



## **Grease Trap Policy**

### **I. PURPOSE**

This policy is designed to implement and enforce the oil and grease discharge rules of the Sewer Use Ordinance Chapter 23 of the Charlotte City Code, Article III, Section 23-80. Nothing in this policy shall negate or override requirements contained in the Ordinance.

To ensure compliance with the City's Sewer Use Ordinance, this policy provides specific standards for oil and grease interceptors' location, type, size, installation, construction, and maintenance. This policy regulates grease discharges to the Publicly Owned Treatment Works (POTW) and may require the issuance of permits to certain non-domestic users and enforcement of general requirements for all users (commercial and residential).

Charlotte Water - Environmental Management Division-System Protection's (CLTWater-EMD/SP) goal with this policy is to prevent excessive introduction of oil and grease into the sewer system and wastewater treatment plants. Oil and Grease have the potential for creating sanitary sewer overflows, hazardous conditions in the collection system, treatment plant inhibitions, increased treatment cost, fines and other cost for the City.

### **II. OVERVIEW**

All Food Service Establishments and other Users shall provide means of preventing grease and oil discharges to the Sewer Collection System. Where a grease and oil interceptor currently exists or is required by Charlotte Water (CLTWater), the Control Authority, it shall be maintained for continuous, satisfactory and effective operation by the owner, leaseholder or operator at his expense. Grease and oil interceptors shall be of a type and capacity approved by the Mecklenburg County Engineering & Building Standards Department and shall be located as to be readily accessible for cleaning and inspection. All Users are encouraged to use proper grease handling procedures.

It is unlawful for any facility producing oil and grease waste to discharge into the City's collection system without authorization from the Control Authority. Authorization shall be given to the users in the Control Authority's Grease Control Program in the form of wastewater discharge permit. Upon initial inspection and approval, a certificate shall be issued allowing the discharge of such wastes into the collection system. Each oil and grease permit shall be issued for a time not longer than five years from the date of the permit. The user shall apply for permit re-issuance a minimum of ninety (90) days prior to the expiration of the user's existing permit. The terms and conditions of the permit may be subject to modification by the Control Authority during the term of the permit as Codes and Policies are modified. The user shall be informed of any proposed changes in the issued permit at least sixty days prior to the effective date of the change(s). Any changes or new conditions in the permit shall include a reasonable schedule for compliance.

As a condition precedent to the granting of an oil and grease permit, the recipient shall agree to hold harmless the City and the City's employees from any liabilities arising from the user's operations under this permit.

### III. AUTHORITY

City of Charlotte Sewer Use Ordinance Synopsis (see actual Ordinance for full language)

#### Section 23-79. **Prohibited Discharge Standards**

- (a) *General Prohibitions.* No user shall discharge, or cause to be discharged, into the POTW, any pollutant or wastewater which causes interference or pass through. These general prohibitions in this section apply to all users of the POTW.
- (b) *Specific Prohibitions.* No user shall discharge or cause to be discharged in the Publicly Owned Treatment Works (POTW) the following:
  - (2) Solid or viscous pollutants in amounts which may cause obstruction to the flow or other interference in the POTW.
  - (12) Any pump and haul waste, except at discharge points designated by CLTWater in accordance with section 23-81 of this article.
  - (15) Any removed substances to include, but not be limited to, sludge, screening, or other residues from the pretreatment of waste water.
  - (16) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin, in amounts that will cause interference of pass through.
  - (18) Any pollutant that will emulsify grease or oil or cause grease or oil to solidify or become more viscous.

#### Section. 23-92. **Authority to Inspect and Sample**

- (a) CLTWater personnel and other authorized employees of the city, bearing proper identification, will inspect the facilities of any user to ascertain whether the purpose of this article is being met and all requirements are being complied with. Persons or occupants of premises where wastewater is created or discharged shall allow CLTWater, the approval authority and the Environmental Protection Agency or their representatives ready access at all times to all parts of the premises to perform inspection, sampling, records examination and copying or other duties. CLTWater, the approval authority and the Environmental Protection Agency shall have the right to set up on the user's property such devices as are necessary to conduct sampling, inspection, compliance monitoring and/or metering operations. Where a user has security measures in force which would require identification and clearance before entry into his premises, the user shall make arrangements with his security guards so that, upon presentation of identification (identification being defined as the pieces of identification supplied by CLTWater, the state or the Environmental Protection Agency to their employees), personnel from CLTWater, the approval authority and the Environmental Protection Agency will be permitted to enter and perform their specific responsibilities without delay. Denial of CLTWater's, the approval authority's or the Environmental Protection Agency's, access to the user's premises or portions thereof shall be a violation of this article. Denial of access may also occur if a user fails to provide without unreasonable delay, such facilities, equipment, or devices as are reasonably necessary to permit personnel of CLTWater, the approval

authority or the Environmental Protection Agency from performing their duties in a safe manner. Unreasonable delays may constitute denial of access. Any delay of more than five minutes may be considered unreasonable.

- (b) At all times, CLTWater shall retain the authority to inspect the POTW and to sample and analyze wastewater in the POTW for any purpose. (Code 1985, § 23-57)

### **North Carolina State Plumbing Code**

*Authority:* Chapter 10 - Sections 1003.1 of the North Carolina State Plumbing Code Where required. Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the building drainage system, the public sewer, or treatment plant or processes.

1003.3.1 "A grease trap or interceptor shall be required to receive the drainage from fixtures and equipment with grease-laden waste located in food preparation areas, such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias or restaurants and clubs.

## **IV. DEFINITIONS**

- 1) **Control Authority** means Charlotte Water (CLTWater).
- 2) **Food service establishment** means any user engaged primarily or incidentally in the preparation of food for human or animal consumption, unless specifically excluded in this definition. The term "food service establishment" does not include any user discharging domestic wastewater from premises used exclusively for residential purposes, so long as the wastewater discharged by such user complies with section 23-79(a) and (b)(2), (6) and (16) of this article. The term "food service establishment" includes restaurants, motels, hotels, cafeterias, hospitals, schools, bars, delicatessens, meat processing operations, bakeries, and similar operations.
- 3) **Grease interceptor and grease trap** mean a device utilized to effect the separation of grease and oils from the wastewater effluent of a user. Such traps or interceptors may be of the outdoor or underground type normally of a 1,000-gallon capacity or more, or the under-the-counter package units which are typically less than 100-gallon capacity. For the purpose of this definition, the terms "trap" and "interceptor" are used interchangeably.
- 4) **Grease** includes oils, fats, cellulose, starch, proteins, wax, or grease, whether emulsified or not. These are substances that may solidify or become viscous at temperatures between 32 degrees Fahrenheit and 150 degrees Fahrenheit (zero degrees and 65 degrees Celsius).
- 5) **Grease Generating Establishments:** Grease generating establishments shall mean all retail food establishments, catering establishments, commercial food preparation facilities, meat processing facilities, and other establishments that may be capable of accumulating and discharging grease in to the Sewer System.
- 6) **Hauler:** One who transfers waste from the site of a customer to an approved site for disposal or treatment. The hauler is responsible for assuring that all federal, state and local regulations are followed regarding waste transport.

- 7) **Interference** means a discharge which, alone or in conjunction with discharges from other sources, inhibits and/or disrupts the POTW; its treatment processes and/or operations; and/or its sludge processes, use and/or disposal. Interference includes, but is not limited to, a discharge which alone or in conjunction with discharges from other sources causes, in whole or in part, a violation of one or more of the city's NPDES permits and/or non-discharge permits, and/or to the prevention of sewage sludge use or disposal in compliance with any of the following statutory/regulatory provisions or permits issued there under, or any more stringent state or local regulations: section 405 of the act (33 USC 1345), or any criteria, guideline or regulations developed pursuant to the Solid Waste Disposal Act (SWDA) (42 USC 6901 et seq.), the Clean Air Act, the Toxic Substances Control Act, the Marine Protection Research and Sanctuary Act (MPRSA), or more stringent state criteria, including those contained in any state sludge management plan prepared pursuant to title IV of the Solid Waste Disposal Act, applicable to the method of disposal or use employed by the POTW.
- 8) **Owner** means any individual, person from company association, society, corporation, or group upon whose property the building or structure is located or will be constructed.
- 9) **Publicly owned treatment works (POTW)** means a treatment works or a combination thereof, as defined by section 212 of the act (33 USC 1292), which is owned by the city. This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature; any conveyances which convey wastewater to the POTW treatment plant; plant and sewer maintenance personnel; and microorganisms associated with the treatment process itself.
- 10) **User** means any person who contributes, causes, or permits the contribution of wastewater into the POTW or proposes such a contribution.

## V. GENERAL REQUIREMENTS

- A. All Food Service Establishments shall have grease-handling facilities approved by the Control Authority. Establishments whose grease-handling facilities or methods are not adequately maintained to prevent floatable oils, fat or grease from entering the sewerage system shall be notified in writing of any noncompliance and required to provide a schedule whereby corrections will be accomplished. (For example, a collapsed or deteriorated baffle wall, leaks, *infiltration* and *inflow*, improperly located or missing tees, and any other deficiencies that will prevent the *grease interceptor or trap* from working properly.)
- B. All Food Service Establishments grease-handling facilities shall be subject to review, evaluation, and inspection by CLTWater representatives during normal working hours. Results of inspections will be made available to facility owner, leaseholder or operator. CLTWater may lend assistance and make recommendations for correction and improvement.
- C. Food Service Establishments receiving two (2) consecutive unsatisfactory evaluations or inspections may be subject to penalties or other corrective actions as provided for in the Sewer Use Ordinance.

- D. Food Service Establishments who continue to violate the CLTWater Grease Trap Policy Requirements may be considered grounds for discontinuance of sewer service.
- E. Food Service Establishments whose operations cause or allow excessive grease to discharge or accumulate in the CLTWater collection system may be liable to CLTWater for costs related to CLTWater service calls for line blockages, line cleanings, and line and pump repairs, etc. including all labor, materials, and equipment. Failure to pay all service-related charges may also be grounds for sewer service discontinuance
- F. Regularly scheduled maintenance of grease-handling facilities and equipment is required to ensure adequate operation. All grease traps must be cleaned (*by a CLTWater approved grease handling and hauling company*), maintained and repaired as needed. All grease traps must be pumped out completely. Outside traps should be pumped quarterly and small under the sink grease traps should be pumped monthly or at the discretion of the Control Authority. In the maintaining of grease interceptors, the owner, lease-holder or operator shall be responsible for approved grease removal and disposal, and shall maintain on-site records of dates, and means of disposal.

The introduction of emulsifying agents such as chemicals, solvents or enzymes directly or indirectly into the grease interceptor, other than what is considered typical business operational practices such as dishwashing or sanitation, is strictly prohibited. By approval from the Control Authority, products which reduce Fats, Oil and Grease (FOG), such as bacteria, may be used in addition to the regular grease interceptor maintenance program, but shall not be a consideration in determining grease interceptor sizing or maintenance frequency. In any case, the discharged waste shall comply with all applicable provisions of Charlotte Sewer Use Ordinance Chapter 23, Article III – Wastewater Discharge Restrictions and all State and Federal Laws.

- G. The user shall maintain a file on site of the records and other documents pertaining to the facility’s grease interceptor. The file contents shall include, but is not limited to, as-built drawings, record of inspections, log of pumping activities and receipts, log of maintenance activities, hauler information, disposal information and monitoring data, if required. The file shall be available at all times for inspection and review by the Control Authority. Records shall be maintained for a period of three (3) years except for as-built drawing which should remain for the life of the grease trap at the food service establishment.
- H. Owner shall be responsible for ensuring that no waste or wastewater pumped from the grease interceptor/grease trap is reintroduced back into the interceptor. This is a violation of the City Sewer Use Ordinance and can result in enforcement action.
- I. Any Food Service Establishment whose effluent discharge to the sewerage system is determined by CLTWater to cause interference in the conveyance or operation of the sewerage system may be required to sample its grease trap discharge and have it analyzed for oil and grease at the expense of the owner, lease-holder or operator. Results of such analyses shall be reported to CLTWater.

- J. All grease traps/interceptors shall be designed and installed to allow for complete access for inspection and maintenance of the inner chamber(s) and viewing and sampling (sanitary Tee) of effluent wastewater discharged to the sewer.
- K. Food Service Establishments shall adopt procedures for handling sources of floatable oils, fat or grease originating within their facility. A notice shall be permanently posted at a prominent place in the facility-advising employees of the procedures to be followed.
- L. Food Service Establishments shall develop and implement a Waste Minimization Plan pertaining to the disposal of grease, oils and food particles. "No Grease" signs or posters shall be required at each fixture that drains to the grease trap. CLTWater may render advice or make suggestions regarding the minimization of waste and posting of signs.
- M. Food Service Establishments shall train their employees on proper *grease* disposal practices and maintain documentation that each employee has received such training.

## VI. DESIGN STANDARDS

### Construction standards

#### A. New Facilities

1. All new Food Service Establishments shall be required to install a grease interceptor, according to the Control Authority and the CLTWater Grease Trap Policy and guidelines. Grease interceptors shall be adequately sized, with no interceptor less than 1,000 gallons total capacity unless otherwise approved by the Control Authority. All as-built drawings must be on file at the facility or readily accessible from an alternative location for the life of the grease trap at the food service establishment.
2. No new Food Service Establishments will be allowed to initiate operations until grease-handling facilities are installed and approved by the Control Authority.
3. All grease interceptors, whether singular or two tanks in series, must have each chamber directly accessible from the surface to provide means for servicing and maintaining the interceptor in working and operating condition.
4. A basket, screen or other intercepting device shall prevent passage into the drainage system of solids 1/2 inch or larger in size. The basket or device shall be removable for cleaning purposes.
5. Where food waste grinders connect to grease traps, a solids interceptor shall separate the discharge before connecting to the grease trap. Solids interceptors and grease interceptors shall be sized and rated for the discharge of the food waste grinder

#### B. Existing Facilities

1. All existing Food Service Establishments shall have grease-handling facilities, approved by the Control Authority. Food Service Establishments without any grease-handling facilities will be given a compliance deadline not to exceed six (6) months from date of

- notification to have approved and installed grease-handling equipment in compliance with this Policy.
2. Failure to come into compliance within the specified time frame will be considered a violation of the City of Charlotte Sewer Use Ordinance and may subject the facility to penalties and corrective actions or service discontinuance. Said installations shall meet the same requirements for design as for new facilities. (See A. above).
  3. In the event an existing Food Service Establishment's grease-handling facilities are either under-designed or substandard in accordance with this policy, the owner(s) will be notified in writing of the deficiencies and required improvements, and given a compliance deadline not to exceed six (6) months.
  4. For cases in which "outdoor" type grease interceptors are infeasible to install, existing Food Service Establishments will be required to install adequate and approved "under-the-counter" grease traps for use on individual fixtures including dishwashers, sinks, and other potentially grease-containing drains. Sizing of "under-the-counter" grease trap units will be in accordance with recommended commercial grease traps.
  5. The grease retention capacity rating in pounds shall be at least two (2) times the GPM flow rate of the type fixture which it serves. Flow control fittings must be provided to the inlet side of all "under-the-counter" units to prevent overloading of the grease trap and to allow for proper operation.
  6. The Control Authority approval of flow control devices and grease trap design must be obtained prior to installation.
  7. The location of "under-the-counter" units must be as near the source of the wastewater as physically possible.
  8. Wastewater from garbage grinders should not be discharged to grease traps/interceptors.
  9. In maintaining grease traps/interceptors, the owner(s) shall be responsible for the proper removal and disposal by appropriate means of the captured material and shall maintain records of the dates and means of disposal, which are subject to review by CLTWater. (See section V. F.)
  10. The exclusive use of enzymes, grease solvents, emulsifiers, etc. is not considered acceptable grease trap maintenance practice.

### **C. New Food Service Establishments in Existing Buildings**

1. Where practical, new Food Service Establishments locating in existing buildings will be required to comply with the grease trap Standards applicable to new facilities. (See A. above New Facilities).
2. Where physically impossible to install "outdoor" units, "under-the-counter" units may be allowed as with existing food service establishments provided prior approval of unit type, size, location, etc. is obtained from CLTWater.

## **VII. EXCEPTIONS**

Under certain circumstances, the interceptor size and location may necessitate special exceptions to this policy. If an exception to this policy is requested, the User must demonstrate that the size and location will not cause the facility any problems in meeting the discharge requirements of the Control Authority.

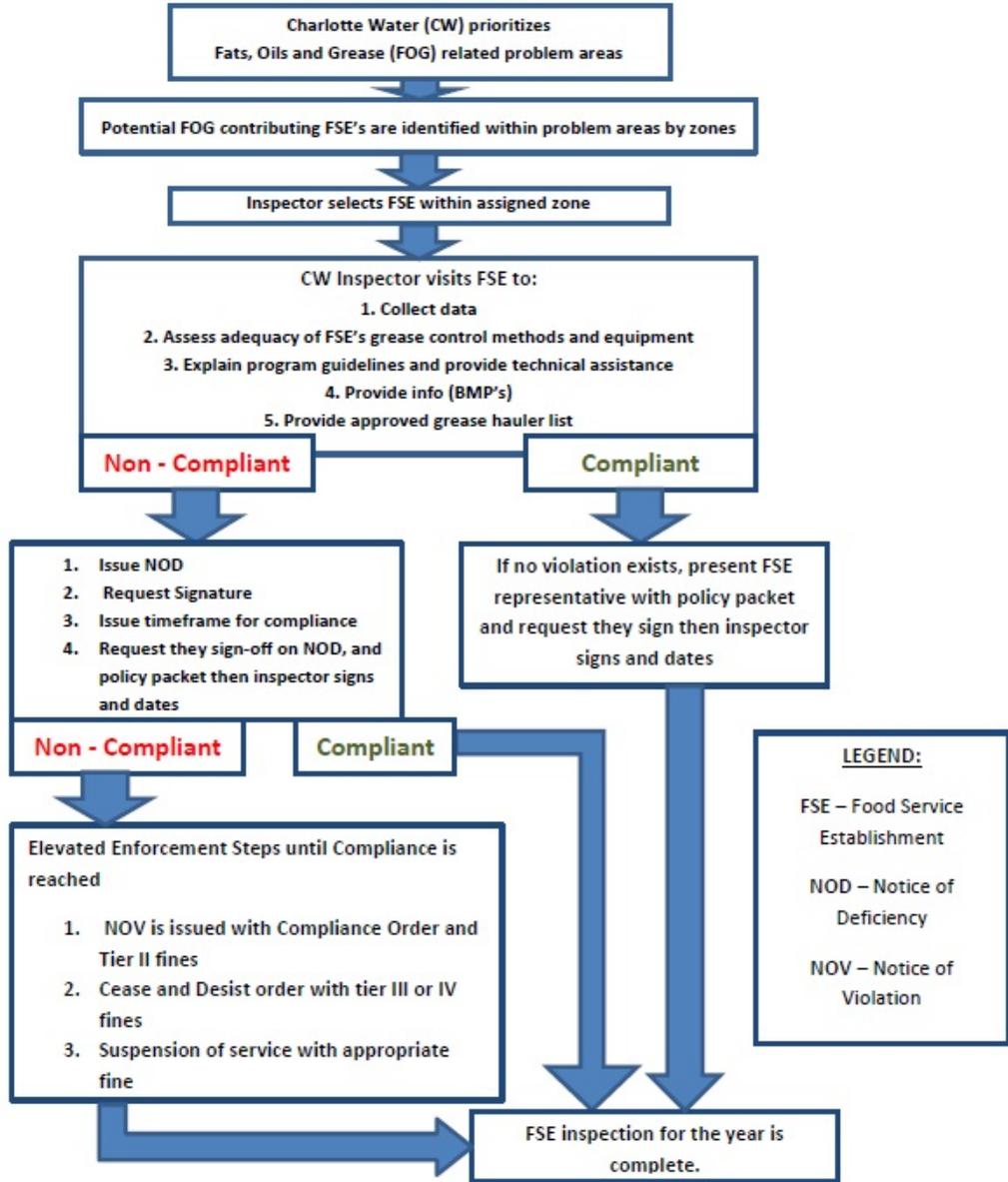
The intent of this policy is to ensure compliance with the City's Wastewater Discharge Restrictions, Article III, which is required by the United States Environmental Protection Agency. This policy is in no way intended to discourage development, but rather to protect the facilities and the City's infrastructure as it relates to the sanitary sewer system.

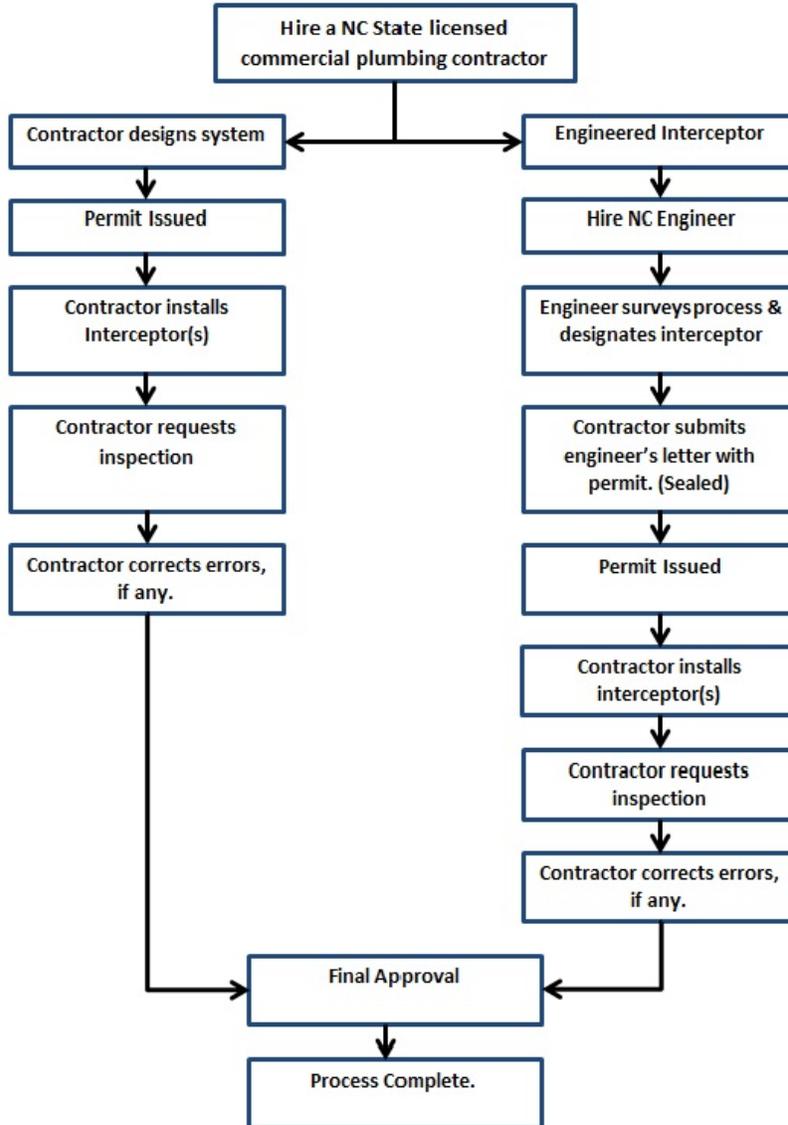
## **VIII. ENFORCEMENT**

Enforcement of this policy shall be in accordance with the provisions of the CLTWater ENFORCEMENT RESPONSE PLAN. Failure to comply with this standard may be grounds for penalty imposition and /or discontinuance of service. Additionally, failure to comply may result in the notification to the Mecklenburg County Health Department for request of additional enforcement action that may lead to revocation of food service permit.

**This policy may be modified or changed by CLTWater at any time in accordance with the requirements of the City Code, North Carolina General Statute and Federal Regulations.**

Should there be any questions concerning this policy, all questions should be directed to the Charlotte Water - Environmental Services Facility-System Protection at (704) 336-4407 or mail to 4222 Westmont Drive, Charlotte, NC 28217.







MECKLENBURG COUNTY  
Land Use and Environmental Services Agency  
Code Enforcement

CODE  
INTERPRETATION

## Mechanical/Plumbing

Code Volume Reference: NC Plumbing Code (2012)

Code Chapter Reference: 1003.1 through 1003.3.4 exception-

Subject: Grease Interceptors

Effective Date: September 30, 2012

Prepared/Revision Date: September 30, 2012

### CODE:

#### 1003.1 Where Required.

Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the building drainage system, the public sewer, the private sewage disposal system or the sewage treatment plant or processes.

**1003.2 Approval.** The size, type and location of each interceptor and of each separator shall be designed and installed in accordance with the manufacturer's instructions, the requirements of the local utility department or health department and the requirements of this section based on the anticipated conditions of use. Wastes that do not require treatment or separation shall not be discharged into any interceptor or separator.

**1003.3 Grease interceptors.** Grease interceptors shall comply with the requirements of Sections 1003.3.1 through 1003.3.5 or with the requirements of the local utility department or health department.

**1003.3.1 Grease interceptors or automatic grease removal devices required.** A grease interceptor or automatic grease removal device shall be required to receive the drainage from fixtures and equipment with grease-laden waste located in food preparation areas, such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias, or clubs. Fixtures and equipment shall include pot sinks, pre-rinse sinks; soup kettles or similar devices; work stations; floor sinks or sinks into which kettles are drained; automatic hood wash units and dishwashers without pre-rinse sinks. Grease interceptors and automatic grease removal de-vices shall receive waste only from fixtures and equipment that allow fats, oils or grease to be discharged.

**1003.3.2 Food waste grinders.** Where food waste grinders connect to grease interceptors, a solids interceptor shall separate the discharge before connecting to the grease interceptor. Solids interceptors and grease interceptors shall be sized and rated for the discharge of the food waste grinder. Emulsifiers, chemicals, enzymes and bacteria shall not discharge into the food waste grinder.

**1003.3.3 Grease interceptors and automatic grease removal devices not required.** A grease interceptor or an automatic grease removal device shall not be required for individual dwelling units or any private living quarters.

**1003.3.4 Grease interceptors and automatic grease removal devices.** Grease interceptors and automatic grease removal devices shall be sized with PDI G101, ASME A112.14 Appendix A, or ASME A112.14.4. Grease interceptors and automatic grease removal devices shall be designed and tested in accordance with PDI G101, ASME A112.14.3 or ASME A112.14.4. Grease interceptors and automatic grease removal

devices shall be installed by the manufacturer's installation instructions.

**1003.3.4 Exception: Interceptors that have a volume of not less than 500 gallons and are located outdoors shall not be required to meet the requirements of this section.**

**INTERPRETATIONS/CLARIFICATIONS:**

Restaurants, hotel kitchens, bars, factory cafeterias, clubs, churches, and other structures that may produce grease laden discharges shall have a grease interceptor sized per table 1003.3.4.1 of the 2012 NC Plumbing Code and conforming to PDI G101, ASME A112.14.3 or ASME A112.14.4 and shall be installed per the manufacturer's instructions.

**1003.3.4 Exception:** Grease interceptors installed outside the building with a capacity equal to or greater than 500 gallons storage capacity are no longer covered by the 2012 North Carolina Plumbing Code. Designers may consult with the local utility or health department to see if any requirements exist for the larger capacity interceptors. The plumbing inspector will only be required to check the material and drain piping for the larger capacity interceptors. Interceptors less than 500 gallons located outside the building or any size grease interceptor located inside the building shall be clearly marked with the manufacturer's name and the standard with which they comply.

Manufactured concrete grease interceptors less than 500 gallons located outside the building only shall be approved by the Code Official (Plan Examiner or Inspector) under the following conditions: The interceptors shall come complete and require no internal field fabrications or modifications by the plumber. Concrete interceptors shall be clearly marked with the manufacturers name and the standard to which they comply.

*Drains with grease producing discharges shall discharge through the interceptor. Food waste disposers shall first discharge through a solids interceptor per section 1003.3.2. Clear/gray water wastes (i.e., ice maker drips, food prep sinks or hand wash sinks) are exempt from discharging through a grease interceptor. An engineer (registered in the State of North Carolina) is responsible for proper sizing of the grease interceptors.*

**Shell Requirements:** Designers who install grease interceptors during the shell phase of construction shall provide grease interceptors per the design of a Mechanical Engineer (registered in the state of North Carolina) for the maximum grease capacity of all food establishments in the shell tenant spaces.

**Notes:**

1. Tenant spaces **shall not share** a grease interceptor (except Mall Food Courts).
2. Interceptors remotely located (more than 10' outside the tenant space), shall require the designer to provide (on the drawings) methodology to handle grease build-up in excessively long grease lines (3% slope is the design standard for drains to keep solids suspended in long runs to the grease interceptor).
3. Grease Interceptors installed in traffic areas shall be rated traffic proof per the manufacturer **ONLY!**
4. Grease interceptors connected to septic systems shall meet the most stringent requirements of the North Carolina Plumbing Code and the Mecklenburg County Health Department Division of Wastewater and Septic tank rules and regulations.

Prepared by: **Willis W. Horton**

Approved by:



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Willis W. Horton, M/P Code Administrator

## PDI Sizing Procedure

### 1. Sizing Method Based on Pipe Diameter Size and Slope

When the final configuration of fixtures in a facility is not known or to allow for additional fixtures in the future, this method shall be used or to size the interceptor for the maximum flow that the drain line from the facility can carry.

Pipe Size (inches)	Full Pipe Flow @ ¼ slope	Interceptor size 1 minute drain	Interceptor size 2 minute drain
2"	19.44 gpm	20 gpm	10 gpm
3"	58.67 gpm.	75 gpm	35 gpm
4"	125.77 gpm	-	75 gpm

### 2. Procedure for Sizing Indoor Grease Interceptors

The Table below is provided to show the standard formula in steps for sizing grease interceptors to suit requirements of specific fixtures. An example of this sizing formula application is included to illustrate the steps.

Steps	Formula	Example
1	Determine cubic content of fixture. Multiply length x width x depth.	A sink 48" long by 24" wide by 12" deep. <b>Cubic content</b> 48 x 24 x 12 = 13,824 cubic inches.
2	Determine capacity in gallons. 1 gal. = 231 cubic inches.	<b>Content in gallons.</b> $\frac{13,824}{231} = 59.8$ gallons
3	Determine actual drainage load. The fixture is normally filled to about 75% of capacity with water. The items been washed displace about 25% of the fixture content, thus actual drainage load = 75% of fixture capacity.	<b>Actual drainage load</b> .75 X 59.8 = 44.9 gallons.
4	In general, good practice dictates a 1 minute drainage period; however, where conditions permit, a 2 minute drainage period is acceptable. Drainage period is the actual time required to completely drain the fixture. Flow rate = $\frac{\text{Actual Drainage Load}}{\text{Drainage Period}}$	<b>Calculate flow rate and drainage period</b> 1-minute period $\frac{44.9}{1} = 44.9$ GPM Flow Rate 2-minute period $\frac{44.9}{2} = 22.5$ GPM Flow Rate
5	From Table 8.2 select Interceptor which corresponds to the flow rate calculated. Note: Select next larger size when flow rate falls between two sizes listed.	<b>Select Interceptor.</b> For 1-minute period - 44.9 GPM requires PDI size 50. For 2-minute period - 22.5 GPM requires PDI size 25.

### 3. Sizing by known compartment sizing

Standard PDI Certified grease interceptors applicable to various size fixtures commonly used in domestic, commercial and institutional installations. The selections listed are based on the PDI sizing formula by GPM.

Recommended PDI Size Grease Interceptor				
Fixture Compartment Size (inches)	Number of Compartments	Drainage Load (Gallons)	1-minute Drainage period	2-minute Drainage period
18 x 12 x 8	1	4.2	7	4
16 x 14 x 8	1	5.8	7	4
20 x 18 x 8	1	9.4	10	7
18 x 18 x 8	2	15.0	15	10
20 x 18 x 8	2	18.7	20	10
30 x 20 x 8	1	15.5	20	10
24 x 20 x 12	1	18.7	20	10
22 x 20 x 1	2	23.0	25	15
22 x 20 x 12	2	34.0	35	20
24 x 24 x 12	2	44.9	50	25
22 x 20 x 12	3	51.4	70	35
(2) 22 x 20 x 12	4	68.0	75	50
(2) 24 x 24 x 12	4	89.8	100	75

## OUTDOOR GREASE INTERCEPTOR SIZING

### The Manning Formula:

Interceptor Size (in gallons) = **F**low rate (GPM)/sink or fixture x sum of fixture **R**atings + the **D**ischarge rate from any mechanical washers (i.e. dishwashers, glass washers, laundry machines, etc.) x a 24 minute retention **T**ime.

The summarized version being:  $I = [(Fr) \times (R)] + (D) \times (T)$

**Flow rate**, measured in gallons per minute (GPM), is determined based on the slope, pipe texture, and pipe diameter. The following rates are pre-calculated. Apply them to your calculation, as demonstrated in the examples below.

0.5" pipe = 0.8 GPM/fixture  
 1.0 " = 5.0 GPM/fixture  
 1.5 " = 15 GPM/fixture  
 2.0" = 33 GPM/fixture  
 2.5" = 59 GPM/fixture  
 3.0" = 93 GPM/fixture

**Fixture ratings** of grease-laden waste streams are pre-determined values for specific kitchen drainage points, such as sinks, wash basins, and floor drains. Essentially, these values represent factors by which you can multiply the flow rate of a drainage pipe to get the potential rate of water movement out of the fixture. Apply them to your calculation, as demonstrated in the examples below.

2, 3, or 4 compartment sink = 1.0  
 1 or 2 compartment meat prep sink = 0.75  
 Pre-rinse sink = 0.5  
 1 or 2 compartment vegetable prep sink = 0.25  
 Can wash = 0.25  
 Mop sink = 0.25

Floor drain = 0.00

**The discharge rate** from dishwashers, laundry machines, glass washers, etc. must be added to your Manning Formula calculation because of their potential for introducing large quantities of water down the drain in a short amount of time. The user's manual for these appliances should indicate the manufacturer's discharge rate in GPMs, or you can call the manufacturer directly. Apply them to your calculation, as demonstrated in the examples below.

**The 24 minute retention time** is a pre-calculated amount of time that engineers have determined to be necessary for grease to separate from water. And, as always, apply it to your calculation, as demonstrated in the examples below.

**Example 1:** A restaurant has the following fixtures in its kitchen (all fixtures have a 1.5 inch diameter pipe):

- (1) 3-compartment pot sink
- 1 pre-rinse sink
- (1) 2-compartment vegetable prep sink
- 1 dishwasher that discharges 10 GPM

Based on the Manning Formula:

$$\begin{aligned} I &= [(Fr) \times (R) + (D)] \times (T) \\ &= 15 \text{ GPM} \times [1 + 0.5 + 0.25] + 10 \text{ GPM}] \times 24 \text{ minutes} \\ &= [(15 \text{ GPM} \times 1.75) + 10 \text{ GPM}] \times 24 \text{ minutes} \\ &= 26.25 \text{ GPM} + 10 \text{ GPM} \times 24 \text{ minutes} \\ &= 870 \text{ gallons} \end{aligned}$$

**Rounded up to the next size interceptor means a 1,000 gallon interceptor is required!**

**Example 2:** A restaurant has the following fixtures in its kitchen:

At a 0.5 inch diameter pipe, a pre-rinse sink

At a 1.5 inch diameter pipe:

- 1 3-compartment pot sinks
- 1 pre-rinse sink
- 1 meat prep sink
- 1 vegetable prep sink

At a 3.0 inch diameter pipe, 1 can wash

Using the Manning Formula, we get:

For the pre-rinse sink, we take  $0.8 \text{ GPM} \times 0.5 = 0.4 \text{ GPM}$

For the 1.5 inch pipe diameter fixtures:  $15 \text{ GPM} \times [1 + 0.5 + 0.75 + 0.25] = 37.5 \text{ GPM}$

For the can wash:  $93 \text{ GPM} \times 0.25 = 23.25 \text{ GPM}$

Add  $0.4 \text{ GPM} + 37.5 \text{ GPM} + 23.25 \text{ GPM} = 61.15 \text{ GPM} \times 24 \text{ minutes} = 1,468 \text{ gallons}$

**Rounded up to the next size means a 1,500 gallon Grease Interceptor is required!**