Longitudinal and Transverse Contact Joints:

Longitudinal contact joints are joints formed between lanes that are poured separately. Transverse contact joints are joints formed between segments of a lane that are poured separately. Transverse contact joints shall be formed perpendicular to pavement centerline at the end of each day of concrete placing, or where concreting has been stopped for 30 minutes or longer but not nearer than 1.5 meters from sawed contraction joints. All contact joints shall have faces perpendicular to the surface of the pavement. Tie bars of the size, length and spacing shown on the Drawings shall be placed across longitudinal and transverse contact joints.

Placing Concrete

The concrete shall be deposited and spread in order that segregation will not occur and place a uniform layer of concrete whose thickness is approximately 20 mm greater than that required for the finished pavement is placed. Rakes shall not be used for handling concrete.

In order to prevent the introduction into the concrete of earth and other foreign materials, the men whose duties require them to work in the concrete, shall in general, confine their movements to the area already covered with fresh concrete. Whenever it becomes necessary for these men to step out of the concrete, their footwear shall be washed or otherwise thoroughly cleaned before returning to the concrete. Repeated carelessness with regard to this detail will be deemed sufficient cause for removing and replacing such worker.

During the operation of striking off the concrete, a uniform ridge of concrete at least 70 mm in height shall be maintained ahead of the strike-off screed for its entire length. Except when making a construction joint, the finishing machine shall at no time be operated beyond that point where this surplus can be maintained in front of the strike-off screed.

After the first operation of the finishing machine, additional concrete shall be added to all low places and honeycombed spots and the concrete rescreeded. In any rescreeding, a uniform head of concrete shall be maintained ahead of the strike-off for its entire length. Honeycombed spots shall not be eliminated by tamping or grouting.

Workers on the job shall have mobile footbridges at their disposal so that they need not walk on the wet concrete.

In conjunction with the placing and spreading, the concrete shall be thoroughly spaded and vibrated along the forms, bulkhead, and joints.

The internal vibrators shall be of pneumatic, gas-driven, or electric type, and shall operate at a frequency of not less than 3,200 pulsations per minute.

Whenever the placing of the concrete is stopped or suspended for any reason, for a period of 30 minutes or longer, a suitable bulkhead shall be placed so as to produce a vertical transverse joint. If an emergency stop occurs within 2.5 meters of the contraction or an expansion joint the concrete shall be removed back to the joint. When the placing of the concrete is resumed, the bulkhead shall be removed and a new concrete placed and vibrated evenly and solidly against the face of previously deposited concrete. Any concrete in excess of the amount needed to complete a given section or that has been deposited outside the forms shall not be used in the work.

The Contractor shall provide suitable equipment for protecting the fresh concrete in case of rain, such as screens which will cause the rain water to run off beyond the edges of the paving, rain proof tarpaulins or other methods approved by the Engineer. The equipment shall be sufficient to shelter from rain all areas equal to that paved in two hours of work.

Finishing Concrete

The concrete shall be compacted and finished by a mechanical, self-propelled finishing machine of approved type, having two independently operated screeds. If a machine possessing only one screed is approved, the screed will not be less than 450 mm wide and shall be equipped with compensating springs to minimize the effect of the momentum of the screed on the side forms. The number of driving wheels, the weight of the machine and the power of the motor shall be so coordinated as to prevent slippage. The top of the forms and the surface of the finishing machine wheels shall be kept free from concrete or dirt.

The machine shall at all times be in first-class mechanical condition and shall be capable of compacting and finishing the concrete are herein described. Any machine which causes displacement of the side forms from the line or grade to which they have been properly set, or causes undue delay due to mechanical difficulties, shall be removed from the work and replaced by a machine meeting the Specifications.

The finishing machine shall be operated over each section of pavement two or more times and at such intervals as will produce the desired results. Generally, two passes of the finishing machine are considered the maximum desirable.

The concrete shall be vibrated, compacted, and finished by a vibratory finishing machine. The vibratory machine shall meet the requirements for ordinary finishing, and shall be one of the following type:

1. The machine shall have two independently operated screeds; the front screed shall be equipped with vibratory units with a frequency of not less than 3,500 pulsations per minute. There shall be not less than one vibratory unit for each 2.5 meters length or portion thereof, of vibratory screed surface. The front screed shall not be less than 300mm wide and shall be equipped with a "bull nose" front edge built on a radius of not less than 50mm. This type of vibratory finishing machine shall be operated in such manner that each section of pavement will receive at least one vibratory pass, but not more than two passes, unless otherwise directed, or ;

2. The machine shall be equipped with an independently operated vibratory "pan" (or pans) and two (2) independently operated screeds, the "pan" shall be mounted in a manner that will permit it to come in contact with the forms and will permit vibration of the full width of lane simultaneously.

   There shall be not less than one vibratory unit for each 2 m. length or portion thereof, of vibrating pan surface. The vibratory units in any individual pan shall be synchronized and have a frequency of not less than 3,500 pulsations per minute. The front screed shall be capable of operating in a position that will strike off the concrete at a sufficient height above the top of the forms to allow for proper compaction with the vibrating pan. This type of vibratory finishing machine shall be operated in such manner than each section of pavement will receive at least one vibratory pass but not more than two passes, unless otherwise directed.

   After the final pass of the finishing machine and when the concrete has started to dry, the surface of the pavement shall be finished with an approved longitudinal float. The float may be operated either manually or by mechanical means. The float may be either of wood or metal shall be straight and smooth and light in weight so as not to displace or sink into the concrete surface.

   To be effective, the float shall be at least 300mm wide and 3m long. When manually operated, the float shall be moved from edge to edge with a wiping motion and advance one (1) meter or more.

The succeeding trip shall overlap the previous trip. A light smoothing lute at least 3 meters long may be used provided approved by the Engineer.

The surface of the pavement shall be tested by the Contractor, before the final belting, with an approved standard straightedge 3 meter in length. Irregularities so detected shall be corrected immediately. Special attention shall be given to the concrete adjacent to transverse joints to insure that the edges thereof are not above the grade specified or the adjacent concrete below grade. All depressions or projections shall be corrected before any initial set has developed in the concrete.

After the concrete has been brought to the required grade, contour and smoothness, it shall be finished by passing over the concrete a drag of one or two burlap clothes, which give the surface the required roughness. The vehicles used to carry these cloths may be independent of the concrete-laying machine or may be incorporated with it and may be operated either by hand or mechanically.

Hand finishing will be permitted only on variable width sections of the pavement and other places where the use of the finishing machine would be impractical. Hand finishing shall be accomplished by means of the hand-operated strike-off template of either steel or steel-shod wood construction. The striking template shall be operated forward with a combined longitudinal and transverse motion and shall be so manipulated that neither end will be raised off the side forms. A similar tamper shall be used for tamping the concrete.

As soon as the concrete has attained its initial set, the edges of the pavement, the longitudinal joints, the construction dummy and expansion joints not sawn shall be carefully finished with an edging tool having radius of at least 5mm. The tools, the special accessories for cutting impressed joints and methods of workmanship shall be such as will produce a joint whose edges are of the same quality of concrete as the other portion of the pavement. Methods and workmanship which make use of excess mortar or grout in this area shall be eliminated. Unnecessary tool marks shall be eliminated during work, and the edges left smooth and true to line.

Striking Forms

Forms shall remain in place at least 12 hours after the concrete has been placed. When working conditions are such that the early strength gain of the concrete is delayed, the forms shall remain in place for a longer period, as directed by the Engineer. Bars or heavy load shall not be used against the concrete when still in the forms. Any damage to concrete resulting from form removal shall be repaired promptly by the Contractor as directed by the Engineer without any additional payment to the Contractor.

Curing Concrete

Unless otherwise ordered by the Engineer, curing of concrete shall be done by any method specified in the Section "Reinforced Concrete".

Cleaning and Sealing Joints

After completion of the required curing and before opening of the pavement to traffic, all joints shall be thoroughly cleaned of all concrete aggregate fragments or other materials.

After removal of side forms, the ends at transverse expansion joints at the edges of the pavement shall be carefully cleaned of any concrete within the expansion spaces for the entire depth of slab, care being taken not to injure the ends of the joints. Expansion and contraction joints shall then be poured with a hot joint sealer to the depth as indicated on the Drawings. Joint sealer shall be poured using approved hand pouring pots, with liquid at a temperature not less than that recommended by the approved manufacturer.

Opening to Traffic

The pavement shall be closed to traffic, including the vehicles of the Contractor, for a period of 10 days after the concrete is placed or longer if in the opinion of the Engineer, the weather conditions make it necessary to extend this time. The Contractor shall furnish, place and maintain satisfactory barricades and lights as directed, to exclude all traffic from the pavement.

Any damage to the pavement due to traffic shall be repaired or replaced at the expense of the Contractor. Paving mixers, mechanical concrete spreaders and finishers and other heavy paving equipment shall not be operated on completed concrete lanes in order to construct alternate lanes until after the regular curing period is completed. Even then, planks shall be laid on the finished pavement or other precautions taken to prevent damage to the concrete pavement.

Pavement Smoothness, Thickness and Tolerance

Portland cement concrete pavement shall be constructed to the designed level and transverse slope shown on the Drawing. The allowable tolerance shall be as listed hereunder:

1.	Permitted variation from design thickness of layer	+ - 5mm
2.	Permitted variation from design level of surface	+ - 5mm

The thickness of the pavement will be determined by measurement of cores from the completed pavement in accordance with AASHTO T 148.

The completed pavement shall be accepted on a lot basis. A lot shall be considered as 2,500 sq.m of pavement. The last unit in each slab constitutes a lot in itself when its length is at least ½ of the normal lot length. If the length of the last unit is shorter than ½ of the normal lot length, it shall be included in the previous lot.

Other areas such as intersections, entrances, crossovers, ramp, etc., will be grouped together to form a lot. Small irregular areas may be included with other unit areas to form a lot.

ITEM 12 : BITUMINOUS CONCRETE SURFACE COURSE, HOT-LAID

SCOPE OF WORK

This Item shall consist of constructing a bituminous concrete surface course composed of aggregates, mineral filler, and bituminous material mixed in a central plant, constructed and laid hot on the prepared base in accordance with this Specification and in conformity with lines, grades, thickness and typical cross-section shown on the Plans.

MATERIALS RERQUIREMENTS

Composition and Quality of Bituminous Mixture

(Job-Mix Formula). The bituminous mixture shall be composed of aggregate, mineral filler, hydrated lime, and bituminous material.

At least three weeks prior to production, the Contractor shall submit in writing a job-mix formula for each mixture supported by laboratory test data along with samples and sources of the components and viscosity-temperature relationships information to the Engineer for testing and approval.

Each job-mix formula submitted shall propose definite single values for:

1. The percentage of aggregate passing each specified sieve size.
2. The percentage of bituminous material to be added.
3. The temperature of the mixture delivered on the road.
4. The kind and percentage of additive to be used.
5. The kind and percentage of mineral filler to be used.

After the job-mix is established, all mixture furnished for the project shall conform thereto within the following ranges of tolerances:

Passing No. 4 and larger sieves	±	7 percent
Passing No. 8 to No. 100 sieves (inclusive)	±	4 percent
Passing No. 200 sieve	±	2 percent
Bituminous Material	±	0.4 percent
Temperature of Mixture	±	10^0C

Should a change in source of material be proposed or should a job-mix formula prove unsatisfactory, a new job-mix formula shall be submitted by the Contractor in writing and be approved by the Engineer prior to production.

Approval of a new jobmix formula may require laboratory testing and verification.

The mixture shall have a minimum compressive strength of 1.4 MPa (200 psi).

The mixture shall have a mass percent air voids with the range of 3 to 5.

The mixture shall also have an index of retained strength of not less than 70 when tested by AASHTO T 165. For aggregates having maximum sizes over 25 mm (1 inch), AASHTO T 165 will be modified to use 150 mm x 150 mm (6 x 6 inches) cylindrical specimens. The 150 mm (6 inches cylinders will be compacted by the procedures outlined

in AASHTO T 167 modified to employ 10 repetitions of a molding load of 9.6 MPa (1400 psi), with no appreciable holding time after each application of the full load.

Bituminous Materials

It shall be either Medium Curing (MC) Cut-back Asphalt or Asphalt Cement, whichever is called for in the Bill of Quantities. The penetration grade, type and grade of bituminous material shall be specified in the Special Provisions.

Asphalt Cements

Asphalt cement shall conform to the requirements of AASHTO M 226.

Liquid Asphalts

Liquid asphalt shall conform to the requirements of the following specifications:

Rapid Curing Liquid Asphalts	-	AASHTO M 81
Medium Curing Liquid Asphalts	-	AASHTO M 82

Emulsified Asphalts

Emulsified asphalts shall conform to the requirements of the following specifications:

Emulsified Asphalt (Anionic)	-	AASHTO M 140 (ASTM D 977)
Emulsified Asphalt (Cationic)	-	AASHTO M 208

Coarse Aggregate

Coarse aggregate retained on the 2.36 mm (No. 8) sieve shall be crushed stone, crushed slag or crushed or natural gravel and unless otherwise stipulated, shall conform to the quality requirements of AASHTO M 79 – 74.

When crushed gravel is used, it shall meet the pertinent requirements of Section 2.1 and 3.1 of AASHTO M 62 – 74 and not less than 50 mass percent of the particles retained on the 4.75 mm (No. 4) sieve shall have at least one fractured face. The coarse aggregate shall be of such gradation that when combined with other required aggregate fractions in proper proportion, the resultant mixture will meet the gradation required under the composition of mixture for the specific type under contract. Only one kind shall be used on the project except by permission of the Engineer.

Fine Aggregate

Fine aggregate passing the 2.36 mm (No. 8) sieve shall consist of natural sand, stone, stone screenings or slag screenings or a combination thereof and unless otherwise stipulated shall conform to the quality requirements of AASHTO M 29 (ASTM D 1073). Fine aggregate shall be of such gradation that when combined with other required aggregate fractions in proper proportion, the resultant mixture will meet the gradation required under the composition of mixture for the specific type under contract.

Open-Graded Asphalt Concrete Friction Course

The coarse aggregate fraction shall have at least 75 mass percent of weight of particles with at least two fractured faces and 90 mass percent with one or more fractured faces, except that lightweight aggregates need not meet this requirement. The abrasion loss (AASHTO T 96) shall not exceed 40 mass percent.

Lightweight Aggregate (except slag)

Lightweight aggregate (except slag), if required or permitted by a Special Provisions, shall be manufactured by the rotary kiln process. The material shall consist of angular-fragments uniform in density and reasonably free from flat, elongated or other deleterious substances. The material shall show an abrasion loss of less than 45 mass percent when tested in accordance with AASHTO T 96. The dry mass per cubic metre shall not exceed 1080 kg (67 pcf). After testing through five cycles of the magnesium sulfate soundness test, the loss shall not exceed ten (10) mass percent.

Aggregate for Bituminous Plant Mix Surfacing

Aggregate shall be uniformly graded from coarse to fine. Target values for the intermediate sieve sizes shall be established within the limits shown in Table.

Range of Gradation Target Values

Sieve Designation, mm	Mass percent passing square mesh sieves, AASHTO T 11 and T 27, exclusive of mineral filler
	Range
25 (1 inch)	100
19 (3/4 inch)	100
4.75 (No. 4)	50 – 60
2.36 (No. 8)	38 – 48
0.075 (No. 200)	3 – 7
	The minimum for Sand Equivalent is 35

No intermediate sizes of aggregate shall be removed for other purposes without written consent of the Engineer.

If crushed gravel is used, not less than 50 mass percent of the material retained on the 4.75 mm (No. 4) sieve shall be particles having at least one fractured face.

That portion of the composite material passing a 4.75 mm (No. 4) sieve shall have a sand equivalent of not less than 35, as determined by AASHTO T 176, Alternate Method No. 2.

The aggregate shall show a durability index not less than 35 (coarse and fine) as determined by AASHTO T 210.

The material shall be free of clay balls and adherent films of clay or other matter that would prevent thorough coating with the bituminous material.

Aggregate for Hot Plant-Mix Bituminous Pavement

The several aggregate fraction for the mixture shall be sized, graded and combined in such proportions that the resulting composite blend meets one of the grading requirements as specified in the Schedule.

The gradings to be used will be shown in the Special Provisions, adjusted to reflect variations in aggregate densities.

The ranges apply to aggregates with bulk specific gravity values that are relatively constant throughout a grading band. When such values vary from sieve to sieve, such as with lightweight aggregates, the ranges for each sieve size shall be adjusted to reflect the variations.

Aggregate for Cold Plant-Mix Bituminous Pavement

The provisions of aggregate for bituminous concrete shall apply.

Aggregate for Pavement

The several aggregate fractions for the mixture shall be sized, graded and combined in such proportions that the resulting composite blends meet the respective grading requirements of Table 703.3 adjusted to reflect variation in aggregate densities.

Aggregate for Top Dressing

The material for the top dressing shall consist of dry sand, stone screenings or slag screenings so graded that at least 95 mass percent shall pass the 4.75 mm (No. 4) sieve and not more than 40 percent shall pass the 0.300 mm (No. 50) sieve.

Gradation Ranges – Hot Plant Mix Bituminous Pavements
(Mass percent passing square sieves, AASHTO T 11 and T 27)

Sieve Designation, mm	GRADING						
	A	B	C	D	E	F	G
37.5 (1-1/2 inch)	100	-	-	-	-	-	-
25 (1 inch)	95-100	100	100	-	-	-	-
19 (3/4 inch)	75-95	95-100	95-100	100	-	100	-
12.5 (1/2 inch)	-	68-86	68-86	95-100	100	-	100
9.5 (3/8 inch)	54-75	56-78	56-78	74-92	95-100	-	95-100
4.75 (No. 4)	36-58	38-60	38-60	48-70	75-90	45-65	30-50
2.36 (No. 8)	25-45	27-47	27-47	33-53	62-82	33-53	5-15
1.18 (No. 16)	-	18-37	18-37	22-40	38-58	-	-
0.600 (No. 30)	11-28	11-28	13-28	15-30	22-42	-	-
0.300 (No. 50)	-	6-20	9-20	10-20	11-28	10-20	-
0.075 (No. 200)	0-8	0-8	4-8	4-9	2-10	3-8	2-5

Aggregate for Road Mix Bituminous Pavement

Aggregates for road mix bituminous pavement construction shall be crushed stone, crushed slag, or crushed or natural gravel which meet the quality requirements of AASHTO M 62-74 or M 63-74 for the specified gradation, except that the sodium sulfate soundness loss shall not exceed 12 mass percent.

When crushed gravel is used, at least 50 mass percent of the particles retained on the 2.00 mm (No. 10) sieve shall have at least one fractured face.

Aggregate for Cover Coats, Surface Treatments and Bituminous Preservative Treatment

Cover aggregate for type 2 seal coat shall consist of sand or fine screenings, reasonably free from dirt or organic matter.

Aggregates for type 3 seal coat (Item 303) surface treatments or bituminous preservative treatment shall be crushed stone, crushed slag or crushed or natural gravel. Only one type of aggregate shall be used on the project unless alternative types are approved. Aggregates shall meet the quality requirements of AASHTO M 78-74.

When tested in accordance with AASHTO T 182, (ASTM D 1664) aggregate shall have a retained bituminous film above 95 mass percent.

Aggregates which do not meet this requirement may be used for bituminous surface treatments and seal coats provided a water resistant film.

When crushed gravel is used, not less than 50 mass percent of the particles retained on the 4.75 mm (No. 4) sieve shall have at least one fractured face. Aggregates shall meet the gradation requirements called for in the Bid Schedule.

Gradation Requirements – Cold Plant Mix Bituminous Pavement (Mass percent passing square mesh sieves, AASHTO T 27)

Sieve Designation		Bottom (Binder) Course	Wearing (Surface) Course
Standard, mm	Alternate US Standard		
37.5	1-1/2"	100	-
25	1"	85 – 100	-
19	¾"	40 – 70	100
12.5	½"	10 – 35	95 – 100
4.75	No. 4	4 – 16	15 – 40
2.36	No. 8	0 – 5	10 – 25
0.600	No. 30	-	4 – 13
0.300	No. 50	-	0 - 5

Gradation Requirements for Cover Coats (Mass percent passing square mesh sieves, AASHTO T 27)

Sieve Designation		Grading designation with corresponding size No. from AASHTO M 43 (ASTM D 448) modified					
Std. mm	Alt US Std	A (No.5)	B (No.6)	C (No.7)	D (No.8)	E (No.9)	F (No.10)
37.5	1-1/2"	100	-	-	-	-	-
25	1"	90-100	100	-	-	-	-
19	¾"	-	90-100	100	-	-	-
12.5	½"	0-10	-	90-100	100	-	-
9.5	3/8"	-	0-15	-	85-100	100	100
4.75	No. 4	-	-	0-15	-	85-100	85-100
2.36	No. 8	-	-	-	0-10	-	-
0.075	No. 200	0-2	0-2	0-2	0-2	0-2	0-10

Blotter

Aggregate for blotter material shall conform to the gradation requirements of AASHTO M 43 (ASTM D 448), size 2.00 mm (No. 10). The aggregate shall be free from vegetable or other deleterious materials.

Gradation Requirements for Bituminous Surface Treatments (Mass percent passing square mesh sieves, AASHTO T 27)

Sieve Designation		Grading designation with corresponding size No. from AASHTO M 43 (ASTM D 448) modified					
Std. mm	Alt US Std	A (No.5)	B (No.6)	C (No.7)	D (No.8)	E (No.9)	F (No.10)
37.5	1-1/2"	100	-	-	-	-	-
25	1"	90-100	100	-	-	-	-
19	¾"	20-25	90-100	100	-	-	-
12.5	½"	0-10	20-55	90-100	100	-	-
9.5	3/8"	0-5	0-15	40-70	85-100	100	100
4.75	No. 4	-	0-5	0-15	10-30	85-100	85-100
2.36	No. 8	-	-	0-5	0-10	10-40	60-100
0.150	No. 100	-	-	-	-	-	0-10

Gradation Requirements for Bituminous Preservative Treatment

Sieve Designation		Mass percent passing square mesh Sieves, AASHTO T 27	
Standard mm	Alternate US Standard	Grading A	Grading B
19	¾"	-	100
9.5	3/8"	100	-
4.75	No. 4	45 – 80	45 – 80
2.36	No. 8	28 – 64	28 – 64
0.075	No. 200	0 – 12	0 - 12

Bed Course Material

Bed course material for sidewalks, paved waterways and curbing shall consist of cinders, sand, slag, gravel, crushed stone or other approved material of such gradation that all particles will pass through a sieve having 37.5 mm (1-1/2 inches) square openings.

Bed course material for slope protection shall be a porous, free-draining material consisting of sand, gravel, cinders, slag, crushed stone or other approved free-draining material. This material shall be uniformly graded and of such size that 100 percent of the material will pass through a sieve having 37.5 mm (1-1/2 inches) square opening.

Sheathing Material

Sheathing material shall conform to either (a) or (b) below:

a. Sound, durable particles of gravel, slag or crushed stone meeting the following gradation:

Sieve	Mass percent passing
75 mm (3")	100
4.75 mm (No. 4)	0 – 10
0.075 mm (No. 200)	0 – 2

b. Clean noncementitious sand meeting the requirements of Subsection 703.1.2.

Aggregates for Subgrade Modification

The material shall consist of hard, durable particles or fragments of slag, stone or gravel, screened or crushed to the required size and grading. The material shall be visually free from vegetable matter and lumps or balls of clay and shall meet the requirements for one of the gradings given in Table whichever is called for in the Bid Schedule.

That portion of the material passing a 0.425 mm (No. 40) sieve shall have a plasticity index of not over 6, as determined by AASHTO T 90.

Grading Requirements – Aggregates for Subgrade Modification

Sieve Designation		Mass percent passing square mesh sieves using AASHTO T 27		
Standard mm	Alternate US Standard			
75	3"	100	-	-
37.5	1-1/2"	-	100	-
25	1"	-	-	100
4.75	No. 4	30 – 70	30 – 70	40 – 80
0.075	No. 200	0 - 15	0 - 15	5 – 20

Crushed slag shall consist of clean, tough, durable pieces of blast furnace slag, reasonably uniform in density and quality and reasonably free from glassy pieces.

Aggregates for Salt Stabilization

Aggregates for salt stabilized base course shall consist of hard durable particles or fragments of slag, stone or gravel, screened or crushed to the required size and grading.

That portion of the material passing a 0.425 mm (No. 40) sieve shall have a plasticity index of not over 6, as determined by AASHTO T 90.

The material shall be visually free from vegetable matter or lumps or balls of clay and shall meet the requirements for one of the gradings given in Table as called for in the Bid Schedule.

Gradation Requirements for Aggregates for Salt Stabilized Base Course

Sieve Designation		Mass percent passing square mesh sieves, AASHTO T 11 and T 27	
Standard, mm	Alternate US Standard	Grading A	Grading B
75	3"	-	-
50	2"	-	100
37.5	1-1/2"	-	70 – 100
25	1"	100	-
19	¾"	70 – 100	50 – 80
9.5	3/8"	50 – 80	40 – 70
4.75	No. 4	35 – 45	30 – 60
2.00	No. 10	25 – 50	20 – 50
0.425	No. 40	15 – 30	10 – 30
0.075	No. 200	7 - 15	7 – 15

*Gradation varies with top size of material and should be based on size of largest material used. For instance, if largest size is 50 mm (2 inches), gradation should be under heading B; if 25 mm (1 inch), under A.

Aggregates for Emulsified Asphalt Treated Base Course

Aggregate shall consist of coarse aggregate of crushed gravel, crushed slag or crushed stone, composed of hard, durable particles or fragments and a filler of finely crushed stone, sand, slag or other finely divided mineral matter. The portion of the material retained on a 4.75 mm (No. 4) sieve shall be known as coarse aggregate and that portion passing a 4.75 mm (No. 4) sieve shall be known as fine aggregate. The material shall meet one of the grading requirements of Table.

Grading Requirements for Aggregates for Emulsified Asphalt Treated Base
(Mass percent passing square mesh sieves, AASHTO T 11 & T 27)

Sieve Designation				
Standard mm	Alternate US Standard	Grading A	Grading B	Grading C
37.5	1-1/2"	100	100	-
25	1"	95 – 100	95 – 100	-
19	¾"	-	50 – 85	100
12.5	1/2"	-	-	95 – 100
4.75	No. 4	-	26 – 59	65 – 100
2.00	No. 10	0 – 9	17 – 48	-
0.300	No. 50	-	-	12 – 35
0.075	No. 200	0 – 2	2 – 10	3 - 12

If crushed gravel is used, not less than 65 mass percent of the coarse aggregate particles retained on a 4.75 mm (No. 4) sieve shall be particles having at least one fractured face.

Coarse aggregate shall have a percent of wear of not more than 35 at 500 revolution, as determined by AASHTO T 96.

The aggregate shall show a durability factor not less than 35 (coarse and fine) as determined by AASHTO T 210 (Production of Plastic Fines in Aggregates).

The material shall be free of clay balls and adherent films of clay or other matter that would prevent thorough coating with bituminous material.

Proportioning of Mixtures

The proportion of bituminous material on the basis of total dry aggregate shall be from 5.0 to 8.0 mass percent. The exact percentage to be used shall be fixed by the Engineer in accordance with the job-mix formula and the other quality control requirements.

ITEM 13 : STEEL AND METAL WORKS

GENERAL

General Requirements contain provisions and requirements essential to these specifications; and apply to this Section, whether or not referred to herein.

SCOPE OF WORK

The work includes the furnishing of all labor, materials, equipment and other incidentals necessary for the fabrication and installation of structural steel and miscellaneous metal works as specified in relevant items of these specifications and as indicated on the drawings.

SUBMITTAL

1. Before placing orders for materials for the steel and metal works, the Contractor shall submit to the Engineer for approval shop drawings for all steelwork. All project shop drawings shall show the dimension of all parts, method of construction, bolts, welding sectional areas and other details.

2. The detail of connections shown on the shop drawings shall be such as to minimize formation of pockets to hold condensation, water or dirt. A minimum gap between abutting angles and the like shall be provided wherever possible to eliminate any traps and facilitate maintenance painting.

3. No materials shall be ordered nor fabrication commenced until the shop drawings are approved by the Engineer.

STORAGE OF MATERIALS

Structural materials, either plain or fabricated, shall be stored above the ground upon platforms, skids, or other supports. Materials shall be kept free from dirt, grease, and other foreign matter and shall be protected from corrosion.

MATERIAL REQUIREMENTS

1. Unless specified herein all steel structures and metals shall conform with the requirements of "Steel and Metal Works." Connections where details are not specified or indicated herein, shall be designed in accordance with the American Institute of Steel Construction (AISC), Manual of Steel Construction, latest edition.

2. Structural steel works consisting of channels, gusset plates and other structural steel shape shall be as indicated on the drawings and shall be structural carbon steel conforming to ASTM A 36. Shapes shall be as given in AISC, Manual of Steel Construction.

3. High strength structural bolts, shall conform to ASTM A 325, Types 1 or 2. Nuts shall conform to ASTM A 560, Grade A, heavy hex style, except nuts 38 mm (1-1/2 inch) may be provided in hex style. Washers shall conform to ANSI B 18.22.1, Type B.

4. Electrodes for arc welding shall be E70 series conforming to American Welding Society Specifications A5.1.

5. Tests are required under the ASTM Standards for steel to be used in the Works and shall be carried out in the presence of the Engineer and at least four (4) days notice must be given to him of the dates proposed for such tests. Four (4) calendar days notice on which fabricated steelwork will be ready for inspection in the Contractor's yard.

6. Standard bolt shall conform to ASTM A 307 Carbon Steel Externally Threaded Standard Fasteners.

EXECUTION

QUALIFICATION

Qualification of steel fabricators, erectors and welders shall comply with the requirements.

FABRICATION REQUIREMENTS

1. Workmanship

   Fabrication shall be performed within the permissible tolerance by the approved fabricator. All workmanship shall be of the best quality with respect to internationally recognized standards of practice.

2. Cutting

   Low-carbon structural steel may be cut by machine-guided torch instead of by shears or saw. Harmful notches, burrs, irregularities, etc., shall not be developed at the cut surface.

3. Contact Faces

   Contact surfaces between bases or other elements bearing directly upon bearing plates shall be ground or milled as necessary for full effective bearing. Edges for welding shall likewise be properly prepared.

4. Bolt Holes

   Bolt holes shall be according to engineering practice and as specified in these specifications. Gas burning of holes will not be permitted.

5. High Strength Bolt Assembly Preparation

   Surfaces of high strength bolted parts in contact with bolt heads and nuts shall not have a slope of more than 1:20 with respect to a plane normal to the bolt axis.

   Where the surface of a high strength bolted part has a slope of more than 1:20, a beveled washer shall be used to compensate for lack of parallelism.

   High strength bolted parts shall fit solidly together when assembled and shall not be separated by gaskets or any other interposed compressible materials.

   When assembled, all joint surfaces including those adjacent to washers shall be free of scale except tight mill scale, and shall be free from dirt, loose scale, burrs, and other defects that would prevent solid seating of parts.

   Contact surfaces of friction-type joints shall be free from oil, paint, lacquer or galvanizing.

6. Welding

   All welding shall be done only by welders certified as to their ability to perform in accordance with accepted testing requirement.

   Welding of parts shall be in accordance with structural standards and the Standard Code for

Arc and Gas Welding in Building Construction of AWS, and shall only be done where shown, specified, or permitted by the Engineer.

Damage to galvanized areas by welding shall be thoroughly cleaned with wire brushing and all traces of welding flux and loose or cracked zinc coating shall be removed prior to painting. The cleaned area shall be painted with two coats of zinc oxide-zinc dust paint. The paint shall be properly compounded with a suitable vehicle in the ratio of one part zinc oxide to four parts zinc dust by weight. As an alternative to the above, the Contractor may submit for approval the use of a galvanizing rod or galvanizing solder to repair damaged areas.

The welding machine shall be a stable welder, and have suitable functions for the dimension of materials to be welded. The auxiliary tools used for welding shall perform sufficiently and adequately.

The welding machine used for field welding shall be of readily adjustable for electric current.

7. Shop Assembly

Structural units furnished shall be assembled in the shop. An inspection shall be made to determine that the fabrication and the matching of the component parts are correct.

Jigs shall be used for the assembly of units as much as possible to maintain appropriate position of mutual materials.

Approval of the Engineer shall be required when drilling temporary bolt holes or welding temporary support to the assembled structure.

The tolerances shall not exceed those allowed by codes and each unit assembled shall be closely checked to insure that all necessary clearances have been provided and that binding does not occur in any moving part.

In order to maintain accurate finished dimensions and shape, appropriate reverse strain or restraint shall be provided as required. Assembly and disassembly work shall be performed in the presence of the Engineer, unless waived in writing by the Engineer any errors or defects disclosed shall be immediately remedied by the Contractor.

Before disassembly for shipment, component parts of the structures shall be match marked to facilitate erection in the field.

FABRICATION TOLERANCES

1. Dimensional Tolerances for Structural Work

Dimensions shall be measured by means of an approved calibrated steel tape at the time of inspection. Unevenness of plate work shall not exceed the limitation of the standard mill practice as specified in the American Institute of Steel Construction, "Manual of Steel Construction".

2. Camber

Reverse camber in any structural steel members in excess of 1/1,000 of the span length shall cause rejection. The minimum dead load camber for any structural steel member shall be as allowed by Code, or otherwise specified.

INSPECTION AND TEST OF WELDING

1. Inspection of Welding

Inspection of welding shall be executed for the following work phases.

a. Before Welding

Scum, angle of bevel, root clearance, cleaning of surface to be welded, quality of end tab, drying of welding rod.

b. During Welding

Welding procedure, diameter of coil and wire, type of flux, welding current and voltage, welding speed, welding rod position, length of arc, melting, cleaning of slag of each level under surface chapping, supervision of welding rod.

c. After Execution of Welding

Assurance of bead surface, existence of harmful defects, treatment of crater, quality of slag removal, size of fillet, dimension of extra fill of butt welding, treatment of end tab.

2. Testing of Welding

Twenty percent (20%) of welds contributing in the overall strength of the structure and which will be inaccessible for the inspection in service shall be tested.

Welding shall be tested by ultrasonic test to the extent specified herein or as directed by the Engineer.

Where partial inspection is required, the ultrasonic test shall be located at random on the welds so as to indicate typical welding quality.

If ten percent (10%) of the random ultrasonic tested indicate unacceptable defect, the remaining eighty percent (80%) of the welding shall be tested. Repair welding required shall be ultrasonic tested after the repairs are made.

CORRECTIONS

In lieu of the rejection of an entire piece or member containing welding which is unsatisfactory or which indicates inferior workmanship, corrective measures may be permitted by the Engineer whose specific approval shall be obtained for making each correction. Defective or unsound welds or base steel shall be corrected either by removing and replacing the entire weld, or as follows.

1. Excessive convexity or overlap shall be reduced by grinding.

2. Undercuts, lack of weld shall be repaired with necessary reinforcement of weld after removal of any foreign materials such as slag, dust, oil, etc.

3. Any defects such as slag inclusions, incomplete fusion, or inadequate joint penetration, shall be completely removed, cleaned and re-welded.

4. Cracks in welds or base steel, shall be removed to sound steel throughout their length and 5cm beyond each end of the crack, followed by welding. The extent of the crack, depth and length, shall be ascertained by the use of acid etching, magnetic particle inspection or other equally positive means.

The removal of welded steel shall be done by chipping, grinding, oxygen cutting, oxygen gouging, or air carbon arc gouging and in such a manner that the remaining welded steel or base steel is not nicked or undercut. Defective portions of the welding shall be removed without substantial removal of the base steel.

INSTALLATION

1. Installation Program

   a. Prerequisite Condition

      Prior to executing steel fabrication and field installation, the Contractor shall prepare a comprehensive installation program including engineering supervision organization, fabrication procedures, field installation procedures, material application, machinery applications, inspection procedure, scope and standard of quality judgment, and submit to the Engineer for approval.

   b. Special Technical Engineering

      Special technical engineering different from contract specifications can be applied upon receiving approval of the Engineer.

2. Installation Requirement

   a. Setting of Anchor Bolt and Others

      a. 1. Anchor bolts shall be set in accurate position by using templates.

      a. 2. The setting method shall be proposed to the Engineer for his approval before setting starts.

      a. 3. The threads of bolt shall be cured with an appropriate method against rust and/or any damage before tightening.

      a. 4. Non-shrink mortar shall be placed under base plates, well cured to obtain the sufficient strength before bearing loads are applied to base plates.

   b. Temporary Bracing

      b. 1. Temporary bracing shall be installed as necessary to stay assemblies and assume loads against forces due to transport, erection operations or other work.

      b. 2. Temporary bracing shall be maintained in place until permanent work is properly connected and other construction installed as necessary for support, bracing or staying of permanent work.

      b. 3. Extent and quality of temporary bracing shall be as necessary against wind and other loads, including seismic loads not less than those for which the permanent structure is designed to resist.

   c. Adequacy of Temporary Connections

      During erection, temporary connection work shall be securely made by bolting and/or welding for all dead load, wind and erection stresses.

d. Alignment

No permanent bolting or welding shall be done until the alignment of all parts with respect to each other shall be true within the respective tolerances required.

e. Field Welding

e. 1. Any shop paint or surfaces adjacent to joints where field welding is to be executed shall be wire brushed to remove paint/primer.

e. 2. Field welding shall conform to the requirements specified herein, except as approved by the Engineer.

f. High Strength Bolts

Final tightening of high strength bolts shall be done by using manufacturer's power operated equipment without any overstress to the threads.

g. Correction of Errors

g. 1. Corrections of minor misfits by use of drift pins, and reaming, chipping or cutting will be permitted and shall be provided as part of erection work.

g. 2. Any errors to be corrected or adjusted, preventing proper assembly, shall be immediately reported to the Engineer, and such corrections or adjustments shall be made as necessary and approved by the Engineer.

g. 3. Cutting or alterations other than as approved will not be permitted.

h. Erection

h. 1. Erection and installation shall be as per approved shop drawings.

h. 2. Each structural unit shall be accurately aligned by the use of steel shims, or other approved methods so that no binding in any moving parts or distortion of any members occurs before it is finally fastened in place.

h. 3. Operations, procedures of erection and bracing shall not cause any damage to works previously placed nor make overstress to any of the building parts or components. Damage caused by such operations shall be repaired as directed by the Engineer at no extra cost to the Employer.

GALVANIZING

PREPARATION

All mild steel parts exposed to weather shall be hot-dipped galvanized after fabrication in accordance with the requirements of ASTM A 123 or ASTM A 153. Prior to galvanizing, the surfaces shall be cleaned of dirt, weld splatter, grease, slag, oil, paint or other deleterious matters. The steel surfaces shall be chemically de-scaled and cleaned with the same abrasive blast or other suitable method as approved by the Engineer.

COATING

The zinc coating shall consist of uniform layers of commercially pure zinc free from abrasions, cracks blisters, chemical spots or other imperfections, and shall adhere firmly to the surface of the steel. The weight of zinc coating per square meter of actual surface shall not be less than

550 grams. Any surface damaged subsequent to galvanizing shall be given two coats of approved zinc rich paints.

PAINTING

This work shall consist of the preparation of the metal surfaces, the application, protection and drying of the painted surfaces, and supplying of all tools, tackle, scaffolding, labor and materials necessary for the entire work. Painting shall be applied in the field or shop as approved by the Engineer.

Unless otherwise specified or approved, all painting work for structural steel shall comply with the requirements of this Section.

SHOP PAINTING

All structural steel shall be given a shop primer after fabrication and cleaning before delivery to the site.

All steel work shall be thoroughly dried and cleaned of all loose mill scale, rust and foreign matters by means of sand blasting or other suitable methods approved by the Engineer before shop painting shall be applied. Each individual piece shall be painted prior to assembly. Portions where
field welding or field contact with concrete is required shall not be painted.

Except for galvanized surfaces and items to be encased in concrete, clean ferrous metal surfaces shall be given one coat of Amerlock 400 Epoxy Primer at 100 Microns or approved equal. Additional coat shall be applied to surfaces that will be concealed or inaccessible for finish painting by Amerlock 400, Top Coat at 150 Microns with color or equivalent.

FIELD PAINTING

After erection, the Contractor shall thoroughly prepare and clean the entire surface of all structural steel from all dirt, grease, rust or other foreign matters. The entire surface of all members shall then be field painted.

MATERIALS

1. Structural Steel Work

   a. After surface preparation, steelwork shall be given one coat of approved prefabricating primer.

   b. Before final assembly of steelwork at the fabricator's shop, two shop coats of special red lead primer shall be applied to the surface of sections to be in permanent contact, meeting faces and all other concealed surfaces. After final assembly, but before delivery to the project site, the steelwork shall likewise be given two shop coats of special red lead primer.

2. Galvanized Steelwork

   All galvanized steelwork shall be treated with zinc chromate two-pack etch primer followed by one coat of non-etch zinc chromate primer.

3. Miscellaneous Metal Work

   Unless otherwise specified in other Sections of the Specifications or shown on the drawing, miscellaneous metal works such as ladders, structural steel ladder rungs, etc.

shall be given two shop coats of epoxy primer and two coats of epoxy enamel.

CONSTRUCTION METHODS

1. Cleaning of Surfaces

Surfaces of metal to be painted shall be thoroughly cleaned; removing rust, loose mill scale, dirt, oil or grease, and other foreign substances. Unless cleaning is to be done by sand blasting, all weld areas, before cleaning is started, shall be neutralized with a proper chemical, after which they shall be thoroughly rinsed with water.

Three methods of cleaning are provided herein. The particular method to be used shall be as directed by the Engineer.

2. Hand Cleaning

The removal of rust, scale, and dirt shall be done by the use of metal brushes, scrapers, chisels, hammers or other effective means. Oil and grease shall be removed by the use of gasoline or benzene.

Bristle or wood fiber brushes shall be used for removing loose dirt.

3. Sandblasting

All steel shall be cleaned by sandblasting. The sandblasting shall remove all loose mill scale and other substances. Special attention shall be given to cleaning of corners and re-entrant angles. Before painting, sand adhering to the steel in corners and elsewhere shall be removed. The cleaning shall be approved by the Engineer prior to any painting which shall be done as soon as possible before rust forms.

4. Flame Cleaning

All metal, except surface inside boxed members and other surfaces which shall be inaccessible to the flame cleaning operation after the member is assembled, shall be flame cleaned in accordance with the following operations.

a. Oil, grease, and similar adherent matter shall be removed by washing with a suitable solvent. Excess solvent shall be wiped from the work before processing with subsequent operations.

b. The surface to be painted shall be cleaned and dehydrated (free from occluded moisture) by the passage of oxyacetylene flames which have an oxygen to acetylene ratio of at least 1.0. The oxyacetylene flames shall be applied to the surfaces of the steel in such a manner and at such speed that the surfaces are dehydrated; dirt, rust loose scale in the form of blisters or scabs, and similar foreign matters are freed by the rapid, intense heating by the flames. The number arrangement and manipulation of the flames shall be such that all parts of the surfaces to be painted are adequately cleaned and dehydrated.

c. Promptly after the application of the flames, the surfaces of the steel shall be wire brushed, hand scraped wherever necessary, and then swept and dusted to remove all free materials and foreign particles.

d. Paint shall be applied promptly after the steel has been cleaned and while the temperature of the steel is still above that of the surrounding atmosphere.

5. Weather Conditions

a. Exterior Coatings

Coatings to surface shall not be applied during foggy or rainy weather, or under the following surface temperature conditions: below 4°C, or over 35°C, unless approved by the Engineer.

b. Interior Coatings

Coatings shall be applied when surfaces to be painted are dry and the following surface temperatures can be maintained: between 18 to 35°C during the application.

6. Application

a. Paint shall be factory tinted and mixed. All paint shall be field mixed before applying in order to keep the pigments in uniform suspension.

b. Field Painting

When the erection work is complete, including all bolting and straightening of bent metal, all adhering rust, scale, dirt, grease or other foreign materials shall be removed as specified above.

As soon as the Engineer has examined and approved each steel and metal works structures, all field bolts, all welds, and any surfaces from which the top or first coat of paint has become worn off, or has otherwise come defective shall be cleaned and thoroughly covered with one coat of paint.

Surfaces to be bolted and surfaces which shall be in contact with concrete, shall not be painted. Surfaces which shall be inaccessible after erection shall be painted with such field coats as are required. When the paint applied for retouching the shop coat has thoroughly dried, and the field cleaning has been satisfactorily completed, such field coats as are required shall be applied. In no case shall a succeeding coat be applied until the previous coat is dry throughout the full thickness of the paint film. All small cracks and cavities which were not sealed in a watertight manner by the first field coat shall be filled with a pasty mixture of red lead and linseed oil before the second coat is applied.

The following provision shall apply to the application of both coats. To secure a maximum coating on edges of plates or shapes, bolt heads and other parts subjected to special wear and attack, the edges shall first be striped with a longitudinal motion and the bolt heads with a rotary motion of the brush, followed immediately by the general painting of the whole surface, including the edges and bolt heads.

The application of the second field coat shall be deferred until adjoining concrete work has been placed and finished. If concreting operations have damaged the paint, the surface shall be re-cleaned and repainted.

c. General Manners

Painting shall be done in a neat and workmanlike manner. Paint may be applied with hand brushes or be spraying, except aluminum paint which preferably shall be applied by spraying. By either method the coating of paint applied shall be smoothly and uniformly spread so that no excess paint shall collect at any point. If the

work done by spraying is not satisfactory to the Engineer hand brushing shall be required.

d. Brushing

When brushes are used, the paint shall be so manipulated under the brush as to produce a smooth, uniform, even coating in close contact with the metal or with previously applied paint, and shall be worked into all corners and crevices.

e. Spraying

Power spraying equipment shall be used to apply the paint in a fine spray. Without the addition of any paint, the sprayed area shall be immediately followed by brushing, when necessary, to secure uniform coverage and to eliminate wrinkling, blistering and air holes.

f. Removal of Paint

If the painting is unsatisfactory to the Engineer the paint shall be removed and the metal thoroughly cleaned and repainted.

ITEM 14 : DRAINAGE WORKS

SCOPE OF WORK

The works shall consist of excavation, backfilling and construction of lateral drains, construction of manholes, reconnection to existing lateral and other related works in accordance with the dimensions, size, elevation and grade as shown on the drawing and shall conform with the Specification.

At least thirty (30) days before the start of any construction related to drainage works, the Contractor shall submit to the Engineer for his approval, shop drawings of the drainage work he intends to construct. The shop drawings shall include the materials and the general method of installation he intends to employ.

MATERIAL REQUIREMENTS

BACK FILL

Fill shall be in accordance with Item "Reclamation and Fill".

GRAVEL BEDDING

Gravel Bedding/gravel base shall be in accordance with the specifications of Crushed Course Aggregates in "Reinforced Concrete".

SAND BEDDING

Sand bedding shall be in accordance with Item "Reinforced Concrete (Fine Aggregates)".

CONCRETE

Mixing/Casting and steel reinforcements shall be in accordance with Item "Reinforced Concrete" while the dimensions shall be as shown on the Drawings.

CEMENT MORTAR

Cement mortar shall consist of one part Portland cement to two parts of fine aggregate with water added as necessary to obtain the required consistency.

REINFORCED CONCRETE PIPE

The fabrication of reinforced concrete pipes shall conform to the Specifications of ASTM C 76 while the testing requirements shall conform to ASTM C 497. The Engineer reserves the right to inspect and test the pipe delivered for intended purpose. Defects that are discovered after acceptance of delivery of the pipe but before installation shall be a cause for rejection.

Standard reinforcement details and concrete strength shall be in accordance with DPWH "Standard Two Meter Concrete Pipe Culvert".

STEEL GRATING

All materials shall be compliant with ASTM A36 or equivalent and Hot Dip Galvanizing shall be in accordance with ASTM A123 with minimum average coating of 610gms/sq.m.

The gratings shall be fusion welded type and non-manually fabricated with loading capacity equivalent to HS20-44. Loads and deflection shall be in accordance with AS3990 and the fabrication shall be covered by the requirements of AWS D1.1.

EXECUTION

EARTHWORKS

All earthworks for concrete pipe culvert shall conform to the lines, grades and elevations shown on the drawings or as directed by the Engineer.

The lateral drain shall be excavated to the depth, grade and width established by the Engineer. The bedding surface shall provide a firm foundation of uniform density throughout the entire length. Soft, spongy, or otherwise unstable material encountered that will not provide a firm foundation for the concrete drainage shall be removed to the full width of the trenches and replaced by suitable material to a depth of not less than 30 cm. 100mm thick gravel bedding shall be used as foundation or otherwise as specified.

PIPE LAYING

The pipe shall be tested for water-tightness of joints before backfilling the trench. Unsatisfactory work shall be corrected without additional cost to the PPA. The collar shall have set sufficiently prior to backfilling.

Methods of installation and typical bedding for pipe conduits if not included in the plans, shall conformed to DPWH "Standard Two Meter Reinforced Concrete Culvert".

LATERAL DRAIN

Concrete cover and the steel gratings shall be set to the required elevations as shown on the drawings to fit the adjoining surfaces and shall be installed after the adjoining concrete is struck off and finished, and the fit on the frames shall be such that there is no rocking.

All completed structures shall be thoroughly cleaned of any accumulations of silts, debris or foreign matter of any kind, until finally accepted and put into service.

CATCH BASIN INLETS, MANHOLES AND OUTLETS

Lid frames shall be set to the required elevations as shown on the drawings to fit the adjoining surfaces. Lids shall be installed after the adjoining concrete is struck off and finished, and the fit on the frames shall be such that there is no rocking.

Where reconstruction of existing catch basin inlets, manholes, outlets, or similar structures are indicated, the work shall be in accordance to the details and elevations as shown on the drawings, including re-installation of existing metal frames, grates and lids, or replacing of concrete covers instead of grates that may have been lost or found lacking. All completed structures shall be thoroughly cleaned of any accumulations of silts, debris or foreign matter of any kind, until finally accepted and put into service.

FIELD DENSITY TEST

Field Density tests to determine the percent of compaction of the fill material shall be conducted until a field density of at least 95 percent of the maximum dry density in accordance with AASHTO T180, Method D has been achieved. In place density determination shall be made in accordance with AASHTO T191.

CLEARING AND DISPOSAL

Dumping or disposal of un-used excavated materials shall be coordinated to PMO. If the excavated materials are determined for disposal, the contractor will provide all necessary works and expenses for its completion in concurrence by the Engineer.

ITEM 15 : MOORING AND FENDERING SYSTEM

SCOPE OF WORK

1. The work includes furnishing of all labor, materials and equipment to complete the installation of mooring bollards and fenders in piers/wharves.

2. The work shall include the supply, transport, handling, storage and installation of fenders systems in the newly constructed piers.

3. The Contractor shall furnish and install the necessary fittings as shown on the drawings and/or specified.

Supplementary parts necessary to complete and install each item of works shall be included whether or not shown or specified. The Contractor shall furnish to relevant trades all anchors, fastenings, inserts, fittings, fixtures or the like to be installed on or required for securing the works.

The Contractor shall submit shop drawings of all fitting works prior to placing orders and commencement of any fabrication.

MATERIAL REQUIREMENTS

MOORING SYSTEM

Designated load capacity of mooring bollards shall be as shown in the drawings, and shall be referred to as the maximum load capacity. The mooring bollards shall be at rupture stage upon reaching the maximum load capacity.

Mooring bollards shall be of the dimensions, weights, capacities and designs as shown in the drawings and shall be fabricated by approved manufacturer with cast steel conforming to the requirements indicated in the plan/drawings, or approved equivalent.

The size of the bolts, nuts and washers shall be in accordance with the specifications provided in the plans/drawings. The anchor plate shall be connected to the holding down bolt as shown in the plans/drawings. All bolts, nuts, washers etc., that are exposed shall be hot-dip galvanized.

Samples of the bolts, nuts, washers and anchor plates shall be submitted to the Engineer for approval before being used in the Works.

The upper part of bollards and base plates which are not embedded in concrete shall be painted. The surface of bollards shall be cleaned thoroughly by wire brush or other means prior to painting to remove rust or any other contamination which may interfere with bond of paint to metal.

The exposed surface shall be coated with rust proof paint and finishing paint, which shall be coal-tar epoxy of 120m micron thickness in accordance with JIS K5623 or the approved standard.

Base Steel:

Chemical composition and mechanical properties of base metal to be used for fabrication of mooring bollard and its accessories shall comply with ASTM A36 and other required standard stated therein.

Concrete Foundation :

Concrete foundation for mooring bollards shall conform to the requirements of the Section concerning "Reinforced Concrete".

Visual Inspection :

All mooring bollards delivered to Site shall be inspected by the Engineer for any signs of flaws or defect inimical to usage.

Mill Test Certificates:

Two (2) copies of mill test reports shall be submitted certifying that materials meet the specified standards.

Test Inspection:

Inspection of all materials and methods of fabrication shall be carried out by the Contractor. However, the Engineer reserves the right to inspect all facilities at any time during the manufacture to ensure that the materials and workmanship are in accordance with Specifications and the best of workmanship.

FENDER SYSTEM

The rubber fenders should comply with the performance requirements specified in the table provided on the plan/drawings of Rubber Dock Fenders (RDF).

PHYSICAL PROPERTIES OF MATERIALS

The rubber for the fenders shall be of high quality natural rubber, synthetic rubber or mixed rubber blended with carbon black used in the rubber industry and shall have sufficient resilience and anti-ageing, weathering, abrasion, wear and oil resistant properties. The rubber dock fenders shall be free from bubbles, cracks and other harmful defects.

The physical properties of the rubber compound used for the fenders shall comply with the following requirements:

Physical Properties and Test Method

Test Item			Properties	Test Method	
Physical Test	Before Aging	Tensile Strength	160kg/sq.m minimum	Test piece: Dumbell No. 3	ASTM D412
		Elongation	350% minimum		ASTM D1456
		Hardness	76Hs maximum	Spring Type hardness test (Type A)	ASTM D2240
	After Aging	Tensile Strength	Not less than 80% of original value	Aging by air heating: 70±1°C x 96 hours.	ASTM D412
		Elongation			ASTM D1456
		Hardness	Not more than original value +8°		ASTM D2240
	Compression Test		30% maximum	Heat treatment: 70±1°C x 22 hours.	ASTM D395

Note: Equivalent Standards are acceptable.

FITTINGS AND ANCHORAGE

Anchor bolts and connecting hardware shall be fabricated using type of steel specified and to the required shapes and sizes shown on the approved plan/drawings.

TESTING, SAMPLING, INSPECTION, ACCEPTANCE, MARKING AND PACKAGING

Testing

All rubber dock fenders shall be tested for performance. It shall pass the required energy absorption and reaction force at a certain deflection as indicated in the plan.

The Contractor shall be required to submit test certificates showing compliance to the above requirements. The test certificates shall be certified by an independent testing institute / organization recognized by the Authority.

The standard performance testing methodology shall be Method B, to wit:

1. Fender temperature shall be stabilized at 23 degrees plus or minus 5 degrees centigrade for at least 24 hours before compression testing.

2. Break-in of fender by deflecting 3 times to rated deflection.

3. Removed load from the RDF and allow recovering for a minimum of 1 hour.

4. Deflect RDF at speed of 2-8 cm/min once to rated deflection.

The testing apparatus shall be calibrated and certified within plus or minus 1% in accordance with ISO or equivalent JIS or ASTM requirements. Calibration shall be traceable to a national/international standard and shall be performed annually by an accredited third party organization. The RDF performance testing center shall be subjected to accreditation by PPA and notation and /or certification by DPWH-BRS prior to acceptance.

Inspection

All fenders of each type shall be inspected for compliance to specified dimensions and all fenders shall be inspected by the Engineer for any sign of flaw or defect inimical to its use.

All anchor bolts and fittings shall be inspected. The material used for the fabrication of bolts and fittings shall be covered by the manufacturer's certified mill certificate and shall be verified by the Authority.

All RDF items/units shall be clearly numbered and marked indicated the following:

Acceptance Tolerance

The acceptance tolerance shall be based on the following:

1. Fender Dimension

Length	:	-2% to +4%
Width	:	-2% to +4%
Height	:	-2% to +4%
Thickness	:	-2% to +8%

2. Anchor Bolt Holes in Fender

Diameter of the Hole	:	+2.0mm
Pitch of the Hole	:	+4.0mm

3. Acceptance tolerance for all fenders supplied shall be as follows:

E = Energy absorption,	E ≥ Specified E but not less than 10% of the specified E
R = Reaction force,	R ≤ Specified R but not more than 10% of the specified R

Marking

All fender units shall be clearly numbered and marked. Each fender shall have the following markings.

1. Fender type and manufacturer's name or trade mark
2. Production serial number
3. Date of manufacture or its abbreviation
4. Main dimensions
5. Project identification as follows:

Name of Port/Project:_____

Year supplied _____

Packaging

The fenders shall be packaged on wooden crate or wrapped individually with Polypropylene sheets except when shipped containerized. The bolts and fittings should be placed in crates and suitably treated for protection when transported by sea and stored in port areas.

EXECUTION

MOORING / FENDERING SYSTEM

All units shall be installed at the locations shown on the drawings and as directed by the Engineer.

ITEM 16 : ELECTRICAL WORKS (PORT LIGHTING SYSTEM)

SCOPE OF WORK

The work to be done shall consist of furnishing, delivering, and installing electrical materials / fixtures completed in accordance with all the details of the electrical works as shown on the drawings including materials, labor, tools and equipment and all incidental works as found necessary.

Refer to electrical plans/drawings for location and extent of work involved.

GENERAL REQUIREMENTS

a) All work shall be done in accordance with the requirements of the publications and agencies having jurisdiction, as well as the requirements of the approved standards.

1.	National Fire Protection Association	-	(NFPA)
2.	National Electrical Manufacturer Association	-	(NEMA)
3.	Underwriter Laboratories, Inc.	-	(UL)
4.	Philippine Electrical Code Philippine National Standard	- -	(PEC) (PNS)
5.	Federation Specification: Circuit Breaker, Molded Case, Branch Circuit and Service		
6.	American National Standard Institute	-	(ANSI)
7.	American Society for Testing and Materials	-	(ASTM)
8.	Illuminating Engineering Society	-	(IES)
9.	Light Emitting Diode	-	(LED)

b) The electrical power of the Port lighting system will be connected to the Concrete Pedestal Post. While the supply voltage should be 220 volts, single phase (1Ø), and 60 hertz.

c) The Contractor shall employ a licensed Registered Electrical Engineer or Master electrician to perform or to supervise and to conduct the continuous inspection of all electrical work.

d) The Contractor shall first obtain approval from the Authority before procurement, fabrication or delivery of electrical materials to the site. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the Manufacturer's Name, Trade Name, Place of Manufacture, Catalog Model or Number, Nameplate Data, Size, Layout Dimensions, Capacity, Project Specification and Paragraph Reference, Technical Society Publication References and other information necessary to establish contract compliance of each item to be furnished.

e) All excavations fill and backfill, and concrete works involved herein, shall be carried to the required elevations and shall conform to the provisions of specification under Earthwork and Concrete Construction of this tender document.

f) The materials and equipment to be furnished shall be standard products of reputable manufacturers engaged in the reproduction of such materials and equipment.

g) The Contractor shall furnish and install electrical materials as shown in the drawings. A licensed Electrical Engineer or Master Electrician is required to implement the installation of the electrical system.

h) Electrical installation shall conform to the requirements of Philippine Electrical Code (PEC) and the other approved standards.

i) The contractor shall install all electrical work with the supervision of the qualified Registered Electrical Engineer (REE) or Master Electrician. All electrical installation applications regardless of capacity and voltage whether new, addition or revision shall be accompanied by electrical plans signed and sealed by a duly licensed Professional Electrical Engineer (PEE).

MATERIAL REQUIREMENTS

All materials shall be brand new and shall be of the approved type meeting all the requirements of the Philippine Electrical Code and bearing the Philippine Standard Agency (PSA) mark.

PRODUCTS

WIRES AND CABLES

The conductor material to be furnished and installed shall be copper wire Heat-Resistant Thermoplastic (THHN/THWN-2). All conductors should be rated 600-volt insulation and should be standard for all sizes.

CONDUIT AND FITTINGS

Underground PVC conduit shall be polyvinyl chloride with concrete covered. It shall be manufactured to schedule 40 outside diameter. All fittings and bends shall be solvent bonded using manufacturers' recommended product.

LED FLOODLIGHT FIXTURE 300 WATT

Specifications:

Rated	: 300-watt LED Floodlight Fixture or equivalent
Input Voltage	: AC 85-265 / 50-60 HZ
Luminous Flux	: 30,000 LM
Color Temperature	: Daylight (5500-6500K)
Optional	
CRI	: Ra>70
PF	:> 0.95
Beam Angle	: 120 degrees
IP Grade	: IP 66 / IP 65
Material	: Die Cast Aluminum

CONCRETE DUCT BANK

The contractor shall construct concrete duct bank as shown in the approved plan.

PANEL BOARD

Panel board shall conform as shown on the approved plans with respect to supply characteristics, rating of main lugs or main circuit breaker, number and ratings and capacities of branch circuit breakers.

Panel board shall consist of a factory completed dead front assembly mounted in an enclosing NEMA-3R cabinet consisting of code gauge galvanized sheet steel box with trim and door.

Main and branch circuit breakers for panel board shall have the rating, capacity and number of poles as shown on the approved plans. Breakers shall be thermal magnetic type solid state-type with interrupting capacity of 10,000 amperes symmetrical minimum. Breaker terminal shall be UL listed as suitable for type of conductor provided. Breaker shall be the bolt-in type (that is, bolted to the current carrying bus). Plug-in circuit breakers are not acceptable.

EXECUTION

INSTALLATION

12.0 Meter Height Floodlight Steel Pole shall be relocated as shown on the approved plans.

Pole Setting: Depth as shown on the approved plans.

Construction of lamp post foundation shall be in accordance with the shape and dimensions as shown on the approved plans.

Excavations / backfilling required before /after installation of lamp post foundation with the trench shall conform to the provisions of Earthwork and Concrete construction.

WORKMANSHIP

The work throughout shall be executed in the best and most thorough manner under the direction of and to the satisfaction of the Registered Electrical Engineer or Master Electrician, who will interpret the intent meaning of the drawings and specifications and shall have the power to reject any work and materials which in his judgment, are not in full accordance therewith.

TESTING OPERATIONS

When the electrical installation is completed, the Contractor shall test the installed electrical materials and equipment in the presence of a Registered Electrical Engineer or Master Electrician. The system shall be free from any defects, shorts or grounds. The Contractor at no extra cost shall furnish all necessary instruments and personnel required for the testing.

GUARANTEE

Upon completion and before final acceptance of the work, the Contractor shall furnish the Engineer with a written guarantee stating that all works executed are free from defects on materials and workmanship. The guarantee shall be for a period of one year from the date of final acceptance. Any work that becomes defective during the said period shall be corrected / replaced by the Contractor at his own expense in a manner satisfactory to the Authority.

ITEM 17 : PROJECT BILLBOARD

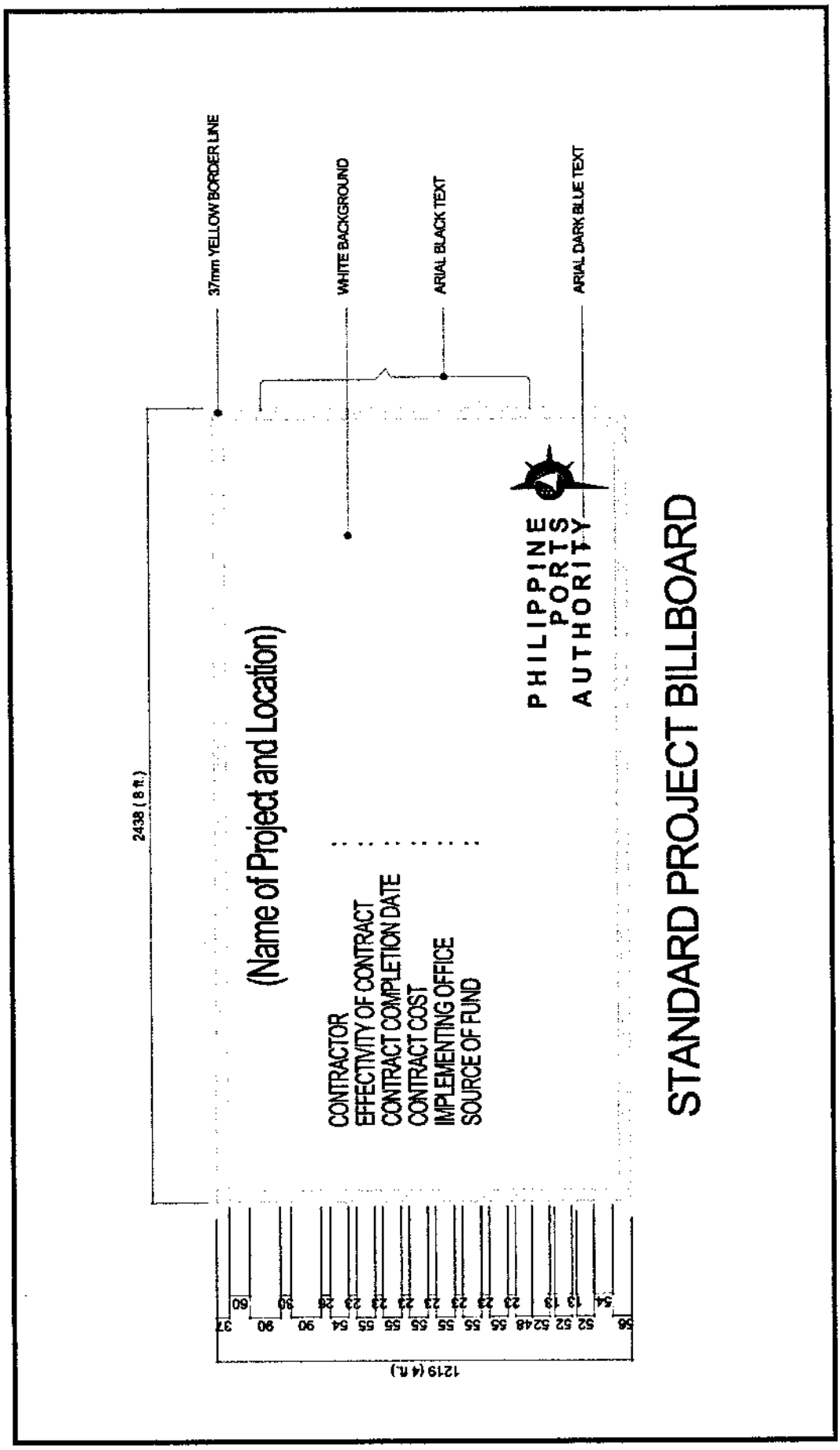
SPECIFICATION

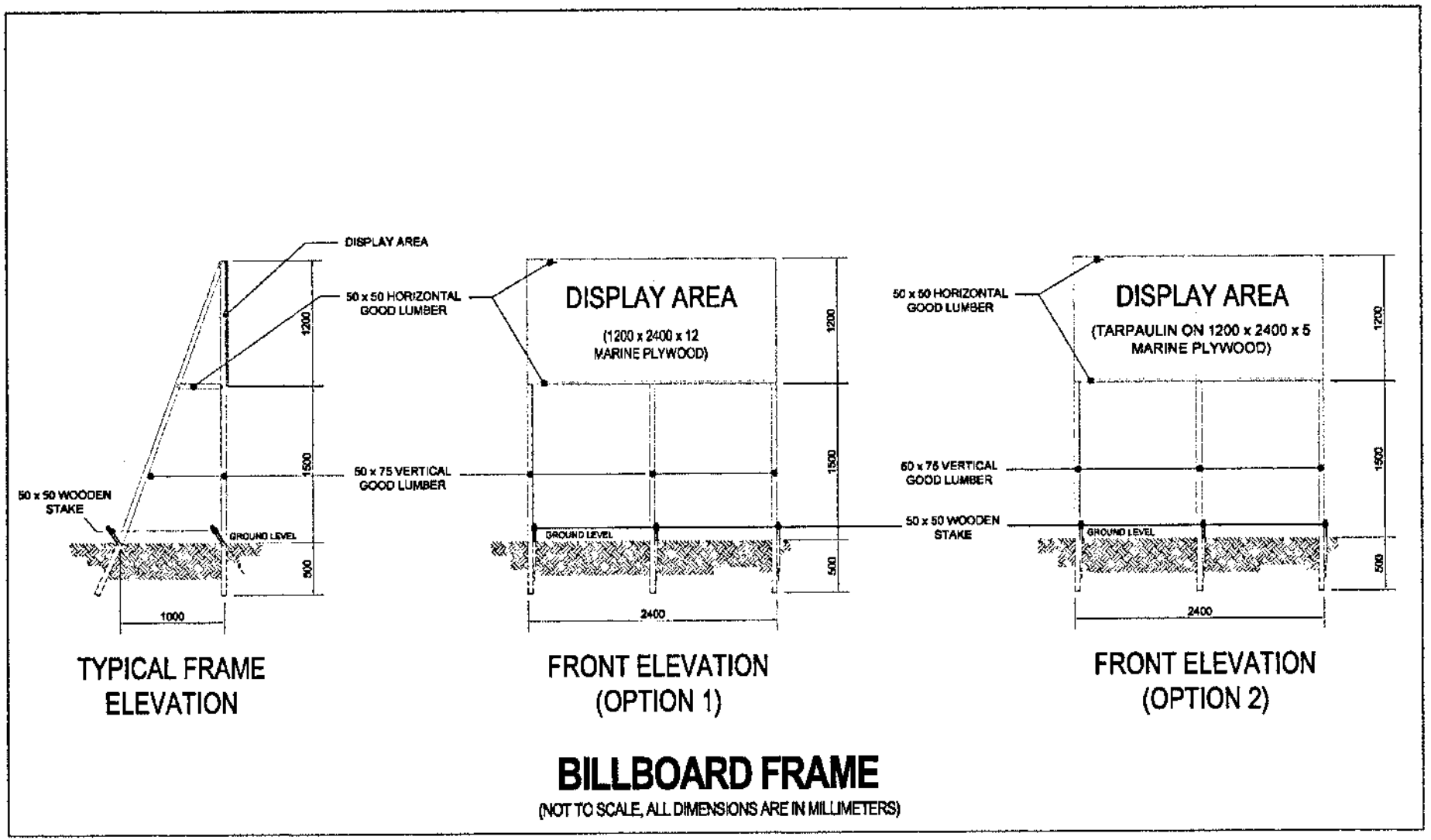
The Project Billboard shall be installed at location(s) designated by the Engineer.

The size and specifications of materials for the standard billboard shall be 4ft. x 8ft. (1,200mm x 2,400mm) using ½ inch (12mm) marine plywood or tarpaulin poster on 3/16 inch (5mm) marine plywood.

Project billboards shall not contain Name(s) and/or picture(s) of any personages.

See attached drawings for further details of the standard billboard.


STANDARD PROJECT BILLBOARD
PHILIPPINE PORTS AUTHORITY
(Name of Project and Location)
CONTRACTOR
EFFECTIVITY OF CONTRACT
CONTRACT COMPLETION DATE
CONTRACT COST
IMPLEMENTING OFFICE
SOURCE OF FUND
37mm YELLOW BORDER LINE
WHITE BACKGROUND
ARIAL BLACK TEXT
ARIAL DARK BLUE TEXT
2438 (8 ft.)
1219 (4 ft.)



BILLBOARD FRAME

(NOT TO SCALE, ALL DIMENSIONS ARE IN MILLIMETERS)

ITEM 18 : SAFETY SIGNAGES AND BARRICADES

DESCRIPTION

This work includes the furnishing and installing of safety signages and barricades in accordance with the specifications and to the details shown below in the drawings, or as directed by the Engineer.

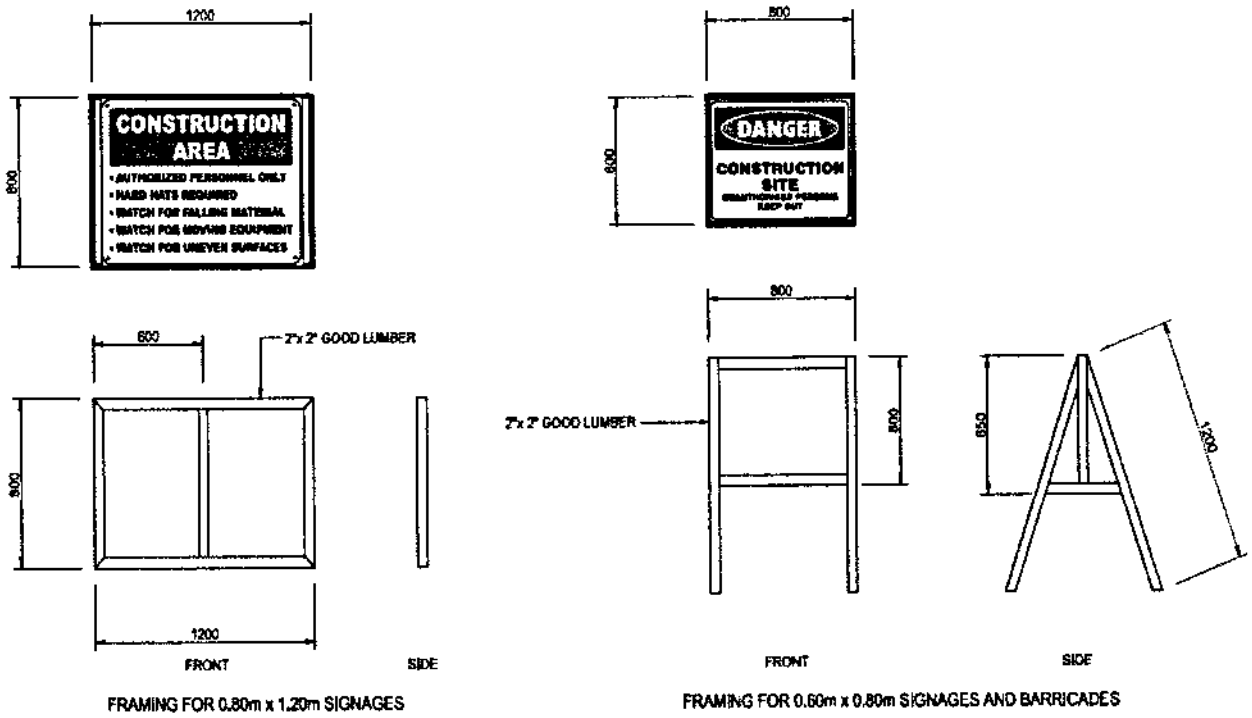
SPECIFICATION

The Signage's and Barricades shall be installed at location(s) designated by the Engineer.

The sizes of the standard signages shall be 2-2/3ft x 4ft (800mm X 1,200mm) for fixed type and 2ft x 2–2/3ft (600mm x 800mm) for mobile type. For barricade standard 2ft x 2–2/3ft (600mm x 800mm) shall be provided.

The materials to be used for signages and barricades are ½ inch (12mm) marine plywood or tarpaulin poster on 2" x 2" (50mm x 50mm) good lumber frame (see drawing below).

The printing or painting shall be the discretion of the Engineer.



STANDARD PLAN FOR SIGNAGES AND BARRICADES

SECTION VII

DRAWINGS
(APPROVED PLANS)

DRAWINGS AND APPROVED PLANS
(SEE ISSUED APPROVED PLANS)

LIST OF DRAWINGS:

1 OF 28 - Development Plan, Vicinity Map, General Notes, Design Parameters, List of Drawings

2 OF 28 - Plan for Existing Affected Structures

3 OF 28 - Development Plan for Port Operational Area

4 OF 28 - Piling Plan for Port Operational Area

5 OF 28 - Section A & B

6 OF 28 - Section B & C

7 OF 28 - Section D & E

8 OF 28 - Section E, F & G

9 OF 28 - Section H, I & J

10 OF 28 - Section K, L & M

11 OF 28 - Detail of Coping Wall-1 & 2, Detail of Mooring Block for 35 Tons Mooring Tee-Head, Detail of Anchor Block, Detail of Anchor Block for Mooring Block

12 OF 28 - Tie Rod Details, Typical Pavement Joints Layout, Detail of Pavement Joints, Detail of Construction Joint, Detail "X", Detail of Slotted RC Curb, Detail of Retaining Wall-1, Typical Stainless Railing Details

13 OF 28 - Sheet Pile Connection Detail, Detail of Channel, Detail of Wale, Details of Wale Splice, Typical Waler Bolt

14 OF 28 - Typical Detail of Combined U-Type, (600mm X 525mm X 13mm @ 19m Length), Detail of Sheet Pile, Pile Dowel and Coating Details

15 OF 28 - Drainage Layout, Typical Section of Drainage Line

16 OF 28 - Detail of 400mm x 400mm Pre-Stressed Concrete Pile

17 OF 28 - General Plan for Continuous Roro Ramp on Piles, Piling Plan for Continuous Roro Ramp on Piles

18 OF 28 - Typical Front Elevation, Side Elevation-1 & 2, Roro Ramp Pile Cap Plan, Pile Connection Detail at Ramp

19 OF 28 - Section A-1 to A5, Typical A to D

20 OF 28 - Roro Ramp w/ Channel Skid Bars (@Expansion Area), Fabricated Channel Skid Bar, Section T, Typical Half Channel Section, Typical Anchor Bars, Typical Section Roro Ramp w/ Channel Skid Bars

21 OF 28 - Detail of Rubber Dock Fender V-Type 500H X 1500L, Detail of Typical Anchor Bolt (Normal), 35 Ton Mooring Tee-Head, Detail of Anchor Bolt

22 OF 28 - Layout of Existing Damaged Fender Blocks (For Demolition and Chipping), Piling Layout

23 OF 28 - Location of Proposed Fender Blocks, Typical Front Elevation

24 OF 28 - Typical Side Elevation, Typical Front Elevation, Section of Fender Block, Isometric Fender Block

25 OF 28 - Alternate Installation of Rubber Dock Fenders (Existing V-Type 500H x 1000L & V-Type 500H x 2000L)

26 OF 28 - Demolition of Existing RC Platform, Existing Layout of Concrete Piles, Layout of New Fender Blocks and Curtain Wall, Section Z, Curtain Wall with RC Curb (Reconstruction)

27 OF 28 - Detail of Rubber Dock Fender V-Type 500H x 2000L (Existing Fenders), Detail of Rubber Dock Fender V-Type 500H X 1000L, Detail of New Anchor Bolt (Normal)

28 OF 28 - Detail of 450mm x 450mm Pre-Stressed Concrete Pile

PORT LIGHTING SYSTEM

E 01 OF 02 - Port Lighting Layout Plan, Legend, General Notes

E 02 OF 02 - Detail of Floodlight Foundation, Detail of Ductbank, Load Schedule, Riser Diagram, Detail of Solar Lamp Post and Foundation, Remarks

SECTION VIII

BILL OF QUANTITIES and ATTACHMENTS

BID SUMMARY

TUBIGON PORT EXPANSION AND RECONSTRUCTION PROJECT

Port of Tubigon, Tubigon, Bohol

NO.	DESCRIPTION OF WORK	AMOUNT (Pesos)
BILL NO. 1	GENERAL EXPENSES	
BILL NO. 2	REMOVAL, DISPOSAL AND EXCAVATION WORKS	
BILL NO. 3	PORT OPERATIONAL AREA	
BILL NO. 4	CONTINUOUS RORO RAMP AND UPGRADING OF FENDER BLOCKS	
BILL NO. 5	REIMBURSABLE ITEMS	1,050,000.00
	BID PRICE	

Name of Firm

Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

Date

BILL OF QUANTITIES
TUBIGON PORT EXPANSION AND RECONSTRUCTION PROJECT
Port of Tubigon, Tubigon, Bohol

NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY. (4)	UNIT PRICE (Pesos) (5)	AMOUNT (Pesos) (4) x (5)
BILL NO. 1	**GENERAL EXPENSES**				
1.01	Mobilization, demobilization and cleaning	lot	1		
1.02	Rental of temporary site office and residence for the Engineer and staff	mo.	24		
1.03	Maintain temporary site office and residence for the Engineer and staff	mo.	24		
1.04	Provide Construction Safety and Health Program in the execution of the project	mo.	24		
	TOTAL FOR BILL NO. 1				

Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

BILL OF QUANTITIES
TUBIGON PORT EXPANSION AND RECONSTRUCTION PROJECT
Port of Tubigon, Tubigon, Bohol

NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY. (4)	UNIT PRICE (Pesos) (5)	AMOUNT (Pesos) (4) x (5)
BILL NO.	**2 REMOVAL, DISPOSAL AND EXCAVATION WORKS**				
2.01	Excavation and backfilling works for electrical and drainage works	cu.m.	197		
2.02	Remove existing fender and turn over to the authority as directed by the Engineer	no.	61		
2.03	Remove existing mooring bollard and turn over to the authority as directed by the Engineer	no.	14		
2.04	Remove and dispose existing portion of port operational area and RC pier	sq.m.	54		
2.05	Remove and dispose existing RC Wharf	sq.m.	337		
2.06	Chip-off and dispose existing R.C. Curb, flush to required elevation and smoothen with mortar	l.m.	61		
2.07	Cut and dispose existing PSC Piles up to seabed elevation	no.	64		
2.08	Remove/relocate existing highmast tower and floodlight and turn over excess materials to the authority	no.	3		
2.09	Remove existing adjustable steel ramp and turn over to the authority	no.	1		
	TOTAL FOR BILL NO. 2				

Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

BILL OF QUANTITIES
TUBIGON PORT EXPANSION AND RECONSTRUCTION PROJECT
Port of Tubigon, Tubigon, Bohol

NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY. (4)	UNIT PRICE (Pesos) (5)	AMOUNT (Pesos) (4) x (5)
BILL NO.	**3 PORT OPERATIONAL AREA**				
3.01	Supply and deliver to site U-Type steel sheet piles including corner connectors	m.t.	1,041		
3.02	Handle, pitch and drive Steel sheet piles and connectors	l.m.	7,999		
3.03	Supply and install steel waling and splice plate for the steel sheet piles	kg.	18,403		
3.04	Supply and apply high-build epoxy protective coating steel sheet piles (Abrasion Resistant Modified Epoxy With ≥85% Volume Solid, Min. Dry Film Thickness = 800 Microns)	sq.m.	6,824		
3.05	Supply and install dowel bars for steel sheet piles	kg.	10,903		
3.06	Supply and deliver to site 400mm x 400mm PSC anchor and lamp post piles	l.m.	5,616		
3.07	Handle, pitch and drive 400mm x 400mm PSC Vertical Piles	l.m.	54		
3.08	Handle, pitch and drive 400mm x 400mm PSC Batter Piles	l.m.	5,562		
3.09	Chip/cut & dispose portion of newly driven PSC anchor piles and lamp post piles	no.	208		
3.10	Supply and place 3,500 psi concrete for the coping wall, anchor blocks, retaining wall, mooring block and rc curb	cu.m.	701		

Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

BILL OF QUANTITIES
TUBIGON PORT EXPANSION AND RECONSTRUCTION PROJECT
Port of Tubigon, Tubigon, Bohol

NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY. (4)	UNIT PRICE (Pesos) (5)	AMOUNT (Pesos) (4) x (5)
3.11	Supply and install steel reinforcement for the coping wall, anchor blocks, retaining wall, mooring block and rc curb	kg.	57,919		
3.12	Supply and place gravel bedding	cu.m.	9		
3.13	Supply and place 50-100 kg. Core rocks	cu.m.	3,360		
3.14	Supply and place 1000 kg. Armour rocks	cu.m.	288		
3.15	Supply and install tie-rod of various sizes including accessories				
	a) 55mm Ø x 13.50m	set	103		
	b) 36mm Ø x 10.00m	set	8		
3.16	Supply and install Geotextile Fabric	sq.m.	2,110		
3.17	Supply and place Sand and Gravel fill	cu.m.	31,864		
3.18	Supply, spread and compact aggregate sub-base course	cu.m.	5,345		
3.19	Supply, spread and compact aggregate base course	cu.m.	1,458		
3.20	Construct portland cement concrete pavement (300mm thk) including dowel bars and construction joint	sq.m.	6,882		
3.21	Construct asphalt pavement (50mm thk) for transition ramp	sq.m.	420		

Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

BILL OF QUANTITIES
TUBIGON PORT EXPANSION AND RECONSTRUCTION PROJECT
Port of Tubigon, Tubigon, Bohol

NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY. (4)	UNIT PRICE (Pesos) (5)	AMOUNT (Pesos) (4) x (5)
3.22	Construct catch drain manhole	set	17		
3.23	Supply, deliver and install port lighting system including accessories	lot	1		
3.24	Supply and lay 600mm dia. reinforced concrete pipe including accessories	l.m.	152		
3.25	Supply and install stainless steel materials	lot	1		
	TOTAL FOR BILL NO. 3				

Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

BILL OF QUANTITIES
TUBIGON PORT EXPANSION AND RECONSTRUCTION PROJECT
Port of Tubigon, Tubigon, Bohol

NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY. (4)	UNIT PRICE (Pesos) (5)	AMOUNT (Pesos) (4) x (5)
BILL NO.	**4 CONTINUOUS RORO RAMP AND UPGRADING OF FENDER BLOCKS**				
4.01	Supply and deliver to site 450mm x 450mm PSC piles	l.m.	4,002		
4.02	Handle, pitch and drive 450mm x 450mm PSC Vertical piles	l.m.	754		
4.03	Handle, pitch and drive 450mm x 450mm PSC Batter piles	l.m.	3,248		
4.04	Chip/cut & dispose portion of newly driven PSC piles	no.	138		
4.05	Supply and place 3,500 psi concrete for superstructures	cu.m.	517		
4.06	Supply and install steel reinforcement for superstructures	kg.	99,207		
4.07	Supply and install black iron steel ramp protection	set	29		
4.08	Supply and install construction joints (100mm x 100mm x 10mm angle bar, hot dipped galvanized) including dowel bars	l.m.	121		
4.09	Supply and deliver to site rubber dock fender (V-type, 500H x 1,500L) including accessories	set	14		
4.10	Install rubber dock fender and accessories	set	14		
4.11	Reinstall removed rubber dock fenders with new accessories	set	44		

Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

BILL OF QUANTITIES
TUBIGON PORT EXPANSION AND RECONSTRUCTION PROJECT
Port of Tubigon, Tubigon, Bohol

NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY. (4)	UNIT PRICE (Pesos) (5)	AMOUNT (Pesos) (4) x (5)
4.12	Supply & deliver to site mooring bollard (35 Tons, T-head) including accessories	set	4		
4.13	Install mooring bollards (T-head type) and accessories	set	4		
	TOTAL FOR BILL NO. 4				

Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

BILL OF QUANTITIES
TUBIGON PORT EXPANSION AND RECONSTRUCTION PROJECT
Port of Tubigon, Tubigon, Bohol

NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY. (4)	UNIT PRICE (Pesos) (5)	AMOUNT (Pesos) (4) x (5)
BILL NO.	**5 REIMBURSABLE ITEMS**				
5.01	Secure approval of environmental Compliance Certificate (ECC) Application, Clearance and other necessary documentary requirements	lot	1	1,050,000.00	1,050,000.00
	TOTAL FOR BILL NO. 5				**1,050,000.00**

Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

BASIS OF PAYMENT FOR WORK ITEMS INCLUDED IN THE PROPOSAL

The work items included in the proposal and the basis of payments are as follows:

BILL NO. 1
GENERAL EXPENSES

Item 1.01 Mobilization, demobilization, and cleaning

The quantity to be paid for shall be the minimum equipment requirement enumerated in the bid documents mobilized, demobilized and cleaning of the site and accepted by the Engineer. The contract lump sum price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to mobilize and demobilize all the minimum equipment requirement enumerated in the bid documents including cleaning of the site. Fifty percent (50%) of the total amount shall be payable after the mobilization activity while the remaining (50%) payable after demobilization and cleaning.

Item 1.02 Rental of temporary site office and residence for the Engineer and staff

The quantity to be paid for shall be the actual rental of site office and residence for the engineer and staff and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary for the provision of temporary site office and residence for the engineer and pstaff.

Item 1.03 Maintain temporary site office and residence for the Engineer and staff

The quantity to be paid for shall be the actual services rendered in maintaining the site office and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the maintenance of the temporary site office and residence as well as other expenses such as provision for electric power, telephone bill, potable water supply, janitorial and security services.

Item 1.04 Provide construction safety and Health Program in the execution of the project

The quantity to be paid for shall be the actual implementation of construction safety and health program and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the implementation of the Construction Safety and Health Program, as required and approved by the Department of Labor and Employment (DOLE).

BILL NO. 2
REMOVAL, DISPOSAL AND EXCAVATION WORKS

Item 2.01 **Excavation and backfilling works for electrical and drainage works**

The quantity to be paid for shall be the actual volume in cubic meter of existing fill materials excavated prior to the execution of electrical and drainage works including backfilling works thereafter in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 2.02 **Remove existing fender and turn over to the authority as directed by the Engineer**

The quantity to be paid for shall be the actual number of existing fenders removed, including turnover to the authority as directed by the Engineer in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 2.03 **Remove existing mooring bollard and turn over to the authority as directed by the Engineer**

The quantity to be paid for shall be the actual number of existing mooring bollards removed, including turnover to the authority as directed by the Engineer in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 2.04 **Remove and dispose existing portion of port operational area and RC pier**

The quantity to be paid for shall be the actual area in square meter of existing portion of port operational area and RC pier to be removed, including the disposal of debris in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 2.05 **Remove and dispose existing RC Wharf**

The quantity to be paid for shall be the actual area in square meter of existing RC Wharf to be removed, including the disposal of debris in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 2.06 **Chip-off and dispose existing R.C. Curb, flush to required elevation and smoothen with mortar**

The quantity to be paid for shall be the actual length in linear meter of existing R.C. curb to be chipped-off, flushed to required elevation and smoothened with mortar, including disposal of debris in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 2.07 Cut and dispose existing PSC Piles up to seabed elevation

The quantity to be paid for shall be the actual number of existing PSC Piles to be cut up to seabed elevation, including the disposal of debris in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 2.08 Remove/relocate existing high mast tower and floodlight and turn over excess materials to the authority

The quantity to be paid for shall be the actual number of high mast tower and floodlight removed/relocated, including turnover of excess materials to the authority in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 2.09 Remove existing adjustable steel ramp and turn over to the authority

The quantity to be paid for shall be the actual number of existing adjustable steel ramp removed, including turnover to the authority in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

BILL NO. 3
PORT OPERATIONAL AREA

Item 3.01 Supply and deliver to site U-Type steel sheet piles including corner connectors

The quantity to be paid for shall be the actual weight in metric ton of U-Type steel sheet piles including corner connectors to be supplied and delivered to site in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.02 Handle, pitch and drive Steel sheet piles and connectors

The quantity to be paid for shall be the actual length in linear meter of steel sheet piles and connectors to be handled, pitched, and driven in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.03 Supply and install steel waling and splice plate for the steel sheet piles

The quantity to be paid for shall be the actual weight in kilogram of steel waling and splice plate for the steel sheet piles to be supplied and installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.04 **Supply and apply high-build epoxy protective coating steel sheet piles (Abrasion Resistant Modified Epoxy With ≥85% Volume Solid, Min. Dry Film Thickness = 800 Microns)**

The quantity to be paid for shall be the actual area in square meter of high-build epoxy protective coating for steel sheet piles (Abrasion Resistant Modified Epoxy With ≥85% Volume Solid, Min. Dry Film Thickness = 800 Microns) supplied and applied in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.05 **Supply and install dowel bars for steel sheet piles**

The quantity to be paid for shall be the actual weight in kilograms of dowel bars for steel sheet piles to be supplied and installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.06 **Supply and deliver to site 400mm x 400mm PSC anchor and lamp post piles**

The quantity to be paid for shall be the actual length in linear meter of 400mm x 400mm PSC anchor and lamp post piles to be supplied and delivered to site in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.07 **Handle, pitch and drive 400mm x 400mm PSC Vertical Piles**

The quantity to be paid for shall be the actual length in linear meter of 400mm x 400mm PSC vertical piles to be handled, pitched, and driven in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.08 **Handle, pitch and drive 400mm x 400mm PSC Batter Piles**

The quantity to be paid for shall be the actual length in linear meter of 400mm x 400mm PSC batter piles to be handled, pitched, and driven in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.09 **Chip/cut & dispose portion of newly driven PSC anchor piles and lamp post piles**

The quantity to be paid for shall be the actual number of portion of newly driven PSC anchor piles and lamp post piles to be chipped/cut, including the disposal of debris in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.10 **Supply and place 3,500 psi concrete for the coping wall, anchor blocks, retaining wall, mooring block and rc curb**

The quantity to be paid for shall be the actual volume in cubic meter of 3,500 psi concrete for the coping wall, anchor blocks, retaining wall, mooring block and rc curb to be supplied and set-in-place in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.11 **Supply and install steel reinforcement for the coping wall, anchor blocks, retaining wall, mooring block and rc curb**

The quantity to be paid for shall be the actual weight in kilogram of steel reinforcement for the coping wall, anchor blocks, retaining wall, mooring block and rc curb to be supplied and installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.12 **Supply and place gravel bedding**

The quantity to be paid for shall be the actual volume in cubic meter of gravel bedding to be supplied and placed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.13 **Supply and place 50-100 kg. Core rocks**

The quantity to be paid for shall be the actual volume in cubic meter of 50-100 kg. core rocks, supplied and set-in-placed in accordance with the plans and specifications and accepted by the Engineer. Hydrographic/Topographic Surveys before and after placing of core rocks shall be made to determine the actual elevations along the cross sections and the actual quantities for payment. Volume due to settlement as established using settlement plates shall also be considered for payment. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.14 **Supply and place 1000 kg. Armour rocks**

The quantity to be paid for shall be the actual volume in cubic meter of 1000 kg. armour rocks, supplied and set-in-placed in accordance with the plans and specifications and accepted by the Engineer. Hydrographic/Topographic Surveys before and after placing of armour rocks shall be made to determine the actual elevations along the cross sections and the actual quantities for payment. Volume due to settlement as established using settlement plates shall also be considered for payment. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.15 **Supply and Install tie-rod of various sizes including accessories**
a) 55mm Ø x 13.50m
b) 36mm Ø x 10.00m

The quantity to be paid for shall be the actual set of tie-rod of various length and sizes including accessories to be supplied and installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full

compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.16 Supply and install Geotextile Fabric

The quantity to be paid for shall be the actual area in square meter of geotextile fabric to be supplied and installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.17 Supply and place Sand and Gravel fill

The quantity to be paid for shall be the actual volume in cubic meter of sand and gravel fill, supplied and set-in-placed in accordance with the plans and specifications and accepted by the Engineer. Hydrographic/Topographic Surveys before and after placing of sand and gravel fill shall be made to determine the actual elevations along the cross sections and the actual quantities for payment. Volume due to settlement as established using settlement plates shall also be considered for payment. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.18 Supply, spread and compact aggregate sub-base course

The quantity to be paid for shall be the actual volume in cubic meter of aggregate sub-base course to be supplied, spread, and compacted in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.19 Supply, spread and compact aggregate base course

The quantity to be paid for shall be the actual volume in cubic meter of aggregate base course to be supplied, spread, and compacted in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.20 Construct portland cement concrete pavement (300mm thk) including dowel bars and construction joint

The quantity to be paid for shall be the actual area in square meter of portland cement concrete pavement (300mm thk) including dowel bars and construction joint to be constructed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.21 Construct asphalt pavement (50mm thk) for transition ramp

The quantity to be paid for shall be the actual area in square meter of asphalt pavement (50mm thk) for transition ramp to be constructed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.22 Construct catch drain manhole

The quantity to be paid for shall be the actual set of catch drain manhole to be constructed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.23 Supply, deliver and install port lighting system including accessories

The quantity to be paid for shall be the actual lot of port lighting system including accessories to be supplied, delivered, and installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.24 Supply and lay 600mm dia. reinforced concrete pipe including accessories

The quantity to be paid for shall be the actual length in linear meter of 600mm dia. reinforced concrete pipe including accessories to be supplied and laid in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 3.25 Supply and install stainless steel materials

The quantity to be paid for shall be the actual lot of stainless-steel materials to be supplied and installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

BILL NO. 4
CONTINUOUS RORO RAMP AND UPGRADING OF FENDER BLOCKS

Item 4.01 Supply and deliver to site 450mm x 450mm PSC piles

The quantity to be paid for shall be the actual length in linear meter of 450mm x 450mm PSC piles to be supplied and delivered to site in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.02 Handle, pitch and drive 450mm x 450mm PSC Vertical piles

The quantity to be paid for shall be the actual length in linear meter of 450mm x 450mm vertical PSC piles to be handled, pitched and driven in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.03 Handle, pitch and drive 450mm x 450mm PSC Batter piles

The quantity to be paid for shall be the actual length in linear meter of 450mm x 450mm batter PSC piles to be handled, pitched and driven in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be

full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.04 Chip/cut & dispose portion of newly driven PSC piles

The quantity to be paid for shall be the actual number of portion of newly driven PSC piles to be chipped/cut, including the disposal of debris in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.05 Supply and place 3,500 psi concrete for superstructures

The quantity to be paid for shall be the actual volume in cubic meters of 3,500 psi. concrete for superstructures to be supplied and set-in-placed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.06 Supply and install steel reinforcement for superstructures

The quantity to be paid for shall be the actual weight in kilogram of steel reinforcement for superstructures to be supplied and installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.07 Supply and install black iron steel ramp protection

The quantity to be paid for shall be the actual set of black iron steel ramp protection to be supplied and installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.08 Supply and install construction joints (100mm x 100mm x 10mm angle bar, hot dipped galvanized) including dowel bars

The quantity to be paid for shall be the actual length in linear meter of construction joints (100mm x 100mm x 10mm angle bar, hot dipped galvanized) including dowel bars to be supplied and installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.09 Supply and deliver to site rubber dock fender (V-type, 500H x 1,500L) including accessories

The quantity to be paid for shall be the actual set of rubber dock fender (V-type, 500H x 1,500L) including accessories to be supplied and delivered to site in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.10 Install rubber dock fender and accessories

The quantity to be paid for shall be the actual set of rubber dock fender and accessories to be installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.11 Reinstall removed rubber dock fenders with new accessories

The quantity to be paid for shall be the actual set of removed rubber dock fenders with new accessories to be reinstalled in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.12 Supply & deliver to site mooring bollard (35 Tons, T-head) including accessories

The quantity to be paid for shall be the actual set of mooring bollard (35 Tons, T-head) including accessories to be supplied and delivered to site in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Item 4.13 Install mooring bollards (T-head type) and accessories

The quantity to be paid for shall be the actual set of mooring bollards (T-head type) and accessories to be installed in accordance with the plans and specifications and accepted by the Engineer. The contract unit price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

BILL NO. 5
REIMBURSABLE ITEMS

Item 5.01 Secure approval of environmental Compliance Certificate (ECC) Application, Clearance and other necessary documentary requirements

Payment for the aforementioned items will be made upon the successful securement of the approved ECC and, if necessary, the Area Clearance for the Tubigon Port Expansion and Reconstruction Project located at the Port of Tubigon, Tubigon, Bohol. These approvals will be issued by the concerned Department of Environment and Natural Resources (DENR).

The contract's lump sum price will serve as full compensation to the Contractor, who is responsible for all activities related to securing the ECC and Area Clearance, whether carried out in-house or through a commissioned consultant. Claims for payment must be accompanied by invoice and/or other supporting documents (e.g., a notarized certificate of completion). The total amount payable shall not exceed the contract's lump sum price.

FACILITIES TO BE PROVIDED FOR THE ENGINEER & HIS STAFF

RENTAL OF SITE OFFICE AND RESIDENCE FOR THE ENGINEER & STAFF

The Contractor shall provide a temporary site office and residence (rental) with an area of at least 48 square meters for use of the Engineer and his staff for the whole duration of the project.

Secure Approval of Environmental Compliance Certificate (ECC) Application and Area Clearance (If Necessary)

The Contractor shall be responsible for facilitating the securement of the Environmental Compliance Certificate (ECC) and, if necessary, the Area Clearance prior to the commencement of the project. This process may be carried out through either in-house resources or a commissioned consultant. The Contractor's responsibilities include, but are not limited to:

A. Preparation of the Environmental Impact Assessment (EIA) Report

The Contractor shall prepare the EIA Report in compliance with all applicable laws, policies, and guidelines set forth by the Department of Environment and Natural Resources (DENR).

B. Submission of Required Documents

The Contractor shall submit all necessary documentation to the appropriate DENR Regional Office and coordinate with other government agencies to acquire the ECC and Area Clearance. This includes obtaining any additional clearances or permits that may be required.

C. Technical Expertise

The Contractor shall provide technical expertise throughout the processing of the ECC and Area Clearance applications until the approvals are granted.

D. Facilitation of Related Activities

The Contractor shall facilitate any other activities or undertakings associated with obtaining the necessary approvals.

During the initial stages of the ECC application, the Contractor may seek assistance from the concerned Port Management Office (PMO) for tasks such as identifying necessary documents and navigating the initial application submission process.

MINIMUM MAJOR EQUIPMENT REQUIREMENTS

1	unit/s	Air Compressor (250 cfm, minimum), owned
1	unit/s	Backhoe (0.40 cu.m., 94.30hp, minimum), owned
1	unit/s	Clamshell, owned
1	unit/s	Concrete cutter, owned
1	unit/s	Concrete bucket, owned
1	unit/s	Concrete Screeder, owned
2	unit/s	Concrete Vibrator (3.5 hp, minimum), owned
1	unit/s	Crane Barge (319 GW, minimum) with 60T crane, owned
1	unit/s	Crawler Crane (30T, minimum), owned/leased
1	unit/s	Pile Hammer (Diesel, 3,700 kg.m. min. - 7,500 kg.m. max. or hydraulic equivalent), owned
1	unit/s	Pile Hammer (Diesel, 10,500 kg.m. min. - 21,600 kg.m. max or hydraulic equivalent), owned/leased
2	unit/s	Diving equipment (complete), owned/leased
1	unit/s	Drop Hammer (2T, minimum), owned
1	unit/s	Dump Truck (10T, net capacity, minimum), owned
2	unit/s	Bar Bender (electric, 25mm dia min.), owned
2	unit/s	Bar Cutter (electric, 25mm dia min.), owned
1	unit/s	Jackhammer, owned
2	unit/s	Jackhammer (U/W), owned/leased
2	unit/s	Oxy/Acetylene cutting outfit, owned
1	unit/s	Payloader (80 hp, minimum), owned/leased
1	unit/s	Plate Compactor (5 hp, minimum), owned
2	unit/s	Road Grader (125 hp, minimum), owned/leased
1	unit/s	Road Roller (10T, vibratory, minimum), owned/leased
1	unit/s	Transit Mixer (6 cu.m. cap., minimum), owned/leased
1	unit/s	Tugboat (500hp, minimum), owned/leased
2	unit/s	U/W cutting equipment, owned/leased
1	unit/s	Water Truck with pump (1,000 gal., minimum), owned
1	unit/s	Welding Machine (400 amp., minimum), owned
1	unit/s	Cargo Truck (2T, minimum) , owned
1	unit/s	Concrete breaker (Backhoe Attachment), owned/leased

CONSTRUCTION SAFETY AND HEALTH REQUIREMENT

The Contractor shall implement the construction safety and health program in accordance with the applicable provisions of the Occupational Safety and Health Standards (OSHS) of the Department of Labor and Employment (DOLE).

The Contractor, subject to the approval of the Engineer shall provide and maintain throughout the duration of the contract a medical room with at least 15 square meters together with all necessary supplies to be sited in the Contractor's main area.

The Contractor shall provide the following minimum requirements:

L A B O R

1	no.	Safety Engineer / Officer
1	no.	Nurse / Health Officer

EQUIPMENT / MATERIALS

Personnel Protective Equipment

39	pcs.	Hard Hats
39	pcs.	Gloves (rubberized)
39	pcs.	Safety Glasses/Goggles (clear)
78	pcs.	Long sleeve T-shirt
4	pcs.	Aprons
39	pairs	Safety Shoes

Safety Devices

1	lot	Barricades
1	lot	Warning signs
2	unit/s	Fire extinguisher (10kg)

Medical and First Aid System - Twenty-Four (24) mos.

NOTE:

The Contractor shall provide the above-cited minimum construction safety and health requirements or as required by the Engineer.

PPA MEMORANDUM CIRCULAR
No 02
Series of 2016
Attachment

REVISED SCHEDULE OF MINIMUM TEST REQUIREMENTS OF CONSTRUCTION MATERIALS FOR PPA INFRASTRUCTURE PROJECTS

Materials/Items of Work	*Required Tests*	*Minimum Incremental Frequency of Tests*
I. Construction of Pier/Wharf, Platform and Ramp		
Structural Concrete (SC)		
A Portland Cement	Quality Test	For every 2,000 bags (40kg) or fraction thereof
B Fine Aggregate	Quality Test for Grading, Elutriation (wash), Bulk Specific Gravity, Absorption, Mortar Strength, Soundness, Organic Impurities, Unit Weight, % Clay Lumps and Shale	For every 1,500 cubic meter or fraction thereof
C Coarse Aggregate	Quality Test for Grading, Bulk Specific Gravity, Absorption and Abrasion	For every 1,500 cubic meter or fraction thereof
D Water	Certificate from the Engineer or Quality Test for Density and Chloride Content	One per source
E Steel Bars	Mill Certificate and Quality Test for Chemical Composition and Mechanical Properties	For every 10,000 kg or fraction thereof
F Concrete	Compressive Strength on cylinder samples	1 set consisting of 3 concrete cylinder samples shall be taken from each day's pouring and to represent not more than 75 cu m of concrete or fraction thereof
	Slump Test	For every mix
G Admixture and Concrete Curing Materials	Quality Test	One per shipment
Piling (P)		
A Concrete Piles	Fabrication Report	One per fabrication
1 Concrete	Same test as for SC (F)	Same frequency as SC (F)
2 Steel Bars	Same test as for SC (E)	Same frequency as SC (E)
3 High Tension Strand	Test for Chemical Composition and Mechanical Properties	For every 20000kg or fraction thereof

Materials/Items of Work	Required Tests	Minimum Incremental Frequency of Tests
4 Coarse Aggregates	Same Test as for SC (C)	Same frequency as SC (C)
5 Fine Aggregates	Same Test as for SC (B)	Same frequency as SC (B)
B Steel Pipe Piles	Fabrication Report, Mill Certificate and Quality Test for Chemical and Mechanical properties	One per fabrication
1 Steel	Chemical Composition (refer below)	
	- Under 14" (355 60mm) Outside Diameter	2 from 200 pipe of fraction thereof
	- 14" to 36" (355 6 to 914mm) Outside Dia	2 from 100 pipe or fraction thereof
	- Over 36" (914mm) Outside Diameter	2 from 3000ft (914m) or fraction thereof
	Mechanical/Tensile	One (1) tension test shall be made on one length or fraction thereof of each size, or one piece of skelp representing each lot of 200 lengths or fraction thereof of each size
2 Polyurethane Coating	Mill Certificate and Quality Test	One per fabrication
3 Concrete	Same test as for SC (F)	Same frequency as SC (F)
4 Fine Aggregate	Same test as for SC (B)	Same frequency as SC (B)
5 Coarse Aggregate	Same test as for SC (C)	Same frequency as SC (C)
6 Steel Bars	Same Test as SC (E)	Same frequency as SC (E)
7 Water	Same Test as SC (D)	Same frequency as SC (D)
Rubber Dock Fenders (RDF)	Physical Test	All units
	Performance Test for Energy Absorption and Reaction Force	All units
Accessories		
Washer and Fixing Bolt, Anchor Bolt	Physical Test	All units
	Quality Test for Chemical Composition and Mechanical Properties	One per fabrication

Materials/Items of Work	***Required Tests***	***Minimum Incremental Frequency of Tests***
Mooring Bollard (MB) and Accessories (Hexagon Nuts, Plain Washer, Anchor Ring and Anchor Bolt)	Physical Test Quality Test for Chemical Composition and Mechanical Properties	All Units One per fabrication
II. Construction of Back-Up Area, Causeway and Pavement Sheet Piling (SP) A Concrete Sheet Piles		
1 Concrete	Same test as for SC (F)	Same frequency as SC (F)
2 Steel Bars	Same test as for SC (E)	Same frequency as SC (E)
3 High Tension Strands	Same test as for P (A 3)	Same frequency as P (A 3)
4 Fine Aggregates	Same test as for SC (B)	Same frequency as SC (B)
5 Coase Aggregates	Same Test as for SC (C)	Same frequency as SC (C)
B Steel Pipe Piles		
1 Steel	Same test as for P (B1)	Same frequency as P (B1)
2 Concrete	Same test as for SC (F)	Same frequency as SC (F)
3 Fine Aggregate	Same test as for SC (B)	Same frequency as SC (B)
4 Steel Bars	Same test as for SC (E)	Same frequency as SC (E)

PPA MEMORANDUM CIRCULAR
No 02
Series of 2016
Attachment

Materials/Items of Work	***Required Tests***	***Minimum Incremental Frequency of Tests***
Rocks	Test for Apparent Specific Gravity and Abrasion	For every 1,500 cubic meter or fraction thereof
Geotextile Filter	Physical and Mechanical Test	One per batch
	Mill Certificate	One per batch
Sand and Gravel Fill	Quality Test for Organic Impurities and Grading	For every 1,500 cubic meter or fraction thereof
Selected Fill	Quality Test for Grading, Plasticity and Laboratory Compaction Test	For every 1,500 cubic meter or fraction thereof
	Laboratory California Bearing Ratio (CBR)	For every 2,500 cubic meter or fraction thereof
	Field Density Test	For every layer of 150mm of compacted depth at least one group of three In-situ density test for every 500 sq m or fraction thereof
Aggregate Base Course	Quality Test for Grading and Plasticity	For every 300 cubic meter or fraction thereof
	Quality Test for Grading, Plasticity, Abrasion and Laboratory Compaction Test	For every 1,500 cubic meter or fraction thereof
	Laboratory California Bearing Ratio (CBR)	Same frequency as Selected Fill
	Field Density Test	Same frequency as Selected Fill
Portland Cement Concrete Pavement (PCCP)		
A Portland Cement	Same test as for SC (A)	Same frequency as SC (A)
B Fine Aggregate	Same test as for SC (B)	Same frequency as SC (B)
C Coarse Aggregate	Same test as for SC (C)	Same frequency as SC (C)
D Water	Same test as for SC (D)	Same frequency as SC (D)
E Steel Bars (Dowels)	Same test as for SC (E)	Same frequency as SC (E)
F Joint Filler	Quality Test	One (1) per shipment

Materials/Items of Work	***Required Tests***	***Minimum Incremental Frequency of Tests***
G Admixture and Concrete Curing Material	Same test as for SC (G)	Same frequency as SC (G)
H Concrete	Same test as for SC (F)	Same frequency as SC (F)
	Flexural Test	3 beam samples for every 330 sq m or fraction thereof
I Completed Pavement	Core Test	1 set (3 specimen) for every 2,500 sq m and fraction thereof
Interlocking Concrete Blocks		
A Cement	Same test as for SC (A)	Same frequency as SC (A)
B Fine Aggregate	Same test as for SC (B)	Same frequency as SC (B)
C Coarse Aggregate	Same test as for SC (C)	Same frequency as SC (C)
D Water	Same test as for SC (D)	Same frequency as SC (D)
E Admixture & Concrete Curing Materials	Same test as for SC (G)	Same frequency as SC (G)
F Completed Blocks	Physical Test and Compressive Strength	6 blocks per day of fabrication
Cement Treated Base Course (CTB)		
A Portland Cement	Same test as for SC (A)	Same frequency as SC (A)
B Fine & Coarse Aggregates	Quality Test for Grading, Abrasion and Soundness	For every 1,500 cubic meter or fraction thereof
C Water	Same test as for SC (D)	Same frequency as SC (D)
D Completed CTB	Field Density Test	For every layer of 150mm of compacted depth at least one group of three In-situ density test every 500 sq m or fraction thereof
Retaining Wall/Coping Wall/RC Curb/RC Ditch/Shear Key/Concrete Blocks\Lean Concrete		
A Portland Cement	Same test as for SC (A)	Same frequency as SC (A)
B Fine Aggregate	Same test as for SC (B)	Same frequency as SC (B)

PPA MEMORANDUM CIRCULAR
No 02
Series of 2016
Attachment

Page 6 of 10

Materials/Items of Work	***Required Tests***	***Minimum Incremental Frequency of Tests***
C Coarse Aggregates	Same test as for SC (C)	Same frequency as SC (C)
D Water	Same test as for SC (D)	Same frequency as SC (D)
E Steel Bars	Same test as for SC (E)	Same frequency as SC (E)
F Admixture and Concrete Curing	Same test as for SC (G)	Same frequency as SC (G)
G Concrete	Same test as for SC (F)	Same frequency as SC (F)
Tie Rod		
A Steel	Same test as for SC (E)	One per batch
B Assembly	Performance Test (Tension)	One per batch
Tie Bars and Dowels	Same test as for SC (E)	For every 10,000 kg or fraction thereof per Tie bars and Dowels
Pipe Culverts and Storm Drains		
A Pipes	Test for Strength, Absorption and Physical	For every 50 pieces
B Mortar or Joint	Same Test as for SC (A,B and D) Alternative Test Same test as for SC (F) and Inspection Report	For every 25 pieces
Concrete Hollow Blocks		
A Portland Cement	Same test as for SC (A)	Same frequency as SC (A)
B Fine Aggregates	Same test as for SC (B)	Same frequency as SC (B)
C Water	Same test as for SC (D)	Same frequency as SC (C)
D Concrete	Same test as for SC (F)	Same frequency as SC (F)
E Completed CHB	Quality Test	One for every 500 pieces or fraction thereof
Construction Joints (CJ)		
A Angle Bars	Test for Physical and Mechanical Properties	One per batch
B Steel Bars	Same test as for SC (E)	One per batch
C Zinc (Hot Dip Galvanizing) Coatings	Physical Test for Appearance, Stripping, Weighing, Adherence and Adhesion	All units
	Coating Thickness Magnetic Thickness Measurement	1 set (3 specimen) for every 100,000 sq mm or fraction thereof

PPA MEMORANDUM CIRCULAR
No 02
Series of 2016
Attachment

Page 7 of 10

Materials/Items of Work	***Required Tests***	***Minimum Incremental Frequency of Tests***
Sacked Concrete		
A Cement	Same test as for SC (A)	Same frequency as SC (A)
B Fine Aggregates	Same test as for SC (B)	Same frequency as SC (B)
C Coarse Aggregates	Same test as for SC (C)	Same frequency as SC (C)
D Water	Same test as for SC (D)	Same frequency as SC (D)
E Concrete	Same test as for SC (F)	Same frequency as SC (F)
F Sack (jute)	Physical Test	One for every 50 pieces
Rubble Concrete		
A Cement	Same test as for SC (A)	Same frequency as SC (A)
B Fine Aggregates	Same test as for SC (B)	Same frequency as SC (B)
C Coarse Aggregates	Same test as for SC (C)	Same frequency as SC (C)
D Water	Same test as for SC (D)	Same frequency as SC (D)
E Concrete	Same test as for SC (F)	Same frequency as SC (F)
F Rocks	Same test as for ROCKS	Same frequency as ROCKS
Earthworks		
A Sub-grade preparation	Grading Test Plasticity Test (LL,PL,PI) Laboratory Compaction Test	For every 1,500 cubic meter or fraction thereof
	Density Test	For every layer of 150mm of compacted depth at least one group of three In-situ density test every 500 sq m or fraction thereof
B Structure Excavation	If excavated materials shall be used as Backfill Grading Test Plasticity Test (LL,PL,PI) Laboratory Compaction Test	For every 1,500 cubic meter or fraction thereof
	Density Test	For every layer of 150mm of compacted depth at least one group of three In-situ density test every 500 sq m or fraction thereof

Materials/Items of Work	***Required Tests***	***Minimum Incremental Frequency of Tests***
III Port Operations Building/Passenger Terminal Building/Transit Shed/Warehouse		
STRUCTURAL WORKS	Refer to Structural Concrete (SC) and Piling Works (P)	
ARCHITECTURAL WORKS		
Ceramic – Filled Liquid Membrane / Water Proofing, Hydrophobic Poreblocking Ingredients with Superplasticizer	Physical Property, Mechanical and Chemical Property, Leak Test / Flood Test	One per shipment
Paint	Quality Test	One 4-L can for every 100 cans or fraction thereof
Ceramic Tile	Inspection and Evaluation Report from the Engineer	One per shipment
Stainless Steel	Inspection and Evaluation Report from the Engineer	One per shipment
Roofing Materials	Inspection and Evaluation Report from the Engineer	One per shipment
Ceiling Materials	Inspection and Evaluation Report from the Engineer	One per shipment
ELECTRICAL AND MECHANICAL WORKS		
Wires / Cables	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per shipment
Electrical Devices	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per shipment
Fire Alarm System	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per item
Wiring Devices	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per shipment

Materials/Items of Work	Required Tests	Minimum Incremental Frequency of Tests
Protective Devices	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per shipment
Telephone System	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per item
CCTV System	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per item
CATV System	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per item
Background Music and Paging System	Inspection and Evaluation Report from the Engineer, Testing and Commissioning	One per item
Air Conditioning Units & Ventilation	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per item
Conduit Pipes	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per item
Lighting Fixtures	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per item
PLUMBING WORKS		
Pipes	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per item

PPA MEMORANDUM CIRCULAR
No 02
Series of 2015
Attachment

Materials/Items of Work	Required Tests	Minimum Incremental Frequency of Tests
Fixtures	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per item
Pipe Culverts	Compression Strength Inspection and Evaluation Report from the Engineer	For every size not more than 25 pipes cast in the field
IV Miscellaneous Materials Fencing A Barbed Wire, Cyclone Wire Mesh, Chain Link B Concrete Post	Physical Test (Dimensions and Coatings) Refer to Superstructure (SC)	One per Batch Refer to Superstructure (SC)
Lamp Post A Structural Steel B Zinc (Hot Dip Galvanizing) Coatings	Physical Test (Dimensions) Same test as for SC (E) Same test as for CJ (C)	All units One per batch
Drainage Steel Grating	Same test as for SC (E) Inspection Report	One (1) batch
Metal Pipe (Cast Iron Galvanized, etc)	Physical Test (Dimensions and Coatings)	1 per delivery
Welding Works	Destructive and Non Destructive Test	One (1) per lot

NOTES
1. **Testing of RDF shall be performed only by an independent Testing Laboratory duly accredited by BRS, DOST and PPA**
2. **Testing of other materials shall be performed only by an independent Testing Laboratory duly accredited by BRS and PPA.**
3. **All other issuances which are otherwise inconsistent herewith are hereby revoked or otherwise amended.**

Approved

RAUL T. SANTOS
Officer-In-Charge,
Office of the General Manager

SECTION IX

CHECKLIST OF TECHNICAL AND FINANCIAL DOCUMENTS

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class "A" Documents

Legal Documents

☐ (a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages)

Technical Documents

☐ (b) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; **and**

☐ (c) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided under the rules; **and**

☐ (d) Special PCAB License in case of Joint Ventures;
and registration for the type and cost of the contract to be bid; **and**

☐ (e) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission;
or
Original copy of Notarized Bid Securing Declaration; **and**

(f) Project Requirements, which shall include the following:

☐ a. Organizational chart for the contract to be bid;

☐ b. List of contractor's key personnel (*e.g.*, Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data;

☐ c. List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be; **and**

☐ (g) Original duly signed Omnibus Sworn Statement (OSS);
and if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.

Financial Documents

☐ (h) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).

Class "B" Documents

☐ (i) If applicable, duly signed joint venture agreement (JVA) in accordance with RA No. 4566 and its IRR in case the joint venture is already in existence;
or
duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.

II. FINANCIAL COMPONENT ENVELOPE

☐ (j) Original of duly signed and accomplished Financial Bid Form; **and**

Other documentary requirements under RA No. 9184

☐ (k) Original of duly signed Bid Prices in the Bill of Quantities; **and**

☐ (l) Duly accomplished Detailed Estimates Form, including a summary sheet indicating the unit prices of construction materials, labor rates, and equipment rentals used in coming up with the Bid; **and**

☐ (m) Cash Flow by Quarter.

SECTION X

BIDDING FORM

Bid Form for the Procurement of Infrastructure Projects

[shall be submitted with the Bid]

BID FORM

Date : _____
Project Identification No. : _____

To: **Philippine Ports Authority**
PPA Building, Bonifacio Drive,
South Harbor, Port Area, Manila

Having examined the Philippine Bidding Documents (PBDs) including the Supplemental or Bid Bulletin Numbers _____, the receipt of which is hereby duly acknowledged, we, the undersigned, declare that:

a. We have no reservation to the PBDs, including the Supplemental or Bid Bulletins, for the Procurement Project: **Tubigon Port Expansion and Reconstruction Project, Port of Tubigon, Tubigon, Bohol**;

b. We offer to execute the Works for this Contract in accordance with the PBDs;

c. The total price of our Bid in words and figures, excluding any discounts offered below is: _____;

d. The discounts offered and the methodology for their application are: _____;

e. The total bid price includes the cost of all taxes, such as, but not limited to: *[specify the applicable taxes, e.g. (i) value added tax (VAT), (ii) income tax, (iii) local taxes, and (iv) other fiscal levies and duties]*, which are itemized herein and reflected in the detailed estimates,

f. Our Bid shall be valid within the period stated in the PBDs, and it shall remain binding upon us at any time before the expiration of that period;

g. If our Bid is accepted, we commit to obtain a Performance Security in the amount of _____ percent of the Contract Price for the due performance of the Contract, or a Performance Securing Declaration in lieu of the the allowable forms of Performance Security, subject to the terms and conditions of issued GPPB guidelines[1] for this purpose;

h. We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents;

i. We understand that this Bid, together with your written acceptance thereof

[1] currently based on GPPB Resolution No. 09-2020

included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed; and

j. We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.

k. We likewise certify/confirm that the undersigned, is the duly authorized representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for the **Tubigon Port Expansion and Reconstruction Project, Port of Tubigon, Tubigon, Bohol** of the **Philippine Ports Authority**.

l. We acknowledge that failure to sign each and every page of this Bid Form, including the Bill of Quantities, shall be a ground for the rejection of our bid.

Name: _____

Legal Capacity: _____

Signature: _____

Duly authorized to sign the Bid for and behalf of: _____

Date: _____

STATEMENT OF THE BIDDER'S ALL ONGOING GOVERNMENT AND PRIVATE CONTRACTS, INCLUDING CONTRACTS AWARDED BUT NOT YET STARTED

I hereby declare that all ongoing contracts, including awarded contracts yet to be started coinciding with the contract to be bid are listed below:

Name of outstanding Contracts 1]	Owner's Name and Address	Scope of Work 2]	Contractor's Role and Percentage of Participation 3]	Total Contract Amount or Value 4]	Date of Contract and NOA 5]	Value of Outstanding Works 6]	Accomplishment (in percentage, %) 7]		Contract Duration 8]	
							Planned	Actual	Start of Project	Estimated Completion Date
A) Government Contracts i. On-going ii. Awarded but not yet started B) Private Contracts i. On-going ii. Awarded but not yet started										

NOTE:

1] As appearing in the contract executed by the parties.
2] With special reference to the Scope of Works of the Project as described/enumerated in the Contract.
3] Indicate the percentage of participation and whether as Sole Contractor, Sub-Contractor or Member in a Joint Venture / Consortium.
4] Indicate the FOREX used if Contract Value is expressed in a currency other than the Philippine Peso.
5] As appearing in the Contract and Notice of Award (NOA).
6] Amount or value of all outstanding or uncompleted portions of the projects under ongoing contracts, including awarded contracts yet to be started coinciding with the contract to be bid.
7] Percentage of Accomplishment as of the preceding month which should not be earlier than two (2) months from the date of bid submission.
8] As appearing in the Notice to Proceed and Contract.

This Statement shall be supported by:

a) Notice of Award
b) Notice to Proceed and Contract

Name of Firm (Signatory's Legal Capacity)	Name of Bidder/Authorized Representative	Date

Revised: September 2021

STATEMENT OF THE BIDDER'S SINGLE LARGEST COMPLETED CONTRACT (SLCC) SIMILAR TO THE CONTRACT TO BE BID

Name of the completed Contract 1]	Owner's Name and Address	Scope of Work 2]	Contractor's Role and Percentage of Participation 3]	Total Contract Value At 4]			Date of Award 5]	Contract Duration 6]	
				Award	Completion	Escalated Value to Present Prices		Start	Completed

NOTE :

1] As appearing in the contract executed by the parties.
2] With special reference to the Scope of Works of the Project as described/enumerated in the Contract.
3] Indicate the percentage of participation and whether as Sole Contractor, Sub-Contractor or Member in a Joint Venture / Consortium.
4] Indicate the FOREX used if Contract Value is expressed in a currency other than the Philippine Peso. Attached the computation for the escalated contract value.
5] As appearing in the Notice of Award.
6] As appearing in the Notice to proceed and Certificate of Completion.

A. The bidder must have an experience of having completed a SLCC that is similar to the contract to be bid equivalent to at least fifty percent (50%) of the ABC, adjusted if necessary, by the Bidder to current prices using the PSA consumer price indices. A contract is considered to be "similar" to the contract to be bid if it has the same Major Categories of Work as stated in the Bid Data Sheet (BDS).
B. This Statement shall be supported by:
   a. Notice of Award, Notice to Proceed and Contract.
   b. Project Owner's Certificate of Final Acceptance issued by the owner and/ or Constructors Performance Evaluation System (CPES) Final Rating, which must be at least Satisfactory. The said Certificate of Acceptance shall contain the following: 1) Name of project owner that issued the certificate, 2) Name of Contractor/ Constructor, 3) Name of Contract, and 4) Contract Duration.
   c. Recapitulation or Final Bill of Quantities.

Name of Firm	Name of Bidder/Authorized Representative (Signatory's Legal Capacity)	Date

Revised: September 2021

STATEMENT OF THE BIDDER'S EXPERIENCE ON MAJOR CATEGORIES OF WORK OF THE SLCC INCLUDING OTHER COMPLETED CONTRACTS SIMILAR TO THE CONTRACT TO BE BID

Major Categories of Work 1]	Unit of Measure 1]	Quantity 1]	SLCC similar to the contract to be bid 2]	Other completed contracts similar to the contract to be bid 2]			Unit of Measure 2]	Quantity 2]
			Name of the contract	Name of the contract	Name of the contract	Name of the contract		
1. Pile Driving works	l.m.	8,809						
2. Reinforced Concrete works	cu.m.	609						
3. Rockworks (50-1,000 kg/pc.)	cu.m.	1,824						
4. Placing of Fill Materials	cu.m.	18,605						
5. Construction of Portland cement concrete pavement	sq.m.	3,441						

NOTE:
1] As stated in the Bid Data Sheet.
2] As appearing in the Recapitulation and/ or Final Bill of Quantities.
This statement shall be supported by:

a. Notice of Award, Notice to Proceed and Contract.
b. Project Owner's Certificate of Final Acceptance issued by the owner and/ or Constructors Performance Evaluation System (CPES) Final Rating, of at least satisfactory. The said Certificate of Acceptance shall contain the following: 1) Name of project owner that issued the certificate, 2) Name of Contractor/Constructor, 3) Name of Contract, and 4) Contract Duration.
c. Recapitulation and/ or Final Bill of Quantities.

Name of Firm	Name of Bidder/Authorized Representative Signatory's Legal Capacity	Date

Revised: September 2021

FINANCIAL DATA

A. The prospective bidder's audited Financial Statements, showing, among others, the prospective bidder's total and current assets and liabilities, stamped "RECEIVED" by the Bureau of Internal Revenue (BIR), or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission.

	Year
1. Total Assets	
2. Current Assets	
3. Total Liabilities	
4. Current Liabilities	
5. Net worth (1-3)	
6. Net Working Capital (2-4)	

B. The computation of the bidders Net Financial Contracting Capacity (NFCC) must be at least equal to the ABC to be bid, as follows:

NFCC = [(Current assets minus current liabilities) (15)] minus the value of all outstanding or uncompleted portions of the projects under ongoing contracts, including awarded contracts yet to be started coinciding with the contract to be bid.

NFCC = _____

Attached herewith are certified true copies of the audited financial statements stamped received by the BIR or BIR authorized collecting agent for the latest/immediately preceding calendar year.

_____
Name of Firm/Applicant

_____
Authorized Signing Official

Date:_____

NOTES:

If Partnership or Joint Venture, each Partner or Member Firm of Joint venture shall submit separate financial statements.

STATEMENT OF THE BIDDER'S KEY PERSONNEL PLEDGED FOR THE CONTRACT TO BE BID

I hereby declare that the following key personnel are qualified and available for the duration of the contract to be bid:

Position of Key Personnel 1]	Name	No. of Key Personnel	Similar Experience in the Position (Years) 2]	Total Experience in the Position (Years)	Attachment(s)	Annex(es)
Project Manager					PRC License (CE Preferred) Complete Qualification and Experience Data Certificate of Commitment	Annex "_"
Project Engineer					PRC License (CE Preferred) Complete Qualification and Experience Data Certificate of Commitment	Annex "_"
Materials Engineer II					PRC License (CE Preferred) Submit Valid and Renewed DPWH Certificate of Accreditation Submit Accreditation Identification Card as Materials Engineer Complete Qualification and Experience Data Certificate of Commitment	Annex "_"
Construction Safety and Health Officer					Certificate of Safety and Health Construction Related Course issued by DOLE Accredited Trainings Complete Qualification and Experience Data Certificate of Commitment	Annex "_"
Foreman					Complete Qualification and Experience Data Certificate of Commitment	Annex "_"
Other Position(s)					Complete Qualification and Experience Data Certificate of Commitment	Annex "_"

NOTE: 1] As stated in the Bid Data Sheet
2] The number of years of experience of the key personnel shall be as indicated in the qualification and experience data or curriculum vitae.

Minimum qualification requirements: The key personnel must have a work experience that is similar in nature and complexity to the contract to be bid.

Project Manager - Five (5) years
Project Engineer - Three (3) years
Foreman - Five (5) years
Construction Safety and Health Officer – One (1) year
Materials Engineer – One (1) year
Materials Engineer I – for projects costing up to 100M
Materials Engineer II – for projects costing more than 100M

Name of Firm

Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

Date

Revised: September 2021

STATEMENT OF THE BIDDER'S EQUIPMENT PLEDGED FOR THE CONTRACT TO BE BID

I hereby declare that the following equipment are in good operating condition and available for the duration of the contract to be bid:

DESCRIPTION (Type, Model, Make)	No. of Unit(s)	Capacity/ Output 1]	Owned, Leased, and/or under purchased agreement 2]	Proof of Ownership/ Leased/ Under Purchase Agreement (Mark as Annex "A.....Z") 3]	OTHER INFORMATION (As Applicable)				
					Manufacturer	Engine Serial No.	Chassis No./ Name of Vessel	Location	Status

NOTE:

1] The unit of capacity of the pledged equipment shall be as indicated in the Proof of Ownership, i.e. GW (for crane barge), DWT (for deck barge and hopper barge), Ton (for crane, road roller and drop hammer), kg.-m/blow (for diesel hammer), Ton (for dump truck), hp (for tugboat, road grader, bulldozer and concrete vibrator), cfm (for compressor), gal (for water truck with pump), amp (for welding machine), bagger (for concrete mixer). If the capacity of the pledged equipment is not indicated in the Proof of Ownership/Lease Contract/Purchased Agreement, submit other proof of capacity such as specifications, brochures or other verifiable printouts indicating the model name, model number and other details of the equipment.

2] Indicate if the pledged equipment are owned, leased or under purchase agreement.

3] If the pledged equipment is owned, it should be in the name of the bidder. Submit proof of ownership, i.e. deed of sale, sales invoice, official receipt; For owned Water Truck, Dump Truck, Cargo Truck and Transit Mixer submit LTO Certificate of Registration and valid Official Receipt; For owned barge/tugboat, submit Marina Certificate of Ownership and valid Cargo Ship Safety Certificate.

If the pledged equipment is leased/under purchase agreement, submit the following:

For equipment under lease agreement:

a. certification of availability of equipment from the equipment lessor for the duration of the project
b. duly Notarized copy of lease contract
c. For Water Truck, Dump Truck, Cargo Truck and Transit Mixer submit LTO Certificate of Registration and valid Official Receipt

For equipment under purchase agreement:

a. certification of availability of equipment from the equipment vendor
b. duly Notarized copy of purchase agreement
c. For Water Truck, Dump Truck and Transit Mixer submit LTO Certificate of Registration and valid Official Receipt or copy of conduction sticker, whichever is applicable.

If the pledged barge/tugboat is leased/under purchase agreement, submit certification of availability of barge/tugboat from the equipment lessor/vendor for the duration of the project, and duly Notarized copy of lease contract/purchased agreement together with a copy of the Marina Certificate of Ownership and valid Cargo Ship Safety Certificate.

The Minimum Major Equipment Requirements are listed in Section 8, Annex 3.

Name of Firm	Name of Bidder/Authorized Representative (Signatory's Legal Capacity)	Date

Revised: April 2025

Omnibus Sworn Statement for Sole Proprietorship

[shall be submitted with the Bid]

REPUBLIC OF THE PHILIPPINES)
CITY/MUNICIPALITY OF _____) S.S.

AFFIDAVIT

I, _____, of legal age, [Civil Status], [Nationality], and residing at _____, after having been duly sworn in accordance with law, do hereby depose and state that:

1. I am the sole proprietor or authorized representative of _____ with office address at _____;

2. As the owner and sole proprietor, or authorized representative of _____, I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for **Tubigon Port Expansion and Reconstruction Project, Port of Tubigon, Tubigon, Bohol** as shown in the attached duly notarized Special Power of Attorney;

3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, **by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;**

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. The owner or sole proprietor is not related to the Head of the Procuring Entity, Procurement Agent if engaged, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. *[Name of Bidder]* complies with existing labor laws and standards; and

8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:

   a. Carefully examining all of the Bidding Documents;
   b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
   c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
   d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.

9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

10. **In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.**

IN WITNESS WHEREOF, I have hereunto set my hand this __ day of ___, 20__ at _____, Philippines.

_____
Name of Bidder/ Authorized Representative
(Signatory's Legal Capacity)
AFFIANT

[Jurat]
[Format shall be based on the latest Rules on Notarial Practice]

Omnibus Sworn Statement for Partnership or Cooperative

[shall be submitted with the Bid]

REPUBLIC OF THE PHILIPPINES)
CITY/MUNICIPALITY OF _____) S.S.

AFFIDAVIT

I, _____, of legal age, [Civil Status], [Nationality], and residing at _____, after having been duly sworn in accordance with law, do hereby depose and state that:

1. I am the duly authorized and designated representative of _____ with office address at _____;

2. I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for **Tubigon Port Expansion and Reconstruction Project, Port of Tubigon, Tubigon, Bohol** of the **Philippine Ports Authority**, as shown in the attached [state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable;)];

3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, **by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;**

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. None of the officers and members of *[Name of Bidder]* is related to the Head of the Procuring Entity, Procurement Agent if engaged, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. *[Name of Bidder]* complies with existing labor laws and standards; and

8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:

   a. Carefully examining all of the Bidding Documents;
   b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
   c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
   d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.

9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

10. **In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.**

IN WITNESS WHEREOF, I have hereunto set my hand this __ day of ___, 20__ at _____, Philippines.

_____
Name of Bidder/ Authorized Representative
(Signatory's Legal Capacity)
AFFIANT

[Jurat]
[Format shall be based on the latest Rules on Notarial Practice]

Omnibus Sworn Statement for Corporation or Joint Venture

[shall be submitted with the Bid]

REPUBLIC OF THE PHILIPPINES)
CITY/MUNICIPALITY OF _____) S.S.

AFFIDAVIT

I, _____, of legal age, [Civil Status], [Nationality], and residing at _____, after having been duly sworn in accordance with law, do hereby depose and state that:

1. I am the duly authorized and designated representative of _____ with office address at _____;

2. I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for **Tubigon Port Expansion and Reconstruction Project, Port of Tubigon, Tubigon, Bohol** as shown in the attached [state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable;)];

3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, **by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;**

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. None of the officers, directors, and controlling stockholders of *[Name of Bidder]* is related to the Head of the Procuring Entity, Procurement Agent if engaged, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. *[Name of Bidder]* complies with existing labor laws and standards; and

8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:

   a. Carefully examining all of the Bidding Documents;
   b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
   c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
   d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.

9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

10. **In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.**

IN WITNESS WHEREOF, I have hereunto set my hand this __ day of ___, 20__ at _____, Philippines.

_____
Name of Bidder/ Authorized Representative
(Signatory's Legal Capacity)
AFFIANT

[Jurat]
[Format shall be based on the latest Rules on Notarial Practice]

Bid Securing Declaration Form

[shall be submitted with the Bid if bidder opts to provide this form of bid security]

REPUBLIC OF THE PHILIPPINES)
CITY OF _____) S.S.

BID SECURING DECLARATION

Project Identification No.: _____

To: **Philippine Ports Authority**
PPA Building, Bonifacio Drive,
South Harbor, Port Area, Manila

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid Securing Declaration.

2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of the written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1(f),of the IRR of RA No. 9184; without prejudice to other legal action the government may undertake.

3. I/We understand that this Bid Securing Declaration shall cease to be valid on the following circumstances:

   a. Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
   b. I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right; and
   c. I am/we are declared the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

IN WITNESS WHEREOF, I/We have hereunto set my/our hand/s this ____ day of *[month] [year]* at *[place of execution]*.

_____
Name of Bidder/ Authorized Representative
(Signatory's Legal Capacity)
AFFIANT

[Jurat]

[Format shall be based on the latest Rules on Notarial Practice]

CONSTRUCTION METHODOLOGY

Name of Project : _____

Project Description : _____

Location : _____

MINIMUM SCOPE OF CONSTRUCTION METHODOLOGY

A. REMOVAL, DISPOSAL AND EXCAVATION WORKS

1. Excavation and backfilling works
2. Removal of existing fenders and bollards including turning over to the Authority
3. Removal and disposal portion of the existing facility
4. Chipping and disposal of existing RC curb and smoothen with mortar
5. Cutting of existing PSC Piles up to seabed elevation including disposal of debris
6. Removal of high mast tower and floodlight including turning over to the Authority
7. Removal of existing steel ramp including turning over to the Authority

B. PORT OPERATIONAL AREA

1. Supply & deliver to site U-type steel sheet piles including connectors and high build epoxy protective coating
2. Handling, pitching & driving of U-type steel sheet piles
3. Supply & installation of steel waling and splice plate
4. Supply & deliver to site 400x400mm PSC piles
5. Handling, pitching & driving of PSC piles
6. Chipping/Cutting of newly driven piles
7. Supply & placing of 3,500 psi concrete
8. Supply & installation of reinforcing steel bars
9. Supply & placing of gravel bedding
10. Supply & placing of 50 to 100 kg. rocks
11. Supply & placing of 1,000 kg. rocks
12. Supply & installation of Tie-rod
13. Supply & installation of geotextile fabric
14. Supply & placing of fill materials
15. Supply & placing of aggregate base course
16. Construction of PCC Pavement
17. Construction of Asphalt Pavement
18. Portlighting system
19. Drainage system
20. Supply and installation of stainless-steel materials

C. CONTINUOUS RORO RAMP AND UPGRADING OF FENDER BLOCKS

1. Supply & deliver to site 450x450mm PSC piles
2. Handling, pitching & driving of 450x450mm PSC piles
3. Chipping/Cutting of newly driven piles
4. Supply & placing of 3,500 psi concrete
5. Supply & installation of reinforcing steel bars
6. Supply & installation of construction joints
7. Supply, delivery & installation of rubber dock fenders and mooring bollards

D. REIMBURSABLE ITEMS

1. Approval of environmental Compliance Certificate (ECC).

NOTES:

The narrative construction method will guide and familiarize the contractor and the PPA on how the project shall be carried out in accordance with the highest standard of workmanship.

The construction method shall be consistent with the Bar Chart / S-Curve Schedule, Equipment Schedule and Manpower Schedule.

_____
Name of Bidder/Authorized Representatives
(Signatory's Legal Capacity)

Revised: September 2021

MANPOWER SCHEDULE

Name of Project : _____

Project Description : _____

Location : _____

MANPOWER (Minimum)	CONTRACT DURATION (_____ Calendar Days)																							
	MONTHLY																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Project Manager																								
Project Engineer																								
Materials Engineer II																								
Construction Safety and Health Officer																								
Foreman																								
Specify other applicable positions, ie.:																								
- Carpenter																								
- Steelman																								
- Mason																								
- Electrician																								
- Rigger																								
- Others																								

_____
Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

Revised: September 2021

EQUIPMENT UTILIZATION SCHEDULE

Name of Project : _____

Project Description : _____

Location : _____

EQUIPMENT (Minimum)	No. of Units	CONTRACT DURATION (_____ Calendar Days)																							
		MONTHLY																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

_____
Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

Revised: September 2021

CASHFLOW BY QUARTER AND PAYMENT SCHEDULE

Name of Project: : _____

Project Description : _____

Location : _____

Project Duration (days or months)	Payment Schedule (Monthly, in Pesos)	Cash flow (Quarterly, in Pesos)
TOTAL		

NOTES

- The cash flow by quarter and payment schedule should be consistent with the Bar Chart and S-curve.
- Payment schedule shall not be more than once a month.

_____
Name of Bidder/Authorized Representative
(Signatory's Legal Capacity)

Revised: September 2021

Contract Agreement Form for the Procurement of Infrastructure Projects (Revised)

[not required to be submitted with the Bid, but it shall be submitted within ten (10) days after receiving the Notice of Award]

CONTRACT AGREEMENT

THIS AGREEMENT, made this _____ day of _____, _____ between **Philippine Ports Authority** with principal office at PPA Building, Bonifacio Drive, South Harbor, Port Area, Manila (hereinafter called the "Entity") and **[name and address of Contractor]** (hereinafter called the "Contractor").

WHEREAS, the Entity is desirous that the Contractor execute **[name and identification number of contract]** (hereinafter called "the Works") and the Entity has accepted the Bid for **[contract price in words and figures in specified currency]** by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents as required by the 2016 revised Implementing Rules and Regulations of Republic Act No. 9184 shall be deemed to form and be read and construed as part of this Agreement, *viz.*:

   a. Philippine Bidding Documents (PBDs);
      i. Drawings/Plans;
      ii. Specifications;
      iii. Bill of Quantities;
      iv. General and Special Conditions of Contract;
      v. Supplemental or Bid Bulletins, if any;

   b. Winning bidder's bid, including the Eligibility requirements, Technical and Financial Proposals, and all other documents or statements submitted;

   Bid form, including all the documents/statements contained in the Bidder's bidding envelopes, as annexes, and all other documents submitted (*e.g.*, Bidder's response to request for clarifications on the bid), including corrections to the bid, if any, resulting from the Procuring Entity's bid evaluation;

   c. Performance Security;

   d. Notice of Award of Contract and the Bidder's conforme thereto; and

   e. Other contract documents that may be required by existing laws and/or the Procuring Entity concerned in the PBDs. **Winning bidder agrees that additional contract documents or information prescribed by the GPPB that are subsequently required for submission after the contract execution, such as the Notice to Proceed, Variation Orders, and Warranty Security, shall likewise form part of the Contract.**

3. In consideration for the sum of **[total contract price in words and figures]** or such other sums as may be ascertained, **[Named of the bidder]** agrees to **[state the object of the contract]** in accordance with his/her/its Bid.

4. The **Philippine Ports Authority** agrees to pay the above-mentioned sum in accordance with the terms of the Bidding.

IN WITNESS whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

JAY DANIEL R. SANTIAGO General Manager	**Name of Bidder/ Authorized Representative** (Signatory's Legal Capacity)
for:	for:
Philippine Ports Authority	**Contractor**

Acknowledgment

[Format shall be based on the latest Rules on Notarial Practice]