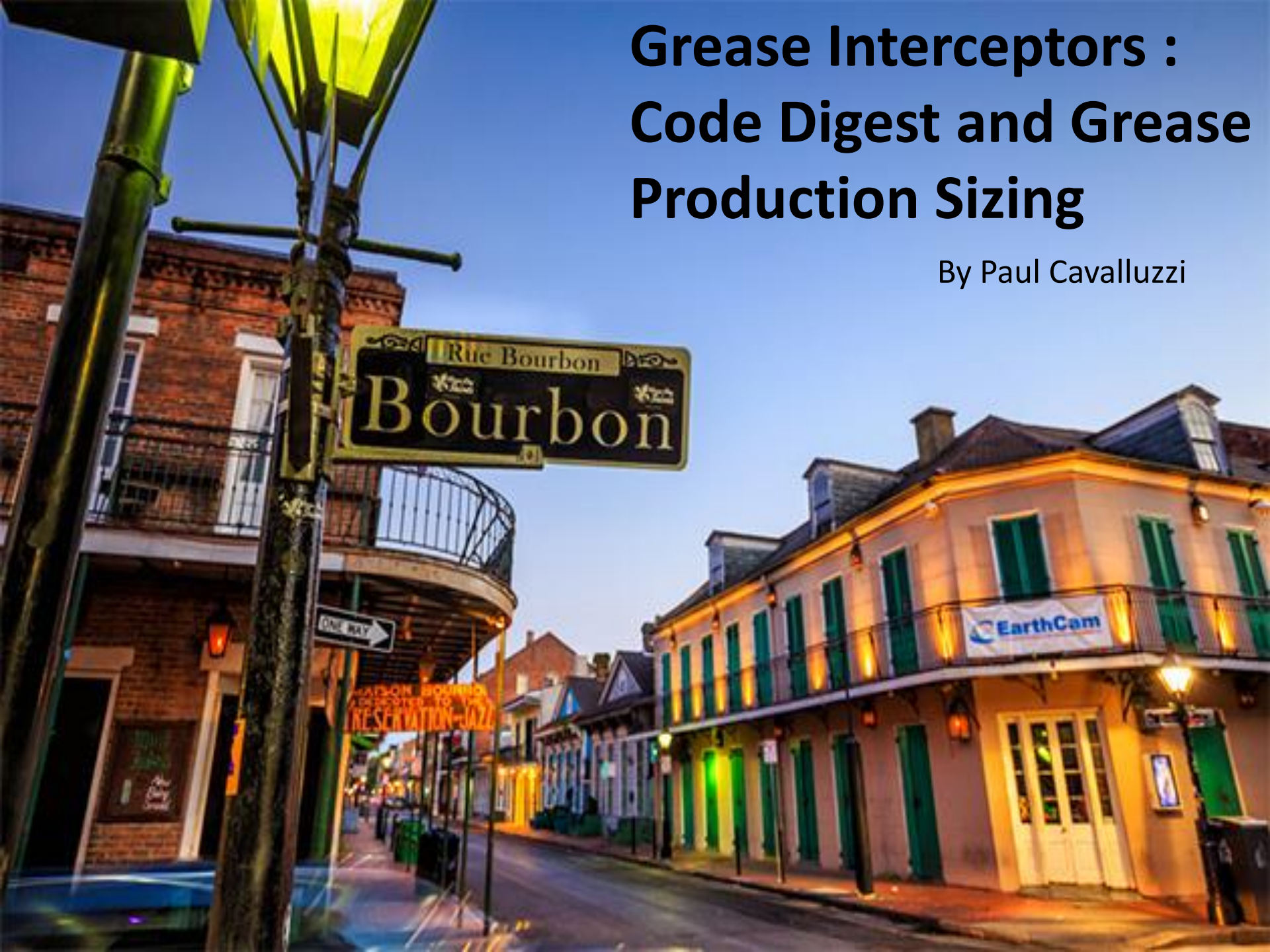


# Grease Interceptors : Code Digest and Grease Production Sizing

By Paul Cavalluzzi



- Louisiana State Code Digest
- Grease Production Sizing



January 1<sup>st</sup> 2016

Independent State Code to **2012 IPC**



Louisiana House Bill 1048 was signed by the Governor on June 23rd, 2014 and enacted as Act Number 836 of 2014. With an effective date of January 1st, 2016, this Act repeals the authority of the State Health Officer, acting through the Office of Public Health (OPH) of the Department of Health (DHH), to prepare and promulgate plumbing rules and regulations.

In accordance with the Act, the Louisiana State Plumbing Code [Part XIV (Plumbing) of Title 51 (State Sanitary Code) of the Louisiana Administrative Code (LAC)] will be null, void, and unenforceable on and after January 1, 2016. As required, the Louisiana State Uniform Construction Code Council (LSUCCC) will promulgate State plumbing regulations through the evaluation, adoption, and amendment of the following codes as part of the State Uniform Construction Code:

- The 2012 International Building Code, Chapter 29-Plumbing Systems;
- The 2012 International Residential Code, Part VII-Plumbing; and,
- The 2012 International Plumbing Code.



- Gravity Grease Interceptors
- Hydromechanical Grease Interceptors
- Automatic Grease Removal Device



**I WANT YOU**  
**TO HELP STOP FOG**  
**NO GREASE DOWN THE DRAIN**

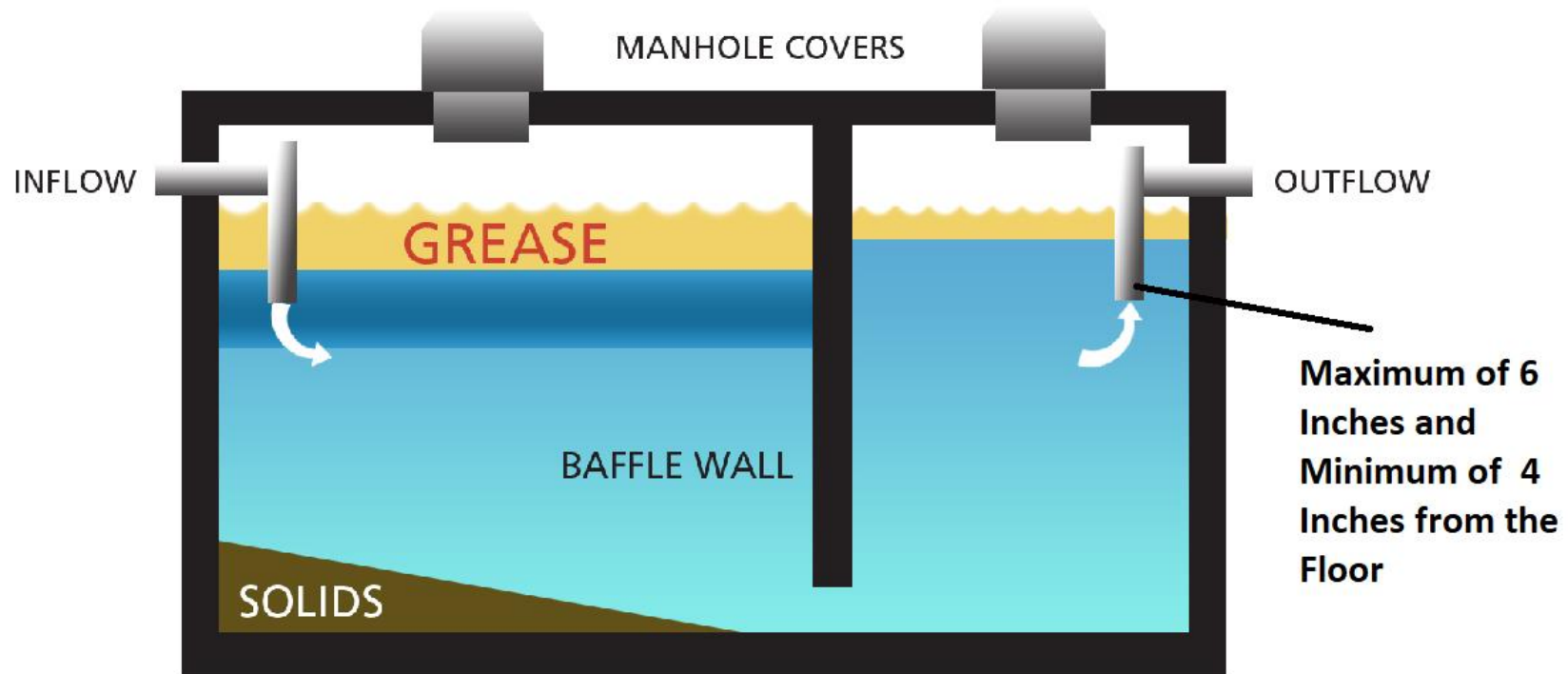
# Gravity Grease Interceptor



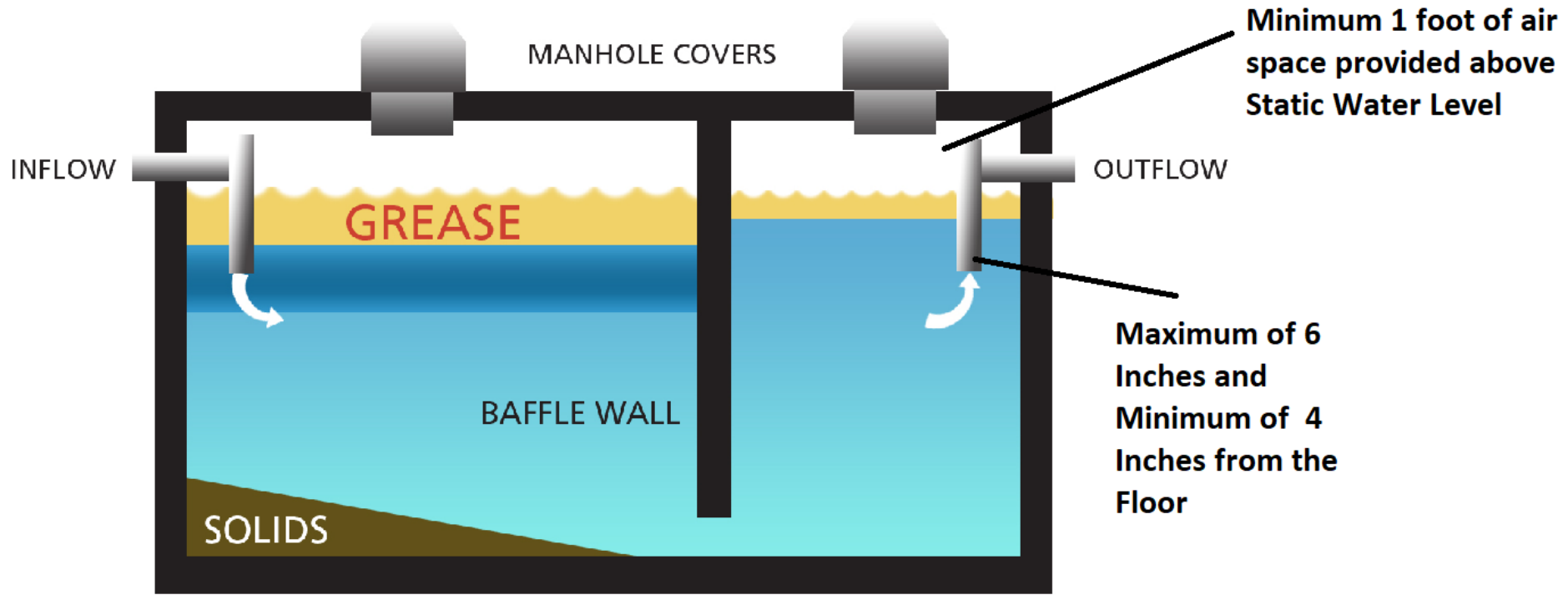
A close-up photograph of a hand holding a silver and red pen, actively drawing architectural sketches on a white sheet of paper. The sketches include various geometric shapes, lines, and shading, representing different views or components of a building or structure. The text "Tells you how to Design" is overlaid in the center of the image.

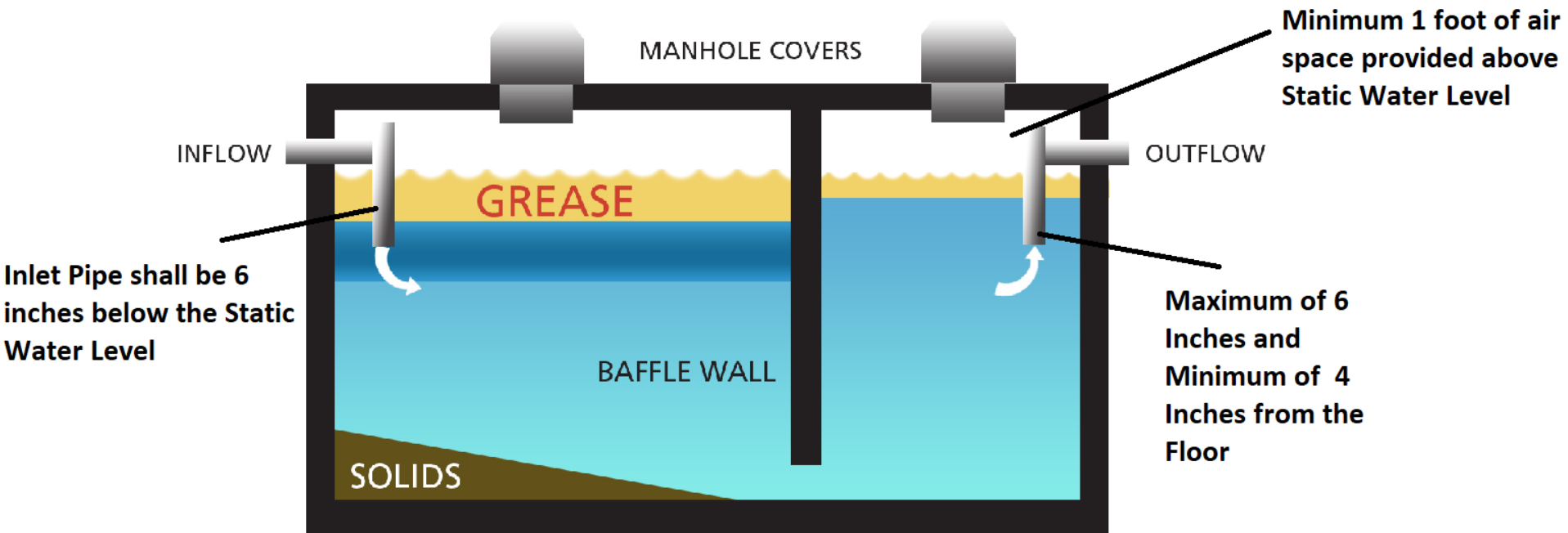
**Tells you how to Design**

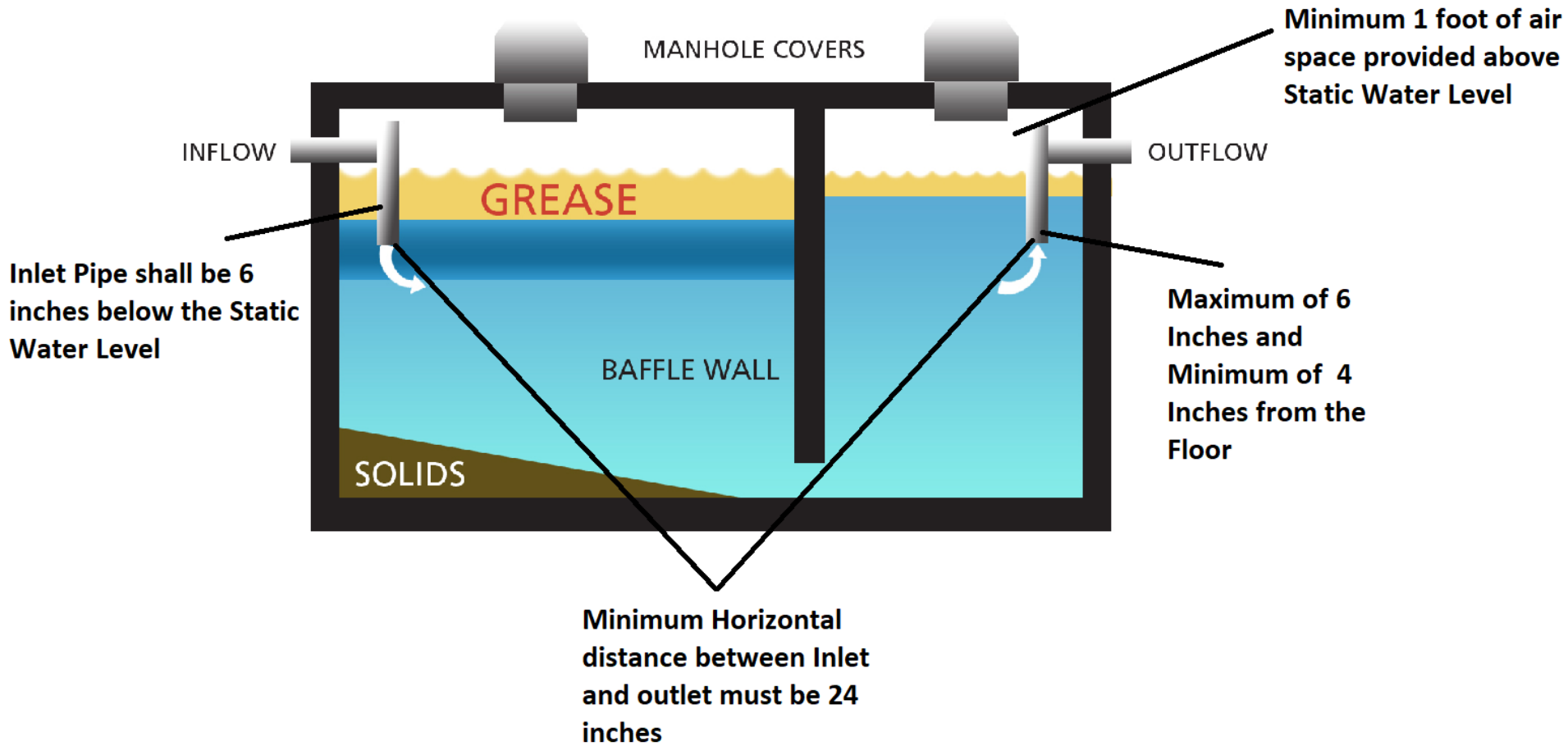












# Hydromechanical Grease Interceptor



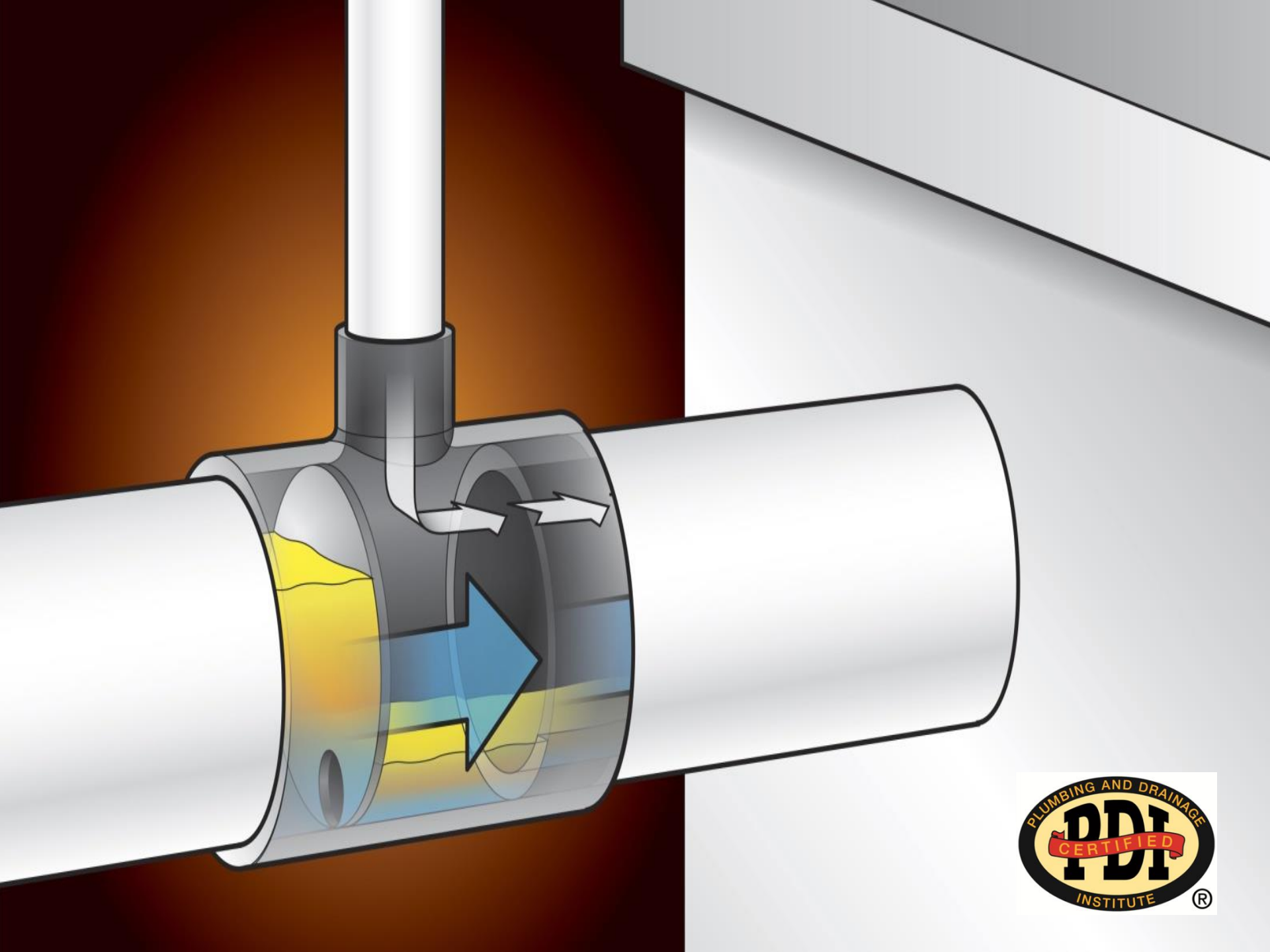




**G101**

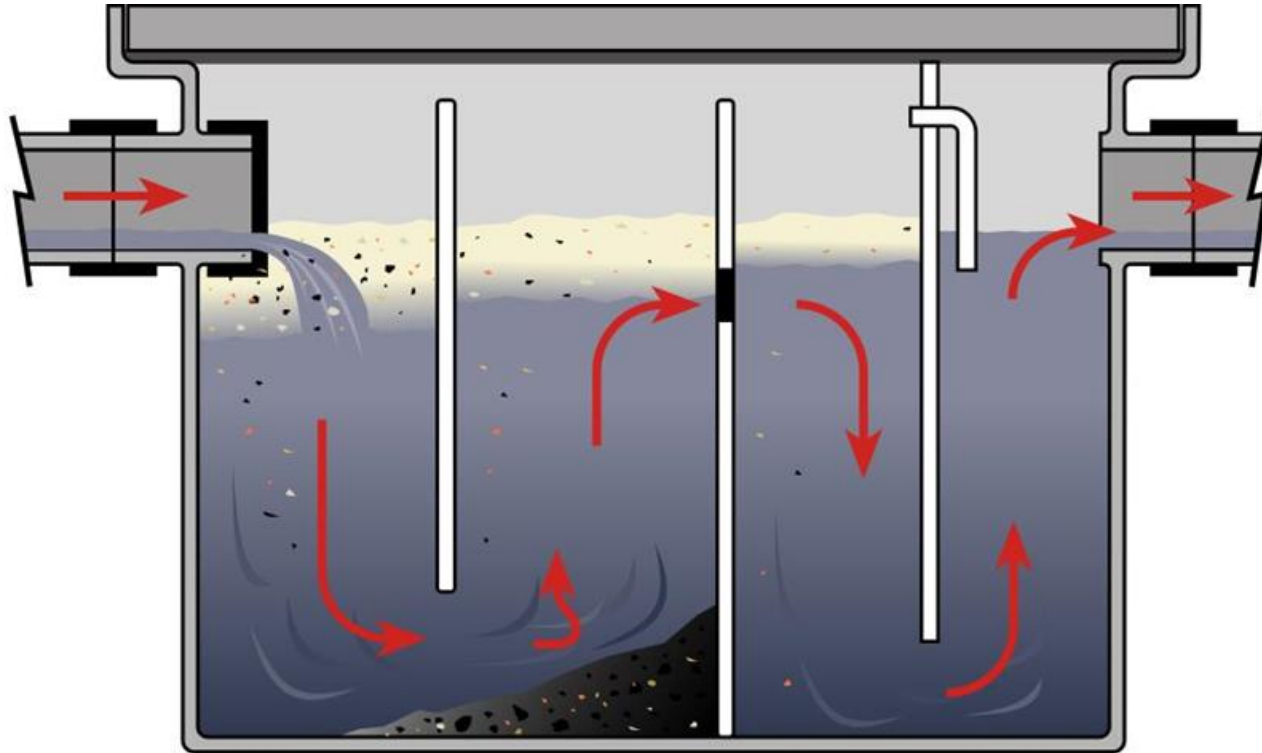


**A 112.14.3**



# Most Models include Baffles

PDI G101 Standard





Under the ASME standard there are four types of devices allowed:

- A. Units with an external flow control, with air intake (vent):  
directly connected
- B. Units with an external flow control, without air intake (vent):  
directly connected
- C. Units without an external flow control: directly connected
- D. Units without an external flow control: indirectly connected



# Automatic Grease Removal Device (GRD)





**A 112.14.4**

# Who Must Comply?





- Restaurants
- Hotel Kitchens
- Hospitals
- School Kitchens
- Bars
- Factory Cafeterias
- Clubs

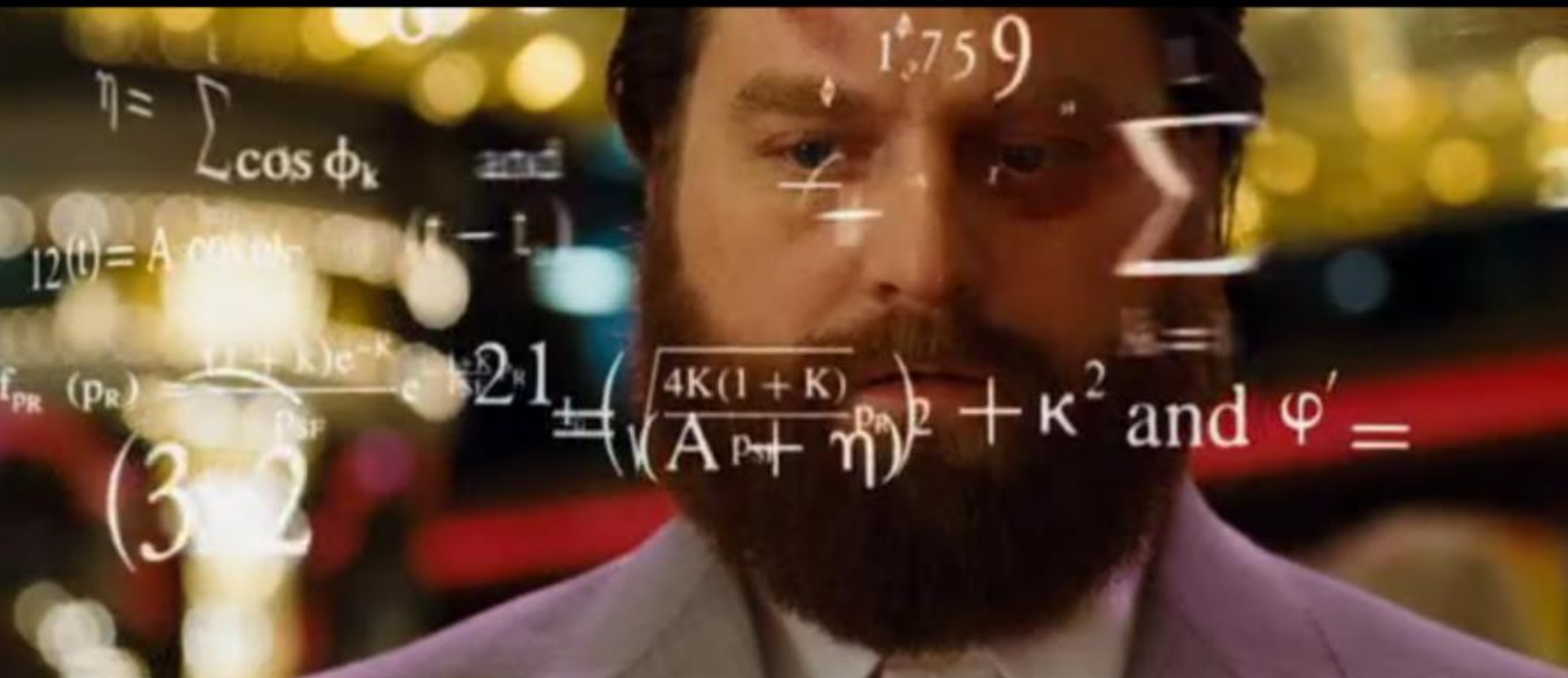


# Fixtures that must be connected due to discharge from Fats Oil and Grease



# Non Standard Detergents





# Sizing Per Code

**WITHOUT** a Garbage Grinder

**WITH** a Garbage Grinder





# **WITHOUT** a Garbage Grinder

Minimum Gallon Capacity shall  
Not be less than 125 Gallons

# WITHOUT a Garbage Grinder



People served during a Single Meal Period  
**125 Gallons**

**WITHOUT** a Garbage Grinder

**> 50**

People served during a Single Meal Period

**WITHOUT** a Garbage Grinder

2 ½ Gallons per Person  
beginning with the 51<sup>st</sup> person



Example **WITHOUT** Garbage Grinder



**WITHOUT** a Garbage Grinder

80 people served during a single Period

80 people served

50 people = 125 gallon

**WITHOUT** a Garbage Grinder

80 people served

50 people = 125 gallon

30 people x 2.5 = 75 gallons

**WITHOUT** a Garbage Grinder

80 people served

50 people = 125 gallon

30 people x 2.5 = 75 gallons

75 + 125 = **200 gallons**

**WITHOUT** a Garbage Grinder

Recommended Unit = GB-250



Gallon Capacity = 275



**WITH a Garbage Grinder**

Minimum Gallon Capacity shall Not  
be less than 500 Gallons

# WITH a Garbage Grinder



People served during a Single Meal Period  
**500 Gallons**

**WITH** a Garbage Grinder

**> 50**

People served during a Single Meal Period

**WITH** a Garbage Grinder

2 ½ Gallons per Person  
beginning with the 51<sup>st</sup> person



Example **WITH** Garbage Grinder



**WITH** a Garbage Grinder

53 people served during a single Period

53 people served

50 people = 500 gallon

**WITH** a Garbage Grinder

53 people served

50 people = 500 gallon

3 people x 2.5 = 7.5 gallons

**WITH** a Garbage Grinder

53 people served

50 people = 500 gallon

3 people x 2.5 = 7.5 gallons

7.5 + 500 = **507.5 gallons**

**WITH** a Garbage Grinder

Recommended Unit = GB-500



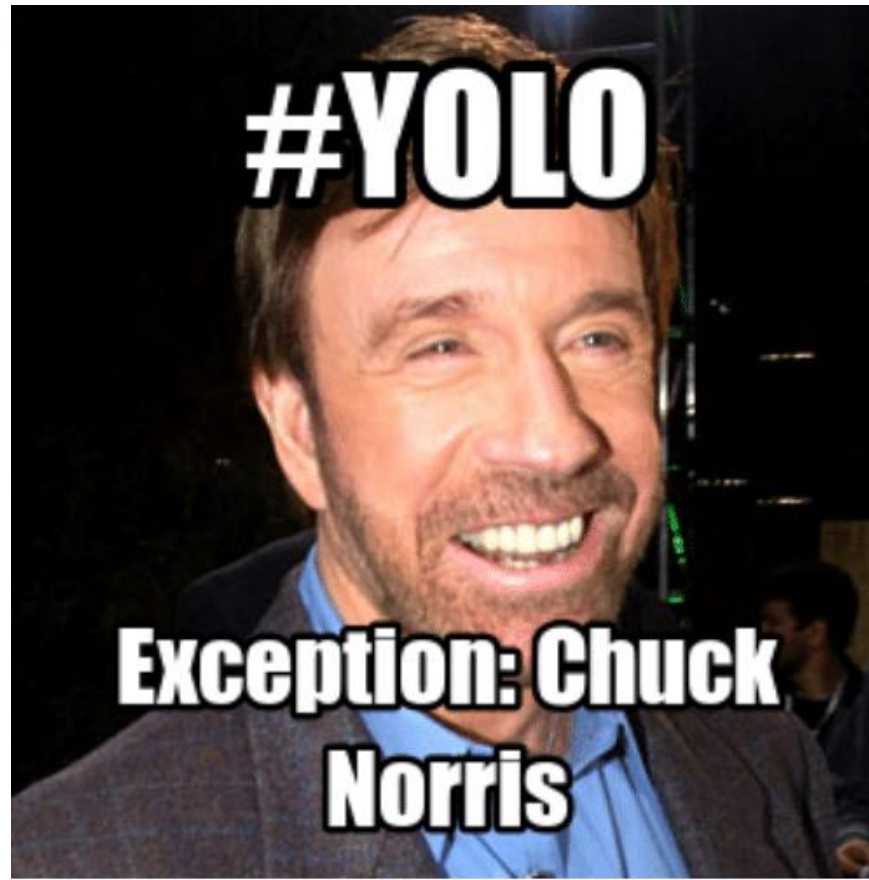
Gallon Capacity = 510

**THERE IS AN  
EXCEPTION TO  
EVERY RULE**

At the Discretion of the code official local jurisdictional code official, a smaller, point of use type hydromechanical grease interceptor or automatic grease removal device may be permissible when:



# (4) Exceptions



Would have to Brake up a concrete Slab around the building







Located further than 75 feet from the plumbing fixtures that the grease interceptor would be servicing

Unfeasible such as when servicing a kitchen located on the upper floors of a multistoried building



Low grease  
production which  
utilize single-  
service tableware





# Exceptions Sizing



Size in accordance with  
PDI or ASME



# **Fixture Volume Sizing**

**Sizing by Pipe Size**

# Fixture Volume Sizing

$$\left( \left[ \frac{\text{Volume of All Sink Bowls in Food Prep Area in Inches}^3}{231} \right] \times 0.75 \text{ (loading factor)} \right) = \text{Max Flow Rate (GPM) to Interceptor}$$

2 Minute Drain Time

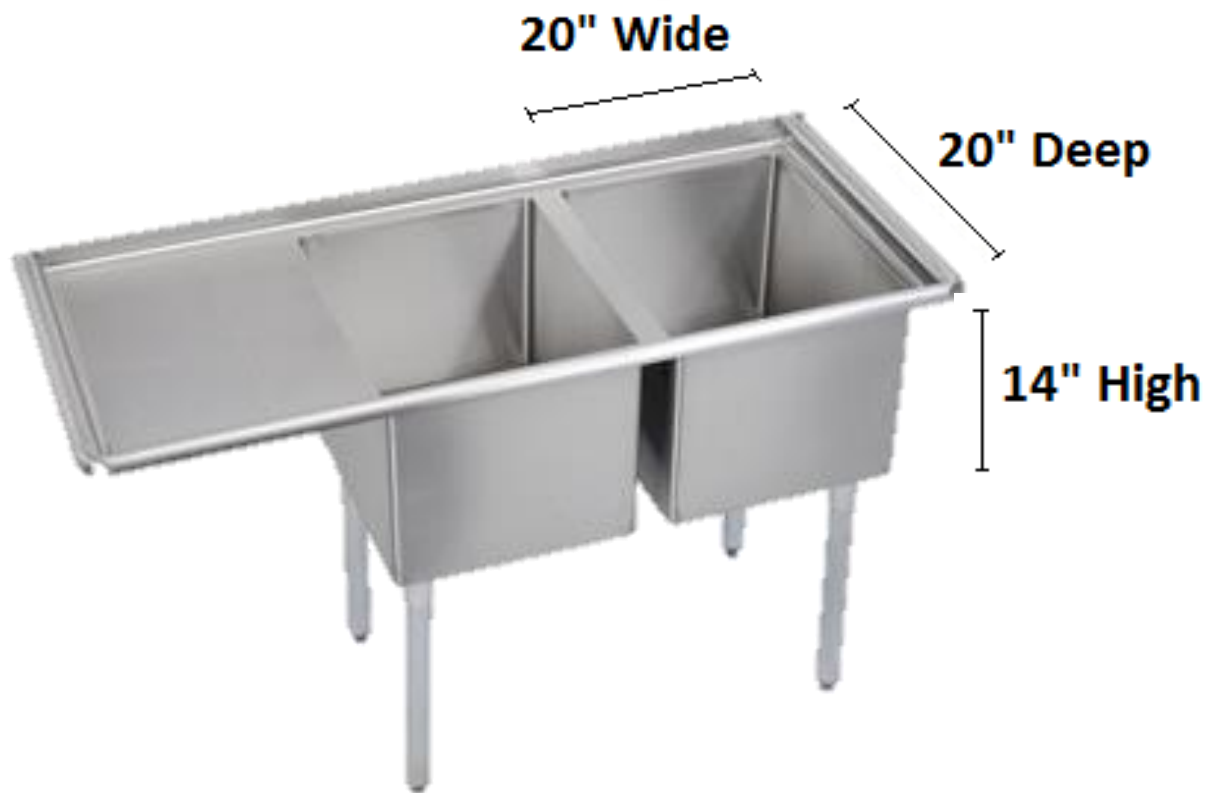
**Determine the flow Rate from Each Fixture**

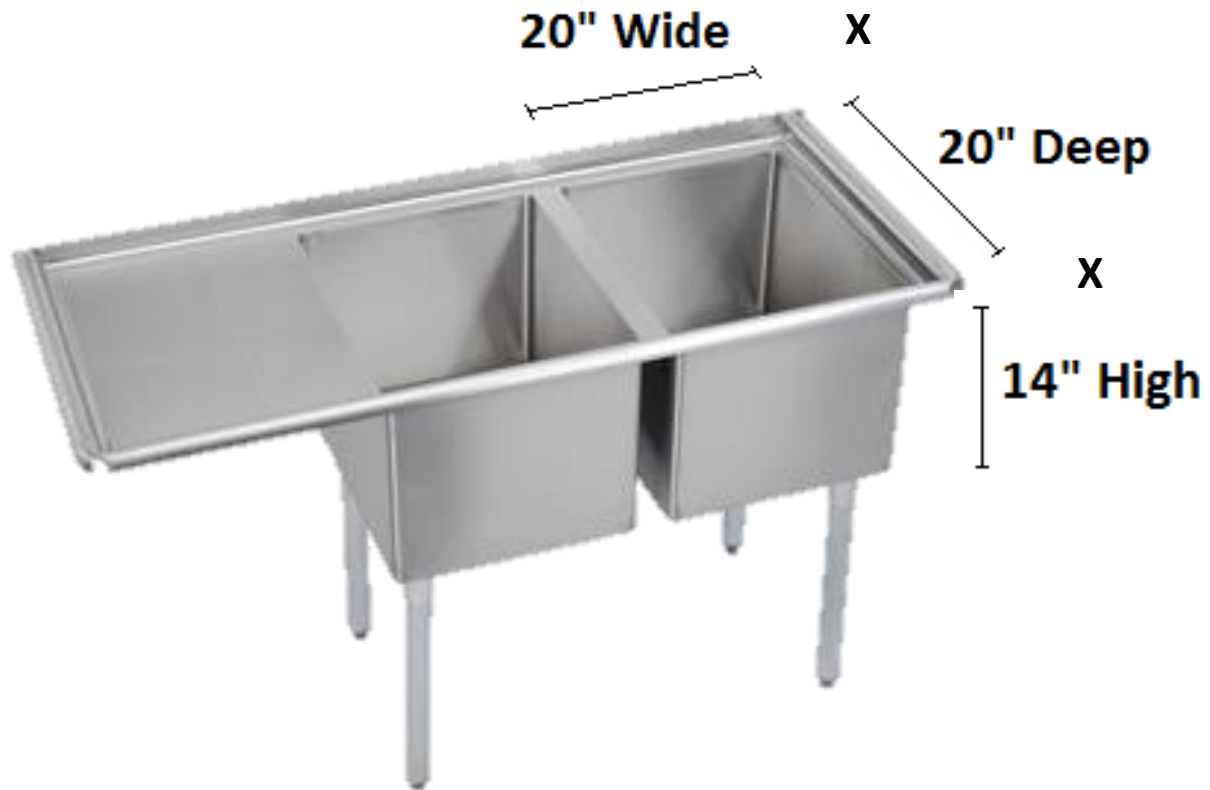


**20" Wide**









$$20 \times 20 \times 14 = 5,600 \text{ cubic inches}$$



$$\left[ \frac{5,600 \text{ cubic inches}}{231} \right]$$

$$\left[ \frac{5,600 \text{ cubic inches}}{231} \right]$$

231 cubic inches  
per gallon

$$\left[ \frac{5,600 \text{ cubic inches}}{231} \right]$$

$$\left[ \frac{5,600 \text{ cubic inches}}{231} \right]$$

---

2 Minute  
Drain Time

$$\left[ \frac{5,600 \text{ cubic inches}}{231} \right]$$

---

2 Minute  
Drain Time

**X** .75  
(loading factor)

$$\left[ \frac{5,600 \text{ cubic inches}}{231} \right]$$

2 Minute  
Drain Time

**X**

**.75**  
(loading factor)



$$\left[ \frac{5,600 \text{ cubic inches}}{231} \right]$$

---

2 Minute  
Drain Time

**X** .75  
(loading factor)

$$\frac{\left[ \frac{5,600 \text{ cubic inches}}{231} \right]}{2 \text{ Minute Drain Time}} \times .75 \text{ (loading factor)} = 9.09 \text{ gpm}$$

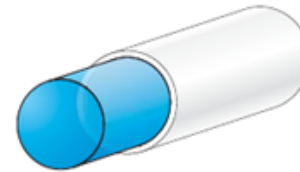


9.09 X (2) Compartment = **18.18 GPM**  
gpm

# Sizing by Pipe Size

## Hydromechanical Grease Interceptor Sizing Using Gravity Flow Rates

Diameter of Grease Waste Pipe	Maximum Full Pipe Flow*	Size of Grease Interceptor	
		One-minute Drainage Period	Two-minute Drainage Period
2" (51 mm)	20 GPM (1.3 L/s)	20 GPM (1.3 L/s)	10 GPM (0.6 L/s)
3" (76 mm)	60 GPM (3.8 L/s)	75 GPM (4.7 L/s)	35 GPM (2.2 L/s)
4" (102 mm)	125 GPM (7.9 L/s)	150 GPM (9.5 L/s)	75 GPM (4.7 L/s)
5" (127 mm)	230 GPM (14.5 L/s)	250 GPM (15.8 L/s)	125 GPM (7.9 L/s)
6" (152 mm)	375 GPM (23.6 L/s)	500 GPM (31.5 L/s)	250 GPM (15.8 L/s)



▲  
**Recommended**

\*1/4 inch slope per foot (20.8mm/m) based on Manning's formula with friction factor N = 0.012.



**Without** Garbage Grinder – Minimum Size 125 Gallons

**With** Garbage Grinder – Minimum Size 500 Gallons

**Exception** Granted – Size by Flow Rate



**When do I  
service my  
Interceptor?**





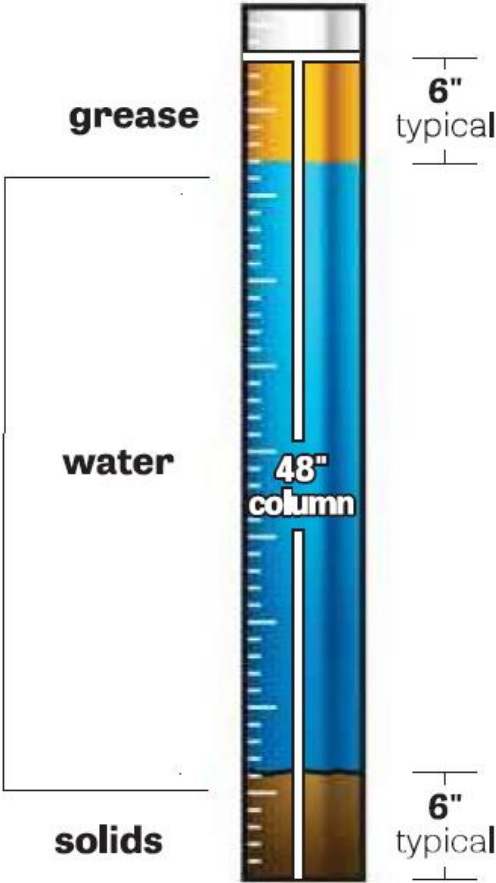
# Gravity Grease Interceptors

## 25% RULE



### Core Sample

1,000 gal. gravity interceptor





Automatic Grease Removal Device

# Daily!!!

MY DAILY ROUTINE



***Grease***

***Production***

***Sizing***



What is wrong with this picture?



125 Gallons



125 Gallons



**When do I  
service my  
Interceptor?**

# Calculate Grease Capacity

## Low Grease Production

No Flatware: 0.005 lbs./meal

With Flatware: 0.0065 lbs./meal



## Medium Grease Production

No Flatware: 0.025 lbs./meal

With Flatware: 0.0325 lbs./meal



## High Grease Production

No Flatware: 0.035 lbs./meal

With Flatware: 0.0455 lbs./meal



Meals Per Day



Grease Production Values



Days Per  
Pump-Out Cycle



Grease Capacity  
Needed





# Plumbing Engineering Design Handbook

## Volume 4: Plumbing Components and Equipment

170

ASPE Plumbing Engineering Design Handbook—Volume 4

### Example 8-3

To calculate a food service facility's daily potential grease load, multiply the number of meals (customers) per day by the grease production value per meal.

Assume the food service facility is a steak and seafood restaurant serving approximately 300 meals per day on washable dishes and flatware. Select the grease production value for high grease production with flatware from Table 8-3 and then calculate the daily grease load as follows:  $300 \times 0.0455 = 13.65$  lbs of grease per day.

Next, select an interceptor based on its certified grease storage capacity and the desired maintenance frequency as follows:

- Weekly maintenance:  $7 \text{ days} \times 13.65 \text{ lbs per day} = 95.55 \text{ lbs of grease storage capacity required}$
- Monthly maintenance:  $30 \text{ days} \times 13.65 \text{ lbs per day} = 409.5 \text{ lbs of grease storage capacity required}$
- Bimonthly maintenance:  $60 \text{ days} \times 13.65 \text{ lbs per day} = 819 \text{ lbs of grease storage capacity required}$
- Quarterly maintenance:  $90 \text{ days} \times 13.65 \text{ lbs per day} = 1,228.5 \text{ lbs of grease storage capacity required}$

The engineer should work closely with the owner to determine the maintenance frequency that best suits their particular project.

As previously stated, it is mandatory to calculate the minimum required flow rate for the interceptor. The amount of grease storage capacity the interceptor should have then can be determined using a procedure similar to Example 8-3, using the actual grease production values for the facility. The appropriate grease interceptor would have the minimum flow rate required as well as have enough capacity to meet the maintenance frequency that best suits the specific project. HGIs certified to PDI G101, ASME A112.14.3, and CSA B481 will have published flow rates and grease storage capacities as determined by their certification for each model offered, which may be relied on in selecting an appropriately sized interceptor.

Restaurant Type	Grease Production Values	Examples
Low grease producer	0.005 lbs (2.268 g)/meal (no flatware)	Elementary cafeteria, grocery meat department, hotel breakfast bar, sub shop, sushi, take-and-bake pizza
	0.0065 lbs (2.948 g)/meal (with flatware)	
Medium grease producer	0.025 lbs (11.340 g)/meal (no flatware)	Cafe, coffee shop, convenience store, grocery deli, Greek, Indian, Japanese, Korean, Thai, Vietnamese
	0.0325 lbs (14.742 g)/meal (with flatware)	
High grease producer	0.035 lbs (15.876 g)/meal (no flatware)	Full-fare family, fast-food hamburger, hamburger bar and grill, German, Italian, fast-food Mexican
	0.0455 lbs (20.638 g)/meal (with flatware)	
Very high grease producer	0.058 lbs (26.308 g)/meal (no flatware)	Full-fare BBQ, fast-food fried chicken, full-fare Mexican, steak and seafood, Chinese, Hawaiian
	0.075 lbs (34.019 g)/meal (with flatware)	



**BUFFALO WILD WINGS**  
GRILL & BAR

# Step 1

## Determine the flow Rate



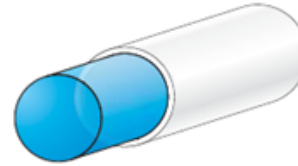
# 4" Pipe Size



# Table 1014.2.1

## Hydromechanical Grease Interceptor Sizing Using Gravity Flow Rates

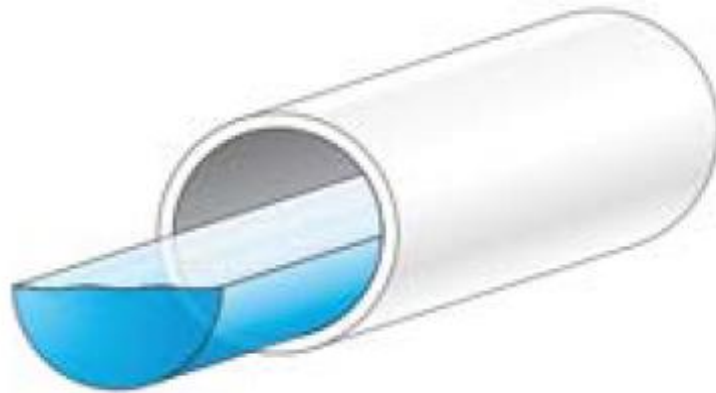
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		One-minute Drainage Period	Two-minute Drainage Period
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6" (152 mm)	375 GPM (23.6 L/s)	500 GPM (31.5 L/s)	250 GPM (15.8 L/s)



▲  
**Recommended**

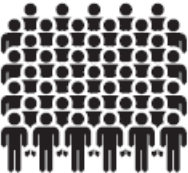


4" Pipe Size = 75 GPM



# Step 2: Calculate Grease Capacity

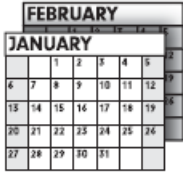
Meals Per Day



Grease Production Values



Days Per Pump-Out Cycle

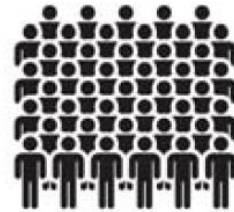


**Grease Capacity Needed**



# 750

Meals or  
Customers  
Per Day



## **Low Grease Production**

---

**No Flatware:** 0.005 lbs./meal

**With Flatware:** 0.0065 lbs./meal



## **Medium Grease Production**

---

**No Flatware:** 0.025 lbs./meal

**With Flatware:** 0.0325 lbs./meal



## **High Grease Production**

---

**No Flatware:** 0.035 lbs./meal

**With Flatware:** 0.0455 lbs./meal





## High Grease Production<sup>5</sup>

---

**No Flatware:** 0.035 lbs./meal

**With Flatware:** 0.0455 lbs./meal



## High Grease Production<sup>5</sup>

---

**No Flatware:** 0.035 lbs./meal

**With Flatware:** 0.0455 lbs./meal



# Days Per Pump-Out Cycle

FEBRUARY						
JANUARY						
	1	2	3	4	5	
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		







30 Days

60 Days

90 Days

Days Per  
Pump-Out  
Cycle

FEBRUARY						
JANUARY						
	1	2	3	4	5	6
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		



# 60 Days

Days Per  
Pump-Out  
Cycle

FEBRUARY						
JANUARY						
	1	2	3	4	5	
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

750

Meals Per Day



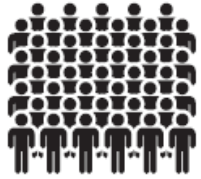
High Grease Production  
0.0455 lbs (20.638 g) / meal (with flatware)



60  
DAY CYCLE



2048 lbs



FEBRUARY	
JANUARY	
6	7
13	14
20	21
27	28



## (2) GB-250 in series



3,502 lbs of FOG









**GREASE MONKEY™**  
**PRE-APPROVED**  
**TOWN U.S.A.**

# Grease Monkey™

Full Service Grease Interceptor Sizing Tool

# Grease Monkey Sizing Tool

# Happy Code Authorities



Happy  
End User





**Thank you!**