

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

<i>Materials/Items of Work</i>	<i>Required Tests</i>	<i>Minimum Incremental Frequency of Tests</i>
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) <ul style="list-style-type: none"> - Under 14" (355.60mm) Outside Diameter - 14" to 36" (355.6 to 914mm) Outside Dia. - Over 36" (914mm) Outside Diameter Mechanical/Tensile	2 from 200 pipe of fraction thereof 2 from 100 pipe or fraction thereof 2 from 3000ft (914m) or fraction thereof 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 Performance Test for Energy Absorption and Reaction Force	All units All units
Accessories: Washer and Fixing Bolt, Anchor Bolt	Physical Test Quality Test for Chemical Composition and Mechanical Properties	All units 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) <ul style="list-style-type: none"> A. Concrete Sheet Piles <ul style="list-style-type: none"> 1. Concrete 2. Steel Bars 3. High Tension Strands 4. Fine Aggregates 5. Coarse Aggregates B. Steel Pipe Piles <ul style="list-style-type: none"> 1. Steel 2. Concrete 3. Fine Aggregate 4. Steel Bars 	<ul style="list-style-type: none"> Same test as for SC (F) Same test as for SC (E) Same test as for P (A.3) Same test as for SC (B) Same Test as for SC (C) Same test as for P (B1) Same test as for SC (F) Same test as for SC (B) Same test as for SC (E) 	<ul style="list-style-type: none"> Same frequency as SC (F) Same frequency as SC (E) Same frequency as P (A.3) Same frequency as SC (B) Same frequency as SC (C) Same frequency as P (B1) Same frequency as SC (F) Same frequency as SC (B) Same frequency as SC (E)

<i>Materials/Items of Work</i>	<i>Required Tests</i>	<i>Minimum Incremental Frequency of Tests</i>
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

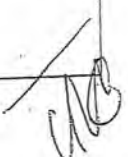
Materials/Items of Work	Required Tests	Minimum Incremental Frequency of Tests
G. Admixture and Concrete Curing Material	Same test as for SC (G)	Same frequency as SC (G)
H. Concrete	Same test as for SC (F) Flexural Test	Same frequency as SC (F) 3 beam samples for every 330 sq.m. or fraction thereof
I. 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)

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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 Coating Thickness: Magnetic Thickness Measurement	All units 1 set (3 specimen) for every 100,000 sq.mm. or fraction thereof

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 Density Test	For every 1,500 cubic meter or fraction thereof 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 Density Test	For every 1,500 cubic meter or fraction thereof 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

<i>Materials/Items of Work</i>	<i>Required Tests</i>	<i>Minimum Incremental Frequency of Tests</i>
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

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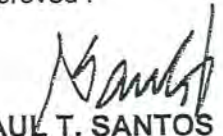
Materials/Items of Work	Required Tests	Minimum Incremental Frequency of Tests
Protective Devices	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per shipment
Telephone System	Inspection and Evaluation Report from the Engineer Testing and Commissioning	One per item
CCTV 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

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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	Physical Test (Dimensions and Coatings)	One per Batch
B. Concrete Post	Refer to Superstructure (SC)	Refer to Superstructure (SC)
Lamp Post		
A. Structural Steel	Physical Test (Dimensions) Same test as for SC (E)	All units
B. Zinc (Hot Dip Galvanizing) Coatings	Same test as for CJ (C)	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

