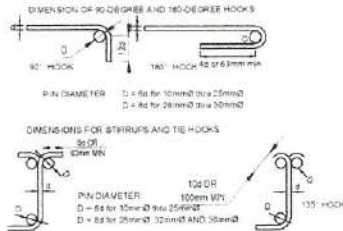


CONSTRUCTION REQUIREMENT

- C. **BENDING** - ALL REINFORCING BARS REQUIRING BENDING SHALL BE COLD-BENT TO THE SHAPES SHOWN ON THE PLANS OR AS REQUIRED BY THE ENGINEER. BARS SHALL BE BENT AROUND A CIRCULAR PIN HAVING THE FOLLOWING DIAMETERS (D) IN RELATION TO THE NOMINAL DIAMETER OF THE BAR (D):



NOTES:
BENDS AND HOOKS IN STIRRUPS OR TIES MAY BE BENT TO THE DIAMETER OF THE REINFORCING BAR ENCLOSED THEREIN.

- D. **PLACING AND FASTENING** - ALL STEEL REINFORCEMENT SHALL BE ACCURATELY PLACED IN THE POSITION SHOWN ON THE PLANS OR AS REQUIRED BY THE ENGINEER AND FIRMLY HELD THERE DURING THE PLACING AND SETTING OF THE CONCRETE. BARS SHALL BE TIED AT ALL INTERSECTIONS EXCEPT WHERE SPACING IS LESS THAN 300 MM IN EACH DIRECTION, IN WHICH CASE, ALTERNATE INTERSECTIONS SHALL BE TIED. TIES SHALL BE FASTENED ON THE INSIDE. DISTANCE FROM THE FORMS SHALL BE MAINTAINED BY MEANS OF STAYS, BLOCKS, TIES, HANGERS, OR OTHER APPROVED SUPPORTS, SO THAT IT DOES NOT VARY FROM THE POSITION INDICATED ON THE PLANS BY MORE THAN 6MM. BLOCKS FOR HOLDING REINFORCEMENT FROM CONTACT WITH THE FORMS SHALL BE PRECAST MORTAR BLOCKS OF APPROVED CONTACT WITH THE FORMS. LAYERS OF BARS SHALL BE SEPARATED BY PRECAST MORTAR BLOCKS OR BY OTHER EQUALLY SUITABLE DEVICES. THE USE OF PEBBLES, PIECES OF BROKEN STONE OR BRICK, METAL PIPE AND WOODEN BLOCKS SHALL NOT BE PERMITTED, UNLESS OTHERWISE SHOWN ON THE PLANS OR AS REQUIRED BY THE ENGINEER. THE MINIMUM DISTANCE BETWEEN BARS SHALL BE 40 MM. REINFORCEMENT IN ANY MEMBER SHALL BE PLACED AND THEN INSPECTED AND APPROVED BY THE ENGINEER BEFORE THE PLACING OF CONCRETE BEGINS. CONCRETE PLACED IN VIOLATION OF THIS PROVISION MAY BE REJECTED AND REMOVAL MAY BE REQUIRED. IF FABRIC REINFORCEMENT IS SHIPPED IN ROLLS, IT SHALL BE STRAIGHTENED BEFORE BEING PLACED. BUNDLED BARS SHALL BE TIED TOGETHER AT NOT MORE THAN 1.8 M INTERVALS.
- E. **SPlicing** - ALL REINFORCEMENT SHALL BE FURNISHED IN THE FULL LENGTHS INDICATED ON THE PLANS. SPlicing OF BARS, EXCEPT WHERE SHOWN ON THE PLANS, WILL NOT BE PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. SPlices SHALL BE STAGGERED AS FAR AS POSSIBLE AND WITH A MINIMUM SEPARATION OF NOT LESS THAN 40 BAR DIAMETERS, NOT MORE THAN ONE-THIRD OF THE BARS MAY BE SPliced IN THE SAME CROSS-SECTION, EXCEPT WHERE SHOWN ON THE PLANS. UNLESS OTHERWISE SHOWN ON THE PLANS, BARS SHALL BE LAPPED A MINIMUM DISTANCE OF:

SPlice TYPE	GRADE 280	GRADE 420	BUT NOT LESS THAN
TENSION	24 BAR DIA	36 BAR DIA	300 MM
COMPRESSION	20 BAR DIA	24 BAR DIA	300 MM

IN LAPPED SPICES, THE BARS SHALL BE PLACED IN CONTACT AND WIRED TOGETHER. LAPPED SPICES WILL NOT BE PERMITTED AT LOCATIONS WHERE THE CONCRETE SECTION IS INSUFFICIENT TO PROVIDE MINIMUM CLEAR DISTANCE OF ONE AND ONE-THIRD THE MAXIMUM SIZE OF COARSE AGGREGATE BETWEEN THE SPICE AND THE NEAREST ADJACENT BAR. WELDING OF REINFORCING STEEL SHALL BE DONE ONLY IF DETAILED ON THE PLANS OR IF AUTHORIZED BY THE ENGINEER IN WRITING. SPIRAL REINFORCEMENT SHALL BE SPliced BY LAPPING AT LEAST ONE AND A HALF TURNS OR BY BUTT WELDING UNLESS OTHERWISE SHOWN ON THE PLANS.

17. STRUCTURAL CONCRETE

- A. **PROPORTIONING AND STRENGTH OF STRUCTURAL CONCRETE** - THE CONCRETE MATERIALS SHALL BE PROPORTIONED IN ACCORDANCE WITH THE REQUIREMENTS FOR EACH CLASS OF CONCRETE AS SPECIFIED IN TABLE 405.2, USING THE ABSOLUTE VOLUME METHOD AS OUTLINED IN THE AMERICAN CONCRETE (ACI) STANDARD 211.1. "RECOMMENDED PRACTICE FOR SELECTING PROPORTIONS FOR NORMAL AND HEAVYWEIGHT CONCRETE". OTHER METHODS OF PROPORTIONING MAY BE EMPLOYED IN THE MIX DESIGN WITH PRIOR APPROVAL OF THE ENGINEER. THE MIX SHALL EITHER BE DESIGNED OR APPROVED BY THE ENGINEER.

A CHANGE IN THE SOURCE OF MATERIALS DURING THE PROGRESS OF WORK MAY NECESSITATE A NEW MIX DESIGN. THE STRENGTH REQUIREMENTS FOR EACH CLASS OF CONCRETE SHALL BE AS SPECIFIED IN TABLE 405.2.

TABLE 405.2 - COMPOSITION AND STRENGTH OF CONCRETE FOR USE IN STRUCTURES

CLASS OF CONCRETE	MINIMUM CEMENT CONTENT PER M3 (KG/M ³) ("BAGS")	MAXIMUM WATER/CEMENT RATIO	CONSISTENCY RANGE SLUMP	DESIGNATED IN SIZE OF COARSE AGGREGATE	MINIMUM COMPRESSIVE STRENGTH OF 150X300 MM CONCRETE CYLINDER SPECIMEN AT 28 DAYS, MM/m ²
A	364 (9.1 BAGS)	0.53	50 - 100	37.5 - 4.75 (1-1/2" - NO. 4)	20.7
B	320 (8 BAGS)	0.58	50 - 100	50 - 4.75 (2" - NO. 4)	16.5
C	380 (9.5 BAGS)	0.55	50 - 100	12.5 - 4.75 (1/2" - NO. 4)	20.7
P	440 (11 BAGS)	0.49	100 MAX	19.0 - 4.75 (3/4" - NO. 4)	37.7
SEAL	380 (9.5 BAGS)	0.58	100 - 200	25 - 4.75 (1" - NO. 4)	20.7

* THE MEASURED CEMENT CONTENT SHALL BE WITHIN PLUS OR MINUS 2 MASS PERCENT OF THE DESIGN CEMENT CONTENT.
** BASED ON 40 KG/BAG

- B. **CONSISTENCY** - CONCRETE SHALL HAVE A CONSISTENCY SUCH THAT IT WILL BE WORKABLE IN THE REQUIRED POSITION. IT SHALL BE OF SUCH A CONSISTENCY THAT IT WILL FLOW AROUND REINFORCING STEEL BUT INDIVIDUAL PARTICLES OF THE COARSE AGGREGATE WHEN ISOLATED SHALL SHOW A COATING OF MORTAR CONTAINING IT PROPORTIONATE AMOUNT OF SAND. THE CONSISTENCY OF CONCRETE SHALL BE GAUGED BY THE ABILITY OF THE EQUIPMENT TO PROPERLY PLACE IT AND NOT BY THE DIFFICULTY IN MIXING AND TRANSPORTING. THE QUANTITY OF MIXING WATER SHALL BE DETERMINED BY THE ENGINEER AND SHALL NOT BE VARIED WITHOUT HIS CONSENT. CONCRETE AS DRY AS IT IS PRACTICAL TO PLACE WITH THE EQUIPMENT SPECIFIED SHALL BE USED.
- C. **BATCHING** - MEASURING AND BATCHING OF MATERIALS SHALL BE DONE AT A BATCHING PLANT.
- D. **MIXING AND DELIVERY** - CONCRETE MAY BE MIXED AT THE SITE OF CONSTRUCTION, AT A CENTRAL POINT OR BY A COMBINATION OF CENTRAL POINT AND TRUCK MIXING OR BY A COMBINATION OF CENTRAL POINT MIXING AND TRUCK AGITATING. MIXING AND DELIVERY OF CONCRETE SHALL BE IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS OF AASHTO M 157 EXCEPT AS MODIFIED IN THE FOLLOWING PARAGRAPHS OF THIS SECTION, FOR TRUCK MIXING OR A COMBINATION OF CENTRAL POINT AND TRUCK MIXING OR TRUCK AGITATING. DELIVERY OF CONCRETE SHALL BE REGULATED SO THAT PLACING IS AT A CONTINUOUS RATE UNLESS DELAYED BY THE PLACING OPERATIONS. THE INTERVALS BETWEEN DELIVERY OF BATCHES SHALL NOT BE SO GREAT AS TO ALLOW THE CONCRETE IN PLACE TO HARDEN PARTIALLY, AND IN NO CASE SHALL SUCH AN INTERVAL EXCEED 30 MINUTES.

18. DRAINAGE STRUCTURES

- A. EXACT LOCATIONS, SLOPES, OUTFALL AND INVERT ELEVATIONS OF DRAINAGE STRUCTURES SHALL BE CHECKED IN THE FIELD. ADJUSTMENT MAY BE MADE TO SUIT ACTUAL FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
- B. EXISTING DRAINAGE STRUCTURES OR PARTS THEREOF REMOVED BY THE CONTRACTOR WHICH ARE STILL SERVICEABLE SHALL BE DEPOSITED AT A PLACE DESIGNATED BY THE ENGINEER WITHIN THE PROJECT SITE WITHOUT ANY COMPENSATION. EXTREME PRECAUTIONS SHALL BE EXERCISED BY THE CONTRACTOR SO AS NOT TO DAMAGE THESE MATERIALS DURING THE REMOVAL AND HANDLING.
- C. PORTIONS OF EXISTING UTILITIES SUCH AS WATER MAINS, IRRIGATION CHANNELS, TELEPHONE POSTS AND TRUNK LINE ETC. THAT MAY CAUSE OBSTRUCTION TO THE CONSTRUCTION OWNER CONCERNED EXTREME PRECAUTION SHALL BE EXERCISED BY THE CONTRACTOR NOT TO DAMAGE ANY SECTION OF THE EXISTING PUBLIC UTILITIES DURING CONSTRUCTION. ANY REPAIR OF DAMAGE HEREOF SHALL BE ON THE ACCOUNT OF THE CONTRACTOR. ANY REMOVAL OF THE MISCELLANEOUS STRUCTURES THAT MAY BE REQUIRED SHALL BE SUBSIDIARY WORK PERTAINING TO OTHER CONTRACT ITEM. NO DIRECT PAYMENT SHALL BE MADE FOR THIS EXCEPT FOR SPECIFIC ITEMS EXPLICITLY IDENTIFIED FOR PAYMENT IN THE BID SCHEDULE.

19. STONE MASONRY

- A. **THE STONE** SHALL BE CLEAN, HARD, AND DURABLE AND SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL. ADOBE STONE SHALL NOT BE USED UNLESS OTHERWISE SPECIFIED.
- B. STONES SHALL HAVE A THICKNESS OF NOT LESS THAN 150 MM, AND WIDTHS OF NOT LESS THAN ONE AND ONE-HALF TIMES THEIR RESPECTIVE THICKNESS, AND LENGTHS OF NOT LESS THAN ONE AND ONE-HALF TIMES THEIR RESPECTIVE WIDTHS. FACE STONES SHALL BE DRESSED TO PROVIDE BED AND JOINT LINES THAT DO NOT VARY MORE THAN 20 MM FROM THE TRUE LINES AND TO ENSURE THE MEETING OF BED AND JOINT LINES WITHOUT THE ROUNDING OF CORNERS OF THE STONES IN EXCESS OF 30 MM IN RADIUS. BED SURFACES OF THE FACE STONES SHALL BE APPROXIMATELY NORMAL TO THE FACE OF THE STONES FOR ABOUT 80 MM AND FROM THIS POINT MAY DEPART FROM A NORMAL PLANE NOT TO EXCEED 50 MM IN 300 MM. FACE STONES SHALL BE PITCHED TO THE LINE ALONG THE BEDS AND JOINTS. THE MAXIMUM PROJECTION OF ROCK FACES BEYOND THE PITCH LINES SHALL NOT BE MORE THAN 50 MM.
- C. **CEMENT, FINE AGGREGATE, AND WATER** SHALL CONFORM TO THE RESPECTIVE REQUIREMENTS FOR THOSE MATERIALS AS SPECIFIED UNDER ITEM 405, STRUCTURAL CONCRETE, EXCEPT AS TO THE GRADING OF FINE AGGREGATE WHICH SHALL ALL PASS THE 2.36 MM (NO. 8) SIEVE, NOT LESS THAN 15 NOR MORE THAN 40 PERCENT SHALL PASS THE 0.3 MM (NO. 50) SIEVE, AND NOT MORE THAN 10 PERCENT SHALL PASS THE 0.15 MM (NO. 100) SIEVE.
- D. **THE MORTAR** FOR THE MASONRY SHALL BE COMPOSED OF ONE PART OF PORTLAND CEMENT AND TWO PARTS OF FINE AGGREGATE BY VOLUME AND SUFFICIENT WATER TO MAKE THE MORTAR OF SUCH CONSISTENCY. MORTAR THAT IS NOT USED WITHIN 90 MINUTES AFTER THE WATER HAS BEEN ADDED SHALL BE DISCARDED. ALL STONES SHALL BE CLEANED THOROUGHLY AND WETTED IMMEDIATELY BEFORE BEING SET AND THE BED WHICH IS TO RECEIVE THEM SHALL BE CLEANED AND MOISTENED BEFORE THE MORTAR IS SPREAD. THEY SHALL BE LAID WITH THEIR LONGEST FACES HORIZONTAL IN FULL BEDS OF MORTAR, AND THE JOINTS SHALL BE FLUSHED WITH MORTAR. THE EXPOSED FACES OF INDIVIDUAL STONES SHALL BE PARALLEL TO THE FACES OF THE WALLS IN WHICH THE STONES ARE SET.
- E. **SELECTION AND PLACING** IS WHEN THE MASONRY IS TO BE PLACED ON A PREPARED FOUNDATION BED. THE BED SHALL BE FIRM AND NORMAL TO, OR IN STEPS NORMAL TO, THE FACE OF THE WALL, AND SHALL HAVE BEEN APPROVED BY THE ENGINEER BEFORE ANY STONE IS PLACED. CARE SHALL BE TAKEN TO PREVENT THE BUNCHING OF SMALL STONE OR STONES OF THE SAME SIZE. LARGE STONES SHALL BE USED IN THE CORNERS. ALL STONES SHALL BE CLEANED THOROUGHLY AND WETTED IMMEDIATELY BEFORE BEING SET, AND THE BED WHICH IS TO RECEIVE THEM SHALL BE CLEANED AND MOISTENED BEFORE THE MORTAR IS SPREAD. THEY SHALL BE LAID WITH THEIR LONGEST FACES HORIZONTAL IN FULL BEDS OF MORTAR, AND THE JOINTS SHALL BE FLUSHED WITH MORTAR. THE EXPOSED FACES OF INDIVIDUAL STONES SHALL BE PARALLEL TO THE FACES OF THE WALLS IN WHICH THE STONES ARE SET. THE STONES SHALL BE SO HANDLED AS NOT TO JAR OR DISPLACE THE STONES ALREADY SET. SUITABLE EQUIPMENT SHALL BE PROVIDED FOR SETTING STONES LARGER THAN THOSE THAT CAN BE HANDLED BY TWO MEN. THE ROLLING OR TURNING OF STONES ON THE WALLS WILL NOT BE PERMITTED. IF A STONE IS LOOSEENED AFTER THE MORTAR HAS TAKEN INITIAL SET, IT SHALL BE REMOVED, THE MORTAR CLEANED OFF, AND THE STONE RELAID WITH FRESH MORTAR.
- F. **BED AND JOINTS** - BEDS FOR FACE STONES MAY VARY FROM 20 MM TO 50 MM IN THICKNESS. THEY SHALL NOT EXTEND IN AN UNBROKEN LINE THROUGH MORE THAN 6 STONES. JOINTS MAY VARY FROM 20 MM TO 50 MM IN THICKNESS. THEY SHALL NOT EXTEND IN AN UNBROKEN LINE THROUGH MORE THAN TWO STONES. FACE STONE SHALL BOND AT LEAST 150 MM LONGITUDINALLY AND 50 MM VERTICALLY. AT NO PLACE SHALL CORNERS OF FOUR STONES BE ADJACENT TO EACH OTHER.
- G. **HEADERS** SHALL BE DISTRIBUTED UNIFORMLY THROUGHOUT THE WALLS OF THE STRUCTURES SO AS TO FORM AT LEAST ONE-FIFTH OF THE EXPOSED FACES. THEY SHALL BE OF SUCH LENGTHS AS TO EXTEND FROM THE FRONT FACE OF THE WALL INTO THE BACKING OF AT LEAST 300 MM WHEN A WALL IS 450 MM OR LESS IN THICKNESS. THE HEADERS SHALL EXTEND ENTIRELY FROM FRONT TO BACK FACE.
- H. **BACKING** SHALL BE BUILT MOSTLY OF LARGE STONES. THE INDIVIDUAL STONES COMPOSING THE BACKING AND HEARTING SHALL BE WELL BONDED WITH THE STONES IN THE FACE WALL AND WITH EACH OTHER. ALL OPENINGS AND INTERSTICES IN THE BACKING SHALL BE FILLED COMPLETELY WITH MORTAR OR WITH SPILLS SURROUNDED COMPLETELY BY MORTAR.
- I. **THE WEEPHOLES** SHALL BE PLACED HORIZONTALLY AT THE LOWEST POINTS WHERE FREE OUTLETS FOR WATER CAN BE OBTAINED AND SHALL BE SPACED AT NOT MORE THAN 2 M CENTER TO CENTER IN A STAGGERED MANNER. THE LENGTH OF THE WEEPHOLES SHALL NOT BE LESS THAN THE THICKNESS OF THE WALLS OF THE ABUTMENT AND SHALL BE AT LEAST 50 MM DIAMETER PVC OR OTHER PIPE MATERIALS. WEEPHOLES MUST BE PROVIDED WITH FILTER BAGS.
- J. **CLEANING EXPOSED FACES** - IMMEDIATELY AFTER BEING LAID, AND WHILE THE MORTAR IS FRESH, ALL FACE STONES SHALL BE THOROUGHLY CLEANED OF MORTAR STAINS AND SHALL BE KEPT CLEAN UNTIL THE WORK IS COMPLETED.
- K. **CURING** - IN HOT OR DRY WEATHER, THE MASONRY SHALL BE SATISFACTORY PROTECTED FROM THE SUN AND SHALL BE KEPT WET FOR A PERIOD OF AT LEAST THREE DAYS AFTER COMPLETION.

	PROJECT NAME AND LOCATION SIPAG - COASTAL ROADS AUGMENT RESILIENCY OF COASTAL COMMUNITIES - CONSTRUCTION OF COASTAL ROAD, BARANGAY GARDEN, POBLACION, ARTECHE, EASTERN SAMAR	SHEET CONTENTS CONSTRUCTION REQUIREMENTS	PREPARED JAKE DANIEL S. HEGHANOVA DESIGNER	REVIEWED FELIX R. EACUS CHIEF ENGINEER/DESIGNATION DATE	RECOMMENDED LAGNES M. BARONDA CHIEF PLANNING AND DESIGN DIVISION DATE	APPROVED MA. MARGARET C. JUNIA, D.M. ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDUARDO M. MADON, CES IV REGIONAL DIRECTOR	SET NO. A	SHEET NO. 9
	REGIONAL OFFICE NO. VIII SARANGANI LEFT	EASTERN SAMAR LD							9 24

CONSTRUCTION REQUIREMENT

20. ROAD SIGN
- A. THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ROAD SIGNS IN ACCORDANCE WITH THIS SPECIFICATION AND TO THE DETAILS SHOWN ON THE PLANS, OR AS REQUIRED BY THE ENGINEER. THE ROAD SIGNS SHALL COMPLY IN ALL RESPECTS WITH THE DPWH HIGHWAY SAFETY DESIGN STANDARDS PART 2: ROAD SIGNS AND PAVEMENT MARKING MANUAL (MAY 2012) PUBLISHED BY THE DPWH. THE CATEGORIES OF ROAD SIGNS ARE DESIGNATED IN THE MANUAL, NAMELY, DANGER WARNING SIGNS, REGULATORY SIGNS AND INFORMATIVE SIGNS, OR GUIDE SIGNS. THESE ARE REFERRED TO IN THE CONTRACT AS WARNING SIGNS AND INFORMATORY SIGNS, RESPECTIVELY.
- B. ROAD SIGNS SHALL BE CLASSIFIED AS STANDARD OR NON-STANDARD. STANDARD SIGNS CONSIST OF ALL WARNING SIGNS, REGULATORY SIGNS AND INFORMATORY SIGNS WITH THE EXCEPTION OF DIRECTION SIGNS, PLACE IDENTIFICATION SIGNS AND THE LINE. NON-STANDARD SIGNS CONSIST OF ALL INFORMATORY SIGNS WHICH ARE NOT CLASSIFIED AS STANDARD SIGNS.
- C. THE SIZE OF WARNING AND REGULATORY SIGNS IS THE LENGTH OF THE SIDE OF TRIANGULAR SIGNS (MEASURED FROM THE POINTS OF INTERSECTION OF THE EXTENSION OF THE EDGES), THE HORIZONTAL WIDTH OF OCTAGONAL SIGNS AND THE DIAMETER OF CIRCULAR SIGNS.

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII SARANGANI, PALO, SLPB	PROJECT NAME AND LOCATION	SHEET CONTENTS	PREPARED	REVIEWED	RECOMMENDED	APPROVED	SET NO.	SHEET NO.
	SIPAG - COASTAL ROADS AUGMENT RESILIENCY OF COASTAL COMMUNITIES - CONSTRUCTION OF COASTAL ROAD, BARANGAY GARDEN, POBLACION, ARTECHE, EASTERN SAMAR	CONSTRUCTION REQUIREMENTS	JAKE CHARLES S. HECHANDOVA ENGINEER III (RMB)	FELIX R. BACUS CHIEF, HIGHWAY DESIGN DIVISION DATE	ACNES M. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	MA. MARGARITA C. JUNIA, O.M. ASSISTANT REGIONAL DIRECTOR DATE	EDGAR B. TABACON, CES III REGIONAL DIRECTOR DATE	A 10 24

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION OF WORK	UNIT	QUANTITY	REMARKS
B.3	Permits and Clearances	L.S.	1.00	
B.4(1)	Construction Survey and Staking	Km.	0.234	
B.5	Project Billboard/ Signboard	Each	8.00	
B.7(2)	Occupational Safety and Health Program	L.S.	1.00	
B.8(1)	Traffic Management	Month	9.20	
B.9	Mobilization/Demobilization	L.S.	1.00	
B.14	Environmental Management and Monitoring	Month	9.2	
100(1)	Clearing and Grubbing	Ha.	0.100	
100(3)a1	Individual Removal of Trees (Small, 150-300 mm dia.)	Each	13	
101(1)	Removal of Structures and Obstruction	L.S.	1.00	EXISTING SEAWALL
102(4)	Surplus Unclassified Excavation	Cu. M.	10,958.49	
104(2)a	Embankment from Borrow, Common Soil	Cu. M.	15,219.00	
104(5)	Boulder Fill	Cu. M.	8,428.24	
105(1)a	Subgrade Preparation, Common Material	Sq. M.	597.00	
200(1)	Aggregate Subbase Course	Cu. M.	908.00	COMPACTED
311(1)c1	PCC Pavement (Unreinforced), Thickness = 0.23 M - 14 days	Sq. M.	702.00	
311(1)e1	PCC Pavement (Unreinforced), Thickness = 0.28 M	Sq. M.	3,135.60	
404(1)b	Reinforcing Steel, Grade 60	kg	66,158.13	
405(1)a3	Structural Concrete, 20.68 Mpa, Class A, 28 days	Cu. M.	612.07	
407(8)	Lean Concrete, Class B, 16.5 Mpa	Cu. M.	15.52	
500(1)b	Pipe Culvert, 910mm dia., Class II-RCPC	L.M.	32.00	
500(3)a	Lined Canal, Rectangular, Reinforced Concrete	L.M.	468.00	WITH COVER (1mX1mX.15m)
505(2)a	Grouted RipRap (Class A)	Cu. M.	405.85	
506(1)	Stone Masonry	Cu. M.	1,693.00	
509(1)b1	Sheet Piles, Steel, Slope Protection	L.M.	4,365.00	
600(1)	Concrete Curb, Cast-in-place	Sq. M.	388.00	
600(7)	Curb and Gutter, Precast	Pcs.	468.00	
601(1)	Sidewalk, 100 mm thk.	Sq. M.	702.00	
603(3)a1	Metal Guardrail (Metal Beam) Including Post, W-Beam	L.M.	0.00	
605(6)e1	Hazard Markers, CHEVRON SIGNS, 450X600MM	Each	10.00	
605(1)e2	Warning Signs, W1-SB (750mm), Horizontal Alignment Widening Road L or R	Each	1.00	
606(1)a1	Pavement Marking (Premixed Reflectorized), White	Sq. M.	30.00	
611(3)	Seedlings/Saplings for Other Programs/Initiatives	Each	500.00	
612(1)	Reflectorized Thermoplastic Pavement Markings, White	Sq. M.	106.00	
612(2)	Reflectorized Thermoplastic Pavement Markings, Yellow	Sq. M.	18.30	
715(2)	Separation Geotextile	Sq. M.	8,638.82	
1407(1)	Tetrapod	Each	752.00	
1702 (4)b	Shoring, Cribbing and Drain Excavation, Cribbing and Cofferdamming	L.S.	1.00	

NOTE:

1. THE CONTRACTOR SHALL SUBMIT AS-STAKED PLAN TO VALIDATE CONTRACT QUANTITIES IN COMPLIANCE WITH D.O. NO. 15 SERIES OF 2016
2. THE QUANTITIES SHOWN ARE SUBJECT TO CHANGE IF SIGNIFICANT IMPROVEMENT HAVE OCCURED BETWEEN THE APPROVED DETAILED ENGINEERING PLAN AND ACTUAL CONDITION OF THE PROJECT DURING THE CONDUCT OF AS-STAKED SURVEY

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BANGAL, PALI, SORSOGON	PROJECT NAME AND LOCATION	SHEET CONTENTS	PREPARED	REVIEWED	RECOMMENDED	APPROVED	SET NO.	SHEET NO.
	SIPAG - COASTAL ROADS AUGMENT RESILIENCY OF COASTAL COMMUNITIES - CONSTRUCTION OF COASTAL ROAD, BARANGAY GARDEN, POBLACION, ARTECHE, EASTERN SAMAR EASTERN SAMAR LG	SUMMARY OF QUANTITIES	 JAKE CHUA, S. HERNANDEZ ENGINEER - 1988	 FELIX R. BACUS CHIEF HIGHWAY DESIGN SECTION DATE	 AGNES M. BARONDA CHIEF PLANNING AND DESIGN DIVISION DATE	 MA. MARGARITA G. JUNIA, D.M. ASSISTANT REGIONAL DIRECTOR DATE	 EDGAR B. TABACON, CRO REGIONAL DIRECTOR DATE	A 11 24

Schedule of B.4(1) - Construction Survey and Staking

STATION	LENGTH
0+000.00 0+234.00	234.00 m
	234.00 m

Schedule of 100(1) - Clearing and Grubbing

Station	Length
0+000.00 0+040.00	40.00 m
TOTAL	40.00 m

Schedule of 100(3)a1 - Individual Removal of Trees (Small, 150-300 mm dia.)

Station	Coconut Trees	Number of Trees
0+000.00	8.00 each	5.00 each
0+234.00		

Schedule of 102(4) - Surplus Unclassified Excavation

Station	Length
0+000.00 0+234.00	234.00 m
TOTAL	234.00 m

Schedule of 104(2)a - Embankment from Borrow, Common Soil

Station	Length
0+000.00 0+234.00	234.00 m
TOTAL	234.00 m

Schedule of 104(5) - Boulder Fill

Station	Length
0+040.00 0+234.00	194.00 m
TOTAL	194.00 m

Schedule of 105(1)a - Subgrade Preparation, Common Material

Station	Length
0+000.00 0+040.00	194.00 m
TOTAL	194.00 m

Schedule of 200(1) - Aggregate Subbase Course

FOR MAIN ROAD & SHOULDER					
Station		Distance	Cross-Sectional Area	Volume	Remarks
0+000.00	0+234.00	0+234.00 m	3.28 m ²	767.52 m ³	OPENING AND CONCRETING
SUBTOTAL VOLUME =				767.52 m ³	
FOR SIDE WALK/BIKE LANE					
Station		Distance	Cross-Sectional Area	Volume	Remarks
0+000.00	0+040.00	234.00 m	0.60 m ²	140.00 m ³	OPENING AND CONCRETING
SUBTOTAL VOLUME =				140.00 m ³	

Schedule of 311(1)e1 - PCC Pavement (Unreinforced), 0.28 m Thick - 14 Days

FOR 4 LANES PCCP				
Station	Distance	Width	Area	Remarks
0+000.00 0+234.00	234.00 m	13.40 m	3,135.60 m ²	OPENING & CONCRETING

Schedule of 311(1)c1 - PCC Pavement (Unreinforced), 0.23 m Thick - 14 Days

FOR SHOULDER				
Station	Distance	Width	Area	Remarks
0+000.00 0+234.00	234.00 m	3.00 m	702.00 m ²	OPENING & CONCRETING

Schedule of 405(1)a3 - Structural Concrete, Class A, 20.68 Mpa, 28 Days

Station Limits	Length	Location
0+040.00 0+234.00	194.00 m	Seaside
TOTAL	194.00 m	

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARANGALAY, CEBU	PROJECT NAME/LOCATION SIPAG - COASTAL ROADS AUGMENT RESILIENCY OF COASTAL COMMUNITIES - CONSTRUCTION OF COASTAL ROAD, BARANGAY GARDEN, POBLACION, ARTECHE, EASTERN SAMAR	SHEET CONTENTS SCHEDULE OF ITEMS	PREPARED  JANE CHARLES S. HICHANGOVA ENGINEER (DBP)	REVIEWED  FELIX R. MACUS CHIEF HIGHWAY DESIGN SECTION	RECOMMENDED  AGNES M. BARONDA CHIEF PLANNING AND DESIGN SECTION	APPROVED  MA. MARGARITA G. JUNIA, D.M. ASST. CHIEF ENGINEER/DIRECTOR	APPROVED  EDGAR P. TABACON, CESSO IV REGIONAL DIRECTOR	SET NO. A	SHEET NO. 12 42
	EASTERN SAMAR LD								

Schedule of 405(1)a3 - Structural Concrete, Class A, 20.68 Mpa, 28 Days

AT REVETMENT (FACING)(SEASIDES)

MAIN BARS

LENGTH	DIAMETER	UNIT WEIGHT	no. of pcs	LOCATION/NO. OF SIDES	WEIGHT
m.	mm	(wt/m.)			(kgs.)
1.00	16	1.580	59.00	1	93.22
SUBTOTAL					93.22

CROSS SECTIONAL BARS

LENGTH	DIAMETER	UNIT WEIGHT	no. of pcs	LOCATION/NO. OF SIDES	WEIGHT
m.	mm	(wt/m.)			(kgs.)
16.541	20	2.470	3.00	1	122.57
SUBTOTAL					122.57

CLAMP

LENGTH	DIAMETER	UNIT WEIGHT	no. of pcs	LOCATION/NO. OF SIDES	WEIGHT
m.	mm	(wt/m.)			(kgs.)
0.451	16	1.580	42.00	1	29.93
SUBTOTAL					29.93

DOWEL BAR

LENGTH	DIAMETER	UNIT WEIGHT	no. of pcs	LOCATION/NO. OF SIDES	WEIGHT
m.	mm	(wt/m.)			(kgs.)
1.320	16	1.580	3.00	1	6.26
SUBTOTAL					6.26

AT WAVE DEFLECTOR

MAIN BARS

LENGTH	DIAMETER	UNIT WEIGHT	no. of pcs	WEIGHT
m.	mm	(wt/m.)		(kgs.)
1	16	1.580	14.00	22.12
SUBTOTAL				22.12

STIRRUPS

LENGTH	DIAMETER	UNIT WEIGHT	no. of pcs	WEIGHT
m.	mm	(wt/m.)		(kgs.)
2.953	20	2.470	3.00	21.88
SUBTOTAL				21.88

AT PILE CAP

MAIN BARS

LENGTH	DIAMETER	UNIT WEIGHT	no. of pcs	LOCATION/NO. OF SIDES	WEIGHT
m.	mm	(wt/m.)			(kgs.)
1	16	1.580	9.00	1	14.22
SUBTOTAL					14.22

STIRRUPS

LENGTH	DIAMETER	UNIT WEIGHT	no. of pcs	LOCATION/NO. OF SIDES	WEIGHT
m.	mm	(wt/m.)			(kgs.)
3.12	20	2.470	4.00	1	30.83
SUBTOTAL					30.83

Schedule of 407(8) - Subgrade Preparation, Common Material

Station	Distance	Area	Volume
0+040.00	0+234.00	194.00 m	0.080 m ²
TOTAL			15.52 m ³

Drainage Schedule Schedule of 500(3)a - Lined Canal, Rectangular, Reinforced Concrete

With Cover (1mX1mX0.15m)

Station Limits	Total Length	Location
0+000.00	0+234.00	468.00 m
TOTAL		468.00 m

Schedule of 500(1)b - Pipe Culvert, Class II, RCPC

Station	Structure	LENGTH
0+100.00	1 ROW RCPC 0.91m ϕ	32.00m

Schedule of 509(1)b1 - Sheet Piles, Steel, Slope Protection

Station Limits	Total Length	Location
0+040.00	0+234.00	194.00 m
TOTAL		194.00 m

Schedule of 505 (2)a - Grouted Riprap, Class A

Station	Distance	Area	Volume
0+040.00	0+234.00	194.00 m	2.092 m ²
SUB-TOTAL			405.85 m ³

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO VIII SARANGANI LEYTE	PROJECT NAME AND LOCATION SIPAG - COASTAL ROADS AUGMENT RESILIENCY OF COASTAL COMMUNITIES - CONSTRUCTION OF COASTAL ROAD, BARANGAY GARDEN, POBLACION, ARTECHE, EASTERN SAMAR	SHEET CONTENTS SCHEDULE OF ITEMS	PREPARED  JAKE CHARLES S. HECHANOVA JUNIOR ENGINEER I (SCE)	REVIEWED  FELIX R. ENCUS CHIEF HIGHWAY DESIGN DIVISION	 AGNES M. BARONDA CHIEF PLANNING AND DESIGN DIVISION	RECOMMENDED  MA. MARGARETA C. MUNIA, D.M. ASSISTANT REGIONAL DIRECTOR	APPROVED  EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR	SET NO. A	SHEET NO. 13 42
	EASTERN SAMAR LD								

Schedule of 506 (1) - Stone Masonry

At Landside

Station	Distance	Area	Volume
0+040.00	0+234.00	194.00 m	7.598 m ²
SUB-TOTAL			1,474.01 m ³

FOR END CLOSURE

LENGTH = 28.850 m
 AREA = 7.598 m²
 SUB-TOTAL VOLUME = 219.20 m³
 TOTAL = 1,693.21 m³
 SAY = 1,693.00 m³

Schedule of 600(1) - Concrete Curb, Cast-in-place

Station Limits	Length	Location	Total
0+040.00	0+234.00	194.00 m B/S @ Seaside	388.00 m ²
TOTAL			388.00 m ²

Schedule of 600(7) - Curb and Gutter, Precast

Station Limits	Length	Remarks
0+000.00	0+234.00	234.00 m B/S
TOTAL		468.00 Pcs

Schedule of 601 (1) - Sidewalk, 100 mm Thick

Location	Length	Width	Area	Area
0+000.00	0+234.00	234.00 m	1.50 m	702.00 m ²
TOTAL				702.00 m ²

Schedule of 603(3)a1 - Metal Gaurdrail (Metal Beam) Including Post, W-Beam

Station Limits	Total Length	Location
0+000.00	0+040.00	234.00 m Landside
0+040.00	0+234.00	40.00 m Seaside
TOTAL		274.00 m

Schedule of 612(1) - Reflectorized Thermoplastic Pavement Markings White

Station Limits		Length	Width	No. of Strips
		m	m	Sq.m.
0+000.00	0+234.00	234.00 m	0.20	46.80
TOTAL				46.80

At Centerline (Broken Line)

Total Length = 234.00 m
 Length Per Stripes = 3.00 m
 Width = 0.15 m
 Area Per Stripes = 0.45 m²

No. of Strips = $\frac{\text{Length}}{3} = 26.00 \text{ Stripes}$

Area = No. of Stripes X Area Per Stripes

Area = 11.70 m²

At Edgeline (Solid Line)

Total Length = 234.00 m
 Width = 0.10 m
 No. of Edge = 2.00 m²

Area = Total Length x Width x No. of Edge = 234 x 0.1 x 2 = 47.00 m²

Total Area = 106.00 m²

Schedule of 612(2) - Reflectorized Thermoplastic Pavement Marking Yellow

Station		Length	Width	Area	Area
Start	End				
0+044.00	0+104.00	60.00 m	0.15 m	9.00 m ²	B/S
0+171.00	0+233.00	62.00 m	0.15 m	9.00 m ²	B/S
TOTAL				18.00 m ²	

Schedule of 715(2) - SEPARATION GEOTEXTILE

Station	Distance	Length	Area
0+040.00	0+234.00	194.00 m	44.530 m
Total =			8,638.82 m ²

Schedule of 1407(1) - Tetrapod

Station	Total Length	No. of Pieces
0+046.00	0+234.00	190.00 m
TOTAL		760.00 m

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BAKAL, PAILO, LETE	PROJECT NAME AND LOCATION SIPAG - COASTAL ROADS AUGMENT RESILIENCY OF COASTAL COMMUNITIES - CONSTRUCTION OF COASTAL ROAD, BARANGAY GARDEN, POBLACION, ARTECHE, EASTERN SAMAR	SHEET CONTENTS SCHEDULE OF ITEMS	PREPARED JAMES HERNANDEZ S. HERNANDEZ ENGINEER I B-20	REVIEWED FELIX R. SACUS CHIEF HIGHWAY ENGINEER DIVISION DATE	RECOMMENDED MA. MARGARITA S. JUNIA, D.M. ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABADON, CESO IV REGIONAL DIRECTOR	SET NO. A	SHEET NO. 14
	EASTERN SAMAR LD						14	42