CITY OF SAGINAW

Guidance Document for the Sizing and Installation of Grease Traps, Oil Water Separators, and other types of interceptors

Part I: Grease Trap Sizing and Design

A. Introduction

The information in this document is based on standard industry practices, City ordinances, and guidance found in the currently adopted International Plumbing Code (IPC). The size, type, and location of grease traps shall be in accordance with the manufacturers' instructions and requirements of the City of Saginaw Environmental and Plumbing Codes.

In this document, the term "grease trap" is used for both grease traps and grease interceptors.

B. Applicability

These requirements are applicable to all commercial food service establishments, including those that are undergoing:

1. New construction
2. Interior remodeling to accommodate expansion or operational modifications
3. Changes of ownership/occupancy
4. Facilities that may be experiencing difficulty in achieving compliance with maintenance and/or wastewater discharge limitations

C. Sizing Requirements

Sizing methods described herein are intended as guidance to determine grease trap sizes that will afford the City's sanitary sewer system a minimum degree of protection against grease and other obstructing materials. Sizing determinations are based on operational data provided by the business owners or their contractors. In approving a customer's plumbing or grease trap design, the City does not accept liability for the failure of a system to adequately treat wastewater to achieve effluent quality requirements specified in City Ordinance 2012-01 (Sec. 98-53 Discharge prohibitions and limitations). It is the responsibility of the generator and/or contractors to ensure the appropriate level of treatment necessary for compliance with environmental and wastewater regulations.

Minimum acceptable grease trap sizing shall be accomplished as follows:

1. Sizing according to formulas found in Section D below.
2. Where sizing formulas determine a grease trap less than 500 gallons in capacity, the facility will be required to install a 500 gal grease trap. *An exception to this size requirement must be submitted in writing to the Environmental Department.*

D. Grease Trap Sizing Formula

For the purpose of plan reviews, a general assessment of grease trap design and size will be performed using the Peak Meals Formula (Appendix A). This formula has been demonstrated as an industry standard capable of achieving the City's discharge criteria when systems are

maintained in proper condition.

E. Alternative Grease Trap Sizing Methods

Alternative grease trap sizing methods can be found in the IPC, UPC, and other industry standards/guidance documents. When using an alternative method (to the Peak Meals Formula), the following must be present on submitted plans:

- Method name (i.e. DFU method, Hydromechanical method)
- Plans must show calculations utilized to determine size
- Plans must be sealed by a Professional Engineer or Master Plumber

The use of non-conventional grease traps (i.e. hydromechanical) will require a Variance when volume requirements (based on Peak Meal Formula) are not met.

F. Construction/Installation

All permitting, construction, and inspection activities must be completed in accordance with currently adopted Building Codes. Additionally, the following specifications must be incorporated into grease trap design.

1. The grease interceptor shall be constructed with a minimum of two baffles. Each manhole access shall be minimum 20" diameter clear opening. Manhole covers shall be placed at grade elevation by using concrete extension rings or 24" RCP. Side connections are prohibited for inlet or outlet. Inlet and outlet risers are required and shall be factory installed or installed by contractor.
2. Grease traps are to be installed at a minimum distance of 10 ft. from sinks and dishwashers to allow for adequate cooling of the wastewater. Water temperatures must be less than 120 degrees prior to entering grease trap.
3. All grease bearing waste streams should be routed through an appropriate grease trap including: three-compartment sinks, pot/pan sinks, soup kettles, hand-washing sinks, automatic dishwashers, mop sinks and floor drains. All drains that receive "clear waste" only, such as from ice machines and drink stations located in food preparation areas must be plumbed to the grease trap.
4. Kitchens that utilize Garbage Disposals shall be required to use a grease trap 25% larger than the calculated size using the Peak Meals formula ***or*** a solids interceptor must be installed prior to the grease trap.
5. All grease traps shall be located on the exterior of the building and must install an effluent sample well. Sample wells will have a minimum 12" diameter access cover. Interior grease traps require a variance and must install an effluent sample tee or have a dedicated clean out.

G. Customer (Generator) Responsibilities

It is the responsibility of the customer (waste generator) to ensure compliance with the City of Saginaw's discharge limitations specified in City Ordinance 2012-01 (Sec. 98-53 - Discharge prohibitions and limitations). Hazardous wastes such as acids, strong cleaners, pesticides,

herbicides, paint, solvents, or gasoline should not be disposed of into the sanitary sewer.

Generators are responsible for maintaining grease traps in continuous proper working condition. Generators are also responsible for inspecting, repairing, replacing, or installing apparatus and equipment as necessary to ensure proper operation and function of grease traps and compliance with discharge limitations at all times. The generator must have grease traps serviced (pumped, cleaned, and inspected) by a permitted Liquid Waste Transporter at a **minimum of every 90 days** to ensure proper function. More frequent service may be required. Records of maintenance are required to be maintained on site or readily available for five (5) years.

Enzymes, solvents, and emulsifiers are not permitted as they cause grease to flow out of the grease trap and deposit in the sanitary sewer. Biological treatment systems must be pre-approved by the Environmental Department. These systems will not alleviate the necessity for inspection and proper maintenance.

Part II: Other types of Interceptors and sizing requirements

Interceptors are required for oil, grease, sand and other substances harmful or hazardous to the building drainage system, the public sewer or sewage treatment plant. Design, size, and location of pretreatment devices must be submitted by a Professional Engineer or Master Plumber.

A. Laundries

Commercial Laundries, laundromats, and dry-cleaners shall be equipped with an interceptor in order to reduce the quantity of lint and silt that enter the sanitary sewer. The facility wastewater system must be of adequate size and design to allow for cool-down of wastewater so that separation of solids can be more readily achieved. The interceptor must be installed with a wire basket or similar device, removable for cleaning, that prevents passage into the drainage system of solids ½ inch (12.7 mm) or larger in size, string, rags, buttons or other materials detrimental to the sanitary sewer system.

Sizing must be in accordance with manufacturer recommendations (typically based on the number of washing machines plumbed to the interceptor). An effluent sample well is required for all commercial laundry facilities.

Large and/or industrial laundries may be subject to Federal Pretreatment regulations. For more information on Federal Pretreatment Regulations related to laundry facilities please contact the City of Saginaw Environmental Department.

B. Car Washes

Where automobiles are washed (including detail shops utilizing hand-wash practices), separators shall have a minimum capacity of 1,000 gallons for the first bay, with an additional

500 gallons of capacity for each additional bay. An effluent sample well is required for all car wash facilities.

C. Automotive Repair Facilities (Garages and Service Stations)

Where automobiles are serviced, greased, or repaired oil/water separators shall have a minimum capacity of 500 gallons for the first 1,000 square feet of area to be drained, plus 250 gallons for each additional 1,000 square feet of area to be drained into the separator. An effluent sampling well is also required.

Note: Parking garages in which servicing, repairing, or washing is not conducted, and in which gasoline is not dispensed, shall not require a separator. Areas of commercial garages utilized only for storage of automobiles are not required to be drained through a separator, provided there are not connections to the sanitary sewer.

D. Elevators

City of Saginaw Ordinance requires an oil/water separator for elevators that utilizes hydraulic fluid and must have the capacity to contain all of the hydraulic fluid for the sum of all elevators.

Any questions should be directed to the Environmental Department contacts below.

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Appendix A
Grease Interceptor Sizing Forms

Peak Meals Per Hour

Grease Interceptor Sizing Worksheet

The Uniform Plumbing Code Formula

Company		Calculated By		Date	
Project		Location			

Follow these six simple steps to determine grease interceptor size.

	No of Meals Per Peak Hours		Waste Flow Rate		Retention Time		Storage Factor		Calculated Interceptor Size		Grease Interceptor
Enter Calculations > Here		X		X		X		=			
	Step 1		Step 2		Step 3		Step 4		Step 5		Step 6

1 — **Number of Meals Per Peak Hour (Recommended Formula):** — Notes:

Seating Capacity		Meal Factor		Meals per Peak Hour
	X		=	

Establishment Type:	Meal Factor
Fast Food (45 min)	1.33
Restaurant (60 min)	1.00
Leisure Dining (90 min)	0.67
Dinner Club (120 min)	0.50

2 — **Waste Flow Rate:** — Notes:

Condition	Flow Rate
With a Dishwashing Machine	6 Gallons
Without a Dishwashing Machine	5 Gallons
Single Service Kitchen	2 Gallons
Food Waste Disposer Only	1 Gallon

3 — **Retention Time** — Notes:

Commercial Kitchen Waste Dishwasher	2.5 Hours
Single Service Kitchen Single Serving	1.5 Hours

4 — **Storage Factor** — Notes:

Kitchen Type	Storage Factor
Fully Equipped Commercial	
Hours of Operation	
8 Hours	1.00
12 Hours	1.50
16 Hours	2.00
24 Hours	3.00
Single Service Kitchen	1.50

5 — **Calculate Liquid Capacity** — Notes:

Multiply the values obtained from step 1, 2, 3 and 4. The result is the approximate grease interceptor size for this application

6 — **Select Grease Interceptor** — Notes:

Using the approximate required liquid capacity from step 5, select an appropriate size as recommended by the manufacturer.