

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 31 23 25: Gravel Fill.
- .2 Section 03 30 00 Cast in place concrete

### **1.02 REFERENCES**

- .1 ASTM International
  - .1 ASTM D 4791-10, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.
- .2 U.S. Environmental Protection Agency (EPA)/Office of Water
  - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for aggregate materials and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
  - .1 Allow continual sampling by Departmental Representative during production.
  - .3 Provide Departmental Representative with access to source and processed material for sampling.
  - .4 Install sampling facilities at discharge end of production conveyor, to allow Departmental Representative to obtain representative samples of items being produced. Stop conveyor belt when requested by Departmental Representative to permit full cross section sampling.
  - .5 Provide front end loader or other suitable equipment including trained operator for stockpile sampling as necessary. Move samples to storage place as directed by Departmental Representative.
  - .6 Supply new or clean sample bags or containers according appropriate to aggregate materials.
  - .7 Pay cost of sampling and testing of aggregates which fail to meet specified requirements.
  - .8 Provide water, electric power and propane to Departmental Representative laboratory trailer at production site.

### **1.04 DELIVERY, STORAGE AND HANDLING**

- .1 Transportation and Handling: handle and transport aggregates to avoid segregation, contamination and degradation.

- .2 Storage: store washed materials or materials excavated from underwater 24 hours minimum to allow free water to drain and for materials to attain uniform water content.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, free from adherent coatings and injurious amounts of disintegrated pieces or other deleterious substances.
- .2 Flat and elongated particles of coarse aggregate: to ASTM D 4791.
  - .1 Greatest dimension to exceed 5 times least dimension.
- .3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
  - .1 Screenings produced in crushing of quarried rock, boulders, gravel or slag.
  - .2 Reclaimed asphalt pavement.
  - .3 Reclaimed concrete material.
- .4 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:
  - .1 Crushed rock.
  - .2 Gravel and crushed gravel composed of naturally formed particles of stone.
  - .3 Light weight aggregate, including slag and expanded shale.

### **2.02 SOURCE QUALITY CONTROL**

- .1 Inform Departmental Representative of proposed source of aggregates and provide access for sampling 4 weeks minimum before starting production.
- .2 If materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate alternative source.
- .3 Advise Departmental Representative 4 weeks minimum 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.

## **3 EXECUTION**

### **3.01 Development of Aggregate Source**

- .1 Source is to be supplied by Contractor
- .2 Pits must be left in a neat and safe condition free from overhanging bands and dangerous water conditions. The pits must be left in such a condition that they comply with legislation regarding aggregate pits.

### **3.02 PREPARATION**

- .1 Processing:
  - .1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
  - .2 Blend aggregates, as required, including reclaimed materials that meet physical requirements of specification is permitted in order to satisfy gradation requirements for material and, percentage of crushed particles, or particle shapes specified.
    - .1 Use methods and equipment approved in writing by Departmental Representative.
- .2 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate gradation.
- .3 Where necessary, screen, crush, wash, classify and process aggregates with suitable equipment to meet requirements.
- .4 Stockpiling:
  - .1 Stockpile aggregates on site in locations approved by Departmental Representative. Do not stockpile on completed pavement surfaces.
  - .2 Stockpile aggregates in sufficient quantities to meet project schedules.
  - .3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
  - .4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.
  - .5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.
  - .6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Departmental Representative within 48 hours of rejection.
  - .7 Stockpile materials in uniform layers of thickness as follows:
    - .1 Maximum 1.5 m for coarse aggregate and base course materials.
    - .2 Maximum 1.5 m for fine aggregate and sub-base materials.
    - .3 Maximum 1.5 m for other materials.
  - .8 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
  - .9 Do not cone piles or spill material over edges of piles.
  - .10 Do not use conveying stackers.
  - .11 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

### **3.03 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 - Cleaning.
- .3 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.

- .4 Leave any unused aggregates in neat compact stockpiles as directed by Departmental Representative.
- .5 Waste Management: separate waste materials for in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .6 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.
- .7 Restrict public access to temporary or permanently abandoned stockpiles by means acceptable to Departmental Representative.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 31 05 16 - Aggregates Materials
- .2 Section 02 41 16 - Sitework Demolition and Removal

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for aggregate materials and include product characteristics, performance criteria, physical size, finish and limitations.
  - .3 Samples:
    - .1 Allow continual sampling by Departmental Representative during production.
    - .3 Provide Departmental Representative with access to source and processed material for sampling.
    - .4 Install sampling facilities at discharge end of production conveyor, to allow Departmental Representative to obtain representative samples of items being produced. Stop conveyor belt when requested by Departmental Representative to permit full cross section sampling.
    - .5 Provide front end loader or other suitable equipment including trained operator for stockpile sampling as necessary. Move samples to storage place as directed by Departmental Representative.
    - .6 Supply new or clean sample bags or containers according appropriate to aggregate materials.
    - .7 Pay cost of sampling and testing of aggregates which fail to meet specified requirements.
    - .8 Provide water, electric power and propane to Departmental Representative laboratory trailer at production site.

### **1.03 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Transportation and Handling: handle and transport aggregates to avoid segregation, contamination and degradation.
- .3 Storage: store washed materials or materials excavated from underwater 24 hours minimum to allow free water to drain and for materials to attain uniform water content.

**2 PRODUCTS UNLESS SPECIFIED DIFFERENTLY IN THE STATEMENT OF WORK**

**2.01 MATERIALS**

- .1 Source of Materials to be incorporated into work or stockpiles requires approval.
- .2 Inform Departmental Representative of proposed source of rock materials and provide access for sampling at least 1 week prior to hauling.
- .3 If, in Departmental Representative's opinion, materials from proposed source do not meet specified requirements, procure an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
- .4 Should a change of material source be proposed during work, advise Departmental Representative, 1 week in advance of proposed change to allow sampling and testing.
- .5 Acceptance of a material at source does not preclude future rejection if it is subsequently found to lack uniformity, or if it fails to conform to requirements specified, or if its field performance is found to be unsatisfactory.

**2.02 ROCK FILL**

- .1 To be run-of quarry rock fill, free from cracks, seams, or other defects which may impair durability; specific gravity minimum 2.64; slate and shale not acceptable.
- .2 Percent by volume of material less than 50mm not to exceed 5, maximum size to be 200mm on any dimension. Material to be well graded and approved by Departmental Representative.
- .3 Material not to contain organic matter, frozen lumps, weeds, sod, roots, logs, stumps or any other objectionable matter.

**2.03 SOURCE QUALITY CONTROL**

- .1 Inform Departmental Representative of proposed source of aggregates and provide access for sampling 4 weeks minimum before starting production.
- .2 If materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate alternative source.
- .3 Advise Departmental Representative 4 weeks minimum 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.

**3 EXECUTION**

**3.01 PLACEMENT**

- .1 Place Rock Fill materials to lines, grades and dimensions indicated on the drawings.

- .2 Place rock fill to elevations indicated on drawings.

### **3.02 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .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 - Cleaning.
- .3 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .4 Leave any unused aggregates in neat compact stockpiles as directed by Departmental Representative.
- .5 Waste Management: separate waste materials for in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .6 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.
- .7 Restrict public access to temporary or permanently abandoned stockpiles by means acceptable to Departmental Representative.

**END OF SECTION**