



FOG^{2.5} Control Device Guidance Manual

FOG Control Program

Miami-Dade County

Department of Regulatory and Economic Resources (RER)

Division of Environmental Resources Management (DERM)

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This manual was developed in collaboration with the Water & Wastewater Division staff.

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FOG^{2.5} Control Device Guidance Manual

1.0 Introduction

The Fats, Oil, and Grease (FOG) Control Device Guidance Manual is intended to serve as a design guide for Professional Engineers designing FOG Control Devices for Food Service Establishments in Miami-Dade County. It is NOT intended to replace engineering judgment or replace the engineering design process. It is NOT a “recipe” book; instead, it provides “minimum” requirements. The Professional Engineer shall use sound engineering judgment and consider (Section 61G15, Florida Administrative Code):

1. The selection of engineering alternatives to be investigated and the comparison of alternatives for engineering works.
2. The selection or development of design standards or methods, and materials to be used.
3. The selection or development of techniques or methods of testing to be used in evaluating materials or completed works, either new or existing.
4. The development and control of operating and maintenance procedures.

2.0 FOG Terms, Definitions, and Acronyms

To establish a consistent basis for reviewing and approving plans and confirming compliance, the following terms are to be used.

Back of the House -	All areas where food is stored, processed, cooked, prepared, and assembled and cleanup areas. It does not include offices, dry storage or front of the house areas.
Best Management Practices -	Activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or minimize pollution.
Black Grease -	Any FOG commingled with septic wastes (bathroom wastes).
Brown Grease -	FOG waste collected in, or removed from, a FOG control device.
Building Sewer-	The part of the building drainage system that extends from the end of the building drain and conveys the discharge to utility or non-utility owned or operated sanitary sewer system.

Building Sanitary Drains -	The pipes intended to receive sanitary wastewater and effluent from FOG control devices where FOG control devices are installed or required. FOG or food waste shall not be discharged into the building sanitary drains.
Dish machine -	Equipment used to sanitize only not to wash.
Dishwasher -	Equipment that washes and sanitizes.
Equipment -	All stoves, ranges, cook tops, griddles, ovens, grills, hoods, fryers, meat blocks, tables, counters, cabinets, refrigerators, freezers, sinks, dishwashing machines, steam tables, plumbing drains, and similar items, other than utensils, used in the operation of a food service establishment.
Fats, Oil and Grease (FOG) -	Any substance such as vegetable or animal product used in, or a byproduct of, the cooking or food preparation process, that can cause or lead to corrosion, blockages, reduced flow, or interference with the sanitary sewer system when discharged alone or combined with other materials or waste.
FOG Capacity Limit -	The combined FOG and solids depth equal to twenty-five (25) percent of the design hydraulic depth in any location of a FOG control device, or seventy-five (75) percent of the rated FOG and solids capacity established by third party certification.
FOG Control Device- (FCD)	Equipment designed to remove, hold and prevent the passage of FOG to onsite sewage treatment and disposal systems, and sanitary sewer systems.
FOG Control System-	The FOG Control Device, and all associated fixtures, and appurtenances including solids separator, flow control device, and sampling port receiving FOG waste, and involved in the pretreatment process prior to connection to the sanitary sewer system.
FOG Control Device Operator -	Person or entity which has management control for FOG control devices which serve other FOG generators.
FOG Generator -	Any nonresidential facility, including, but not limited to, restaurants, bakeries, hotel and cafeteria kitchens, commercial kitchens, kitchens serving hospitals, nursing homes, daycares, assisted living facilities and other healthcare facilities, food processing plants or such other nonresidential facilities that can introduce food waste or FOG into building sanitary drains, building sewers, onsite sewage treatment and disposal systems, or non-utility or utility sanitary sewer systems. A FOG generator also includes those nonresidential facilities that produce yellow grease.

- FOG Discharge Control Operating Permit - Operating permit issued to FOG generators or FOG control device operators pursuant to Sections 24-18 and 24-42.6. Also referred to as a GDO permit.
- FOG Sampling Point - A reasonably accessible location for sampling the effluent of a FOG control device.
- Food- As defined by the Florida Department of Health FAC 64E-11: Any raw, cooked or processed edible substance, ice, beverage or ingredient used or intended for use in whole, or in part, for human consumption.
- Food Preparation- As defined by the Florida Department of Health FAC 64E-11: The manipulation of foods intended for human consumption by such means as washing, slicing, peeling, chipping, shucking, scooping, and/or portioning. The term also includes those activities involving temperature changes, combining ingredients, opening ready-to-eat food packages, or any other activity causing physical or chemical alterations in the food.
- Front of the House - Office space, dry storage, and in general all areas not included in the back of the house.
- Gravity Grease Interceptor- FOG control device that primarily relies on the difference in specific gravity between wastewater and FOG to affect separation of FOG from wastewater.
- Grease Interceptor - FOG control device connected to a building grease waste drain or located between one or more fixtures (e.g., three-compartment sink, mop sink, dishwasher, etc.) and a building sanitary drain or grease waste (GW) drain line, above or below ground. The term “grease interceptor” is also commonly used to describe the same device. For the intents and purposes of this document the term grease interceptor would be used instead of grease trap. Grease interceptors shall not receive sanitary sewage waste (bathrooms).
- Grease Waste Drains - The pipes intended to receive FOG and food waste. They convey the discharge to solids separators and FOG control devices.
- Hydromechanical Grease Interceptor- FOG control device that is third party tested and certified, and relies on the difference in specific gravity between wastewater and FOG to affect separation of FOG from wastewater, and may incorporate a flow control device, air entrainment, and other means or principles to improve the efficacy of separation as demonstrated by third-party testing, validation and certification.

- Interceptor Monitoring Alarm- System and its components capable of monitoring a FOG control device on a regular interval. The system shall trigger a visual and audible alarm at the FOG Capacity Limit.
- Interceptor Monitoring Device- System and its components capable of monitoring floating and settled solids in a FOG control device on a regular interval, triggering a visual and audible alarm at the FOG Capacity Limit, and reporting data electronically to the Department at a frequency and format approved by the Director or Director's designee
- Kitchenware - All multi-use utensils other than tableware.
- Ordinary Restaurant - Food service establishment with reusable plates and silverware.
- Residential FOG Source- Residential kitchen that can introduce food waste or FOG into a building drain, building sewer, onsite sewage treatment and disposal system, or non-utility or utility sanitary sewer system.
- Single-service article – Any cups, containers, closures, plates, straws, place mats, napkins, doilies, spoons, stirrers, paddles, knives, forks, wrapping materials and all similar articles which are constructed wholly or in part from paper, paperboard, molded pulp, foil, wood, plastic, synthetic or other readily destructible materials, and which are intended by the manufacturers to be for one-time, one-person use, then to be discarded.
- Single Service Article Restaurant - Food service establishment with throw away utensils, plates, etc.
- Solids Separator (SS)- Separator intended to capture solids and allow grease to pass through. It is installed at the source or on the grease waste drains prior to a grease interceptor. SS are recommended to improve the operation of grease interceptors. However, SS are always required after a food/solids grinder and before a hydromechanical interceptor.
- Tableware- Multi-use eating and drinking utensils.
- Third Party Certified- A certification by an independent entity that specific equipment or devices have been tested and meet or exceed standards established by the certifying entity and which the certifying entity has reviewed or audited the manufacturing process. The certifying entity shall be recognized by the Director or Director's designee and can include, but is not limited to, the National Sanitation Foundation (NSF), American Society of Mechanical Engineers (ASME), Plumbing and Drainage Institute (PDI) or Canadian Standards Association (CSA) or combination of these and other entities to include the aforementioned requirements.

Utensils-	Implements such as pots, pans, ladles or food containers used in the preparation, storage, transportation or serving of food.
Ware washing -	Cleaning and sanitizing of utensils and food-contact surfaces or equipment.
Wash-Down Area -	Area where FOG generators wash the back of the house mats or equipment.
Yellow Grease -	FOG generated as a byproduct from cooking or food preparation that is not mixed with water, wastewater or other waste.

List of Acronyms

ASME	American Society of Mechanical Engineers
BMPs	Best management Practices
FBC-P	Florida Building Code, Plumbing
FCD	FOG Control Device
FCS	FOG Control System
FOG	Fats, Oil, and Grease
FSE	Food Service Establishment
DFU	Drainage Fixture Units
GI	Grease Interceptor
GW	Grease Waste
OSTDS	Onsite Sewage Treatment and Disposal Systems
PDI	Plumbing and Drainage Institute
PIC	Permitting and Inspection Center
SP	Sampling Port
SS	Solid Separator
WPS	Wastewater Permitting Section

3.0 Rules & Regulations

What facilities or uses can introduce FOG to a utility or non-utility sanitary sewer system? Restaurants, bakeries, cafeterias, hotels, coffee shops, banquet halls, ice cream parlor, and catering establishments are just a few obvious examples of facilities or uses that can introduce FOG to a utility or non-utility sanitary sewer system. Others are less obvious; e.g., Bank with full kitchen, day care, fish market, tea shop, etc.

Chapter 24, Environmental Code of Miami-Dade County (Section 24-18), requires that FOG Control Devices (FCDs) be installed, and that a sampling point be provided on the effluent/discharge side (i.e., beyond point of no further treatment) of the FCD, for all nonresidential generators, and food/beverage service establishments, or areas discharging into a publicly or privately operated sanitary sewer collection system if fats, oil, and grease can be introduced into the sanitary sewer system, interim package sewage treatment plants, or onsite sewage treatment and disposal system located in a wellfield protection area¹ of any utility or non-utility potable water supply wells, in quantities which have the potential to affect or hinder the operation of sewage collection, transmission or treatment facilities. Concentrations as low as 150 mg/L of FOG can impact the collection, transmission and treatment facilities.

Applicable Chapter 24 code sections are provided below.

- 24-5 Definitions
- 24-15 Plan Approval Required
 - 24-15(2) Waste water facilities
 - 24-15.1 Procedures for approval of plans
 - 24-15.2 Registered Engineer required
 - 24-15.3 Standards for preparation of plans
 - 24-15.3(3) FOG control device required
- 24-18 Operating Permit required
- 24-42.4 Sanitary sewer discharge limitations and pretreatment standards
- 24-42.6 Fats, Oils and Grease Control Program

¹ <https://www.miamidade.gov/environment/wellfields.asp>

Other applicable codes and regulations:

- Florida Building Code – Chapter 10 – Plumbing

Section 1003 Interceptors and Separators

- Florida Administrative Code

Rule 64E-6 Standards for onsite sewage treatment and disposal

64E-6.013 Construction Materials and Standards for Treatment Receptacles

Rule 64E-11 Food hygiene

4.0 FCD Permitting Process

4.1 Where to submit plans

Note that the first step for any construction project subject to this guide manual is to “submit” construction drawings to the Building Department having jurisdiction over the establishment/site under construction. Once a process number or construction permit number is provided by the Building Department, plans must be submitted for DERM’s approval. Revisions to drawings after a DERM approval is obtained, along with the previously DERM-Grease approved sheets as reference, are also required to be submitted to DERM for review and approval.

New plans requiring DERM Grease Review are no longer being reviewed at the Permitting and Inspection Center (11805 SW 26 Street, Miami FL, 33175) for DERM review, and are only being reviewed electronically by the Overtown Transit Village (OTV) staff engineers.

Plans are submitted electronically for DERM review by the applicant using the link below to the web portal by following the instructions under “Building Permit-Related Applications & Plans Submissions”. All instructions are to be carefully read, and followed to ensure a faster review process.

<https://wwwx.miamidade.gov/Apps/RER/EPSPortal>

For facilities located within a municipal Building Department utilizing the e-Municipal system, plans will be sent to DERM Plan Review using their electronic transfer protocols. Prior to uploading any plans to the web portal, the applicant should verify if the facility is located within a municipality whose Building Department uses the e-Municipal system.

4.2 When DERM Grease Review is Required

A DERM Grease Review is required for non-residential facilities/areas that can introduce FOG to a utility or non-utility sanitary sewer system or onsite sewage treatment and disposal system (OSTDS) located in a wellfield protection area¹ of any utility or non-utility potable water supply well.

There are two main entry points for a Grease Review: Plan Review, and Certificate of Use (CU) / Occupational License (OL) Application Review. Plan Review is required for all new development, additions or enlargements,

renovations, construction, and changes in use. CU/OL Application Reviews are required for all new uses, changes in use, and changes in name or ownership.

4.2.1 Plan Review Process

Plan review is required for the following type of work:

- New construction
- Interior remodeling
- Change in seating capacity, and/or change in area, or expansion
- Changes in ownership, or type of use
- FCD update to comply with discharge limitations
- Revisions to master permit

4.2.2 Certificate of Use / Occupational License Application Submittal

Certificate of Use (CU)/ Occupational License (OL) Application Reviews are required for all new uses, changes in use, and changes in name or ownership.

For facilities located within a municipality/incorporated Miami-Dade County, the CU/OL application process starts at the municipal Building Department, where the application is completed by the applicant, reviewed accordingly by the municipality, and is to be sent to DERM electronically for all the DERM specialty reviews prior to obtaining the final approval from the municipality to issue the associated licenses to operate. Municipal CU/OL applications are submitted electronically for DERM review by the applicant using the link below following the instructions under “Submit for Review and Approval a Municipal Certificate of Use”.

<https://wwwx.miamidade.gov/Apps/RER/EPSPortal>

Instructions for CU/OL applications located within Unincorporated Miami-Dade County can be found at the following website: <https://www.miamidade.gov/permits/zoning-certificate.asp>

4.2.3 Certificate of Use / Occupational License Application Review

Food service establishments (FSEs) with an active FOG Discharge Control operating permit (often referred to as a Grease Discharge Operating permit, or GDO permit) proposing only change in ownership are required to bring along with the FOG Discharge Control operating permit application², and the Existing FOG Control Device (FCD) condition assessment report³ to assure that the FCD is in operating condition.

FSEs with an active FOG Discharge Control operating permit proposing a change in the food service establishment type, or change in seating capacity, or change in area, are required to provide new plumbing plans signed, sealed, and dated by a Florida licensed Professional Engineer, to show compliance with the requirements included in Section 24-42.6 of the MDC Code. Said plans shall include facility layout, required fixture connections, compliance with FCD sizing calculations per MDC Section 24-42.6(9), proposed pump out frequency, and the FCD condition assessment using the Department's template³. Plans may be required to be submitted to Building Department and DERM Plan Review.

FSEs with FOG Discharge Control operating permit inactive/closed for a period of more than 12 months, or existing FSEs that never had a GDO permit, are required to provide, along with the OL Application, new plumbing plans signed, sealed, and dated by a Florida licensed Professional Engineer, to show compliance with the requirements included in Section 24-42.6 of the MDC Code. Said plans shall include facility layout, required fixture connections, compliance with FCD sizing calculations per MDC Section 24-42.6(9), proposed pump out frequency, and the FCD condition assessment using the Department's template. Plans may be required to be submitted to Building Department and DERM Plan Review. FSEs with open enforcement will be required to correct the violation before the CU/OL is approved.

Existing FOG generators and FOG control device operators that discharge to an onsite sewage treatment and disposal system (OSTDS) located in a wellfield protection area¹ of any utility potable water supply wells, without a valid FOG Discharge Control Operating permit issued prior to March 5, 2018, per MDC Environmental Protection Code, Section 24-42.6(6)(5) are required to submit the FCD condition assessment

² Blank FOG Discharge Control - Operating permit Application available at <http://www.miamidade.gov/permits/library/grease-discharge.pdf>

³ Blank Existing FCD condition assessment reports available at <http://www.miamidade.gov/environment/fats-oils-grease.asp>. Form must be completed by a professional engineer, licensed plumber pursuant to Part III of Chapter 489 of Florida Status, and Part III of Rule 64E-6, FAC

prepared by a licensed plumber or Florida Professional Engineer, and new plans prepared by a Florida Professional Engineer- to include facility layout, required fixture connections, compliance with FCD sizing calculations per MDC Section 24-42.6(9), proposed pump out frequency, and the FCD condition assessment using the Department's template, to be submitted within 12 months of the Department's notification.

Attachment 1 FOG 2.5 CU/OL Review Decision Matrix provides more specific information about the requirements for approval of CU/OL applications.

4.3. Atypical FSEs

4.3.1 Day Cares, and Adult Day Cares

This category includes facilities such as Day Cares, Adult Cares and others regulated by the Florida Department of Health (FDOH). Food service establishments under FDOH authority are regulated by the Chapter 64E-11, Florida Administrative Code, which clearly outlines when the operation requires to have washing equipment and when it does not. Florida Building Code Chapter 4 provides regulations for these types of facilities as well. These distinctions are used to determine the requirement of a grease interceptor; when washing equipment is required then a grease interceptor is required.

Basically, if the establishment uses or intends to use multiuse equipment and utensils, then washing equipment is required. Washing equipment can be comprised of a three compartment sink, and/or a two compartment sink and dishwashing machines. FDOH rules do not require dishwashing equipment if the establishment will ONLY use single service articles, or if the establishment caters food AND the catering contract/agreement indicates that all multiuse utensils/equipment will be returned to the caterer⁴.

The local FDOH offices issue a Food Permit or a Sanitation Certificate to the establishments under its jurisdiction, which outlines the limitations and prohibitions. Food permits are available upon request from the local FDOH office.

See below extract from a FDOH inspection to a Day Care Facility that caters food and uses all disposable utensils.

⁴ Email communication with Mr. Ric Mathis, EHPC, Food Safety and Sanitation Program, FL Department of Health, Division of Disease Control and Health Protection

Shown on Plan	Provide	N/A	Items
R/R		/	Three-compartment sink with hot and cold running water. Sanitizing by appropriate chemical (Water temperature not to exceed 120 °F) or hot water at 170 °F
R/R	/		A 1-compartment <input type="checkbox"/> and/or 2-compartment <input checked="" type="checkbox"/> sink with hot and cold running water.
R/R	/		Drain-boards provided for two/three compartment sink(s), or moveable dish-table.
R/R	/		Utility sink with hot and cold running water.
R/R		/	Residential automatic dishwasher of approved type.
R/R		/	Dipper well (required for the service of bulk ice cream)
R/R	/		Water Heater of adequate size for ALL operations requiring hot water
R/R	/		Hand-wash sink(s) in the food preparation/dish-washing area(s) with hot and cold running water
R/R	/		Adequate protection against the entrance of vermin at ALL openings.
R/R	/		Adequate garbage disposal facilities
R/R	/		Adequate refrigeration facilities equipped with accurate thermometers.
R/R	/		Adequate restroom fixtures for the facility capacity.
R/R	/		Walls and floors of a smooth, durable, easily cleanable impervious material
R/R	/		A covered-type baseboard at the juncture of the wall and the floor.
R/R	/		All stationary equipment sealed to adjacent surfaces or enough space behind the units to facilitate cleaning.
ADDITIONAL REQUIREMENTS:			
			Catering food only. All disposable utensils used. No hand washing. Handwash sink in kitchen. No grease trap/dishwasher required by DOH. Final approval given by DOH inspector

I understand that an inspection of this establishment will be made for ALL of the requirements in the previously listed Chapters of the Florida Administrative Code.

Figure 1. Sample FDOH inspection form

For DERM, with regards to FOG, the requirements for a grease interceptor are summarized in Table 1.

Any facility that:	Any facility that:	Any facility that:
(1) Prepares/Cooks food, or (2) Serves/Handles food prepared on site, catered, or delivered with multi-use utensils (kitchenware)	(1) Requires "Equipment" for washing utensils and/or kitchenware, or (2) Has or Proposes "Equipment" for washing utensils and/or kitchenware	(1) Only uses/requires single-service articles, AND (2) Does not Prepare/Cook food, AND (3) Does not Require "Equipment" for washing Utensils, AND (4) Does not have or propose "Equipment" for washing utensils and/or kitchenware
Must provide washing equipment, and therefore must provide a grease interceptor	Must provide a Grease Interceptor.	Is NOT required (BY DERM) to have a Grease Interceptor (they are NOT prohibited from having a Grease Interceptor)

Table 1. FSEs under FDOH authority required to have a grease interceptor

Table 2 provides an overview of how the different types of facilities are regulated for food safety and the jurisdictions of the different Departments involved.

Department of Agriculture and Consumer Services (DACS)	Department of Business and Professional Regulations (DBPR)	Florida Department of Health (FDOH)
<ul style="list-style-type: none"> • Grocery stores • Food processing plants • Food storage • Food distribution points 	<ul style="list-style-type: none"> • Restaurants • Mobile food vehicles • Caterers 	<ul style="list-style-type: none"> • Institutions • Schools • Civic or fraternal organizations • Bars and lounges • Theaters that serve traditional Theater foods (such as soft drinks, popcorn, hot dogs, etc.) • Locations that participate in the USDA Afterschool Meal Program. • Temporary food events, mobile food units, and vending machines that operate at or through any of these facilities.
<p>Source: http://www.floridahealth.gov/environmental-health/food-safety-and-sanitation/food-manager-code-standards.html</p>		

Table 2. FSEs and their respective food safety authority

4.3.2 Facilities utilizing OSTDS

Facilities served by Onsite Sewage Treatment and Disposal Systems (OSTDS) are regulated by the Florida Department of Health (FDOH), and therefore the type of grease interceptor must comply with FDOH regulations per Rule 64E-6 (gravity interceptors), as well as Florida Building Code Plumbing Chapter 10, and Miami-Dade County Section 24-42.6 when located in a wellfield protection area¹.

FOG generators discharging to an OSTD located in a wellfield protection area¹ of any utility or non-utility potable water supply wells require a FOG Discharge Control Operating permit.

Pursuant to MDC Section 24-42.6(6), existing FSEs discharging to an OSTD located in a wellfield protection area¹, without a valid FOG Discharge Control Operating permit issued prior to March 5, 2018 shall submit as-built plans prepared by a Florida-registered Professional Engineer, within one year of the Department notifying them of their obligation to obtain a FOG Discharge Control Operating permit. Said plans shall comply with the following:

- (a) Include an Existing FOG control device condition assessment **Error! Bookmark not defined.** prepared by a licensed plumber or Florida Professional Engineer to demonstrate that the FCD is functioning in accordance with the manufacture's specifications and that there is a sampling point that complies with Section 24-42.6(8).
- (b) Demonstrate that all existing back of the house fixtures discharge to existing FOG control devices.
- (c) FOG control devices comply with Chapter 64E-6, FAC.
- (d) Demonstrate that existing yellow and brown grease storage areas prevent the release of FOG to ground, groundwater, surface waters or storm sewers.
- (e) That existing mat and equipment wash-down areas prevent the release of FOG to ground, groundwater, surface waters or storm sewers and prevent inflow of stormwater.

In the event that the FSE cannot comply with the above, plan submittal to Building Department and DERM will be required to upgrade the facility. The upgrades shall be implemented within one (1) year of the Department's notification.

Within five (5) days of the Director or the Director designee's approval of the as-built plans or plans to upgrade the facility, a FOG Discharge Control Operating permit application shall be submitted to the Department pursuant to Sections 24-18(A)(18) and 24-42.6(10).

4.3.3 Beer House/ Wine Bar

In general, facilities operating only as beer house or a wine bar, serving only beer, or wine respectively, are not required to install a grease interceptor if NO open food is served at the establishment. The DERM Grease Reviewers will carefully analyze each case.

4.3.4 Second User

Facilities applying as a second user, sharing the space with an existing GDO permitted site where this second user will utilize the equipment, and fixtures contributing to the FOG generation, are required to provide new as-built plans by a FL licensed Professional Engineer. Plans shall show compliance with Section 24-42.6 of the MDC Code including the facility layout, plumbing fixture connections, the existing FCD condition assessment, and updated sizing calculations in accordance with Section 24-42.6(9) that reflect flow and FOG loading from all users connected to the grease interceptor. A FOG Discharge Control Operating permit is required for each user.

4.3.5 Kiosks

Food/beverage service kiosks without an available connection to a sewer line, and operating with a holding tank for the wastewater, are required to either install a grease interceptor to treat the waste before the discharge to a holding tank, or the untreated collected waste from a holding tank needs to be disposed directly into a fully Code compliant FOG Control System at a DERM GDO-permitted facility, and never in a storage area for holding (such as in drums, tanks, etc.) for a future pump out.

Facilities establishing the use, are required to submit plans to their Building Department, and DERM Plan Review. Plumbing plans shall be signed, sealed, and dated by a Florida-registered Professional Engineer, and shall include at the minimum the following information:

- For a kiosk with a holding tank **proposing their own** FOG Control System (FCS):
 - a) Site plan with the exact location of the kiosk in reference to the rest of the facility.
 - b) All the plumbing fixtures discharging into the holding tank that comply with FBC Plumbing.
 - c) Size of the holding tank at kiosk, to be emptied daily.
 - d) The exact point of discharge where the treated waste collected in the holding tank is to be disposed of.
 - e) Calculation of the FOG load (in pounds) generated at the kiosk.
 - f) Total gallons of wastewater generated per day.
 - g) Sizing calculations shall follow the current codes according to the type of grease interceptor that will be receiving the waste.
 - h) All other requirements for a new FCS per the appropriate type of grease interceptor as required by the Section 24-42.6 of the MDC Code.

- For a kiosk with a holding tank **NOT proposing their own** FOG Control System (FCS), and will be discharging to an existing DERM GDO-permitted, and fully Code compliant FCD, plans shall show:
 - a) Site plan with the exact location of the kiosk reference to the rest of the facility.
 - b) For the existing FCS that the kiosk will discharge their waste in to, provide the following:
 - c) A Condition Assessment of the existing FCD being discharged to- For existing GIs, provide a condition assessment report for the appropriate type of GI- and all required attachments. GI shall be empty to assure that it is functioning as designed and in good working condition. If damaged, it may not be reused, and must be REPLACED. Update information accordingly in plans. All documents, manifests, photos shall be submitted with plans. Blank forms <http://www.miamidade.gov/environment/fats-oils-grease.asp>
 - d) Site plan with the exact physical location of the FCS that will be receiving the kiosk waste- capacity of the FCS shall be labeled.
 - e) The exact point of discharge where the treated waste collected in the holding tank is to be disposed of in the existing system for treatment.

- f) Sizing calculations per MDC-Section Section 24-42.6(9) or the appropriate FCS, demonstrating that the existing FCS has capacity to receive the wastewater, and grease was load generated by the kiosk.
- g) Calculations, according to the code, of the entire load received by the FOG Control System (detailed flow, and grease waste load received from every tenant) to assure that the existing system has sufficient capacity. Calculations shall provide the load received from each establishment/tenant.
- h) Updated grease interceptor pump out frequency calculations.
- i) The existing FCS shall be in compliance with current regulations per MDC Section 24-42.6- including but not limited to: 99% efficiency, solids separator for hydromechanical grease interceptors, and for gravity grease interceptors: pH requirements, State Health Office tank approval #, FDOT certification, etc.
- j) Letter from the owner of the existing GI, granting permission to this specific establishment to discharge X amount of gallons of grease waste into their existing GI.

4.3.6 Others

Fire stations, clubhouses, pantries, event spaces, offices, hotel buffet areas; Food/beverage products do not have to be considered “commercially” sold in order for a commercial-use facility to require a FOG control system. Florida Building Code Plumbing section, and Miami-Dade County Code requires a FOG control device for any areas located outside of an individual dwelling unit, or private living quarters that have any drainage pipes with potential to discharge FOG to the sanitary sewer system. Plans will be analyzed carefully by the Reviewer on a case by case basis.

5.0 FOG Design Requirements

Several factors must be considered when designing a FOG control device: the type of system, available space to install the FCD, volume of the waste generated by the Food Service Establishment, influent concentration, temperature, flow rate, and number of fixtures to be connected to the interceptor, among others. All designs shall be prepared by a Florida Professional Engineer [Section 24.42.6(8)(a) of the Code].

5.1 Types of FOG Control Devices

Even though all FOG control devices operate on the principle that water and FOG have different specific gravities, for design there are two major types of systems: hydromechanical and gravity.

Hydromechanical systems are commonly available up to 100 gallons per minute (gpm), but can be found up to 200gpm, of rated flow capacity, and are generally but not always, located indoors close to the fixture source of FOG.

Gravity systems must be located outdoors, the capacity is measured in gallons, and are most commonly made of concrete, but are also found in fiberglass, plastic, and protected steel.

For the separation of the FOG from the waste stream, hydromechanical FCDs utilize the difference in specific gravity, air entrainment, baffles, and hydraulic flow action; whereas for the gravity FCDs the separation of FOG relies on gravity flow, stokes law and retention time⁵.

Hydromechanical FCDs must be third party certified by one of the following standards ASME A112.14.3 Appendix A, ASME A112.14.4, CSA B481.3 or PDI G101. The certification is for certain flow-through rate in gallons per minute and certain pounds of FOG retention capacity. Hydromechanical FCDs are included in Section 24-42.6 of the Code, and in the Florida Building Code Plumbing (FBC-P), Chapter 10. Where a conflict exists between Section 24-42.6 and FBC-P, the stricter requirement shall apply. When proposing hydromechanical FCDs the engineer should indicate in plans the FCD's third party certifier, capacity in gpm, and capacity in pounds of grease retention at 99% removal efficiency. Testing results from the certification of the hydromechanical FCD must be obtained from the manufacturer.

⁵ Source: Grease Interceptors, Continuing Education from the American Society of Plumbing Engineers, CEU 199, May 2013.

Gravity FCDs are included in Section 24-42.6 of the MDC Code and Florida Administrative Code (FAC) Rule 64E-6. Per FAC Rule 64E-6.013(7) the minimum volume of any gravity grease interceptor shall be 750-gallons and the maximum volume of an individual single grease interceptor chamber shall be 1,250-gallons. When the required effective capacity of the grease interceptor is greater than 1,250-gallons, installation of multi-chambered grease interceptors or grease interceptors in SERIES is required. Florida Building Code Plumbing section allows for gravity grease interceptors to be designed, and tested in accordance with ASME A112.14.6, and IAPMO/ANSI Z1001 standards. For Z1001, sizing per peak flow along with FOG generation shall be accounted for. Where a conflict exists between Section 24-42.6 and FAC Rule 64E6, the stricter requirement shall apply.

The material of the interceptor shall also be compatible with a pH of 3.0. Concrete protective liners, mechanically anchored or coatings, which specifications indicate that they are for wastewater immersion, and approved for use in wastewater wet wells, pump stations, manholes, AND for corrosion/acid protection, not simply waterproofing or damp-proofing will be accepted. Plan sheets shall include documentation by the manufacturer with the specifications for the liners/coatings applied by the casting facility/tank manufacturer during the casting process. For coatings the design engineer shall confirm that the coating provides abrasion protection compatible with scraping and pressure washing performed under normal maintenance, pursuant to Section 61G15, Florida Administrative Code. For instances where the casting facility does not provide the pH coating during the casting process, on site application on coatings may be allowed. Plans will need to show the proposed coating will meet our requirements, and what company will be applying the coating in accordance with the manufacturer application instructions. DERM FOG construction inspectors will verify the coating is applied, and all other aspects of the installations are completed per approved plans prior to issuing the construction inspection approval.

When proposing gravity FCDs, the engineer is required to show in plans the State Health Office's designated approval number that demonstrates that the proposed interceptor was approved for use as grease interceptor [FAC 64E-6.013(3)]. FDOH website provides an updated list of approved grease interceptors⁶.

⁶ http://www.floridahealth.gov/environmental-health/onsite-sewage/products/_documents/septic-tanks.pdf

Pursuant Section 24-42.6(8)(q) of the Code, for concrete precast interceptors, the engineer is required to obtain from the manufacturer, and include in plans, the name of the concrete precast plant and name of the plant's certifying agent approved by the Department of Transportation (NPCA, CCI and PCI⁷).

Contact information at the certifying agents are provided below:

Construction Certification Institute, Inc. (CCI)

Fred L. McGee, President
12710 Summerwood Drive, Suite G, Fort Myers, FL 33908
Telephone: (239) 454-7663
Fax: (239) 454-6787
info@cciweb.us
<http://www.cciweb.us/>

National Precast Concrete Association (NPCA)

Richard M. Krolewski, Promotion Specialist
1320 City Center Drive, Suite 200, Carmel, Indiana 46032
Telephone: (800) 366-7731
Fax: (317) 571-0041
rkrolewski@precast.org
<http://www.precast.org/>

Precast/Prestressed Concrete Institute (PCI)

Michael Kesselmayer, Managing Director - Quality Programs
200 W. Adams St., Suite 2100, Chicago, Illinois 60606
Telephone: (312) 583-6770
mkesselmayer@pci.org
<http://www.pci.org>

⁷ <http://www.fdot.gov/materials/quality/programs/plantcertification/index.shtm>

5.2 Fixtures to be connected to the FOG Control Device

All plumbing fixtures with potential to discharge grease-laden waste located in food and beverage preparation and service areas must be routed through a FCD. The obvious fixtures include:

- Preparation (Prep) sinks,
- Pre-rinse sinks,
- Pot sinks,
- Three-compartment sinks,
- Mop sinks,
- Dishwashers (ware washers), and
- Floor and trench drains

There are other fixtures that can contribute FOG (e.g., wok stations, pasta stations, etc.). All fixtures that can contribute FOG shall connect to the building grease waste (GW) drain line. The GW drain line shall be clearly marked with GW to distinguish it from the sanitary line serving bathrooms and other sources that should not be plumbed to the FCD. **Attachment 2** provides the typical fixture and fixture symbols shown in plans.

The location of the fixture is also important, for example, a floor drain located behind the service counter shall be connected to the GW drain line even if there is no direct FOG discharge connected to it. Some judgment should be exercised for existing facilities as it applies to floor sinks or floor drains. In some applications, floor drains can't be used to discharge greasy water and only serve to provide a point of discharge for an indirect discharge (e.g., ice maker).



5.3 Wastewater Flow Rate and FOG Mass Rate

Wastewater flow rate and mass rate are determining factors in the design of a grease waste pretreatment system. Calculations and considerations will differ for hydromechanical and gravity FCDs.

5.3.1 Wastewater Flow Rate

Peak flow must be calculated to properly size a grease interceptor to a particular use. When the final configuration of fixtures, and total number of fixtures is unknown (shell FCD installation), peak flow can be calculated using Manning's Formula for full pipe flow for the grease waste drain nominal diameter and slope and a roughness coefficient of 0.0113. See Section 5.7 of this Guidance Manual.

For plans for a build out, or renovation, where the number of fixtures is a known factor, peak flow can be estimated as:

- **Full Pipe Flow** (diameter and slope). Calculated using Manning’s formula for full pipe flow for the grease waste drain nominal diameter and slope and a roughness coefficient of 0.0113, or
- **Drain Time**. Based on total fixture flow rate using one (1) or two minutes (2) drain time, or
- **Drainage Fixture Units** (DFUs). Based on drainage fixture units (DFUs) by multiplying the proposed DFUs by the flow rate calculated using Manning’s Formula for full pipe flow and a roughness coefficient of 0.0113 and divided by the maximum number of DFUs allowed under the Florida Building Code, latest edition, for the grease waste drain diameter and slope. Calculated flow shall not be less than the minimum peak flow in the table below from Section 24-42.6(9)(g) of the Code .

Nominal pipe size in inches	Minimum Total Flow Rate at Grease Interceptor Influent
1.25 – 2.5	20 gpm
3	23 gpm
4	50 gpm
5	91 gpm
6	147 gpm
8	317 gpm

Table 3. Minimum peak flows when using DFUs to determine the peak flow

5.3.2 FOG Loading

Fats Oils and Grease loading to the interceptor is used to calculate cleaning frequencies, and as a factor to properly calculate the size of the grease interceptor. The production of FOG per meal or unit of production changes according to the type of food service establishment. The following values may be used to estimate the FOG loading to the grease interceptor per meal.

Restaurant Type	Grease Production Values ⁸	Food Service Establishment (FSE) Type
Low Grease Producer	0.005 lbs/meal (no flatware)	Elementary cafeteria, grocery meat department, hotel breakfast bar, sub shop, sushi, take-and-bake pizza
	0.0065 lbs/meal (with flatware)	
Medium Grease Producer	0.025 lbs/meal (no flatware)	Café, coffee shop, convenience store, grocery deli, Greek, Indian, Japanese, Korean, Thai, Vietnamese
	0.0325 lbs/meal (with flatware)	
High Grease Producer	0.035 lbs/meal (no flatware)	Full-fare family, fast-food, hamburger bar and grill, German, Italian, fast-food Mexican
	0.0455 lbs/meal (with flatware)	
Very High Grease Producer	0.058 lbs/meal (no flatware)	Full-fare BBQ, fast-food fried chicken, full-fare Mexican, steak and seafood, Chinese, Hawaiian
	0.075 lbs/meal (with flatware)	

Table 4. FOG Loading

5.4 Hydromechanical FCD Selection & Configuration

Sizing requirements are included in Section 24-42.6(9)(c) of the code. When sizing for a hydromechanical grease interceptor the engineer should consider flow rating capacity (gpm) as well as the grease retention capacity at 99% removal efficiency of the interceptor. Where more than one (1) hydromechanical grease interceptor is required to provide the required removal efficiency, they shall be installed in series and the removal efficiency shall be based on the third party testing of the proposed configuration per Section 24-42.6(9)(d) of the code. The engineer designing the system shall obtain from the manufacturer testing information, and include it in plumbing plans.

The minimum size and number of grease interceptors shall be the greatest of the following:

- i) 20 gallons per minute
- ii) Calculations based on the Florida Building Code, latest edition.
- iii) Calculations based on peak flow rate

AND

$$\text{Grease Interceptor's FOG Storage Capacity at 99\% removal efficiency} > M \text{ (meals/day)} \times \text{FOGMEAL (lbs/meal)} \times T \text{ (Cleaning Frequency)}$$

⁸ Refer to ASPE Plumbing Engineer Design Handbook Volume 4, Chapter 8, Table 8-3

Where,

M = maximum number of meals served per day

FOGMEAL = average pounds of Fats, Oils and Grease contained per meal (See Table 4)

Refer to **Attachment 3** for sample calculations.

5.5 Gravity FCD Selection & Configuration

FCD sizing requirements are included in Section 24-42.6 (9)(a) of the Code. Grease Interceptor(s) proposed shall comply with minimum and maximum size (effective volume) requirements of 64E6, FAC.

The minimum size and number of grease interceptors shall be the greatest of the following:

- i) Grease interceptor volume based on the Florida Building Code, latest edition.
- ii) Alternative calculations:
 - a. Third party certification of the effluent concentration showing that complies with discharge standards per Section 24-42.4 (150 mg/L), or of the FOG removal efficiency at 99%.

Or,

- b. Grease interceptor volume based on peak flow rate (Q_{PEAK}) and thirty (30)-minute hydraulic detention time. Total calculated volume shall be increased to account for the maximum volume of waste stored between cleaning cycles (V_{FOG}).

$$V = Q_{PEAK} \times 30 \text{ min} + V_{FOG}$$

Q_{PEAK} = peak flow rate, gpm (full pipe flow based on pipe diameter, slope & DFUs)

V_{FOG} = volume of waste stored between cleaning cycles

- iii) Grease Interceptor Volume (V) calculated based on Chapter 64E-6, Florida Administrative Code.

$$V = [S \times HR/12 \times GS \times RF] + [M \times GM \times LF] + V_{FOG}$$

Where,

S = Number of seats (indoor and outdoor)

HR = Hours of Operation, including prep time and closing

GS = Gallons per seat (25 gallons for ordinary restaurants and 10 gallons for single service article restaurant)

RF = Road factor: use 2.0 interstate highways, 1.5 other freeways, 1.25 recreational areas, 1.0 main highway, and 0.75 other roads.

LF = No ware washer 0.75, with ware washer 1.0 (additional hydraulic detention time for surfactants and heat)

M = Number of meals served per day, excluding sit-down restaurant meals (take out, drive-thru, banquet, room service, other commercial kitchen use, etc.).

If no take-out meals, specify NO Take-Out Meals. If no drive-thru, specify NO Drive-Thru.

GM = 5 gallons per meal

LF = Ware washer 1.0, without use 0.75

V_{FOG} = Volume of waste stored between cleaning cycles

The following multiplication factors can be used as an alternative to calculating the maximum volume of waste stored between cleaning cycles

Cleaning Cycle	Multiplying Factor
Every 30 days	1.0
Every 60 days	1.15
Every 90 days	1.25

Table 5. Gravity Cleaning Cycle Factors

Refer to **Attachment 4** for sample calculations.

5.6 Shared FCD Sizing Considerations

Some facilities share FCDs, more common cases are observed in malls, and multiuse buildings. When a FCD serves more than one site, the administrator/operator of the system shall keep track of the capacity allocated to each site, as follows:

Gravity systems

- For restaurants: number of seats, hours of operation, type of establishment (ordinary restaurant or single service article restaurant), and number of take-out meals per day.
- Commercial kitchens: number of meals per day and whether the site is equipped with dishwasher or not.

Hydromechanical systems

- Number of DFUs or GPM allocated per site.
- Grease production factor according to the type of FSE

Plans submitted for a FSE with a shared FOG control device shall incorporate sizing calculations for all the FSEs in the system to show available capacity for the project. Also see Section 5.10.7 of this Guidance Manual regarding the FOG Master Plan.

5.7 FCD Sizing for Shell Spaces

When sizing FCDs for shell spaces, where the configuration of the system is unknown, the size of the FCD provided shall be adequate for the maximum capacity of the grease waste (GW) drain line. Pursuant to Section 24-42(6)(9)(g)(i) peak flow shall be calculated using Manning's Formula for full pipe flow for the grease waste drain nominal diameter and slope and a roughness coefficient of 0.0113.

Regarding FOG loading, when the engineer has knowledge of future occupant, and occupancy, another possibility is to include well informed engineering assumptions with the sizing calculations, and size the system as if it is a build-out. The engineer designing the system should exercise caution as the capacity of the FCD will limit future use, and be advised future buildouts will still require updated calculations with the known information at that time.

For example, when proposing a gravity system, the engineer may determine the seating area for the future FSE and based on occupation rates estimate the seating capacity. Table 1004.5 of the Florida Building Code, provides occupational loads for restaurants/dining room area as 1/15, i.e., for a dining area of 600 square feet, the estimated number of seats can be derived based on number of people allowed as 600/15, 40 people/seats. In any case, the engineer shall include complete calculations, that is:

For Gravity Interceptors, the minimum size must be the greatest of:

- Peak flow calculations that consider the 30-minute hydraulic detention time and pump out cycle [MDC Section 24-42.6(9)(a)(ii)(1)]
- Calculations per FAC, Rule 64E-6 [MDC Section 24-42.6(9)(a)(iii)] where the number of seats/meals are derived from the engineering assumptions and pump out cycle

For Hydromechanical Interceptors, the minimum size must be the greatest of:

- 20 gpm [MDC Section 24-42.6(9)(c)(i)]

- Calculations based on Peak Flow, pump out cycle, and FCD grease retention capacity at 99% removal efficiency.

ALL shell space plans, and shell FCDs submitted for review must include the following note: “Plans in this set are for a shell FOG Control Device/System installation only, the approval of this shell is not valid for obtaining Certificate of Use/Occupational License approvals. Plans for the buildout to connect to this FOG Control Device/System are required to be submitted to the Building Department, and DERM Plan Review for Grease Review approval and compliance with MDC Section 24-42.6.”

Plan approval for shell FCD installations require construction inspection approval prior to any buildout plan approvals. DERM FOG construction inspection green cards for municipal projects, or proof of Plumbing Department inspection for unincorporated Miami-Dade County projects will be required at buildout plan review level to verify the shell installation was completed per shell FCD approved plans. Plans for buildouts will be limited to the flow, and FOG retention capacities of the FCD installed under the approved shell plans, and the engineer designing buildout plans is also responsible for the buildout facility’s FCD compliance with MDC Section 24-42.6.

5.8 FCD Sampling Point

Pursuant Section 24-42.6(8) of the code, a reasonably accessible location to sample the effluent of the FOG control device shall be provided. The sampling point shall be located after the point of no further treatment. Sampling points located after an individual FCD shall not be considered sufficient for the purpose of demonstrating compliance if there are other fixtures that can introduce FOG beyond the sampling point. A sampling point located after an individual FCD can be used to evaluate the performance of the individual interceptor, but not for overall compliance. Therefore when the system consists of more than one FCD, it is required to provide one compliance sampling point after the flow from all FCDs is combined.

Referring to Figure 2 below, note that the existing FCD location is inadequate because there are fixtures (e.g., dishwasher) that can introduce FOG into the private or public sewer connected to the building (kitchen) drain after the FCD . Also note that the sampling point is inadequate for the same reason.

In Figure 3 and Figure 4, note that the existing FCD location is adequate because it is located beyond all fixtures that can introduce FOG into the private or public sewer, and is also installed below ground/grade to intersect the building grease waste drain. Also note that the sampling point is adequate for the same reasons.

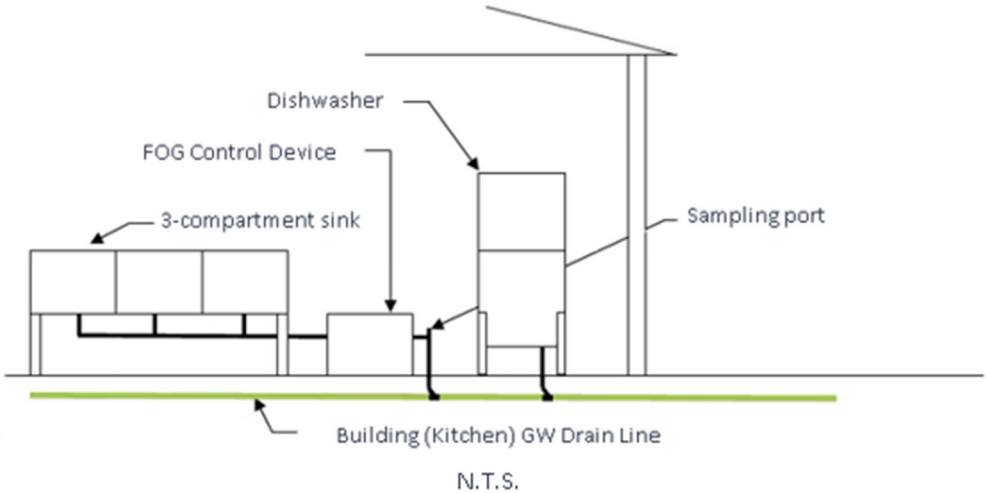


Figure 2. FCD and sampling port inadequate location

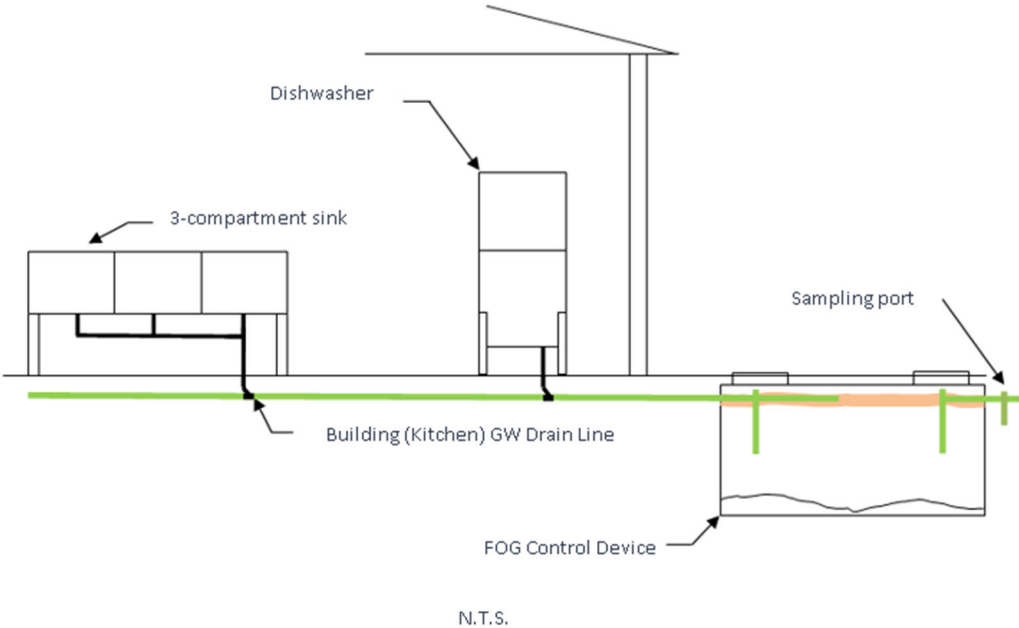


Figure 3. FCD and sampling port adequate location

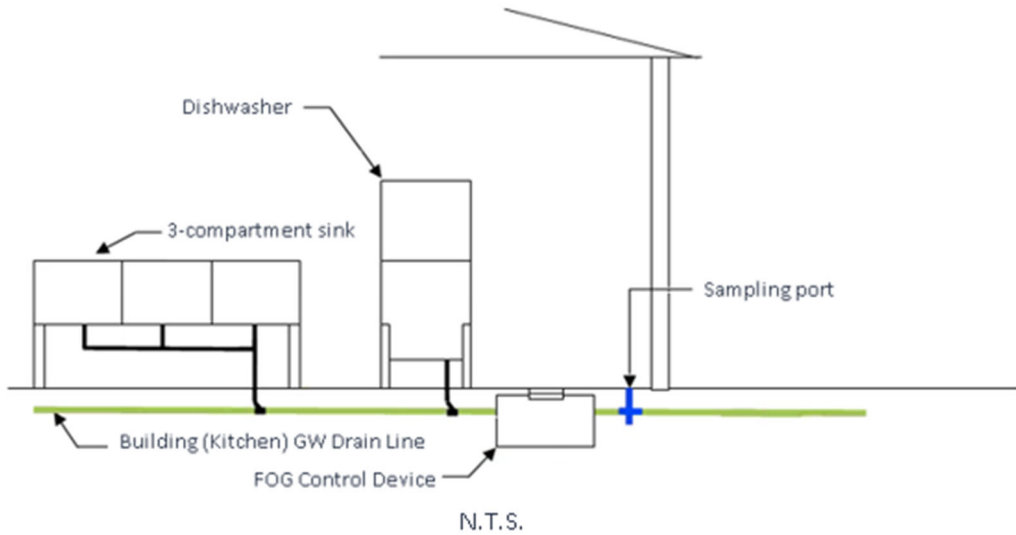


Figure 4. FCD and sampling port adequate location

It shall be noted that Figures, 2, 3, and 4 above do not include any solids separators in the schematics, however the same logic for placement of the FCD, and sampling port applies to the location of the solids separator when installing a FCD that requires one- see Section 5.10.8 of this Guidance Manual.

Some grease interceptors have a built-in sampling port (point) while others have “viewing ports”. Based on field data collected over past years, the Department requires the use of an external sampling point located outside the FCD. Several grease interceptor manufacturers have sampling points/ports that can be used to collect a compliance sample; some are included in Figure 5.



Figure 5. Sampling port configurations

Manufactured sampling ports are preferred, and shall have sufficient access and depth to facilitate efficient sampling collection, as well as allow for a 3-inch diameter x 6-inch long sample bottle used by DERM FOG inspection staff.

For existing FCDs a plumbing fitting configured to allow sample collection will be allowed. Sampling point design shall at least comply with:

- A double sanitary tee installed on the building (kitchen) GW Drain Line and located hydraulically beyond all fixtures that can contribute FOG (e.g., 3-compartment sink, mop sink, dish washer, prep-sink, etc.).
- The double sanitary tee sampling point includes a PVC-CAP on the bottom of the vertical axis to create the sampling sump.
- Minimum diameter vertical axis is 6-inch, and minimum depth of the sump 6-inch.

The engineer of record shall design/select the most appropriate sampling point design to assure consistent and representative sampling results based on site-specific facility and operation conditions. The sampling point shall be directly accessible for visual inspection and sampling. A permanent minimum clearance for sampling port is 3 feet horizontal and 4 feet vertical from the out edge of the lid, and shall be shown in plans.

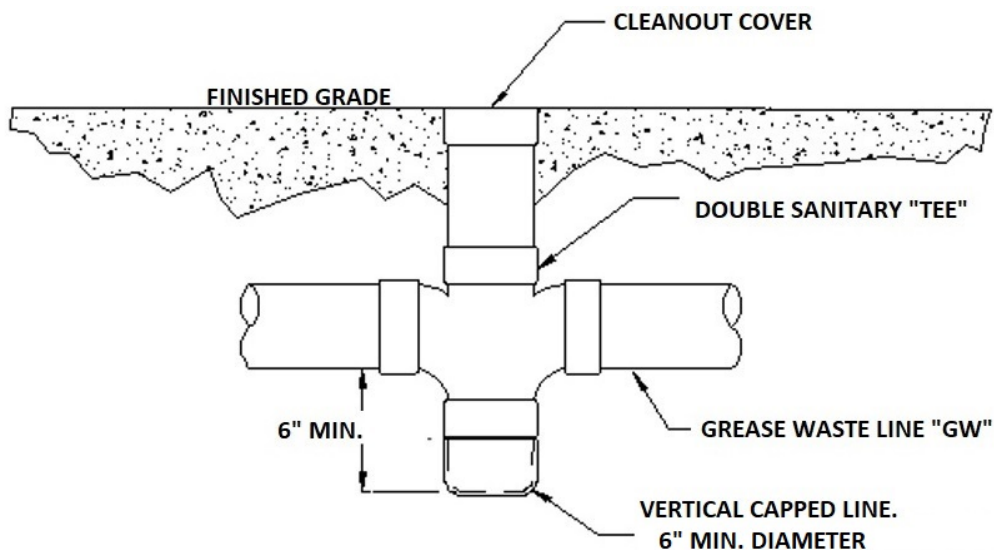


Figure 6. Minimum sampling port requirements

The sampling point shall not be confused with a cleanout, which are part of most systems and are there to provide access to the line, but are not configured to allow sample collection. FBC-Plumbing Section 708 indicates that cleanouts when required must be accessible and shall not be covered with cement or plaster.

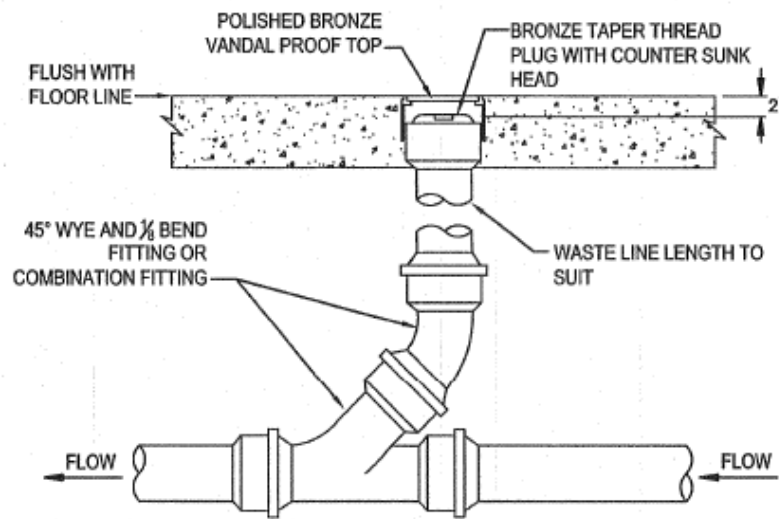


Figure 7. Cleanout schematic

5.9 Location of the FOG Control Device

Proposed FCDs cannot receive flow from more than one property (8), unless a unity of title, in a form approved by Director, or Director’s designee, is executed. Note that covenant in lieu of unity of title is NOT a unity of title and is therefore not acceptable.

A unity of title must be provided at the time of the plan submittal. If an easement, or area outside of the project’s property boundary is to be used for the installation of a system, it too requires documentation at plan level.

A boundary survey that delineates property lines, including delineating “common” areas/land, parking spaces, utilities, etc. may be requested at the time of plan submittal.

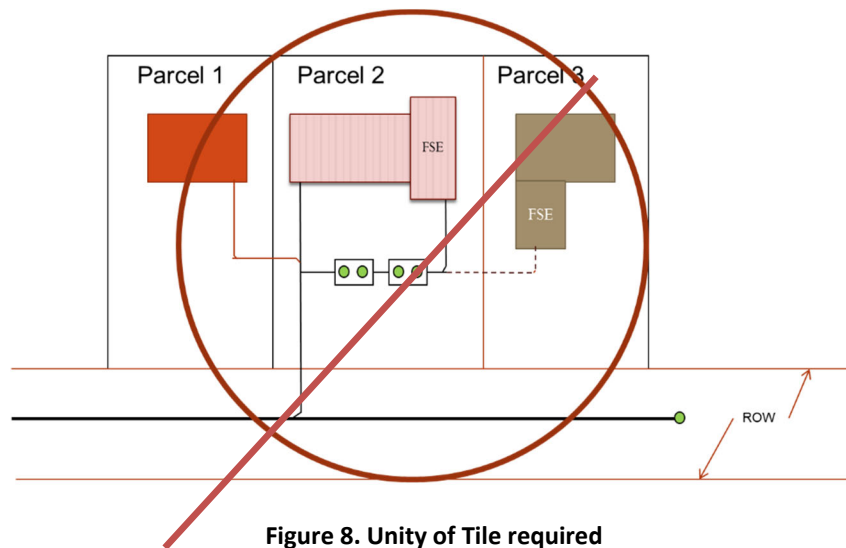


Figure 8. Unity of Title required

5.9.1 FCD Accessibility

Accessibility is a very important consideration when deciding location of the FCD. In the case of hydromechanical systems located inside the establishment, installations under the 3-compartment sinks or under counters are not accepted. The design shall give enough clearance for maintenance and inspection purposes. Typically four (4) feet of vertical clearance will be enough, depending on the size of the FCD, and location of installation. Ultimately the dimensions of the FCD, and installation location shall determine the required clearance. A minimum permanent clearance of 4 feet vertical and 3 feet horizontal from the outer edge of the lids shall be shown on plans for interceptor and sampling point. FCDs shall also be installed below grade pursuant Section 24-42.6(8)(g) of the Code.

Systems with manholes as access points shall not be located in areas with high traffic such as drive-thru lanes, entry/exit driveways, garage entry and exit ramps, drive aisles, parking lot spaces, etc. Plumbing floor/site

plans are required to show the area of the proposed FCD location on site within the property boundary (landscape area, sidewalk, corridor, bollarded no parking zone, etc.). Access routes to the FCDs for DERM FOG inspections, sampling, pump outs, and maintenance shall be considered in the design taking into account areas where the customers will be, or where the operations of the establishment occur so that these areas will not be disturbed during these activities.

5.9.2 ADA Parking Spaces

Solids separators, grease interceptors, and sampling point openings/manholes shall be provided with a minimum horizontal of 4-ft clearance, measured from the outer edge of the closest opening to all Handicap/ADA Parking spaces and adjacent access aisles. This 4-ft horizontal clearance created by this MINIMUM separation shall not encroach into ANY Handicap parking space and the adjacent access aisle. Proposed installation locations may not obstruct, or occupy the entry/exit way of the parking space. If at any time, including field inspection, there is less than 4-ft horizontal clearance, measured from the outside edge of an opening/manhole, the system shall be required to be removed/abandoned and all flows to it immediately cease in accordance with MDC Code Section 24-42.6(8)(i), 2019 Florida Statutes TITLE XXIII, Ch. 316 Sec. 316.1955

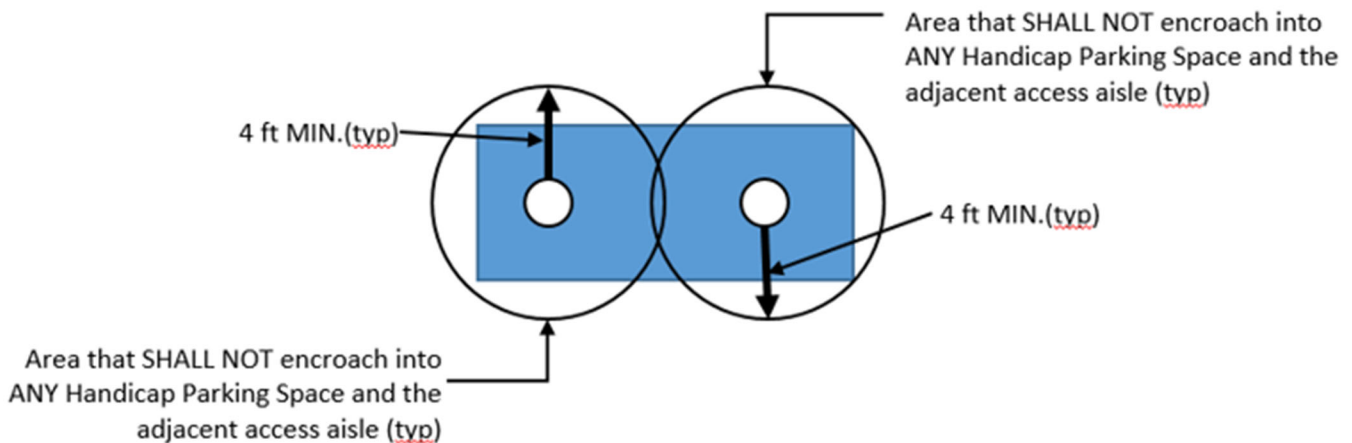


Figure 9. ADA encroachment restrictions

5.9.3 Other Installations

FCDs shall be installed below grade pursuant Section 24-42.6(8)(g) of the Code. For any other installations approved by the Director or Director's designee the plans shall consider the safety, and practical accessibility for all persons who will be accessing the FCDs.

Sufficient access to the tops of the solids separators, FCDs, and sampling port for inspection, sampling, and maintenance purposes shall be demonstrated in plans. Plans shall provide a safe, and permanent access structure, raised platform, or standing platform to provide access to the elevated system with minimum 3-foot horizontal clearances to be met from the outer edge of the lid of each solids separator, FCD, and sampling port.

Any proposed platforms shall provide sufficient access to the tops of the solids separators, FCDs, and sampling port shall be from the top of the manholes/lids.

At a minimum, 7-foot unobstructed clearance from the standing point of the platform shall be provided for personnel to access. The maximum height allowed from the top of the standing platform to the top of the tallest manhole lid is 40-inches, provided that a manufacturer approved lightweight lid is specified in plans. Proposed width of standing platforms shall be a minimum of 36-inches to also meet the minimum horizontal clearance requirement.

Platform heights, widths, and any associated safety railings and shall encompass the platform, and any stairways provided shall be a permanent structure, with non-slip, flat-footed steps. Plans shall clearly show all elevation, aerial, and plan view details with heights, and dimensions of all components of FCDs, and the proposed access design drawn to scale. Of course, any proposals shall conform to all other industry safety regulations.

The manufacturer cut sheet/shop drawing for the alternative lightweight lids need to be provided in plans, and specified as typical for each grease interceptor, and solids separator, sampling port as applicable MDC Code Section 24-42.6(8)(i).

5.9.4 Horizontal Runs

Horizontal run is another aspect of the design sometimes overlooked when designing the system. To avoid clogging of pipes with congealed grease, the location of the grease interceptor more than 25-feet from the source is not advised (PDI-G101-installation).

Section 24-42.6(8)(v) of the Code provides that when the location of the interceptor is at a distance greater than or equal to 50-feet from the source of FOG, access points must be provided at least every 50-feet measured center-to-center. Additional design measures are required when the distance is greater than 100-feet. Linear distances may be required to be shown at the time of plan review where the run is suspected of being greater than 50-feet.

5.9.5 Clogging Prevention

The Code provides that anytime the horizontal run from the source of food waste and FOG is greater than 100 feet, plans shall include provisions for preventing the clogging of the line by FOG and other waste- this is in addition to the access points required at every 50-feet. Mechanisms to achieve this is to install a heat trace on the pipe, frequency of jetting of the lines, etc. The design and installation of heat trace is regulated under the IEeE 515.1 standard. Note that Interceptor Monitoring Alarms or Devices, are not accepted as clogging prevention methods.

5.9.6 FOG Monitoring Alarms & Devices

FCDs installed in remote locations including a different floor, or any horizontal distance exceeding 100 feet from the back of the house area, require an Interceptor Monitoring Alarm (IMA), or an Interceptor Monitoring Device (IMD) to be provided in plans for installation.

- Interceptor Monitoring Alarm shall mean a system and its components capable of monitoring levels in a FOG control device on a regular interval. The system shall trigger a visual and audible alarm at the FOG Capacity Limit. Proposed IMAs shall indicate in plumbing plans for installation: the height of the water (in inches) at which it will alarm- not to exceed the crown of the pipe in the outlet side of the tank.
- Interceptor Monitoring Device shall mean a system and its components capable of monitoring floating and settled solids in a FOG control device on a regular interval, triggering a visual and audible alarm at the FOG Capacity Limit, and reporting data electronically to the Department at a frequency and format approved by the Director or Director's designee. Proposed IMDs shall indicate in plumbing plans: the FOG capacity limit/height of the combined FOG and solids depth at which the alarm will be triggered (25% for gravity, and 75% for hydromechanical).

The FCD manufacturer, and IMA/IMD manufacturer should be contacted accordingly to provide all required specifications, and diagrams.

The visual and audio alarm system panel is required at the location of each user discharging to the FCD to be able to receive notifications. The alarm system may also be centrally located at a Building Management Office with their consent if they are maintaining the FCD.

5.10 Other Design Considerations

5.10.1 Existing FOG Control Devices

When a new facility is connecting to an existing DERM GDO-permitted FCD, or when an expansion or renovation is proposed that requires providing more FCD capacity, the existing system shall be updated to fully comply with the new regulations under Section 24-42.6 of the Code.

5.10.2 Facilities Adding Seating Capacity

Adding seating is directly correlated with the FCD capacity therefore the Florida-registered Professional Engineer shall, at a minimum, show new sizing and pump out calculations to comply with Section 24-42.6(9) of the Code, as well as an existing FCD Condition Assessment, and demonstrating that all required plumbing fixtures are connected to the FCD.

5.10.3 Other Increases to FOG Loading

All sources of FOG contributions shall be considered at plan level including but not limited to changes in use, or operations which also increase FOG generation in the cooking or cleaning processes such as:

- Adding any additional services: take-out, delivery/delivery app services catering, drive-thru, etc.
- Addition of exhaust hoods
- Addition of cooking equipment
- Addition of new display areas for storing food items
- New additions to the existing menu

5.10.4 Stormwater/Rainwater

The installation of a FCD shall not allow the infiltration of rain water in the sewer system. To avoid rainwater infiltration in the system, mop sinks, and other outdoor drains are not allowed.

5.10.5 Trash Room Floor Drains

Any trash areas located outdoors with floor drains discharging to grease waste or sanitary lines, shall provide a permanently roofed, and bermed enclosure to prevent stormwater infiltration to the sanitary sewer system.

5.10.6 No Direct Connection for 3-Compartment Sinks

Per FBC-802.1.8 sinks used for the washing, rinsing or sanitizing of utensils, dishes, pots, pans or service ware used in the preparation, serving or eating of food shall discharge indirectly through an air gap or an air break to the drainage system.

5.10.7 FOG Master Plan

For facilities such as plazas, malls, hotels with multiple food service establishments (FSEs), or areas which discharge to shared FCDs, a FOG Master Plan (FMP) shall be provided, and updated accordingly in plans at the time of each FSEs plan review submittal to keep track of flow, FOG loading used and available capacity in the shared FCDs. The FMP will compound information for all FSEs contributing FOG waste to the FCD, or for any changes in FSE. The most current FMP should be kept by building management office for their tenants, and be provided to the customer or design engineers as it will be asked for at the time of plan review. The FMP template may be found as **Attachment 5**.

5.10.8 Solids Separators

Grease waste systems receive solids and food solids mainly as a result of lack of best management practices during cleaning activities (untrained staff). Solids separation is a critical component to preventing plumbing backups, and to reduce the frequency of pump/maintenance for the FOG control device; therefore it is important to install adequate solids separators.

The accumulation of solids reduces the effectiveness of the FCD by reducing hydraulic detention time, and is problematic for the flow control mechanisms as solids can block the flow control, which effectively reduces pipe size; most if not all hydromechanical units, require a flow control.

Per Section 24-42.6(8)(u) of the Code, solid separation is required for all FCDs that are equipped with a flow control device or that are not certified to handle solids. Solid separators shall at a minimum meet calculated peak flow rate of entering the FCD.

It shall be noted that per FBC-Plumbing Section 1003.3.2 food waste disposers, or grinders shall not discharge to the FCD.

5.10.9 Construction Inspection

When municipal construction plans are approved, an installation inspection by DERM FOG Inspectors is required prior to obtaining a GDO permit, Certificate of Use/Occupational License/Business Tax Receipt approval, or buildout approval for previously approved shell FCDs. A passed construction installation inspection will result in the issuance of a green approval card for the DERM-Grease approved process number. A failed construction inspection will result in the issuance of a red disapproval card, and a detailed inspection report identifying why the inspection was not approved. A few reasons failed construction inspections may occur are: approved plans are not on site, installation was not completed per approved plans, FOG Control System components are inaccessible, FOG approved sheets were voided and revised and not sent back to DERM-Grease for re-approval, etc.

To schedule a construction inspection, follow the instruction on the “FOG 2.0 RER-DERM FCS Installation Inspection” stamp that is required on all municipal FOG approved plans. An email shall be sent to iFOG2@miamidade.gov requesting the inspection 24-hours prior to the desired inspection date- the email shall include the DERM-Grease approved process number, the complete address of the facility, folio number, and name and telephone number of the contact person to be present during the inspection. DERM-Grease approved plan sheets are required to be on site for inspection.

DERM-Grease Review plans approved for unincorporated Miami-Dade County projects (folios beginning in 30) are inspected by the Building/Plumbing Department inspectors.

5.10.10 FCD Labeling

Labels on all FOG control devices, both hydromechanical and gravity, shall be visible at the time of construction inspection, and shall remain visible after the installation is completed. Plan review staff will verify that all shop drawings are provided showing the location of identification labels which will remain visible after the installation is complete. At a minimum, the following must be shown on the label:

Hydromechanical: the manufacturer name, model number, rated flow rate, pounds of FOG/grease capacity at the rated % efficiency per lab testing results

Gravity: State Health Office/FDOH approval number

Acceptable means of applying permanent marking shall include legible, permanently-affixed and protected: metal plates, etching, mechanical stamping, stamping with a permanent non-water soluble ink, molding in, and adhesive labels when placed on a surface that is not-normally submerged in water, and uses non-water soluble ink.

5.10.11 Yellow Grease Storage Areas

Yellow and brown grease storage areas shall be designed to prevent the release of FOG to ground, groundwater, surface waters or storm sewers. Locations and details for all stored waste, including yellow and brown grease, shall be shown and labeled in plans. Storage containers shall be sized so they do not exceed ninety percent capacity prior to being emptied. All storage containers shall have a lid that prevents rainwater inflow and can be locked to prevent vandalism (Section 24-42.6 (8)(s) of the Code).

Plans shall show calculations for the quantity of yellow and brown grease generated by the user, capacity in gallons of the storage container, and frequency of emptying of the storage container at 90% capacity of the container or sooner.

5.10.12 Wash-Down Areas

All wash-down areas shall be designed to prevent the release of wash-water and FOG to ground, groundwater, surface waters, storm sewer (Section 24-42.6 (8)(t) of the Code). Plans submitted for review shall show wash-down areas for the washing of larger equipment, floor mats, can washing, etc. if wash-down services are to be performed in a mop sink, the mop sink shall be labeled as such with mop sink discharging to the FCD. If equipment for wash down services are taken off site and performed by a contracted servicing company, a note with the information regarding the specifics shall be included in the plumbing plans.

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ATTACHMENT 1

FOG 2.5 CU/OL DECISION MATRIX

FOG^{2.5} CU/OL Review Decision Matrix

December 11, 2020

Facility Status	GDO Permit Status	Type	CU (or Municipal Equivalent) Review	Actions by CU Reviewer	Actions by FOG Review Engineer
Existing Facility Discharging to Public Sewers	NGT or UNKN ⁽¹⁾	A	FSE with Status 13 (NGT/UNKN) - these are the "Original" NGTs that the Department issued GDOs with NGT Shell.	Advise applicant that they will need to submit plans to the Building Department and DERM-Grease for the installation of a FCD.	
	Active GDO Permit [Status 1 to 5] OR Prior use had a valid GDO operating permit within the last 12 months	B	1. NO change in FSE type, NO change in seating, NO change in area, & NO open enforcement. 2. GDO Application is completed properly with required signatures. MDC Section 24-42.6(7)(c)	Activate FOG Review to verify FOG Control Device (FCD) condition assessment results.	FOG Review to include FOG Control Device (FCD) Condition Assessment ^{(2),(3)} . CU Approved if GI is not breached. Otherwise CU NOT approved, advise applicant that they will need to submit plans to the BLDG and DERM-Grease in compliance with Section 24-4.2.6 (FOG 2.0). Deficiencies reported in the condition assessment, other than breached tank, shall be referred to the inspection group via email.
		C	Change in FSE type; increased seating capacity, dining area, or drive-thru capacity ⁽¹⁾ MDC Section 24-42.6(7)(b)	Activate FOG Review, CU NOT approved. Advise applicant that a FOG review is required to determine if existing system has adequate capacity and if it is in compliance with with Section 24-42.6	Plans with sizing calculations Signed by a P.E., to show compliance with MDC Section 24-42.6 AND FOG Control Device Condition Assessment ^{(2),(3)} required with the OL Application. 1. If no plumbing changes, AS-BUILT showing compliance with MDC Section 24-42.6 (OL Intake) . **A, **B 2. If plumbing changes construction plans (BLDG & DERM) submittal required (Building Intake). 3. If adding outdoor seating not previously approved, construction plans (BLDG & DERM-Grease) submittal required (Building Intake). 4. If breached interceptor (per condition assessment) construction plans (BLDG & DERM-Grease) submittal required (Building Intake). 5. If insufficient capacity construction plans (BLDG & DERM) submittal required (Building Intake). **A_For facilities with existing hydromechanical FCD, if the FCD does not comply with 99% removal efficiency, then request construction plans, instead of as-built. **B_As-builts with existing gravity FCDs are NOT required to show compliance with pH, DOH number and, concrete precasting facility.
		D	Open enforcement.	Advise customer that violation needs to be corrected prior to CU issuance.	Follow instructions in FNOV/WN.
		E	No previous record of CU approved by DERM	Activate FOG Review, CU NOT approved.	1. NO change in FSE type, NO change in seating, NO change in area, & NO open enforcement, go to B. 2. Change in FSE type; increased seating capacity, dining area, or drive-thru capacity ⁽¹⁾ , go to C.
		F	Plans approved by DERM-Grease after January 1, 2015	Activate FOG Review to Confirm Plans Match GDO Application.	Confirm approved plans, and GDO application match for the same business. If plans approved under FOG2.0 and plans are for a MUNICIPALITY, DERM Construction Inspection Approval card required.
		G	NO change in FSE type, NO change in seating, NO change in area, & NO open enforcement.	Activate FOG Review, CU NOT approved.	Plans with sizing calculations Signed by a P.E., to show compliance with MDC Section 24-42.6 AND Grease Interceptor Condition Assessment ^{(2),(3)} required with the OL Application. 1. If no plumbing changes, AS-BUILT showing compliance with MDC Section 24-42.6 (OL Intake) . **A, **B 2. If plumbing changes construction plans (BLDG & DERM) submittal required (Building Intake). 3. If adding outdoor seating not previously approved, construction plans (BLDG & DERM-Grease) submittal required (Building Intake). 4. If breached interceptor (per condition assessment) construction plans (BLDG & DERM-Grease) submittal required (Building Intake). 5. If insufficient capacity construction plans (BLDG & DERM) submittal required (Building Intake). **A_For facilities with existing hydromechanical FCD, if the FCD does not comply with 99% removal efficiency, then request construction plans, instead of as-built. **B_As-builts with existing gravity FCDs, are NOT required to show compliance with pH, DOH number and, concrete precasting facility.
	H	Change in FSE type; increased seating capacity, dining area, or drive-thru capacity ⁽¹⁾			
	I	FSE with existing FCD, NEVER HAD A GDO PERMIT, NO record of plans approved by DERM- Grease after January 1, 2015			
	J	No previous record of CU approved by DERM			
	Closed/Inactive GDO permit > 12 months [Status 7] OR Never had a GDO permit MDC Section 24-42.6(5)(A)	K	Open enforcement.	Advise customer that violation needs to be corrected prior to CU issuance.	Follow instructions in NOV/WN.
		L	Plans approved by DERM-Grease after January 1, 2015	Activate FOG Review to Confirm Plans Match GDO Application.	1. Confirm Plans Match GDO Application. 2. If plans approved under FOG2.0 AND plans are for a MUNICIPALITY, confirm DERM Construction Inspection Approved.
		M	Only for GDO permits closed >12 months: NO change in FSE type, NO change in seating, NO change in area, & NO open enforcement.	Activate FOG Review, CU NOT approved.	See Type G above or, facility may qualify for Abeyance for review on a case by case basis (See attached).
	Second User [Any Status]	N	FSE proposing second use	Activate FOG Review, CU NOT approved.	Same as H. Note that a GDO permit will be issued to each user, and authorization letter is required from existing user to allow the additional discharge to the interceptor.
	Existing Facility Discharging to SEPTIC (OSTDS)	Never had a GDO permit	O	FSE located outside a Wellfield Protection Area, AND public sewer not abutting, GDO permit not required.	CU Approved, FOG Review Not Required
P			FSE located inside a Wellfield Protection Area - NO change in FSE type, NO change in seating, NO change in area, & NO open enforcement. Per MDC Section 24-42.6(6) , GDO permit required within 12 months.	Activate FOG Review	FOG review to confirm if the applicant was notified of 12-months to comply with MDC Section 24-42.6(6) . To search for the date of the notification -- Go to PEN Database and look for the open task (NumLock T). 1. If not previously notified, provide the applicant the information on MDC Section 24-42.6(6) , available online ⁽⁴⁾ . Fill out a FOG Plan Review Tracking Form to open the permit Shell , refer the case via e-mail to the inspection group (iFOG2@miamidade.gov) AND approve CU. 2. If more than 12-months after the notification As-Built plans signed by PE, to show compliance with MDC Section 24-42.6 , FOG Control Device Condition Assessment ^{(2),(3)} , AND GDO permit application required. 3. If the applicant does not comply with the requirements listed under 2), disapprove CU and refer case to inspection group.
Q			FSE located inside a Wellfield Protection Area - Change in FSE type; increased seating capacity, dining area, or drive-thru capacity ⁽¹⁾ . Per MDC Section 24-42.6(6) , GDO permit required within 12 months.	Activate FOG Review	CU not approved. Plans submittal required to comply with MDC Section 24-42.6(6) .
New Facility	No GDO permit	R	Plans approved by DERM-Grease after January 1, 2015	Activate FOG Review to Confirm Plans Match GDO Application.	Confirm approved plans, and GDO application match for the same business. If plans approved under FOG2.0 and plans are for a MUNICIPALITY, DERM Construction Inspection Approval card required.
		S	NO record of plans approved by DERM-Grease after January 1, 2015	CU NOT approved. Advise applicant that construction plans (BLDG & DERM-Grease) submittal required.	

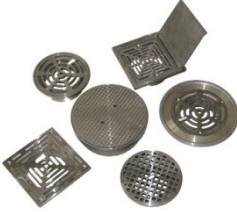






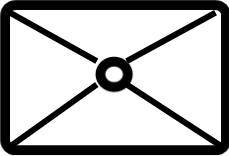
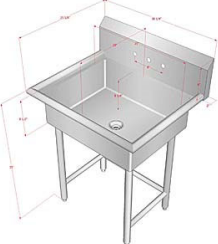


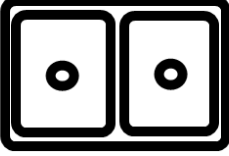
NOTES
⁽¹⁾ Increasing square feet, increasing dining areas seating (chairs and/or stools), modifying (adding or subtracting) plumbing system, adding or expanding drive-thru lanes capacity; or adding, replacing or modifying FOG control devices. Any of these impacts FOG generation and therefore require Engineering FOG review.
⁽²⁾ FOG Control Device (FCD) condition assessment, forms must be signed by PE, or a Certified Plumber
 Template available at: <https://www.miamidade.gov/environment/fats-oils-grease.asp>
⁽³⁾ Condition Assessment valid for 12 months, and not required for new systems for 12 months
⁽⁴⁾ Instructions for sites on Septic and in the WPA, available at: <https://www.miamidade.gov/environment/fats-oils-grease.asp>
⁽⁵⁾ NGT facilities are placed under Status 13, after plans are approved, to indicate that DERM inspection is required.

ALL STATUS 13⁽⁵⁾ and 16 SHALL PROVIDE DERM CONSTRUCTION INSPECTION APPROVAL CARD

Customer shall schedule inspection by email at: iFOG2@miamidade.gov

UPDATED 12/11/2020

Attachment 2. Fixtures and Fixtures Symbols

Type of Fixture		Plumbing Symbols
Floor Drains		<p style="margin: 0;">FD</p> 
Trench /Channel Drains		
Floor Sink		<p style="margin: 0;">FS</p> 
Mop Sink		
Single Compartment Sink		
Two Compartment Sink		

ATTACHMENT 3

HYDROMECHANICAL FCD SAMPLE SIZING CALCULATIONS

Hydromechanical Grease Interceptor Sizing - Sample 1

1. Peak Flow based on - Drain Time- Total fixture flow rate using one (1) or two (2) minutes drain time

Fixtures	L	W	D	Quantity	Volume	
	inches	inches	inches		in ³	gallons
3-comp sink	20	18	12	3	12,960	56.1
3-comp sink	18	15	12	3	9,720	42.1
Hand Sink	12	9	6	1	648	2.8
Mop Sink	23	18	18	1	7,452	32.3
2-comp sink	20	18	12	2	8,640	37.4
Total						171

V = 171 gallons
 75% of V = 128 gallons
 Drain Time = 2 min
 $Q_{\text{DRAIN FIXTURE}} = 64 \text{ gpm}$
 Grease Waste Drain Diameter = 4 inch
 Drainage Fixture Units = 180 DFUs
 Peak Flow Rate = 64 gpm
Select FCD by matching Q = 75 gpm

2. FOG Load

Seats = 100 Seats
 Seatings rotations = 3 meals/seat
 Meals from seats = 300 meals/day
 Take-Out Meals = 150 meals/day
 Drive-Thru Meals = 0 meals/day
 Banquet/Meeting Meals = 0 meals/day
 Room Service meals = 0 meals/day
 Total Meals = 450 meals/day

 Pounds FOG/Meal = 0.05 lbs/meal
 Pounds FOG/day = 22.5

Pump out Frequency = 30 days 60 days 90 days
 Pounds of FOG @ POF = 675 FOG lbs 1350 FOG lbs 2025 FOG lbs

3. Select the FCD assuming the following grease holding capacity on the FCDs at the required 75 gpm

One (1) FCD FOG Capacity @99% = 1,000 Lbs Tested
 Two (2) FCD FOG Capacity @99% = 1,827 Lbs Tested
 Three (3) FCD FOG Capacity @99% = 2,329 Lbs Extrapolated

Hydromechanical Grease Interceptor Sizing - Sample 2

1. Peak Flow - based on maximum capacity of the drain line

Grease Waste Drain Diameter = 4 inch
Max. Drainage Fixture Units = 180 DFUs
Peak Flow Rate = 100 gpm

2. FOG Load

FOG Based on Seats:

S = 254 Seats
Seating per seat = 3
Meals = 762 meals/day

Total Meals = 912 meals/day
Pounds FOG/Meal = 0.05 lbs/meal
Pounds FOG/day = 46 FOG lbs/day

FOG Based on Other Meals:

Take-Out Meals = 150 meals/day
Drive-Thru Meals = 0 meals/day
Banquet/Meeting Meals = 0 meals/day
Room Service meals = 0 meals/day
Total Meals = 912 meals/day

Pump out Frequency (POF) = 30 days

Pounds of FOG @ POF = 1368 FOG lbs

3. Select the FCD assuming the following grease holding capacity on the FCDs at the required rated capacity of 100 gpm

One (1) FCD FOG Capacity @99% = 1,000 Lbs Tested
Two (2) FCD FOG Capacity @99% = 1,827 Lbs Tested
Three (3) FCD FOG Capacity @99% = 2,329 Lbs Extrapolated

Hydromechanical Grease Interceptor Sizing - Sample 3

1. Peak Flow based on Drainage Fixture Units (DFUs)

Grease Waste Drain Diameter = **4** inch
 Proposed Drainage Fixture Units (DFUs) = 65 DFUs
 DFU/gpm = **1.7**
 Calculated Flow rate = 38
 Minimum Flow rate = **50 gpm**

Diameter (inches)	DFU/gpm	Minimum Total Flow Rate
3	0.8	23 gpm
4	1.7	50 gpm
5	2.1	91 gpm
6	2.3	147 gpm
8	2.4	317 gpm

2. FOG Load

FOG Based on Seats:

S = 30 Seats
 Seating per seat = 3
 Meals = 90 meals/day

Total Meals = 170 meals/day
 Pounds FOG/Meal = 0.05 lbs/meal
 Pounds FOG/day = 9 FOG lbs/day

FOG Based on Other Meals:

Take-Out Meals = 80 meals/day
 Drive-Thru Meals = 0 meals/day
 Banquet/Meeting Meals = 0 meals/day
 Room Service meals = 0 meals/day
Total Meals = 170 meals/day

Pump out Frequency (POF) = 60 days

Pounds of FOG @ POF = 510 FOG lbs

3. Select the FCD assuming the following grease holding capacity on the FCDs at the required rated capacity of **50 gpm**

One (1) FCD FOG Capacity @99% = 250 Lbs Tested
 Two (2) FCD FOG Capacity @99% = **600 Lbs** Tested

ATTACHMENT 4

**GRAVITY FCD SAMPLE SIZING
CALCULATIONS**

Gravity Grease Interceptor Sizing - Sample 1: Seats + Meals

Grease Waste Drain Diameter = 4 inch
 Drainage Fixture Units = 180 DFUs
 Peak Flow Rate = 100 gpm

Volume Based on Seats:

Effective Capacity = $S \times HR/12 \times GS \times RF \times F$

Type = Single service article restaurant

Location = Interstate Highway

Pump Out Frequency = 90 days

S = 50 Seats

HR = 12 hrs per day, including Pre & Closing

GS = 10 gallons per seat

RF = 2 Interstate Highway

F = 1.25 Pump Out Frequency Factor

DERM Effective Capacity = 1,250 gallons

FBC (64E-6, FAC) Min. Capacity = 1,000 gallons

Volume Based on Meals:

Effective Capacity = $M \times GM \times LF \times F$

M = 300

Ware Washer = Yes

Pump Out Frequency = 90 days

GM = 5 gal/meal

LF = 1

F = 1.25

DERM Effective Capacity = 1875 gallons

FBC (64E-6, FAC) Min. Capacity = 1500 gpm

Volume by 64E-6 + DERM = 1250 gallons + 1875 gallons = 3,125 gallons

Pounds of FOG/Meal = 0.05 lbs/meal
 Meals (using 4 rotations) = 200 meals/day
 Pounds of FOG/day = 10 FOG lbs/day
 Pounds of FOG @Pump Out Frequency= 900 FOG lbs
 FOG in gallons (6.8lbs/gal)= 132 FOG gallons

Pounds of FOG/Meal = 0.05 lbs/meal
 Meals = 300 meals/day
 Pounds of FOG/day = 15 FOG lbs/day
 Pounds of FOG @Pump Out Frequency= 1,350 FOG lbs
 FOG in gallons = 199 FOG gallons

Volume of FOG = 132 + 66 gallons = 331 gallons

The minimum volume shall be the largest of the following:

Volume by 64E-6 + DERM = 1,250 gallons + 1875 gallons = 3,125 gallons

Volume = QPEAK x 30 min + VFOG = 3,000 gallons + 331 gallons = 3,331 gallons

- S = Number of seats (indoor and outdoor)
- HR = Hours of Operation, including prep time and closing
- GS = Gallons per seat (25 gallons for ordinary restaurants and
- RF = Road factor: use 2.0 interstate highways, 1.5 other
- WWF = No ware washer 1, with ware washer 1.25 (additional
- M = Number of meals served per day
- GM = Gallons per meal, use 5 gallons
- LF = Ware washer 1, without use 0.75
- F = Pump out frequency: use 1.25 for 90 days, 1.15 for 60 days & 1 for 30 days

Gravity Grease Interceptor Sizing - Sample 2: Seats + Meals

Grease Waste Drain Diameter = 4 inch
 Drainage Fixture Units = 180 DFUs
 Peak Flow Rate = 100 gpm

Volume Based on Seats:

Effective Capacity = $S \times HR / 12 \times GS \times RF \times F$

Type = Single service article restaurant

Location = Interstate Highway

Pump Out Frequency = 90 days

S = 254 Seats

HR = 12 hrs per day, including Pre & Closing

GS = 10 gallons per seat

RF = 2 Interstate Highway

F = 1.25 Pump Out Frequency Factor

DERM Effective Capacity = **6,350** gallons

FBC (64E-6, FAC) Min. Capacity = 5,080 gallons

Volume Based on Meals:

Effective Capacity = $M \times GM \times LF \times F$

M = 100

Ware Washer = Yes

Pump Out Frequency = 90 days

GM = 5 gal/meal

LF = 1

F = 1.25

DERM Effective Capacity = **625** gallons

FBC (64E-6, FAC) Min. Capacity = 500 gpm

Volume by 64E-6 + DERM = 6350 gallons + 625 gallons = 6,975 gallons

Pounds of FOG/Meal = 0.05 lbs/meal

Meals (using 4 rotations) = 1,016 meals/day

Pounds of FOG/day = 51 FOG lbs/day

Pounds of FOG @ Pump Out Frequency = 4,572 FOG lbs

FOG in gallons (6.8lbs/gal) = 672 FOG gallons

Pounds of FOG/Meal = 0.05 lbs/meal

Meals = 100 meals/day

Pounds of FOG/day = 5 FOG lbs/day

Pounds of FOG @ Pump Out Frequency = 450 FOG lbs

FOG in gallons = 66 FOG gallons

Volume of FOG = 672 + 66 gallons = 739 gallons

The minimum volume shall be the largest of the following:

Volume by 64E-6 + DERM = 6,350 gallons + 625 gallons = **6,975 gallons**

Volume = QPEAK x 30 min + VFOG = 3,000 gallons + 739 gallons = **3,739 gallons**

S = Number of seats (indoor and outdoor)

HR = Hours of Operation, including prep time and closing

GS = Gallons per seat (25 gallons for ordinary restaurants and

RF = Road factor: use 2.0 interstate highways, 1.5 other

WWF = No ware washer 1, with ware washer 1.25 (additional

M = Number of meals served per day

GM = Gallons per meal, use 5 gallons

LF = Ware washer 1, without use 0.75

F = Pump out frequency: use 1.25 for 90 days, 1.15 for 60 days & 1 for 30 days

Gravity Grease Interceptor Sizing - Sample 3: Fast Food Restaurant based on MEALS

Grease Waste Drain Diameter = 4 inch
 Drainage Fixture Units = 180 DFUs
 Peak Flow Rate (Q_{PEAK}) = 100 gpm

Volume Based on Meals:

Effective Capacity = $M \times GM \times LF \times F$
Number of Seats = 60
Number of Seat Rotations = 5
Meals from seats = 300
Meals from Take-Out = 200
Meals from Drive Thru = 320
TOTAL MEALS PER DAY (M) = 820

Ware Washer = Yes
Pump Out Frequency = 90 days
 GM = 5 Gallons per Meal
 LF = 1 (ware washer factor)
 F = 1.25 POF (1.25 for 90 days, 1.15 for 60 days, 1 for 30 days)

DERM Effective Capacity = 5,125 gallons
 FBC (64E-6, FAC) Min. Capacity = 4,100 gallons

Volume by 64E-6 x DERM POF-F =	5,125 gallons
---------------------------------------	----------------------

Pounds of FOG/Meal = 0.035 lbs/meal
 Meals = 820 meals/day
 Pounds of FOG/day = 29 FOG lbs/day
 Pounds of FOG @ Pump Out Frequency = 2,583 FOG lbs

FOG in gallons (6.8lbs/gal) = V_{FOG} =	380 FOG gallons
---	------------------------

The minimum volume shall be the **largest** of the following:

Volume by 64E-6 x DERM POF-F =	5,125
Volume = $Q_{PEAK} \times 30 \text{ min} + V_{FOG}$ =	3,000 + 380 = 3,380 gallons

- M = Number of meals served per day
- GM = Gallons per meal, use 5 gallons
- LF = Ware washer 1, without use 0.75
- F = Pump out frequency: use 1.25 for 90 days, 1.15 for 60 days & 1 for 30 days

Gravity Grease Interceptor Sizing - Sample 4: Fast Food Restaurant based on MEALS

Grease Waste Drain Diameter = 4 inch
 Drainage Fixture Units = 180 DFUs
 Peak Flow Rate (Q_{PEAK}) = 100 gpm

Volume Based on Meals:

Effective Capacity = $(M \times GM \times LF) + V_{FOG}$
Number of Seats = 60
Number of Seat Rotations = 5
Meals from seats = 300
Meals from Take-Out = 200
Meals from Drive Thru = 320
TOTAL MEALS PER DAY (M) = 820

Ware Washer = Yes
Pump Out Frequency = 90 days
 GM = 5 Gallons per Meal
 LF = 1 (ware washer factor)

DERM Effective Capacity = 4,480 gallons
 FBC (64E-6, FAC) Min. Capacity = 4,100 gallons

Volume by 64E-6 +gallons FOG @POF = 4,480 gallons
--

Pounds of FOG/Meal = 0.035 lbs/meal
 Meals = 820 meals/day
 Pounds of FOG/day = 29 FOG lbs/day
 Pounds of FOG @ **Pump Out Frequency** = 2,583 FOG lbs

FOG in gallons (6.8lbs/gal) = V_{FOG} = 380 FOG gallons

The minimum volume shall be the **largest** of the following:

Volume by 64E-6 + DERM V_{FOG} = 4,100 + 380 = 4,480 gallons
--

Volume = $Q_{PEAK} \times 30 \text{ min} + V_{FOG}$ = 3,000 + 380 = 3,380 gallons

M = Number of meals served per day
 GM = Gallons per meal, use 5 gallons
 LF = Ware washer 1, without use 0.75

ATTACHMENT 5

FOG MASTER PLAN (FMP) TEMPLATE

Miami-Dade County DERM FOG Control Program

FOG MASTER PLAN (**GRAVITY SYSTEMS**)

SYSTEM ID:

SITE:	Date:
FULL ADDRESS:	FOLIO(S):
CONTACT PERSON:	PHONE NUMBER:
	EMAIL:

No.	GDO #	ADDRESS:	SPACE/SUITE/ BAY/KIOSK	DERM APPROVED PROCESS NUMBER:	FOOD SERVICE ESTABLISHMENT (DBA)	TOTAL SEATS	GALLONS/SEAT *	# HOURS OF OPERATION	LOADING FACTOR (ROAD) **	TAKE-OUT MEALS/DAY	GAL/TAKE- OUT MEAL	LOADING FACTOR (DISHWASHING)***	CAPACITY (Gallons)	POF Factor ****	ALLOCATED CAPACITY (gallons)	DFU's
1											5		0		0	
2											5		0		0	
3											5		0		0	
4											5		0		0	
5											5		0		0	
6											5		0		0	
7											5		0		0	
8											5		0		0	
9											5		0		0	
10											5		0		0	
11											5		0		0	
12											5		0		0	
13											5		0		0	
14											5		0		0	
15											5		0		0	
16											5		0		0	
17											5		0		0	
18											5		0		0	
19											5		0		0	
20											5		0		0	
						0						0		0	0	

*** GALLONS OF WASTE PER SEAT**

- 25 Ordinary Restaurant
- 10 Single Service Restaurant
- 5 Take-Out Meals

**** LOADING FACTOR (ROAD)**

- 2.00 interstate highways,
- 1.50 other freeways,
- 1.25 recreational areas,
- 1.00 main highways, and
- 0.75 other roads.

***** LOADING FACTOR (DISHWASHING)**

- 1.00 with dishwashing
- 0.75 without dishwashing

H=(AxBxC/12xD)+(ExFxG)
J=HxI

****** POF FACTOR**

- 1.00 every 30 days
- 1.15 every 60 days
- 1.25 every 90 days

TOTAL CAPACITY OF SYSTEM	0	GALLONS
TOTAL ALLOCATED CAPACITY	0	GALLONS
TOTAL AVAILABLE CAPACITY	0	GALLONS

PIPE SIZE AT INLET OF THE INTERCEPTOR: INCHES

PEAK FLOW x 30min RETENTION= GALLONS

Miami-Dade County DERM FOG Control Program

FOG MASTER PLAN (HYDROMECHANICAL SYSTEMS)

SYSTEM ID:

SITE:	Date:		
FULL ADDRESS:	FOLIO(S):		
CONTACT PERSON:	PHONE NUMBER:	EMAIL:	

No.	GDO #	ADDRESS:	SPACE /SUITE / BAY/KIOSK	DERM APPROVED PROCESS NUMBER:	FOOD SERVICE ESTABLISHMENT (DBA)	A	B	C	D	E	F	G	H	I	J
						TOTAL SEATS	SEAT ROTATION	GREASE PRODUCTION FACTOR *	TAKE-OUT MEALS/DAY	GREASE PRODUCTION FACTOR *	FOG LBS/DAY	POF*	TOTAL FOG AT SELECTED POF	PEAK FLOW (GPM)	DFU's
1											0		0		
2											0		0		
3											0		0		
4											0		0		
5											0		0		
6											0		0		
7											0		0		
8											0		0		
9											0		0		
10											0		0		
11											0		0		
12											0		0		
13											0		0		
14											0		0		
15											0		0		
16											0		0		
17											0		0		
18											0		0		
19											0		0		
20											0		0		
						0			0		0		0		0

*** GREASE PRODUCTION FACTORS (lbs/meal)**

	NO FLATWARE	WITH FLATWARE	
LOW GREASE	0.0050	0.0065	
MEDIUM GREASE	0.0250	0.0325	
HIGH GREASE	0.0350	0.0455	F=(AxBxC)+(DxE)
VERY HIGH GREASE	0.0580	0.0750	H=FxG

TOTAL CAPACITY OF SYSTEM (GPM)		GPM
TOTAL CAPACITY OF SYSTEM (LBS)		LBS
TOTAL ALLOCATED CAPACITY	0	LBS
TOTAL AVAILABLE CAPACITY	0	LBS

PIPE SIZE AT INLET OF THE INTERCEPTOR: INCHES

ATTACHMENT 6

FOG 2.5 PLAN REVIEW CHECKLIST

DERM^{2.5} FOG Plan Review Checklist

Updated 6/24/2021

Accepted	Not Accepted	N/A	Item / Criteria
1. General			
			Electronic plans being submitted are legible and include Facility Name, address (include unit/bay) and GDO permit No. (existing facilities with grease discharge operating permit).
			Architectural, Civil and Plumbing drawings match (where applicable).
			Drawings indicate Type of Food Service Establishment, i.e., full service restaurant, cafeteria, bakery, ice cream parlor, day care, etc.
			All seats (bar, table, booth, etc.) shown and counted.
			Drive-thru shown (for existing and/or proposed).
			List/include “ daily maximum meals ” for dine-in, take-out, drive-thru, delivery, etc.
			Existing Labeled “ Existing ” and Proposed labeled “ Proposed .”
			Projects proposing to use Existing FOG Control Devices (FCDs) include Condition Assessment for each tank/unit. Blank Condition Assessment Forms for Gravity and Hydromechanical tanks available at https://www.miamidade.gov/environment/fats-oils-grease.asp
2. Plumbing Sheets MDC Code Section 24-42.6(8)			
			Signed/sealed/dated by a Florida Registered-Professional Engineer . MDC Code Sections 24-42.6(8)(a), and 24-15.2.
			Floor plan and Isometric drawings show sanitary and grease drain lines and fixtures (Existing & Proposed).
			All appliances connected to plumbing shown and identified (Existing & Proposed).
			All drainage fixtures identified/labeled. DFUs, slope and diameter shown in plan and isometric (Existing & Proposed).
			Grease waste line labeled “ GW ” to distinguish it from the sanitary (bathroom) waste line. All GW lines connected to a FCD (Existing & Proposed).
			Sanitary line labeled “Sanitary” or “ SS ” to distinguish it from GW line (Existing & Proposed).
			All Drainage Fixtures located in food and beverage preparation areas (back of house) are connected to the grease waste line (GW), and routed through a FCD. Drainage fixtures include but are not limited to kitchen sinks (one, two, or three compartment), mop sinks, hand sinks, floor and trench drains, sink drains, dishwasher, pasta stations, etc.
			Sanitary (bathroom) waste line does not connect to GW lines or FCD.

DERM^{2.5} FOG Plan Review Checklist

Updated 6/24/2021

	Accepted	Not Accepted	N/A	Item / Criteria
Plumbing Sheets (continuation)				
				FCD shown in plan and isometric drawings (Existing & Proposed). Label as Hydro mechanical or Gravity and indicate installation above ground or below ground.
				Locations and details for all wash-down areas shown and labeled. All wash-down areas are designed to prevent the release of wash-water and FOG to ground, groundwater, surface waters, or stormwater. Where mat and equipment wash-down is to be performed in a mop sink; the mop sink shall be properly sized and labeled.
				Locations and details for all stored waste, including yellow and brown grease , shown and labeled. Storage areas designed to prevent the release of FOG to ground, groundwater, surface waters or storm sewers. Storage containers are identified by waste type and capacity in gallons and sized to prevent overfilling. All storage containers have a lid that prevents rainwater inflow. Plans shall show quantity of yellow and brown grease generated, with cleaning/emptying of the storage container frequency at 90% capacity of the container or sooner.
				Where the horizontal run from the source of food waste and FOG is greater than 100 feet, provisions for preventing clogging by FOG and other waste is included.
				Where the horizontal run from the source of FOG is greater than 50 feet from the solids separator or FOG control device, plans show access points every 50 feet measured center-to-center. Details for access point provided in drawings.
				Where the FOG control device is located at a different floor or at a horizontal distance exceeding 100 feet from the back of the house area, an Interceptor Monitoring Alarm or Device is provided.
				Plan profiles and sections demonstrate how all labels and markings on FCDs remain visible during and after installation.
				<p>Gravity FCD</p> <p>Effective Volume, material of tank and all appurtenances (e.g., inlet/outlet, cover, etc.), Plan and Elevation Details and dimensions (e.g., length, width, depth, inlet/outlet dimensions), and DOH Number shown. http://ww10.doh.state.fl.us/pub/bos/Tanks/Tank-List.pdf Gravity FCDs located outside per FAC Rule 64E-6. Material of the interceptor compatible with the waste stored (pH of 3.0). Specifications for concrete protective liners mechanically anchored or coatings indicate that it is for wastewater immersion, approved for use in wastewater wet wells, pump stations, manholes, AND for corrosion/acid protection, not simply waterproofing or damp-proofing. Plans indicate that coating application will be by the manufacturer. For proposed concrete precast FCDs, the precast concrete plant name and precast concrete plant certifying agency accepted by the Florida Department of Transportation (NPCA, CCI and PCI^{*1}) is shown and labeled accordingly. ^{*1} http://www.fdot.gov/materials/quality/programs/plantcertification/index.shtm</p>

DERM^{2.5} FOG Plan Review Checklist

Updated 6/24/2021

Accepted	Not Accepted	N/A	Item / Criteria
Plumbing Sheets (continuation)			
			<p>Make/Model No., PDI/ASME/CSA Certification, Flow Rate (gpm), FOG Capacity (lbs) at 99% grease removal efficiency shown in plumbing plans.</p> <p>Every Unit Must Show/Install Vented Flow Control/Air Inlet – Not Just First!</p> <p>Solids separation is provided prior to existing or proposed FOG control devices that require a flow control device or that are not certified to handle solids.</p> <p>FOG control devices installed below ground/grade to intersect the building grease waste drain.</p>
		Hydromechanical FCD	<p>Sampling Point located after the point of no further treatment, shown in plan and isometric drawings and labeled.</p> <p>When more than one FCD, a compliance sampling point is required after the flow from all FCDs are combined (excluding sanitary lines).</p> <p>Sampling point detail shall be provided and be consistent with pipe sizes.</p> <p>The sampling point shall be directly accessible for visual inspection and sampling. Minimum diameter for the vertical axis is 4-inches. Minimum clearance for sampling port is 3 ft horizontal and 4 ft vertical and shall be shown in plans.</p> <p><u>Note that utilizing DERM’s retrofit sampling point detail is not mandatory.</u> The engineer of record shall design/select the most appropriate sampling point design to assure consistent and representative sampling results based on site-specific facility and operation conditions.</p> <p>Access to Sampling Point shown in plan and elevation Minimum 4-ft vertical and 3-ft horizontal clearance required.</p>
			<p>Access to FCD shown in plan and elevation. Minimum 4-ft vertical and 3-ft horizontal clearance required. Horizontal clearance may be equivalent to the width of the FCD but not less than 30-inches.</p>
			<p>Where the FOG control device will serve multiple users/tenants, each user/tenant shall be identified and their flows and loading rates shall also be included on the plans. Clearly detail capacity allocated to this project/facility, and capacity for other facilities. Provide address with bay/unit number of all the facilities.</p>
			<p>FCD sizing calculations shall be provided and include cleaning (pump-out) frequency. Refer to sizing requirements below. All assumptions, factors, variables and information used to size system shall be included. Minimum information is provided below.</p>

DERM^{2.5} FOG Plan Review Checklist

Updated 6/24/2021

Accepted	Not Accepted	N/A	Item / Criteria									
			3. Gravity FCD Sizing [MDC Section 24-42.6(9)(a) and (b)]									
			FCD(s) proposed shall comply with minimum and maximum size (effective volume) requirements of 64E6, FAC.									
			The minimum volume for gravity FCDs shall be the largest of the following:									
			i) FCD volume based on the Florida Building Code, latest edition.									
			ii) FCD volume based on peak flow rate (QPEAK) and thirty (30)-minute hydraulic detention time. Total calculated volume shall be increased to account for the maximum volume of waste stored between cleaning cycles (POF method, or V _{FOG} method)									
			<p>POF Method</p> <p>$V = Q_{\text{peak}} \times 30 \text{ min} \times \text{POF},$</p> <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">$V = Q_{\text{peak}} \times 30 \text{ min}$</td> <td style="padding-right: 20px;">x 1.0</td> <td>For pump out frequency every 30 days</td> </tr> <tr> <td></td> <td>x 1.15</td> <td>For pump out frequency every 60 days</td> </tr> <tr> <td></td> <td>x 1.25</td> <td>For pump out frequency every 90 days</td> </tr> </table> <p>$Q_{\text{PEAK}} = \text{peak flow rate, gpm (See section 5),}$</p> <p>POF = Multiplication Factor to account for the volume of waste stored between cleaning cycles</p> <p>Or,</p> <p>V_{FOG} Method</p> <p>$V = (Q_{\text{peak}} \times 30 \text{ min}) + V_{\text{FOG}}$</p> <p>V_{FOG} can be calculated as follows</p> <p>$V_{\text{FOG}} = [\text{meals/day} \times \text{Lbs. of FOG/meal} \times \text{days between Pump out Cycles}] / 6.8 \text{ Lbs./gal.}$</p>	$V = Q_{\text{peak}} \times 30 \text{ min}$	x 1.0	For pump out frequency every 30 days		x 1.15	For pump out frequency every 60 days		x 1.25	For pump out frequency every 90 days
$V = Q_{\text{peak}} \times 30 \text{ min}$	x 1.0	For pump out frequency every 30 days										
	x 1.15	For pump out frequency every 60 days										
	x 1.25	For pump out frequency every 90 days										

DERM^{2.5} FOG Plan Review Checklist

Updated 6/24/2021

Accepted	Not Accepted	N/A	Item / Criteria
			Gravity FCD Sizing (continuation)
			<p>iii) FCD Volume (V) calculated based on Chapter 64E-6, Florida Administrative Code. $V = [(S \times HR/12 \times GS \times RF) + (M \times GM \times LF)] \times POF$</p> <p>Or,</p> $V = [S \times HR/12 \times GS \times RF] + [M \times GM \times LF] + V_{FOG}$ <p>Where,</p> <ul style="list-style-type: none"> S = Number of seats (indoor and outdoor) HR = Hours of Operation, including prep time and closing GS = Gallons per seat <ul style="list-style-type: none"> 25 gallons for ordinary restaurants, and 10 gallons for single service article restaurant RF = Road factor: 2.0 interstate highways, <ul style="list-style-type: none"> 1.5 other freeways, 1.25 recreational areas, 1.0 main highway and 0.75 other roads. LF = Loading Factor: 0.75, no ware washer, <ul style="list-style-type: none"> 1, with ware washer (additional hydraulic detention time for surfactants and heat) M = Number of meals served per day, excluding sit-down restaurant meals (take out, drive-thru, banquet, room service, etc.). If no take-out meals, specify NO Take-Out Meals. If no drive-thru, specify NO Drive-Thru. GM = 5 gallons per meal LF = Loading Factor: 0.75, no ware washer, <ul style="list-style-type: none"> 1, with ware washer V_{FOG} = Volume of waste stored between cleaning cycles POF = Multiplication Factor to account for the volume of waste stored between cleaning cycles
			All Gravity FCDs shall be connected in series.

DERM^{2.5} FOG Plan Review Checklist

Updated 6/24/2021

Accepted	Not Accepted	N/A	Item / Criteria																			
			4. Hydromechanical FCD Sizing [MDC Section 24-42.6(9)(c)(d)]																			
			Peak Flow Rate shall be calculated based on Full pipe flow, or Fixture Drain Time (1 or 2 minutes), or pipe diameter/DFUs (see section 5 in next page).																			
			FCD(s) shall be sized based on FOG production and proposed cleaning frequency and matched to Peak Flow Rate (gpm). Minimum size accepted 20 gpm.																			
			FOG production shall be based on total number of meals and FOG per meal (FOG lbs/meal).																			
			<p>The minimum size and number of FCDs shall be the greatest of the following:</p> <ul style="list-style-type: none"> i) 20 gallons per minute ii) Calculations based on the Florida Building Code, latest edition. iii) Calculations based on peak flow rate <p style="margin-left: 40px;">AND</p> <p style="margin-left: 40px;">FCD FOG Storage Capacity at 99% efficiency ></p> <p style="margin-left: 40px;">$M(\text{meals/day}) \times \text{FOG/MEAL (lbs/meal)} \times T \text{ (Cleaning Frequency)}$</p> <p style="margin-left: 40px;">Where,</p> <ul style="list-style-type: none"> <li style="margin-left: 40px;">M = maximum number of meals served per day <li style="margin-left: 40px;">FOG/MEAL* = average grease production value per meal <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Restaurant Type</th> <th style="text-align: left;">Grease Production Values</th> <th style="text-align: left;">Food Service Establishment (FSE) Type</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Low Grease Producer</td> <td>0.005 lbs/meal (no flatware)</td> <td rowspan="2">Elementary Cafeteria, grocery meat department, hotel breakfast bar, sub shop, sushi, take-and-bake pizza</td> </tr> <tr> <td>0.0065 lbs/meal (with flatware)</td> </tr> <tr> <td rowspan="2">Medium Grease Producer</td> <td>0.025 lbs/meal (no flatware)</td> <td rowspan="2">Café, coffee shop, convenience store, grocery deli, Greek, Indian, Japanese, Korean, Thai, Vietnamese</td> </tr> <tr> <td>0.0325 lbs/meal (with flatware)</td> </tr> <tr> <td rowspan="2">High Grease Producer</td> <td>0.035 lbs/meal (no flatware)</td> <td rowspan="2">Full-fare family, fast-food, hamburger bar and grill, German, Italian, fast-food Mexican</td> </tr> <tr> <td>0.0455 lbs/meal (with flatware)</td> </tr> <tr> <td rowspan="2">Very High Grease Producer</td> <td>0.058 lbs/meal (no flatware)</td> <td rowspan="2">Full-fare BBQ, Fast-food fried chicken, full-fare Mexican, steak and seafood, Chinese, Hawaiian</td> </tr> <tr> <td>0.075 lbs/meal (with flatware)</td> </tr> </tbody> </table> <p>* Refer to ASPE Plumbing Engineer Design Handbook Volume 4, Chapter 8, Table 8-3</p> <p>Other FOG/MEAL values accepted with appropriate study reference.</p>	Restaurant Type	Grease Production Values	Food Service Establishment (FSE) Type	Low Grease Producer	0.005 lbs/meal (no flatware)	Elementary Cafeteria, grocery meat department, hotel breakfast bar, sub shop, sushi, take-and-bake pizza	0.0065 lbs/meal (with flatware)	Medium Grease Producer	0.025 lbs/meal (no flatware)	Café, coffee shop, convenience store, grocery deli, Greek, Indian, Japanese, Korean, Thai, Vietnamese	0.0325 lbs/meal (with flatware)	High Grease Producer	0.035 lbs/meal (no flatware)	Full-fare family, fast-food, hamburger bar and grill, German, Italian, fast-food Mexican	0.0455 lbs/meal (with flatware)	Very High Grease Producer	0.058 lbs/meal (no flatware)	Full-fare BBQ, Fast-food fried chicken, full-fare Mexican, steak and seafood, Chinese, Hawaiian	0.075 lbs/meal (with flatware)
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Very High Grease Producer	0.058 lbs/meal (no flatware)	Full-fare BBQ, Fast-food fried chicken, full-fare Mexican, steak and seafood, Chinese, Hawaiian																				
	0.075 lbs/meal (with flatware)																					
			<p>Where more than one (1) hydromechanical FCD is required, installation shall be proposed in series and removal efficiency based on third party testing of the proposed configuration and number of FCDs proposed.</p> <p>The test configuration, including flow control, air entrainment and other appurtenances, shall match the proposed field installation.</p>																			

DERM^{2.5} FOG Plan Review Checklist

Updated 6/24/2021

Accepted	Not Accepted	N/A	Item / Criteria																
			5. Peak Flow Rate [MDC Section 24-42.6(9)(g)]																
			<p>Peak flow Rate shall be estimated as follows:</p> <ol style="list-style-type: none"> 1. Full Pipe Flow (diameter and slope) Calculated using Manning’s Formula for full pipe flow for the grease waste drain nominal diameter and slope and a roughness coefficient of 0.0113. <p>Or,</p> <ol style="list-style-type: none"> 2. Drain Time Based on total fixture flow rate using one (1) or two minutes (2) drain time <p>Or,</p> <ol style="list-style-type: none"> 3. Drainage Fixture Units (DFUs) Based on drainage fixture units (DFUs) by multiplying the proposed DFUs by the flow rate calculated using Manning’s Formula for full pipe flow and a roughness coefficient of 0.0113 and divided by the maximum number of DFUs allowed under the Florida Building Code, latest edition, for the grease waste drain diameter and slope. <p>Calculated flow shall not be less than the minimum peak flow in the table below. (Section 24-42.6(9)(g) of the Code).</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Nominal pipe size (inches)</th> <th>Minimum Total Flow Rate at FCD Influent</th> </tr> </thead> <tbody> <tr> <td>1.25 – 2.5</td> <td>20 gpm</td> </tr> <tr> <td>3</td> <td>23 gpm</td> </tr> <tr> <td>4</td> <td>50 gpm</td> </tr> <tr> <td>5</td> <td>91 gpm</td> </tr> <tr> <td>6</td> <td>147 gpm</td> </tr> <tr> <td>8</td> <td>317 gpm</td> </tr> <tr> <td>10</td> <td>576 gpm</td> </tr> </tbody> </table>	Nominal pipe size (inches)	Minimum Total Flow Rate at FCD Influent	1.25 – 2.5	20 gpm	3	23 gpm	4	50 gpm	5	91 gpm	6	147 gpm	8	317 gpm	10	576 gpm
Nominal pipe size (inches)	Minimum Total Flow Rate at FCD Influent																		
1.25 – 2.5	20 gpm																		
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