
AGGREGATE MATERIALS

PART 1 GENERAL**1.1 Related Work**

- .1 All Division 1 Specification Sections.
- .2 Section [02071](#) Reinforced Turf Permeable Paving
- .3 Section [02743](#) Asphalt Concrete Paving
- .4 Section [03300](#) Cast-in-Place Concrete

1.2 Reference

- .1 Society for Testing and Materials (ASTM) Society for Testing and Materials (ASTM)
 - .1 American Current ASTM C117, Test Method for Material Finer Than 0.075mm Sieve in Mineral Aggregates by Washing.
 - .2 Current ASTM C127, Test Method for Specific Gravity and Absorption of Coarse Aggregate.
 - .3 Current ASTM C 136, Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 Current ASTM D698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .5 Current ASTM D698, Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb. (2.49-kg) Rammer and 12-in (304.8-mm) Drop
 - .6 Current ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (2,700kN-m/m³).
 - .7 Current ASTM D4318, Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
 - .8 Current ASTM D4791- [99], Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.
 - .9 ASTM E11, Specification for Wire - Cloth Sieves for Testing Purposes.
 - .10 Current ASTM F355-95, ASTM F1292-99 (Playground Sand)
- .2 Canadian General Standards Board (CGSB)
 - .1 Current CAN/CGSB-8.1-[88], Sieves, Testing, Woven Wire, Inch Series.
 - .2 Current CAN/CGSB-8.2-[M88], Sieves, Testing, Woven Wire, Metric.
- .3 Canada Standards Association (CSA)
 - .1 Current CAN/CSA-A5, Portland Cement.

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- .2 Current CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
- .3 Current CSA A82.56, Aggregate for Masonry Mortar.
- .3 Ontario Provincial Standard Specifications (OPSS)

1.3 Samples

- .1 Submit samples in accordance with Section [01330 Submittals](#).
- .2 Submit to the Consultant, samples of material for sieve analysis at least three (3) weeks before installation of aggregate materials.

1.4 Testing

- .1 Contact the testing agency for compaction and materials tests as per Section [01450 Quality Control & Inspection](#).
- .2 Testing to be conducted for this section of Work is as follows:
 - a. Sieve designation of specified aggregate.

PART 2 PRODUCTS

2.1 Materials

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.
- .2 Flat and elongated particles of coarse aggregate: to ASTM D4791.
- .3 Aggregate materials to satisfy the following requirements:
 - .1 Bedding and Surrounding Material - Catch Basins and Manholes.
 - .1 Crushed or screened stone, gravel or sand.
 - .2 Gradations to be within limits specified when tested to current ASTM C136 and ASTM C117. Sieve sizes to current CAN/CGSB-8.1.
 - .3 Table:

Sieve Designation (mm)	% Passing Stone/Gravel	% Passing Gravel/Sand
25	100	-
12.5	65-90	100

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4.75	35-55	50-100
2.00	-	30-90
0.425	10-25	10-50
0.075	0-8	0-10

- .2 Bedding and Surrounding Material – Storm Sewer Pipe
- .1 Crushed or screened stone, gravel or sand.
- .2 Gradations to be within limits specified when tested to current ASTM C136 and ASTM C117. Sieve sizes to current CAN/CGSB-8.1.
- .3 Table

Sieve Designation (mm)	% Passing Stone/Gravel	% Passing Gravel/Sand
25	100	-
12.5	65-90	100
4.75	35-55	50-100
2.00	-	30-90
0.425	10-25	10-50
0.075	0-8	0-10

- .3 Playground Sub Drains, French Drains & Armourstone Wall Backfill
- .1 Open graded, hard, durable particles, 19mm diameter clear stone.
- .4 Soccer Field / Cricket Pitch Sub-Drainage Pipe Aggregate
- .1 Open graded, hard, durable particles, 10mm diameter clear stone.
- .5 Type 3 Fill
- .1 In accordance with Section [02315 Excavating, Trenching and Backfilling](#).
- .6 Granular Base
- .1 In accordance with Section [02233 Granular Base](#).
- .7 Soccer Field / Cricket Pitch Sand
- .1 Concrete Sand

1. As described in current OPSS.

Sieve Designation (mm)	% Passing
9.5	100-100
4.75	95-100
2.36	80-100
1.18	50-85
0.6	25-60
0.3	10-30
0.15	0-10

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0.075

0-3

2.2 Quality Control

- .1 Inform Consultant of proposed source of aggregates and provide access for sampling at least four (4) weeks prior to commencing production.
- .2 If, in opinion of the Consultant, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
- .3 Advise Consultant four (4) weeks in advance of proposed change of material source.
- .4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

PART 3 EXECUTION**3.1 Preparation**

- .1 Processing
 - .1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
 - .2 Blend aggregates, if required, to obtain gradation requirements, percentage of crushed particles, or particle shapes, as specified.
 - .3 Wash aggregates, if required to meet specifications.
 - .4 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate.
- .2 Handling
 - .1 Handle and transport aggregates to avoid segregation, contamination and degradation.
- .3 Stockpiling
 - .1 Stockpile aggregates on site in locations as indicated unless directed otherwise by the Consultant. Do not stockpile on completed pavement surfaces.
 - .2 Stockpile aggregates in sufficient quantities to meet project schedule.

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- .3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
- .4 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.
- .5 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by the Consultant within forty-eight (48) hours of rejection.
- .6 Stockpile materials in uniform layers of thickness as follows:
 - 1. Max 1.5m for coarse aggregate and base course materials.
 - 2. Max 1.5m for fine aggregate and sub-base materials.
 - 3. Max 1.5m for other materials.
- .7 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
- .8 Do not cone piles or spill material over edges of piles.
- .9 Do not use conveying stackers.
- .10 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

3.2 Cleaning

- .1 Restore stockpile areas to pre-construction condition or as otherwise specified.
- .2 Dispose of any unused aggregates.

END OF SECTION - 02701