

Georgia Department of Transportation
Office of Materials and Research

Standard Operating Procedure (SOP) 18
Inspection of Gray Iron Drainage Castings

I. General

This Standard Operating Procedure provides a means whereby qualified domestic foundries and distributors can utilize certified personnel to fulfill supplier's responsibility for furnishing gray iron castings conforming in every detail to the Georgia Department of Transportation Specifications, Project Plans or Standard Plans. Approval of non-domestic foundries is described in [Section II.C](#).

II. Acceptance Requirements

Each foundry and distributor must qualify under the acceptance requirements set forth herein. Qualified foundries and distributors are defined as those with a Georgia Department of Transportation approved Quality Control Program, a certified technician (domestic foundries only), and an acceptable record of production of quality gray iron castings. The [Office of Materials and Research](#) will publish, at least annually, a list of all foundries, which have qualified under the program set forth in detail in this Standard Operating Procedure. This list is identified as [Qualified Products List 11,"Gray Iron Drainage Castings"](#).

A. Application to Furnish Gray Iron Castings

A foundry and/or distributor who wishes to furnish gray iron castings to Georgia Department of Transportation projects must submit written application for approval to the Inspection Services Branch of the [Office of Materials and Research](#). This application must be submitted each year and include at least the following information:

1. The foundry and/or distributor name, address, names of the principal officers of the company, names of production managers, and name of the certified casting technician.
2. An outline of the foundry and/or distributor's Quality Control Program. This should include a brief description of the equipment and materials that will be used in the fabrication and inspection of iron castings.

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B. [Yearly Guarantee](#)

In addition, the foundry and/or distributor will submit a notarized [Yearly Guarantee](#) stating that all iron castings furnished for use on Georgia Department of Transportation projects are warranted to meet all requirements of the governing specifications and approved plans. A "[Yearly Certification and Guarantee](#)" is attached for your completion and submittal to the Department.

The Guarantee must carry the notarized signature of a responsible officer of the foundry and/or distributor with the authority to bind the company to contract.

Applicants for approval as a foundry or distributor must schedule an initial inspection with the Inspection Services Branch of the [Office of Materials and Research](#). This inspection will include a review of the quality control techniques, quality control records and equipment. Provided the results of the initial inspection indicate an ability to consistently furnish gray iron castings which conform to the governing specifications and approved plan drawings and the foundry and/or distributor has a certified casting technician (domestic foundries only) approved by the Georgia Department of Transportation, the foundry and/or distributor will then be designated as a qualified foundry and/or distributor.

C. **Non-domestic Foundries**

Non-domestic foundries shall comply with all requirements listed in this SOP except those requirements pertaining to the qualification of a certified technician and the approval to perform in-house testing of flexure and tension bars for material acceptance. The Department will inspect all castings manufactured by non-domestic foundries at their local distribution location. The Department will perform all flexure and/or tension testing of cast-on bars for material acceptance. All test bars from non-domestic foundries will be cast-on actual products and conform to AASHTO M306, Section 9.1.3 and AASHTO M105. The Department will weigh a representative random sample of finished castings at the distribution location prior to final acceptance. The distributor is required to furnish a certified scale capable of performing the random weight verification.

III. Foundry and Distributor Responsibilities—General

A. **Quality Control**

Foundries will be required to cast each day, at their option, either two flexure test specimens or two tension test specimens that represent the iron used in all items cast. In addition, each flexure or tension test specimen shall have legibly cast into it the date the bar was cast. This date shall be the same as the date cast into each gray iron drainage casting that it represents. Tension test specimens shall have cast date transferred by stenciling into machined bar.

As soon as practical after casting, the two test bars shall be forwarded, transportation charges prepaid, to the [Office of Materials and Research](#), Attention: Inspection Services Branch, 15 Kennedy Drive, Forest Park, Georgia 30297. The bars will be accompanied by a certification representing each day's production. This certification shall include a statement certifying that all units were cast using iron represented by the test bars submitted to the [Office of Materials and Research](#). In lieu of submitting test bars to the Department, foundries may seek approval to test bars at their own facility. Foundries, which elect this option, will be required to get their lab certified by the Department.

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Foundries electing to test bars at their own facility will be required to submit a certified test report listing actual flexure or tension strengths as determined in accordance with AASHTO M105.

B. Certification of Technician

Personnel selected by foundries and/or distributors to be certified casting technicians (CCT) shall establish their qualifications and proficiency by successfully completing written, oral, and/or on-the-job examinations prescribed by the [Office of Materials and Research](#). Application for examination shall be in writing and directed to the following address:

Georgia Department of Transportation

Office of Materials and Research

Inspection Services Section

15 Kennedy Drive

Forest Park, Georgia 30297

C. Technician Responsibilities

The technician's responsibilities shall include supervising the foundry and/or distributor's quality control program. The technician will take appropriate action to insure that all castings are fabricated to meet the governing specifications. This shall include insuring that each casting date represented has test bars that meet the requirements set forth in AASHTO M105. In addition, to insure the Department that each casting fabricated for Georgia Department of Transportation usage meets all governing Specifications, Project Plans, or Standard Plans, the technician shall personally inspect each finished casting and reject any casting which fails to meet the requirements. All gray iron drainage castings shall be smoothed and cleaned. Only castings that are of uniform quality and free of cracks, shrinks, porosity, blow holes or other defects may be stamped approved by the certified casting technician (CCT). If the inspection of an item discloses it meets the workmanship, weight and dimension requirements of the plans and specifications, the technician shall then personally place a CCT stamp on each casting. The Department shall issue the stamp for use by the certified technician. This stamp shall remain the property of the Department. This stamp shall not be placed on any casting prior to completion of the fabrication and inspection process.

The Department reserves the right to revoke the privileges of the Certified Casting Technician at any time he/she fails to provide proper assurances that he/she is operating in accordance with this procedure, or when confidence is lost in the technician's capability to perform the duties as outlined.

A technician may be placed in a "Special Control" status in lieu of revocation whenever GDOT feels that the technician is experiencing temporary problems with performance of quality control and approval duties. If this occurs, the technician will be notified of his/her status and corrections must be made and satisfactory practices must be strictly adhered to for 30 calendar days. GDOT will inform the technician of the conditions under which he/she must operate during the interim period. A technician can only remain on "Special Control" for 30 calendar days, after which he/she must have shown satisfactory performance or have privileges revoked indefinitely.

IV. Office of Materials and Research Responsibilities

The [Office of Materials and Research](#) will monitor each foundry and/or distributor's quality control procedures. This will include a review of the records of production, shipment, certification, and inspection. In addition, the Department shall randomly perform tests and visually inspect finished castings that have been approved by the certified casting technician by evidence of the CCT stamp. The [Office of Materials and Research](#) shall provide the foundry and/or distributors with a copy of all test reports for any samples secured at that location and these reports shall also become part of the certified technician's quality control records.

As described in [Section II.C](#), the Department will perform a visual inspection of all non-domestic castings. Castings that pass visual inspection and have acceptable test bar results will be marked with a GDT stamp as evidence of final approval.

V. Reporting

All foundries and/or distributors shall comply with the approved system of reporting each shipment of iron castings to a Department of Transportation Construction project. Each shipment shall be reported on a [Gray Iron Castings Shipment Report](#). These reports shall be submitted to the [Office of Materials and Research](#) within one week of shipment. The certified casting technician shall complete this form and certify the inspection date to be correct. In addition, all shipment reports must be accompanied by test reports showing acceptable flexure or tension values for each date represented.

The [Office of Materials and Research](#) will review each report and if the information provided is complete and correct, the reports will be distributed as part of the documentation for project and/or foundry approval.

VI. Removal of Foundries and/or Distributors from Qualified Products List 11

The State Materials and Research Engineer will remove any foundry and/or distributor from the approved list due to failure to comply with any of the requirements of the governing specifications, approved plan drawings as well as failure to comply with any of the requirements in Laboratory SOP 18.

VII. Project Acceptance of Gray Iron Drainage Castings

The field engineer may accept CCT or GDT stamped iron castings at the project site provided there is no evidence of damage due to shipping and handling.

Georgene M. Geary, P.E.
State Materials and Research Engineer

Glenn W. Durrence, P.E.
Director of Construction

Yearly Guarantee

This is to guarantee that all _____
(Type of Material)

furnished to State of Georgia projects by _____
(Company Name and Location)

during the next twelve (12) months will meet the appropriate governing requirements of the Georgia Department of Transportation Specifications. I further warrant that material furnished to State of Georgia Projects will be replaced without cost to the purchaser and State of Georgia when found not in conformity with any of the specified requirements. I accept full responsibility for determining the governing Specifications and details which apply to each order.

I further warrant that all steel products shipped to Georgia Department of Transportation projects are made from domestic steel and iron and that no foreign billets are used directly in the manufacture of these products.

I _____ do hereby affirm that as _____
(Typed Name) (Official Title)

of _____ I am legally responsible to bind said
organization to
(Company Name)

the above warranty and certification.

Signed _____

Date _____

Notary Public _____

Date _____

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
OFFICE OF MATERIALS AND RESEARCH**
GRAY IRON CASTINGS SHIPPING REPORT

Manufactured By: _____ Location _____

Contractor _____ Date Shipped _____

GDOT Std. #						
Date Cast						
Quantity						
Test Bar Tensile Strength						
CCT #						

I certify the material covered by this report was manufactured to comply with the Department of Transportation, State of Georgia Standard Specifications Section 854.2.01. I further certify that the material herein has been subjected to the required testing and inspection as evidenced by the above noted Certified Casting Technician (CCT) number stamped on all castings shipped. A copy of actual certification test data is attached and remains on file in our office.

Inspector Signature

Subscribed and sworn to before me, this _____
day of _____, 20_____

Notary Public