WASTEWATER MANAGEMENT OPERATIONS
GREASE TRAP/INTERCEPTOR INSTALLATION GUIDELINES

PURPOSE

Grease traps and grease interceptors are installed on 'gray' water drain lines from fixtures that have the potential to discharge high concentration levels of fats, oils and grease (FOG). They are generally installed on premises that have kitchens with food preparation facilities for large numbers of people. These facilities include restaurants/food services, hotels/motels, schools, and institutions.

The purpose of a grease trap or a grease interceptor is to provide a place for the wastewater to slow down and cool sufficiently to allow the liquefied FOG to solidify and be retained before the wastewater reaches the sanitary sewer system. The retained FOG should be regularly removed or pumped out. The maintenance frequency varies with each facility.

APPLICABILITY

Grease traps and interceptors should be accessible for cleaning and sampling, and relatively close to the fixture(s) discharging greasy wastes. The best location for grease interceptors is generally immediately outside of an exterior wall, but upstream from the 'black' water (sanitary wastes only) drain line(s).

DEFINITIONS

For purposes of this document a distinction is made between a grease trap and a grease interceptor. Grease traps are usually located inside the facility. Grease interceptors (sometimes called separators) are larger than grease traps and are installed underground outside the facility.

1. Grease Trap: a device designed to retain grease from one to a maximum of four equivalent fixtures.

Grease traps have adjustable weirs and should have flow restrictors. Weirs allow the grease to be retained. Most existing grease traps are located near the fixture(s) needing treatment. Such fixtures usually discharge hot water (i.e. sinks). Grease traps must be cleaned frequently. If not, hot water will liquefy the grease and carry it through the trap and into the sewer system, possibly clogging the side sewer or main sewer. For this reason, the City of Fircrest does not allow dishwashers to be connected to grease traps.

2. Grease Interceptor: an interceptor is at least 500 gallons in capacity, serves all fixtures needing treatment, and is remotely located.

Grease interceptors are generally located outside the facility and in the ground. Grease interceptors are preferred over grease traps, but may be larger than necessary for some establishments. Grease interceptors are similar to septic tanks or oil/water separators. Pre-cast interceptor vaults are commercially available.

3. Equivalent Fixtures: approved, installed receptacles, devices, or appliances which are supplied with water or which receive liquid or liquid-borne wastes and discharge such wastes into the sanitary sewer system to which they may be directly or indirectly connected. For a list of common devices see Table 1. Some devices count as two equivalent fixtures.

   Industrial or commercial tanks, vats and similar processing equipment are not fixtures, but may be connected to or discharged into approved traps or devices with proper approval.

4. Single Service Kitchen: a kitchen where the meals are served on throwaway plates and utensils.

CONSTRUCTION DETAILS

The most important consideration for the design of grease traps and interceptors are:

1. Capacity of the trap or interceptor,
2. Facilities for ensuring that both the inlet and outlet are properly baffled,
3. Ease and convenience with which the device can be inspected, cleaned, and the accumulated grease removed,
4. Inaccessibility of the device to insects and vermin,
5. Distance between inlet and outlet, which should be sufficient to allow gravity separation of the grease, so that the grease will not escape through the outlet, and
6. A sampling tee or cleanout in the discharge pipe from the device.

Flow control fittings should be installed on the inlet side of smaller traps to protect against overloading or sudden surges from the sink or other fixtures. Traps and interceptors must be vented in accordance with the current Plumbing Code.

SIZING CRITERIA

PART 1: Grease Trap vs. Grease Interceptor

A. Grease Traps

Please answer the following questions:

	YES	NO
Does the facility have four equivalent fixtures or less connected to proposed device, not including dishwasher? (see Definitions and Table 1)	____	____
Does the facility serve less than 40 meals per peak hour? (SEE Part II.B.1 to determine peak meals)	____	____

If you answer 'yes' to both of these questions, please size your grease trap according to criteria in section PART II.A and submit calculations with plans and specifications.

If you answered 'no' to either of these questions, please continue to Section B. Grease Interceptors.

B. Grease Interceptors

Please answer the following questions:

	YES	NO
Does the facility have 8 equivalent fixtures or less which should be connected to proposed device, not including dishwasher? (see Definitions and Table 1)	____	____
Does facility serve less than 40 meals (peak hour)? (see Part II.B.1 to determine peak meals)	____	____

If you answered 'yes' to both of these questions, at minimum two grease traps are required with no more than four equivalent fixtures discharging into one trap. Please size each grease trap according to the criteria in Part II.A and submit calculations with plans and specifications.

If you answered 'no' to either of those questions, you are required to install a grease interceptor outside the facility. If it is not feasible to locate the interceptor outside, it may be installed in a location inside the facility where no food is handled. Please size your interceptor according to the criteria in section Part II.B and submit calculations with plans and specifications.

Below is a table used to compute the number of equivalent fixtures:

TABLE 1
Equivalent Fixtures

Device	No. of Equivalent Fixtures
Three compartment sink	2
Single wash-up sink	1
Single food preparation sink	1
Floor drain (active)	1
Floor sink/receptor	1

Note: Only floor drains which discharge or have the potential to discharge grease waste (usually kitchen drains) should be connected to a grease trap/interceptor. Floor drains routinely used to discharge grease waste should be counted as one equivalent fixture.

PART II: Sizing

A. Grease Trap

Capacity of a grease trap should be determined using the following table:

No. of equivalent Fixtures	Required flow rate (gpm)	Grease Retention (lbs)
1	20	40
2	25	50
3	35	70
4	50	100

All grease traps shall be regularly maintained. A maintenance log shall be kept on-site. At a minimum, the log shall contain date of maintenance, date of inspection, and name of inspector/ worker.

B. Grease Interceptor

The size of a grease interceptor shall be determined by the following formula:

Number of meals per peak hour	x	Waste flow rate	x	Retention time	x	Storage factor	=	Size (gal)
(1)		(2)		(3)		(4)		

(1) Meals Served at the Peak Hour:

The number of meals served at the Peak Hour is obtained by multiplying the number of seats by 60, and dividing by the estimated time it takes for a patron to eat. Cash register receipts may be used to establish this number.

For restaurants which are determined to need a grease interceptor, the number of seats may be estimated to be equal to 100% of the seating capacity of the dining area and 20% of the seating capacity in the lounge. For restaurants with drive-through service, the estimated drive-through service rate at Peak Hour should be included. In rest homes, camp kitchens and other similar kitchens, the peak meals would be equal to the occupant load.

(2) Waste Flow Rate:

A. With dishwashing machine	6 gallon flow
B. Without dishwashing machine	5 gallon flow
C. Single service kitchen	2 gallon flow
D. Food waste disposer	1 gallon flow

(3) Retention Times:

Commercial kitchen waste dishwasher	2.5 hours
Single service kitchen	1.5 hours

(4) Storage factors:

Fully equipped commercial kitchen	8-hour operation	1.0
	12-hour operation	1.5
	16-hour operation	2.0
	24-hour operation	3.0
Single service kitchen		1.5

C. Examples:

(1) A restaurant has seating for 125 patrons. It is located next to a freeway and operates 24 hours per day. Equipment includes a dishwasher and a waste disposal unit. Patrons take an average of 45 minutes to dine.

a. Meals served per peak hour may be estimated. 125 x 60 ÷ 45 minutes = 167 meals per peak hour.
b. Waste flow rate is 6 gal. + 1 gal. = 7 gallons per meal.
c. Retention time is 2.5 hours.
d. Storage factor is 3.

Solution: 167 x 7 x 2.5 x 3 – 8,768 gallon interceptor.

(2) A <u>new</u> restaurant has seating for 125 patrons and a cocktail lounge that seats 25 patrons. They will operate 12 hours per day with equipment that includes a dishwasher and a waste disposal unit. It is assumed that patrons will take one hour to dine.

a. Meals served per peak hour may be estimated. [(125) + (25 x 0.20)] x 60 ÷ 60 = 130 meals per peak hour.
b. Waste flow rate is 6 gallons because the waste disposal unit is piped to bypass the interceptor.
c. Retention time is 2.5 hours.
d. Storage factor is 1.5.

Solution: 130 x 6 x 2.5 x 1.5 = 2,925 gallon interceptor

The Approval Authority may, but is not required to, allow a variance from the standards found in this guidance document on a case-by-case basis if:

a. A facility is between the criteria for trap vs. interceptor
b. Grease generated is proven to be less than normal or less than anticipates, or
c. Installation of a grease interceptor at a location outside the facility is not feasible.

The proceeding information is for guidance only. The Approval Authority reserves the right to require installation of additional or upgraded equipment as necessary to ensure proper conveyance of wastewater through the municipal sewer system. In addition, the Approval Authority may modify or reduce sizing requirements on interceptors that may cause septic conditions at certain establishments.