



Concrete Technology Division

Vicki Stewart, Division Chief

443-572-5134

David Rosen, Assistant Division Chief – Field Operations

443-572-5890

Dusty Brady, Assistant Division Chief – Laboratory

443-572-5135

Material Quality Assurance Processes

Admixtures for Concrete

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 1

Source Level Materials	Specification	Comments
Air Entraining Agents	902.06.01	
Dry Cast Admixtures	902.06	
Precast Admixture	902.06	
Type A - Water Reducing Agent	902.06.02	
Type C - Accelerating Agent, Chloride	902.06	
Type C - Accelerating Agent, Non-Chloride	902.06.02	
Type D - Water Reducing and Retarding Agent	902.06.02	
Type F - Water Reducing High Range Agent	902.06.03	
Type G - Water Reducing High Range and Retarder	902.06.03	

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

Production facility data maintained to provide a basis for qualified products.

Address and low level information is maintained to provide data of facilities that produce this category's material types. Facilities that produce materials in this category will be given a status of "Product Qualification Required". Producers of this category should be associated to all material types.

1 per 1 Prior to Usage on Project

Evaluation of Material Product for CTD Materials

Product Qualification

All admixture products must be qualified for use prior to usage on State contracts.

Qualification of Material Product for use on State Projects.

New products for this category will be evaluated through the MPEL system. Navigate to "<http://www.roads.maryland.gov/index.aspx?PageID=600>" for the current qualified list and detailed procedures. Navigate to "<http://apps.roads.maryland.gov/MPEL/>" for new submissions.

1 per 1 Prior to Usage on Project

Material Product QC

Product Qualification

Concrete Technology Laboratory to collect and evaluate Admixture Material Samples.

Samples taken at concrete production facilities. See Ready Mix and Precast Concrete sections for details on sampling.

1 Quart in a Screw Top Can

1 per 1 Months

Material Quality Assurance Processes

Cement Materials and Bagged Mixtures, Group 1

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 1

Source Level Materials	Specification	Comments
Non-Shrink Cementitious Grout	902.11	
Rapid Hardening Cement (horizontal repairs)	902.14	

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

Production facility data maintained to provide a basis for qualified products.

Address and low level information is maintained to provide data of facilities that produce this category's material types. Facilities that produce materials in this category will be given a status of "Product Qualification Required".

1 per 1 Prior to Source Request

Evaluation of Material Product for CTD Materials

Product Qualification

Qualification of Material Product for use on State Projects

New products for this category will be evaluated through the MPEL system. Navigate to "<http://www.roads.maryland.gov/index.aspx?PageID=600>" for the current qualified list and detailed procedures. Navigate to "<http://apps.roads.maryland.gov/MPEL/>" for new submissions.

1 per 1 Prior to Source Request

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Material Producers and product must be on a qualified list and associated correctly prior to source approval. If the Contractor sources a producer or product that is not on the qualified list, he will be advised that the source approval is contingent on a qualification process, the procedures, and duration. If he still wishes to use this product, he will need to advise the material producer / vendor to contact the New Products Team for procedures.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer to collect certifications (TC 1.03 w/o test data) and submit to OMT for clearance.

A portion of the bag that the material was supplied in that indicates specifications that the material meets may be used as the submitted certification.

1 per 1 Delivery to Project

Material Quality Assurance Processes

Cement Materials and Bagged Mixtures, Group 2

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 2

Source Level Materials	Specification	Comments
C 91 Masonry Cement	902.05	
Masonry Lime	921.03.01	
Masonry Mortar	903.06	
Portland Cement (Bagged)	902.03	
Quick Lime	921.03.03	
Soil Stabilization Lime	921.03.02	
Trowelable Grade Mortar	Special Provisions	

Plant or Product Qualification

Review of Misc Production Location

Limited Producer Check

General review of producer information. No production qualification required.

Production facility data maintained to track the material supply chain.

Address and low level information is maintained to provide data of facilities that produce materials in this category. Facilities that produce material in this category will be given a status of "Project Specific Review Required."

1 per 1 Prior to Source Request

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Material Production

CTD Material Review and Acceptance

Material Certification for Project Usage

Submit sample of material accompanied by a Form 88 and Material certification (1.03 w/o test data) to OMT for job specific approval.

1 Factory Sealed Container in a Factory Sealed Container

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer to collect certifications (TC 1.03 w/o test data) and a material sample. Submit to OMT for verification and clearance

A portion of the bag that the material was supplied in that indicates specifications that the material meets may be used as the submitted certification.

Material Quality Assurance Processes

Cement Materials and Bagged Mixtures, Group 2

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 2 of 2

1 per 1

Delivery to Project

Material Quality Assurance Processes

Cement Materials and Bagged Mixtures, Group 3

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 1

Source Level Materials	Specification	Comments
Epoxy Grout	902.11	Buy America Applicable
Epoxy or Polyester Anchoring System	902.11	Buy America Applicable
Rapid Hardening Materials (Overhead or Vertical)	Special Provisions	

Plant or Product Qualification

Review of Misc Production Location

Limited Producer Check

General review of producer information. No production qualification required.

Production facility data maintained to track the material supply chain.

Address and low level information is maintained to provide data of facilities that produce materials in this category. Facilities that produce material in this category will be given a status of "Project Specific Review Required."

1 per 1 Prior to Source Request

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Material Production

CTD Material Review and Acceptance

Material Certification for Project Usage

Submit Form 88 and Material Certification (1.03 w/o test data) to OMT for job specific approval.

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

The manufacturer/producer shall comply with: Title 23 US Code Section 313 and 23 CFR Part 635.410 for iron and steel products and manufactured products; and 2 CFR part 184 for construction materials. A statement of compliance with 23 CFR part 635.410 for iron and steel products and manufactured products, or 2 CFR part 184 for construction materials from the manufacturer/producer must be included with every delivery to the project and must identify where the material was manufactured/produced.

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer to verify approval stamp.

The project engineer shall verify that the material is from the correct batch and it has been stamped "Approved for State use". Typically used with epoxy grout.

1 per 1 Delivery to Project

Material Quality Assurance Processes

Cement Materials and Bagged Mixtures, Group 4

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 1

Source Level Materials	Specification	Comments
Type I - Portland Cement	902.03	
Type II - Portland Cement	902.03	
Type III - Portland Cement	902.03	
Fly Ash	902.06.04	
Ground Iron Blast Furnace Slag	902.06.04	
Microsilica	902.06.04	
Type I (PM)	902.04	
Type IP	902.04	

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

Material Specific Qualification of Material Producer

Cursory review of producer required so that they can be sourced in concrete mixtures.

1 per 1

Prior to Source Request

Material Quality Assurance Processes

Concrete Deck Protection

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 1

Source Level Materials	Specification	Comments
Kerosene		
Linseed Oil	902.12	

Plant or Product Qualification

Review of Misc Production Location

Limited Producer Check

General review of producer information. No production qualification required.

Production facility data maintained to track the material supply chain.

Address and low level information is maintained to provide data of facilities that produce materials in this category. Facilities that produce material in this category will be given a status of "Project Specific Review Required."

1 per 1 Prior to Source Request

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer to collect certifications (TC 1.03 w/o test data) and submit to OMT for clearance.

1 per 1 Delivery to Project

Material Quality Assurance Processes

Curing Compounds (Liquid Membrane)

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 2

Source Level Materials	Specification	Comments
Clear or Translucent Curing Compound	902.07.03, ASTM C309	Buy America Applicable
Curing and Sealing Compounds	ASTM C1315	Buy America Applicable
White Pigmented Curing Compound	902.07.03, ASTM C309	Buy America Applicable

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

Production facility data maintained to provide a basis for qualified products.

Address and low level information is maintained to provide data of facilities that produce this category's material types. Facilities that produce materials in this category will be given a status of "Product Qualification Required".

1 per 1 Prior to Usage on Project

Evaluation of Material Product for CTD Materials

Product Qualification

The produced curing compound products must be listed on the OMT pre-qualified curing compounds list.

Qualification of Material Product for use on State Projects.

New products for this category will be evaluated through the MPEL system. Navigate to "<http://www.roads.maryland.gov/index.aspx?PageID=600>" for the current qualified list and detailed procedures. Navigate to "<http://apps.roads.maryland.gov/MPEL/>" for new submissions.

1 per 1 Prior to Source Request

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Material Producers and product must be on a qualified list and associated correctly prior to source approval. If the Contractor sources a producer or product that is not on the qualified list, he will be advised that the source approval is contingent on a qualification process, the procedures, and duration. If he still wishes to use this product, he will need to advise the material producer / vendor to contact the New Products Team for procedures.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

The manufacturer/producer shall comply with: Title 23 US Code Section 313 and 23 CFR Part 635.410 for iron and steel products and manufactured products; and 2 CFR part 184 for construction materials. A statement of compliance with 23 CFR part 635.410 for iron and steel products and manufactured products, or 2 CFR part 184 for construction materials from the manufacturer/producer must be included with every delivery to the project and must identify where the material was manufactured/produced.

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

The PE shall receive a material certification that is supplied by the producer that conforms to TC-1.03

Material Quality Assurance Processes

Curing Compounds (Liquid Membrane)

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 2 of 2

Project Engineer to collect certifications (TC 1.03 w/ test data) and submit to OMT for clearance.

1 per 1

Delivery to Project

Material Quality Assurance Processes

Decorative Concrete Finish, Horizontal Surface

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 1

Source Level Materials	Specification	Comments
Shake on Colorant with Hardener		Buy America Applicable

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

Material Specific Qualification of Material Producer

1 per 1 Prior to Source Request

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

The manufacturer/producer shall comply with: Title 23 US Code Section 313 and 23 CFR Part 635.410 for iron and steel products and manufactured products; and 2 CFR part 184 for construction materials. A statement of compliance with 23 CFR part 635.410 for iron and steel products and manufactured products, or 2 CFR part 184 for construction materials from the manufacturer/producer must be included with every delivery to the project and must identify where the material was manufactured/produced.

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer to inspect placed materials and submit Form 14 to MMD for clearance.

1 per 1 Item Completion

Material Quality Assurance Processes

Decorative Concrete Stains, Vertical Surface

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 1

Source Level Materials	Specification	Comments
Stain for Architectural Finish	921.12	
Stain for Noise Barriers	921.12	

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

Production facility data maintained to provide a basis for qualified products.

Address and low level information is maintained to provide data of facilities that produce this category's material types. Facilities that produce materials in this category will be given a status of "Product Qualification Required".

1 per 1 Prior to Source Request

Evaluation of Material Product for CTD Materials

Product Qualification

Qualification of Material Product for use on State Projects.

New products for this category will be evaluated through the MPEL system. Navigate to "<http://www.roads.maryland.gov/index.aspx?PageID=600>" for the current qualified list and detailed procedures. Navigate to "<http://apps.roads.maryland.gov/MPEL/>" for new submissions.

1 per 1 Prior to Source Request

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Material Producers and product must be on a qualified list and associated correctly prior to source approval. If the Contractor sources a producer or product that is not on the qualified list, he will be advised that the source approval is contingent on a qualification process, the procedures, and duration. If he still wishes to use this product, he will need to advise the material producer / vendor to contact the New Products Team for procedures.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer to collect manufacturer's material certifications (TC 1.03 w/ test data) and submit to MMD for clearance.

Test data is requested due to the short shelf life of the product.

1 per 1 Delivery to Project

Material Quality Assurance Processes

Form Release

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 1

Source Level Materials	Specification	Comments
Form Release Compounds	902.08	

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

Form release products must be pre-qualified prior to a source of supply request.

Production facility data maintained to provide a basis for qualified products.

Address and low level information is maintained to provide data of facilities that produce this category's material types. Facilities that produce materials in this category will be given a status of "Product Qualification Required".

1 per 1 Prior to Source Request

Evaluation of Material Product for CTD Materials

Product Qualification

Form release producers must be pre-qualified prior to a source of supply request.

Qualification of Material Product for use on State Projects.

New products for this category will be evaluated through the MPEL system. Navigate to "<http://www.roads.maryland.gov/index.aspx?PageID=600>" for the current qualified list and detailed procedures. Navigate to "<http://apps.roads.maryland.gov/MPEL/>" for new submissions.

1 per 1 Prior to Source Request

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Material Producers and product must be on a qualified list and associated correctly prior to source approval. If the Contractor sources a producer or product that is not on the qualified list, he will be advised that the source approval is contingent on a qualification process, the procedures, and duration. If he still wishes to use this product, he will need to advise the material producer / vendor to contact the New Products Team for procedures.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

The Project Engineer will conduct a visual inspection of the material. A Form 14 shall be submitted indicating whether or not "Materials Conform to Specifications" or are "Performing Satisfactorily in the Field."

Project Engineer to inspect placed material and submit Form 14.

1 per 1 Delivery to Project

Material Quality Assurance Processes

Latex Emulsion

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 1

Source Level Materials	Specification	Comments
Styrene Butadiene Latex Emulsion	902.13	Buy America Applicable

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

Latex Emulsion material production plants shall be included on the OMT maintained Pre-qualified list.

Production facility data maintained to provide a basis for qualified products.

Address and low level information is maintained to provide data of facilities that produce this category's material types. Facilities that produce materials in this category will be given a status of "Product Qualification Required".

1 per 1 Prior to Usage on Project

Evaluation of Material Product for CTD Materials

Product Qualification

Latex Emulsion material products shall be identified on the OMT maintained Pre-qualified list.

Qualification of Material Product for use on State Projects.

New products for this category will be evaluated through the MPEL system. Navigate to "<http://www.roads.maryland.gov/index.aspx?PageID=600>" for the current qualified list and detailed procedures. Navigate to "<http://apps.roads.maryland.gov/MPEL/>" for new submissions.

1 per 1 Prior to Usage on Project

Material Quality Assurance Processes

Miscellaneous Chemical Materials

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 1

Source Level Materials	Specification	Comments
Calcium Chloride	921.02.01	
Magnesium Chloride	921.02.02	
Timber Preservatives	921.06	

Project Construction

CTD Material Verification

Material Verification

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer to collect certifications (TC 1.03 w/ test data) and submit certs and Form 14 to OMT for clearance.

1 per 1

Delivery to Project

Material Quality Assurance Processes

Portland Cement Concrete Mixtures

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 3

Source Level Materials	Specification	Comments
Mix 1	902.10.03	
Mix 2	902.10.03	
Mix 3	902.10.03	
Mix 4	902.10.03	
Mix 5	902.10.03	
Mix 6	902.10.03	
Mix 7	902.10.03	
Mix 8	902.10.03	
Mix 9	902.10.03	
Mix 10	902.10.03	
Mix 11	902.10.03	
Mix 12	902.10.03	
Mix 13		

Non-Standard PCC Mixture

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

Production facility to be certified to produce material for State projects.

Production facilities shall be inspected annually to ensure eligibility for use on State projects.

1 per 1 Prior to Source Request
1 per 12 Months

SHA Acceptance Facility Visit for CTD Material Production

Facility Qualification

An OMT representative shall randomly visit concrete production facilities to perform quality assurance on the production processes, review files and verify that QC plan is being followed.

OMT Personnel to perform Quality Assurance on concrete production processes.

Includes Gradations, Moisture and other processes

75 Lbs in a Soils Bag

1 per 10 Production Day

Evaluation of Material Product for CTD Materials

Product Qualification

The mix design and certifications for component materials are submitted to OMT for review. A trial batch is conducted by the producer and witnessed by an OMT representative. After plastic tests and strength test results meet requirements the mix design is approved for shipment to Administration projects.

Review and Qualification of Portland Cement Concrete Mixture Material Product.

Material Quality Assurance Processes

Portland Cement Concrete Mixtures

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 2 of 3

1 per 1 Prior to Source Request

Material Product QC

Product Qualification

The producer's certified technician shall perform daily QC tests to verify they material is within design specifications. All documentation shall be kept on file for OMT review.

Producer to perform daily gradations and moisture tests on aggregate materials.

Performed at production facility, results kept on file.

10 LBS - Fine Agg, 35 LBS Lt. wt., 50 LBS Coarse. in a Soils Bag

2 per 1 Production Day

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Material Producer and Product must be on qualified lists and associated correctly prior to source approval. If either cannot be accomplished the source will be rejected.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Material Production

Notification of Production for CTD materials

Production Notification

Producer to notify OMT one working day prior to production at concrete@sha.state.md.us

Only applicable for SHA projects.

1 per 1 Production Day

Project Construction

CTD Material Verification

Material Verification

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Load tickets shall be collected and stored in the project folder.

Project Engineer to conduct field tests. (Air Entrainment, Slump, etc.).

Concrete acceptance on job site and plastic tests.

1 per 1 Delivery to Project

Project Engineer to collect certifications (TC 1.03 w/ test data) and submit to OMT for clearance.

Flowable Fill acceptance at Project Site.

1 per 1 Delivery to Project

Material Quality Assurance Processes

Portland Cement Concrete Mixtures

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 3 of 3

Concrete Sampling and Testing

Material Sampling and Testing

Project Engineer will be responsible for verifying the creation of 28 day test cylinder specimens and the initial curing of these cylinders. If the contractor requests early cylinder breaks appropriate specimen will also be made at this time. OMT will perform cylinder breaks at the appropriate time. Payment shall be based on the 28 day break only.

Project Engineer to mold acceptance cylinders, Prime Contractor to cure and transport cylinders to OMT for testing.

2 Cylinders = 1 Sample

1	per	1	Production Day
1	per	50	Cubic Yard

Mix 7 -Project Engineer to mold acceptance cylinders, Prime Contractor to cure and transport cylinders to OMT for testing.

2 Cylinders = 1 Sample

3	per	1	Placement Day
---	-----	---	---------------

Pay Factor Calculation

Sample Analysis

Pay factors shall be determined by statistical analysis of all samples at the end of the project.

OMT to perform statistical analysis on all acceptance concrete cylinder tests for project.

Pay factor analysis. This option is not applicable for Mix 9 Concrete.

1	per	1	Item Completion
---	-----	---	-----------------

Material Quality Assurance Processes

Portland Cement Concrete Mixtures, Latex Modified

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 2

Source Level Materials	Specification	Comments
LMC	902.13	Buy America Applicable

Plant or Product Qualification

Review of Misc Production Location

Limited Producer Check

General review of producer information. No production qualification required.

Production facility data maintained to track the material supply chain.

Address and low level information is maintained to provide data of facilities that produce materials in this category. Facilities that produce material in this category will be given a status of "Project Specific Review Required."

1 per 1 Prior to Source Request

Evaluation of Production Facility for CTD Materials

Facility Qualification

The mobile mixers for use on each project shall be calibrated and approved by OMT personnel prior to use and any time they leave the jobsite.

Detailed Qualification of Production Facility.

Inspection of mobile mixer

1 per 1 Prior to Usage on Project

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

A project specific mix design must be attached to the documents portion of the source submission request. This mix design will be evaluated during the source submission review process.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

The manufacturer/producer shall comply with: Title 23 US Code Section 313 and 23 CFR Part 635.410 for iron and steel products and manufactured products; and 2 CFR part 184 for construction materials. A statement of compliance with 23 CFR part 635.410 for iron and steel products and manufactured products, or 2 CFR part 184 for construction materials from the manufacturer/producer must be included with every delivery to the project and must identify where the material was manufactured/produced.

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer to perform concrete plastic tests.

Concrete Plastic Tests

Typically one slump and one air entrainment.

1 per 1 Delivery to Project

Chemical Tests

Material Sampling and Testing

The latex emulsion and other admixtures are sampled for each lot of respective material used at the project site. The material sample are submitted to the Administration laboratory for verification. The supplier shall furnish certifications as specified in TC-1.03.

Material Quality Assurance Processes

Portland Cement Concrete Mixtures, Latex Modified

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 2 of 2

Submit a sample or certification (TC 1.03 w/ test data) of each component to OMT for verification.

Utilized for Mobile Mixers

2 Quarts - Latex, 1 Quart Each Admixture in a Plastic Jug

1 per 1 Lot / Production Day

Concrete Sampling and Testing

Material Sampling and Testing

The Administration inspector performs slump and air content determination and cylinder molding of the plastic mixture. Concrete cylinder specimens are delivered to the Administration Laboratory for compressive strength testing. Final acceptance is based on strength results. One test is to be performed prior to material placement, the second test occurs half way through placement.

Submit sample to OMT for testing.

Latex Concrete "Mini" Cylinders (3" x 6")

2 per 1 Truck

Pay Factor Calculation

Sample Analysis

OMT to perform statistical analysis on all acceptance concrete cylinder tests for project.

Pay factor analysis

1 per 1 Item Completion

Material Quality Assurance Processes

Precast Concrete, Drainage Structures

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 3

Source Level Materials	Specification	Comments
Drainage Inlet	305	Buy America Applicable
Junction Box	811	Buy America Applicable
Manhole Section	305	Buy America Applicable
Miscellaneous Precast Concrete Drainage Structure	305	Buy America Applicable
Precast Concrete Endwall	305	Buy America Applicable
Precast Concrete Manhole	305	Buy America Applicable

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

The Concrete Technology Division shall visit the production facility to inspect its production processes. During this visit the Quality Control plan will be reviewed, once approved it will be kept on file with CTD. The contents on an approved quality control are outlined in Section 915 on the standard specifications.

Facility to be qualified (and re-qualified annually) for state projects before it is sourced to a project.

Once approved the facility will be subject to unannounced periodic inspection. Responsibility for plant QC operations may be rescinded and the plant subjected to continuous direct inspection by CTD if the plant is found to be in non-compliance with specifications.

1 per 12 Months

Quality Control for Aggregate Material Gradation

Facility QA/QC

Producer to perform gradation quality control as per AASHTO T27.

Calculate F.M. with each gradation of fine aggregates.

17 lbs for coarse; 500 grams for fine

1 per 7 Production Day

SHA Acceptance Review for Aggregate Material Gradation.

Facility QA/QC

Concrete Technology representative to witness gradation quality control process of producer.

.

1 per 30 Production Day

Quality Control for Aggregate Moisture Content

Facility QA/QC

Producer to perform moisture quality control as per MSMT 251.

17 lbs for coarse; 500 grams for fine

1 per 1 Production Day

SHA Acceptance Review of Aggregate Moisture Content

Facility QA/QC

Material Quality Assurance Processes

Precast Concrete, Drainage Structures

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 2 of 3

Concrete Technology representative to witness moisture quality control

1 per 30 Production Day

SHA Acceptance Review for Steel Reinforcing

Facility QA/QC

Deformed Steel bars to be sampled by producer. A Concrete Technology representative will witness the sampling, fill out Form 88, and deliver sample to the OMT laboratory.

3 - 2 foot lengths

1 per 90 Production Day

SHA Acceptance Review for Admixture Materials

Facility QA/QC

Producer to sample all admixture materials and provide to Concrete Technology for evaluation.

Samples to be taken from last available location before being added to the mixture.

1 Quart in a Screw Top Can

1 per 30 Production Day

SHA Acceptance Review for Cementitious Materials.

Facility QA/QC

Producer to sample all cementitious materials and provide to Concrete Technology for evaluation, as per 902.03.

Sampling to be taken at last available location before introduction to mix.

10 lbs in a Plastic Jug

1 per 3 Months

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Material Producer must be on qualified lists and associated correctly prior to source approval. If this cannot be accomplished the source will be rejected.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Material Production

Notification of Production for CTD materials

Production Notification

Material Quality Assurance Processes

Precast Concrete, Drainage Structures

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 3 of 3

Producer to notify the Concrete Technology Division prior to production at concrete@sha.state.md.us. Please provide the design standard with the notification.

New production required 5 days notice for a contract's first production, 2 days notice thereafter. Stock items require notice between 48 hours prior to shipping and end of shipping day. Producer to notify OMT of the design standard that will be adhered to during manufacturing.

1 per 1 Prior to Usage on Project

CTD Material Review and Acceptance

Material Certification for Project Usage

Submit copies of any shop drawings, specifications, or plan sheets to the designer as per the Invitation for Bids document.

No precast drainage structure may be produced without the use of an approved SHA Standard drawing, a Manufacturer's Approved Substitute standard (with required approvals), or an approved shop drawing.

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

The manufacturer/producer shall comply with: Title 23 US Code Section 313 and 23 CFR Part 635.410 for iron and steel products and manufactured products; and 2 CFR part 184 for construction materials. A statement of compliance with 23 CFR part 635.410 for iron and steel products and manufactured products, or 2 CFR part 184 for construction materials from the manufacturer/producer must be included with every delivery to the project and must identify where the material was manufactured/produced.

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer to visually inspect precast elements, record all QC stamps on a Form 14, and verify stamp matches the certification. Collect manufacture's certification and submit it along with the Form 14 to MMD for clearance.

1 per 1 Delivery to Project

Material Quality Assurance Processes

Precast Concrete, Miscellaneous

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 2

Source Level Materials	Specification	Comments
Concrete Crib Wall		Buy America Applicable
Precast Concrete Hand Holes	811.02.01	Buy America Applicable
Precast Concrete Traffic Barrier	950.01	Buy America Applicable
Precast Curb		Buy America Applicable
Precast Pilaster Cap		Buy America Applicable
Valve Vault		Buy America Applicable

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

The Concrete Technology Division shall visit the production facility to inspect its production processes. During this visit the Quality Control plan will be reviewed, once approved it will be kept on file with CTD. The contents on an approved quality control are outlined in Section 915 on the standard specifications.

Facility to be qualified (and re-qualified annually) for state projects before it is sourced to a project.

Once approved the facility will be subject to unannounced periodic inspection.

1 per 3 Year

Quality Control for Aggregate Material Gradation

Facility QA/QC

Producer to perform gradation quality control as per AASHTO T27

Perform additional tests when there is a change in material due to deliveries or segregation. Calculate F.M. with each gradation of fine aggregates.

17 lbs for coarse; 500 grams for fine

1 per 7 Production Day

SHA Acceptance Review for Aggregate Material Gradation.

Facility QA/QC

Concrete Technology representative to witness gradation quality control process of producer.

.

1 per 2 Year

Quality Control for Aggregate Moisture Content

Facility QA/QC

Producer to perform moisture quality control as per MSMT 251.

Sample to be taken from stockpile (or belt if unblended).

17 lbs for coarse; 500 grams for fine

1 per 1 Production Day

SHA Acceptance Review of Aggregate Moisture Content

Facility QA/QC

Material Quality Assurance Processes

Precast Concrete, Miscellaneous

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 2 of 2

Concrete Technology representative to witness moisture quality control

1 per 2 Year

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Material Producer must be on qualified lists and associated correctly prior to source approval. If this cannot be accomplished the source will be rejected.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Material Production

Notification of Production for CTD materials

Production Notification

Producer to notify the Concrete Technology Division between 48 hours prior to shipment and end of shipping day at concrete@sha.state.md.us.

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

The manufacturer/producer shall comply with: Title 23 US Code Section 313 and 23 CFR Part 635.410 for iron and steel products and manufactured products; and 2 CFR part 184 for construction materials. A statement of compliance with 23 CFR part 635.410 for iron and steel products and manufactured products, or 2 CFR part 184 for construction materials from the manufacturer/producer must be included with every delivery to the project and must identify where the material was manufactured/produced.

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

The supplier shall furnish certifications in compliance with TC-1.03 without test results. If the contractor wishes to substitute round man-holes for square (or vice versa) he must have written approval from the Project Engineer. A copy of this approval will be submitted to OMT for materials clearance.

Project Engineer to visually inspect precast elements, record all QC stamps on a Form 14, and verify stamp matches the certification. Collect manufacture's Certification and submit it along with the Form 14 to MMD for clearance.

1 per 1 Delivery to Project

Material Quality Assurance Processes

Precast Concrete, Pipe

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 3

Source Level Materials	Specification	Comments
Precast Concrete Elliptical Pipe	905	Buy America Applicable
Precast Concrete End Sections	905	Buy America Applicable
Precast Concrete Pipe	905	Buy America Applicable
Precast Concrete Pipe - Non-reinforced	905	
Small Precast Box Culvert (<97")	305.03.06	Buy America Applicable

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

Facility to be qualified (and re-qualified annually) for state projects before it is sourced to a project.

Precast Concrete Pipe facilities to be qualified annually. During this evaluation sample pipe will be tested for absorption, compression, strand wire tension, three edge bending, and pressure testing.

1 per 1 Prior to Source Request
1 per 12 Months

SHA Acceptance Facility Visit for CTD Material Production

Facility Qualification

Quality Assurance of Pipe Production

A sample pipe shall be three edge tested to the point of 0.01 crack formation.

1 per 30 Production Day
1 per 1000 Each

Quality Control for Aggregate Material Gradation

Facility QA/QC

Producer to perform gradation quality control as per AASHTO T27

Perform additional tests when there is a change in material due to deliveries or segregation. Calculate F.M. with each gradation of fine aggregates.

17 lbs for coarse; 500 grams for fine

1 per 7 Production Day

SHA Acceptance Review for Aggregate Material Gradation.

Facility QA/QC

Concrete Technology representative to witness gradation quality control process of producer.

1 per 30 Production Day

Quality Control for Aggregate Moisture Content

Facility QA/QC

Material Quality Assurance Processes

Precast Concrete, Pipe

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 2 of 3

Producer to perform moisture quality control as per MSMT 251.

17 lbs for coarse; 500 grams for fine

1 per 1 Production Day

SHA Acceptance Review of Aggregate Moisture Content

Facility QA/QC

Concrete Technology representative to witness moisture quality control

1 per 30 Production Day

SHA Acceptance Review for Admixture Materials

Facility QA/QC

Producer to sample all admixture materials and provide to Concrete Technology for evaluation.

Samples to be taken from last available location before being added to the mixture.

1 Quart in a Screw Top Can

1 per 30 Production Day

SHA Acceptance Review for Cementitious Materials.

Facility QA/QC

Producer to sample all cementitious materials and provide to Concrete Technology for evaluation, as per 902.03.

Samples to be taken from last available location before introduction to the mixture.

10 lbs in a Plastic Jug

1 per 1 Months
1 per 10 Production Day

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Material Producer must be on qualified lists and associated correctly prior to source approval. If this cannot be accomplished the source will be rejected.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Material Production

Notification of Production for CTD materials

Production Notification

Material Quality Assurance Processes

Precast Concrete, Pipe

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 3 of 3

Producer to notify the Concrete Technology Division between 48 hours prior to shipment and end of shipping day at concrete@sha.state.md.us.

1 per 1 Prior to Usage on Project

CTD Material Review and Acceptance

Material Certification for Project Usage

Plant QC Personnel to perform lot inspection

QC Personnel to perform pipe inspections, stamp each pipe, and stamp shipping ticket to certify pipe for shipment.

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

The manufacturer/producer shall comply with: Title 23 US Code Section 313 and 23 CFR Part 635.410 for iron and steel products and manufactured products; and 2 CFR part 184 for construction materials. A statement of compliance with 23 CFR part 635.410 for iron and steel products and manufactured products, or 2 CFR part 184 for construction materials from the manufacturer/producer must be included with every delivery to the project and must identify where the material was manufactured/produced.

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer to visually inspect pipe, record all QC Stamps from pipe on a Form 14, and verify a pipe stamp matches the certification. Collect manufacture's Certification and submit it along with the Form 14 to MMD for Clearance.

1 per 1 Delivery to Project

Material Quality Assurance Processes

Precast Concrete, Prestressed and Structural

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 3

Source Level Materials	Specification	Comments
Large Precast Box Culvert (>96")	420.02.03	Buy America Applicable
Other Structural Precast Concrete Sections	Special Provisions	Buy America Applicable
Precast Concrete Arch Culvert	Special Provisions	Buy America Applicable
Prestressed Concrete Girder	440	Buy America Applicable
Prestressed Concrete Slab	440	Buy America Applicable

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

The producer's quality control plan is submitted to the Concrete Technology Division for review and approval. A "Facilities Check" inspection may be conducted.

Facility to be qualified (and re-qualified annually) for state projects before it is sourced to a project.

1 per 12 Months

Quality Control for Aggregate Material Gradation

Facility QA/QC

Producer to perform gradation quality control as per AASHTO T27.

Perform additional tests when there is a change in material due to deliveries or segregation. Calculate F.M. with each gradation of fine aggregates.

17 lbs for coarse; 500 grams for fine

1 per 7 Production Day

SHA Acceptance Review for Aggregate Material Gradation.

Facility QA/QC

Concrete Technology representative to witness gradation quality control process of producer.

1 per 30 Production Day

Quality Control for Aggregate Moisture Content

Facility QA/QC

Producer to perform moisture quality control as per MSMT 251.

17 lbs for coarse; 500 grams for fine

1 per 1 Production Day

SHA Acceptance Review of Aggregate Moisture Content

Facility QA/QC

Material Quality Assurance Processes

Precast Concrete, Prestressed and Structural

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 2 of 3

Concrete Technology representative to witness moisture quality control

1 per 30 Production Day

SHA Acceptance Review for Steel Reinforcing

Facility QA/QC

Deformed Steel bars to be sampled by producer. A Concrete Technology representative will witness the sampling, fill out Form 88 and deliver sample to the OMT laboratory.

3 - 2 foot lengths

1 per 90 Production Day

SHA Acceptance Review for Admixture Materials

Facility QA/QC

Producer to sample all admixture materials and provide to Concrete Technology for evaluation.

Samples to be taken from last available location before being added to the mixture.

1 Quart in a Screw Top Can

1 per 30 Production Day

SHA Acceptance Review for Cementitious Materials.

Facility QA/QC

Producer to sample all cementitious materials and provide to Concrete Technology for evaluation.

Samples to be taken from last available location before introduction to mixture.

1 per 1 Months

1 per 10 Production Day

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Material Producer must be on qualified lists and associated correctly prior to source approval. If this cannot be accomplished the source will be rejected.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Material Production

Notification of Production for CTD materials

Production Notification

Material Quality Assurance Processes

Precast Concrete, Prestressed and Structural

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 3 of 3

Producer to submit Shop Drawings and provide Production Notice to the Concrete Technology Division (concrete@sha.state.md.us) 30 business days before commencing production of any prestressed or other structural concrete items.

1 per 1 Prior to Usage on Project

CTD Material Review and Acceptance

Material Certification for Project Usage

Direct Inspection at the casting facility by an SHA representative is required due to the nature of the structure. Pre-pour meetings at the plant take place to outline the casting process and also to define the responsibilities of the QC staff as well as the inspection process and quality assurance.

Direct Inspection at Facility during Casting, Approval of Material for Project Use.

Direct inspection at facility during casting by an OMT representative.

1 per 1 Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

The manufacturer/producer shall comply with: Title 23 US Code Section 313 and 23 CFR Part 635.410 for iron and steel products and manufactured products; and 2 CFR part 184 for construction materials. A statement of compliance with 23 CFR part 635.410 for iron and steel products and manufactured products, or 2 CFR part 184 for construction materials from the manufacturer/producer must be included with every delivery to the project and must identify where the material was manufactured/produced.

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

The Project Engineer shall verify that the structural components as received are stamped with an inspection approval logo. Additionally, the pieces should have the piece number and the date cast marked on each piece. Materials inspection forms and certifications will accompany shipment.

Project Engineer to visually inspect precast elements, record all stamps on a Form 14, and verify stamps match the certification. Collect manufacture's certification and submit it along with the Form 14 to MMD for clearance.

1 per 1 Delivery to Project

Material Quality Assurance Processes

Precast Concrete, Walls

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 1 of 3

Source Level Materials	Specification	Comments
Precast MSE Wall Components	Special Provisions	Buy America Applicable
Precast Noise Barrier Component	455	Buy America Applicable

Plant or Product Qualification

Evaluation of Production Facility for CTD Materials

Facility Qualification

The noise panel production facility must be approved prior to a project source request. The producer shall submit the QC plan to the Concrete Technology Division for review and approval. QC personnel must be certified as a MDSA Certified Concrete Field Technician.

Facility to be qualified (and re-qualified annually) for state projects before it is sourced to a project.

1 per 1 Prior to Usage on Project
1 per 12 Months

Quality Control for Aggregate Material Gradation

Facility QA/QC

Producer to perform gradation quality control as per AASHTO T27

Perform additional tests when there is a change in material due to deliveries or segregation. Sample taken from stockpile (or belt if unblended). Calculate F.M. with each gradation of fine aggregates.

17 lbs for coarse; 500 grams for fine

1 per 7 Production Day

SHA Acceptance Review for Aggregate Material Gradation.

Facility QA/QC

Concrete Technology representative to witness gradation quality control process of producer.

1 per 30 Production Day

Quality Control for Aggregate Moisture Content

Facility QA/QC

Producer to perform moisture quality control as per MSMT 251.

Sample taken from stockpile (or belt if unblended)

17 lbs for coarse; 500 grams for fine

1 per 1 Production Day

SHA Acceptance Review of Aggregate Moisture Content

Facility QA/QC

Concrete Technology representative to witness moisture quality control

Material Quality Assurance Processes

Precast Concrete, Walls

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 2 of 3

1 per 30 Production Day

SHA Acceptance Review for Admixture Materials

Facility QA/QC

Producer to sample all admixture materials and provide to Concrete Technology for evaluation.

Samples to be taken from last available location before being added to the mixture.

1 Quart in a Screw Top Can

1 per 30 Production Day

SHA Acceptance Review for Cementitious Materials.

Facility QA/QC

Producer to sample all cementitious materials and provide to Concrete Technology for evaluation.

Samples to be taken from last available location before introduction to mixture.

10 lbs in a Plastic Jug

1 per 1 Months
1 per 10 Production Day

Source Approval

Source Submission

Source of Supply Submittal

A name and address of the material sources of supply shall be sent to MMD for review. The producer is the organization that creates the material, the supplier is the one that delivers it to the project.

Material Producer must be on qualified lists and associated correctly prior to source approval. If this cannot be accomplished the source will be rejected.

Source of Supply Processing

1 per 1 Prior to Usage on Project

Material Production

Notification of Production for CTD materials

Production Notification

Producer to submit Shop Drawings and provide Production Notice to the Concrete Technology Division (concrete@sha.state.md.us) 30 business days before commencing production of any precast MSE or Noise Barrier components.

1 per 1 Prior to Usage on Project

CTD Material Review and Acceptance

Material Certification for Project Usage

Direct Inspection at the casting facility by an SHA representative is required due to the nature of the structure. Pre-pour meetings at the plant take place to outline the casting process and also to define the responsibilities of the QC staff as well as the inspection process and quality assurance.

Direct Inspection at Facility during Casting, Approval of Material for Project Use.

1 per 1 Prior to Usage on Project

Material Quality Assurance Processes

Precast Concrete, Walls

Concrete Technology Division

QA / Frequency Guide, Source Level Material Listing Page 3 of 3

Test Panel Verification

Material Certification for Project Usage

A test panel will be constructed at the production facility that matches the contract requirements (including an OMT approved mixture). This panel shall be approved by the Landscape Programs Division and the Office of Structures before full scale production proceeds.

Test panel to be evaluated by OMT, LOD and OOS.

2 x 2 test panel to be reviewed by OMT (approved mixture and production) and LOD/OOS (contract conformance).

1 per 1

Prior to Usage on Project

Project Construction

CTD Material Verification

Material Verification

The manufacturer/producer shall comply with: Title 23 US Code Section 313 and 23 CFR Part 635.410 for iron and steel products and manufactured products; and 2 CFR part 184 for construction materials. A statement of compliance with 23 CFR part 635.410 for iron and steel products and manufactured products, or 2 CFR part 184 for construction materials from the manufacturer/producer must be included with every delivery to the project and must identify where the material was manufactured/produced.

Project Engineer shall ensure that the material is from the approved source of supply and that it is fit for usage.

Project Engineer shall verify that the precast components received are stamped with an inspection approval logo. The pieces should have the piece number and the date cast marked on each piece. Form 14s from the materials inspection and certifications will accompany shipment.

Project Engineer to visually inspect precast elements, record all stamps on a Form 14, and verify stamps match the certification. Collect manufacture's certification and submit it along with the Form 14 to MMD for clearance.

1 per 1

Delivery to Project