

ANNEXURE CQS-C MAXIMUM LOT SIZES AND MINIMUM TEST FREQUENCIES

GENERAL

1. The maximum lot sizes and minimum test frequencies are separately specified for all major activities covered by the Technical Specifications as listed hereunder.
2. The requirements applicable to this Contract are identified with an asterisk indicating that only these details are attached in this Annexure.
3. Where material/product quality certification can be obtained from the supplier, tests listed per contract/separable part need not be repeated.

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Sub-Annexure C1

EARTHWORKS (Specification C213)

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|---|--|--------------------------------|-----------------------------|--------------------------------|
| Stripping Topsoil | Surface Levels | 20,000m ² | 1 Cross Section per 15m | Survey |
| Excavation | Geometry | 20,000m ² | 1 Cross Section per 15m | Survey |
| Floor of Cuttings | Material Quality - CBR | 10,000m ² | 1 per 2,000m ² * | T117A |
| | Compaction | 10,000m ² | Table A1-Annexure CQS-A | T166, AS1289.F1.1 |
| Foundation for Embankments | Compaction | 20,000m ² | Table A1-Annexure CQS-A | T166 |
| Embankments - General | Geometry | One layer 20,000m ² | 1 Cross Section per 15m | Survey |
| | Material Quality - CBR | One layer 20,000m ² | 1 per 1,000m ³ | T117A AS1289.F1.1 |
| | Compaction/Moisture Content | One layer 20,000m ² | Table A1-Annexure CQS-A | T166 AS1289.5.1.1 AS1289.5.7.1 |
| | Geometry | One layer 20,000m ² | 1 Cross Section per 15m | Survey |
| Road Carriageway Embankments - Select Zone | Material Quality - Maximum Particle Size | 10,000m ² | 1 per 1,000m ³ * | AS1289.F1.1 T106 |
| | - CBR | 10,000m ² | 1 per 500m ³ * | T117A |
| | Compaction/Moisture Content | One layer 10,000m ² | Table A1-Annexure CQS-A | AS1289.5.1.1 T119, T120, T166 |
| | Geometry | One layer 20,000m ² | 1 Cross Section per 15m | Survey |
| Fill Adjacent to Structures: Bridges, Retaining Walls and Cast-in-Situ Culverts | Material Quality - Maximum Particle Size | 1 Contract | 1 per 200m ³ * | T106 AS1289.3.3.1 |
| | - Plasticity Index | 1 Contract | 1 per 200m ³ * | |
| | Compaction/Moisture Content | 1 Structure | 2 per Structure | AS1289.5.1.1 T119, T120, T166 |

* Note: or part thereof, per lot.

Sub-Annexure C2**STORMWATER DRAINAGE - PIPE CULVERTS, BOX CULVERTS, OPEN DRAINS INCLUDING KERB & GUTTER, DRAINAGE STRUCTURES (Specifications C220, C221, C222, C223, C224)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|---|---|---|--|--|
| Supply of Precast Units | Precast Quality - Suppliers documentary evidence and certification | 1 delivery | 1 per type/size/class per delivery | |
| Siting and Excavation | Geometry | 1 drainage line/structure | 1 per drainage line/structure | Survey |
| Foundation | Compaction | 1 drainage line/structure | 1 per 20 lin m * | T166 |
| Material surrounding Steel Structures | Material Quality - pH/Electrical Resistivity | 1 drainage line/structure | 1 per material | AS1289.D3.1 AS1289.D4.1 |
| Bedding | Material Quality - Particle Size Distribution Compaction/Moisture Content | 1 contract 1 drainage line/structure | 1 per 200m ³ * 1 per layer, max 100m ² | AS1141.11 T166 AS1289.5.7.1 |
| Concrete Bedding or Lining | Refer 'Minor Concrete Works' | | | |
| Installation of Precast Units | Geometry | 1 drainage line/structure | 1 per drainage line/structure | Survey |
| Selected Backfill | Material Quality - Maximum Particle Size - Plasticity Index Compaction/Moisture Content | 1 contract 1 contract 1 drainage line/structure | 1 per 200m ³ * 1 per 200m ³ * 1 per 2 layers max 100m ² | T106 AS1289.3.3.1 T166 AS1289.5.7.1 |
| Rock Fill for Gabions/ Wire Mattresses | Material Quality: - Particle Size Distribution - Wet Strength - Wet/Dry Strength Variation | 1 contract 1 contract 1 contract | 1 per 200m ³ 1 per contract 1 per contract | AS1141.11 AS1141.22 AS1141.22 |
| Kerb and Gutter | Geometry | | 1 Cross Section per 15m | Survey and 3m Straight Edge |

* Note: or part thereof, per lot.

**Sub-Annexure C3
SUBSURFACE DRAINAGE (Specifications C230, C231, C232, C233)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD | |
|---------------------------------|--|--------------------|-------------------------|------------------------------|------|
| Material Supply | Material Quality - Supplier's documentary evidence and certification of: | | | | |
| | Pipe | 1 contract/size | 1 per type/size | | |
| | Filter Material | | | | |
| | - Grading (Type A, B, C, D) | 1 contract/size | 1 per type | AS1141.11 | |
| | - Coefficient of Permeability (Type B) | 1 contract/size | 1 per type | AS1289.E5.1 ASTM-D2434-68 | |
| | - Grading Variation after Treatment (Type B) | 1 contract/size | 1 per type | T102, T103, AS1141.11 | |
| | - Wet Strength (Type C, D) | 1 contract/size | 1 per type | AS1141.22 | |
| - 10% Fines Wet/Dry (Type C, D) | 1 contract/size | 1 per type | AS1141.22 | | |
| | Geotextile | 1 contract | 1 per type | | |
| Excavation - Trench Base | Line and Grade | 1 drainage line | 1 per drainage line | Survey | |
| | Compaction | 1 drainage line | 1 per 200 lin m* | T166 | |
| Bedding and Backfill | | | | | |
| | - Filter Material | Compaction | 1 drainage line | 1 per 100 lin m* | T166 |
| | - Selected Backfill | Compaction | 1 drainage line | 1 per 100 lin m* | T166 |
| - Earth Backfill | Compaction | 1 drainage line | 1 per 100 lin m* | T166 | |
| Drainage Mat | Geometry | 2000m ² | 1 Cross Section per 25m | Survey | |

* Note: or part thereof, per lot

**Sub-Annexure C4
STABILISATION (Specification C241)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|-----------------------------|--|--|---------------------------|------------------|
| Material Supply | Material Quality - Supplier's documentary evidence and certification of: | | | |
| | - Cement | 1 contract | 1 per week | |
| | - Quicklime | | | |
| | · Available Lime (CaO content) | 1 contract | 1 per 100t * | T430 |
| | · Slaking Rate | 1 contract | 1 per 100t * | T432 |
| | · Particle Size Dist'n | 1 contract | 1 per contract | AS1141.11 |
| | - Hydrated Lime | | | |
| | · Available Lime (CaOH ₂) | 1 contract | 1 per 100t | T430 |
| | · Residue on Sieving | 1 contract | 1 per contract | T433 |
| | - Ground Blast Furnace Slag | 1 contract | 1 per month | |
| - Flyash | 1 contract | 1 per month | | |
| - Blended Stabilising Agent | 1 contract | 1 per month | | |
| - Water | | | | |
| Chloride ion conc'n | 1 contract | 1 per contract | T1004 | |
| Sulphate ion conc'n | 1 contract | 1 per contract | AS1289.D2.1 | |
| Undissolved solids | 1 contract | 1 per contract | | |
| Mix Design | NATA certification - Supplier's documentary evidence and certification | 1 mix | 1 per mix | |
| In-Place Spreading | Spread rate | 1 layer 5,000m ² , Max 1 day's spreading | 1 per 1,000m ² | T136 |
| Trimming and Compaction | Geometry | 1 layer 5,000m ² , max 1 day's placement | One cross section per 15m | Survey |
| | Surface Quality | " | 10 per 100m lane length | 3m Straight Edge |
| | Layer thickness | " | 6 per 200m length * | |
| | Alignment/Width | " | One cross section per 15m | Measure/Survey |
| | Compaction | " | Table A1-Annexure CQS-A | AS1289.5.7.1 |

* Note: or part thereof, per lot.

**Sub-Annexure C5
FLEXIBLE PAVEMENTS (Specification C242)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|-------------------------|--|--|---|--|
| Base and Subbase Supply | Material Quality - Supplier's documentary evidence and certification - Particle Size Distribution - Fine Particle Size Distribution Ratio - Liquid Limit - Plastic Limit - Plasticity Index - CBR - Maximum Dry Compressive Strength - Particle Shape - Aggregate Wet Strength - Wet/Dry Strength Variation - Modified Texas Triaxial Classification - Unconfined Compressive Strength (Modified) - Unconfined Compressive Strength (Bound) | 1 contract/ material type | 1 per 1,000t* 1 per 1,000t* 1 per 1,000t* 1 per 1,000t* 1 per 1,000t* 1 per 1,000t* 1 per 5,000t* 1 per 5,000t* 1 per 5,000t* 1 per contract 1 per 5,000t* 1 per 1,000t* | T106 T107 T108 AS1289.3.3.1 AS1289.3.3.1 AS1289.F1.1 T114 AS1141.14 AS1141.22 AS1141.22 T171 T116 T131 |
| Placement | Geometry Deflection Control - Benkelman Beam Compaction/Moisture Content | One layer 5,000m ² max 1 day's placement One layer 5,000m ² max 1 day's placement One layer 5,000m ² max 1 day's placement | 1 Cross Section per 15m 10 per 100 lin m* per lane 1 per 30 lin m per lane minimum 6 per lot Table A1- Annexure CQS-A | Survey 3m Straight Edge T160 AS1289.5.2.1, T119, T120, T130, T166, AS1289.5.8.1 |

* Note: or part thereof, per lot.

**Sub-Annexure C6
SPRAYED BITUMINOUS SURFACING (Specification C244)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|-------------------|---|---|---|---|
| Materials Supply | Material Quality - Suppliers documentary evidence and certification of: - Class 170 Bitumen - Refinery Cutback Bitumen - Polymer Modified Binder - Bitumen Adhesion Agent - Cutback Oils - Aggregate Precoating Agent - Aggregate · Grading · ALD · Wet Strength · 10% Fines Wet/Dry · Particle Shape · Fractured Faces · Stripping · Initial Adhesion · Polished Agg Friction V. | 1 tanker load 1 tanker load 1 tanker load 1 delivery 1 delivery/ tanker 1 delivery/ tanker 1 stockpile 1 stockpile 1 contract 1 contract 1 contract 1 contract 1 contract 1 contract 1 contract | 1 per tanker load 1 per tanker load 1 per tanker load 1 per delivery 1 per delivery/tanker 1 per delivery/tanker 1 per 400m ³ * 1 per 200m ³ * † † † † † † † † | AS1141.11 T235 AS1141.22 AS1141.22 AS1141.14 T239 T230 T238 AS1141.41 |
| Application Rates | Binder Aggregate | 1 day's operation 1 day's operation | Calculate per spray run Calculate per spray run | |

† One per Contract or change in material

* Note: or part thereof, per lot

**Sub-Annexure C7
ASPHALTIC CONCRETE (Specification C245)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|------------------|---|---|--|---|
| Materials Supply | <p>Material Quality - Supplier's documentary evidence and certification of:</p> <ul style="list-style-type: none"> - Coarse & Fine Aggregates <ul style="list-style-type: none"> · Grading · Moisture Content · Wet Strength · 10% Fines Wet/Dry · Particle Shape · Fractured Faces · Resistance to Stripping · Polishing Agg Friction Value - Mineral Filler - Class 170/320 Bitumen <ul style="list-style-type: none"> · Viscosity at 60°C · Penetration at 15°C · Viscosity at 135°C · Flash point (°C) · Insoluble matter · Rolling thin film oven test <ul style="list-style-type: none"> (a) Ductility, residue, 15°C (b) Viscosity, residue, 60°C or (c) App. viscosity, residue, 25°C · Thin film oven test (1.6mm) <ul style="list-style-type: none"> (a) Ductility, residue, 25°C · Density at 15°C · Water Content and Foaming at 175°C - Scrap Rubber/C170 Bitumen Mixture <ul style="list-style-type: none"> · Minimum Recovery | <p>1 wk's prod'n 1 wk's prod'n 1 contract 1 contract 1 contract 1 contract 1 contract 1 contract 1 contract 1 mth's prod'n 1 wk's production 1 contract " " " " " " " " " " 1 day's operation</p> | <p>1 per day 1 per day)) 1 per) contract) or change in) material) 1 per month 1 per tanker load 1 per contract or change in supplier " " " " " " " " " " 1 per tanker load</p> | <p>AS1141.11 T120 AS1141.22 AS1141.22 AS1141.14 T239 T230 AS1141.41 AS2341.2 AS2341.12 AS2008 AS2341.14 AS2341.8 AS2008 AS2341.11 AS2341.2 AS2008, AS2341.5 AS2008 AS2341.11 AS2341.7 T501 T1180</p> |

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|---------------------------|--|---|--|--|
| Materials Supply (Cont'd) | <ul style="list-style-type: none"> - Polymer Modified Bitumen <ul style="list-style-type: none"> (i) SBS Modified Bitumens <ul style="list-style-type: none"> · Elasticity Recovery at 60°C · Viscosity on ER at 60°C · Torsional Recovery at 25°C · Viscosity at 135°C · Segregation · Flash Point (°C) · Softening Point (°C) · Ductility 4°C after RTFO · Penetration at 25°C (ii) EVA Modified Bitumens <ul style="list-style-type: none"> · Elasticity Recovery at 45°C · Viscosity by Elastomer at 45°C · Torsional Recovery at 25°C · Softening Point (°C) · Viscosity at 135°C · Ductility 4°C after RTFO · Penetration at 25°C - Bitumen Adhesion Agent <ul style="list-style-type: none"> · Resistance to Stripping - Scrap Rubber <ul style="list-style-type: none"> · Grading · Shape/Length · Foaming (%) · Moisture Content (%) · Iron Content (%) · Bulk Density (%) - Bitumen Emulsion | <ul style="list-style-type: none"> 1 week's operation " 1 contract " " " " " " 1 week's operation " 1 contract " " " " 1 contract 1 week's production " 1 contract " " " 1 contract | <ul style="list-style-type: none"> 1 per tanker load " 1 per grade per contract or change in supplier " " " " " 1 per tanker load " 1 per grade per contract or change in supplier " " " 1 per contract or change in material 1 per contract or change in supplier " " " 1 per tanker load/bulk delivery | <ul style="list-style-type: none"> T741 T741 T739 AS2341.3 T740 AS2341.14 AS2341.18 AS2341.10, AS2341.11 ASTM, D5 T741 T741 T739 AS2341.18 AS2341.3 AS2341.10, AS2341.11 ASTM, D5 T230 T734 T731 T732 T733 RTA Spec 3254 |
| Mix Design | Approval of mix and NATA certification. Supplier's documentary evidence and certification | 1 mix | 1 per mix | |

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|----------------|---|---|--|---|
| Production Mix | Temperature Sampling Moisture Content Grading Binder Content Voids in Compacted Mix Maximum Theoretical Density |)) 1 day's) production) per site,) max 500t | 1 per truck load 1 per 50t 1 per 50t* 1 per 50t* 1 per 50t* 1 per 50t* | Measure AS2150 T607 T607 T601,AS1507, T606 AS1507 |
| Laying | Temperature Levels Surface Quality Relative Compaction/Layer Thickness | 1 day's laying per site, max 500t 1 layer, max 500t 1 layer, max 500t 1 layer, max 500t | 1 per truck load 1 cross section per 15m 10 per 100m* lane length Table A1 Annexure CQS-A | Measure Survey 3m Straight Edge T601, T606 |

* Note: or part thereof, per lot

**Sub-Annexure C8
READY-MIXED CONCRETE PRODUCTION & SUPPLY
(Specifications C247, C248)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|-----------------------|---|------------------|-----------------------------------|--------------------|
| Raw Materials Supply | Material Quality - Supplier's documentary evidence and certification of:- | | | |
| | Cement | 1 mth's prod'n | 1 per week | AS3972 |
| | Flyash | 1 mth's prod'n | 1 per month | AS3582.1 |
| | Water | 1 contract | 1 per contract | T1004, AS1289.D2.1 |
| | Admixtures | 1 mth's prod'n | 1 per month | AS 1478 |
| | Fine Aggregates | | | |
| | - Grading | 1 wk's prod'n | 1 per 200m ³ concrete* | AS1141.11 |
| | - Moisture Content | 1 wk's prod'n | 1 per day | |
| | - Sulphate Soundness | 1 contract | 1 per contract | AS1141.24 |
| | - Bulk Density | 1 contract | 1 per contract | AS 2758.1 |
| | - Unit Mass | 1 contract | 1 per contract | AS 2758.1 |
| | - Water Absorption | 1 contract | 1 per contract | AS 2758.1 |
| | - Material Finer 2µm | 1 contract | 1 per contract | AS 2758.1 |
| | - Deleterious Material (Impurities/Reactive) | 1 contract | 1 per contract | AS 2758.1 |
| | Coarse Aggregates | | | |
| | - Grading | 1 wk's prod'n | 1 per 200m ³ concrete* | AS1141.11 |
| | - Moisture Content | 1 wk's prod'n | 1 per day | |
| | - Wet Strength | 1 contract | 1 per contract | AS1141.22 |
| | - 10% Fines Wet/Dry | 1 contract | 1 per contract | AS1141.22 |
| | - Abrasion (Los Angeles) | 1 contract | 1 per contract | AS1141.23 |
| | - Sulphate Soundness | 1 contract | 1 per contract | AS1141.24 |
| | - Particle Shape | 1 contract | 1 per contract | AS1141.14 |
| | - Fractured Faces | 1 contract | 1 per contract | T239 |
| - Bulk Density | 1 contract | 1 per contract | AS 2758.1 | |
| - Unit Mass | 1 contract | 1 per contract | AS 2758.1 | |
| - Water Absorption | 1 contract | 1 per contract | AS 2758.1 | |
| - Material Finer 75µm | 1 contract | 1 per contract | AS 2758.1 | |

| | | | | |
|-------------------------------|------------------|------------|----------------|-----------|
| Raw Materials Supply (Cont'd) | - Weak Particles | 1 contract | 1 per contract | AS 2758.1 |
|-------------------------------|------------------|------------|----------------|-----------|

QUALITY SYSTEM REQUIREMENTS

Contract No.

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|------------|---|------------------|------------------------|-------------|
| | - Light Particles | 1 contract | 1 per contract | AS 2758.1 |
| | - Deleterious Materials (Impurities/Reactive) | 1 contract | 1 per contract | AS 2758.1 |
| | - Iron Unsoundness | 1 contract | 1 per contract | AS 2758.1 |
| | - Falling/Dusting Unsoundness | 1 contract | 1 per contract | AS 2758.1 |
| Mix Design | Compressive Strength | 1 contract mix | 1 per mix per contract | AS1012.14 |
| | Aggregate Moisture Content | 1 contract mix | 1 per mix per contract | |
| | Consistency - Slump | 1 contract mix | 1 per mix per contract | AS1012.3 |
| | Air Content | 1 contract mix | 1 per mix per contract | T320 |
| | Shrinkage | 1 contract mix | 1 per mix per contract | T321 |

* Note: or part thereof, per lot

Sub-Annexure C9
MASS CONCRETE SUBBASE (Specification C247)

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|-----------------|--|------------------|----------------------------------|----------------------------------|
| Concrete Supply | Refer Sub-Annexure C8: Concrete Production and Supply | | | |
| | Concrete/Air Temperature | 50m ³ | 1 per 50m ³ * | Measure |
| | Air Content | 50m ³ | 1 per 50m ³ * | AS1012.4 Method 2 |
| | Consistency - Slump | 50m ³ | 1 per load | AS1012.3 Method 1 |
| | Compressive Strength (7 day) | 50m ³ | 1 pair per 50m ³ * | AS1012.1 AS1012.8 AS1012.9 |
| | Compressive Strength (28 day) | 50m ³ | 1 pair per 50m ³ * | AS1012.1 AS1012.8 AS1012.9 |
| Placement | Thickness | 50m ³ | 5m grid on plan area | Survey and |
| | Geometry | 50m ³ | 1 cross section per 15m | Survey and 3m Straight Edge |
| Curing | Material Quality - Supplier's documentary evidence and certification | 1 contract | 1 per production batch | T864 |
| | Application Rate | 1 day's work | 1 per 500m ² * | |
| Joints | Geometry | 50m ³ | All joints | Survey |

* Note: or part thereof, per lot

**Sub-Annexure C10
PLAIN OR REINFORCED CONCRETE BASE (Specification C248)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|-----------------|---|------------------|-------------------------------|----------------------------------|
| Concrete Supply | Refer Sub-Annexure C8: Concrete Production and Supply | | | |
| | Concrete/Air Temperature | 50m ³ | 1 per 50m ³ * | Measure |
| | Air Content | 50m ³ | 1 per 50m ³ * | AS1012.4 Method 2 |
| | Consistency - Slump | 50m ³ | 1 per load | AS1012.3 Method 1 |
| | Compressive Strength (7 day) | 50m ³ | 1 pair per 50m ³ * | AS1012.1 AS1012.8 AS1012.9 |
| | Compressive Strength (28 day) | 50m ³ | 1 pair per 50m ³ * | AS1012.1 AS1012.8 AS1012.9 |
| Placement | Relative Compaction | | | |
| | - Machine Placed | 50m ³ | 1 per 50m ³ * | AS1012.14 |
| | - Hand Placed | 50m ³ | 2 per lot | AS1012.14 |
| | Thickness | 50m ³ | 5m grid on plan area | Survey |
| | Geometry | 50m ³ | 1 cross section per 15m | Survey and 3m Straight Edge |
| Ride Quality | Profile Factor | 50m ³ | All lanes | T179 |
| Surface Texture | Texture Depth | 50m ³ | 2 per 50m ³ | T240 |
| Curing | Material Quality - Supplier's documentary evidence and certification | 1 contract | 1 per production batch | T864 |
| | Application Rate | 1 day's work | 1 per 500m ² * | |
| Joints | Sealant Material Quality Supplier's documentary evidence and certification | 1 contract | 1 per prod'n batch | |
| | Geometry | 50m ³ | All joints | Survey |

* Note: or part thereof, per lot

**Sub-Annexure C11
BITUMINOUS MICROSURFACING (Specification C255)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|------------------|--|--|--|---|
| Materials Supply | Material Quality - Supplier's documentary evidence and certification of: - Bitumen (prior to emulsification) - Bitumen Emulsion · Residual Binder Content (Residue from Evaporation) - Mineral Aggregates · Degradation Factor · Los Angeles Value · Aggregate Wet Strength · Wet/Dry Strength Variation · Polished Aggregate Friction Value · Sand Equivalent - Mineral Filler - Combined Aggregate Grading | 1 contract 1 contract 1 contract 1 contract 1 contract 1 contract 1 contract 1 month's prod'n 1 contract | 1 per contract or change in material 1 per delivery 1 per source 1 per source 1 per source 1 per source 1 per source 1 per source 1 per month 1 per 200m ³ * | AS1160, App.D AS1141.25 AS1141.23 AS1141.22 AS1141.22 AS1141.42 AS1289.C7.1 AS1141.11, AS1141.12 |
| Mix Design | Approval of mix and NATA certification - Supplier's documentary evidence and certification | 1 mix | 1 per mix | |
| Production Mix | Grading Residual Binder Content | 1 day's prod'n max 50m ³ | 1 per 50m ³ * 1 per 50m ³ * | AS2891.3.1 AS2891.3.1 |
| Laying | Levels Surface Quality | 1 layer, max 200m ³ 1 layer, max 200m ³ | 1 cross section per 15m 10 per 100m* lane length | Survey 3m Straight Edge |

* Note: or part thereof, per lot

**Sub-Annexure C12
SEGMENTAL PAVING (Specification C254)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|--------------------|--|--|--------------------------------------|------------------|
| Materials Supply | Material Quality - Supplier's documentary evidence and certification of: | | | |
| | - Concrete Segmental Paving Units | 1 contract | 1 per contract | |
| | - Clay Segmental Paving Units | 1 contract | 1 per contract | |
| | - Bedding Sand · Grading | 1 contract | 1 per contract or change in material | AS1141.11 |
| | - Joint Filling Sand · Grading | 1 contract | 1 per contract or change in material | AS1141.11 |
| | - Joint Filler | 1 contract | 1 per contract | |
| Base | Geometry | One layer 5000m ² , max 1 day's placement | One cross section per 15m | Survey |
| | Surface Quality | " | 10 per 50m per lane/paving length* | 3m Straight Edge |
| Edge Restraints | Refer 'Minor Concrete Works' | | | |
| Laying Paver Units | Joint Width | 1 day's placement | All joints | Measure |
| | Geometry | 1 day's placement | One cross section per 15m | Survey |
| | Surface Quality | 1 day's placement | 10 per 50m per lane/paving length* | 3m Straight Edge |

* Note: or part thereof, per lot

Sub-Annexure C13 MINOR CONCRETE WORKS (Specification C271)

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|-----------------------------|---|------------------------------------|--|------------------------------|
| Subgrade | Compaction | 1000 lin m or 1000m ² | 1 per 200 lin m or 200m ² | T166 |
| Gravel Subbase Construction | Compaction | 1 day's placement | 1 per 100 lin m or 100m ² | T166 |
| | Subbase Geometry | 1 day's placement | 1 per 15 lin m | 3m Straight Edge |
| Steel Supply | Material Quality - Suppliers documentary evidence and certification | 1 delivery | 1 per production batch | |
| Ready-Mixed Concrete Supply | Material Quality - Suppliers documentary evidence and certification | 1 contract | 1 per mix type | |
| | Consistency - Slump | 15m ³ | 1 per load | AS1012.3 Method 1 |
| | Compressive Strength (7 and 28 day) | 15m ³ | 2 pairs per 15m ³ | AS1012.1, AS1012.8, AS1012.9 |
| Concrete Placement | Finished Levels | 15m ³ | 1 cross section per 15m | Survey and 3m Straight Edge |
| Backfilling | Material Quality | | | |
| | - Maximum particle size | 1 contract/ material type | 1 per 200m ^{3*} | T106 |
| | - Plasticity Index | 1 contract/ material type | 1 per 200m ^{3*} | AS1289.3.3.1 |
| | Compaction | 1 structure, max 200m ³ | 1 per layer, max 200m ^{2*} | T166 |
| Sprayed Concrete | Test Panels and Cores | 1 contract | 3 test panels and 4 cores per mix design | AS1012.4, AS1012.9 AS1012.14 |
| | Compressive Strength Cores | 15m ³ | 2 per 15m ³ | AS1012.4, AS1012.9 AS1012.14 |
| | Curing Material Quality - Supplier's documentary evidence and certification | 1 contract | 1 per production batch | |

* Note: or part thereof, per lot

**Sub-Annexure C14
PAVEMENT MARKINGS (Specification C261)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|---------------------------|---|--|--|---|
| Materials Supply | Material Quality - Supplier's documentary evidence and certification of: - Paint - Glass Beads - Thermoplastic Material - Raised Pavement Markers | 1 contract 1 contract 1 contract 1 contract | 1 per contract or change in material " " " | |
| Paint Application | Wet Film Thickness Application Rate of Glass Beads | 1 contract 1 contract | 1 per site visit or change in pressure settings 1 per site visit or change in pressure settings | Annexure C261A Annexure C261B |
| Thermoplastic Application | Cold Film Thickness Application Rate of Glass Beads | 1 contract 1 contract | 1 per site visit or change in pressure settings 1 per site visit or change in pressure settings | Measure by micrometer Annexure C261B |

Sub-Annexure C15
SIGNPOSTING (Specification C262)

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|----------------------|---|--|--|-------------|
| Materials Supply | Material Quality - Supplier's documentary evidence and certification of: - Sign Blanks - Aluminium Extrusion Backing - Retro-reflective Material - Non-reflective Paint - Non-reflective Sheet Material - Steel Sign Support Structures | 1 contract 1 contract 1 contract 1 contract 1 contract 1 contract | 1 per contract, or change in material " " " " " | |
| Concrete Foundations | Refer 'Minor Concrete Works' | | | |

**Sub-Annexure C16
LANDSCAPING (Specification C273)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|------------------|---|--|---|-------------|
| Imported Topsoil | Material Quality - pH - Organic Content - Soluble Salt Content | 10,000m ² 10,000m ² 10,000m ² | 1 per 500m ³ 1 per 500m ³ 1 per 500m ³ | AS 4419 |

Sub-Annexure C17 WATER RETICULATION (Specification C401)

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|-------------------------------------|---|-------------------|--------------------------------------|----------------------|
| Materials Supply | Material Quality - Supplier's documentary evidence and certification of: | | | |
| | - uPVC Pipes | 1 contract | 1 per contract | AS2977 |
| | - Ductile Iron Pipes | 1 contract | " | AS2280 and AS2129 |
| | - Copper Pipe | 1 contract | " | AS1432 |
| | - Polyethylene Pipe | 1 contract | " | AS1159 |
| | - Stop Valves Material | 1 contract | " | AS2638 and AS2129 |
| | - Non Return Valves | 1 contract | " | AS3578 |
| - Spring Hydrants | 1 contract | 1 per contract | AS2544 or AS3952 | |
| Siting and Excavation | Geometry | 1 line | 1 per line | Survey |
| Bedding | Material Quality - Grading | 1 contract | 1 per contract per source | AS2032 |
| Thrust and Anchor Blocks | Refer Annexure C13 | | | |
| Concrete Encasement | Refer Annexure C13 | | | |
| Chamber Covers and Frames | Geometry | 1 cover/frame | 1 per cover/frame | survey |
| Testing of Pipelines | Pressure testing | 1 line | 1 per line | As specified C401.28 |
| Backfill and Compaction | Compaction | 1 line | 1 per 2 layers max 100m ² | AS1289.5.7.1 |
| Switchgear and Controlgear Assembly | Electrical function | each installation | 1 factory test per installation | AS3439 |
| Commissioning of Pumping Station | Certification testing of electrical installation in accordance with relevant Australian Standards | 1 installation | 1 per installation | |

**Sub-Annexure C18
SEWERAGE SYSTEM (Specification C402)**

| ACTIVITY | KEY QUALITY VERIFICATION REQUIREMENTS | MAXIMUM LOT SIZE | MINIMUM TEST FREQUENCY | TEST METHOD |
|---|---|--|--------------------------------------|------------------------------|
| Materials Supply | Material Quality - Supplier's documentary evidence and certification of: | | | |
| | - uPVC Pipes | 1 contract | 1 per contract | AS1477 |
| | - Ductile Iron Pipes | 1 contract | " | AS2280 and AS2129 |
| | - Vitrified Clay Pipes | 1 contract | " | AS1741 |
| | - Precast Access Chambers | 1 contract | " | AS4198 |
| Siting and Excavation | Geometry | 1 line/ structure | 1 per line/ structure | Survey |
| Bedding | Material Quality - Grading | 1 contract | 1 per contract per source | T106 |
| Concrete Bedding | Refer Annexure C13 | | | |
| Laying and Jointing of Pipes, Access Chambers, Structures | Geometry | 1 line | 1 per line | Survey |
| Thrust and Anchor Blocks | Refer Annexure C13 | | | |
| Concrete Encasement | Refer Annexure C13 | | | |
| Cast-in-situ Access Chambers | Material Quality - Tri-Calcium Aluminate Content | 1 contract | 1 per contract per source | AS3972 |
| | - Fineness Index | 1 contract | " | AS3972 |
| | - Minimum Cement Content | 1 contract | " | AS3972 |
| Acceptance Test of Gravitation Mains and Access Chambers | - Compressed Air Testing | 1 line | 1 per line | As specified C402.36 C402.37 |
| | - Hydrostatic Testing | 1 per test length Test length = 1370m pipeline dia.(mm) | 1 per line | As specified C402.38 |
| Backfill and Compaction | Compaction | 1 line | 1 per 2 layers max 100m ² | AS1289.5.7.1 |
| Switchgear and Controlgear Assembly | Electrical Compliance | each installation | 1 factory test per installation | AS3439 |
| Commissioning of Pumping Station | Certification testing of electrical installation in accordance with relevant Australian Standards | 1 installation | 1 per installation | |