
1.0 GENERAL**1.1 Products Installed and Supplied**

- .1 Granular sub-base material: supplied and installed by the Contractor in accordance with:
 - .1 Section **31 05 16**
 - .2 Section **31 24 13**

1.2 Measurement and Payment

- .1 The cost of sub-base granular materials is included in lump sum of works.

1.3 References

- .1 ASTM International
 - .1 ASTM C117-04, Standard Test Methods for Material Finer than 0.075 mm Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D422-63-2007, Standard Test Methods for Particle-Size Analysis of Soils.
 - .5 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .6 ASTM D1557-09, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).
 - .7 ASTM D1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - .8 ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

1.4 Action and Informational Submittals

- .1 Submit in accordance with Section **01 33 00**.
- .2 Product data:
 - .1 Submit manufacturer instructions (certificate of conformity delivered by an accredited laboratory), printed product literature and data sheets, including product characteristics, physical size, finish and limitations.
 - .2 Erosion and sedimentation control: submit copy of Erosion and Sedimentation Control Plan according to Section **31 25 00**.
 - .3 Construction waste management: submit project Waste Management Plan.

1.5 Delivery, Storage and Handling

- .1 Deliver, store and handle materials in accordance with Section **31 05 16**.
- .2 Storage and handling requirements:

- .1 Store materials in accordance with manufacturer's recommendations and Erosion and Sedimentation Control Plan according to Section 31 25 00.
- .2 Replace defective or damaged materials with new ones.

2.0 PRODUCTS

2.1 Materials

- .1 Granular sub-base material type 1: in accordance with **Section 31 05 16** and following requirements:

- .1 Crushed, pit run or screened stone.
 .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1 and CAN/CGSB-8.2.
 .3 Gradations meet the Type 1 of the following table:

Sieve Designation	% Passing			
	Type 1 MG 112	Type 2 Sand	Type 3 Fine sand	Type 4 MG 20
100 mm				
75 mm	100	100	100	-
50 mm	-	-	-	100
37.5 mm	-			-
25 mm	55-100	-	-	60-100
19 mm	-	-	-	-
12.5 mm	-	-	-	38-70
9.5 mm	-	-	-	-
4.75 mm	25-100	25-85	-	22-55
2.00 mm	15-80	-	-	13-42
0.425 mm	4-50	5-30	0-30	5-28
0.180 mm	-	-	-	-
0.075 mm	0-8	0-10	0-88	2-10

- .4 Other properties as follows:
- .1 Liquid limit: to ASTM D4318, maximum 25.
 .2 Plasticity index: to ASTM D4318, maximum 6.
 .3 Los Angeles degradation: to ASTM C131. Max. % loss by weight: 50 %.
 .4 Particles smaller than 0.02 mm: to ASTM D422, Maximum 3%.
 .5 Soaked CBR: to ASTM D1883, minimum 40, when compacted to 100% of ASTM D1557.

3.0 EXECUTION

3.1 Examination

- .1 Verification of conditions: verify conditions of substrate previously installed under other sections or contracts are acceptable for granular sub-base installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 Preparation

- .1 Temporary erosion and sedimentation control:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff according to sediment and erosion control plan.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 Placing

- .1 Place granular sub-base after subgrade is inspected and approved by Departmental Representative.
- .2 Construct granular sub-base to depth and grade in areas indicated.
- .3 Ensure no frozen material in placed.
- .4 Place material only on clean unfrozen surface, free from snow or ice.
- .5 Begin spreading sub-base material on crown line or high side of one-way slope.
- .6 Place granular sub-base materials using methods which do not lead to segregation or degradation.
- .7 For spreading and shaping material, use spreader boxes having adjustable templates or screeds which will place material in uniform layers of required thickness.
- .8 Place material to full width in uniform layers not exceeding 300 mm compacted thickness.
 - .1 Departmental Representative may authorize thicker lifts if specified compaction can be achieved.
- .9 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .10 Remove and replace portion of layer in which material has become segregated during spreading.

3.4 Compaction

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Efficiency of equipment not specified to be proved at least as efficient as specified equipment at no extra cost and written approval must be received from Departmental Representative before use.
- .3 Compact to density of not less than 95% corrected maximum dry density in accordance with ASTM D698 and ASTM D1557, except for top 150 mm, compact to 98% maximum dry density.
- .4 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.
- .5 Apply water as necessary during compaction to obtain specified density.
- .6 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Departmental Representative.
- .7 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.5 Cleaning

- .1 Progress cleaning: clean in accordance with Section 01 74 11.
 - .1 Leave work area clean at end of each day.
- .2 Final cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
- .3 Waste management: separate waste materials for recycling in accordance with Section 01 74 21.

3.6 Site Tolerances

- .1 Finished sub-base surface to be within 10 mm of elevation as indicated but not uniformly high or low.

3.7 Protection

- .1 Maintain finished sub-base in condition conforming to this section until succeeding base is constructed, or until granular sub-base is accepted by Departmental Representative.

End of Section

1.0 GENERAL

Granular base material type 3 provides for the foundation (base) of streets, parking and other granular pads are included in package in the global cost.

1.1 Measurement and Payment

- .1 Cost of aggregate granular base materials is paid by lump sum.

1.2 References

- .1 ASTM International
 - .1 ASTM C117-04, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .5 ASTM D1557-09, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).
 - .6 ASTM D1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - .7 ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.3 Action and Informational Submittals

- .1 Submit in accordance with Section 01 33 00.
- .2 Product data:
 - .1 Submit manufacturer's instructions (certificate of conformity, certificate delivered by an accredited laboratory), printed product literature and data sheets including product characteristics, physical size, finish and limitations.
 - .2 Erosion and sedimentation control: submit copy of Erosion and Sedimentation Control Plan.
 - .3 Construction waste management:
 - .1 Submit project Waste Management Plan.

1.4 **Delivery, Storage and Handling**

- .1 Deliver, store and handle materials in accordance with Section 31 05 16.
- .2 Storage and handling requirements:
 - .1 Stockpile minimum 50% of total aggregate required prior to beginning operation.
 - .2 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .3 Replace defective or damaged materials with new ones.

2.0 PRODUCTS

2.1 Materials

- .1 Granular base material type 3 in accordance with Section 31 05 16 – Aggregate Materials and following requirements:

- .1 Crushed stone.
 .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1 and CAN/CGSB-8.2.
 .3 Gradations meet the type 3 of the following table:

Sieve Designation	% Passing		
	Type 1 MG 112	Type 2 MG 20	Type 3
100 mm	-	-	-
75 mm	-	-	-
50 mm	100	-	-
37.5 mm	70-100	-	-
25 mm	-	100	-
19 mm	50-75	-	100
12.5 mm	-	65-100	70-100
9.5 mm	40-65	-	-
4.75 mm	30-50	35-60	40-70
2.00 mm	-	22-45	23-50
0.425 mm	10-30	10-25	7-25
0.180 mm	-	-	-
0.075 mm	3-8	3-8	3-8

- .4 Other properties as follows:

- .1 Liquid limit: to ASTM D4318, maximum 25.
 .2 Plasticity index: to ASTM D4318, maximum 6.
 .3 Los Angeles degradation: to ASTM C131. Max. % loss by weight: 45.
 .4 Crushed particles: at least 60% of particles by mass within each of following sieve designation range to have at least one (1) freshly fractured face. Material to be divided into ranges using methods of ASTM C136.

Passing	Retained on	
50 mm	To	25 mm
25 mm	To	19.0 mm
19.0 mm	To	4.75 mm

- .5 Soaked CBR to ASTM D1883, minimum 100, when compacted to 100% of ASTM D1557.

3.0 EXECUTION

3.1 Preparation

- .1 Temporary erosion and sedimentation control:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff according to Sediment and Erosion Control Plan specific to site (see Section 31 25 00).
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 Placement and Installation

- .1 Place granular base after sub-base surface is inspected and approved in writing by Departmental Representative.
- .2 Placing:
 - .1 Construct granular base to depth and grade in areas indicated.
 - .2 Ensure no frozen material is placed.
 - .3 Place material only on clean unfrozen surface, free from snow and ice.
 - .4 Begin spreading base material on crown line or on high side of one-way slope.
 - .5 Place material using methods which do not lead to segregation or degradation of aggregate.
 - .6 For spreading and shaping material, use spreader boxes having adjustable templates or screeds which will place material in uniform layers of required thickness.
 - .7 Place material to full width in uniform layers not exceeding 300 mm compacted thickness.
 - .8 Departmental Representative may authorize thicker lift layers if specified compaction can be achieved.
 - .9 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
Remove and replace portion of layer in which material becomes segregated during spreading.
- .3 Compaction equipment:
 - .1 Ensure compaction equipment is capable of obtaining required material densities.
 - .2 Efficiency of equipment not specified to be proved at least as efficient as specified equipment at no extra cost and written approval must be received from Departmental Representative before use.
- .4 Compacting:
 - .1 Compact to density not less than 98% corrected maximum dry density to ASTM D698 and ASTM D1557.
 - .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
 - .3 Apply water as necessary during compacting to obtain specified density.
 - .4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved in writing by Departmental Representative.
 - .5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.3 Site Tolerances

- .1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.

3.4 Cleaning

- .1 Progress cleaning: clean in accordance with Section **01 74 11**.
 - .1 Leave work area clean at end of each day.
- .2 Final cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section **01 74 11**.
- .3 Waste management: separate waste materials in accordance with Section **01 74 21**.
 - .1 Divert unused granular material from landfill to local facility approved by Departmental Representative.

3.5 Protection

- .1 Maintain finished base in condition conforming to this section until succeeding material is applied or until acceptance by Departmental Representative.

End of section

1.0 GENERAL

1.1 Works

- .1 The Contractor must install cut stones surfacing on the areas as indicated.

1.2 References

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C136-01, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .2 ASTM C979-99, Standard Specification for Pigments for Integrally Colored Concrete.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Method of Test for Concrete.
 - .2 CSA A179-94, Mortar and Grout for Unit Masonry.
 - .3 CSA-A231.2-95, Precast Concrete Pavers.
 - .4 CSA A283-00, Qualification Code for Concrete Testing Laboratories.

1.3 Shop Drawings

- .1 Submit shop drawings in accordance with Section **01 33 00**.
- .2 Indicate layout pattern and relationship of paving joints to fixtures and project formed details.

1.4 Action and Informational Submittals

- .1 Product Data:
 - .1 Submit product data in accordance with Section 01 33 00.
 - .2 Submit certification of compliance for all materials used.
- .2 Manufacturer's Instructions:
 - .1 Submit manufacturer's installations instructions.

1.5 Quality Assurance

- .1 Qualifications:
 - .1 Installer: company or person specializing in cut stones surfacing installations with 3 documented experiences.
- .2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.6 **Measurement and Payment**

- .1 The cost of cut stones surfacing is paid in lump sum of civil works.

1.7 **Waste Management and Disposal**

- .1 Dispose waste materials in accordance with Section 01 74 21.

2.0 PRODUCTS**2.1 Cut Stones**

- .1 Local appropriated stones as follows:
 - .1 Sizes 1200 mm x 900 mm x 100 mm height and 1200 mm x 300 mm x 100 mm.
 - .2 Shape: rectangular.
 - .3 Colour: acceptable to Departmental Representative.

.2.2 Base granular material

- .1 Aggregate base courses material according with Section 32 11 23.

.2.3 Bedding material

- .1 Bedding material: clean, non-plastic, free from deleterious or foreign matter, natural or manufactured from crushed rock or gravel. Do not use limestone screenings or stone dust.
- .2 Graduation: to CSA –A23.1, Table 4 – Grading Limits for Fine Aggregate, and CSA A179 as follows:

Sieve Designation	% Passing for Bedding Sand	Joint Sand
10 mm	100	
5 mm	95-100	100
2.5 mm	80-100	95-100
1.25 mm	50-90	60-100
630 microns	25-65	
600 microns	35-80	
315 microns	10-35	
300 microns	15-20	
160 microns	2-10	
150 microns	2-15	

.2.4 Joint material

- .1 Sans with polymer design for precast concrete paving.

.2.5 Sealing Compound

- .1 Exterior type, specially formulated for application on cut stones surfacing.

3.0 EXECUTION

3.1 Manufacturer's instructions

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions and data sheets.

3.2 Base granular material (structural surface)

- .1 Install and compact base granular material (structural surface).
- .2 Verify that structural surfaces conform to levels and compaction, required for installation of cut stones. If discrepancies occur, notify Departmental Representative.
- .3 Verify that top of structural (top of base) does not exceed plus or minus 10 mm of grade over 3 m straightedge.
- .4 Ensure that structural surface is not frozen or standing water is present during installation.

3.3 Placing of bedding material

- .1 Ensure bedding material is not saturated or frozen at all times until installation is complete.
- .2 Spread and screed material on structural surface to achieve 25 mm compacted thickness after vibrating pavers in place. Do not use joint sand for bedding sand.
- .3 Do not disturb screeded material. Do not use bedding material to fill depressions in structural surface.

3.4 Installation of cut stones

- .1 Lay cut stones to pattern indicated. Joints between pavers: 10 mm wide.
- .2 Saw cut stones to fit around obstructions and at abutting structures.
- .3 Use a low amplitude, high frequency plate compactor capable of at least 22 kN centrifugal compaction force to vibrate pavers into bedding sand.
- .4 Inspect, remove, and replace chipped, broken and damaged cut stones.
- .5 Sweep dry joint sand material with polymer into joints.
- .6 Settle sans by vibrating cut stones with plate compactor.
- .7 Continue application of joint material with polymer and vibrating of cut stones until joints are full.
- .8 Sweep off excess joint material when installation is complete.
- .9 Moisten the sand with polymer according to manufacturer's instructions.
- .10 Final surface elevations not to exceed plus or minus 10 mm under 3 m long straightedge.

.11 Surface elevation of cut stones: 6 mm above adjacent granite curbs.

.12 Ensure conformance of final elevations.

3.5 Cleaning

.1 Carry out cleaning at times and conditions recommended by manufacturer of cleaning compound, immediately prior to sealing.

.2 Remove and dispose of loose, extraneous materials from surfaces to be cleaned.

.3 Apply cleaning compounds appropriate for removal of various contaminants encountered in accordance with manufacturer's recommendations.

.4 Final surface to be free of contamination.

3.6 Sealing

.1 Ensure cut stones surfaces to be sealed are clean, free of extraneous materials and efflorescence, dry and appropriately cured.

.2 Apply 1 coat sealer in accordance with manufacturer's recommendations.

.3 Protect sealed surfaces from trespass until sealer has dried and hardened.

3.7 Cleaning

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers according to Sections 01 74 11 and 01 74 21.

End of Section

1.0 GENERAL

This Section aims to provide the requirements for the crushed stone surfacing for pedestrian walkways and marshalling yard. Details plan provide requirements for the road structure including sub-base and base granular materials and crushed stone surfacing.

1.1 Measurement and Payment

- .1 Granular base see Section 32 11 23.
- .2 The cost of crushed stone surfacing is included in the global cost.

1.2 References

- .1 ASTM International
 - .1 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .2 ASTM C117-04, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .3 ASTM D4318-05, Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
 - .4 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³).
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.3 Administrative Requirements

- .1 Access: allow access to building at all times.
- .2 Scheduling: co-ordinate paving schedule to minimize interference with normal use of premises.

1.4 Action and Informational Submittals

- .1 Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit manufacturer's instruction (certificate of conformity, certificate delivered by an accredited laboratory), printed product literature and data sheet including product characteristic, physical size, finish and limitations.
- .3 Submit project Waste Management Plan.

1.5 Delivery, Storage and Handling

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Store crushed stone as and where directed by Departmental Representative.

2.0 PRODUCTS

2.1 Materials

- .1 Granular sub-base: in accordance with Section 31 05 16 and Section 31 11 16.01.
- .2 Granular base: in accordance with Section 31 05 16 and Section 32 11 23.
- .3 Granular topping:
 - .1 Screenings: hard, durable, crushed stone particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
 - .2 Gradations: within limits specified in the following table:

Sieve Designation	% Passing
25 mm	100
12 mm	0

3.0 EXECUTION

3.1 Subgrade

- .1 Ensure subgrade preparation conforms to levels and compaction required, to allow for installation of granular sub-base.

3.2 Granular Sub-Base

- .1 Granular sub-base material minimum thickness as indicated.
- .2 Place material in uniform layers not to exceed 300 mm compacted thickness.
 - .1 Compact layer to 100 % Standard Density in accordance with ASTM D698.

3.3 Granular Base

- .1 Granular base material thickness as indicated.
- .2 Spread and compact granular base material in uniform layers not exceeding 100 mm compacted thickness.
- .3 Compact to a density of not less than 100 % Standard Density in accordance with ASTM D698.

3.4 Granular Topping

- .1 Place granular topping to compacted thickness as indicated.
- .2 Place material in uniform layers not to exceed 50 mm compacted thickness.
 - .1 Compact layer to 100 % Standard Density in accordance with ASTM D698.

3.5 Field Quality Control

- .1 Inspection and testing of crushed stone paving: carried out by Departmental Representative.

3.6 Cleaning

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
- .3 Waste Management: dispose waste materials in accordance with Section 01 74 21.

3.7 **Protection**

- .1 Prevent damage to buildings, bollards and base layer of parking and adjacent property.
 - .1 Repair damages incurred.
- .2 Provide access to building at all times. Co-ordinate surfacing schedule to minimize interference with normal use of premises.

End of Section

1.0 GENERAL**1.1 Works**

- .1 The Contractor must install concrete universal access and curbs as indicated.

1.2 References

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C117-04, Standard Test Method for Materials Finer than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D260-86 (2001), Standard Specification for Boiled Linseed Oil.
 - .4 ASTM D698-00a1, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-3.3-99 (March 2004), Kerosene, Amend. No. 1, National Standard of Canada.
 - .2 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1-04/A23.2-4, Concrete Materials and Methods of Concrete Construction / Method of Test and Standard Practices for Concrete.

1.3 Action and informational submittals

- .1 Submit shop drawings in accordance with Section 01 33 00.
- .2 Submit attestations or certificates of conformity of the materials used.

1.4 Delivery, storage and handling

- .1 Transport, store and handle materials according to manufacturer's recommendations.
- .2 Waste Management and Disposal:
 - .1 Dispose waste materials in accordance with Section 01 74 21.

1.5 Measurement and payment

- .1 The wood curbs are paid by linear metre.

2.0 PRODUCTS

2.1 Materials

- .1 Concrete mixes and materials: in accordance with Section 03 30 00.
- .2 Reinforcing steel: in accordance with Section 03 20 00.
- .3 Curing Compound: in accordance with Section 03 30 00.
- .4 Granular base: material in accordance with Section 33 11 23.
- .5 Non-staining mineral type form release agent: chemically active release agents containing compounds that react with free lime to provide water-soluble soap.
- .6 Fill material: in accordance with Section 33 11 23.
- .7 Boiled linseed oil: ASTM D260.
- .8 Kerosene: to CAN/CGSB-3.3.
- .9 Joint filler: in accordance with Section 03 30 00.

3.0 EXECUTION

3.1 Grade preparation

- .1 Do grade preparation work in accordance with Section 31 23 33.01.
- .2 Dispose of surplus and unsuitable excavated material in approved location on site or according to Departmental Representative's instructions.
- .3 Place fill in maximum 150 mm layers and compact to at least 95% of maximum dry density to ASTM D698.

3.2 Granular base

- .1 Obtain Departmental Representative's approval of subgrade before placing granular base.
- .2 Place granular base material to lines, widths, and depths as indicated.
- .3 Compact granular base in maximum 150 mm layers to at least 95% of maximum density to ASTM D698.

3.3 Concrete

- .1 Obtain Departmental Representative approval of granular base and reinforcing steel prior to placing concrete.
- .2 Do concrete work in accordance with Section 03 30 00.
- .3 Immediately after floating, give curb surface uniform broom finish to produce regular corrugations not exceeding 2 mm deep, by drawing broom in direction normal to center line.
- .4 Provide edging as indicated with 25 mm radius edging tool.

3.4 Tolerances

- .1 Finish surfaces to within 3 mm in 3 m as measured with 3 m straightedge placed on surface.

3.5 Expansion and contraction joints

- .1 Install expansion joints at intervals of 6 m.
- .2 When concrete slab is adjacent to curb, make joints of curb coincide.

3.6 Isolation

- .1 Install isolation joints around permanent structure.
- .2 Install joint filler in isolation joints in accordance with Section 03 30 00.
- .3 Seal isolation joints with sealant approved by Departmental Representative.

3.7 Curing

- .1 Cure concrete by adding moisture continuously in accordance with CSA-A23.1/A23.2 to exposed finished surfaces for at least 1 day after placing, or sealing moisture in by curing compound as directed by Departmental Representative.
- .2 Where burlap is used for moist curing, place two prewetted layers on concrete surface and keep continuously wet during curing period.
- .3 Apply curing compound evenly to form continuous film, in accordance with manufacturer's requirements.

3.8 Backfilling

- .1 Allow concrete to cure for 7 days prior to backfilling.
- .2 Backfill to designated elevations with material as directed by Departmental Representative.
 - .1 Compact and shape to required contours as indicated.

3.9 Linseed Oil treatment

- .1 Apply two coats of linseed oil mixture uniformly to surfaces of curbs, after concrete has cured for specified curing time and when surface of concrete is clean and dry.
- .2 Linseed oil mixture to consist of 50% boiled linseed oils and 50% mineral spirits by volume.
- .3 Apply treatment when air temperature above 10 degrees C.
- .4 Apply first coat at 135 mL/m².
- .5 Apply second coat at 90 mL/m² when first coat has dried.

3.10 Cleaning

- .1 Proceed in accordance with Section 01 74 11.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

End of Section