General Specification for Civil Engineering Works

2006 Edition

AMENDMENT NO. 1/2016

VOLUME 1

SECTION 1 GENERAL

APPENDIX 1.1 - STANDARDS

(a) Appendix 1.1 **Add the following standards:**

BS DD 232:2005	Method for determination of the maximum binder content of bituminous mixtures without excessive binder drainage
ASTM D 546-05	Standard test method for sieve analysis of mineral filler for bituminous paving mixtures
AASHTO Designation M320-05	Standard Specification for Performance-Graded Asphalt Binder
AASHTO Designation T48-06	Standard Method of Test for Flash and Fire Points by Cleveland Open Cup
AASHTO Designation T240-09	Standard Method of Test for Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test)
AASHTO Designation T315-09	Standard Method of Test for Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer (DSR)
AASHTO Designation T316-06	Standard Method of Test for Viscosity Determination of Asphalt Binder Using Rotational Viscometer

SECTION 5 DRAINAGE WORKS

MATERIALS

(b) Clause 5.28 **Replace the title of the clause with the following:**

Manhole covers, gully gratings and kerb overflow weirs made of cast iron

Replace sub-clause (1) with the following:

(1) Manhole covers, gully gratings and kerb overflow weirs made of cast iron shall be of Grade EN-GJL-150 complying with BS EN 1561.

Bolts and nuts shall comply with BS 4190.

(c) Clause 5.28A **Add the title of the new clause to read as follows:**

Gully gratings and channel gratings made of compound material

Add the new clause with the following:

(1) Gully gratings and channel gratings made of compound material essentially shall comprise of non-metallic components with strength and properties complying with the conditions stated in this clause. Embedded steel reinforcement bars are permitted on condition that there is a minimum 10 mm cover.

(2) Gratings shall be cleanly cast and free of any holes or voids. The outer surface shall be smooth, regular and with no observable damage.

(3) Gratings shall have the manufacturer's name cast integrally with the unit in a raised form.

(4) Gratings shall be stored off the ground on level supports in a manner which will not result in damage or deformation of the units. The units shall be protected from direct sunshine.

TESTING: MANHOLE COVERS, GULLY GRATINGS AND KERB OVERFLOW WEIRS

(d) **Add** "MADE OF CAST IRON" **on the above section heading after** "OVERFLOW WEIRS"**.**

(e) **Add the heading of the new section after Clause 5.98 to read as follows:**

TESTING: GULLY GRATINGS AND CHANNEL GRATINGS MADE OF COMPOUND MATERIAL

(f) Clause 5.98A **Add the title of the new clause to read as follows:**

Batch

Add the new clause with the following:

A batch of gratings is any quantity of gratings manufactured by the same manufacturer, covered by the same certificate and delivered to the Site at any one time.

(g) Clause 5.98B **Add the title of the new clause to read as follows:**

Samples

Add the new clause with the following:

One sample of grating shall be provided from each 20 gratings or part thereof in a batch.

(h) Clause 5.98C **Add the title of the new clause to read as follows:**

Testing and compliance criteria

Add the new clause with the following:

(1) Each sample of gully grating shall be subjected to a load test.

(2) The method of testing shall be as stated in Appendix 5.3. The minimum mass and test loads which the gratings and frames shall withstand without fracturing or cracking shall be as stated in Table 5.10A.

(3) Unless the Contractor presents evidence of compliance to the satisfaction of the Engineer, full-scale tests as listed in Clause 5.98C(4) and (5) shall be carried out with one sample from each 100 gratings or part thereof in a batch as defined in Clause 5.98A.

(4) For double triangular gratings, the permanent set under the test load stated in Table 5.10B shall not exceed the larger of 1mm or CO/500, where CO is the diameter of the largest circle that can be placed within the external boundary of the grating. For rectangular gratings, CO is equal to the length of the shorter side of the grating. The procedures of permanent set testing on a grating are as follows:

(a) Before the load is applied, take an initial reading at the geometric centre of the grating. (For double triangular gratings, initial readings shall be measured on both triangular gratings, as close as possible to their geometric centres.)

(b) The load shall be applied at a rate of 1 kN/s to 5 kN/s up to the test load as stated in Table 5.10B.

(c) Remove load from the grating.

(d) Repeat the procedures (b) to (c) four more times.

(e) Take final reading at the geometric centre of the grating and determine the value of permanent set as the absolute difference of the measured readings between the initial and the final readings at the geometric centre of the grating.

(5) The gratings and frames shall comply with the requirements in Table 5.10C as determined by the testing methods as follows:

(a) Acid Resistance Test
- The grating sample is immersed in a sulfuric acid solution (H_2SO_4) of 20% concentration for 48 hours.

(b) Heat Resistance Test
- The grating sample is placed in an oven at 80°C for 168 hours and then cooled down to room temperature for 24 hours before the load test.
- The arrangement of the load test shall follow Appendix 5.3. The diameter of the transfer block is in Table 5.10A. A compressive load is applied to the centre of the block at a rate of 1 kN/s to 3 kN/s. The grating sample is

subjected to 5 cycles of loading to 30% of the test load in Table 5.10A and unloading to 0 kN. The grating is then loaded to and sustained at 45% of the test load in Table 5.10A for 5 minutes and unloaded to 0 kN. Lastly, the grating is loaded to 95% of the test load in Table 5.10A for 5 minutes and unloaded to 0 kN.

(c) Weather Resistance

- The grating sample is placed in a weather test chamber conditioned at 65±3°C and 65±5% relative humidity, under a light intensity of 550±50W/m^2, and subjected to distilled water spray cycles (each cycle of 18 minutes spray and 102 minutes no spray) for 500 hours. Afterwards, the sample is cooled down to room temperature for at least 24 hours before the load test.
- The load test shall be carried out in accordance with the second paragraph in (b) above.

(i) Table 5.10A **Add the new table as follows:**

Table 5.10A: Details of gully gratings and frames and channel gratings made of compound materials

Type of gully grating and frames and channel grating	Minimum mass of each grating (kg)	Test requirements	
		Diameter of block (mm)	Test load (t)
Grating for double triangular gully grating Type GA1-450	33.0	300	20
Frame			
- adjacent to kerb	12.0	300	20
- away from kerb	13.0	300	20
Channel grating not subject to vehicular load (mm)			
600 x 400 x 40	14	300	5
600 x 325 x 40	10	300	5
Channel grating subject to vehicular load (mm)			
600 x 400 x 70	26	300	20
600 x 325 x 70	21	300	20

(j) Table 5.10B **Add the new table as follows:**

Table 5.10B: Test load for permanent set testing on gully gratings and channel gratings made of compound material

Type of gully grating and channel grating	Test load (t)
Grating for double triangular gully grating Type GA1-450	6
Channel grating not subject to vehicular load	1.5
Channel grating subject to vehicular load	6

(k) Table 5.10C **Add the new table as follows:**

Table 5.10C: Properties of the gully gratings and channel gratings made of compound material

Properties	Requirements
Acid Resistance	No obvious corrosion on surface of the sample and loss in mass < 1%
Heat Resistance	No crack found after the load test
Weather Resistance	No crack found after the load test

SECTION 9 CARRIAGEWAYS: SUB-BASE MATERIAL AND BITUMINOUS MATERIALS

MATERIALS

(l) Clause 9.04(2) **Delete** ", river sand or a mixture of crushed rock and river sand" **in the first sentence.**

(m) Table 9.4 **Replace the heading of the last column with** "Polymer modified friction course" **and its minimum and maximum bitumen content as percentage of total mass including binder with** "5.5" **and** "7.0" **respectively.**

(n) Clause 9.05(2) **Replace** "bituminous" **with** "polymer modified"**.**

(o) Clause 9.06 **Replace the clause with the following:**

(1) Bitumen for bituminous materials other than polymer modified friction course material shall comply with ASTM D 946, Grade 60-70 and shall have a softening point exceeding 44°C and less than 55°C. The wax content of the bitumen shall comply with requirements for Grade A specified in JTG F40-2004. Unless otherwise permitted by the Engineer, blending or mixing of bitumen shall be carried out at a refinery approved by the Engineer.

(2) Bitumen for polymer modified friction course material shall be polymer modified bitumen that shall be a pre-blended type bitumen with Styrene-Butadiene-Styrene (SBS) polymer manufactured by the wet mix method unless otherwise approved by the Engineer. Dry mix method for

mixing the bitumen and polymer in the batching plant shall not be allowed. The polymer modified bitumen shall have a performance grade not lower than PG 76 of the Performance Graded Asphalt Binder Specification specified by the AASHTO Designation M320.

DESIGN OF SUB-BASE MATERIAL AND BITUMINOUS MATERIALS

(p) Clause 9.10(4) **Replace the sub-clause with the following:**

(4) Bituminous materials of all aggregate sizes, other than bituminous roadbase material, shall be designed in accordance with the Marshall Method of Mix Design stated in The Asphalt Institute Handbook 'MS-2 Mix Design Methods for Asphalt Concrete and other Hot-mix Types, Sixth Edition (1997)' with modifications only if agreed by the Engineer. For design of bituminous wearing course and base course materials, the compaction standard shall be 75 blows per side. The maximum amount of RAP allowable in the bituminous wearing course and base course materials shall be 15% by mass of the total mix. Separate mix designs shall be required for these materials incorporating RAP. For design of polymer modified friction course material, the compaction standard shall be 50 blows per side unless otherwise agreed by the Engineer. The mixing and compaction temperatures for the mixes shall follow the recommendations of the manufacturer of the polymer modified bitumen.

(q) Clause 9.10(5) **Replace the sub-clause with the following:**

(5) For polymer modified friction course material, binder drainage tests in accordance with BS DD 232 shall be carried out on the proposed aggregate/modified binder combination to determine the maximum target binder content (T_{max}) of the mix. The proposed mix will be acceptable if the maximum target binder content (T_{max}) is equal to or greater than the proposed binder content.

(r) Table 9.5 **Replace the heading of the last column with** "Polymer modified friction course" **and its minimum voids in mineral aggregate as a percentage of total bulk volume and air voids in mix as a percentage of total bulk volume with** "-" **and** "min. 20.0" **respectively.**

SUBMISSIONS

(s) Clause 9.11(1) **Add** "other than polymer modified bitumen" **before** "showing the manufacturer's name" **in sub-clause (b).**

Add the new sub-clause (c) as follows:

(c) A certificate from the manufacturer for polymer modified bitumen showing the manufacturer's name, the date and place of manufacture and showing that the polymer modified bitumen complies with the requirements in Clause 9.06(2).

(t) Clause 9.12(2) **Replace the sub-clause with the following:**

(2) The following particulars of bituminous materials shall also be submitted to the Engineer:

For bituminous materials other than polymer modified friction course material:

(a) Certified copies of work sheets for mix designs, which shall include the relative density of the mixed aggregates,

(b) Source of bitumen, and

(c) If requested by the Engineer, past test records of the same mix produced in the same plant.

For polymer modified friction course material:

(a) Polymer modified binder content % by weight of total mass,

(b) Source and type of aggregates,

(c) Certified copies of work sheets for mix designs, which shall include the relative density of the mix aggregates,

(d) Mixing temperature during production,

(e) Grading details in tabular and graphical form,

(f) Source of polymer modified bitumen,

(g) Details of each mixing plant proposed, and

(h) If requested by the Engineer, past test records of the same mix produced in the same plant.

TRIALS

(u) Table 9.6 **Replace the first cell of the last row with** "Polymer modified friction course material"**.**

(v) Clause 9.19(4) **Add** "polymer modified" **before** "friction course"**.**

(w) Table 9.7 **Replace the heading of the last column with** "10 (for mix other than polymer modified friction course material)" **and add the following column at rightmost:**

10 (for polymer modified friction course material)
-
-
-
-
0

± 4
± 7
± 7
-
-
-
-
± 2

HANDLING, STORAGE AND TRANSPORT OF MATERIALS

(x) Clause 9.25 **Delete sub-clause (4) from this clause.**

(y) Clause 9.26(3) **Delete the last sentence from this sub-clause.**

MIXING OF SUB-BASE MATERIAL AND BITUMINOUS MATERIALS

(z) Clause 9.29 **Add** "other than polymer modified friction course material" **after** "Bituminous materials" **in sub-clause (3).**

Add sub-clauses (4) to (6) as follows:

(4) The polymer modified friction course material shall comply with the temperature requirements as recommended by the supplier of the polymer modified bitumen during and after mixing.

(5) The particulars of temperature requirements for the polymer modified friction course material shall be submitted to the Engineer at the time stated in Clause 9.12(3).

(6) If instructed by the Engineer, the Contractor shall measure in the presence of the Engineer's Representative the following temperatures:

(a) Temperature after mixing,

(b) Temperature at laying, and

(c) Temperature at start of compaction.

(aa) Table 9.8 **Delete the rightmost column of the table.**

PRELIMINARY WORK

(ab) Clause 9.30(4) **Replace the last sentence of this sub-clause with the following:**

The material shall be compacted in layers not exceeding 50 mm thick using hand rammers or mechanical equipment up to the underside of the wearing course if the top surfacing is wearing course, or up to the underside of the polymer modified friction course if the top surfacing is polymer modified friction course.

LAYING AND COMPACTION OF BITUMINOUS MATERIALS

(ac) Clause 9.33

Replace "bituminous" **with** "polymer modified" **in the first sentence of sub-clause (2).**

Add "other than polymer modified friction course material" **after** "Bituminous materials" **in sub-clause (6).**

Add sub-clause (7) as follows:

(7) Without prejudice to Clause 9.33(2) above, polymer modified friction course material shall comply with the temperature requirements as recommended by the manufacturer of the polymer modified bitumen during laying and compaction.

(ad) Clause 9.36(4)

Replace the sub-clause with the following:

(4) To ensure continuity of voids in polymer modified friction course, pneumatic-tyre roller shall not be used for compacting polymer modified friction course.

(ae) Clause 9.37

Add "polymer modified" **before** "friction course" **in sub-clauses (2) and (6).**

TOLERANCES

(af) Clause 9.40

Add "polymer modified" **before** "friction course" **in sub-clauses (1), (2), (3) and (4).**

(ag) Table 9.9

Replace "Friction course" **with** "Polymer modified friction course" **in last row.**

TESTING: AGGREGATES, FILLER AND BITUMEN FOR BITUMINOUS MATERIALS

(ah) Table 9.11

Replace the table with the following:

Material	Property	Method of testing
Coarse aggregate	Relative density Water absorption	CS3
	Ten per cent fines value	CS3
	Particle size distribution	CS3
	Flakiness index	CS3
Fine aggregate	Relative density Water absorption	CS3
	Particle size distribution	Geospec 3, Test Method 8.2

Filler	Relative density	BS EN 196-6
	Particle size distribution	ASTM D 546 with modification(1)
Bitumen for bituminous materials other than polymer modified friction course material	Relative density	ASTM D 3289
	Softening point	BS 2000
	Penetration	ASTM D 5
	Ductility	ASTM D 113
	Retained penetration after thin film oven test	ASTM D 1754
	Solubility	ASTM D 2042
	Viscosity	ASTM D 2171 or BS 2000
	Loss on heating	BS 2000
Bitumen for polymer modified friction course material	Viscosity	AASHTO Designation T316
	Dynamic Shear	AASHTO Designation T315
	Dynamic Shear after Rolling Thin-Film Oven	AASHTO Designation T315 and AASHTO Designation T240
	Flash Point	AASHTO Designation T48

Note: (1) For particle size distribution tests in accordance with ASTM D 546, the modification is that BS sieves are used instead of ASTM sieves.

TESTING: BITUMINOUS MATERIALS OTHER THAN BITUMINOUS FRICTION COURSE MATERIAL

(ai) **Replace all** "bituminous friction course material" **with** "polymer modified friction course material" **under this section.**

(aj) Clause 9.57(1) **Add** "polymer modified" **before** "friction course materials"**.**

TESTING: BITUMINOUS FRICTION COURSE MATERIAL

(ak) **Replace all** "bituminous friction course material" **with** "polymer modified friction course material" **under this section.**

(al) Clause 9.59(3) **Replace this sub-clause with the following:**

(3) Samples shall be taken from roadway prior to compaction at locations where the polymer modified friction course material will be laid or from other locations as instructed by the Engineer prior to compaction.

(am) Clause 9.60(2) **Replace this sub-clause with the following:**

(2) The method of testing shall be in accordance with the following:

Particle size distribution	: Appendix 9.2
Bitumen content	: Appendix 9.2

(an) Clause 9.61(a) **Replace this sub-clause with the following:**

(a) The particle size distribution shall be such that not more than one point on the particle size distribution curve is outside the approved gradation envelopes determined as stated in Clause 9.22(2). Notwithstanding the above distribution, the percentage passing the 75μm BS test sieve shall not exceed the approved design value by more than 3%.

TESTING: TEXTURE DEPTH AND PERMEABILITY

(ao) **Replace all** "friction course" **with** "polymer modified friction course" **under this section.**

APPENDIX 9.1 – DETERMINATION OF THE PERMEABILITY OF FRICTION COURSE MATERIAL

(ap) Appendix 9.1 **Replace all** "friction course material" **with** "polymer modified friction course material" **in this Appendix.**

APPENDIX 9.2 – DETERMINATION OF BINDER CONTENT AND PARTICLE SIZE DISTRIBUTION OF POLYMER MODIFIED FRICTION COURSE MATERIAL

(aq) Appendix 9.2 **Add the following clauses as a new Appendix 9.2.**

(ar) Clause 9.2.1 **Add the title of the new clause to read as follows:**

Scope

Add the new clause with the following:

This method covers the determination of the polymer modified binder content (i.e. the total binder and polymer content) and particle size distribution of polymer modified friction course material by making use of a combination of two tests in accordance with ASTM D 2172, Method A and ASTM D 6307, ASTM C 136 with modifications and ASTM C 117, Method B.

(as) Clause 9.2.2 **Add the title of the new clause to read as follows:**

Calibration procedure

Add the new clause with the following:

Testing on laboratory mix to determine the calibration factor shall be

required. The procedure shall be as follows:

(a) For a particular mix, prepare a laboratory mix of known particle size distribution and bitumen content (A).

(b) Test the trial samples of the laboratory mix in accordance with ASTM D 2172, Method A (Centrifugal Method) to determine the polymer modified binder content (B) of the trial samples.

(c) Test the residual of the trial samples that have been tested by ASTM D 2172, Method A in accordance with ASTM D 6307 (Ignition Method) to determine the polymer modified binder content (C) of the residual.

(d) Calculate the calibration factor for that particular mix (Z) by the following formula:

Calibration Factor (for a particular mix), Z = C - (A - B)

(e) Repeat the above steps from (a) to (d) for two additional calibration samples.

(f) Calculate the average calibration factor (Z) by averaging the three values obtained in step (d) above.

(at) Clause 9.2.3 **Add the title of the new clause to read as follows:**

Testing

Add the new clause with the following:

The procedure for testing polymer modified friction course material shall be as follows:

(a) Test the samples in accordance with ASTM D 2172, Method A (Centrifugal Method) to obtain the polymer modified binder content (X) of the test samples.

(b) Keep the residual (Residual 1) of the test samples that have been tested in sub-clause (a) above.

(c) With the average value of the calibration factor (Z) entered into the NCAT Tester for correction purpose, test Residual 1 obtained from sub-clause (b) above in accordance with ASTM D 6307 (Ignition Method) to obtain the residual polymer modified binder content (Y) of Residual 1.

(d) Keep the residual (Residual 2) of Residual 1 that has been tested in sub-clause (c) above.

(e) Determine the particle size distribution of Residual 2 in accordance with ASTM C 136 with modifications and ASTM C 117, Method B.

(au) Clause 9.2.4 **Add the title of the new clause to read as follows:**

Calculation

Add the new clause with the following:

(1) The polymer modified binder content of the test samples shall be calculated as follows:

Polymer modified binder content = X + Y

(2) The particle size distribution of the test samples shall be the particle size distribution of Residual 2.

(av) Clause 9.2.5 **Add the title of the new clause to read as follows:**

Reporting of results

Add the new clause with the following:

The following shall be reported:

(a) Polymer modified binder content (X).

(b) Polymer modified binder content (Y).

(c) Polymer modified binder content (total binder and polymer content).

(d) Particle size distribution.

SECTION 10 CONCRETE CARRIAGEWAYS

MATERIALS

(aw) Clause 10.09 **Delete** "natural river deposited sand consisting of at least 95% by mass of quartz grains or"**.**

CONCRETE

(ax) Clause 10.17(d) **Replace** "30 mm" **with** "75 mm"**.**

VOLUME 2

SECTION 25 ENVIRONMENTAL PROTECTION

GENERAL

(ay) Clause 25.01

Delete "as described in Clauses 25.29 to 25.34 below" **from sub-clause (4).**

Replace sub-clause (5) with sub-clauses (5) to (8) as follows:

(5) The Contractor shall follow "Environmental Monitoring and Audit (EM&A) Guidelines for Development Projects in Hong Kong" for the EM&A practice. The guidelines are given by Environment Protection Department (EPD) on the website:-

http://www.epd.gov.hk/eia/hb/materials/guidelines.htm

The above website is subject to change and hence the homepage of EPD should be referred to when warranted.

(6) Where the activities on Site are found not in compliance with the requirements as specified or cause unacceptable environmental impacts, the Contractor shall immediately carry out appropriate environmental mitigation measures to rectify the situation to the Engineer's satisfaction.

(7) The Contractor shall make due allowance in his resources and programme for carrying out of the Works in compliance with the environmental protection control requirements under the Contract.

(8) The Contractor shall provide suitable training to the workers on environmental nuisance abatement and waste management.

WATER POLLUTION CONTROL

(az) Clause 25.02

Add ", its subsidiary regulations" **after** "Water Pollution Control Ordinance" **in sub-clause (1).**

Replace "Guide Books & Codes of Practice" **with** "Guidelines and Reference Materials" **in the first sentence of sub-clause (3).**

(ba) Clause 25.07(1)(f)

Add "at least" **before** "110%" **in the sub-clause.**

NOISE CONTROL

(bb) Clause 25.10(6)

Add ", as specified in the Professional Persons Environmental Consultative Committee Practice Note (ProPECC PN) 2/93 "Noise from Construction Activities – Non-statutory Controls" issued by the Director of Environmental Protection, or any update or reissue of this document posted on the website of Environmental Protection Department (http://www.epd.gov.hk) under Resources and Publications\Publications\Guidelines and Reference Materials" **after** "use of purpose-built acoustic panels and enclosures" **in the second sentence of the sub-clause.**

(bc) Clause 25.12

Delete "during breaking construction" **in sub-clause (5).**

Add sub-clause (6) as follows:

(6) The Contractor shall use non-percussive methods such as hydraulic hammer, vibration or jacking method for installing or extracting sheet piles.

AIR POLLUTION CONTROL

(bd) Clause 25.14(1)

Replace "and Air Pollution Control (Construction Dust) Regulation and Air Pollution Control (Smoke) Regulation" **with** ", Air Pollution Control (Construction Dust) Regulation, Air Pollution Control (Smoke) Regulations and Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation"**.**

(be) Clause 25.15

Replace "emission dust" **with** "dust emission" **in the second sentence of sub-clause (4).**

Replace sub-clauses (9) to (13) with sub-clauses (9) to (15) as follows:

(9) All dump trucks (i.e. goods vehicle of gross vehicle weight equal to or more than 16 tonnes, fitted with a dump bed) leaving the Site carrying dusty materials shall be fitted with a mechanical cover to cover the dump bed. The mechanical cover shall be in good service condition and the Contractor shall be responsible for selecting a design of mechanical cover satisfying all the following requirements:

(a) The cover shall be constructed of durable materials and suitable components in good condition. The materials of the cover shall be effective in preventing dust emissions. The cover shall be power-operated with manual backup. Except in the manual backup mode, the cover shall only be operable inside the driving cabin, if applicable.

(b) The cover system shall incorporate controls to ensure safety in operation. The cover shall be inoperable unless the vehicle has come to a standstill, and after the hand brake is on. A warning system, consisting of flashing amber lights and audible alarm, shall be activated automatically when the cover is being operated inside the driving cabin. The warning system shall be visible and audible from both inside (by an indicator light or the like if necessary) and outside the driving cabin. A locking system shall be in place to prevent accidental opening of the cover, if applicable.

(c) The cover shall be able to withstand strong winds under normal circumstances. After the cover to the dump bed is closed, any gap left on the system of enclosure shall be less than 25mm wide measured in a direction across the gap as far as practicable. Any remaining gap shall be sealed up tightly with suitable materials of sufficient length to bridge across the gap as far as practicable. In addition, the cover shall not accumulate any significant amount of dust or debris which may obstruct its

operation. The gross vehicle weight and maximum dimensions of the truck after fitted with the cover and associated accessories shall comply with the relevant legislation.

(10) The Engineer or his Representative shall have the power to refuse entry into the Site any dump truck that fails to meet this specification and to require any loaded dump truck to unload its contents before leaving the Site if its dump bed and cover are found not to comply with the above requirements after loading. Provided always that approval for leaving the Site of a loaded dump truck by the Engineer or his site supervisory staff shall not relieve the Contractor of his obligation to comply with the relevant legislation, and the Employer shall not be liable for any loss or damage sustained by the Contractor or the truck drivers or truck owners arising from or in connection with any offence committed by the Contractor or the truck drivers or truck owners in relation to transportation of the Construction and Demolition (C&D) materials from the Site.

(11) Vehicles other than dump truck carrying dusty materials away from the Site may use means other than mechanical covers to cover their dusty materials, provided that the vehicle shall have properly fitted side-boards and tail-boards, with dusty materials loaded to a height not exceeding the height of the side-boards and tail-boards, and covered with a tarpaulin or suitable impervious covering material (as approved by the Engineer or his Representative) in good condition. The covering shall be properly secured and extended at least 300 mm over the edges of the side-boards and tail-boards before leaving the Site and maintained throughout the journey to the off-loading destination. For the purpose of this sub-clause, "dusty materials" include cement, earth, pulverized fuel ash, excavated and crushed rock, aggregates, silt, stone fines, sand, debris, saw dust and wooden chips, etc.

(12) Earth-moving operations shall be carefully controlled with enhanced dust-suppression measures when winds are strong and particularly blowing towards the adjacent sensitive receivers. Sheltered areas of the Site shall be used for dusty operations, especially during windy periods.

(13) The areas with earthwork activities, including the final compaction activities, shall be completed as quickly as possible and in compliance with good practices, to limit creation of wind-blown dust.

(14) The location of dust-producing plant or facilities, either fixed or temporary, shall be subject to the agreement of the Engineer.

(15) For activities that are likely to generate a substantial amount of dust and where there are no effective measures or it is not possible to adequately control the dust level, vacuum cleaners should be used where practicable to suppress such dust.

WASTE MANAGEMENT

(bf) Clause 25.21(1) **Replace** "Construction and Demolition (C&D) materials" **with** "C&D materials"**.**

(bg) Clause 25.25 **Replace sub-clauses (1) and (2) with the following:**

(1) The Contractor shall implement a Trip Ticket System (TTS) for removal of C&D materials from the Site to the designated disposal ground.

(2) The inert portion of the C&D materials shall be disposed of at the designated public fill reception facilities and the non-inert portion of the C&D materials shall be disposed of at the designated landfills or outlying islands transfer facilities, as specified in the Contract.

Delete sub-clauses (3) to (18).

(bh) Clause 25.26(4) **Replace the sub-clause with the following:**

(4) The Contractor shall ensure that no earth, rock or debris including any deposit arising from the movement of plant or vehicles is deposited on public roads or private rights of way as a result of the activities of the Contractor, his Sub-contractors, and other contractors working on the Site. The Contractor shall provide adequate wheel-washing and vehicle-cleaning facilities to wash mud and the like from the wheels and bodywork of all vehicles to the satisfaction of the Engineer before the vehicles leave the Site.

ENVIRONMENTAL MONITORING AND AUDIT

(bi) **Delete this section (i.e. from Clauses 25.29 to 25.34).**

APPENDIX 25.3 – SAMPLE OF DISPOSAL DELIVERY FORM

(bj) Appendix 25.3 **Delete this Appendix.**

APPENDIX 25.4 – A SAMPLE OF "DAILY RECORD SUMMARY" TO RECORD DAILY DISPOSAL OF CONSTRUCTION & DEMOLITION (C&D) MATERIALS FROM THE SITE

(bk) Appendix 25.4 **Delete this Appendix.**

Quality Management & Standards Unit
Civil Engineering and Development Department
30 December 2016