

SECTION 13226 - ANTHRACITE MEDIA

City of San Diego, CWP Guidelines

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing anthracite media in each of the filters and performing all indicated washing and testing.

1.2 RELATED SECTIONS

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.
 - 1. Section 13221 Plastic Block Air Scouring Filter Underdrains
 - 2. Section 13222 Strainer Nozzle Air Scouring Filter Underdrains
 - 3. Section 13229 Gravel Filter Bed

1.3 SPECIFICATIONS AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:
 - 1. ANSI/AWWA B100 Filtering Material
 - 2. ASTM C 128 Test Method for Specific Gravity and Absorption of Fine Aggregate
 - 3. ASTM E 11 Specification for Wire-Cloth Sieves for Testing Purposes

1.4 SHOP DRAWINGS AND SAMPLES

- A. The following shall be submitted in compliance with Section 01300:
 - 1. Samples of anthracite proposed for use. Samples shall be placed in tight jars holding not less than 1 quart and shall be properly labeled.
- B. The CONSTRUCTION MANAGER'S approval of the submitted anthracite media samples shall not be construed as signifying that the materials satisfy all requirements of these Specifications and shall in no way relieve the CONTRACTOR of the obligation to satisfy all requirements indicated herein.

PART 2 -- PRODUCTS

2.1 ANTHRACITE MEDIA

- A. **General:** Anthracite media and filter media testing methods shall conform to the requirements of ANSI/AWWA B 100, except as otherwise indicated. Anthracite media shall consist of a layer of graded material placed upon the gravel filter bed to the depth indicated.
- B. **Uniformity:** The media furnished for use in the WORK shall be equal in all respects to the approved samples, and similar samples for test purposes shall be furnished as required by the CONSTRUCTION MANAGER during the preparation and placing of the filter materials.
- C. **Material Quality:** The anthracite shall be composed of hard and durable grains, and shall be processed from anthracite coal. Average apparent specific gravity shall be determined by the procedure set forth in ASTM C 128.
- D. The anthracite shall be free from any significant amounts of iron sulfides, clay, shale, dust or other foreign matter.
- E. The anthracite solubility in 37 percent concentrated hydrochloric acid shall be less than 2.5 percent. It shall have a hardness of not less than 2.7 on the MOH scale. All test procedures shall be in accordance with the applicable portion of Section 5 of ANSI/AWWA B100.
- F. **Particle Size and Gradation:** Anthracite to be placed in each filter shall have size and a uniformity coefficient as indicated. The particle size shall be determined by screening through standard sieves calibrated in accordance with ASTM E 11. Effective size is defined as the theoretical size of the sieve (in millimeters) that will pass 10 percent of the sample by weight. The uniformity coefficient is defined as the theoretical size of the sieve (in millimeters) that will pass 60 percent of the sample by weight divided by the effective size. No more than 5 percent by weight shall be smaller than the lower designated size limit, and not more than 3 percent by weight shall be larger than the upper designated size limit.

2.2 FILTER DESIGN

- A. The anthracite layer of the filter bed shall meet the following design criteria:

1. Apparent specific gravity	1.65
2. Effective size (mm)	1.4 to 1.5
3. Uniformity coefficient	less than 1.5
4. Top sieve size	No. 10
5. Bottom sieve size	No. 20

2.3 ANTHRACITE SUPPLIERS

- A. Anthracite shall be supplied by one of the following manufacturers (or equal):
 - 1. Carbonite Filter Co.
 - 2. C.E. Cast Industrial Products
 - 3. Reading Anthracite Coal Co.

4. Shamokin Filter Co.

PART 3 -- EXECUTION

3.1 GENERAL

- A. **Placing:** The anthracite shall not be contaminated with dirt or organic matter during transporting and placing. Any anthracite which becomes dirty, either before or after it has been placed in the filters, shall be either washed or removed and replaced by clean anthracite. All anthracite which has been contaminated by organic matter will be rejected. In placing the anthracite in the filters, extreme care shall be taken to avoid disturbing the gravel filter bed.
- B. **Washing and Testing:** After the anthracite has been placed, it shall be washed at least 3 times, with the CONSTRUCTION MANAGER present, by the washing devices connected with the filters. Each of these separate and distinct washings shall be of at least 5 minutes duration at the indicated maximum wash rate.
- C. **Flow Rate:** The washwater shall be applied at the start at a rate not to exceed 2 gallons per minute per square foot of filter area and shall be gradually increased to a maximum of 18 gpm/sq ft.
- D. **Cleaning:** The fine-grained materials which accumulate at the surface of the bed shall be scraped off and removed by the CONTRACTOR at the end of each period of backwash. The depth of scraping shall be approximately 5 percent, 2.5 percent, and 1.3 percent of the indicated anthracite depth for successive washes.
- E. The filters shall be washed and tested one at a time. Filtered water shall be used for the initial backwash and testing.

** END OF SECTION **