

## SECTION 106—CONTROL OF MATERIAL

**106.01 GENERAL**—Use material complying with the requirements of these specifications. At the pre-construction conference, submit a list of material to be sampled and tested by the Contractor and a list of material to be sampled and tested by the Department.

Refer to the provisions of Act 226-1968, concerning the purchase of aluminum and steel products produced in a foreign country, except for those projects, which are partially or totally financed with Federal funds.

According to the provisions of Act 3-1978, as amended by the Act 161-1982, and the Act 144-1984, use or furnish only steel products produced in the United States in the performance of the contract or any subcontract.

Following contract execution, furnish to the Department a complete statement of the project construction material's origin, composition, and manufacture.

With each shipment of steel products delivered to the project site, except fabricated steel (see [Section 1105.01\(e\)6](#)), provide the Inspector-in-Charge the following:

- For unidentified steel products, documentation such as invoices, bills of lading, and mill certification that the steel was melted and manufactured in the United States.
- For a steel product identifiable from its face, certification that Section 4 of the Act has been complied with.

The provisions of this act will not be waived unless the Secretary has determined, under authority granted in Section 4(b) of the act, that a certain steel product or products is not produced in the United States in sufficient quantities to meet contract requirements. Such a determination will be set forth in the proposal, or in an addendum to the proposal.

Steel products are defined as products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated, otherwise similarly processed, or processed by a combination of two or more of these operations from steel made in the United States by the open hearth, basic oxygen, electric furnace, Bessemer, or any other steel-producing process. Included are cast iron products and machinery and equipment as listed in United States Department of Commerce Standard Industrial Classification 25, 35, and 37 and made of, fabricated from, or containing steel components. If a product, as delivered to the project, contains both foreign and United States steel, such product is considered to be a United States steel product only if at least 75% of the cost of the articles, materials, and supplies have been mined, produced, or manufactured, as the case may be, in the United States. On Federal-Aid projects, comply with the provisions specified in [Section 106.10](#).

No payment will be made on the contract if unidentified steel products are supplied, until the hereinbefore requirements are met.

Any payments made that should not have been made may be recoverable from a manufacturer or supplier as well as from a contractor or subcontractor.

Any person who willfully violates the Act will be prohibited from submitting bids for any contract for a period of 5 years from the date of determination that a violation has occurred. In the event the person who violates the provisions of Section 4(A) is a subcontractor, manufacturer or supplier, such person will be prohibited from performing any work or supplying any materials to the Department for a period of 5 years from the date of determination that a violation has occurred.

If steel products are used as a construction tool and will not serve a permanent functional use in the project, compliance with Act 3-1978, as amended by the Act 161-1982, and the Act 144-1984, is not required.

When standard manufactured items are specified and these items are identified by unit mass (unit weight), section dimensions, or similar characteristics, their identification will be considered to be nominal masses (weights) or dimensions. Unless more stringently controlled by specified tolerances, industry established manufacturing tolerances will be accepted.

### 106.02 MATERIAL—

**(a) Preliminary Acceptance and Approval.** Have the source(s) of material supply approved before delivery to project.

**1. Preapproved Sources.** For any preapproved source of material supply, submit the following: source; description; and specified use. If a previously accepted source of material no longer provides the specified material, furnish material from another preapproved source as specified in [Section 106.03\(b\)3](#).

**2. Other Sources.** If source of material is not preapproved, submit the following: source; description; specified use; QC Plan; and samples of the kind and quality specified, to the MTD with a copy to the Representative.

Do not deliver material from the unapproved source to the project until written acceptance is received from the Representative. The Department reserves the right to obtain samples of the material provided by the Contractor for laboratory testing to verify compliance with specifications.

**(b) Inspection.** Inspect material delivered to the project and stockpile the material passing inspection for use. Do not incorporate questionable material, until material is tested by MTD and accepted in writing by the Representative. The Department reserves the right to reject questionable material delivered to the project when the MTD test results are not according to the specifications. Furnish assistance to the Inspector, as required to obtain samples.

Allow designated Department representatives to inspect material being used, or intended to be used, at any time before, during, or after material preparation, while being used during the progress of the work, or after the work has been completed. Furnish or arrange with producers or manufacturers to provide necessary material, labor, tools, and equipment for such inspection.

Inspections and tests, if made at any point other than the point of incorporation in the work, will not guarantee acceptance of the material. Inspection and testing performed by the Department will not relieve the Contractor's responsibility for QC.

## 106.03 TESTS AND ACCEPTANCE OF MATERIAL—

### (a) Restricted Performance Specifications.

**1. Responsibility.** The Department will be responsible for determining the acceptability of the material and construction. Material will be reviewed for acceptance through the Department's specified acceptance procedures. Sample locations for acceptance testing will be determined by the Department.

Perform sampling and testing for acceptance in the presence of the Inspector, unless otherwise specified. Lot size will be specified. In the event that operational conditions cause work to be interrupted before the specified lot size has been achieved, the lot may be redefined by the Inspector. It is the intent of these specifications that each lot be evaluated based on the same number of samples. Transport acceptance samples from sampling point to testing site or other designated location in the presence of the Inspector.

The Contractor is responsible for the control and quality of the material and construction.

Prepare a QC Plan as specified in [Section 106.03\(a\)2.a](#) and submit it to the Inspector-In-Charge for review at the start of the project. Include QC sampling and testing frequencies and action points to initiate corrective measures. Notify the Inspector before performing QC sampling and testing. Perform QC sampling and testing and report results to the Inspector.

Obtain and test samples according to the [Department's PTMs](#). If the required test method is not specified, use methods described in the AASHTO Standard Specifications for Transportation Materials and Methods of Sampling and Testing, and Supplements, Standards and/or Tentatives of [ASTM](#), or other testing procedures adopted by the Department.

Verification sampling and testing will be performed by the District, unless otherwise specified.

QA sampling and testing will be performed or witnessed by the BOCM.

Independent Assurance sampling and testing will be administered by the BOCM.

### 2. QC.

**2.a** Maintain a QC system that provides reasonable assurance that materials, products, and completed construction, submitted for acceptance, conform to contract requirements whether self-manufactured, processed, or procured from subcontractors or vendors. When specified, submit for review, a plan of the QC system to be used. Have performed or perform the inspections and tests required to substantiate product conformance to contract requirements. Make the inspection and test results available for review throughout the

contract life. Procedures will be subject to the review of the Department before the work is started. Charts and records documenting QC inspections and tests are the property of the Department. Submit a QC Plan for use in compliance with the following guidelines, as a minimum:

**2.a.1 Raw Materials.** List the source of material along with methods of documentation and testing performed to assure the material quality.

**2.a.2 Production Control.** List lot size and samples required; include sample selection, labeling and test procedure; also include manufacturing phase.

**2.a.3 Product Testing.** List type and frequency of tests to be performed, along with method of documenting and reporting test results. List test equipment and calibration procedure (frequency) required. List procedure for retesting or rejecting items failing the tests. List the disposal methods and location for test samples and rejected lots.

**2.a.4 Personnel.** List the personnel in charge of QC and define their areas of responsibility.

**2.a.5 Packaging and Shipping.** List method of identifying, storing, loading, transporting, and unloading to assure safe delivery of acceptable material and products.

**2.a.6 Documentation.** List the procedures used for documentation and certification.

The QC Plan and process are subject to periodic review and inspection by the Department.

**2.b** Promptly record conforming and non-conforming inspection and test results on acceptable forms or charts. Keep these records complete and keep them available for inspection at all times during the performance of the work.

**2.c** Promptly correct any errors, equipment malfunctions, process changes, or other assignable causes which have resulted or could result in the submission of material, products, and completed construction not conforming to specification requirements.

**2.d** When required, provide or have provided and maintain measuring and testing devices necessary to ensure that material and products conform to contract requirements. In order to ensure continued accuracy, calibrate these devices at established intervals against Department standards.

**2.e** When required, make the measuring and testing equipment available to the Representative for use in determining conformance of material, products, or completed construction with contract requirements. In addition, make personnel available for the operation of such devices and for verification of the accuracy and condition of the devices. Have calibration results available at all times. The Department reserves the right to conduct periodic inspections of the measuring and testing devices to confirm both calibration and condition of operation.

**2.f** Failure to comply with the QC Plan may result in suspension of approval to provide material for Department use and/or removal from the approved list of material suppliers in the applicable bulletins.

### **3. Acceptance Plans.**

**3.a Percent Within Tolerance.** The percentage of each lot within the specified tolerances will be determined by the following procedures:

**3.a.1** The “n” sampling positions on the lot will be located by use of the table of random numbers found in [PTM No. 1](#).

**3.a.2** A measurement will be made at each location, or a test portion taken and the measurement made on the test portion.

**3.a.3** The lot ( $X$ ) measurements are averaged to find  $\bar{X}$ .

$$\bar{X} = \sum_{i=1}^n \frac{X_i}{n}$$

**3.a.4** The Standard Deviation, “s,” of the lot measurements will be determined as follows:

$$s = \sqrt{\sum_{i=1}^n \frac{(X_i - \bar{X})^2}{n-1}}$$

**3.a.5** The Quality Index ( $Q_U$ ) is found by subtracting the average ( $X$ ) of the measurements from the upper specification limit ( $U$ ) and dividing the result by “s.”

$$Q_u = \frac{(u - \bar{X})}{s}$$

**3.a.6** The Quality Index ( $Q_L$ ) is found by subtracting the lower specification limit ( $L$ ) from the average and dividing the result by “s.”

$$Q_L = \frac{(\bar{X} - L)}{s}$$

**3.a.7** The percentage of material that will fall within the upper tolerance limit ( $U$ ) is estimated by entering Table A or Table B with  $Q_U$ , using the column appropriate to the total number of measurements ( $n$ ). Use Table A if  $Q_U$  has a negative value, or use Table B if  $Q_U$  has a positive value.

**3.a.8** The percentage of material that will fall within the lower tolerance limit ( $L$ ) is estimated by entering Table A or Table B with  $Q_L$ , using the column appropriate to the total number of measurements ( $n$ ). Use Table A if  $Q_L$  has a negative value, or use Table B if  $Q_L$  has a positive value.

**3.a.9** In cases where both upper ( $U$ ) and lower ( $L$ ) tolerance limits are concerned, the percentage of material that will fall within tolerance limits is found by adding the percent ( $P_U$ ) within the upper tolerance limit ( $U$ ) to the percent ( $P_L$ ) within the lower tolerance limit ( $L$ ) and subtracting 100 from the sum.

$$\text{Total percent within limits} = (P_U + P_L) - 100$$

**3.a.10** When determining the percentage within tolerance when the calculated Quality Index (Q.I.) value is between two tabular values in Table A or Table B, the following procedure is used:

- The difference between the tabular Q.I. values on either side of the calculated value Q.I. value will be determined.
- The difference will be divided by 2 and the quotient added to the lower tabular Q.I. value, resulting in the interpolated Q.I. value.
- If the calculated Q.I. is equal to or greater than the interpolated value, the higher listed percent within tolerance will be used.
- If the calculated Q.I. is less than interpolated value, the lower listed percent within the tolerance will be used.

**TABLE A**  
**Estimating Percent of Lot Within Tolerance**  
**(Standard Deviation Method)**  
**Negative Values of  $Q_U$  or  $Q_L$**

Percent Within Tolerance	n=3	n=4	n=5	n=6	n=7
50	0.0000	0.0000	0.0000	0.0000	0.0000
49	0.0361	0.0300	0.0281	0.0272	0.0267
48	0.0722	0.0600	0.0562	0.0545	0.0535
47	0.1083	0.0900	0.0843	0.0818	0.0802
46	0.1444	0.1200	0.1124	0.1091	0.1070
45	0.1806	0.1500	0.1406	0.1364	0.1338
44	0.2158	0.1800	0.1689	0.1639	0.1608
43	0.2510	0.2100	0.1972	0.1914	0.1878
42	0.2863	0.2400	0.2256	0.2189	0.2148
41	0.3215	0.2700	0.2539	0.2464	0.2418
40	0.3568	0.3000	0.2823	0.2740	0.2689
39	0.3912	0.3300	0.3106	0.3018	0.2966
38	0.4252	0.3600	0.3392	0.3295	0.3238
37	0.4587	0.3900	0.3678	0.3577	0.3515
36	0.4917	0.4200	0.3968	0.3859	0.3791
35	0.5242	0.4500	0.4254	0.4140	0.4073
34	0.5564	0.4800	0.4544	0.4426	0.4354
33	0.5878	0.5101	0.4837	0.4712	0.4639
32	0.6187	0.5401	0.5131	0.5002	0.4925
31	0.6490	0.5701	0.5424	0.5292	0.5211
30	0.6788	0.6001	0.5717	0.5586	0.5506
29	0.7076	0.6301	0.6018	0.5880	0.5846
28	0.7360	0.6601	0.6315	0.6178	0.6095
27	0.7635	0.6901	0.6619	0.6480	0.6395
26	0.7905	0.7201	0.6919	0.6782	0.6703
25	0.8164	0.7501	0.7227	0.7093	0.7011
24	0.8416	0.7801	0.7535	0.7403	0.7320
23	0.8661	0.8101	0.7846	0.7717	0.7642
22	0.8896	0.8401	0.8161	0.8040	0.7964
21	0.9122	0.8701	0.8479	0.8363	0.8290
20	0.9342	0.9001	0.8798	0.8693	0.8626
19	0.9555	0.9301	0.9123	0.9028	0.8966
18	0.9748	0.9601	0.9453	0.9367	0.9315
17	0.9940	0.9901	0.9782	0.9718	0.9673
16	1.0118	1.0201	1.0125	1.0073	1.0032

**TABLE A (continued)**  
**Estimating Percent of Lot Within Tolerance**  
**(Standard Deviation Method)**  
**Negative Values of  $Q_U$  or  $Q_L$**

<b>Percent Within Tolerance</b>	n=3	n=4	n=5	n=6	n=7
15	1.0286	1.0501	1.0469	1.0437	1.0413
14	1.0446	1.0801	1.0819	1.0813	1.0798
13	1.0597	1.1101	1.1174	1.1196	1.1202
12	1.0732	1.1401	1.1538	1.1592	1.1615
11	1.0864	1.1701	1.1911	1.2001	1.2045
10	1.0977	1.2001	1.2293	1.2421	1.2494
9	1.1087	1.2301	1.2683	1.2866	1.2966
8	1.1170	1.2601	1.3091	1.3328	1.3465
7	1.1263	1.2901	1.3510	1.3813	1.3990
6	1.1330	1.3201	1.3946	1.4332	1.4562
5	1.1367	1.3501	1.4408	1.4892	1.5184
4	1.1402	1.3801	1.4898	1.5500	1.5868
3	1.1439	1.4101	1.5428	1.6190	1.6662
2	1.1476	1.4401	1.6018	1.6990	1.7615
1	1.1510	1.4701	1.6719	1.8016	1.8893

**TABLE B**  
**Estimating Percent of Lot Within Tolerance**  
**(Standard Deviation Method)**  
**Positive Values of  $Q_U$  or  $Q_L$**

Percent Within Tolerance	n=3	n=4	n=5	n=6	n=7
99	1.1510	1.4701	1.6719	1.8016	1.8893
98	1.1476	1.4401	1.6018	1.6990	1.7615
97	1.1439	1.4101	1.5428	1.6190	1.6662
96	1.1402	1.3801	1.4898	1.5500	1.5868
95	1.1367	1.3501	1.4408	1.4892	1.5184
94	1.1330	1.3201	1.3946	1.4332	1.4562
93	1.1263	1.2901	1.3510	1.3813	1.3990
92	1.1170	1.2601	1.3091	1.3328	1.3465
91	1.1087	1.2301	1.2683	1.2866	1.2966
90	1.0977	1.2001	1.2293	1.2421	1.2494
89	1.0864	1.1701	1.1911	1.2001	1.2045
88	1.0732	1.1401	1.1538	1.1592	1.1615
87	1.0596	1.1101	1.1174	1.1196	1.1202
86	1.0446	1.0801	1.0819	1.0813	1.0798
85	1.0286	1.0501	1.0469	1.0437	1.0413
84	1.0118	1.0201	1.0125	1.0073	1.0032
83	0.9940	0.9901	0.9782	0.9718	0.9673
82	0.9748	0.9601	0.9453	0.9367	0.9315
81	0.9550	0.9301	0.9123	0.9028	0.8966
80	0.9342	0.9001	0.8798	0.8693	0.8626
79	0.9122	0.8701	0.8479	0.8363	0.8290
78	0.8896	0.8401	0.8161	0.8040	0.7964
77	0.8661	0.8101	0.7846	0.7717	0.7642
76	0.8416	0.7801	0.7535	0.7403	0.7320
75	0.8164	0.7501	0.7227	0.7093	0.7011
74	0.7905	0.7201	0.6919	0.6782	0.6703
73	0.7635	0.6901	0.6619	0.6480	0.6395
72	0.7360	0.6601	0.6315	0.6178	0.6095
71	0.7076	0.6301	0.6018	0.5880	0.5846
70	0.6788	0.6001	0.5717	0.5586	0.5506
69	0.6490	0.5701	0.5424	0.5292	0.5211
68	0.6187	0.5401	0.5131	0.5002	0.4925
67	0.5878	0.5101	0.4837	0.4712	0.4639
66	0.5564	0.4800	0.4544	0.4426	0.4354
65	0.5242	0.4500	0.4254	0.4140	0.4073

**TABLE B (continued)**  
**Estimating Percent of Lot Within Tolerance**  
**(Standard Deviation Method)**  
**Positive Values of  $Q_U$  or  $Q_L$**

Percent Within Tolerance	n=3	n=4	n=5	n=6	n=7
64	0.4917	0.4200	0.3968	0.3859	0.3791
63	0.4587	0.3900	0.3678	0.3577	0.3515
62	0.4252	0.3600	0.3392	0.3295	0.3238
61	0.3912	0.3300	0.3106	0.3018	0.2966
60	0.3568	0.3000	0.2823	0.2740	0.2689
59	0.3215	0.2700	0.2539	0.2464	0.2418
58	0.2863	0.2400	0.2256	0.2189	0.2148
57	0.2510	0.2100	0.1972	0.1914	0.1878
56	0.2158	0.1800	0.1689	0.1639	0.1608
55	0.1806	0.1500	0.1406	0.1364	0.1338
54	0.1444	0.1200	0.1124	0.1091	0.1070
53	0.1083	0.0900	0.0843	0.0818	0.0802
52	0.0722	0.0600	0.0562	0.0545	0.0535
51	0.0361	0.0300	0.0281	0.0272	0.0267
50	0.0000	0.0000	0.0000	0.0000	0.0000

**3.b Resampling of Lot.** It is the intent of these specifications that lots will meet specification requirements at the time of submission. If permitted, nonconforming lots that can be corrected may be reworked and sampled.

**3.c General Basis of Adjusted Payment.** The related adjusted percentage of contract price will be determined by the method designated in the appropriate specification section.

**(b) Specifications, Other than Restricted Performance.**

**1. Responsibility.** The Department will be responsible for determining the acceptability of the material and construction. Material will be reviewed for acceptance through the Department's specified acceptance procedures. Sample locations for acceptance testing will be determined by the Department.

Perform sampling and testing for acceptance in the presence of the Inspector, unless otherwise specified. Transport acceptance samples from sampling point to testing site or other designated location in the presence of the Inspector.

The Contractor is responsible for the control and quality of the material and construction.

Prepare a QC Plan as specified in [Section 106.03\(a\)2.a](#) and submit it to the Inspector-In-Charge for review at the start of the project. Include QC sampling and testing frequencies and action points to initiate corrective measures. Notify the Inspector before performing QC sampling and testing. Perform QC sampling and testing and report results to the Inspector.

Do not incorporate any material into the work that is determined to be outside the specification limits.

Obtain and test samples according to the [Department's PTMs](#). If the required test method is not specified, use methods described in the AASHTO Standard Specifications for Transportation Materials and Methods of Sampling and Testing, and Supplements, Standards and/or Tentatives of [ASTM](#), or other testing procedures adopted by the Department.

Verification sampling and testing will be performed by the District, unless otherwise specified.

QA sampling and testing will be performed or witnessed by the BOCM.

Independent Assurance sampling and testing will be administered by the BOCM.

**2. QC.** [Section 106.03\(a\)2](#), and as follows:

Provide a plan of the QC system to be used for all construction work requiring acceptance testing by the Department, including QC test frequencies and action points to initiate corrective measures. Submit a copy of the QC Plan to the Project Engineer, to be maintained at the Department's project field office, before the start of work. A QC Plan is not required for items specified in [Section 901](#).

**3. Certification.** Maintain the original copy of [Form CS-4171](#), supplied by the Department, along with all component certifications, at the last manufacturer's, fabricator's, or producer's location for a period of not less than 3 years from the date of the last shipment to the project. Make files available for inspection and verification by a Department Representative. Do not incorporate any material in the work until certification arrives on the project, unless otherwise approved. To avoid delays, have noncertified material tested and approved by MTD.

Notify suppliers that certification file must be maintained for purchased materials to provide an audit trail to the manufacturer, fabricator, or producer. Notify manufacturers, fabricators, and producers that all component certifications for purchased materials must be maintained at their place of business for a period of 3 years from the date of the last shipment to the project and available for inspection by the Department.

Include the following information for certifications including [Form CS-4171](#) on file with the last manufacturer, producer, or supplier.

- Material Identification and Quantity.
- Lot Number.
- Specification Reference ([ASTM](#) or AASHTO) and/or test data for the material shipped.
- BUY AMERICA Certification for Iron, Steel, or Coating application if applicable.
- Signature and title of a legally responsible person in the manufacturing firm. The legally responsible person's name is also to be printed or typed next to or below his or her signature.

Submit a copy of [Form CS-4171](#), with each shipment of material to the project.

Accept responsibility for all certifications for all materials arriving at the project. Materials of questionable quality delivered to the project will be sampled, tested, and approved by MTD before incorporation in any work. Random samples may be taken by the Representative, from the material at the source, delivered to the project, or at the place of the last manufacturer's, fabricator's, or producer's location, before delivery. Random QA samples may also be taken by the Department for material delivered to the project, place of supply, or at the place of the last manufacturer, fabricator, or producer, before delivery. The random samples will be sent to the MTD for testing.

Material provided by Producers listed in [Bulletin 15](#), Approved Construction Materials, is approved for use only in its intended application(s). Producers will be assigned a Level of Certification, based on their ability to comply with the specifications, as follows:

- LEVEL 1—Test material at the minimum frequency identified in the approved QC Plan. Ship on the basis of certification.
- LEVEL 2—Test material at an increased frequency, as identified in a revised QC Plan, coordinated with the BOCM. Continue to ship on the basis of certification. Submit an action plan to demonstrate how material and processes are to be controlled to ensure the product consistently meets specification requirements.
- LEVEL 3—Test material at LEVEL 2 frequency and arrange for additional testing at the LEVEL 2 frequency by an independent laboratory. Correlate test results from in-house and independent lab and continue to ship on the basis of certification.

- LEVEL 4—Test material at LEVEL 2 frequency and arrange for additional testing at the LEVEL 2 frequency by an independent laboratory. Correlate test results from in-house and independent lab. Certify that the material meets specifications; submit samples to MTD for verification; and ship only after notification of acceptable lot test results from the BOCM. Failure to advance above this level of certification will result in the Department’s initiating action for suspension/removal from [Bulletin 15](#) according to the State’s Contractor Responsibility Program.

The BOCM will determine the Level of Certification for each Producer. Producers will initially be assigned a LEVEL 1 certification until performance dictates a reevaluation.

**106.04 USE OF MATERIALS FROM WITHIN THE PROJECT**—With written permission, material found in the excavation areas and meeting the Department’s specifications may be used in the project construction. Material used will be paid for, as specified in [Section 110.01](#). However, replace any portion removed with suitable material, if required to complete the embankments. The replaced quantity will be 110% of the volume of stone or gravel removed and 100% of the volume of sand and other material removed. Do not use reserved material, as specified in [Section 104.06](#), or as indicated in the proposal.

#### **106.05 STORAGE OF MATERIAL**—

**(a) General.** Store material to assure preservation of specified quality and fitness for the work.

Stored material, even though accepted before storage, may again be inspected before use in the work. Locate stored material to facilitate prompt inspection and control.

Do not use private property for storage purposes without written permission of the owner or lessee. Make copies of this permission available to the Department. Restore storage sites to conditions acceptable to property owners and the Department.

**(b) Storage of Aggregates.** Provide a separate stockpile for each aggregate size and type at cement concrete plants.

Do not use aggregates that become segregated or mixed with earth or foreign material.

If divided aggregate bins are used for storage or for proportioning, take measures to prevent mixing of aggregates.

Provide an area for storage of aggregates for use in Portland cement concrete and bituminous concrete. Store aggregates on one of the following constructed according to standard practice:

- Bituminous concrete base course, 100 mm (4 inches) minimum depth.
- Class C concrete, or better, 100 mm (4 inches) minimum depth.

**(c) Control of Aggregates.** Have aggregates available for use in cement concrete at the proportioning plant in enough time before batching to allow inspection and testing. Handle the aggregates so they may be field tested and accepted, before storing them with previously accepted aggregates. Batch fine and coarse aggregates separately. Properly control uniformity of moisture and uniformity of gradation. Provide a system of water sprays, then use when required, to maintain coarse aggregate moisture control.

During cool and cold weather concrete production, maintain aggregates required for individual concrete placements, whether stored in proportioning bins or stockpiles, at a temperature of not less than 4 °C (40F) before and during batching operations, for a sufficient length of time to eliminate the presence of frost in or around the aggregate particles.

**(d) Storage of Reinforcement.** Satisfactorily store reinforcement above ground, in a clean and dry condition on a platform, in an orderly manner, plainly marked to facilitate inspection.

**106.06 HANDLING AND TRANSPORTATION OF MATERIAL—**

**(a) General.** Carefully handle material to preserve quality and fitness for the work and to prevent loss, segregation, or inconsistency in quantities after weighing or measuring for incorporation in the work.

**(b) Aggregates.** In dry batching operations, measure aggregates or weigh before placing in the compartments of the vehicle, unless otherwise specified or permitted. Clean the vehicles and provide tight batch partitions at least 100 mm (4 inches) higher than the batched aggregate level being hauled, to prevent any spillage from one compartment to another.

**(c) Bulk Cement.** Bulk cement may be used, as specified in [Section 701](#).

If bulk cement is used, transport to the mixer in acceptable metal, rubber, or plastic, watertight containers or compartments.

**(d) Bag Cement.** If bag cement is used, dump the contents of the correct number of bags required for each batch into the mixer skip. If permitted, bag cement may be transported from storage to the mixer by placing the correct number of bags per batch on the batched aggregate in the aggregate compartments. When transported, the bag cement may be dumped on the aggregate after having been checked by the inspector, and if done not more than 30 m (100 feet) from the mixer. Bag cement that is allowed to lie on the batched aggregates longer than 2 hours, or cement dumped on the batched aggregate longer than 1 hour, will be rejected.

**106.07 UNACCEPTABLE MATERIAL—****(a) Restricted Performance Specifications.**

**1. Acceptance or Rejection.** Following the application of the appropriate acceptance plan, the Representative's decision will be final as to the acceptance, rejection, or acceptance at an adjusted price of sampled lots.

**2. Disposition of Lots.** If permitted, lots not conforming to specifications may be reworked and resubmitted for acceptance sampling. For nonconforming lots that are not adaptable to correction by reworking, remove and replace them, have them accepted without payment, or have them accepted at an adjusted price as stated in the specifications or, if not stated, as directed.

**(b) Specifications, Other than Restricted Performance.** Material not conforming to the requirements of the specifications, whether in place or not, will be rejected. Remove such material promptly from the site of the work, unless otherwise directed. Do not return rejected material to the work site until defects have been corrected and the material has been accepted for use.

**106.08 DEPARTMENT FURNISHED MATERIAL—**The Department will furnish material, if specified in the proposal, in the quantities required. Material will be delivered or made available at the point specified.

The cost of handling and placing material after delivery will be included in the contract price for the item.

After delivery and acceptance by the Contractor, the cost of replacing material due to shortages, deficiencies, or damage, including demurrage charges, will be deducted from money due or to become due.

**106.09 PENNSYLVANIA TRADE PRACTICES ACT—**This section does not apply to projects which are partially or totally financed with Federal funds.

**(a) General.** Pursuant to the PA Trade Practices Act, Act 226-1968, the Department will not specify, purchase, or permit to be furnished or used in any contract aluminum or steel products as set forth below made in the countries set forth below.

The Department may utilize the discretionary waiver provision of Act 3-1978 as to steel products. As to aluminum products, if the sole source is from a banned country relief may be permitted under the Statutory Construction Act, 1 PA C.S. 1901 et seq.

**1. Brazil.** Welded carbon steel pipes and tubes; carbon steel wire rod; tool steel; certain stainless steel products including hot-rolled stainless steel bar; stainless steel wire rod and cold-formed stainless steel bar; pre-stressed concrete steel wire strand; hot-rolled carbon steel plate in coil; hot-rolled carbon steel sheet; and cold-rolled carbon steel sheet.

**2. Spain.** Certain stainless steel products, including stainless steel wire rod, hot-rolled stainless steel bars, and cold-formed stainless steel bars; pre-stressed concrete steel wire strand; certain steel products, including hot-rolled steel plate, cold-rolled carbon steel plate, carbon steel structural shapes, galvanized carbon steel sheet, hot-rolled carbon steel bars; and cold-formed carbon steel bars.

**3. South Korea.** Welded carbon steel pipes and tubes; hot-rolled carbon steel plate; hot-rolled carbon steel sheet; and galvanized steel sheet.

**4. Argentina.** Carbon steel wire rod and cold-rolled carbon steel sheet.

**106.10 BUY AMERICA PROVISIONS AND CONVICT PRODUCED MATERIALS**—This section only applies to projects partially or totally financed with Federal funds.

**(a) Buy America Provisions.** Furnish steel or iron materials, including coating for permanently incorporated work according to 23 CFR 635.410 and as follows:

- Pig iron and processed, pelletized, and reduced iron ore manufactured outside of the United States is acceptable for use in domestic manufacturing process for steel and/or iron materials.
- All manufacturing processes of steel or iron materials in a product, including coating; and any subsequent process that alters the steel or iron material's physical form or shape, or changes its chemical composition; are to occur within the United States. This includes rolling, extruding, machining, bending, grinding, drilling, and coating. Coating includes all processes that protect or enhance the value of the material, such as epoxy coatings, galvanizing or painting.
- Provide certification to the Inspector-in-Charge, that all manufacturing processes for steel and iron materials in a product, including coating, have occurred in the United States; certify as specified in [Section 106.01](#).

Products manufactured of foreign steel or iron materials may be used, provided the cost of such products as they are delivered to the project does not exceed 0.1% of the total contract amount, or \$2,500, whichever is greater.

**(b) Convict Produced Materials.** Pursuant to 23 CFR 635.417, materials produced by convict labor after July 1, 1991 may not be used for Federal-aid highway construction projects, unless produced at a prison facility which had been producing convict-made materials for Federal-Aid construction projects before July 1, 1987.

Material produced by convicts who are on parole, supervised release, or probation from a prison may be incorporated in a Federal-Aid highway construction project.