

## DIVISION 2 – SITE CONSTRUCTION

### SECTION 02060

#### AGGREGATE

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Coarse aggregate materials.
  - 2. Fine aggregate materials.
  - 3. Blended aggregate materials.
  - 4. Rip Rap
  
- B. Related Sections:
  - 1. Section 02320 - Backfill.
  - 2. Section 02324 - Trenching.
  - 3. Section 02512 - Water Distribution.
  - 4. Section 02630 - Storm Drainage.
  - 5. Section 02721 - Aggregate Base Course.
  - 6. Section 02740 - Flexible Pavement.
  - 7. Section 02750 - Rigid Pavement.
  - 8. Section 03300 - Cast-in-Place Concrete.

##### 1.2 REFERENCES

- A. Colorado Department of Transportation:
  - 1. 2017 CDOT Standard Specifications for Road and Bridge Construction.
  
- B. American Association of State Highway and Transportation Officials:
  - 1. AASHTO M147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.
  - 2. AASHTO T-24- Unconfined Compressive Strength of Drilled Core Specimen
  
- C. American Society for Testing and Materials:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
3. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
4. ASTM C535- Abrasion Resistance by Los Angeles Machine

### 1.3 SUBMITTALS

- A. Materials Source: Submit name of imported materials suppliers.
- B. Copies of all Proctor density curves and test results showing exact location of sample collection and test sites must be furnished to Engineer.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

### 1.4 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.
- B. Perform Work in accordance with City of Cañon City standard.
- C. Maintain one copy of each document on site.
- D.

## PART 2 PRODUCTS

### 2.1 COARSE AGGREGATE MATERIALS

- A. Coarse Aggregate Type Class 6 (Road Base): 2017 CDOT Standard Specifications for Road and Bridge Construction, Section 703.03; within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
3/4 inch	100
No. 4	30 to 65
No. 8	25 to 55
No. 200	3 to 12

- B. Coarse Aggregate Type A1: No. 67 (Gravel): free of clay, shale, organic matter; within the following limits: 2017 CDOT Standard Specifications for Road and Bridge Construction, Section 703.00; within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 inch	100
3/4 inch	90 to 100
3/8 inch	20 to 55
No. 4	0 to 10
No. 8	0 to 5

## 2.2 FINE AGGREGATE MATERIALS

- A. Fine Aggregate Type A2 (Sand): Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; within the following limits: 2017 CDOT Standard Specifications for Road and Bridge Construction, Section 703.00; within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8 inch	100
No. 4	95 to 100
No. 8	80 to 100
No. 16	50 to 85
No. 30	25 to 60
No. 50	10 to 30
No. 100	2 to 10

## 2.3 BLENDED AGGREGATE MATERIALS

- A. For use only as directed by Engineer. Also, see 1.9 Special Considerations, Section 00710 and 2.1 Fill Materials, Section 02324.
- B. Blended Aggregate Type A3 (Ordinary Backfill or Select Borrow Material):
1. Ordinary Backfill - on-site material that has been excavated from the trench, which may actually contain soil, except for rubbish, frozen material, broken pavement, large stones, or other consolidated material greater than 3 inches in diameter, organic muck, or other materials considered deleterious by Engineer. Expansive clays of a plastic nature will not be considered suitable.
  2. Select Borrow Material - well-graded mixture of sound mineral aggregate containing sufficient, proper bonding material which may include recycled materials; within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
No. 4	100
No. 10	80
No. 200	5 to 15

## 2.4 RIP RAP

- A. Rip Rap shall consist of hard, dense, and durable stone, angular in shape and resistant to weathering. Rounded stone or boulders shall not be used as rip rap material. The stone shall have a specific gravity of at least 2.5. Each piece shall have its greatest dimension not greater than three times its least dimension. Rip rap shall conform to 2017 CDOT Standard Specifications for Road and Bridge Construction, Section 506.00. Rip rap shall conform to the gradation requirements given in Table 506-2, 2017 CDOT Standard Specifications for Road and Bridge Construction

## 2.4 SOURCE QUALITY CONTROL

- A. Coarse Aggregate Material - Testing and Analysis: Perform in accordance with ASTM D698.
- B. Fine Aggregate Material - Testing and Analysis: Perform in accordance with ASTM D698.
- C. Blended Aggregate Material - Testing and Analysis: Perform in accordance with ASTM D698.
- D. Rip Rap – Testing and Analysis: ASTM C 535 LA Abrasion and AASHTO T-24.
- E. When tests indicate materials do not meet specified requirements, change material and retest.
- F. Testing shall use the Standard Proctor method. Alternatives such as Modified Proctor or Relative Density based on necessity due to material type may be used with the permission of the Engineer so long as the necessary conversion data, testing, and information has been completed and submitted prior commencement of the work.

## PART 3 EXECUTION

### 3.1 EXCAVATION

- A. Excavate aggregate materials from on-site locations indicated when directed by Engineer as specified in Section 02315 and Section 02324.
- B. Stockpile excavated material meeting requirements for aggregate materials when directed by Engineer.
- C. Remove excess excavated materials, not intended for reuse, from site.

### 3.2 STOCKPILING

- A. Stockpile materials on site at locations designated by Engineer.

- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.
- D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- E. Stockpile unsuitable or hazardous materials on impervious material and cover to prevent erosion and leaching, until disposed of.

### 3.3 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION