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**CW 3110 - SUB-GRADE, SUB-BASE AND BASE COURSE CONSTRUCTION**

1. **DESCRIPTION**

1.1 **General**

.1 This specification covers pavement removal, excavation, preparation of sub-grade, supply and placement of sub-base and base course materials, ditch grading and boulevard grading for pavements, slab renewals, curbs, miscellaneous concrete slabs, sidewalks and other related works.

1.2 **Definitions**

.1 Sub-grade – the natural in-situ material.

.2 Sub-base – where required, the layer of material provided between the sub-grade and the base course.

.3 Base course – the layer of base course material, greater than 50mm in depth, immediately underlying the pavement wearing surface.

.4 Leveling course – a non-structural layer of base course material, up to 50mm in depth, placed immediately underlying the pavement wearing surface.

.5 Crushed Aggregate – Crushed aggregate from glacial till pits.

.6 Crushed Limestone - Crushed limestone from a limestone quarry.

.7 Crushed Granite – Crushed granite from a granite quarry.

.8 Crushed Recycled Concrete – Crushed Portland Cement Concrete that has been crushed into pieces that are a group of aggregate particles cemented together which may or may not include the host (dominant) particle.

.10 Deleterious Material - soft material that would decay or disintegrate from weathering, porcelain, vegetation, organic material, wood, glass, plastic, metal, reinforcing steel, building rubble, brick, shale, and friable particles.

.11 Friable - the condition of being friable, describes the ability of a solid substance to be reduced to smaller pieces with little effort, especially by rubbing.

1.3 **Referenced Standard Construction Specifications**

.1 CW 1130 – Work Site Requirements.

.2 CW 3130 – Supply and Installation of Geotextile Fabrics.

.3 CW 3450 – Planing of Pavement.

2. **MATERIALS**

2.1 **Sub-Base Materials**

.1 Sub-base material of the type(s) shown on the Drawings or indicated in the Specifications will be supplied in accordance with the following requirements:

.1 Suitable site sub-base material will be of a type approved by the Contract Administrator.
.2 Clay borrow sub-base material will be of a type approved by the Contract Administrator.

.3 Crushed sub-base material will be crushed aggregate, crushed granite, crushed limestone or crushed concrete pavement.

.4 Crushed sub-base material will be well-graded and conform to the following grading requirements:

<table>
<thead>
<tr>
<th>TABLE CW 3110.1 - Crushed Sub-Base Material Grading Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>CANADIAN METRIC SIEVE SIZE</td>
</tr>
<tr>
<td>200 000</td>
</tr>
<tr>
<td>150 000</td>
</tr>
<tr>
<td>100 000</td>
</tr>
<tr>
<td>50 000</td>
</tr>
<tr>
<td>25 000</td>
</tr>
<tr>
<td>5 000</td>
</tr>
<tr>
<td>80</td>
</tr>
</tbody>
</table>

The content composition of crushed concrete pavement shall be based on weight as follows:
- minimum of 85% Crushed Recycled Concrete
- maximum of 15% of recycled asphaltic concrete
- maximum of 3% clay
- maximum of 1% deleterious material

150 and 100 millimetre crushed sub-base material when subjected to the abrasion test will have a loss of not more than 40% when tested in accordance with grading 1 of ASTM C535, Test for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

50 millimetre crushed sub-base material when subjected to the abrasion test will have a loss of not more than 40% when tested in accordance with grading A of ASTM C131, Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
2.2 **Base Course Materials**

.1 Base course material will be approved by the Contract Administrator.

.2 Base course material will consist of sound, hard, crushed rock, crushed gravel, or crushed concrete.

.3 Crushed rock and crushed gravel will be free from organic or soft material that would disintegrate through decay or weathering.

.4 Base course material will consist of sound durable particles produced by crushing, screening and grading of recovered materials, free from soft material that would decay or disintegrate from weathering.

.5 Crushed concrete base course material is limited to a maximum of two percent of the total dry weight of deleterious material.

.6 The base course material will be well graded and conform to the following grading requirements:

**TABLE CW 3110.2 – Base Course Material Grading Requirements**

<table>
<thead>
<tr>
<th>CANADIAN METRIC SIEVE SIZE</th>
<th>PERCENT OF TOTAL DRY WEIGHT PASSING EACH SIEVE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Granular</td>
</tr>
<tr>
<td>25 000</td>
<td>100%</td>
</tr>
<tr>
<td>20 000</td>
<td>80% - 100%</td>
</tr>
<tr>
<td>5 000</td>
<td>40% - 70%</td>
</tr>
<tr>
<td>2 500</td>
<td>25% - 55%</td>
</tr>
<tr>
<td>315</td>
<td>13% - 30%</td>
</tr>
<tr>
<td>80</td>
<td>5% - 15%</td>
</tr>
</tbody>
</table>

Base course material when subjected to the abrasion test will have a loss of not more than 35% when tested in accordance with grading B of ASTM C131, Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

**Test base course material using an Atterberg Limits Test in accordance with ASTM D4318. The material passing the 315 sieve will have a liquid limit not greater than 25 and a plasticity index not greater than 6.**

Where base course is being placed under an asphaltic concrete pavement, the aggregate retained on a No. 5 000 sieve will contain not less than 35% crushed aggregate as determined by actual particle count. Crushed aggregate will be considered as that aggregate having at least one fractured face.

2.3 **Asphalt Cuttings for Base Course Material**

.1 Asphalt cuttings produced from planing of asphalt pavements or overlays in accordance with CW 3450 may be used as a base course material where indicated in the Specifications or as approved by the Contract Administrator.

.2 Asphalt cuttings will be well graded and have a maximum particle size of 40 millimetres.
2.4 Lime or Portland Cement

.1 Use either Lime or Type 10 normal Portland Cement for drying the sub-grade.

.2 Supply Lime in accordance with CSA A82.43.

.3 Supply Portland Cement in accordance with CSA A5.

2.5 Imported Fill Material

.1 Imported fill material will consist of low to medium plastic clays or mixtures of sand and clay, uniform in texture.

.2 The fill material shall be free of wood, vegetation, concrete rubble or stones larger than 25 millimetres in diameter.

2.6 Quality Assurance Testing

.1 The Contract Administrator shall ensure that a minimum of one sample shall be tested for gradation and LA abrasion for sub-base and base course materials prior to starting construction for every contract. The materials shall be sampled from stockpiles designated to be used for the contract and shall be tested in accordance with this Specification.

.2 The materials shall be sampled from stockpiles designated to be used for the contract and shall be tested in accordance with this Specification.

.3 If one test fails to meet the requirements of this Specification, the material shall be re-tested. If the material fails a second test, the Contract Administrator shall designate a new source for supply of the material.

.4 Testing in addition to the requirements of this Specification shall be as directed by the Contract Administrator.

.5 Copies of all test results shall be sent to the Research and Standards Engineer for the Public Works Department and to the Contract Administrator prior to the supply and placement of the material.

3. CONSTRUCTION METHODS

3.1 Pavement Removal
.1 Remove existing concrete pavement, including curbs and asphalt overlays at locations as shown on the Drawings or as directed by the Contract Administrator. Remove all pavements to a combined thickness of 300 millimetres, unless otherwise indicated in the Specifications.

.2 Remove existing asphalt pavement including asphalt curbs at locations as shown on the Drawings or as directed by the Contract Administrator. Remove pavement to a maximum thickness of 150 millimetres, unless otherwise indicated in the Specifications.

.3 Saw-cut the existing pavement full-depth along the limits designated for removal.

.4 Utilize backhoe type equipment unless approved otherwise by the Contract Administrator.

.5 Dispose of material in accordance with Section 3.4 of CW 1130.

### 3.2 Excavation

.1 Excavate in-situ material to the depth to accommodate the pavement structure as shown on the Drawings or as directed by the Contract Administrator.

.2 Stockpile suitable in-situ material and suitable site sub-base material at locations on site as directed by the Contract Administrator.

.3 Dispose of surplus suitable site material and unsuitable material such as frost heaving clays, silts, rocks and rubble in accordance with Section 3.4 of CW 1130.

.4 Strip and stockpile topsoil from the site in a manner which will prevent contamination of topsoil with underlying soil materials. Stockpile the stripped topsoil at locations on site for later use.

.5 The limits of excavation will be taken as a vertical plane 450 millimetres beyond the limits of the proposed pavement except when slip form paving equipment is specified for placement of the concrete pavement, the limits of excavation will be increased to a vertical plane 750 millimetres beyond the limits of the proposed pavement.

.6 During excavation, the Contractor will be advised by the Contract Administrator as to which areas have an unsuitable sub-grade. Extend the excavation either to the lower limit of the unsuitable material or to a depth as directed by the Contract Administrator.

.7 Remove wooden poles, concrete bases, or tree stumps encountered under pavements to the top of subgrade or 1 metre below the bottom of the pavement surface, whichever depth is greater.

.8 Backfill and compact over-excavated areas with sub-base material approved by the Contract Administrator.

.9 Excavate additional material beyond the boulevard grading and ditch grading limits as directed by the Contract Administrator.

### 3.3 Preparation of Sub-grade and Placement of Sub-Base Material

.1 Compact the sub-grade after the bottom of the excavation has been approved by the Contract Administrator.

.2 Compact areas of suitable sub-grade material, the full width of the excavation, to a minimum of 95% Standard Proctor Density.

.3 Sub-base material shall not be placed over frozen subsoil.
.4 Place and compact suitable site sub-base material before placing any new sub-base material, as directed by the Contract Administrator.

.5 Place and compact crushed sub-base material with or without geogrid as directed by the Contract Administrator in accordance with CW 3135.

.6 Place and compact sub-base materials in layers to a depth of 3 times the maximum aggregate size or as directed by the Contract Administrator. Compact to a minimum of 100% Standard Proctor Density, for the full width of the excavation, and each layer must be levelled and approved by the Contract Administrator before the succeeding layer may be placed.

.7 Layering, mixing or blending of crushed concrete with crushed aggregate or crushed limestone sub-base materials is not allowed.

.8 Recompact or replace any layer, which has been rejected as directed by the Contract Administrator.

.9 When excess water has been applied, either by sprinkling operations or by precipitation, to cause local or continuous pondage, soil compaction will not be permitted until sufficient soil drying has occurred, creating a condition lending itself favourably to compacting operations. Exercise necessary precautions to protect compacted areas against excess wetting from any natural or artificial sources of water application.

.10 Should excess moisture from continuous or heavy precipitation threaten to unduly delay the completion of the Contract. Apply in writing to the Contract Administrator requesting permission to use Lime or Portland Cement to dry out the clay sub-grade or sub-base material at specific location(s).

3.4 Placement of Sub-Base Material With Geotextile Fabric

.1 Install separation or separation/reinforcement geotextile fabric in accordance with CW 3130.

.2 For stable sub-grades, place and compact sub-base material to a minimum depth of 150 millimetres.

.3 For unstable sub-grades, place and compact sub-base material to a minimum depth of 300 millimetres or greater thickness as directed by the Contract Administrator.

.4 Place sub-base material by end-dumping methods and level with front-end loader type of equipment as approved by the Contract Administrator to avoid damage to the geotextile fabric and minimize sub-grade failures.

.5 Layering, mixing or blending of crushed concrete with crushed aggregate or crushed limestone sub-base materials is not allowed.

.6 Avoid sudden stops or sharp turns by construction equipment during placement of sub-base materials.

.7 Construction traffic will not be allowed to travel on the placed sub-base material until approved by the Contract Administrator.

3.5 Placement of Crushed Sub-base Material with Geotextile Fabric and Geogrid For Unstable Sub-grades
.1 Prepare the subgrade in accordance with Section 3.3 of this Specification.

.2 Supply and install separation (non-woven) geotextile fabric over the subgrade in accordance with CW 3130.

.3 Supply and install geogrid over the separation (non-woven) fabric in accordance with CW 3135.

.4 Supply crushed sub-base material in accordance with Section 2.1 of CW 3110.

.5 Compacted sub-base sections using size and depth as directed by the Contract Administrator or as shown on the Drawings. For residential pavements, optimum performance of approved geogrid may be achieved using 300-450mm in thickness of 100mm crushed subbase material.

.6 Place crushed sub-base material by end dumping down the centre of the excavation. The sub-base shall be pushed forward and levelled using a track type dozer where possible, to build a thickened section to support the hauling operations and avoid damage to the subgrade, geotextile fabric or geogrid. This procedure shall continue until all sub-base material has been placed down the centre of the excavation.

.7 Spread the crushed sub-base material to facilitate final grades utilizing a track type dozer.

.8 Initial compaction of the crushed sub-base material shall consist of two complete passes utilizing vibratory type equipment capable of compacting the material. Each pass shall be over lapped by half the width of the roller. All additional compaction shall be completed utilizing static type equipment. No trucks, rubber tire loaders or graders will be allowed to travel on the sub-base material until the Contract Administrator has approved the compaction of the sub-base.

3.6 Placement of Base Course Material

.1 Place and compact base course material to a minimum 75 millimetres thickness for pavement and approaches to a minimum of 100% Standard Proctor Density for the full width of the excavation unless otherwise shown on the Drawings or as directed by the Contract Administrator.

.2 Level the compacted base course to the finished base course elevation.

.3 Maintain the finished base course until the pavement is placed.

.4 Spread base course material uniformly to avoid segregation, free of pockets of fine and coarse material.

.5 Place and compact leveling course to a maximum thickness of 50 millimetres for sidewalks, renewal of existing curbs and miscellaneous concrete slabs, to 95% Standard Proctor Density.

.6 Place and compact base course material immediately beneath pavement and forms to provide firm support.
3.7 Placement of Imported Fill

.1 Place fill materials to satisfy the grading requirements of boulevard and ditches.

.2 Supply material in accordance with Section 2.5 of this specification.

.3 Compact to a minimum of 90% Standard Proctor Density.

.4 Imported fill shall be free of frozen lumps and shall be placed and compacted in an unfrozen state. Imported fill shall not be placed over frozen subsoil.

3.8 Grading of Boulevards

.1 Grading of the boulevards and medians to receive sod will be understood to mean the required excavation or backfilling to a depth up to 150 millimetres so that the boulevards and medians, after compaction, are at a uniform depth of 100 millimetres below finished boulevard grade, as shown on the Drawings.

.2 Remove all debris, stones and concrete rubble from the boulevards and medians before commencing grading.

.3 Grade the boulevards and medians to receive sod, unless otherwise shown on the Drawings or as directed by the Contractor Administrator.

.4 Remove all debris, stones and concrete rubble from the boulevards and medians before commencing grading.

.5 Excavate to a depth of up to 150 millimetres to meet the final grade 100 millimetres below finished boulevard grade.

.6 Place and compact suitable backfill material as approved by the Contract Administrator to a depth of up to 150 millimetres to meet the final grade 100 millimetres below finished boulevard grade.

.7 Supply backfill material in accordance with Section 2.5 of this specification.

.8 Compact backfill materials to a minimum of 90% Standard Proctor Density.

3.9 Grading of Ditches

.1 Grading of ditches will be understood to mean the required excavation or backfilling to a depth up to 300 millimetres so that the ditches, after compaction are at finished grade where no sodding is required or at a uniform depth of 100 millimetres below finished grade where sodding is required.

.2 Grade ditches as shown on the Drawings or as directed by the Contract Administrator.

.3 Excavate to a depth of up to 300 millimetres to meet the final ditch grade requirements.

.4 Place and compact suitable backfill material as approved by the Contract Administrator to a depth of up to 300 millimetres to meet the final ditch grade requirements.

.5 Supply backfill material in accordance with Section 2.5 of this specification.

.6 Compact backfill materials to a minimum of 90% Standard Proctor Density.
3.10 Quality of Sub-grade, Sub-base and Base Course Layers

.1 Determine the Standard Proctor Density for the sub-grade, sub-base and base course materials at the optimum moisture content in accordance with ASTM Standard D698. The field density of each sub-grade, sub-base and base course layers will be a percentage of the applicable Standard Proctor Density, in Sections 3.3, 3.4, 3.5 and 3.6 of this specification.

.2 Utilize quality control tests to determine the acceptability of the sub-grade, sub-base and base course layers, as placed and compacted before the succeeding layer may be applied.

.3 Verify the field density of the compacted layers by Field Density Tests in accordance with ASTM Standard D1556, Test for Density of Soil in Place by the Sand-Cone Method, or ASTM Standard D2922, Test of Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

.4 The frequency and number of tests will be as directed by the Contract Administrator.

.5 Fill promptly, holes made by the removal of samples from the layers with appropriate material and thoroughly compact so as to conform in every way with the adjoining material.

3.11 Removal of Existing Concrete Bases

.1 Remove existing concrete bases as shown on the Drawings or as directed by the Contract Administrator.

.2 Remove to a depth of 1.0 metre below finished grade.

.3 Dispose of material in accordance with Section 3.4 of CW 1130.

.4 Backfill holes remaining with base course material and compact to the satisfaction of the Contract Administrator.

4. MEASUREMENT AND PAYMENT

4.1 Pavement Removal

.1 Pavement removal will be measured on an area basis and paid for at the Contract Unit Price per square meter for the "Items of Work" listed here below. The area to be paid for will be the total number of square metres of existing pavement removed in accordance with this specification, accepted and measured by the Contract Administrator.

**Items of Work:**

Pavement Removal
  i.) Concrete Pavement
  ii.) Asphalt Pavement

.2 Disposal of material will be included in the payment for the “Items of Works” listed for pavement removal.

.3 Curb and asphalt overlay will be included in the payment for the Item of Work if both are removed in one operation with the pavement.
.4 Payment for pavement over 300mm in thickness will be paid in ratio to the thickness over 300mm.

4.2 **Stripping and Stockpiling Topsoil**

.1 Stripping and stockpiling topsoil will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for “Stripping and Stockpiling Topsoil”. The volume to be paid for will be the total number of cubic metres of existing topsoil stripped and stockpiled in accordance with this specification, accepted and measured by the Contract Administrator.

4.3 **Excavation**

.1 Excavation will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for “Excavation”. The volume to be paid for will be the total number of cubic metres excavated in accordance with this specification, accepted and measured by the Contract Administrator.

.2 The volume of excavation will be measured by cross-sections in its original position and computed by the method of Average End Areas.

.3 Only material excavated within the limits of excavation will be included in the payment for “Excavation”.

.4 Disposal of material, removal of miscellaneous trees, shrub and concrete bases unless otherwise indicated in the Specifications, will be included in payment for “Excavation”.

.5 Excavation of solid bedrock, glacial till, boulders, loose rock, concrete rubble and foundations which are located within the limits of excavation and which require the use of additional or unconventional excavation equipment will be measured and paid for in addition to the unit price for excavation.

4.4 **Sub-grade Compaction**

.1 Sub-grade compaction will be measured on an area basis and paid for at the Contract Unit Price per square metre for “Sub-Grade Compaction”. The area to be paid for will be the total number of square metres of sub-grade compacted in accordance with this specification, accepted and measured by the Contract Administrator.

4.5 **Sub-base Material**

.1 **Suitable Site Sub-base Material**

.1 The reloading, hauling, placing and compaction of suitable site sub-base material will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for “Placing Suitable Site Sub-base Material”. The volume to be paid for will be the total number of cubic metres of suitable site sub-base material placed in accordance with this specification, accepted and measured by the Contract Administrator.

.2 The volume of suitable sub-base material will be measured by cross-sections and computed by the method of Average End Areas.

.3 Only material placed within the limits of excavation will be included in the payment for “Placing Suitable Site Sub-base Material”.

.4 No measurement or payment will be made for materials rejected by the Contract Administrator.
.2 **Clay Borrow Sub-base Material**

.1 The supplying, placing and compaction of clay borrow sub-base material will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for "Supplying and Placing Clay Borrow Sub-base Material". The volume to be paid for will be the total number of cubic metres of material compacted in place in accordance with this specification, accepted and measured by the Contract Administrator.

.2 The volume of clay borrow sub-base material will be measured by cross-sections and computed by the method of Average End Areas.

.3 Only material placed within the limits of excavation will be included in the payment for “Supplying and Placing Clay Borrow Sub-base Material”.

.4 No measurement or payment will be made for materials rejected by the Contract Administrator.

.3 **Crushed Sub-base Material**

.1 The supplying, placing and compaction of crushed sub-base material will be measured on a weight basis and paid for at the Contract Unit Price per tonne for the "Items of Work" listed here below. The weight to be paid for will be the total number of tonnes of crushed sub-base material supplied and placed in accordance with this specification, accepted and measured by the Contract Administrator.

**Items of Work:**

Crushed Sub-Base Material
i.) 50 mm*
ii.) 100 mm*
iii.) 150 mm*

*Limestone, Granular or Crushed Concrete Material may be specified.

.2 The weight to be paid for will be the total number of tonnes of crushed sub-base material as measured on a certified weigh scale.

.3 Only material placed within the limits of excavation will be included in the payment for the “Items of Work” listed for crushed sub-base material.

.4 No measurement or payment will be made for materials rejected by the Contract Administrator.

4.6 **Base Course Material**

.1 The supplying, placing and compaction of base course material will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for the “Supplying and Placing Base Course Material **”. The volume to be paid for will be the total number of cubic metres of base course material supplied and placed in accordance with this specification, accepted and measured by the Contract Administrator.

* Limestone, Granular or Crushed Concrete Material may be specified.
.2 The placing and compaction of asphalt cuttings will be measured on a volume basis and paid for at the Contract Unit price per cubic metre for “Asphalt Cuttings Base Course Material”. The volume to be paid for will be the total number of cubic metres of asphalt cuttings placed in accordance with this specification, accepted and measured by the Contract Administrator.

.3 The volume of base course material will be measured by cross-sections and computed by the method of Average End Areas.

.4 Only material placed within the limits of excavation will be included in payment for “Supplying and Placing Base Course Material” or “Asphalt Cuttings Base Course Material”.

.5 No measurement or payment will be made for materials rejected by the Contract Administrator.

4.7 **Leveling Course**

.1 No payment will be made for leveling course.

4.8 **Grading of Boulevards**

.1 The grading of boulevards will be measured on an area basis and paid for at the Contract Unit Price per square metre for “Grading of Boulevards”. The area to be paid for will be the total number of square metres of boulevards graded in accordance with this specification, accepted and measured by the Contract Administrator.

.2 Additional excavation over 150 millimetres in depth required to complete boulevard grading will be paid for as “Boulevard Excavation”.

.3 Additional placement of backfill material over 150 millimetres in depth required to complete boulevard grading will be paid as “Imported Fill Material”.

4.9 **Ditch Grading**

.1 Ditch grading will be measured on an area basis and paid for at the Contract Unit Price per square metre for “Ditch Grading”. The area to be paid for will be the total number of square metres of ditch graded in accordance with this specification, accepted and measured by the Contract Administrator.

.2 Additional excavation over 300 millimetres in depth required to complete the ditch grading will be paid for as “Ditch Excavation”.

.3 Additional placement of backfill material over 300 millimetres in depth required to complete the ditch grading will be paid as “Imported Fill Material”.

4.10 **Boulevard Excavation**

.1 Boulevard excavation will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for “Boulevard Excavation”. The volume to be paid for will be the total number of cubic metres of boulevard excavated in accordance with this specification, accepted and measured by the Contract Administrator.

.2 The volume of excavation will be as measured by cross-sections in its original position and computed by the method of Average End Areas.

4.11 **Ditch Excavation**
.1 Ditch excavation will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for “Ditch Excavation”. The volume to be paid for will be the total number of cubic metres of ditches excavated in accordance with this specification, accepted and measured by the Contract Administrator.

.2 The volume of excavation will be as measured by cross-sections in its original position and computed by the method of Average End Areas.

4.12 Removal of Existing Concrete Bases

.1 Removal of existing concrete bases will be measured on a unit basis and paid for at the Contract Unit Price per unit for the “Items of Work” listed here below. The number of units to be paid for will be the total number of existing concrete bases removed in accordance with this specification, accepted and measured by the Contract Administrator.

**Items of Work:**

Removal of Existing Concrete Bases
  i.) 600 mm Diameter or Less
  ii.) Greater than 600 mm Diameter

.2 No measurement or payment will be made for concrete bases removed for parking metres and precast concrete bases for traffic signs.

4.13 Imported Fill Material

.1 Imported material fill will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for “Imported Fill Material”. The volume to be paid for will be the total number of cubic metres of imported fill material supplied and placed in accordance with this specification, accepted and measured by the Contract Administrator.

.2 The volume of imported fill material will be computed from cross-sections by the method of Average End Areas.

4.14 Lime or Portland Cement

.1 Lime for drying the sub-grade will be measured on a weight basis and paid for at the Contract Unit Price per tonne for “Supplying and Placing Lime”. The weight to be paid for will be the total number of tonnes of Lime supplied and placed in accordance with this specification, accepted and measured by the Contract Administrator.

.2 Portland Cement for drying the sub-grade will be measured on a weight basis and paid for at the Contract Unit Price per tonne for “Supplying and Placing Portland Cement”. The weight to be paid for will be the total number of tonnes of Portland Cement supplied and placed in accordance with this specification, accepted and measured by the Contract Administrator.

.3 The weight to be paid for will be the total number of tonnes of Lime or Portland Cement as measured on a certified weigh scale.