Murfreesboro Water Resources Department
Grease Control Equipment and Monitoring Specifications

Grease Interceptors

Sizing

The following are the default minimum grease control equipment required by Murfreesboro Water Resources Department for all FOG Generating Establishments:

- Food Service Establishments – Hydro-mechanical Grease Interceptor (Schier Products GB-250; Canplas Endura XL 100; Thermaco TZ-1826-ECA-6); or equivalent 1,000 gallon nominally sized, monolithic Gravity Grease Interceptor installed on the exterior.
- Motor Vehicle Service Establishments - Oil-Water Separator (Striem OS 100); or equivalent 1,000 gallon nominally sized, monolithic Gravity Grease Interceptor installed on the exterior.

The grease control equipment listed above are the default minimums. However, grease control equipment shall be sized specifically for each FOG Generating Establishment based on MWRD sizing calculations. To calculate the appropriate size grease control equipment, the FOG Generating Establishment owner, engineer, architect or contractor should submit a Wastewater Grease Interceptor Trap (GrIT) application or Oil-Water Separator application along with waste plumbing drawings and the equipment - plumbing fixture schedules to MWRD's FOG Division. To assist with *estimating* their grease control equipment sizing, applicants may also utilize MWRD's Grease Control Equipment Sizing Worksheet (available on MWRD's Development web page).

MWRD will review grease control equipment sizing information received from Wastewater Grease Interceptor-Trap applications or Oil-Water Separator applications executed by the FOG Generating Establishment's owner or other duly authorized representative. MWRD will then determine and specify grease control equipment based on the type of FOG Generating Establishment, the number of fixture units, and other considerations. The formula used by MWRD for calculating grease control equipment capacity requirements is based on the U.S. Environmental Protection Agency's EPA Procedure 2 Model, which has been modified to meet WERF specifications. The maximum capacity for Grease Interceptors, Oil-Water Separators or any other type of reclamation tanks is 2,000 gallons. If the FOG Generating Establishment requires additional capacity, subsequent tanks will be installed in series in the direction of flow (inlet to outlet).

Multiple-tank configurations shall always be installed in such a manner as to ensure positive flow between the tanks. Therefore, tanks shall be installed in series with the inlet invert of each successive tank set at a minimum of two (2) inches below the outlet invert of the preceding tank.

Grease Control Equipment Specifications

Grease Control Equipment must remove fats, oils, and grease to a level at or below that which is required by Sections 33-36 (A) and 33-36 (B) of the Murfreesboro City Code. Failure to comply will require enforcement action in accordance with the Murfreesboro Water Resources Department's Food Service Establishment Enforcement Response Guide and Industrial Pretreatment Specifications.

Grease Control Equipment – Installed on Interior

Automatic Grease Recovery Device or Unit (AGRD; AGRU)

New or replacement grease control equipment installations on the interior of FOG Generating Establishments shall be of the Automatic Grease Recovery Device (AGRD) type. Under no circumstances will MWRD permit the use of passive style grease control equipment on the interior of any FOG Generating Establishment.

1. All Automatic Grease Recovery Devices must be equipped with the manufacturer's flow control device and must be properly vented on the upstream side of the unit. Failure to have the flow restrictor and venting will be considered a violation of this policy.
2. The minimum flow rating and storage capacity for Automatic Grease Recovery Devices is twenty (20) gallons per minute - forty (40) pounds of grease storage capacity.
3. Automatic Grease Recovery Devices shall be cleaned per the manufacturer's recommendations, which typically includes the disposal of FOG and removal of food solids from the strainer basket daily and weekly maintenance of the skimming mechanism.

Grease Control Equipment – Installed on Exterior

MWRD accepts two types of grease control equipment for installation on the exterior: Gravity Grease Interceptors and Hydro-mechanical Grease Interceptors.

Gravity Grease Interceptor - Construction

Gravity Grease Interceptor tanks shall be designed and constructed as a monolithic (one-piece tank base and walls) unit. MWRD will not accept bisected tank designs or any other tank design which places the joint between the base and the lid below the water line at the outlet, as these tank designs are prohibited for use by any FOG Generating Establishment connected to the City of Murfreesboro's public sewer collection system, whether for new construction or replacement.

Hydro-mechanical Grease Interceptors - Construction

MWRD currently accepts Hydro-mechanical Grease Interceptors constructed with integral flow control from the following three manufacturers:

- Schier Products GB-250, GB-500 and GB-1000
- Canplas XL100
- Thermaco TZ-1826-ECA-6 (in ground option)

Oil-Water Separators - Construction

MWRD currently accepts Oil-Water Separators constructed with integral flow control from the following two manufacturers:

- Striem OS 100
- Zurn Pro-Ceptor

Grease Waste Plumbing Design

- A two-way (combination Tee with single opening at top) cleanout shall be installed immediately upstream of the grease interceptor inlet. A two-way combination Tee is not required to be installed downstream of the outlet side of the last tank in series for grease interceptors equipped with sampling ports.
- The minimum inlet pipe diameter shall be four (4) inches ID and shall enter the receiving chamber at a minimum of two and one-half (2 ½) inches above the invert of the outlet piping. The minimum outlet pipe diameter shall be at minimum four (4) inches ID and shall be no smaller than the inlet piping.
- Gravity Grease Interceptors shall be equipped with plumbing Tee's installed vertically and shall include a pipe (nipple) installed in the top of the Tee to extend within a range between two (2) inches but not more than six (6) inches from the interceptor ceiling. The bottom of the inlet Tee shall extend to within eighteen (18) inches of the tank floor. The bottom of the outlet Tee shall extend to within twelve (12) inches of the tank floor.
- Hydro-mechanical Grease Interceptors are equipped with internal flow control plumbing by the manufacturer. No additional plumbing is necessary on the interior of Hydro-mechanical Grease Interceptors.
- All pipe penetrations and connections between the grease waste plumbing and the interceptor with associated appurtenances (two-way combination Tee cleanouts and sampling ports) shall be made with resilient connectors. Openings in the sidewall of precast, concrete grease interceptor tanks for pipe penetrations shall be precast or cored. The opening shall be of a size to allow for lateral or vertical adjustments through 20 degrees.

- A resilient connector, such as Kor-N-Seal or another approved alternative, shall be installed in the precast or cored (concrete) opening. The resilient connector shall be molded from an EDPM or polyisoprene compound meeting the requirements set forth in ASTM C923. An external corrosion resistant stainless-steel band shall be used to seal around the pipe. Where applicable, the void between the pipe and the connector shall be filled (on the inside only) with grout or a flexible gasket material such as RUB-R-NEK LTM or an approved equivalent.

Baffles

- Grease and Oil Interceptors equipped with an integral baffle shall have a non-flexing (i.e. concrete, steel, etc.) baffle the full width of the interceptor, sealed to the walls and the floor, and extend from the floor to within two (2) inches, but not more than six (6) inches from the ceiling. The baffle shall have an opening consisting of either a slot type opening (preferable) with a minimum height of six (6) inches and a minimum width of twenty-four (24) inches; or a minimum of five (5) six-inch ID openings. The openings shall be centered between the tank floor and the top of the liquid depth at the outlet. ***See illustration.***
- The baffle shall divide the Grease or Oil Interceptor as follows: The inlet compartment shall contain two thirds (2/3) of the total liquid capacity and the outlet compartment shall contain one third (1/3) of the total liquid capacity of the tank.
- Grease and Oil Interceptors designed to use a device other than a baffle as the primary means for flow control must be certified by the NSF or Plumbing Drainage Institute.

Sampling Port

A sampling port will be installed immediately after the outlet pipe of the Grease Interceptor. Sampling ports must be water-tight, as such they must be molded or precast as monolithic units.

The minimum access opening for precast concrete sampling ports will consist of a cast iron frame and cover with a minimum opening of eleven (11) inches X thirteen (13) inches to allow sampling using a one (1)-liter glass container. The drop from the Grease Interceptor outlet pipe to the bottom of the sampling port will be a minimum of four (4) inches, unless approved otherwise by the Director.

Access Openings (Manholes)

- Access to Grease and Oil Interceptors shall be provided by a minimum of 1 manhole per interceptor division (baffle chamber) with a minimum diameter of twenty-four (24) inches. Gravity Grease Interceptor manhole frames and covers must be pickable and constructed of cast iron. Hydro-mechanical Grease Interceptor manhole covers located in traffic designated areas must be pickable and constructed of cast iron. The tops of all manhole frames must terminate at least one (1) inch above finished grade in paved (asphalt, concrete, etc.) or traffic designated areas; or two (2) inches above finished grade when located in greenspace areas such as grass or landscape beds. Grease interceptors must be equipped with two (2) manhole openings - one (1) manhole opening shall be located above the inlet Tee and one (1) manhole opening shall be located above the outlet Tee. The Tee's shall be located as near as possible to the perimeter of the manhole opening, but fully within the manhole opening. The space above the manhole opening shall be unobstructed and unrestricted to facilitate service (cleaning, pumping, repairs) and inspections.
- Concrete risers must be constructed or precast as a monolithic unit. One two (2) inch iron manhole frame extension ring may be used for finish grade adjustment in greenspace areas.
- Grease Interceptor manholes are to be accessible for inspection by the Department or other authorities having jurisdiction (TDEC, U.S. EPA, etc.) at all times.

Additional Requirements

Testing – ALL TESTING MUST BE CONDUCTED PRIOR TO BACKFILLING. Grease Interceptors, Oil-Water Separators and sampling ports shall be constructed to be watertight in accordance with Section 5.1.2 of the American National Standard for precast concrete Gravity Grease Interceptors, IAPMO Z1000-Z1001 and ASTM C1719. To demonstrate water-tightness, a hydrostatic water test (IAPMO Z1000-Z1001) or vacuum test (ASTM C1719) shall be conducted by the installer and scheduled to permit visual verification by MWRD personnel.

Preparation for the hydrostatic water test should include pre-testing by filling the tank to the prescribed levels twenty-four (24) hours prior to the scheduled test date and time.
The hydrostatic water test shall be conducted in accordance with IAPMO Z1000-Z1001 and consist of the following procedures:

- Plug the inlet of the tank (or first tank in series, if applicable) and the outlet of the last tank in series or sampling port.
- Fill the tank(s) with water to a level above the top of the crown (obvert) of the inlet and outlet pipe penetrations. The sampling port shall be filled to a level above the joint between the sampling port body and the iron access casting (if applicable).
- No visible leakage or drop in the water level in the tank(s) over a period of eight to ten (8-10) hours.

Vacuum testing shall be in accordance with ASTM C1719. Vacuum test shall be conducted in the field by the plumbing installation contractor in the presence of Murfreesboro Water Resources Department personnel using the following procedure(s):

- Prepare for the vacuum test by introducing a negative pressure of four (4) inches Hg.
- Allow the pressure to stabilize at the prescribed testing standard, then disconnect vacuum source.
- Test is passed when the tank holds four (4) inches Hg for five (5) minutes with no loss in pressure during the five (5) minute test period.

Location – Grease Interceptors shall be located to be readily accessible for cleaning, maintenance and inspections. They should be located close to the FOG point of discharge and in a location approved by the Director. Grease Interceptors may not be located behind barricades, fences or limited access-secure areas unless approved by the Director. Properties with Grease Interceptors located in limited access areas must provide the Department with means of unimpeded access (codes, lock keys, etc.).

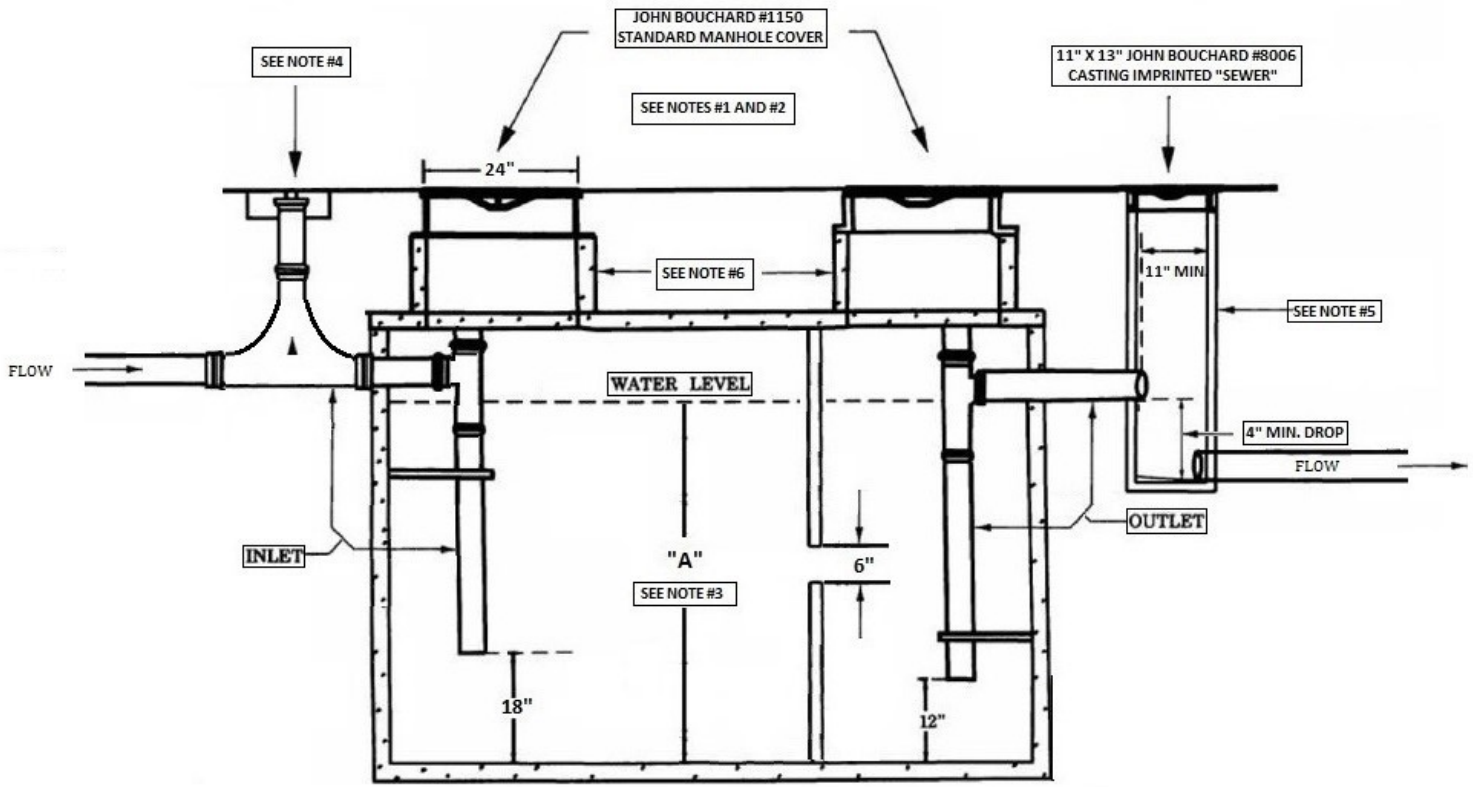
Responsibility – Removal of the grease or oil from the wastewater routed to a public or private sanitary system; and maintenance of the structural integrity of the grease control device (traffic rated, water-tight, etc.) is the responsibility of the FOG Generating Establishment tenant for Grease Interceptors serving individual tenant spaces; or the property owner-manager for Commonly Shared Grease Interceptors (multiple tenant spaces sharing one Grease Interceptor).

In the absence of the FOG generator, the owner or other duly authorized representative of any such real property shall assume all responsibilities for maintenance of all grease control equipment, which includes preparing grease control equipment (cleaning, repair, service) and ensuring that grease control equipment is acceptable to the Department prior to entering into subsequent lease agreements with a FOG generating tenant.

Construction Material – Grease Interceptors and Oil-Water Separators shall be constructed of sound durable materials, not subject to excessive corrosion or decay, and shall be water and gas tight. Each Interceptor and other associated appurtenances (e.g. exterior cleanouts, sampling ports, etc.) shall be designed to withstand any anticipated load to be placed on the Interceptor or any component of the assembly as imposed by the location such as traffic designated areas rated for pedestrian use, vehicular parking, service or driving areas; or of a design approved by the Director.

Maintenance – Grease Interceptors and Oil-Water Separators shall be maintained in accordance with Murfreesboro Water Resources Department FOG Management Policy.

PRECAST CONCRETE GRAVITY GREASE INTERCEPTOR WITH SAMPLING PORT



NOTES:

1. CONCRETE TANKS MUST BE PRECAST MONOLITHIC UNITS WITH THE LID ATTACHED ABOVE THE PIPE PENETRATIONS.
2. THE MAXIMUM CAPACITY FOR ANY SINGLE TANK IS 2,000 GALLONS. SECONDARY TANKS MUST BE CONNECTED IN SERIES IF ADDITIONAL CAPACITY IS REQUIRED.
3. "A"= THE CENTERLINE FROM THE BOTTOM OF THE OUTLET TO THE TANK FLOOR WITH THE BAFFLE WALL OPENING CENTERED ON DIMENSION "A". THE MINIMUM HEIGHT OF THE OPENING IS SIX (6) INCHES.
4. ALL GREASE INTERCEPTORS MUST INCLUDE A TWO-WAY COMBINATION TEE CLEANOUT ON THE INLET SIDE OF THE TANK.
5. ALL GREASE INTERCEPTORS MUST BE EQUIPPED WITH A SAMPLING PORT. SAMPLING PORTS MUST BE MOLDED OR PRECAST AS A MONOLITHIC UNIT. FIELD CUT TO ESTABLISH FINAL GRADE.
6. MANHOLE FRAME RISERS MUST BE PRECAST AS A MONOLITHIC UNIT. FIELD CUT TO ESTABLISH FINAL GRADE.