

SECTION 3 SUBMITTAL AND TESTING PROCEDURES

A. GENERAL

1. Related Documents

- a. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- b. Certain specification sections contain additional submittal procedures for specified items. The requirements stated therein shall be primary for those items.

2. Summary

- a. This Section includes administrative and procedural requirements for submittals, including the following:
 - 1) Shop Drawings.
 - 2) Product Data.
 - 3) Samples.
 - 4) Informational Submittals: Miscellaneous submittals
 - 5) Requests for Information (RFI); requests for clarification and interpretation.

3. Definitions

- a. Action Submittals: Written and graphic information that requires Architect/Engineer's responsive action.
- b. Informational Submittals: Written information that does not require Architect/Engineer's approval. Submittals may be rejected for not complying with requirements.

4. Submittal Procedures

- a. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1) Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2) Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

- a) Architect/Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

b. Processing Time

Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect/Engineer's receipt of submittal.

- 1) Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect/Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
- 2) Concurrent Review: Where concurrent review of submittals by Architect/Engineer's consultants, Owner, or other parties is required, allow 14 days for initial review of each submittal.
- 3) If intermediate submittal is necessary, process it in same manner as initial submittal.
- 4) Allow 10 days for processing each resubmittal.
- 5) No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

c. Identification

Place a permanent label or title block on each submittal for identification.

- 1) Indicate name of firm or entity that prepared each submittal on label or title block.
- 2) Provide a space on label or beside title block to record review and approval markings and action taken by Architect/Engineer.
- 3) Include the following information on label for processing and recording action taken:
 - a) Project name.
 - b) Date.
 - c) Name and address of Architect/Engineer.
 - d) Name and address of Contractor.
 - e) Name and address of subcontractor.
 - f) Name and address of supplier.
 - g) Name of manufacturer.
 - h) Unique identifier, including revision number.
 - i) Number and title of appropriate Specification Section.
 - j) Drawing number and detail references, as appropriate.

k) Other necessary identification.

d. Deviations

Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

e. Additional Copies

Unless additional copies are required for final submittal, and unless Architect/Engineer observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.

f. Transmittal

Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect/Engineer return submittals, without review, received from sources other than Contractor.

- 1) Paper or Electronic submittals may be provided, except for color and texture approvals. Send to or Email to Borough Engineer for distribution.
- 2) On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect/Engineer on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
- 3) Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
- 4) Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Submittal and transmittal distribution record.
 - i. Remarks.
 - j. Signature of transmitter.

g. Distribution

Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

h. Use for Construction

Use only final submittals with mark indicating action taken by Architect/Engineer in connection with construction.

i. Requests for clarification or interpretation including Request for Information (RFI) shall be in writing (mailed or emailed) to the Engineer – copy Architect.

B. PRODUCTS

1. Action Submittals

a. Shop Drawings

Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1) Preparation: Include the following information, as applicable:

- a) Dimensions.
- b) Identification of products.
- c) Fabrication and installation drawings.
- d) Roughing-in and setting diagrams.
- e) Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
- f) Shopwork manufacturing instructions.
- g) Templates and patterns.
- h) Schedules.
- i) Design calculations.
- j) Compliance with specified standards.
- k) Notation of coordination requirements.
- l) Notation of dimensions established by field measurement.

2) Wiring Diagrams

Differentiate between manufacturer-installed and field-installed wiring.

- b) Product name or name of manufacturer.
- c) Sample source.

4) Additional Information

On an attached separate sheet, prepared on Contractor's letterhead, provide the following:

- a) Size limitations.
 - b) Compliance with recognized standards.
 - c) Availability.
 - d) Delivery time.
- 5) Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
- a) If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least 3 sets of paired units that show approximate limits of the variations.
 - b) Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

6) Number of Samples for Initial Selection

Submit 1 full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect/Engineer will return submittal with options selected.

7) Number of Samples for Verification

Submit 3 sets of Samples. Architect/Engineer will retain 1 Sample set; remainder will be returned.

- a) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

8) Disposition

Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

- a) Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

- b) Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

- c. Product Schedule or List

Prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

- 1) Type of product. Include unique identifier for each product.
- 2) Number and name of room or space.
- 3) Location within room or space.

- 2. Architecture/Engineer's Action

- a. General

Architect/Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.

- b. Action Submittals

Architect/Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect/Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

- 1) Architect/Engineer's action on shop drawings will result in making one of five notations on them; namely "SATISFACTORY," "UNSATISFACTORY," "SATISFACTORY AS NOTED," "SATISFACTORY AS NOTED, REVISIONS REQUIRED," or "UNSATISFACTORY, REVISE AND RESUBMIT."
- 2) Final Unrestricted Release: When the Architect/Engineer marks a submittal "SATISFACTORY," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
- 3) Final-But-Restricted Release: When the Architect/Engineer marks a submittal "SATISFACTORY AS NOTED" the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
 - a) Resubmit to Architect/Engineer a file copy of submittal stamped by Architect/Engineer as "SATISFACTORY AS NOTED," after the corrections have been made.
- 4) Returned for Re-submittal: When the Architect/Engineer marks a submittal "SATISFACTORY AS NOTED, REVISIONS REQUIRED," or

"UNSATISFACTORY, REVISE AND RESUBMIT," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.

- a) Do not use, or allow others to use, submittals marked "UNSATISFACTORY," "SATISFACTORY AS NOTED, REVISIONS REQUIRED," or "UNSATISFACTORY, REVISE AND RESUBMIT," at the Project Site or elsewhere where Work is in progress.

- 3. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect/Engineer will return the submittal marked "Action Not Required."

c. Informational Submittals

Architect/Engineer will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect/Engineer will forward each submittal to appropriate party.

- d. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

C. TESTING

1. Laboratory Testing

The materials listed shall require advance and periodic laboratory tests as indicated, and shall be sampled in accordance with the methods of ASTM and as directed by the Engineer. With the exception of concrete test cylinders and mixing water, duplicate advance samples of all materials requiring laboratory tests shall be submitted to the Engineer, one of which will be certified by the Engineer for submission to the testing laboratory and the other retained on the job site in suitable storage provided by the Contractor. Except as noted on the following chart, preliminary samples of materials for advance laboratory tests shall be submitted at least two (2) weeks prior to starting delivery of such materials to the site of the project.

The testing laboratory shall furnish both the Engineer and the contractor with two (2) copies of the reports showing the results of such tests, and the reports shall be considered as sufficient evidence of the acceptance or rejection of the quality of the materials tested.

The specifications for, and the method of testing will be found under the detailed specifications for the particular material involved. All samples shall be properly packed and clearly marked as to source and intended use.

5) Sheet Size

Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.

4) Number of Copies

Submit 5 prints for the Architect/Engineer's review.

- a) The Architect/Engineer will stamp each submittal with a uniform action stamp; refer to Article 3.02
- b) Distribution: Contractor is responsible for distributing required prints of shop drawings to his subcontractors and material suppliers after review by the Architect/Engineer.
- c) One copy of each shop drawing shall be kept at the project site.
- d) Contractor shall submit one copy of each shop drawing to the Owner at the end of the project as a "Record Document."

b. Samples

Prepare physical units of materials or products, including the following:

1) Samples for Initial Selection

Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

2) Samples for Verification

Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

3) Preparation

Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect/Engineer's sample where so indicated. Attach label on unexposed side that includes the following:

- a) Generic description of Sample.

Material	Test Frequency	Sample	Shipping Container
Fine Aggregate	Advance, first shipment then ea. 100 tons	100 lbs	Canvas Sack
Coarse	Advance, first shipment then ea. 200 tons	Stone or Gravel 200 lbs.	Strong Sack
Water (for concrete)	Advance for each source	One Quart	Plastic
Concrete a. Trial Mix b. Air Entrainment c. Tests of Job Concrete	Advance test using approved materials 2 at 28 days Advance test of trial mix when air-entraining agent used. Advance then each 50 c.y. for the first 100 c.y., and then each 100 c.y. thereafter, but not less than 1 test for each individual structure	4 cylinders per mix, 2 broken at 7 days 4 cylinders per test 2 broken at 7 days 2 at 28 days	Wood
Reinforcement (Bar)	Advance	2 pc. ea - Dia. 2 ft. lg.	
Reinforcement (Mesh)	Advance	2 s.f.	
Brick	Advance, then each lot of 50,000 or less for each grade	5 bricks	Wood
Facing Tile	Advance, then each lot of 10,000 units or fraction thereof.	10 units per test	Wood
Concrete Masonry Units	Advance, then each lot of 10,000 units or fraction thereof.	10 units per test	Wood

In the event that the 28-day cylinders of concrete fail to meet the strength requirements, the Contractor shall obtain and test concrete core specimens from the affected area. The drilled cores shall be obtained and tested in conformance with ASTM Specification C42-64, the tests to be conducted by an independent testing laboratory. The number of cores required and the location from which core is taken will be determined by the Engineer.

A core specimen taken perpendicular to a horizontal surface shall be located, when possible, so that its axis is perpendicular to the bed of the concrete as originally placed and not near formed joints or obvious edges of a unit of deposit.

A specimen taken perpendicular to a vertical surface, or perpendicular to a surface with a batter, shall be taken from near the middle of a unit of deposit when possible and not near formed joints or obvious edges of a unit of deposit.

The diameter of core specimens should be at least three times the maximum nominal size of the coarse aggregate used in the concrete, but must be at least 2 inches in diameter. The length of the specimen, when capped, shall be at least twice the diameter of the specimen. The core specimens shall be taken to the laboratory and when transported, shall not be thrown, dropped, allowed to roll, or damaged in any way.

Test results shall be mailed directly to the Engineer from the testing laboratory. If the average of the test results on core specimens taken from a given area fail to meet the 28 day strength requirement, the Contractor shall strengthen or replace those portions of the structure which fail to develop the required strength. The Contractor shall perform all such work, including sampling and testing, as directed by the Engineer at the Contractor's own expense.

2. Shop Tests

The materials listed below shall be tested at the shop or plant of, and by, the producer. Each manufacturer of such materials shall be fully equipped to carry out the tests herein designated. Upon demand of the Engineer, the manufacturer shall perform such additional number of tests as the Engineer may deem necessary to establish the quality of the material offered for use. The Engineer shall be furnished with certified records or reports of the results of all tests, such reports or records to contain a sworn statement that the tests have been made as specified.

The Engineer reserves the right to require that laboratory tests also be conducted on any or all of the materials listed below as he deems necessary; and it will be the General Contractor's responsibility to furnish, without compensation, all labor, materials and equipment necessary for collecting, packaging and identifying representative samples of materials to be tested and the shipping of such samples to the testing laboratory.

Material	Test Method	Number of Tests
Cement	ASTM C-114	Chemical analysis, one for each 500 barrels.
Cast Iron Pipe (Pit Cast) (Centrifugally Cast)	ASA A-21.2	Chemical analysis, each heat; Hydrostatic test, each piece.
Cast Iron Pipe	ASA A-21.6 ASA A-21.8	Chemical analysis, each heat; Hydrostatic Test, each.
Reinforced Concrete Pipe	ASTM C-76	As specified in ASTM C-76
Precast Reinforced Concrete Manhole Risers and Tops	ASTM C 478-61T	As specified in C-478-61T
Corrugated Metal Culvert Pipe	AASHTO M-36	As specified in AASHTO M-36.

3. Field Tests

All sewers, waterlines, piping and equipment shall be tested in the field after installation in the presence of the Engineer or his authorized representative, in the manner prescribed in the applicable sections of these specifications. The Engineer may also perform any other field tests necessary to determine compliance with the contract requirements. The Contractor shall furnish all necessary labor, equipment and materials for such tests and, with the exception of the Engineer's expenses, shall bear all the costs thereof.

END OF SECTION