside and feature maintenance; vegetation control, road sign and guardrail cleaning and repainting; and maintenance of other roadside features.
v) Road markings maintenance.
vi) Bridge maintenance; cleaning of bridge decks, shelves framework and drainage, spot repainting and clearing of waterways.

Preventive/Periodic Maintenance Activities:

i) AC overlay
ii) Re-blocking of PCC slabs
iii) Large area resealing of pavement
iv) Re-gravelling of shoulders
v) On bridges, parapet repairs, deck sealing, repairs of scour protection, repainting, etc.
vi) Backlog reduction, such as installation of new pipe-culvert, riprap/concrete side ditches, etc.

2) Allocation of Budget

Budget from GAA

Budget from GAA is allocated to each Region, then to each District Engineering Office (DEO) in accordance with EMK system.

Budget Allocation = Basic Cost x EMK

EMK: Equivalent Maintenance Kilometer

EMK = Physical Road Kilometer (km) x Road Width Factor x Pavement Type Factor x Traffic Factor + Bridge Length (m) x Bridge Type Factor

Budget from GAA is released by the Department of Budget and Management (DBM).

Budget from MVUC

Budget from MVUC is basically allocated to each DEO based on the road conditions of each DEO. DPWH-National analyzes maintenance requirements of each DEO using HDM-IV model and recommend to the Road Board based on the HDM-IV analysis results. The Road Board decides budget allocation to each DEO referencing the recommendation of DPWH-National. Due to lack of road/bridge and traffic database, DPWH-National cannot undertake the HDM-IV analysis for roads in ARMM, it makes no recommendations on ARMM roads. Allocation of MVUC fund to DEOs in ARMM is decided at the discretion of the Road Board.

6.5.5 Allocated Maintenance Budget

1) Annual Budget Allocated to DEO from GAA

The annual maintenance budget allocated to DEOs and AESOs is about 110 Million Pesos. The budget allocated to each of the eight (8) DEOs is about 10 Million Pesos to 25 Million Pesos depending on the National Road length.

The annual maintenance budget allocated to each DEO is shown in **Table 6.5.5-1**. Budget allocation to work activities in each DEO is shown in **Table 6.5.5-2**. 85% of the total annual maintenance budget is allocated to DEO and the remaining 15% to AESO.

TABLE 6.5.5-1 ALLOCATED BUDGET TO EACH DEO FROM GAA (2008)

(Based on PHP 68,691 EMK in 2008) (Unit: Pesos)

Engineering District Office	Roads		Bridges		Total EMK	Total Allocation
	EMK	Allocation	EMK	Allocation		
Lanao del Sur(II)	320,687	22,028,311	49,596	3,406,939	370,283	25,435,250
Shariff Kabunsuan	260,104	17,867,000	26,357	1,810,000	286,461	19,677,000
Lanao del Sur(II)	237,117	16,258,000	36,672	2,549,100	273,789	18,807,100
Maguindanao	187,196	12,859,000	18,972	1,303,000	206,166	14,162,000
Tawi-Tawi	198,668	13,647,000	76	52,000	199,428	13,699,000
Sulu(I)	161,947	11,124,000	1,677	115,550	163,624	11,239,550
Sulu(II)	77,192	5,302,000	799	55,350	77,991	5,357,350
Marawi City	28,877	1,984,000	3,214	220,350	32,091	2,204,350
Total	1,471,788	101,069,311	138,047	9,512,289	1,609,833	110,581,600

Source: DPWH-ARMM

Note: Allocation including the Area Equipment Service Budget (15% of total allocation)

TABLE 6.5.4.1-2 BUDGET ALLOCATION TO WORK ACTIVITIES IN EACH DEO (2007)

(Unit; Pesos)

Activities	Engineering Districts							
	Shariff Kabunsuan	Magindanao	Lonao Del Sur(I)	Lonao Del Sur(II)	Tawi Tawi	Sulu (I)	Sulu (II)	Marawi City
National Road Length (km)	142.26	101.772	119.479	161.3	135.903	90.99	78.54	28.09
Cnstruction Works	11,280,358	8,298,857	10,452,986	14,136,829	7,241,090	6,246,942	2,977,615	1,225,178
* Material Cost	-	-	-	-	-	-	-	-
* Labor Cost	-	-	-	-	-	-	-	-
* Adimi. Cost	-	-	-	-	-	-	-	-
Routine Works	2,720,975	1,849,886	2,687,910	3,454,357	2,172,338	1,604,210	764,588	315,046
*Cutting Grass	-	-	-	-	-	-	-	-
*Clealling Contral	-	-	-	-	-	-	-	-
*Paching Pothles	-	-	-	-	-	-	-	-
Preodic Works	1,622,205	1,095,891	1,791,940	2,604,403	1,463,578	1,073,050	511,533	210,030
*Regravelling	-	-	-	-	-	-	-	-
*Resurfacement	-	-	-	-	-	-	-	-
Material Quality Cont.	118,062	84,972	112,843	152,612	82,194	67,437	32,144	13,226
Administration Works	987,850	708,100	940,355	1,271,762	684,950	561,978	267,868	110,218
Equipment Cost	2,951,550	2,124,300	2,821,065	3,815,287	2,054,850	1,685,932	803,602	330652
Total of Each District	19,681,000	14,162,006	18,807,099	25,435,250	13,699,000	11,239,549	5,357,350	2,204,350
Total of all Districts	110,585,604							

Source: DPWH-ARMM

2) Annual Budget Allocated to DEO from MVUC

The annual maintenance budget allocated to the DEO from the MVUC funds in years 2006, 2007, and 2008 are shown in **Table 6.5.5-3**.

TABLE 6.5.5-3 ANNUAL BUDGET ALLOCATED TO DEO FROM MVUC

Items	Amount in Php 1,000		
	2006	**2007**	**2008**
Basilan			
Routine Maintenance of NR	6,556	8,819	10,693
Preventive Maintenance of NR	25,000		
Maintenance of Local Roads	2,038	5,000	1,695
Sulu			
Routine Maintenance of NR	2,659	7,960	8,784
Preventive Maintenance of NR	40,000	10,000	20,000
Maintenance of Local Roads	1,560	5,000	
Maguindanao I			
Routine Maintenance of NR	2,581	8,275	6,977
Preventive Maintenance of NR	15,000	15,000	
Maintenance of Local Roads	*		*
Maguindanao II			
Routine Maintenance of NR	1,887	6,940	6.535
Preventive Maintenance of NR			
Maintenance of Local Roads	3,361		3,361
Lanao del Sur I			
Routine Maintenance of NR	2,924	6,937	7,405
Preventive Maintenance of NR	25,000	10,000	10,000
Maintenance of Local Roads	2,533		2,099
Lanao del Sur II			
Routine Maintenance of NR	2,634	7,951	8,700
Preventive Maintenance of NR			10,000
Maintenance of Local Roads	**		**
Tawi-Tawi			
Routine Maintenance of NR	2,691	8,780	9,010
Preventive Maintenance of NR	5,000	15,000	10,000
Maintenance of Local Roads	1,309	5,000	853
Marawi City			
Routine Maintenance of NR	503	1,603	1,642
Preventive Maintenance of NR			
Maintenance of Local Roads	420		
Total, ARMM	**143,656**	**122,266**	**117,754**
Routine Maintenance of NR	22,434	57,266	59,746
Preventive Maintenance of NR	110,000	50,000	50,000
Maintenance of Local Roads	11,222	15,000	8,008

Source: DPWH-National, BOM, October 2008

* Included in Maguindanao II ** Included in Lanao del Sur I

DPWH-National has released the MVUC routine maintenance funds to its Regional Offices in Regions IX, X and XII. In turn, the DPWH-National Regional Offices have transferred the funds for routine maintenance to the DEO for implementation by administration. This is done through Memoranda of Agreement (MOA) directly concluded between these two parties.

With regard to MVUC funds for preventive maintenance, however, DPWH-National Regional Offices usually transferred the money to the special DPWH- National offices in the area – e.g., sub-office in Maguindanao, task force in Lanao del Sur, etc. – and occasionally to the LGU and the DEO through the MOA. The selection of implementing office depends upon the preference of the project proponents who are mainly Congressmen.

According to the DPWH-ARMM officials, they have not been officially informed of the allocation and use of the MVUC funds since the MOA are directly transacted between the DPWH-National Regional Offices and the DEO, bypassing the DPWH-ARMM central office. Thus, they cannot monitor or supervise the work. Neither can they check any duplication between the maintenance works funded by DPWH-ARMM and those funded by DPWH-National through MVUC.

DPWH-ARMM maintenance staff explained that their road inventory data are old and their data system is inadequate, especially in getting up-to-date information on the conditions of the roads. Thus, they advocate the establishment of an improved database for accurate, timely and verifiable information as a basis for better planning and implementing maintenance and improvement works responsive to needs. They would like to be linked to the DPWH-National road database, suggest a joint road inventory between DPWH-ARMM proper and DEO, and training on data systems.

3) Annual Budget for Area Equipment Service Office (AESO)

The annual budget allocated of each AESO is shown in **Table 6.5.5-4**. There are five (5) offices of AESO in individual Provinces. The total annual budget for the AESO is allocated to be about 19 Million Pesos. Each office of AESO has an allocation of about 3 Million Pesos. From the viewpoint of expenditure, over 90% of total budget is spent for the procurement of equipment and spare parts. However, the equipments and spare parts are not ensured sufficiently, and there are many damaged equipments. They have been waiting for a long period to procure new spare parts.

Therefore, the AESO would like to procure the new equipments and spare parts; however, it is very difficult to procure these materials due to shortage of budget. This is one of the big problems to ensure good maintenance works.

TABLE 6.5.5-4 ANNUAL BUDGET OF AREA EQUIPMENT SERVICE OFFICE

(Unit: Pesos)

Items and Equipment Service Office	Calender Year				
	2004	2005	2006	2007	2008
(1) Regional Office	2,988,924	2,316,626	3,610,476	12,202,020	2,316,626
* Travelling Expenses	-	617,666	-	-	617,666
* Monitaring& Inspection	-	0	-	-	0
* Contral of Sevise	-	1,248,960	-	-	1,248,960
* Certificate of Cover(GSIS)	-	0	-	-	0
* Renewal of Registration	-	450,000	-	-	450,000
* Miscellaneous Expenses	-	0	-	-	0
(2) Maguindanao Service Office	3,528,037	3,768,037	3,691,557	1,250,349	3,768,037
* Procurment of Parts	-	3,550,633	-	-	3,550,633
* Equipment Rehabilitation	-	0	-	-	0
* Travelling Expenses	-	0	-	-	0
* Contract of Service	-	217,404	-	-	217,404
* Miscellaneous Expenses	-	0	-	-	0
(3) Sulu Service Office	3,420,579	3,733,047	3,682,686	1,190,349	3,733,048
* Procurment of Parts	-	3,370,707	-	-	3,370,707
* Equipment Rehabilitation	-	0	-	-	0
* Travelling Expenses	-	0	-	-	0
* Contract of Service	-	362,340	-	-	362,340
* Miscellaneous Expenses	-	0	-	-	0
(4) Tawi-Tawi Service Office	3,060,728	3,397,796	2,042,052	685,174	3,397,796
* Procurment of Parts	-	3,010,856	-	-	3,010,856
* Equipment Rehabilitation	-	0	-	-	0
* Travelling Expenses	-	0	-	-	0
* Contract of Service	-	386,940	-	-	386,940
* Miscellaneous Expenses	-	0	-	-	0
(5) Lanao del Sur (I) Service Office	3,348,111	3,348,111	1,872,516	685,174	3,348,111
* Procurment of Parts	-	3,130,707	-	-	3,130,707
* Equipment Rehabilitation	-	0	-	-	0
* Travelling Expenses	-	0	-	-	0
* Contract of Service	-	217,404	-	-	217,404
* Miscellaneous Expenses	-	0	-	-	0
(6) Lanao del Sur (II) Service Offic	3,168,186	2,950,782	1,690,952	565,174	2,950,781
* Procurment of Parts	-	2,950,781	-	-	2,950,781
* Equipment Rehabilitation	-	0	-	-	0
* Travelling Expenses	-	0	-	-	0
* Contract of Service	-	0	-	-	0
* Miscellaneous Expenses	-	0	-	-	0
Total (Annual Equipment Service)	19,514,565	19,514,399	16,590,239	16,578,240	19,514,399

Source: DPWH-ARMM

Note : No available data

6.5.6 Annual Maintenance Work Program (AMWP) System

1) Preparation Procedure of AMWP

Generally, the draft Annual Maintenance Work Program (AMWP) is prepared by the DEO and AESO. The draft AMWP is integrated and reviewed by the Maintenance Division and Equipment Division in DPWH-ARMM headquarter, and they are responsible for seeking approval from the Regional Secretary as shown in **Figure 6.5.6-1**. The detailed procedures for preparation of AMWP are as follows;

1) Each DEO conducts road and bridge inventory/condition surveys.

2) The analysis and evaluation of these survey results are examined by each DEO, and they select the annual maintenance work activities.

3) Each DEO prepares draft AMWP based on the previous year's maintenance budget, and it is submitted to the Maintenance Division Office (MDO) of the headquarter.

4) MDO integrates and reviews the draft AMWP submitted by each DEO, and after completion of review, the draft AMWP is submitted to the Regional Secretary.

5) After draft AMWP is approved by the Regional Secretary, the AMWP returns to the MDO and DEO.

6) Actual maintenance works are then implemented based on the AMWP.

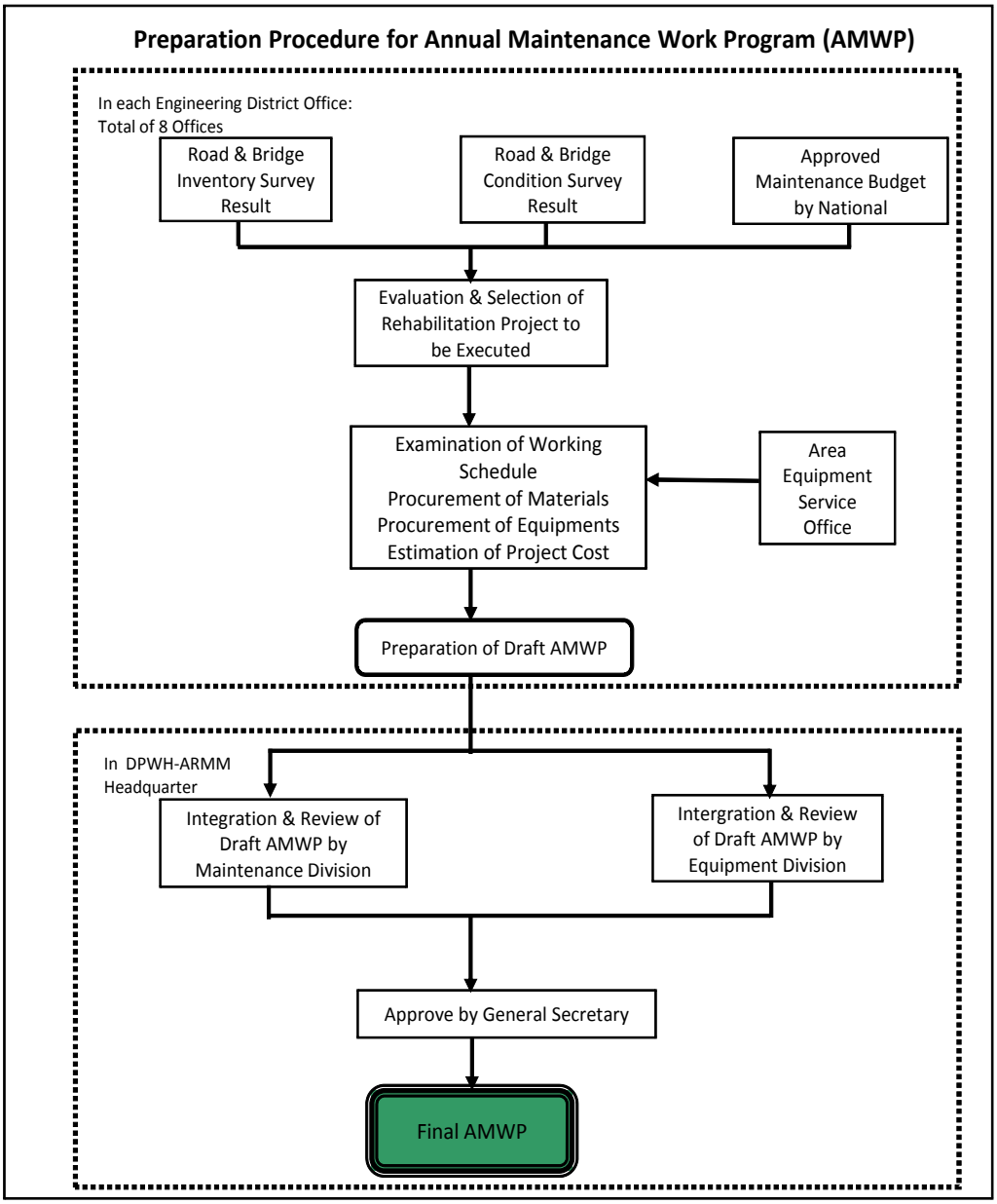
2) Report Contents of AMWP

The major contents of AMWP are as follows:

1) Maintenance activities items by MBA and budget
2) Routine maintenance activities items and budget
3) Periodic maintenance activities items and budget
4) Number of labors employed and budget
5) List of materials procured and budget
6) Construction quantity and cost estimate
7) Unit cost estimate

As mentioned above, the detailed maintenance activities and expenditures are described in the AMWP, however, the following analysis and evaluations are not mentioned in the AMWP.

1) The procedure of evaluation and selection of work activities in the year,
2) The work schedule and construction method, and
3) The results of supervision of maintenance activities.



Source: JICA Study Team

FIGURE 6.5.6-1 PROCEDURE FOR PREPARATION OF AMWP

6.5.7 Implementation System of Road and Bridge Maintenance

1) Implementation Procedure

In the year 1996, the execution of maintenance works had been conducted to use in parallel with the MBA system (Maintenance by Administration) and the MBC system (Maintenance by Contractor), however in the year 1997, the execution of maintenance works has been carried out only by MBA system. The District Engineering Office (DEO) and the Area Equipment Service Office (AESO) have full responsibility over the execution of maintenance on the National Roads.

The procedure of execution of maintenance works is shown in **Figure 6.5.7-1**, and the general procedures of execution are described hereunder;

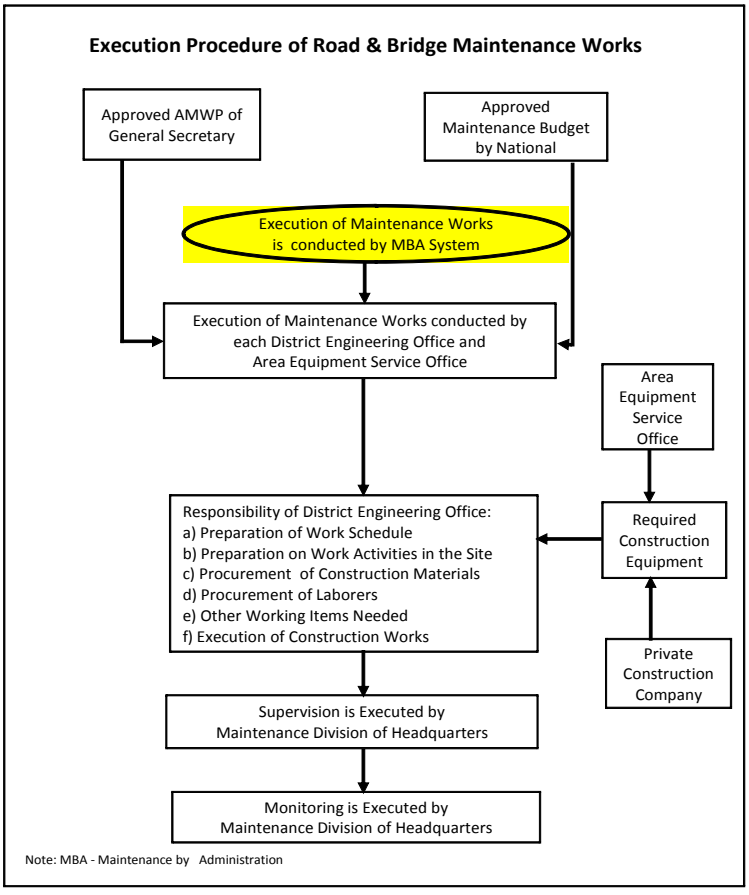
1) Based on the annual maintenance budget and AMWP, the DEO and AESO should prepare the working schedule and material procurement schedule, and schedule of employment of labors including cost estimation.

2) The DEO and AESO have full responsibility over the execution of maintenance works. Therefore, prior to the commencement of implementation, the DEO and AESO shall prepare all maintenance working activities needed.

3) Whenever construction equipments are needed in the project site, the DEO requests the equipments list to the AESO. The AESO shall prepare the equipments needed according to the request.

4) When AESO has insufficient available equipments, they have to borrow/rent the maintenance equipments needed from private construction companies.

5) The supervision and monitoring of maintenance working or activities are carried out by the MDO and AESO of the headquarters of DPWH-ARMM.



Source: JICA team

FIGURE 6.5.7-1 PROCEDURE OF EXECUTION OF MAINTENANCE WORKS

2) Actual Work Activities of District Engineering Office

The actual working activities of DEO consists of three (3) categories which are i) Routine Works, ii) Periodic Works, and iii) Special Works. The above mentioned routine and periodic works are executed by the DEO and AESO adopting the Maintenance by Administration (MBA) system. Therefore, prior to commencement of work, the DEO and AESO prepares the following activities in cooperation with related Divisions, namely i) Maintenance Division, ii) Equipment Division.

1) Preparation of work schedule
2) Preparation work program
3) Procurement of construction materials needed
4) Labor employment if necessary
5) Procurement of construction equipments from the AESO.

a) Routine Work Activities

The routine works are directly carried out by the DEO and AESO for some time on the required National Roads, and following working activities are included based on the data of the Bureau of Maintenance (BOM).

a) Pothole patching, sealing of cracks on pavement
b) Grading and patching of shoulders
c) Drainage cleaning and clearing
d) Road side and feature maintenance; vegetation control, road sign and guardrail cleaning and repainting.
e) Road marking maintenance
f) Bridge maintenance; cleaning of bridge decks, shelves framework and drainage, spot repainting.

b) Periodic Work Activities

The periodic works are conducted by the DEO and AESO according to the road damaged conditions on the required road segments, and the following working activities are included based on the data of the Bureau of Maintenance (BOM).

a) Large area resealing of pavement
b) Re-gravelling of shoulders
c) On bridges, parapet repairs, deck sealing, repairs to scour protection, re-painting

c) Special Work Activities

The special works mentioned above are also directly conducted by the DEO and AESO, when the road facilities are damaged by heavy rain or typhoon and etc.

6.5.8 Capability of Manpower in Maintenance Organization

1) Number of Staff in DPWH-ARMM

As previously mentioned, the Regional Office of DPWH-ARMM is formed by three (3) General Secretaries, two (2) Directors, eight (8) Divisions, and several Sections located under the Director.

The total number of DPWH-ARMM staff is 605 as shown in **Table 6.5.8-1**. Table shows that a total of 127 staffs are working in Regional Office headquarters and 20 to 70 staffs are working in each of the eight (8) offices of DEO, depending upon the National Road maintenance length required. About 15 to 40 staffs are working in each of the five (5) offices of AESO.

TABLE 6.5.8-1 NUMBERS OF STAFFS ON ALL DPWH-ARMM

Office/Agency	Number of Staff (person)			
	Total	Technical	Non-Technical	Co-Terminus
Regional Office	127	44	81	2
Magindanao (I) Engineering District	41	28	13	0
Magindanao (II) Engineering District	32	19	13	0
Lanao del Sur (I)	73	48	25	0
Lanao del Sur(II)	20	13	7	0
Sulu (I)	75	48	27	0
Sulu (II)	45	31	14	0
Tawi-Tawi	59	38	21	0
Magindanao Area Equipment Service	41	26	15	0
Lanao del Sur	37	18	19	0
Sulu	41	25	16	0
Tawi-Tawi	14	7	7	0
Total	605	345	258	2
Percentage	100%	57%	43%	---

Source: DPWH-ARMM

The Maintenance Division (MD) and Equipment Division (ED) in DPWH-ARMM headquarters are fully responsible of the road and bridge maintenance in good cooperation with DEO and AESO. The number of staff of the MD is allocated to be a total of 7 Engineers that is i) 1 Chief Engineer (Class-V), ii) 2 Engineers (Class-III), iii) 2 Engineers (Class-II), and iv) 2 Assistant Engineers. The number of staff of an ED is allocated to be a total 5 Engineers that is i) 1 Chief Engineer (Class-V), ii) 2 Engineers (Class II), ii) 1 Electrical Engineer (Class-II), and iv) 1 Mechanical Engineer (Class-II) respectively.

2) Number of Staff in District Engineering Office (DEO)

The breakdown of manpower in each DEO is shown in **Table 6.5.8-2**. Table shows, the staffs of DEO are basically composed of administrative staffs,

engineers, assistance engineers, and other members. About 30% of the total staffs are occupied by administrative staffs.

TABLE 6.5.8-2 BREAKDOWN OF NUMBER OF STAFF IN DISTRICT ENGINEERING OFFICE

Name of Engineering Division Office	Total No. of Staff	Classification
1) Shariff Kabunsuan	41	13 --- Administrative 5------Chief engineer 5------Engineer 1-------Architecture 1-------Laboratory 8-- -- -Assistant engineer 1-------Special investigator 2 -------Cost estimator 2-------Draft man 2-------Clerk 2-------Driver
2) Maguindanao	32	13- -- Administrative 5------Chief engineer 5------Engineer 5-- ---Assistant engineer 1-------Special investigator 1-------Clerk 2-------Driver
3) Lanao del Sur (I)	73	25-- - Administrative 5--- ---Chief engineer 5-- ----Engineer 2-------Architecture 2-------Laboratory 10-----Assistant engineer 8-------Special investigator 2 ------Cost estimator 3-------Draft man 7-------Clerk 4-------Driver
4) Lanao der Sur (II)	20	7-- - Administrative 4-- ----Chief engineer 4-- ----Engineer 1-------Architecture 1- ---Assistant engineer 1 -------Cost estimator 1-------Clerk 1-------Driver
5) Sulu (I)	75	27- -- Administrative
6) Sulu (II)	45	14- -- Administrative
7) Tawi-Tawi	59	21-- - Administrative 5------Chief engineer 5------Engineer 1-------Architecture 1-------Laboratory 15-----Assistant engineer 1-------Special investigator 2 -------Cost estimator 2-------Draft man 2--------Clerk 2--------Driver
8) Basilan	Not available	Not available

Source: DPWH-ARMM

3) Number of Staff in Area Equipment Service Office (AESO)

The breakdown of manpower in the each of the five (5) offices of AESO is shown in **Table 6.5.8-3**. Table shows, the number of staff are composed of the

administration staffs, mechanical engineers, assistant engineers, and other members. About 35% to 40% of total numbers of staff of AESO are occupied by the administrative staffs.

TABLE 6.5.8-3 BREAKDOWN OF NUMBER OF STAFF IN AREA EQUIPMENT SERVICE OFFICE

Name of Area Equipment Service Office	Total No. of Staff	Classification
1) Maguindanao	**41**	**15 -----Administrative** **1 ---- --Chief engineer** **11------Mechanic** **1-------Electrician** **1-------Inspector** **9-------Assistant** **3-------Clerk**
2) Lanao del Sur (I)	**37**	**15 -----Administrative** **1-------Chief engineer** **11------Mechanic** **1-------Electrician** **1-------Inspector** **9-------Assistant** **3-------Clerk**
3) Lanao del Sur (II)	**Not available**	**Not available**
4) Sulu	**41**	**16 -----Administrative** **2-------Chief engineer** **10------Mechanic** **1-------Electrician** **1-------Inspector** **8-------Assistant** **3-------Clerk**
5) Tawi-Tawi	**14**	**7 -----Administrative** **3------Mechanic** **1-------Electrician** **1-------Inspector** **1-------Assistant** **1------Clerk**

Source: DPWH-ARMM

6.5.9 Condition of Equipment in Area Equipment Service Office (AESO)

The number of equipments and types of equipments registered in each of the five (5) offices of AESO is shown in **Table 6.5.9-1**. This table shows the number of major equipments that can be operated for the execution of maintenance working which are mainly i) dump-truck, ii) bulldozer, iii) vibrator, and iv) concrete mixer. The workable equipments are very few. And also major equipments are waiting for repair for quite a long time.

Only a few equipments can be operated, most of them are very old, as well as troublesome in the project site. There is an extreme shortage in the number and type of equipments in each office of AESO. However, they cannot procure new maintenance equipments due to shortage of maintenance budget.

Considering the above mentioned equipment conditions, the DEO of DPWH-ARMM headquarters strongly expects to procure the following major

equipments, and they are also promoting to ensure the budget and technical assistance from the National Government and International Assistance.

1) Bulldozer
2) Wheel Loader
3) Grader
4) Compactor
5) Excavator
6) Backhoe/Loader
7) Dump-truck
8) Small size equipments
9) Spare parts

TABLE 6.5.9-1 NUMBER OF EQUIPMENT IN EACH AREA EQUIPMENT SERVICE OFFICE

Items	Maguindanao AESO		Lanao Sur(I) AESO		Lanao Sur(II) AESO		Sulu AESO		Tawi-Tawi AESO	
	No. of Equipment	Condition	No. of Equipment	Condition	No. of Equipment	Condition	No. of Equipment	Condition	No. of Equipment	Condition
Pick Up	4	O	3	O			8	O	1	O
	3	D					4	W	1	U
Dump	3	O	1	O	1	W	3	O	4	O
Truck	2	D	2	W			1	W		
Truck Crane									1	W
Road	2	O	1	O	1	W	2	O	3	O
Grader	1	D	1	W					1	W
Tank									1	W
Trailer									2	O
Pile									1	O
Hammer									1	U
Bulldozer	1	O	1	O					1	U
Vibrator			1	O			1	O	3	O
Trailer									2	O
Pay-loader					2	W	1	O		
Road	1	O	2	O						
Loader	1	D								
Tractor									1	O
Compactor							4	O	2	O
							1	W		
Concrete Mixer			2	W			1	D	2	W
Backhoe	1	O	1	W			1	O	1	O
Generator							1	O	2	W
Air Compressor							3	O	1	O
Rock Crusher							1	O		
Water Tank							2	O		
Water Pump							1	O		
							2	W		
Road Roller							1	O		

Source: DPWH-ARMM

Note: O: Operational, W: Waiting Repair, U: Under Repair, D: Disposed

6.5.10 Private Construction Company Conditions

There are many private construction companies in the ARMM and surrounding areas. However, these construction companies are located within the city of Cotabato. The conditions of companies are shown in **Table 6.5.10-1**.

These companies operate in ARMM areas however, the comparatively large scale company is only one and the remaining companies are medium-scale companies where they have about 20 to 30 units of equipments and a depot. They have about 50 temporary workers, however, permanent staff is very few due to the reason that government or private construction projects are very limited here. The size of one project scale is not so large as well.

The results of hearing survey to private construction companies, the following conditions are pointed out:

1) There are many construction companies in ARMM and surrounding areas, however, most companies are located in Cotabato City.

2) The average number of permanent staff employed by the company is only about 5 to 10 persons.

3) The laborers needed in the project are employed in the project site depending upon the project size.

4) The private company has a depot, and major construction equipments are kept in the depot. About 30 staffs such as chief engineers, drivers, operators, mechanical engineers are employed.

5) There are no construction companies in island provinces such as Basilan Province and Sulu Province.

6) When construction company succeed to get the project at the above mentioned province, the construction equipments are transported by barge from mainland to island.

7) At present, maintenance works have been conducted by Maintenance by Administration (MBA) system. However, they have strongly expressed interest to introduce the MBC (Maintenance by Contractor) system for the execution of maintenance works.

TABLE 6.5.10-1 LIST OF CONSTRUCTION COMPANIES

Name of Construction Firms	Contractor's Office Adress	Construction Categories	Total Number of Available Equipment	Total Number of Manpower/ Personnel
1) FFJJ Construction	Cotabato City	Engineering Building	95 Units	150
2) Stoneline Construction	Cotabato City	Engineering Building	25 Units	56
3) M.K Duiamano Multibuilders	Shariff Kabunsuan	Engineering	23 Units	51
4) K.A. Builders & Supply	North Cotabato	Engineering	20 Units	45
5) RLG Construction	Zamboanga City	Engineering Building	23 Units	56
6) Khay & Sha Construction	Tawi-Tawi	Engineering Building	23 Units	62
7) Curve-Line Construction	Cotabato City	Engineering Building	19 Units	45
8) Manniss Construction	Cotabato City	Engineering Building	18 Units	50
9) Rgret Construction	Cotabato City	Engineering Building	19 Units	52
10) Mmaachiever Construction	Lanao der Sur	Engineering Building	49 Units	49
11) Minrock Builder	Cotabato City	Engineering Building	19 Units	39
12) BBS Construction	Cotabato City	Engineering Building	21 Units	42
13) J.R Lomantas Desing & Construction Service	Davao City	Engineering Building	12 Units	38
14) ALM Engineering Supply& Construction	Maguindanao	Engineering Building	23 Units	45
15) Corics Construction	Shariff Kabunsuan	Engineering Building	19 Units	45

Source: DPWH-ARMM

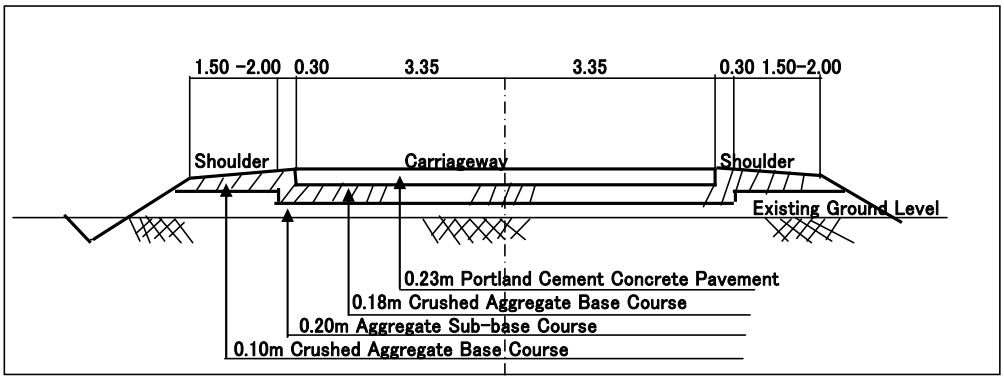
6.5.11 Results of Initial Reconnaissance Survey

The road and bridge initial reconnaissance survey in the city of Cotabato is carried out by the JICA Study Team on September 2008. Based on the results of survey, the following road conditions were observed. However, the detailed road and bridge inventory survey and condition survey on national roads and major provincial roads were carried out from October 2006 to March 2008 by the local consultant under control of the JICA Study Team.

(1) Typical Cross Section

Almost all road segments are constructed at 2-lane road with 3.35 m lane width, and 1.50 meters to 2.00 meters width shoulders are constructed on the both road sides. The pavement type of carriageway is covered by Portland Cement Concrete (PCC), and the shoulders are covered by cement concrete or crushed aggregate material. In some road segments, drainage facilities are constructed using concrete or gravel material. The typical cross section of the National Road is illustrated in **Figure 6.5.11-1**.

As shown in Figure, 23 centimeters depth of the surface course is constructed using PCC, 18 centimeters depth base course depth of the bases course is constructed using crushed aggregate material while the 20 centimeters depth of sub-bases course is constructed using aggregate material.



Source: DPWH-ARMM

FIGURE 6.5.11-1 TYPICAL CROSS SECTION OF NATIONAL ROAD BY CONCRETE PAVEMENT

(2) Pavement Surface Conditions

Photos 6.5.11-1 to **Photo 6.5.11-4** show the Portland Cement Concrete (PCC) pavement surface condition. The pavement condition on most road segments has not been ensured to be of good condition.

Therefore, many cracks and potholes are observed on the cement concrete pavement in many road segments. The potholes on the pavement should be maintained as soon as possible considering the traffic safety and to minimize the road maintenance cost as well as traffic cost.

PHOTO.6.5.11-1 PORTLAND CEMENT CONCRETE PAVEMENT CONDITION

PHOTO.6.5.11-2 PORTLAND CEMENT CONCRETE PAVEMENT CONDITION

PHOTO.6.5.11-3 PORTLAND CEMENT CONCRETE PAVEMENT CONDITION

PHOTO.6.5.11-4 PORTLAND CEMENT CONCRETE PAVEMENT CONDITION

(3) Bridge Conditions

The long bridge is constructed usually by PC concrete girder bridges and a short span bridge is constructed by RC girder bridge as shown in **Photo 6.5.11-5**. The handrail of the bridge is also constructed by concrete. In general, many bridges showed signs of wear and tear/dilapidation, and many cracks are observed at the bridge abutments.

PHOTO.6.5.11-5 BRIDGE CONDITIONS

(4) Drainage Conditions

In some road segments, there are drainages on both road sides constructed by concrete or gravel or earth. The drainage constructed by concrete is keeping a good condition as shown in **Photo 6.5.11-6**, however, grasses cover the drainage constructed by earth. The routine maintenance of the drainage facilities are conducted by DEO.

PHOTO.6.5.11-6 CEMENT CONCRETE DRAINAGE CONDITIONS

6.6 DATABASE FOR PLANNING AND MAINTENANCE

6.6.1 Planning Database

The current database for national roads in DPWH-ARMM is deemed inadequate for planning and management of roads. This has considerably hampered the quality of work done by the regional planning staff.

- The road inventory for national roads consists mainly of Road Diagrams and Bridge Lists (RDBL) prepared by DEOs, following the old DPWH-National format. The RDBL provides basic inventory data which are obtained manually in the field by DEO staff at least once a year. The RDBL presents the data graphically in a scaled straight line diagram along the length of the road. These data include the following, among others:

  a. Carriageway width
  b. Carriageway surface type – whether concrete, asphalt, or gravel
  c. Locations and widths of shoulders and ditches
  d. Locations of bridges and culverts
  e. Pavement width and thickness
  f. Carriageway/pavement surface condition – whether good, fair, poor or bad.
  g. Horizontal alignment
  h. Terrain and carriageway gradient
  i. Annual average daily traffic (AADT)

j. Roadside friction – whether light, medium or heavy
k. Traffic accident frequency
l. List of bridges/culverts, with corresponding number of spans, span length, type, width, sidewalk width, year constructed, and design capacity of each structure.

Annex 6-7 shows extracts from a typical RDBL prepared by a DEO of DPWH-ARMM.

- The RDBL, if properly prepared, would serve as a basic reference on the existing features and conditions of roads and bridges. It would be a useful, although not sufficient, input in preparing plans and programs for road improvement and maintenance.

- RDBL data, however, are not always accurate or complete, even for the basic information in items a to e above. Data for items f to k above are seldom provided in the RDBL.

- The Planning/Programming and Infotech Division, with its limited staff, has apparently been unable to adequately verify or validate the data in the RDBL. At any rate, DPWH-National has replaced the RDBL by the computerized Road and Bridge Information Application (RBIA) system.

- Some data on the condition of national roads are provided by DEOs to the DPWH-ARMM Maintenance Division, following the subjective ratings (good, fair, poor, bad) previously used by DPWH-National. These ratings, however, are subject to varying individual judgment. Moreover, the Maintenance Division has not been able to sufficiently validate these data. DPWH-National has already replaced this subjective condition rating method by the more objective and precise International Roughness Index (IRI) and Visual Road Condition (ROCOND) rating systems.

- Data on the specific attributes and conditions of bridges are spotty and are not included in the RDBL.

- Reliable traffic data needed for planning are not available. Traffic counts have not been made since DPWH-ARMM spun off from DPWH-National in the 1990s.

- On the other hand, the planning database, as well as planning tools, of DPWH-National has been modernized and is supported by information and communication technology (ICT) systems. The database includes information gathered from the field and processed in the central office, pertaining to the inventory, attributes and conditions of national roads and bridges, and regular traffic survey and axle load data, among others. The DPWH-National database, however, has not included ARMM since the latter became autonomous. With this ARMM gap in the national road network, DPWH-National has been able to fully carry out its mandate to undertake the integrated planning of the entire national roads system for the country. At the same time, DPWH-ARMM misses the opportunity to

6.6.2 Maintenance Database

The existing database for roads described in Section 3.6.1 is essentially used by both planning and maintenance staff. As explained by DPWH-ARMM maintenance staff, the programming and management of maintenance works on national roads in ARMM is greatly hindered by the following weak characteristics of the database, particularly as they relate to maintenance.

- The existing road inventory data are old and the data system which is largely provided by the RDBL is inadequate, as mentioned above. Precise and up-to-date information on the actual conditions of the roads is wanting. As noted above, the road condition data supplied by the DEOs are based on the subjective ratings and are not routinely verified by the DPWH-ARMM Maintenance Division.

- Reliable information on bridge elements (span, pier, abutment), attributes (e.g., for span - deck, main members, secondary members, etc; for pier/abutment - main structure, foundation, scour protection, etc.), and condition (degree of deterioration) is scarce.

- There is no effective and regular system for inspecting roads and bridges, assessing conditions, identifying defects/damages and their degree of severity, and monitoring the changes in conditions over time. The data would be necessary in planning and costing appropriate repair, maintenance, or rehabilitation works. The system for recording and processing the information obtained from the inspection and assessment of bridges is likewise inadequate.

- Records of “as-built” drawings of road, bridges and other structures are not systematically kept. Much less are these drawings updated to reflect the series of improvement and repair works done.

CHAPTER 7

REGIONAL DEVELOPMENT SCENARIOS

7.1 REVIEW OF NATIONAL AND REGIONAL DEVELOPMENT PLANS

7.1.1 National Development Plans

1) Medium-Term Philippine Development Plan (2004-2010)

The Medium Term Philippine Development Plan (MTPDP) 2004-2010 lays down as a fundamental plan indicating the overall national development goals, strategies and thrusts of the national government.

The basic task of MTPDP is to fight poverty by building prosperity for the greatest number of the Filipino people. The country must open up economic opportunities, maintain socioeconomic stability, and promote good stewardship – all to ensure better quality of life of citizens. The country will focus on strategic measures and activities, which will spur economic growth and create jobs.

10-Point Legacy Agenda:

Livelihood

1. Creation of 10 million jobs or 1.7 million jobs per year by tripling the loans for small business (from 1 million to 3 million micro, small, and medium enterprises) and developing 2 million hectares of agribusiness land to generate 1 job per hectare

Education

2. Education for all by constructing 3,000 classrooms every year, providing college/ vocational/ technical scholarship to qualified poor families, and providing books and computers in every school

Fiscal Strength

3. Balancing the budget

Decentralized Development

4. Decentralization of progress and development through the development of transportation networks roll-on and roll-off ferries and digital infrastructure to connect the entire country

5. Provision of clean water to all 45,000 barangays and electricity to 1,500 barangays every year

6. Decongestion of Metro Manila by developing new centers of government business, and housing in Luzon, Visayas, and Mindanao

7. Development of Subic and Clark as the best international service and logistics center in Asia.

National Harmony

8. Automation of the electoral process
9. Just completion of the peace process
10. Just closure to the divisions resulting from EDSA 1, 2, and 3

Macro Economy:

As targets of MTPDP, the following macroeconomic growths are prospected.

TABLE 7.1.1 MACROECONOMIC TARGETS IN MTPDP

	2004 Actual	Targets (%)						
		2004	2005	2006	2007	2008	2009	2010
Gross National Product	6.1	5.2-6.0	5.5-6.4	6.5-7.5	6.9-7.8	7.0-8.0	7.2-8.2	7.2-8.2
Gross Domestic Product	6.3	4.9-5.8	5.3-6.3	6.3-7.3	6.5-7.5	6.8-7.8	7.0-8.0	7.0-8.0
Inflation Rate	4.8	4.0-5.0	4.0-5.0	4.0-5.0	3.0-4.0	3.0-4.0	3.0-4.0	3.0-4.0
Poverty Incidence (family)	28.4	25.69-26.04	24.35-25.04	22.93-23.95	21.61-22.89	20.31-21.84	19.04-20.78	17.88-19.81
Unemployment Rate	12.13	12.1	11.9	11.6	11.1	10.4	9.7	8.9

Source: MTPDP 2004-2010

For Agribusiness:

Poverty in the Philippines is the highest issues in the rural areas where agriculture serves as the base to generate incomes and employment in the countryside. As such, the government deems the development of the sector as essential to any anti-poverty program.

The government has recognized the need for a more holistic approach that will not only address the production bottlenecks but also its vulnerabilities calling for the promotion of agribusiness such as post-production handling, value-adding, marketing and distribution.

The MTPDP identified ***Goal 1*** as: "Develop at least 2 million hectares of new land for agribusiness in order to contribute 2 million out of 10 million jobs targeted as a legacy by 2010"

Goal 2: "Make food plentiful at competitive prices where the cost of priority 'wage goods' such as rice, sugar, vegetables, poultry, pork and fish and other

important non-wage goods like corn must be reduced. This also means that government will continue to fight for self-sufficiency in rice production by increasing price and production efficiency and competitiveness."

2) Mindanao Agenda

For development of the super region of Mindanao, following targets and strategies are declared in line with abovementioned 10-point legacy agenda.

Agenda 1) Jobs creation, SME and Agro-business development
Agenda 2) Education for all
Agenda 4) Linking the country through transportation and digital infrastructure
Agenda 5) Electricity and water to Barangays
Agenda 6) Formation of new government centers
Agenda 9) A just end to the peace process affirmative actions for Mindanao

7.1.2 Regional Development Plans

There are various regional development plans by region in the Study Area. They are summarized as follows:

1) <u>The ARMM regional development plan (2004-2010)</u>

The ARMM RDP focuses on the region's contribution toward meeting the President's 10-point Agenda of MTPDP.

<u>Vision:</u>

We, the Bangsa Moro people, under the guidance of the Almighty in our continuing quest for self-determination, envision a peaceful, progressive society through social justice, human equity, and responsive governance with empowered people, distinct cultural heritage and identity, sustainable managed patrimony, and with established international amity.

<u>Mission:</u>

Promote peace, public order and security; provide and ensure access to quality basic services especially for the poor segment of the population; and sustain the gains achieved for politico-economic and socio-cultural uplift within the context of human environment, sustainable development and good governance.

<u>Development goals</u> of the plan are:

- Strengthened and sustained peace and security in the region
- Improved economic growth and job creation
- Enhanced social development with direct poverty reduction
- Improved physical planning and sustained infrastructure facilities and utilities

- Improved and sustained infrastructure facilities and utilities
- Institutionalized good governance
- Enhanced international relations

Some more detailed contents of the plan are described in the following section of this report; **c) Updated ARMM RDP 2008-2010**.

2) <u>ARMM Regional Physical Framework Plan: 2000-2030</u>

As a long-term development plan of ARMM, Regional Physical Framework Plan (RPFP) has been approved and submitted under the chairman of Regional Governor, Datu Zaldy Uy AMPATUAN in June 2005.

This plan aims to serve as a major reference of all socioeconomic development planning and decision making of the autonomous region, to be in the regional centers or in the sub-regional areas covering a long-term period from 2000 to 2030.

It covers the policy direction and agenda on the management of resources for the most favorable development concerns in land use such as settlement, infrastructure, agriculture and industry, and most likely the rehabilitation/conservation and protection of the physical resources in order to attain sustainable development in the next 30 years.

The plan is composed of Chapter 1: Introduction, 2: Physical Planning Environment, 3: Physical Framework Plan and 4: Implementation of Plan, and the RPFP consists of four (4) components such as:

1) Production Land Use
2) Protection Land Use
3) Settlement Plan
4) Infrastructure Plan

Followings are the proposed major transport infrastructure projects as long-term development plan (see **Figure 7.1.2-1**).

- Major Road Improvements and critical infrastructure projects:

  a) Concreting of road along the coastal municipalities (Parang-Balabagan-Malabang-Sultan Gumander-Karomatan)
  b) Lumbatan-Marogong-Tubaran-Malabang Road
  c) Concreting of Parang-Buldon-Barira-Butig Road (Proposed Diosdado Macapagal Friendship Highway)
  d) Concreting of Molundo-Wao Road
  e) Jolo Island Circumferential Road
  f) Jolo Trunk-line Road Network
  g) Tawi-Tawi
  h) Basilan Circumferential Road
  i) Lake Lanao Circumferential Road
  j) Semba-Kusiong Road

k) Concreting of Awang-Upi Lebak Road
l) Construction of Cotabato City East Diversion Road
m) Construction of Ganassi-Tubod Road
n) Flood Control and Drainage Project
o) Major Ports and Airports
p) Bridge Projects

- Integrated Infrastructure Support Program for Agro-Industrial Development

a) Development of the Regional Agro-Industrial Growth Zone (On and Off-Site Support Facilities Project)

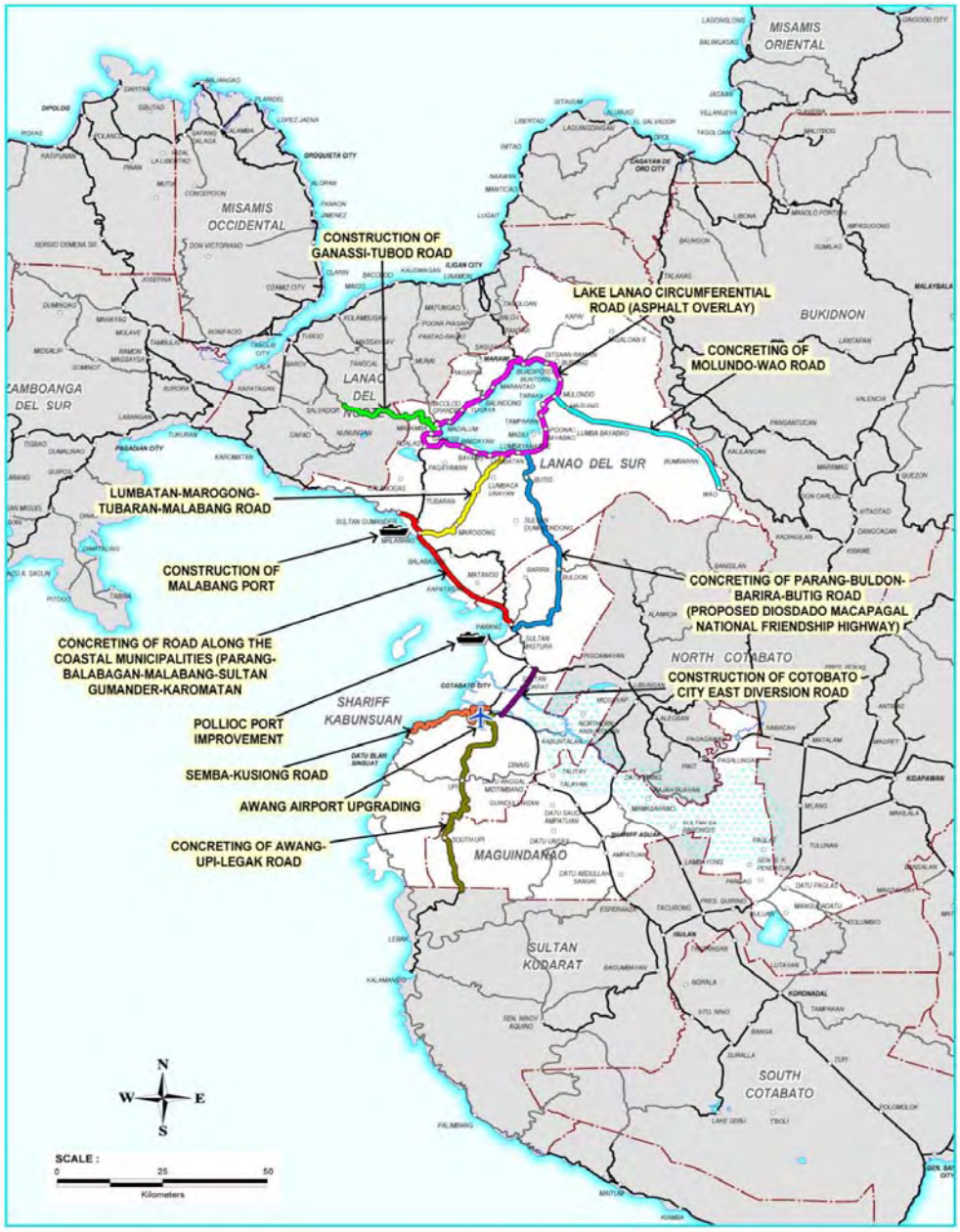


FIGURE 7.1.2-1 (1/2) PROPOSED INFRASTRUCTURE PROJECTS UNDER ARMM REGIONAL PHYSICAL FRAMEWORK PLAN (2000-2030)

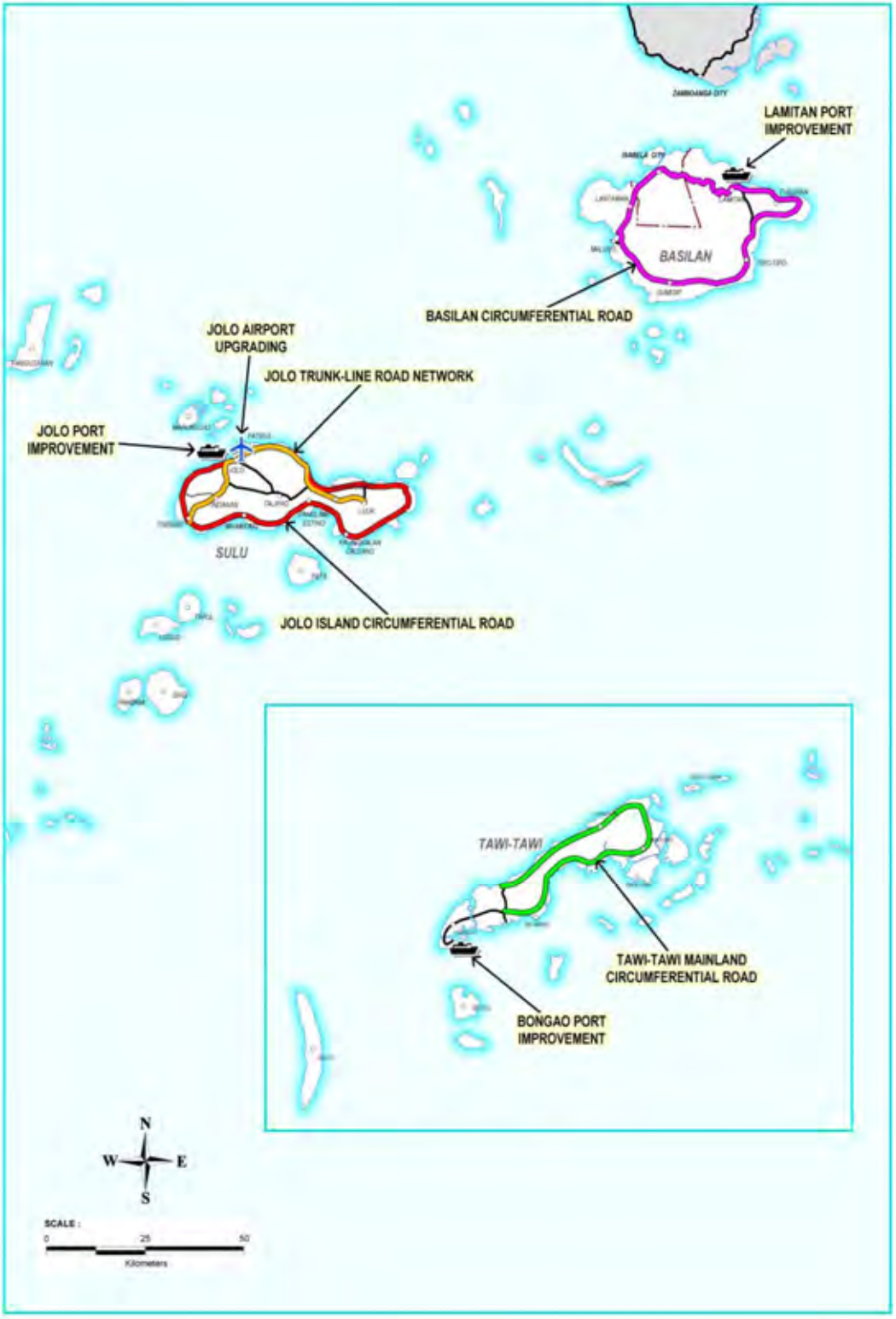


FIGURE 7.1.2-1 (2/2) PROPOSED INFRASTRUCTURE PROJECTS UNDER ARMM REGIONAL PHYSICAL FRAMEWORK PLAN (2000-2030)

b) Support for Agriculture Production Areas (Post-Harvest Facilities, Irrigation and Drainage System, etc.)

- In addition, 'Railway System in Mindanao' and 'Sea Transportation Network Improvement' are also listed up.

  a) Polloc Port Improvement
  b) Construction of Malabang Port
  c) Bongao Port Improvement
  d) Jolo Port Improvement
  e) Lamitan Port Improvement
  f) Municipal fishing ports in the islands and mainland also be developed

- Airport Improvement

  a) Awang and Jolo Airports be upgraded to international navigation standard to accommodate bigger aircraft.
  b) An alternate airport of Malabang

Moreover, the RPFP lists up necessary projects.

- School buildings, hospitals, rural/Barangay health units, day care centers, teacher training center, manpower training centers and recreational sport centers as social infrastructure
- Water supply projects
- Power supply projects

And finally, the RPFP points out the necessity of the various areas of implementation and cooperation of the development program strategies:

1) Regional Peace and Order,
2) Sustainable Agri-Based Development,
3) Comprehensive Agrarian Reforms,
4) Integrated Investment Generation and Enterprise Development,
5) Promotion of Cultural Heritage & Eco-Tourism,
6) Tourism Development & Investment,
7) Eco-Tourism Research,
8) Science and Education Services,
9) Human Resources Development,
10) Health & Education Services,
11) Community-Based Development,
12) Comprehensive Social Welfare,
13) Integrated Environment and Natural Resource Development,
14) Resettlement & Livelihood Programs for Marginalized Sectors and Internally Displaced Persons and Deportees from Sabah, Malaysia,
15) Integrated Disaster Preparedness Development.

3) Updated ARMM Regional Development Plan (2008-2010)

This revised draft of RDP is the latest plan/program for regional development, and was submitted in October 2008 based on the 'Mid-term Assessment', major contents consists of followings:

I. Introduction
II. Mid-Term Assessment
III. Regional Development Challenges and Opportunities
IV. Priority Development Objectives, Strategies and Targets
V. Top-10 Priority Programs and Projects

Macro-Economic Targets

To support the MTPDP, the region will pursue the following macro-economic targets:

- Increase the Gross Regional Domestic Product (GRDP) at an average annual growth rate of 3.0 percent in year 2002 to 4.8 percent in year 2010.
- Manage annual population growth rate of the region at an average of 2.7 percent between the periods of 2005-2010.
- Increase Employment rate of the region from 90.52 percent in year 2002 to 96.08 percent in year 2010.
- Reduce Poverty Incidence from 51.2 percent in year 2000 to 47.2 percent in year 2010.

Spatial Framework

This framework suggests the flagship programs for each province and city of the region. It is its strategic economic focus.

a) Maguindanao – "Showcase of Diversified Agriculture"
b) Lanao del Sur – "Home of the Lake, A Hydro-Power in Mindanao"
c) Sulu –"Exotic Crops Capital of ARMM"
d) Tawi-Tawi - "ASEAN's Best Gateway to EAGA"
e) Basilan – " Center of Commercial Crops"
f) Islamic City of Marawi - " City by the Lake, Center of Islamic Education, Culture and Arts"

Top-10 Priority Programs and Projects

1. **Regional Peace Building Program:** This involves the following: a) promotion traditional conflict resolution mechanisms; b) coordination, monitoring and evaluation of peace building initiatives; c) building/upgrading of major facilities, structures & logistics for firefighting, jail management, policing, and disaster management.

2. **Kabulnan Irrigation Project Phase II:** This involves development of potential irrigable area of upper Kabulnan with an approximate area of 20,000 hectares. The project covers irrigation and social components.

3. **Rural Development Pilot Project for Muslim Mindanao Peace Promotion in Ditsaan Ramain area in Lanao del Sur (Basak Area Irrigation Project):** This involves development of 12,000 hectares irrigation system and integrated social component project. Net irrigable area is 20,000 hectares of potential agricultural lands.

4. **Diosdado Macapagal Friendship Highway (Barira-Butig-Road):** The road project will start from Sta. 0+000 (Poblacion Barira) going to Sta. 32+000 (Poblacion Butig). Actual road condition from Sta. 0+000 (Poblacion Barira) to Sta 6+000 (Camp Abubakar) which is 6.00 kilometers is an existing gravel road, Sta. 6+000 to Sta. 15+000 (Camp Kararao) which is about 9.00 kms. is trail road section that crosses three rivers (Ambal, Kamagingking, and Banganan rivers) and traverse mountainous/ rolling terrain, Sta. 15+000 to Sta. 19+000 (Camp Busra) with flat terrain and Sta. 19+000 to Sta. 32+000 (Poblacion Butig) which is approximately about 13.00 kilometers (9.00 kms. of which is trail section and 4.00 kms. is gravel road).

5. **Halal Industry Development Program:** It aims to establish hala industry development component that will cater the halal requirements of ARMM people. It involves provision of start-up facilities, equipment and logistics. It focuses on Halal product development and promotion not only at regional but also in the national and international dimensions.

6. **Integrated Agro-Forest Development and Production of High Valued Crops Program:** It includes development of agro-forestry thru reforestation and other environmental preservation. This will also involve planting and production of high value crops, which are important not only to promote living condition of the beneficiaries but also the community residents.

7. **Integrated School Building Program with Facilities for Basic Education:** This will involve provision of school buildings (at least four classrooms per school building with equipment and facilities) to seven (7) divisions of the region. It is intended to have an estimated 350 school buildings at 50SB per division office.

8. **Integrated Community-Based Training and Entrepreneurship Development Program:** The project is focus on relevant skills training to rural folks involving Community-Based Training and Employment Coordinators (CBTECs), which are based in their respective communities. This will also involve provision of basic tools, equipment and starting capital of the project beneficiaries.

9. **Scholarship Program for Bangsamoro Deserving Student:** The project will provide scholarship program for Bangsamoro deserving students within the area of autonomy. This project can help the poor and deserving students to continue their studies in the tertiary level and vocational school thru the scholarship grant assistance.

10. **Improvement of ARMM Ports and Airports:** This involves rehabilitation, upgrading/ improvement of ARMM major ports and airports to support the agri-economic activities in the region. This includes Awang airport, Sanga-Sanga airport, Jolo airport, Polloc port, Basilan-Sulu-Tawi-Tawi Roro, etc.

4) Region X (Northern Mindanao)

The outline of Region X Regional Development Plan (2004-2010) is summarized as follows:

In order to contribute the realization of the 10-Point Legacy of the president administration, the development plan focuses on very specific concerns: job generation, social development, good governance, all to be supported by efficient infrastructure and utilities.

Job Creation and Economic Growth:

The region aims to improve the performance of its agriculture sector through the creation of micro, small and medium agri-based order to provide more sustained and productive employment opportunities to its people. Meanwhile, the industry and service sectors are expected to increase their share of employment pie with more aggressive support to the export, mining and tourism business.

Social Development and Direct Anti-Poverty Measures:

Greater access to improved social services is crucial in ensuring a better quality of life. Though the region has experienced reduction in poverty and subsistence incidence in recent years, the fight against poverty still remains a major focus of development efforts. Specific targets are set to further improve the access to basic education, technical-vocational education and training, higher education, health care and nutrition and housing. Special attention is given to the vulnerable groups such as subsistence farmers, fisher-folk, indigenous groups, poor Muslim communities, etc.

Improved Physical Planning Towards a Sustainable Management of the Environment:

Consistent with the national goal of dispersing development, the region aims to avoid concentration of development to only a few major centers. Thus, it adopts the polycentric development spatial strategy that will encourage the growth of economic and service centers all over the region, and an equitable broad-based economic growth is aimed through decentralized but integrated physical development.

Improved Infrastructure and Logistics Support:

The region's growing economy and population have resulted in an increasing demand for adequate, reliable and efficient support infrastructure and utilities.

To meet this requirement, the region will put in place and improve its infrastructures along transportation, communications, water, power and social facilities.

Good Governance and Peace and Order:

Institution building is vital to the success of region's development efforts, especially along; promoting efficiency and equity in managing resources; improving capacities to address issues on graft and corruption, public safety and security, dispensation of justice, disaster preparedness and response; as well as, sustain the mainstreaming of gender and development in the development process.

5) Region XII (SOCSKSARGEN)

The Region XII Regional Development Plan (2004-2010) is also summarized as follows:

Vision:

By 2030, Region XII is socially and environmentally livable with sustained natural resources; producing globally competitive human resources and agri-industrial and fishery products, particularly tuna, crabs, prawns, high value of crops (asparagus, banana and cut-flowers), and *halal* products; transshipment hub of Southern Philippines; center of eco-tourism; and with united, god-centered and self-reliant people with access to economic opportunities and quality services.

Economic Growth and Job Creation:

a) Macro Economy

Gross Regional Domestic Product: The region aimed to achieve GRDP growth rate of 5.7 % by 2010, from a target level of 4.1 % in 2004, or an average annual growth rate of 4.9 % for the period 2004-2010.

Despite a setback in 2005, the region's actual GRDP average annual growth rate for 2004-2006 was 4.9 %, higher by 0.75 % than the 4.15 % of target for the period. The industry sector posted the highest average growth rate at 6.7 %. The agriculture, fishery and forestry sector, on the other hand, recorded lowest growth at 3.5 %. The services sector grew at an average rate of 5.3 %.

Employment: Labor force participation rate declined from 68.8 % in 2004 to 66.1 % in 2006, posting an average rate of 67.3 %. Employment rate on the other hand, registered an increased trend from 90.4 % in 2004 to 95.3 % in 2006, or an average rate of 93.5 %. The actual employment rate surpassed the targeted rates in the second and third year of plan implementation.

Prices: For the plan period, 2004-2010, the region targeted to keep inflation rate below 5 %. However, in 2004-2006, the annual inflation rates were above target, with an average of 6.2 %for the period.

Poverty: The poverty reduction efforts in the region include the provision of livelihood and micro-financing for the poor; enhancement of the agriculture and fishery sectors through improved irrigation facilities, utilization of updated production technologies, development of micro-small-medium-enterprise, use of high yielding varieties/species, and good post harvest facilities; empowering of poor communities (e.g. KALAHI Program); acceleration of land distribution through the Asset Reform Program; and peace building and conflict preventions.
Region XII remains to be one of the poorest regions in the country, ranking 8th among the 17 regions with the highest poverty incidence.

b) Livelihood: Increasing Investments and Exports to Create Jobs

Investments and Exports: For the period under review, the region's exports remained agriculture-based, with the marine sector accounting for 50 percent of aggregate exports, dominated by canned and fresh tuna having a combined share of 44 percent. Fruits and vegetables (30%) comprised the second major exports, with canned and fresh pineapples accounting for a combined share of 25 percent. On the other hand, resource-based products ranked third (19%) with crude coconut oil accounting for 17 percent of total exports. Industrial and consumer manufactures contributed a meager 1 percent to the regional export trade. Other exports such as beverage and liquors, live animals and personal effects accounted for less than 1 percent.

Total investments for the period 2004-2006 recorded an increasing trend. In 2004, the level of investments reached P2,916 million, which increased to P4,241 million in 2005 posting a 46 percent growth. Investments also increased in 2006 to P5,548 million or 31 percent.

Jobs Generation: The region targeted to generate about 562,160 jobs for 2005-2006 from various investment activities in trade and industry, science and technology, agribusiness, cooperatives, fishery, environment and natural resources, mining, tourism, land reform, infrastructure, housing, roads/bridges and irrigation. However, only the jobs generated in land development for agriculture and fishery, mining and development and irrigation development have been reported, the total of which was 107,034 jobs.

Agribusiness: The fluctuating support for agribusiness land development has affected achievement of the plan targets. Among the other crops targeted for agribusiness land development, vegetables, durian and banana have surpassed the two-year term targets with accomplishment rates of 2,338 percent, 287 percent and 132 percent, respectively.

In terms of cereal production, the region targeted to produce 6 metric tons

of rice per hectare in irrigated areas, 2.4 metric tons of rice per hectare in non-irrigated areas, 1.6 metric tons of white corn per hectare and 4 metric tons per hectare of yellow corn, by 2010. In 2006, irrigated rice lands yielded an average of 3.81 metric tons per hectare, still short by 2.19 metric tons from the target. Meanwhile, the target for non-irrigated areas had been achieved within the 3-year period, with an average yield of 2.76 metric tons per hectare. For yellow corn, the average yield per hectare was 3.33 metric tons nearing the target of 4 metric tons. The target yield per hectare for white corn has been achieved, with the average yield of 2.17 metric tons per hectare for the period.

For agriculture and fishery, a total of 67,070 hectares of lands were developed for agribusiness, marking a 70 percent achievement of plan targets. A total of 98,677 jobs were generated indicating a 198 % achievement of the target number of jobs to be generated.

Environment, Natural Resources and Mining Development: The amelioration of ecosystems remains to be a primary concern of the region. While the environment of urban and industrializing centers of the region is not as seriously degraded as in other centers of the country, focus on the enforcement of regulations are continuously pursued to minimize if not prevent the pressure from increasing population, pervasive poverty and effects of industrialization.

Tourism Development: The region's tourism industry was confronted by concerns on poor access to tourist destination, undeveloped tourism destination, inadequate tour operators, poor tourism facilities and services, lack of local tourism programs and promotional materials, and safety and security concerns. However, the region's tourism industry has grown to a respectable standard with the influx of tourist arrivals increasing steadily in the last five years. From 424,714 in 2002 the figure rose progressively and recorded a high of 627,117 in 2006.

c) Infrastructure and Decentralized Development

The improvement of national roads in the region for the past three years has been unsatisfactory owing to the scrapping of the DPWH allocation for locally funded projects since 2004 until 2006. This allocation was supposed to fund the improvement works for national roads.

Roads and Bridges: The region's performance was relatively better in the construction of bridges along secondary national roads with the completion of five bridges under the President's Bridge Program (PBP), which is assisted by Austria and United Kingdom; and substantially accomplishing another two bridge structures funded locally by DPWH.

Seaports: Pre-construction activities (detailed engineering and bidding) for the expansion of the Gen. Santos City Port were done in 2005 and 2006. The implementation of the civil works started in January 2007 and completion of the project is targeted in CY 2009. The project contract costs to P395 million. Meanwhile, a substantial number of jobs were

generated during the expansion and improvement of the Gen. Santos City Fish-port Complex which was implemented from June 2005 until May 2007. The total Project Contract Cost amounted to P1.38 billion.

Airports: The Department of Transportation and Communications (DOTC) had earlier programmed the full-scale upgrading of the Cotabato/Awang Airport under the Southern Philippines Airport Development Project (SPADP) and subsequently, under the Inter-modal Transport Development Project (ITDP) for ADB assistance when SPADP implementation did not push through. However, DOTC eventually decided to delete airport projects from ITDP and instead proposed these projects solely for GOP funding. Phase 1 of the improvement of the runway of the Cotabato Airport was allocated with P20 million in 2005, and its phase 2 with P25 million in 2006. Phase 1 was completed in October 2006, while phase 2 was completed in May 2007. The improvement of the runway is expected to be completed by the end of 2007.

Digital Infrastructure: In the area of digital infrastructure, mobile phone companies were into construction of cell site towers to expand and improve cellular phone signal. Interconnectivity for information sharing was facilitated with the use of inter-net from various private ISPs and the government through the PREGINET.

Irrigation Development: The construction of the Malitubog-Maridagao Irrigation Project (MMIP) Phase 1 with a total target gross area of 10,840 hectares was supposed to be completed in CY 2005 at a cost of P3.01 billion. As of June 2006, only 6,562 hectares were actually turned-over to the operation of the NIA XII Regional Office; and only about 2,247 hectares were actually irrigated.

Energy Independence and Savings:

A relatively modest performance was noted for energy independence and savings in the past three years (2004-2006). In particular, no accomplishment has been reported on optimizing the Mt. Apo geothermal fields through exploration of other potential wells for development and eventual construction of new power plants to address the continuing rise of power demand in Mindanao.

Social Justice and Basic Needs:

i) Health, Nutrition and Reproductive Health

The region was able to meet the targets for reducing infant mortality and maternal mortality rates, as well as, malnutrition rate among pre-school children during the period. However, there is much to be done in terms of achieving the 2010 targets of 95% coverage of fully immunized children, 85%TB cure rate, and 91% households with access to safe drinking water.

ii) Livelihood and Employment

Programs and projects were implemented to pursue employment generation for the vulnerable sector, particularly the women, youth, persons with disabilities and the OFWs, such as the following: Promotion of Rural Employment through Self-Employment and Entrepreneurship (PRESEED), Women Employment Entrepreneurial Development (WEED), Tulong Alalay sa Taong May Kapansanan (TULAY 2000), OFW GROCERIA PROJECT, SEA-Kaunlaran Association thru Self-Employment Assistance-Kaunlaran (SEA-K) and Tindahan Natin (TN). These projects contributed to the attainment of the targets under livelihood and micro financing specifically the number of trainings conducted and number of beneficiaries, respectively.

iii) Access to Land and Land Rights

Agrarian Reform: For the period 2004-2006, around 50,859 hectares were distributed under the Land Tenure Improvement, which benefited some 27 thousand farmers beneficiaries (FBs). Support services were given to the beneficiaries under the Program Beneficiaries Development like marketing assistance, credit assistance, Kalahi Farmer Centers, basic social services, capacity building trainings and infrastructure projects.Likewise, agrarian legal assistance and adjudication of agrarian cases are extended to landowners and farmer-benefiaciaries.

Ancestral Domain Reforms: The region achieved modest improvements in the implementation of programs and projects for indigenous cultural communities (ICCs) such as the Titling of Ancestral Domain Land Claims, conduct of survey to a number of CALTs and issuance of Certificate of Ancestral Domain Titles to IPs.

However, efforts have to be intensified to be able to meet its target by 2010, particularly in the formulation of the Ancestral Domain Sustainable Development Protection Plan (ADSDPP), which provides the basis for the convergence of efforts of the government and other development entities in pursuing strategic/program interventions that would empower the indigenous groups.

iv) Protecting the Vulnerable Groups

The region continued to provide services through the implementation of existing laws and various programs and projects which were all aimed at improving the conditions of children in need of special protection (CNSP), women in especially difficult circumstances (WEDC), and youthful offenders (YOs). Various assistance and services were also provided to family victims of disaster of natural and man-made calamities in the region.

v) Empowering Poor Communities

With the successful pilot implementation of the KALAHI-CIDSS Program over the past three years as a flagship project of the national government

for poverty reduction, the World Bank has committed additional funding support for the expansion of the KALAHI-CIDSS implementation in the region. The program has been implemented on a pilot basis in three municipalities of the region, namely, Arakan (28 barangays) in Cotabato, Malungon (31 barangays) and Malapatan (6 barangays) in Sarangani. With the additional funding support from the World Bank, expansion of the program has been focused in sixteen barangays (16) barangays of Columbio, Sultan Kudarat Province and nineteen (19)barangays of Lake Sebu, South Cotabato Province.

Education and Youth Opportunities:

i) Early Childhood and Basic Education

Early Childhood Education: As of 2006, out of the 1,194 barangays in the region, 1,043 have already established day care centers. However, there is still a need to increase access of young children in remote and underserved communities to early childhood care and development services, particularly in the remaining 151 barangays without day care centers. Also needing improvement are the quality of early childhood development programs, materials and facilities. Corollary to this need would be the development of more qualified and competent early childhood development workers.

Elementary and Secondary Education: Low and declining levels of educational performance, particularly in public schools, point to a low probability of the attainment of universal access to primary education in Region XII in the next three years. There is a need to improve the holding power and internal efficiency of schools considering the low levels of cohort survival rates and completion rates, as well as, high dropout rates. There is low school preparedness among young entrants to Grade 1.

Resources for Basic Education: There was a very slight improvement in the teacher-pupil ratio both in the elementary and secondary levels. To address the imbalance in teacher deployment, new teaching positions were created and vacant positions were transferred. The appointment of new teaching positions and redeployment of teachers were based on the Teacher Deployment Analysis.

ii) Technical-Vocational Education and Training

In Region XII, there are 132 TVET public institutions supervised by TESDA and accredited private institutions that provide school-based and non-school based training and skills development programs for skilled employment. The total number of enrollees and graduates from these TVET institutions registered a growth rate of 26.9 % and 24 %, respectively, during the past three years. Intensive direct assistance to less privileged and poor families through scholarships has been increased. For 2004-2006, a total of 2,660 PESFA slots and 1,023 slots for TESDP-ADB were granted to Region XII.

iii) Higher Education

Access to Higher Education: For the period 2004-2006, the number of higher education institutions (HEIs) established in Region XII registered an average growth rate of 0.83 %. However, a decline by 4.22 %in the number of HEIs was recorded in SY 2005-2006, as a result of the cessation in the operations of some institutions due to financial constraints. However, in the following year, four institutions had been established.

State Universities and Colleges (SUCs): The SUCs in Region XII, namely, Mindanao State University-General Santos City Campus, Cotabato State Polytechnic College, Sultan Kudarat Polytechnic College, University of Southern Mindanao, and Cotabato Foundation College of Science and Technology continued to provide quality education through their mandated functions of instruction, research, extension and production, They continue to play a catalytic role as knowledge institutions producing globally competitive, culture sensitive and morally responsive human resources for development.

Rationalizing Governance and Financing Higher Education: The gradual reduction of national government funding support to state universities and colleges posed a challenge to state-run institutions to undertake income-generating programs/projects (IGPs) to augment income for their operations. Hence, state universities and colleges, in addition to regular appropriations of the national government, generated local funds from development projects.

Good Governance:

Despite fiscal constraints for the implementation of programs and projects, the region has moved closer toward its goal of institutionalizing reforms in bureaucracy.

Reforms in Institutions: The region's stride towards eliminating graft and corruption is difficult to assess given the absence of official reports on cases filed against erring officials or the actions taken by concerned agencies on these cases. However, line agencies and local government units sustained their efforts in promoting efficient and effective governance; and conducted about 2,364 trainings along this line. Examinations professionalizing the government workforce were regular conducted. Also, efforts were pursued toward strengthening regional and local development and special bodies; expansion of the utilization of information and communications technology to improve delivery of services; mainstreaming gender and development, disaster risk management, and other recent development concerns in planning and governance.

Utilization of Information and Communication Technology (ICT): The utilization of ICT is a useful mechanism to attain well-coordinated and

well-planned development efforts at all levels of governance. This enhances productivity, efficiency and effectiveness of government operations. During the last three years the Region XII has been moving on towards technology modernization. Although not all of the regional line agencies and LGUs of the region have attained a 1:1 computer-personnel ratio, most are already inter-net connected. At the same time, most of the government workers at all level of governance has availed of ICT-related trainings.

Peace, Security and Administration of Justice: The keen vigilance of the law enforcement agencies and peace and development councils in the region and the implementation of livelihood and peace-promoting programs and projects contributed significantly to attaining a generally stable peace and order situation in the region. Cases reported on human rights violations have been pursued and legal assistance were provided to those in need.

7.2 REGIONAL DEVELOPMENT ISSUES

Regional development issues are summarized as follows:

7.2.1 Autonomous Region of Muslim Mindanao (ARMM)

a. Low Production and Poor Quality of Agri-Fishery Product

The region as an agri-based economy is presently confronted with low production and poor quality of agri-fishery products. This problem is caused by high cost of inputs, poor technology adoption and farming practices, and laxity of policy implementation. Adoption of appropriate technology is minimal.

b. Low Productivity in Aquaculture

This is due to inadequate pre- and post-harvest facilities, low/poor technology application, high cost of inputs in aquaculture, low infusion of capital. Poor marketing and pricing plus lack or inadequate infrastructure support facilities and utilities, like farm to market road, irrigation and poor training and extension services by the government contributed to this condition.

c. Slow Pace in Land Tenure Improvement and Development

The region has vast Alienable and Disposable (A & D) land, both public and privately owned lands up for distribution and yet land tenure improvement through distribution and provision of services is very slow as reported. These A & D land, if distributed well, can be developed and utilized for the production of rice and corn.

d. Low Level of Investment

Low level of investment in ARMM causes from poor infrastructure and utilities. This is compounded by poor access to credit and relatively unstable peace and order condition.

Despite the presence of a numerous industries in the region such as banana production, corn and cassava starch processing, coco-oil-milling, garment making, plywood and wood product making, additional investments are still needed in order to provide jobs and adequate income to the people.

e. Environment and Natural Resources Development

Environment and natural resources development is a concern for ARMM stakeholders because of frequent flooding in Maguindanao. The unabated destruction of coastal resources and fish sanctuaries, deforested watersheds, and illegal logging aggravate the situation. Poor implementation of regulatory policies owing to "non priority" stance of the agency and local government units contribute to the problems.

f. Economic Activities Affected by Peace and Order Situation

The isolated collision of armed elements in some areas in the region has brought negative image in the minds of other people from other regions in the country and in foreign countries that affects the economic activities and flow of investments in the region.

g. Inadequate Commitment and Support from the Implementers of Programs/ Projects

Some local officials and political leaders do not have strong determination in the implementation of projects in some areas in the region especially in the remote areas.

h. *Halal* Industry Advocacy

While Halal industry in the region is one of the top priorities of the current administration, there is still a need to heighten the level of awareness and promotion of the industry.

i. Clear Link of Regional, Provincial and LGU plans

Component provinces and cities have yet to craft their respective Provincial Physical Framework Plan (PPFP) in accordance with the regional physical framework plan, while the proper anchoring of the Comprehensive Land Use Plan (CLUP) to PPFPs and Comprehensive Development Plan (CDP) to CLUP remain to be done.

j. Environmental Degradation

The continuous degradation of forest cover in the region emanated from frequent flooding, unabated destruction of coastal resources and fish sanctuaries, deforested watersheds, and illegal logging aggravated the environment and natural resources situation in the region.

k. Limited and Small Scale Infrastructure and Logistics

While substantial number of projects has been implemented for the past years, it is way behind the requirement of the region. Some is hard to reach areas still lack basic infrastructure. Also, most of the projects implemented are small scale in nature that is intended as immediate response to rehabilitate conflict affected areas. Medium to large-scale projects in support to economic activities are still wanting.

l. Participation of Private Sector and Civil Society

Meaningful participation and collaboration with private sector and civil society in the region remains also a challenge. Annual and medium-term plans of the region are largely public sector led and the private sector/civil society contribution is rarely seen.

7.2.2 Region XII SOCSKSARGEN

For Region XII, despite the many opportunities in agribusiness, the following challenges continue to hamper the growth of the sector:

a. Low Productivity and Poor Quality of Agri-Fishery Product

The region as an agri-based economy is presently confronted with low production and poor quality of agri-fishery products. This problem is caused by high cost of inputs, poor technology adoption and farming practices, and laxity of policy implementation. Adoption of appropriate technology is minimal. There is also the problem of inadequate pre- and post-harvest facilities, low infusion of capital, poor marketing and pricing plus lack or inadequate infrastructure support like farm to market road, irrigation and poor training and extension services by the government.

b. High Production Cost

As in the case of many farmers nationwide, the farmers in Region XII similarly are struggling with the high cost in farm inputs such as fertilizers, seeds, pesticides, and herbicides, among others. One problem is that such inputs are not always available in the area, thus triggering high prices.

The high costs of production are further exacerbated by the lack of capital impeding small farmers to engage in productive farming. In some cases, capital is available but the high interest rates have been a disincentive for farmers to borrow.

c. Conflicting Policies Governing Critical Development Activities such as Land Use Policies

The strict enforcement of policy on non-conversion of prime agricultural lands is being pursued. Potential agricultural areas are being identified to protect these from conversion.

d. Inadequate Infrastructure Support Facilities

Low rate of irrigation development and poor maintenance of irrigation facilities: This is one of the priority undertakings in the region with the fast tracking of on-going and new projects.

e. Unstable Peace and Order

Like in the case of ARMM, the occurrences of conflicts in certain parts of the region have served as disincentive to potential investors in establishing agribusiness enterprises. While there are many opportunities for such enterprises, still the inflow or infusion of investments in the region remains greatly affected by notion of conflicts in some areas.

f. Lack of Capability of Some Local Government Units for Local Development Planning and Good Governance

There is a need to capacitate LGU staff and personnel on development planning, good governance, and project development.

7.3 FUTURE REGIONAL DEVELOPMENT SCENARIO

7.3.1 Overall Mindanao Regional Development Concept

In due consideration of present economic performance, accumulation of facilities, land uses, potential of land, etc, overall Mindanao regional development concept is shown in **Figure 7.3.1-1**.

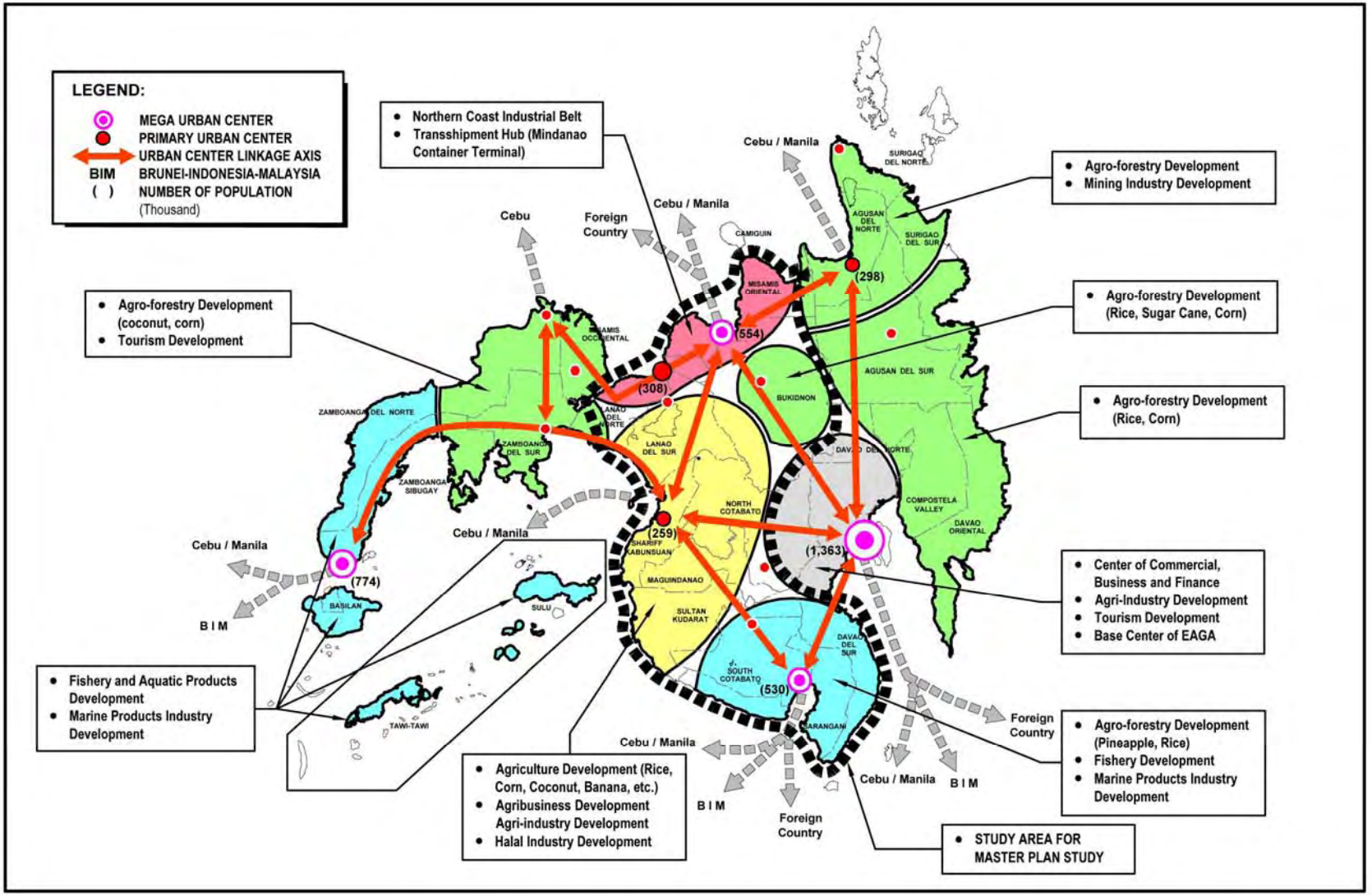


FIGURE 7.3.1-2 OVERALL MINDANAO REGIONAL DEVELOPMENT CONCEPT

7.3.2 Regional Development Goals and Strategies

Based on the understandings of several existing national/regional plans and development issues described above, regional development goals and strategies were established as shown in **Figure 7.3.1-2**.

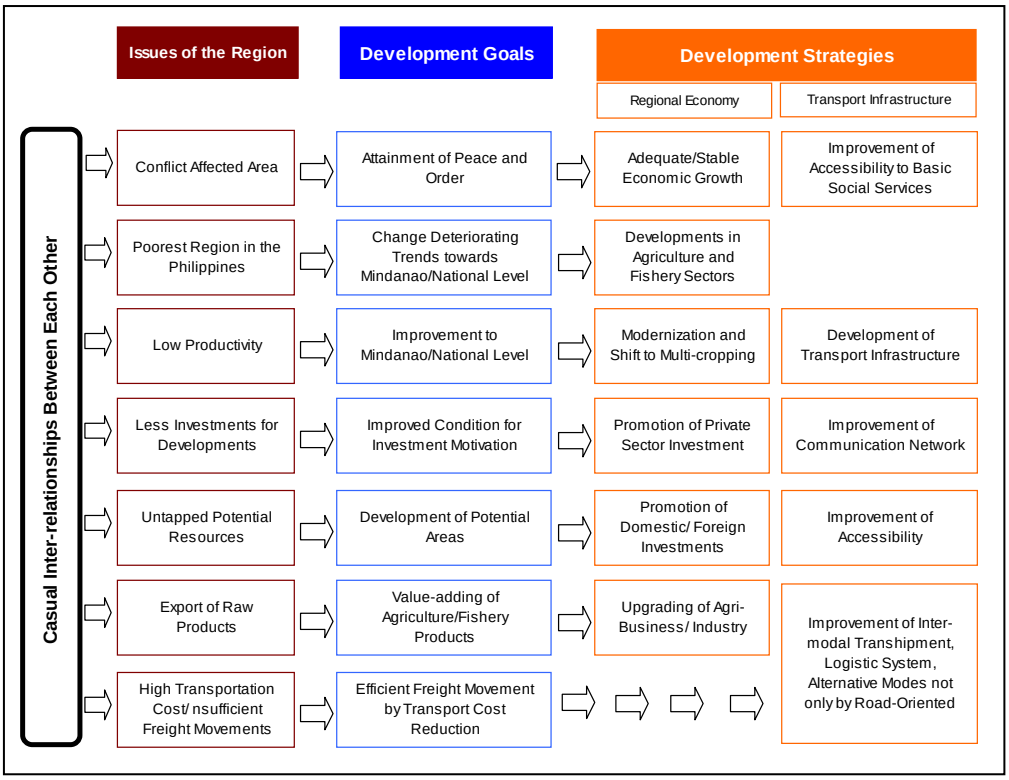


FIGURE 7.3.1-2 REGIONAL DEVELOPMENT GOALS AND STRATEGY

7.3.3 Future Socio-Economic Framework

In order to accomplish the above-mentioned regional developments, necessary and possible growths both in population and Gross Regional Domestic Products (GRDP) were estimated as basic indices.

Growth rates both in population and GRDP by Region/Province were estimated based on 'existing trends', 'forecasts in various existing authorized regional development plans' and 'proposed development scenarios in this study'.

1) Population

As the population trends in the Study Area were analyzed in Chapter 3 based on the population census data since 2000, future estimations were examined mainly based on the following points:

- General increasing trends in the study Area will continue even in future.
- Quite high increases in some provinces from 2000 to 2007 will be

moderated gradually in future.

- Population growth rate after 2020 will become almost same as to national average

The total populations of the Study Area are estimated to be 15.1million in 2015 (1.2 times of 2007), 16.9million in 2020 (1.34 times) and 18.7million in 2025 (1.49 times), respectively as shown in **Table 7.3.3-1**.

TABLE 7.3.3-1 FUTURE FORECASTED POPULATION

Region / Province	2007	2015	2020	2025
ARMM	**4,120,795**	**5,022,700**	**5,625,500**	**6,235,400**
Basilan	408,520	501,400	539,900	598,400
Lanao del Sur	1,138,544	1,338,300	1,468,300	1,627,500
Maguindanao	710,829	946,200	1,098,500	1,217,600
Shariff Kabunsuan	562,886	699,900	778,500	862,900
Sulu	849,670	970,700	1,055,500	1,169,900
Tawi-Tawi	450,346	566,200	684,800	759,100
Region X (Study Area only)	**3,339,464**	**3,968,300**	**4,409,300**	**4,887,400**
Bukidnon	1,190,284	1,430,400	1,623,000	1,799,000
Lanao del Norte	846,329	966,500	1,033,100	1,145,100
Misamis Oriental	1,302,851	1,571,400	1,753,200	1,943,300
Region XII	**5,125,877**	**6,143,800**	**6,844,900**	**7,587,000**
North Cotabato	1,121,974	1,753,800	1,917,700	2,125,700
Sarangani	475,514	742,800	817,800	906,500
South Cotabato	1,296,796	2,107,700	2,411,300	2,672,700
Sultan Kudarat	675,644	1,055,600	1,166,600	1,293,100
Cotabato City	259,153	483,800	531,400	589,100
Study Area Total	**12,586,136**	**15,134,800**	**16,879,700**	**18,709,800**

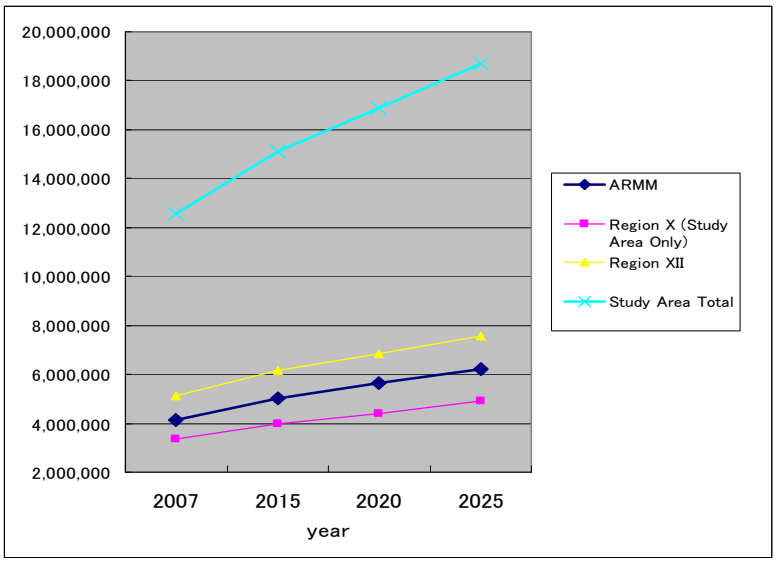


FIGURE 7.3.3-1 FUTURE POPULATION PROJECTIONS BY REGION

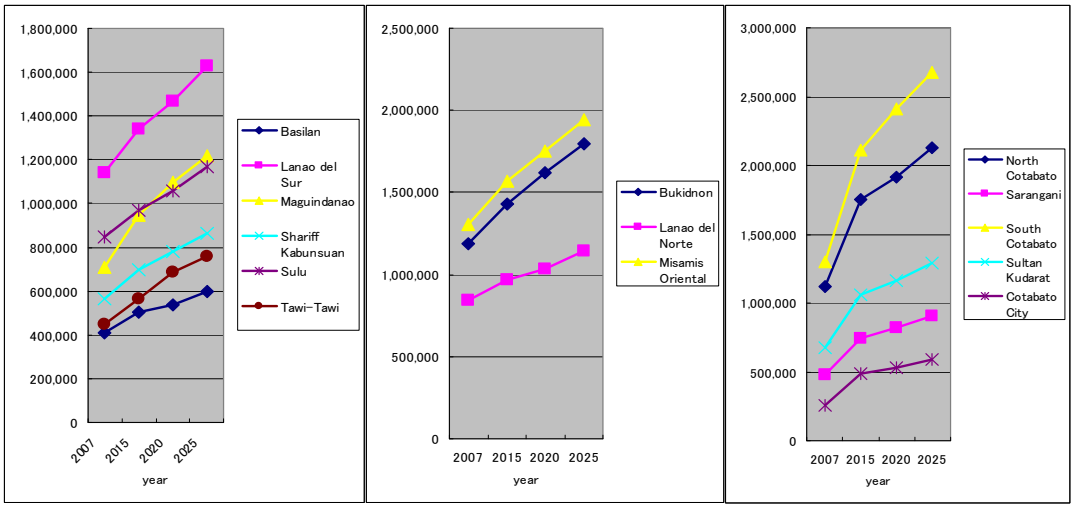


FIGURE 7.3.3-2, -3 & -4 FUTURE POPULATION PROJECTIONS BY PROVINCE

Population growth rates in the past and projected are shown in **Table 7.3.3-2**.

TABLE 7.3.3-2 COMPARISON OF POPULATION GROWTH RATES

Region	Actual Growth Rate (%)				Study Team's Assumption		
	1980-1990	1990-1995	1995-2000	2000-2007	2007-2015	2015-2020	2020-2025
ARMM	2.99	2.32	3.48	5.66	2.51	2.29	2.08
Region X	2.36	2.60	1.98	1.81	2.18	2.13	2.08
Region XII	3.37	3.48	2.65	2.46	2.29	2.19	2.08
Study Area Total			**2.67**	**3.23**	**2.33**	**2.21**	**2.08**
Philippines Total	2.35	2.48	2.15	2.15	2.08 (by NSC based on 2000 Census)		

2) GRDP

Existing data on GRDP trends by sector is available only by region, not by province. Therefore, future projections were also made by region.

An examination was carried out based on the assumption that all of the Study Area will be developed in future keeping a balance each other in accordance with the proposed development scenarios. The results are summarized in the **Figures 6.3.3-5, -6** and **-7** and **Table 7.3.3-3**.

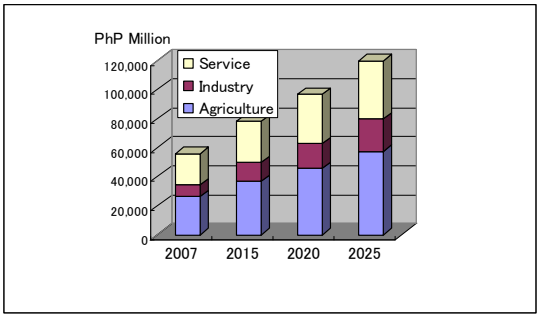


FIGURE 7.3.3-5 PROJECTED GRDPS, ARMM

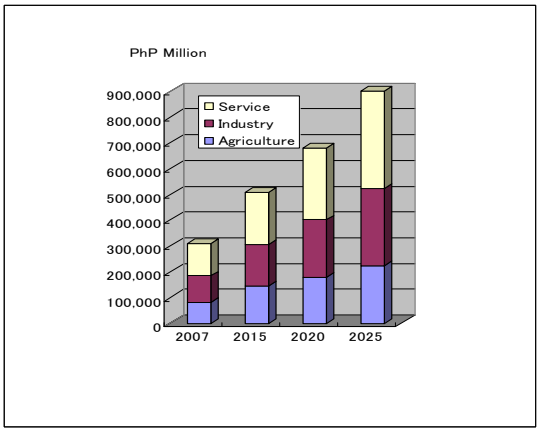


FIGURE 7.3.3-6 PROJECTED GRDPS, REGION X

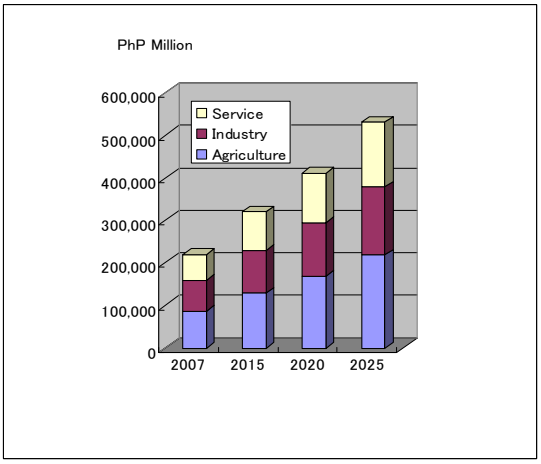


FIGURE 7.3.3-7 PROJECTED GRDPS, REGION XII

TABLE 7.3.3-3 PROJECTED GRDP BY REGION

Unit: Million PhP

ARMM					Comparison	Composition
	2007	2015	2020	2025	2025/2007	in 2025 (%)
Agriculture	26,315	37,078	46,025	57,616	2.19	47.4
Industry	8,320	12,539	16,615	22,200	2.67	18.3
Service	21,248	28,684	34,471	41,780	1.97	34.4
Total	57,890	78,300	97,110	121,597	2.10	100.0
Region X						
Agriculture	81,478	143,640	179,629	223,327	2.74	24.6
Industry	102,686	162,611	221,499	300,005	2.92	33.0
Service	126,021	201,208	277,966	385,449	3.06	42.4
Total	310,186	507,459	679,094	908,781	2.93	100.0
Region XII						
Agriculture	86,944	129,013	168,886	218,688	2.52	41.1
Industry	72,432	101,051	125,629	159,854	2.21	30.1
Service	60,945	90,697	116,495	153,136	2.51	28.8
Total	220,322	320,761	411,009	531,679	2.41	100.0