

SAMPLE DRAWINGS FOR
HOSPITALS

KILOWA.

KITCHEN . LAUNDRY . WASTE
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BOH DRAWING

LIST OF DELIVERABLES

- Waste Generation data report
- Layout plan of waste management areas
- Methodology to accumulate, segregate and dispose off waste

WASTE GENERATION DATA REPORT

KILOWA SAMPLE PROJECT										
GARBAGE DISPOSAL CALCULATION										
Sr.No	OUTLET	Est.no	Est Garbage in gms per meal	Est.Garbage in Kgs/ day	Salvage/ Containers	Salvage/ Containers in kgs	Dry Garbage degradable	Dry Garbage degradable Kgs/day	Wet Garb (FOOD)	Wet Garb (FOOD) Kgs/day
1	All Day Dining	384	250	96	18%	17	20%	19	62%	60
2	Room service	180	150	27	18%	5	20%	5	62%	17
3	Bar & Cigar Lounge	90	150	14	22%	3	20%	3	58%	8
4	Function Halls	900	250	225	18%	41	20%	45	62%	140
5	Lobby Lounge & Deli café	27	100	3	22%	1	20%	1	58%	2
6	Staff cafeteria	104	150	16	18%	3	20%	3	62%	10
7	Rooms (200 gms per room for 151 rooms @ 70%)	106	200	21	7%	1	28%	6	65%	14
8	Office Area (2.2 kg per 1000 sq. feet)	2.2	2200	5	15%	1	85%	4		
	Sub total									
	Total			406		71		86		249

Summary :

Salvage

Dry Garbage (Uncompacted)

Wet Garbage (Uncompacted)

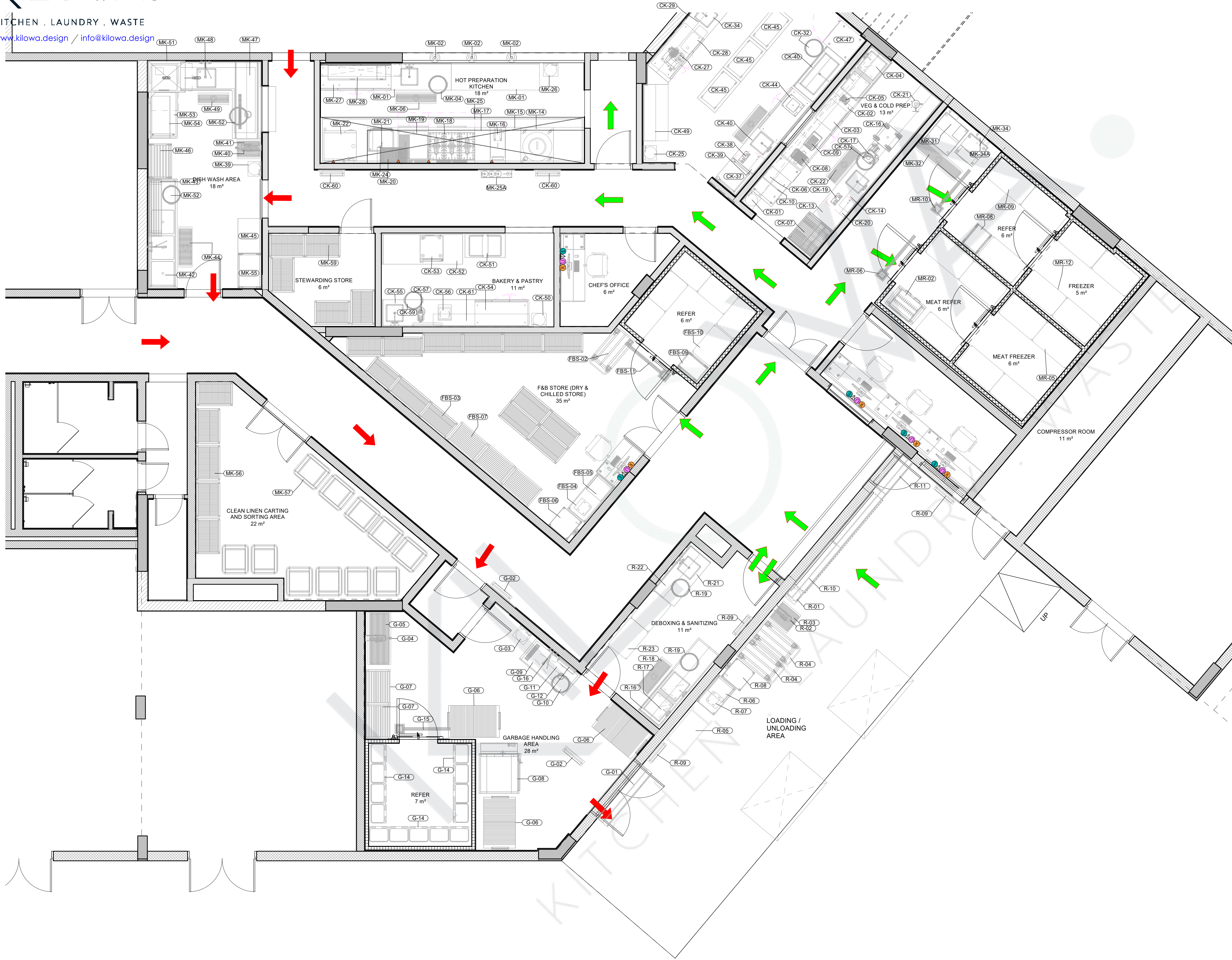
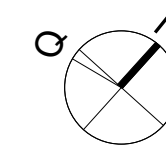
71 Kgs

86 Kgs

249 Kgs

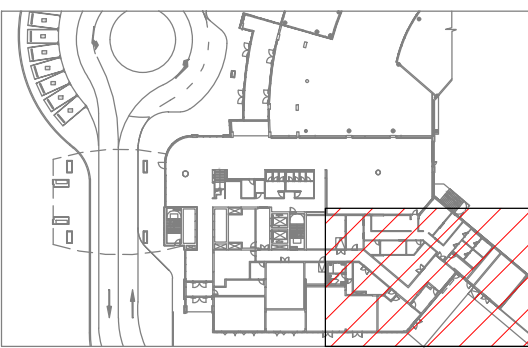
KILOWA SAMPLE PROJECT									
No of Bins Calculation									
			Compaction			Bins			
			Uncompacted	Compacted	Reduced	Holding (KG)	Holding (LTR)	Bin Size	Bins
Dry Garbage									
	Cardboard	25%	21	30%	15	15	72	70	1
	Paper	25%	21	60%	9	9	41	70	1
	Aluminium	15%	13	60%	5	5	129	70	2
	Plastics	35%	30	60%	12	12	602	70	9
	Sub Totals	100%	86						12
Salvage			71	0%	71	142	432	360	1
Food Waste			249	60%	99	199	361	70	5

EQUIPMENT LAYOUT PLAN



REVIEW STATUS	<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D
APPROVED				
APPROVED AS NOTED				
REVISE & RESUBMIT				
REJECTED				

KEY PLAN:



- GENERAL NOTES:
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 - DO NOT SCALE FROM THIS DRAWING. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. MENTIONED SIZE DRAWING SET IS FULL SIZE.
 - ALL EQUIPMENTS HAVE THEIR UNIQUE NUMBERING i.e. ITEM NO. FOR INFORMATION OF EQUIPMENTS PLEASE REFER EQUIPMENT SPECIFICATION SHEET ALONG WITH THE DRAWINGS.
 - KITCHEN EQUIPMENT SPECIFICATION ARE GIVEN UNDER EQUIPMENT SPECIFICATION SHEET.
 - THE MEP REQUIREMENTS FOR THE EQUIPMENTS ARE SHOWN IN SERVICES DRAWINGS WHICH USED UNIQUE SYMBOLS, WHICH ARE DEFINED IN SHEET NO. 1003.

REFERENCE DESIGN DRAWINGS		
REFERENCE NUMBER	DATE	TITLE
REFERENCE SHOP DRAWINGS		
REFERENCE NUMBER	DATE	TITLE
RELATED DOCUMENTS		
REFERENCE NUMBER	DATE	TITLE

REV	DATE	DESCRIPTION	DRAWN	CHECK	APPROVED
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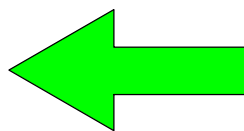
PROJECT TITLE:
SAMPLE DRAWINGS FOR HOTELS

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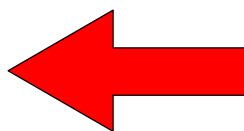
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GROUND FLOOR P1
SMPL -KILOWA-KLW -DD -G00 -1101

SHEET (7 OF 41)

Date: 31/10/19	Drawn: JK	Checked: DB	Format: A1	Scale: 1 : 50
PRO: SMPL	ORG: KILOWA	DI: KLW	TOD: DD	
ZONE: G00	DWG. NO: 1101	REV: 00		



FOOD MOVEMENT



GARBAGE MOVEMENT

METHODOLOGY TO ACCUMULATE, SEGREGATE & DISPOSE OFF WASTE

GARBAGE DISPOSAL CALCULATION

INTRODUCTION

This report has been prepared to summarize our estimated volume of waste that may arise from the Hotel Taj At The Trees Mumbai and provide a strategy for its management and disposal. The report focuses on the likely volume of waste that will arise from the hotel's operations.

The garbage segregation system of a hotel is based on the specific disposal method involved for a particular type of garbage generated. The types of garbage generated in the hotel can be broadly classified into three major groups:

1. Empty Bottles and Cans
2. Dry Garbage
 - a. Bio-degradable: Paper / Cartons etc.
 - b. Non-bio-degradable: Plastics
3. Wet garbage: Bio-degradable: Food Waste

Wet garbage i.e. food remains from the dining table and the kitchen is the major component of the hotel garbage, it is estimated that it comprises of approximately 64% of total hotel garbage collection.

ASSUMPTIONS



Sl. No.	Particular	Capacity	Seat Turns / Usage
1.	Hotel Keys	150 Keys	80% occupancy <ul style="list-style-type: none"> o 60% Double Occupancy o 40% Single Occupancy
2.	Room Service	192 House Count	Total number guests ordering room service has been calculated per day is 154.
3.	All Day Dining Restaurant	90 Seats	Assumed 24 Hrs. operations and total number of meals calculated per day are 383.
4.	Specialty Restaurant	60 Seats	Assumed lunch & dinner operations and total number of meals calculated per day is 102.
5.	Lounge Bar	50 Seats	Assumed bar operation from 11:00 Hrs till 00:00 Hrs and total number of guests calculated per day is 110.
6.	Pool Bar	30 Seats	Assumed lesser turnover and expected number of covers considered per day is 30.
7.	Banquet & Conference	600 Guests	Assumed 1.5 turn-over and calculated number of guests per day is 900.
8.	Staff Dining	Based on 2.0 staffs per key	Calculated number of staff meal cooked per day is 171 considering one staff would have at-least 2 meals per day.
9.	Offices	Office Area (2.2 kg per 1000 sqft)	Total area assumed is 3000 sqft.

*Note: Operator can check / revise the assumptions.

SOURCE OF GARBAGE GENERATION

Food & Beverage




The volume of waste generated by Food & Beverage department contributes the major chunk of overall volume. This includes waste generated in food preparation, restaurant food left-over, bottles, cans, tins generated from bar and other sections. The entire waste generated should be segregated as per the details shown below:

Sl. No.	Type of Waste	Colour of Bin	Reference Image
1.	Dry Waste	Green	
2.	Wet Waste.	Blue	

Hotel Rooms

Hotel rooms are one of the sections which contribute significantly to the overall volume of the garbage generated in the hotel. The nature of garbage generated by hotel rooms can have all three categories mentioned above. Hence, it is of utmost importance that the garbage is segregated by the hotel's housekeeping team on the floor pantry, which eventually assists in better management and segregation of overall garbage.

Therefore, hotels in India follow the below colour code for the waste bins:

Sl. No.	Type of Waste	Colour of Bin	Reference Image
1.	Dry Waste	Green	
2.	Plastic Bottles, Tins / Cans etc.	Blue	
3.	Glass Items	Red	

Others

This section comprises of waste generated by various offices, wherein the potential volume of waste is dry in nature and consists paper etc.

GARBAGE COLLECTION & SEGREGATION

The hotel should have an inbuilt operational system to segregate the garbage at the source of generation. This is achieved by placing garbage bins of different color coding specifying the type of garbage to be disposed in respective bins. If garbage segregation is not done at source due to any reason, then the garbage collected from all the areas of the hotel is brought to the garbage area and here it is sorted and segregated according to the above categories.

1. Empty Bottles and Cans

The segregated empty bottles and cans is then stored in Empty Bottles room and then disposed-off through garbage contractor or as per local municipality norms.

2. Dry Garbage

The recyclable dry garbage consisting of plastics and other paper products is segregated & taken to the trash compactor where it is compressed to the smaller size by trash compactor and then disposed-off through garbage contractor or as per local municipality norms for recycling.

3. Wet garbage

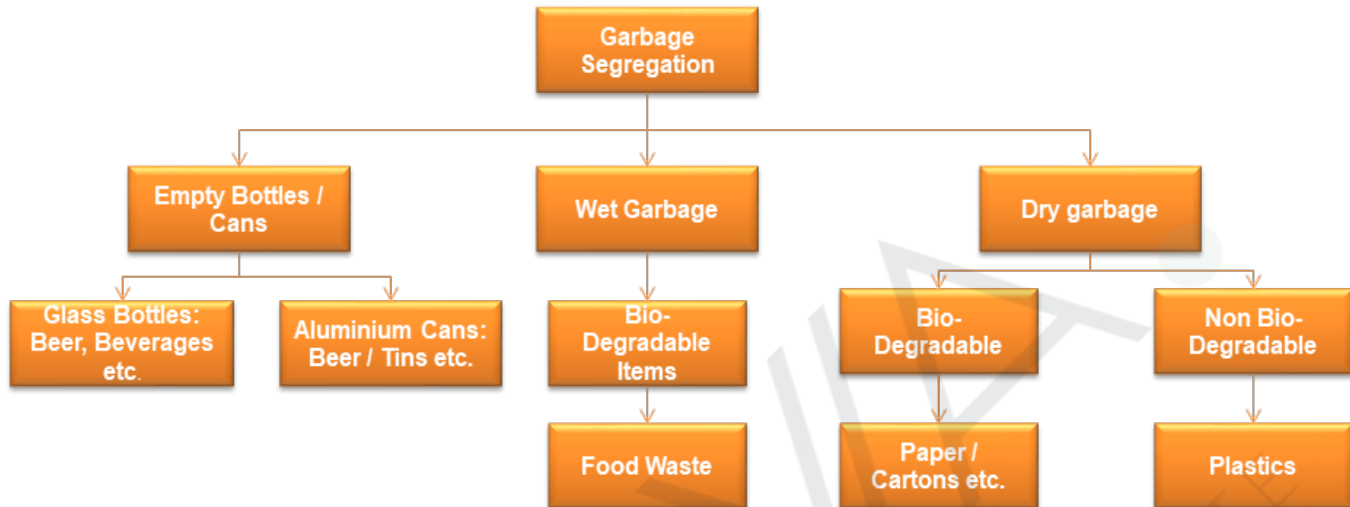
The wet garbage is stored at 0°-4° Celsius in the garbage cold room provided at the garbage management exit of the hotel. The wet garbage is held at this temperature so as to retard the bacterial growth till the time it is not disposed-off. At this point, it is disposed in the following ways:

The wet garbage comprising of bio-gradable items such as food remains can be treated in following ways:

- a. Either sold off directly to piggery farms.
- b. **Or** passed through waste pulveriser, through which 70% of the waste is converted as liquid and drained-off. The rest solid residue is either used for compost for horticultural purposes or can be sold to piggery farms.
- c. **Or** through local municipality agencies or as per local municipality norms.

Any other type of wet garbage is collected by the local municipal garbage collection agency of the area.

GARBAGE SEGREGATION



Food waste has been calculated on the basis of the yield waste and left over:



The garbage generation has been segregated in two parts:

1. Yield Waste from Commissary Kitchen.
2. Left-over food.

1. Yield Waste from Commissary Kitchen:

- a. In Vegetable Prep-Kitchen-75% is the actual yield and 25% would be the waste.
- b. In Butchery Prep-Kitchen-65% is the actual yield and 35% would be considered as waste.

2. Left-over Food:

- a. In Buffet-40% of food items can be considered as left-over.
- b. In Banquets-50% of food can be considered as left-over.
- c. Restaurants-20% of food can be considered as left-ver.

On the basis of the above description we have calculated the Garbage disposal.

*Note-In CommissaryKitchen, volume of yield and waste also depends upon the type of raw material purchased.

Example

In All Day Dining restaurant, total number of meals has been calculated as 383 meals in 24 hours of the operation. Break-up of 383 meals is as below:

Sl. No.	Meal Period	Assumption	Calculation	Total No. of Meals
1.	Breakfast	80% of total house count of the hotel	192 X 80%	154
2.	Morning Snacks	25% of total capacity of the restaurant	90 X 25%	23
3.	Lunch	60% of total capacity of the restaurant	90 X 60%	54
4.	Evening Tea	25% of total capacity of the restaurant	90 X 25%	23
5.	Dinner	120% of total capacity of the restaurant	90 X 120%	108
6.	Midnight	25% of total capacity of the restaurant	90 X 25%	23

Out of total number of meals, volume of garbage per meal has been calculated as 250 Gms, totaling 96 Kgs per day.

This 250 Gms of waste includes waste from Commissary Kitchen as well as Left-over food.

Therefore, total waste generated from All Day Dining would be 96 Kgs, which is further divided into following three categories:

Sl. No.	Type of Waste	% of Waste	Weight of Waste in Kgs
1.	Empty Bottles / Tins / Cans	18%	17.2
2.	Dry Garbage	20%	19.2
3.	Wet Garbage	62%	59.4
	Total	100%	95.8 Or 96

*Note-The above details are based upon various calculations and assumptions of this size of city hotel.