Grease Removal Device Installation Requirements

The removal of fats, oils, and grease (FOG) from kitchen wastewater is an essential operational requirement for Food Service Establishments (FSEs) like restaurants, cafes, catering facilities, commissaries, churches, hotels, cafeterias, convenience stores, full service grocery stores, schools, hospitals, nursing homes and food manufacturing plants to ensure the proper operation of the sanitary sewer system for all. As such, El Dorado Irrigation District (EID or District) requires an appropriately sized and installed Grease Removal Device (GRD) to be installed on "gray" water drains discharging to the District's sewer system. GRDs are designed to remove FOG from wastewater. EID has adopted regulations (EID Administrative Regulation (AR) 6022) and implemented the following requirements and procedures to ensure proper GRD installation and operation. All new FSEs connecting to the District's sewer system are required to provide a Plot Plumbing Plan along with the manufacturer specification sheet for the proposed GRD for District approval prior to installation. The District may require the same information for any existing FSE that plans significant changes to plumbing, plumbing fixtures or food preparation than what is on file with District's Industrial Pretreatment and Pollution Prevention Program.

All drawings shall clearly convey all the information required. Only one set of plans is required. Submittals may be emailed to ipp@eid.org

Failure to clearly show/demonstrate compliance with the minimum requirements will result in your application being returned for correction of deficiencies, which may delay project approval. Do not install the device without approval from EID. Once approved by EID, the GRD device may be installed as configured in the approved plans. If plans are changed in any way after EID approval, additional review and approval is required by EID.

The following types of GRDs may be installed:

- **"Grease Interceptor" or "Gravity Grease Interceptor (GGI)"** means a multi-compartment device that is constructed in different sizes (minimum 1000 gallons according to EID Design and Construction Standards) and is generally required to be located outside and underground between a FSE and the connection to the Sewer System. These devices use gravity to separate FOG from the wastewater as it moves from one compartment to the next.
- **"Grease Trap" or "Hydromechanical Grease Interceptor (HGI**)" means a device for separating and retaining waterborne FOG and FOG complexes prior to the wastewater exiting the FSE and entering the District's Sewer System. These can be located inside or outside the facility and are required to have an approved type of vented flow restrictor. Flow restrictors slow the flow of water entering the HGI. The device must be certified, installed, and sized according to then-current Uniform Plumbing Code at the time of construction.

This document should not be used as a substitute for codes and regulations. The applicant is responsible for compliance with all code and policy requirements, regardless of whether they are referred to or contained in this document.

DETERMINING THE TYPE OF GRD TO INSTALL

Specific site conditions often determine space requirements when installing a new GRD. In existing buildings, space for a GGI usually does not exist. Breaking down the fixtures into smaller groups and running them through an appropriately sized HGI may be the best solution. Connecting as many potential grease generating drainage fixtures as possible to the GRD can help prevent blockages in the sewer system due to FOG.

- GGIs 1000 gallons or greater
    - GGIs smaller than 1000 gallons are not allowed for new installation per EID grease interceptor standard drawing S13. Due to their size, these are installed exclusively outdoors below grade. GGIs shall have a minimum of three manholes to allow visibility of each inlet piping, baffle (divider) piping and outlet piping to ensure accessibility for inspection, cleaning, and removal of all contents. The number of manholes shall be indicated on plans. Existing interceptors with two manholes may be allowed under certain conditions and only as authorized in writing by the Environmental Compliance Division of EID.

- HGIs come in a variety of sizes based on flow (gallons per minute/GPM)
    - Due to space constraints, typically HGIs rated below 100 GPM are installed indoors (either above or below grade) while HGIs 100 GPM or greater are installed outdoors below grade. The inlet pipe to the HGI shall be equipped with a flow control fitting. The flow control fitting shall be specific to the HGI manufacturer design (often included with HGI installations).

PLOT/PLUMBING PLAN REQUIRMENTS

The **plot/plumbing plan** shall provide information identifying the location of the FSE relative to the streets and surrounding area, show general dining, kitchen, and washing/cleaning areas, and provide information on the **general** piping connections related to wastewater discharged to the sewer. At a **minimum,** the drawing shall be drawn to scale and shall clearly identify each of the following:

a. Map orientation or North arrow.
b. Name of FSE, address, drawing name and number, date drawn/revised and the name of person designing the drawings.
c. Legend for symbols used.
d. All general work areas including the dining and kitchen areas.
e. The overall building dimensions and work area dimensions.
f. All plumbing fixtures demonstrating which are (and are not) connected to the sewer. This may include, but is not limited to: sinks, floor sinks, floor drains, mop sinks, dishwashers, restrooms, drain lines, etc.
g. Location of GRD(s).
h. Sizing calculations used to determine the minimum size of the GRD to be installed. (May be shown on a separate page).
i. GRD manufacturer information: Make, Model, Size. Include manufacture specification sheet with submittal.
j. A list indicating fixtures that are connected to GRD(s)- See Table 1 on page 3

The following table specifies which fixtures are required and which are recommended but not required for each type of GRD.

Table 1: GRD Fixture Connection

	GRD Type		
Type of Drainage Fixture	**GGI (Minimum 1000 Gallons)**	**HGI (less than 100 GPM)**	**HGI (100 GPM or Greater)**
Pre Rinse (scullery) sinks	Required	Required	Required
Three compartment sinks	Required	Required	Required
Dishwashing room drainage fixtures (small drains on busing counters adjacent to pre-rinse sinks or silverware soaking sinks)	Required	Required	Required
Wok stoves, rotisseries, or other FOG generating cooking equipment with drip wastewater lines	Required	Required	Required
Dishwasher	Required	Shall Not Connect	Required
Floor Drains	Required	Recommended	Required
Prep Sink (no dishwashing)	Required	Recommended	Required
Mop Sink	Required	Recommended	Required
Soda Machine/ refrigerator/ ice machine waste lines	Not Required	Not Required	Not Required
Outside equipment/ floor mat washing drains (must be covered to prevent rainwater intrusion)	Required	Recommended	Required
Kettles and tilt/braising pans and associated floor drains	Required	Recommended	Required
Pasta cooker drip lines	Required	Recommended	Required

SIZING OF THE GRD

Sizing of a GRD can be accomplished in three main ways:

1. **Pipe Diameter Sizing (See Table 2)**
   - Used for HGI Sizing

2. **Fixture Volume Sizing (See Table 3)**
   - Used for HGI Sizing

3. **Drainage Fixture Unit (DFU) Sizing (See Table 4)**
   - Used for GGI Sizing

Table 2: Hydromechanical Grease Interceptor Sizing Using Gravity Flow Rates

		Size of HGI	
Diameter of Grease Waste piping (inches)	**Maximum Full Pipe Flow (gpm) [1]**	**One Minute Drainage period [2] (gpm)**	**Two Minute Drainage period [2] (gpm)**
2	20	20	10
3	60	75	35
4	125	150	75
5	230	250	125
6	375	400	200

Table 1014.2.1- 2024 Uniform Plumbing Code (UPC)

Notes:
[1] ¼ inch per foot based on Manning's formula with friction factor N=0.012
[2] Drainage period is the actual time it takes to completely drain the fixture. Assume a 1 minute drainage period unless conditions permit a 2 minute drainage period. Using a 2 minute drainage period may lead to slow discharge times and/or overflows from indirect drains. Two minute drainage time should only be used if installation space will not accommodate the GRD recommended for the one minute drainage period.

Table 3: Hydromechanical Grease Interceptor Sizing Using Fixture Capacity		
	Procedure	**Example**
Step 1	Determine the **cubic content** of the fixture by multiplying length X Width X Depth	**Pre-Rinse Sink**: 48" x 24" x 12" Cubic content: 48 x 24 x 12= **13,824 cubic inches**
Step 2	Determine the capacity in gallons. 1 gal = 231 cubic inches	Contents in gallons: 13,824/231 = **59.8 gallons**
Step 3	Repeat steps 1-2 for each fixture that is required to be connected to the GRD	**(1) 3 compartment sink** :12"x 12" x 24" Cubic Content: 12 x 12 x 24= 3456 cubic inches per compartment x 3 compartments= **10,368 cubic inches.** **(2)** 10,368/ 231= **44.8 gallons**
Step 4	Add the capacity in gallons for all fixtures	Prep sink + 3 compartment sink = Total capacity: 59.8 gal. + 44.8 gal. = **104.6 gal.**
Step 5	Determine actual drainage load (fill factor). The fixture is usually filled to about 75% of capacity. **Actual drainage load**= 75% of fixture capacity	Actual drainage load: 0.75 x 104.6 gallons= **78.45 gal.**
Step 6	Determine the flow rate and the **drainage period: Flow Rate**= Actual drainage load/ Drainage period. Good practice uses a drainage period of one minute. Two minute drainage time should only be used if installation space will not accommodate the GRD recommended for the one minute drainage period.	**Calculated drainage flow rate 1 minute** period: 78.45 gal./ 1 min= 78.45 Gallons per Minute (GPM) **Calculated drainage flow rate 2 minutes** period: 78.45gal/ 2 min= 39.2 Gallons per Minute (GPM)
Step 7	Select a GRD that with a GPM rating greater than or equal to the calculated drainage flow rate	The drainage flow rate for a 1 minute period is 78.45 GPM. The minimum size GRD needs to be rated for 78.45 GPM. Round up to the next readily available manufactured HGI.

Modified from example 1014.2.1- 2024 Uniform Plumbing Code (UPC)

Table 4: Drainage Fixture Unit (DFU) Gravity Grease Interceptor (GGI) Sizing	
DFUs[1, 2]	**GGI Volume**
8	~~500 gallons*~~
21	~~750 gallons*~~
35	1,000 gallons
90	1,250 gallons
172	1,500 gallons
216	2,000 gallons
307	2,500 gallons
342	3,000 gallons
428	4,000 gallons
576	5,000 gallons
720	7,500 gallons
2112	10,000 gallons
2640	15,000 gallons

Table 1014.3.6- 2024 Uniform Plumbing Code (UPC)

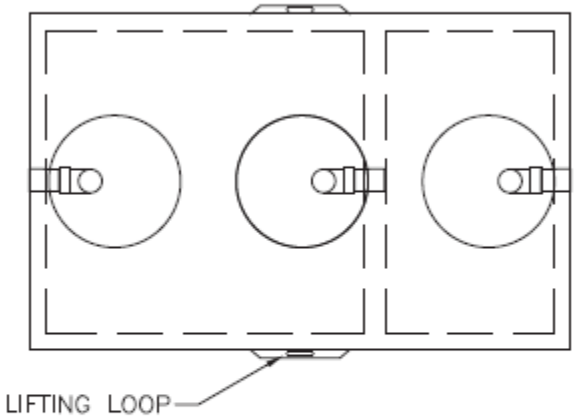
Notes:

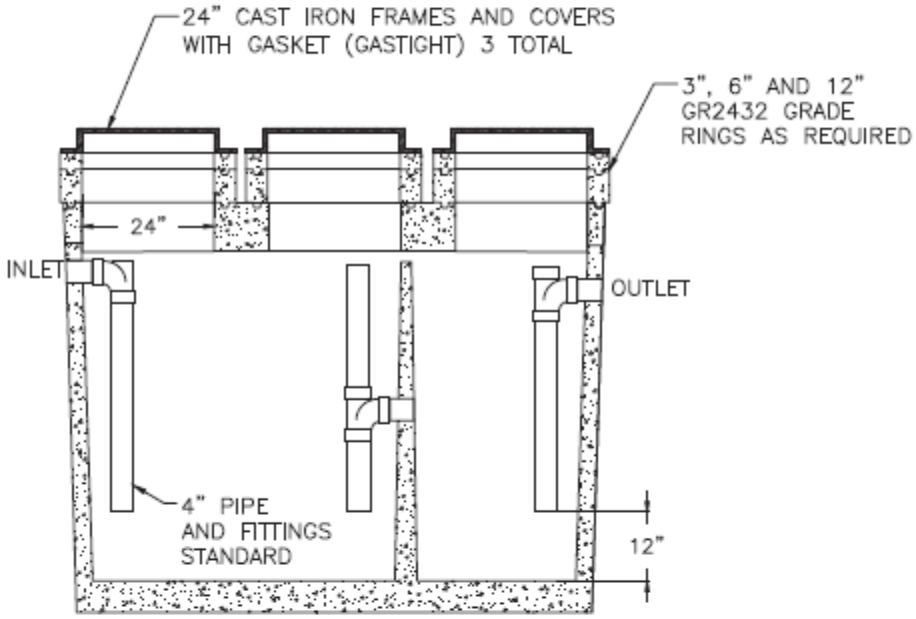
[1] DFUs may be found in the UPC (2024 UPC: Tables 702.1 and 702.1 (1)

[2] Add the DFUs of all fixtures required to connect to the GGI. Use this table determine the minimum interceptor size required. When calculated number does not match any given DFU value in the table, round up to the next largest interceptor size.

*Interceptors with a volume less than 1000 gallons are not allowed for new installation per EID grease interceptor standard drawing S13

TOP VIEW
(COVERS & RINGS REMOVED)





SIDE SECTION VIEW

CONSTRUCTION NOTES

1. DESIGN LOAD: H-20 TRAFFIC WITH DRY SOIL CONDITIONS (WATER LEVEL BELOW TANK) AND 1'-6' EARTH COVER.
2. SUITABLE SUB-BASE BEDDED WITH GRANULAR MATERIAL SHALL BE PREPARED TO HANDLE ANTICIPATED LOADS.
3. TO BE SIZED BY ENGINEER.

EL DORADO IRRIGATION DISTRICT

GREASE INTERCEPTOR
1,000 GALLON MINIMUM

DRAWN BY	SCALE	REVISION	DATE	BY	EID STANDARD DRAWING NO.
A. URTEAGA	NONE	1	11/03/15	TS	S13
APPROVED	DATE	2	04/25/16	TS	
B. MUELLER	05/09	3	11/15/22	MB	