SCHEDULE OF MINIMUM TEST REQUIREMENTS GOVERNING ITEMS OF WORK OF THE DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGES AND AIRPORTS, 1998, (VOLUME II)

PART C - EARTHWORK

ITEMS OF WORK		MINIMUM TEST REQUIREMENTS
Item 100 -	Clearing & Grubbing	None
Item 101 -	Removal of Structures & Obstruction	None
Item 102 -	Excavation	Same tests as for Items 103, 104 and 105, which-ever is applicable.
Item 103 -	Structure Excavation If excavated materials are wasted, the volume involved shall be reported so that Quality Control requirements may be adjusted accordingly. Submit Project Engineer Certificate of Waste	If excavated materials are incorporated into the work: For every 1500 cu.m. or fraction thereof: 1-G, Grading Test 1-P, Plasticity Test (LL, PL, PI) 1-C, Laboratory Compaction Test For every 150 mm layer in uncompacted depth: 1-D, Field Density
Item 104 -	Embankment	For every 1500 cu.m. or fraction thereof: 1-G, Grading Test 1-P, Plasticity Test (LL, PL, PI) 1-C, Laboratory Compaction Test For each 500 sq. m. of each layer of compacted fill or fraction thereof at least one group of three in-situ density tests. The layers shall be placed not exceeding 200 mm in loose measurement or based on the result of compaction trials.
Item 105 -	Sub-grade Preparation	Same tests as for Item 104
Item 106 -	Compaction Equipment and Density Control Strips	Same tests as for Items 104, 105, 200, 201, 202, 203, 204, 205, 206 and 300.
Item 107 -	Overhaul	None

PART D - SUBBASE AND BASE COURSE

ITEMS OF WORK		MINIMUM TEST REQUIREMENTS
Item 200 -	Aggregate Subbase Course	For every 300 cu.m. or fraction thereof: 1-G, Grading Test 1-P, Plasticity Test (LL, PL, PI) For every 1500 cu.m. or fraction thereof: 1-C, Laboratory Compaction Test For every 2500 cu.m. or fraction thereof: 1-CBR, California Bearing Ratio Test For every layer of 150 mm of compacted depth/ based on the results of compaction trials: At least one group of three in-situ density tests for each 500 sq.m. or fraction thereof.
Item 201 -	Aggregate Base Course	For every 300 cu.m. or fraction thereof: 1-G, Grading Test 1-P, Plasticity Test (LL, PL, PI) For every 1500 cu.m. or fraction thereof: 1-Q, Quality Test for : (Grading, Plasticity and Abrasion) 1-C, Laboratory Compaction Test For every layer of 150 mm of compacted depth/ based on the results of compaction trials: At least one group of three in-situ density tests for each 500 sq.m. or fraction thereof.

PART D - SUBBASE AND BASE COURSE

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 202 - Crush Aggregate Base Course	Same tests as for Item 201 For every 1500 cu.m. or fraction thereof: 1-F, Fractured Face
Item 203 - Lime Stabilized Road Mix Base Course Amount of Lime to be added: 3 to 12 mass percent of dry aggregate	A. Soil Aggregate For every 300 cu.m. or fraction thereof: 1-G, Grading Test 1-P, Plasticity Test (LL, PL, PI) For every 1500 cu.m. or fraction thereof: 1-Q, Quality Test for : (Grading, Plasticity and Abrasion) B. Mix For every 300 cu.m. or fraction thereof: 1-C, Laboratory Compaction Test 1-UC, Unconfined Compression Test 1-CBR, California Bearing Ratio Test C. Compacted Base Course For every layer of 150 mm of compacted depth: 1-D, Field Density Test for every 150m or fraction thereof D. Hydrated Lime For every 100 t or fraction thereof: 1-Q, Quality Test
Item 204 - Portland Cement Stabilized Road Mix Base Course Amount of Cement to be added: 6 to 10 mass % of dry soil aggregate	A. Soil Aggregate Same tests as for Item 203 B. Cement 1-Q Quality Test for every 2000 bags of fraction thereof C. Water 1-Q, Quality Test/Project Engineer's Certificate D. Mix For every 300 cu.m. or fraction thereof: 1-C, Laboratory Compaction Test 1-UC, Unconfined Compression Test 1-CBR, California Bearing Ratio Test E. Compacted Base Course For every layer of 150 mm compacted depth 1-D, Field density Test for every 150m or fraction thereof 1-T, thickness determination for every 150 m or fraction thereof
Item 205 - Asphalt Stabilized Road Mix Base Course Amount of Asphalt to be added: 6 to 10 mass % of dry soil aggregate.	A. Soil Aggregate Same tests as for Item 203 B. Emulsified Asphalt 1-Q, Quality Test for every 40 to 200 drums or fraction thereof C. Mix Same tests as for Item 203 D. Compacted Base Course Same tests as for Item 203
Item 206 - Portland Cement Treated Plant Mix Base course Amount of Asphalt to be added: 6 to 10 mass % of dry soil aggregate	A. Soil Aggregate Same tests as for Item 203 B. Portland Cement For every 2000 bags of fraction thereof: 1-Q, Quality Test C. Water 1-Q, Quality Test/Project Engr's Certificate

PART D - SUBBASE AND BASE COURSE

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	D. Same tests as for Item 204 E. Compacted Base Course For every layer of 150 mm compacted depth 1-D, Field Density Test for every 150 m or fraction thereof 1-T, Thickness determination for every 150m or fraction thereof
Item 207 - Aggregate Stockpile	Same tests as specified in Item No. of the Specs.

PART E - SURFACE COURSE

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 300 - Aggregate Surface Course	For every 300 cu. m. or fraction thereof: 1-G, Grading Test 1-P, Plasticity Test (Pl, LL, PI) For every 1500 cu.m. or fraction thereof: 1-C, compaction Test for: (Grading, plasticity and Abrasion) For every layer of 150 mm of compacted depth/based on the results of compaction trials. At least on group of three in-situ density tests for each 500 sq. m. or fraction thereof. For crushed Gravel or Crushed Stone, 1500 cu.m. or fraction thereof: 1-F, Fractured face
Item 301 - Bituminous Prime Coat	Quantity: 1 to 2 L/sq.m. 1-Q, quality Test for every 40 t or 200 drums
Item 302 - Bituminous Tack Coat	Quantity: 0.2 to 0.7 L/sq.m. 1-Q, Quality test for every 40 t or 200 drums
Item 303 - Bituminous Seal Coat	A. Bituminous Materials Quantity: o.2 to 1.5 L/sq.m. 1-Q, Quality Test for every 40t or 200 drums B. Cover Aggregates Quantity: From 5 to 14 kg/s.q. m. For every 75 cu.m./200 kg. or fraction thereof : 1-G, grading Test
Item 304 - Bituminous Surface Treatment	A. Aggregates Quantity: Using Cut-Back Asphalt or Asphalt Cement – 13.6 to 38.0 kg/sq.m. Using Emulsified Asphalt - 13.6 to 19.04 Kg/sq.m. For every 75 cu.m./200 kg. or fraction thereof: 1- G, grading Test 1- P, Plasticity Test (PL, LL, PI) For every 1500 cu.m. or fraction thereof: 1- Q, Quality Test for: (Grading, Plasticity, Abrasion, Stripping and Bulk specific Gravity) 1-F, Fractured Face B. Bituminous Materials Quantity: Using Cut-back Asphalt or Asphalt Cement - 1.58 to 2.04 L/sq.m. Using Emulsified asphalt - 1.58 to 2.04 L/sq.m. Same test as for Item 301

PART E - SURFACE COURSE

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 305 - Bituminous Penetration Macadam Pavement	A. Aggregates Quantity: 1. Using Asphalt Cement or Rapid Curing Course (Crushed) ----------90 Kg/sq.m. Key (Crushed) ---(13 & 11) -----24 kg/sq.m. Cover Crushed & Screened) -----8 kg/sq.m. 2. Using Emulsified Asphalt Course (Crushed) -----90 kg/sq.m. Choker (Crushed) -----10 kg/sq.m. Key (Crushed) -----18 kg/sq.m. Cover (Crushed or Screened) ----- 8 kg/sq.m. Same test as for Item 304 B. Bituminous Materials Quantity: 7.2 to 11 L/sq.m. Same tests as for for Item 301
Item 306 - Bituminous Road Mix Surface Course	A. Aggregates Same tests as for Item 304 B. Bituminous Materials Quantity: 1. Using Cut-Back Asphalt - 4.5 to 7.0 mass % of total dry aggregate 2. Using Emulsified Asphalt - 6.0 to 10.0 mass % of total dry aggregate Same test as for Item 301 C. Mix Tests: For every 75 cu.m./130 t or fraction thereof: 1-G, grading Test 1-Ext., Extraction 1-Sty., Stability 1-C, Laboratory Compaction D. Hydrate Lime For every 100 t or fraction thereof: Tests: 1-Q, quality Test E. Compacted pavement For each full day's operation: Tests: D & T (Density and Thickness Test) - at least one (1) but not more than (3) samples shall be taken.
Item 307 - Bituminous Plant-Mix Surface Course General	A. Aggregates For every 75 cu.m./200 t or fraction thereof: 1-G & P, Grading and Plasticity Tests for every 1500 cu.m. of fraction thereof: 1-Q, quality Test for: (Grading, Plasticity, Abrasion, Stripping and Bulk Specific Gavity) 1-F, Fractured Face B. Bituminous Materials Quantity: 5.0 to 8.0 mass % of total dry aggregate Tests: 1-Q, Quality Test for each 40 t of fraction thereof C. Mix For every 75 cu.m. /130 t of fraction thereof: 1-G, Grading Test 1-Ext., Extraction 1-Sty., Stability 1-C, Laboratory Compaction

PART E - SURFACE COURSE

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	D. Hydrated Lime For every 100 t or fraction thereof E. Mineral filler For every 75 cu.m. or fraction thereof: 1-G & P, grading and Plasticity Tests (LL, PL, PI) For each full day's operation: D & T (Density and Thickness Tests) - at least one (1) but not more than three (3) samples shall be taken.
Item 308 - Bituminous Plant Mix, Surface Course, Cold laid	A. Aggregate Same tests as for Item 307 B. Bituminous Material Quantity: Using Cut-Back Asphalt - 4.5 to 7.0 mass % of total dry aggregate Using Emulsified Asphalt - 6.0 to 10.0 mass % of total dry aggregate Tests: 1-Q, Quality Test for every 40t or 200 drums C. Mix Same tests as for Item 307 D. Hydrated Lime Same tests as for Item 307 E. Mineral Filler For every 75 cu.m. or fraction thereof: 1-G & P, Grading and Plasticity Tests (LL, PL, PI) F. Compacted Pavement Same tests as for Item 307
Item 309 - Bituminous Plant Mix (Stockpile Maintenance Mixture)	A. Aggregate Same tests as for Item 307 B. Bituminous Materials Qantity: 4 to 10 Mass % of total mix Tsts: 1-Q, Quality Test for every 40t or 200 drums C. Mix Same tests as for Item 307 D. Hydrated Lime Same tests as for Item 307 E. Mineral Filler Same tests as for Item 307 F. Compacted Pavement Same tests as for Item 307
Item 310 - Bituminous Concrete Surface Course, Hot-Laid	A. Aggregate Same tests as for Item 307 B. Bituminous Materials Quantity: 5 to 8 Mass % of total dry aggregates C. Mix Same tests as for Item 307 D. Hydrated Lime Same tests as for Item 307 E. Mineral Filler Same tests as for Item 307 F. Compacted Pavement Same tests as for Item 307

PART E - SURFACE COURSE

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 311 - Portland Cement Concrete Pavement	A. Cement Quality: 9.00 bags cu.m. (40Kg/bag) Tests: For every 2000 bags or fraction thereof 1-Q, Quality Test B. Fine Aggregate Quantity: 1 0.05 cu.m./cu.m. concrete (if rounded coarse aggregate is used) 2. 0.54 cu.m./cu.m. concrete (if angular coarse aggregate is used) Tests: For every 1500 cu.m. or fraction thereof: a. For a coarse not yet tested, or failed in previous quality test: 1-Q, Quality Test For: Grading, Elutriation (Wash), Bulk Specific Gravity, Absorption Mortar Strength, Soundness, Organic Impurities, Unit Weight, % Clay Lumps and Shale. b. For a source previously tested and passed Quality Test: 1-Q, Quality Test for: Grading, Elutriation (Wash), Bulk Specific Gravity, Absorption Mortar Strength. For every 75 cu.m. or fraction thereof 1-G, Grading Test C. Course Aggregate Quantity: 1. 0.77 cu.m/cu.m concrete (if rounded coarse aggregate is used) 2. 0.68 cu.m/cu.m concrete (if angular coarse aggregate is used) Tests: For every 1500 cu.m or fraction Thereof a. For a source previously tested and passed quality tests: 1-Q, Quality Test for: Grading, Bulk Specific Gravity, Absorption and Abrasion For every 75 cu. m or fraction thereof: 1-G Grading Test D. Water Tests: 1-Certificate from Project Engineer or 1-Q, Quality Test, if source is questionable E. Joint Filler 1. Poured Joint Filler 1-Q, Quality Test on each type of ingredient for each shipment 2. Premolded Joint Filler 1-Q, Quality Test on each thickness of filler for each shipment F. Special Curing Agents 1-Q, Quality Test for each shipment G. Steel Bars For every 10,000 kg. or fraction thereof for each size 1-Q, Quality Test for Bending, Tension and Chemical Analysis

PART E - SURFACE COURSE

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	H. Concrete Flexural Strength Test on Concrete Beam Sample 1-set consisting of 3 beam samples shall represent a 330 sq. m of pavement, 230 mm depth or fraction thereof placed each day. Volume of concrete not more than 75 cu.m. I. Completed Pavement Thickness determination by concrete core drilling on a lot basis Five (5) holes per km per lane or five (5) holes per 500 m when 2 lanes are poured concurrently.

PART F - BRIDGE CONSTRUCTION

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 400 - Piling	A. Timber Piles 1-Inspection Report for each size and shipment of timber B. Concrete Piles a. Concrete Same tests as for Item 405 b. Reinforcing Steel Same tests as for Item 404 C. Structural Piles 1-Q, Quality Test/Mill Test Certificate 1-IR, Inspection Report
Item 401 - Railings	A. Concrete Same tests as for Item 405, Class C B. Reinforcing Steel Same tests as for Item 404
Item 402 - Timber Structures	1-Q, Quality Test on Manufacturer's Certificate for each type of materials used 1-Inspection Report for each type and shipment of timber
Item 403 - Metal Structures	1-Q, Quality Test or Mill Test Certificate for each type of materials used 1-Inspection Report for each type and shipment of metal used
Item 404 - Reinforcing Steel	A. Bar Reinforcement for Concrete for every 10,000 kg or fraction thereof for each size: 1-Q, Quality Test for Bending, Tension and Chemical Analysis B. Wire and Wire Mesh 1-Q, Quality Test
Item 405 - Structural Concrete	A. Cement Quantity: (40 kg/bag) Class A ---------- 9.0 bags/cu.m. of concrete Class B ---------- 8.0 bags/cu.m. of concrete Class C ---------- 9.5 bags/cu.m. of concrete Class P ---------- 11.0 bags/cu.m. of concrete Tests: For every 2000 bags or fraction thereof 1-Q, Quality Test

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	B. Fine Aggregate Quantity: cu.m./cu.m. of concrete For Rounded For Angular Class A ---------- 0.50 ---------- 0.54 Class B ---------- 0.45 ---------- 0.52 Class C ---------- 0.53 ---------- 0.59 Class P ---------- 0.44 --------- 0.47 Tests: For every 1500 cu.m or fraction thereof a. For a source not yet tested or failed in previous quality test 1-Q, Quality Test for: Grading, Elutriation (Wash), Bulk Specific Gravity, Absorption, Mortar Strength, Soundness, Organic Impurities, Unit Weight, % Clay Lumps and Shale b. For a source previously tested and passed quality test: 1-Q, Quality Test for: Grading, Elutriation (Wash), Bulk Specific Gravity, Absorption, and Mortar Strength For every 75 cu.m. or fraction thereof: 1-G, Grading Test C. Coarse Aggregates Quantity: cu.m./cu.m. of concrete For Rounded For Angular Class A ---------- 0.77 ---------- 0.68 Class B ---------- 0.82 ---------- 0.73 Class C ---------- 0.70 ---------- 0.68 Class P ---------- 0.68 --------- 0.65 Tests: For every 1500 cu.m or fraction thereof a. For a source not yet tested or failed in previous quality tests: 1-Q, Quality Test for: Grading, Bulk Specific Gravity, Absorption, Abrasion, Soundness and Unit Weight b. For a source previously tested and passed quality test: 1-Q, Quality Test for Grading, Absorption, Bulk Specific Gravity and Abrasion For every 75 cu.m. or fraction thereof: 1-G, Grading Test D. Water 1-Certificate from Project Engineer 1-Q, Quality Test, if source is questionable E. Premolded Filler for expansion joints 1-Q, Quality Test on each thickness of filler for each shipment F. Steel Reinforcement 1-Q, Quality Test for every 10,000 kg or fraction thereof for each size G. Concrete Compressive strength test on concrete 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

PART F - BRIDGE CONSTRUCTION

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 406 - Prestressed Concrete Structures	A. Concrete Same tests as for Item 405, Class P B. Steel Reinforcement Same tests as for Item 404 C. Wire Strand 1-Q, for every 20 t or fraction thereof
Item 407 - Concrete Structures	Same tests as for Items 403, 404, 405 and 411. Elastomeric Bearing Pad will be tested to determine its quality
Item 408 - Steel Bridges	Same tests as for Items 403 and 411 Painting: 1-Q, One 20-L can for every 100 cans or fraction thereof or 1-Q, One 4-L can for every 100 cans or fraction thereof
Item 409 - Welded Structural Steel	Same tests as for Item 403 and Inspection Report
Item 410 - Treated or Untreated Timber	Inspection Report for Timber 1-Q, Quality Test for preservatives
Item 411 - Paint	1-Q, One 20-L can for every 100 cans or fraction thereof or 1-Q, one 4-L can for every 100 cans or fraction thereof

PART G - DRAINAGE AND SLOPE PROTECTION

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 500 - Pipe Culverts and Storm Drains	A. Pipes Pipe for every 50 pieces: Strength, Absorption and Dimension Alternative Requirements: 1-set consisting of 3 concrete cylinder samples for not more than 25 pipes cast in the field, and 1-Inspection Report for each size for not more than 25 pipes cast in the field B. Mortar for Joint Cement, Fine Aggregates and Water - Same tests as for Item 405
Item 501 - Underdrains	A. Concrete Pipe (Non-Reinforced) 0.5% of the number of pipes of each size but not less than 2, for strength, absorption and dimension Alternative Requirements: 1-set consisting of 3 concrete cylinder samples for not more than 25 pipes cast in the field, and 1-Inspection Report for each size for not more than 25 pipes cast in the field. B. Clay Pipe 1-Pipe for every 200 pieces each size, with a minimum of 2 specimens for strength, absorption and dimension.
Item 502 - Manholes, inlets and Catch Basins	A. Concrete Same tests as for Item 405, Class A B. Lids, Cast Iron Frames and Grating Inspection Report

PART G - DRAINAGE AND SLOPE PROTECTION

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 503 - Cleaning and Reconditioning Existing Drainage Structures	Inspection Report
Item 504 - Riprap and Grouted Riprap	Same tests as for Item 505
Item 505 - Stone Masonry	A. Cement Quantity: 2 bags/cu.m. of concrete Tests: For every 2,000 bags or fraction thereof: 1-Q, Quality Tests B. Fine Aggregate Quantity: 0.17 cu.m./cu.m. of concrete Tests: for every 2,000 bags or fraction thereof 1-Q, quality Test for: (Same as for Item 405) For every 75 cu.m. or fraction thereof: C. Stone Inspection Report D. Water 1-Certificate from Project Engineer or 1-Q, quality Test, if source is questionable
Item 506 - Hand-Laid Embankment	Inspection Report
Item 507 - Sheet Piles	A. Timber Sheet Piles Inspection Report B. Concrete Sheet Piles Same tests as for Item 400 C. Steel Sheet Piles Same tests as for Item 403
Item 508 - Concrete Slope Protection	A. Bed Course Same tests as for Item 200 B. Steel Reinforcement Same tests as for Item 404 C. Concrete Same tests as for Item 405
Item 509 - Gabions	1-Q, Quality Test for each shipment

PART H - MISCELLANEOUS STRUCTURE

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 600 - Curb and/or Gutter	A. Concrete Quantity: 0.078 cu.m./m (Curb only) 0.092 cu.m./m (Curb and Gutter, type A) 0.149 cu.m./m (Curb and Gutter Type B) 0.074 cu.m./m (Curb and Gutter Type C) Same tests as for Item 405 B. Joint Filler Same tests as for Item 311
Item 601 - Sidewalk	A. Concrete Same tests as for Item 405, Class A B. Premolded Expansion Joint Filler Same tests as item 311
Item 602 - Monuments, Markers and Guide Posts	A. Concrete Same as for Item 405 B. Reinforcing Steel Same tests as for Item 404 C. Timber Same tests as for Item 410 D. Paint Same tests as for Item 411

PART H - MISCELLANEOUS STRUCTURE

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 604 - Fencing	A. Barbed Wire, Chain Link Fabric 1-Q, Quality Test B. Concrete Post Same tests as for Item 405 Steel Reinforcement: Same test as for Item 404
Item 605 - Road Sign	Inspection Report
Item 606 - Pavement Markings	Same tests as for Item 411
Item 607 - Reflective Pavement Studs	Inspection Report
Item 608 - Topsoil	Inspection Report
Item 609 - Sprigging	Inspection Report
Item 610 - Sodding	Inspection Report
Item 611 - Tree Planting	Inspection Report

PART I - MATERIALS DETAILS

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 700 - Hydraulic Cement	Same tests as for Item 405
Item 701 - Construction Lime (Hydrated)	1-Q, Quality test for every 100 t or fraction thereof
Item 702 - Bituminous Materials	Same tests as for Items 301, 302, 303, 306, 307, 308, 309 and 310
Item 703 - Aggregates	Same tests as for Item of Work specified in the Bill of Quantities
Item 703A - Mineral filler	Same tests as for Item 307
Item 704 - Masonry Units	1-Q, Quality Test for every 10,000 units or fraction thereof
Item 705 - Joint Materials	Same tests as for Item 311 and 500
Item 706 - Concrete, Clay, Plastic and Fiber Pipes	A. Concrete Pipes Same tests as for Item 500 B. Clay and other types of pipes Refer to the applicable requirements of AASHTO Test and Specification
Item 707 - Metal Pipe	Same tests as for Item 400
Item 708 - Concrete Curing Materials & Admixtures	1-Q, Quality Test for each shipment
Item 709 - Paints	Same tests as for Item 411
Item 710 - Reinforcing Steel and Wire Rope	A. Reinforcing Steel Same tests as for Item 404 B. Wire Rope Same tests as for item 406
Item 711 - Fence and Guardrail	A. Fence Same tests as for Item 604 B. Guardrail Same tests as for Item 603
Item 712 - Structural Metal	Same tests as for Items 403 and 409
Item 713 - Treated and Untreated Timber	Same tests as for Item 410
Item 714 - Water	1-Certificate from Project Engineer or 1-Q, Quality Test, if source is questionable

SCHEDULE OF MINIMUM TEST REQUIREMENTS GOVERNING ITEMS OF WORK OF THE DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGES AND AIRPORTS USING TEST REQUIREMENTS AS PRACTICED BY THE NATIONAL TRANSMISSION CORPORATION (TRANSCO) FOR POWER TRANSMISSION LINE AND SUBSTATION PROJECTS

PART C - EARTHWORK	
ITEMS OF WORK	**MINIMUM TEST REQUIREMENTS**
Item 100 - Clearing & Grubbing	None
Item 101 - Removal of Structures & Obstruction	None
Item 102 - Excavation	Same tests as for Items 103, 104 and 105, whichever is applicable. (same as per DPWH Standard)
Item 103 - Structure Excavation If excavated materials are wasted, the volume involved shall be reported so that quality control requirements may be adjusted accordingly. Submit Project Engineer Certificate of Waste.	If excavated materials are incorporated into the work: For every 1500 cu.m. or fraction thereof: 1- Specific Gravity 1- Grading Test 1- Plasticity Test (LL, PL, PI) 1- Laboratory Compaction Test
Item 104 - Embankment/Backfill	For every 1500 cu.m. or fraction thereof per source: 1- Specific Gravity 1- Grading Test 1- Plasticity Test (LL, PL, PI) 1- Laboratory Compaction Test A. Substations A.1 Grading Fill * 1 - Field Density Test for each 200 sq. m. of each layer of compacted fill A.2 Roadways * 1 - Field Density Test for each 50 sq. m. of each layer of compacted fill * The layers shall be placed not exceeding 200 mm in loose measurement and compacted with approved vibro-roller weighing not less than 10 tons. B. Transmission Lines B.1 Backfill 1- Field Density Test for each tower
Item 105 - Sub-grade Preparation	Same tests as for Item 104 above
PART D - SUBBASE AND BASE COURSE	
ITEMS OF WORK	**MINIMUM TEST REQUIREMENTS**
Item 200 - Aggregate Subbase Course	For every 300 cu.m. or fraction thereof per source: 1- Grading Test 1- Abrasion Test 1- Plasticity Test (LL, PL, PI) 1- Laboratory Compaction Test For every 50 sq.m. per layer of 150 mm of compacted depth: 1- Field Density Test
Item 201 - Aggregate Base Course	Same tests as for Item 200 above
Item 202 - Crushed Aggregate Base Course	Same tests as for Item 200 above

PART E -SURFACE COURSE	
ITEMS OF WORK	**MINIMUM TEST REQUIREMENTS**
Item 311 - Portland Cement Concrete Pavement	A. Cement Splg.: For every 1,000 bags/brand or fraction thereof per brand: 1 - bag (40 kg/bag) Tests: 1 - Time of Setting using Vicat Apparatus 1 - Mortar Strength Test B. Fine Aggregate Tests: a. For each new source (no previous tests) 1- Gradation Test 1- Decantation Test 1- Bulk Specific Gravity & Absorption 1- Unit Weight Determination b. For each approved source (with previous acceptable test results) 1- Gradation Test 1- Decantation Test 1- Unit Weight Determination C. Coarse Aggregate Tests: a. For each new source (no previous tests) 1- Gradation Test 1- Bulk Specific Gravity & Absorption 1- Unit Weight Determination 1- Abrasion Test b. For each approved source (with previous acceptable test results) 1- Gradation Test 1- Unit Weight Determination D. Water Tests: Certificate from Project Engineer E. Joint Filler None F. Special Curing Agents None G. Steel Bars Per 10,000 kg or fraction thereof of steel bars/delivery/ per size Tests: 1 - Mill Certificate 1 - Quality Test for Bending, Tension and Unit Weight Determination in every size. H. Concrete Mix Prop.: As determined by Transco thru Trial Mix conducted Tests: Per 25 m^3 or fraction thereof per pouring schedule 1 - set of 3 concrete cylinder samples for Compressive Strength Test. I. Completed Pavement None

PART F - BRIDGE CONSTRUCTION/TOWER FOOTINGS, EQUIPMENT FOUNDATIONS, AND OTHER STRUCTURES.	
ITEMS OF WORK	**MINIMUM TEST REQUIREMENTS**
Item 400 - Piling	B. Concrete Piles a. Concrete Same tests as for Item 405 below b. Reinforcing Steel Same tests as for Item 404 below C. Structural Piles 1 - Mill Test Certificate
Item 404 - Reinforcing Steel	A. Bar Reinforcement for Concrete Per 10,000 kg or fraction thereof of steel bars Tests: 1 - Mill Certificate 1 - Quality Test for Bending, Tension and Unit Weight determination in every size. B. Wire and Wire Mesh - None
Item 405 - Structural Concrete	A. Cement Splg.: For every 1,000 bags/brand: 1 - bag (40kg/bag) Tests: 1 - Time of Setting using Vicat Apparatus 1 - Mortar Strength Test B. Fine Aggregates Tests: a. For each new source (no previous test) 1 - Gradation Test 1 - Decantation Test 1 - Bulk Specific Gravity and Absorption 1 - Unit Weight Determination b. For each approved source (with previous acceptable test results) 1 - Gradation Test 1 - Decantation Test 1 - Unit Weight C. Coarse Aggregates Tests: a. For each new source (no previous test) 1 - Gradation Test 1 - Bulk Specific Gravity and Absorption 1 - Unit Weight Determination 1 - Abrasion Test b. For each approved source (with previous acceptable test results) 1 - Gradation Test 1 - Unit Weight Determination D. Water Tests: Certificate from Project Engineer E. Premolded Filler for expansion joints None

PART F - BRIDGE CONSTRUCTION/TOWER FOOTINGS, EQUIPMENT FOUNDATIONS, AND OTHER STRUCTURES.	
ITEMS OF WORK	**MINIMUM TEST REQUIREMENTS**
	F. Concrete Mix Prop.: As determined by Transco thru Trial Mix conducted Tests: 1 - set of 3 conc. cylinder samples for: a. Every leg of transmission tower b. Every equipment foundation/cluster of related foundations c. Every 25 m^3 or fraction thereof per pouring schedule.
Item 407 - Other Concrete Structures	Same tests as for Item 405 above
PART G - DRAINAGE AND SLOPE PROTECTION	
ITEMS OF WORK	**MINIMUM TEST REQUIREMENTS**
Item 504 - Riprap and Grouted Riprap	Same tests as for Item 505 below
Item 505 - Stone Masonry	A. Cement Mix Prop.: 1:3 of cement to clean fine aggregates Tests: Same tests as for Items 405 - A above B. Fine Aggregate Tests: Same tests as for Items 405 - B above C. Boulder Tests: Unit weight, specific gravity, Weight
Item 508 - Concrete Slope Protection	A. Bed Course Same tests as for Item 200 DPWH Standard B. Steel Reinforcement Same tests as for Item 404 DPWH Standard C. Concrete Same tests as for Item 405 above
PART H - MISCELLANEOUS STRUCTURE	
ITEMS OF WORK	**MINIMUM TEST REQUIREMENTS**
Item 600 - Curb and/or Gutter	A. Concrete Same tests as for Item 405 above B. Joint Filler None
Item 601 - Sidewalk	A. Concrete Same tests as for Items 311 DPWH Standard and 405 above B. Premolded Expansion Joint Filler None
PART I - MATERIALS DETAILS	
ITEMS OF WORK	**MINIMUM TEST REQUIREMENTS**
Item 704 - Masonry Units	1 - Compressive strength test every specimen taken at random representing 500 units deliverred at site or fraction thereof.
Item 708 - Concrete Curing Materials & Admixtures	1-Quality Tests for each shipment 1-Specific Gravity