

CHAPTER V

SITE SELECTION AND SITE EVALUATION (II)

In the previous chapter, the first part of the site selection and evaluation - the area analysis - has been discussed. In this chapter is discussed the second part of the selection and evaluation process - the site analysis. This analysis purports to evaluate the site selected within the chosen strip along the main thoroughfare. The site analysis consists of 2 parts:

- 1) Collecting the required data about the selected site.
- 2) Estimating the volume potential of the site.

Collecting the Required Data.

The first prerequisite in the selection of a site for development into a new outlet is that the plot of land must be vacant or that the owner(s) of the plot, on being approached is(are) willing to sell the plot even if there are buildings on the plot. Thus information regarding whether the owner is willing to sell the land is necessary and may be obtained through contact.

It is now necessary to gather information about the site and its surrounding in order to evaluate the volume potential. For this purpose the site analysis Data Form is used.

A diagram of the site and its surrounding is required. The number of lanes of traffic passing the site as well as the direction of flow are indicated, Median strips, road dividers or road islands, if they exist or are placed for, and the direction to the CBD are also shown. (See Illustration 10). Twenty distinct items of data are recorded in the Form.

Here, it is necessary to define some of the
19
terms used.

Location of station:

(a) a station on the driver's left hand side as he moves towards the CBD is referred to as inbound.

(b) that on the driver's left hand side moving away from CBD is an outbound station.

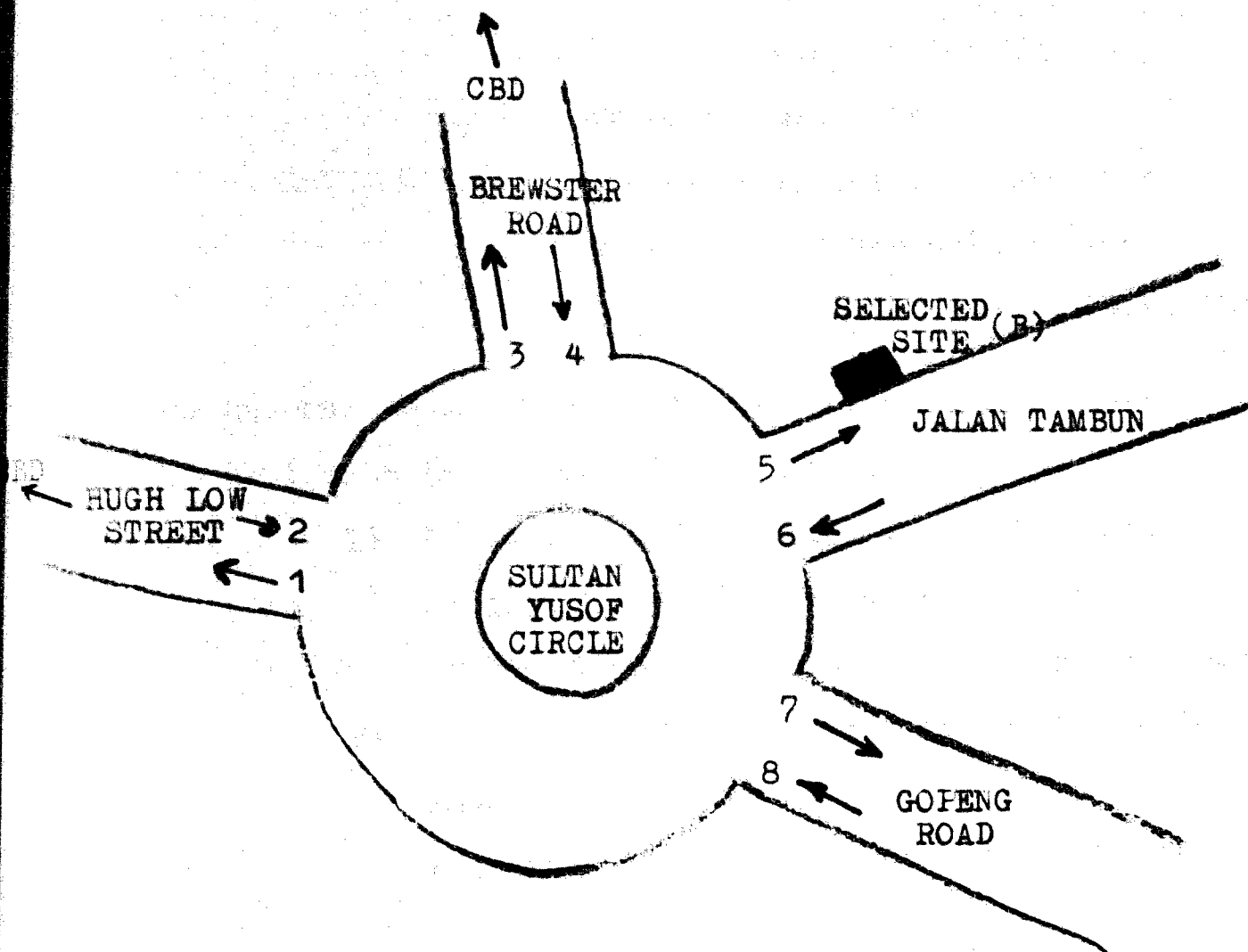
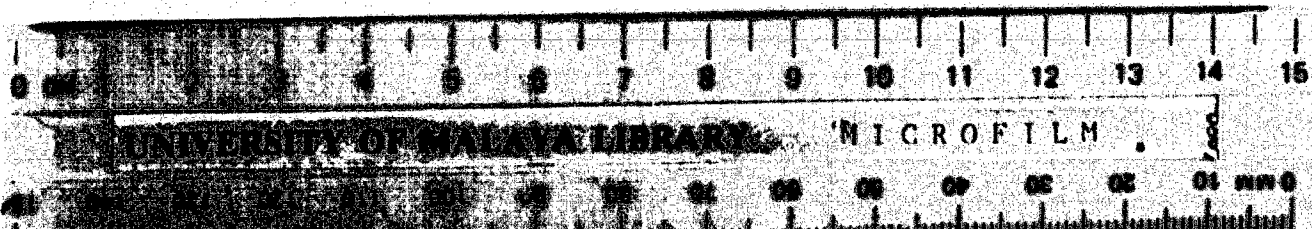


ILLUSTRATION 10: SITE ANALYSIS ---
THE SELECTED SITE

- Notes: (1) Numbers indicate the lanes of traffic passing the site selected.
(2) Arrows indicate the directions of traffic flow.
(3) Only traffic in lanes 2, 4, 5, 6 and 8 are accessible to the selected site.



Near Corner location: a station which is adjacent to the lanes of traffic on the main street before crossing on road intersection.

Far Corner location: a station adjacent to the lane of traffic on the main street after crossing the road intersection.

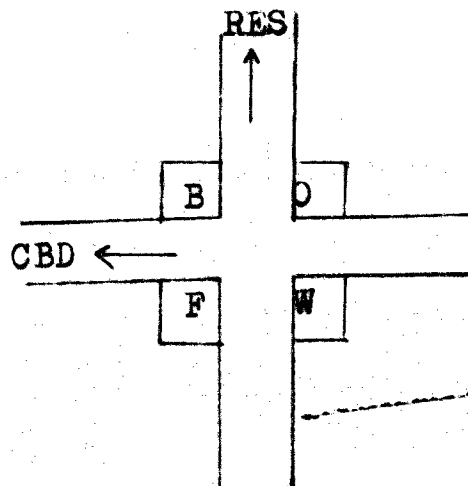
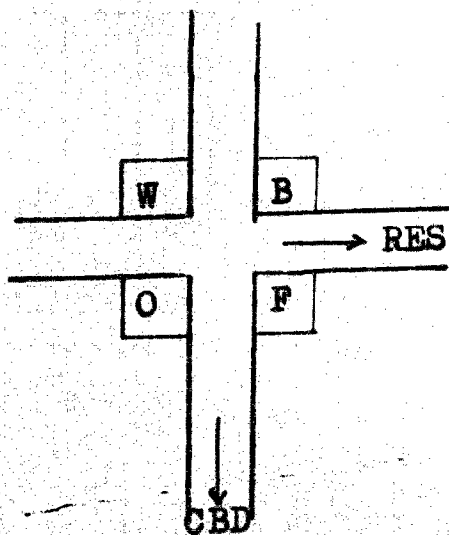
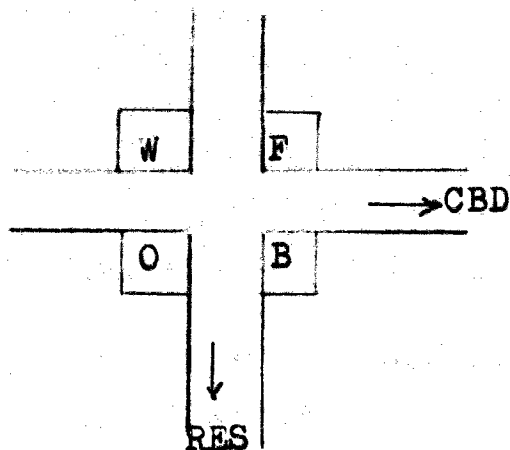
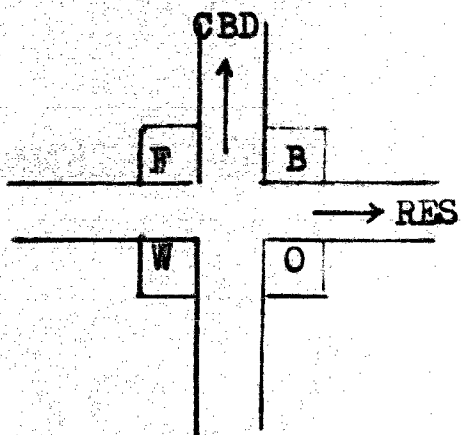
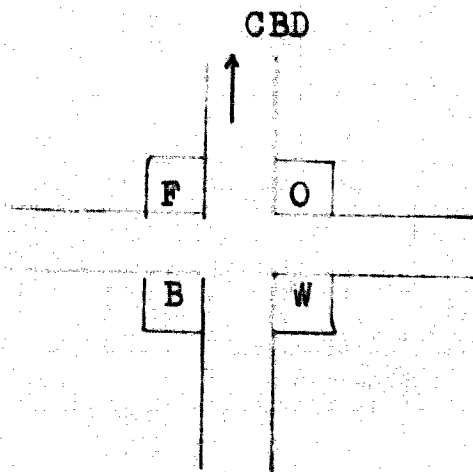
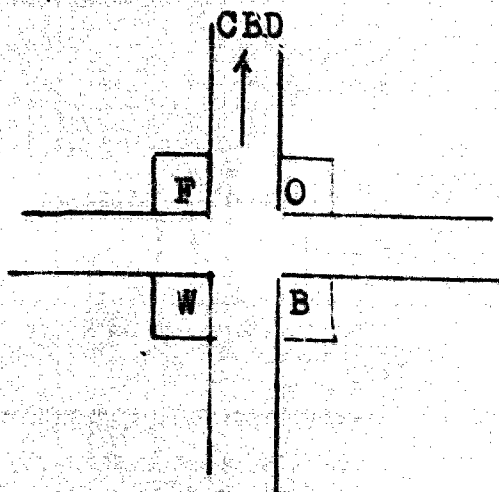
Two general observations will help to determine where the best site is located along a road.

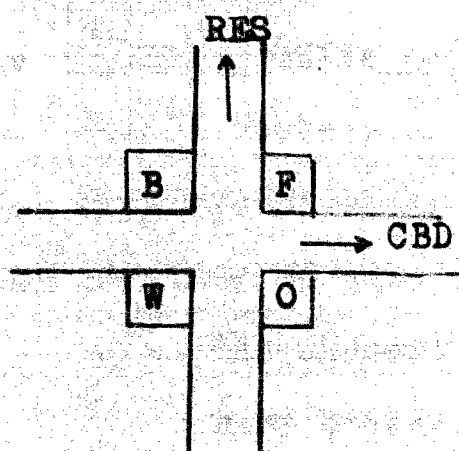
- 1) A motorist will usually make a purchase of gasoline when he is on the way out of the CBD after finishing his work or business.
- 2) A station which is on the motorist's left hand side and located after a road crossing is more easily accessible to him.

Basing on these general observations, the best site can be determined at an inside lot, a triangular lot, or a corner lot, as shown below. "B" is, therefore, the best site because it is an outbound location and located, except in the case of a straight lot, after a road crossing.

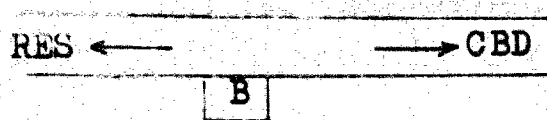
Following Illustration 10 the selected site is on an inside lot, and the location is outbound.

CORNER LOT

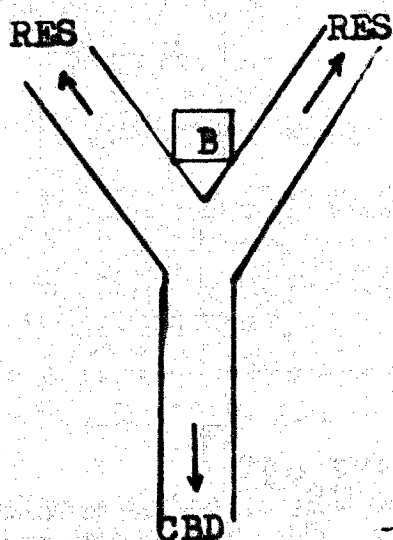




INSIDE LOT



TRIANGULAR LOT



LEGEND:

- CBD = Central Business District
- RES = Residential Area
- B = Best Site
- F = Far Corner Site
- O = Other Site
- W = Worst Site

ILLUSTRATION 11: DIAGRAMS SHOWING THE BEST SITE IN AN INSIDE LOT, A CORNER LOT, AND A TRIANGULAR LOT.

Site Analysis Data Form

Location: Tanbun Road, Ipoh.

1. Actual traffic count : 2222 cars ²⁰
2. Square footage of site: 12,000 sq. ft. (approximately)
3. Frontage of site: 150 ft. (approximately)
4. Location of site

Far corner: Inside Location ✓

Near corner: Triangular

5. Side of the major street where site is located:

Outbound (away from CBD) ✓

Inbound (towards CBD)

6. If a corner or triangular location, no. of stop signs:

No. Stop signs: NIL

2 way stop: -

4 way stop: -

20

The traffic volume represents the traffic volume from 10.00 a.m. - 1.00 p.m. on a week day. It is apparent that the traffic count is capable of distortion. being based on only 3 sampling hours. The writer regrets that due to shortage of time, a traffic count for these sampling hours is taken. However, the traffic volume is, in the writer's opinion, not unrealistic, basing on his knowledge of the area.

The count includes all motor vehicles but excluding all motor bikes and scooters, passing the site. A vehicle passing the site 3 times will be registered 3 times in the count. Ref: Appendix 1.

Traffic light: **NIL**

7. Speed at which traffic usually moves along the major street: **Between 30-40 m.p.h.**
8. No. of lanes of traffic in each direction along the major street:

<u>Direction</u>	<u>No. of Lanes</u>
1 way	1 3
2 way ✓	2 ✓ 4

9. Is it possible for the traffic in the opposite lane to cross over on the locations major street?

Yes: ✓ No:

10. No. of directions from which a customer may enter the location.

1 2 ✓ 3 4

11. Curb cuts possible:

<u>Main Street</u>	<u>Side Street</u>
Full Cut: ✓	NIL
1 Cut:	
2 Cuts:	
3 Cuts:	

11. Note: Curb cut means the number of cuttings to be taken in order to enter location.

12. Visibility along: Main Street Side Street
- | | |
|-----------------|-----|
| Under 200 ft. ✓ | NIL |
| 200 - 500 ft. | |
| Over 500 ft. | |

13. No. of service stations in direct competition
with this site: 3

14. Competitive Station Data:

Brand	Age	Monthly Volume	Trading Hours
Esso	3	21,000 I.G.	13 Hours
Shell	5	45,000 I.G.	"
Caltex	2	9,000 I.G.	"

Note: I.G. = Imperial Gallon.

15. Is the site located within one block of a planned
shopping area?

Yes:

No:



16. Average annual family income in the immediate area:

Low income:

Middle income:



High income:

17. Average age of those living in the immediate area:

Under 30 years:

30 - 40 years:



Over 40 years:

18. Number of households within a half-mile radius: not
available.

19. Residential area is:

Stable:

Growing:



Declining:

20. Other points about this site that would tend to influence potential volume: This site has a great potential volume of sales.

Reasons:

- 1) Tambun Road is the main artery leading to the fast developing Canning Garden Estate. The rate of development is significant, as evidenced by the huge extension of the Canning Garden Estate Housing Project estimated at slightly less than a thousand units.
- 2) Besides, the Tiger Lane Residential area which houses the high-income group is also developing at a considerable speed.

Estimating the Volume Potential of a Site

The Site Analysis Data Form prepared provides the information needed to obtain a reasonably accurate estimate of the volume potential at the selected site. However, many factors are taken into consideration before the volume potential can be calculated. This calculated volume potential will serve as the base year volume, that is, the second year volume. The reason for using the second year volume as the base is that it is expected that by the end of second year, an outlet is able to engage in a normal operation,

where as in the first year, the outlet may not have been exposed fully to the motoring public yet. Besides, it also takes some time to draw customers to it.

The factors considered are as follows:

1) The Effect of Market Share on Volume

Based on the marketing research studies of several thousand service stations of all brands by Esso, an important relationship has been shown to be consistently true. This is known as the "Market Distribution Law". Briefly, it states that the average volume per service station for each brand of motor fuel in any given market is a function of the brand's market position, provided other marketing factors are essentially equal.²¹ For example: a certain brand will have a higher customer acceptance and therefore sell more volume through a given retail outlet than other brands. Generally, top ranking brands, like Esso and Shell, have shown much better sales performance through outlets than have average or little known brands. Brand is a factor to be considered when potential volume of a site is estimated.

²¹ ESE, Inc., Retail Sales Development,
January 1, 1963, "Site Selection and Evaluation",
p. 12.

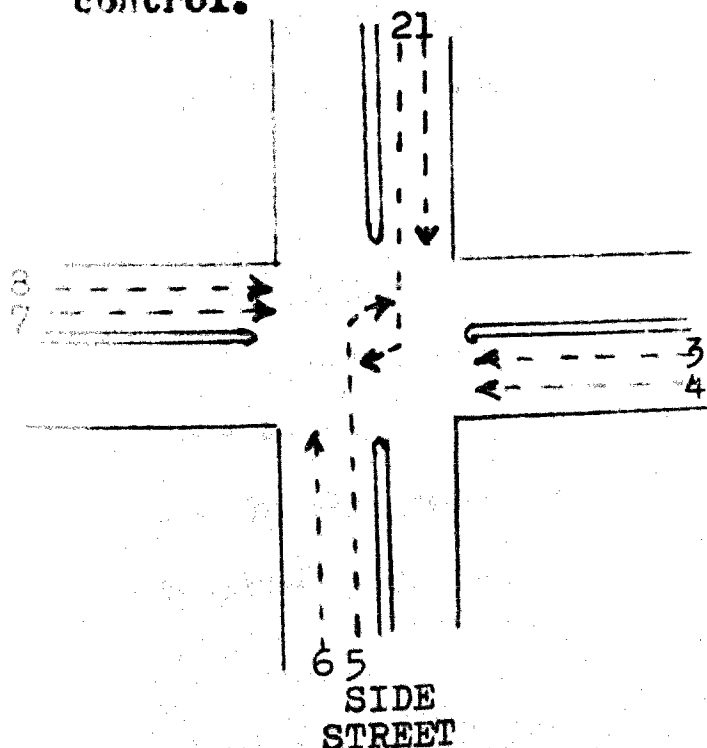
2. The Effect of Station Site Attributes on Volume

(1) Traffic Characteristics:

Exposure of a Station

In determining the exposure of a station site, a traffic count is necessary. It must be selective so as to include only the actual traffic that can conceivably enter a site. A simple illustration will explain this clearly.

In the diagram, although a 4-way traffic count at a particular intersection may show that approximately the same number of cars passes the site on each of the four corners, the actual traffic exposure to each of the four sites can vary considerably. This variation is caused by limitations placed on traffic movement due to restricted turning movements, physical barriers such as median strips and multilane control.



Note:

1. Right hand traffic on side street must turn right.
2. No right turn is permitted from the main street.

Thus, only lanes 1, 2, 5, 7 and 8 can be included in a traffic count to estimate the exposure of the station site. Lanes 3, 4, and 6 cannot reach the site because of median strips and traffic restrictions that carry them away from the station. In our illustration used in Ipoh, since there are no such traffic restrictions the traffic count thus included all lanes of traffic that are accessible to the site selected. (refer to illustration 10).

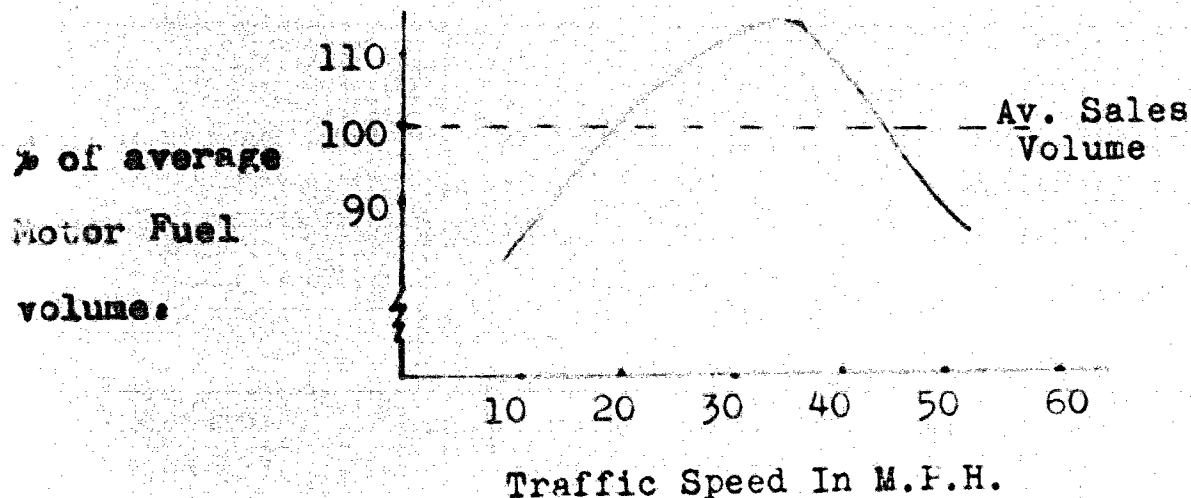
Traffic control

The presence of stop lights and signs can work for or against sales volume at a site. Because the motorist is stopped by such controls, he is given a better opportunity to leave the traffic stream to enter a convenient station. On the other hand, where excessive back-up occurs, stations on the near side of such intersection may find themselves continually blocked from potential customers by cars in the left lane that are awaiting for the light to change.

Traffic Speed

Experience has shown that consistently higher volumes are sold by stations exposed to traffic moving in the range of 20-40 m.p.h. Traffic in urban areas that moves at a speed above or below this

range seems less inclined to enter a service station. The relationship between the traffic speed and the average sale volume may be presented as below:



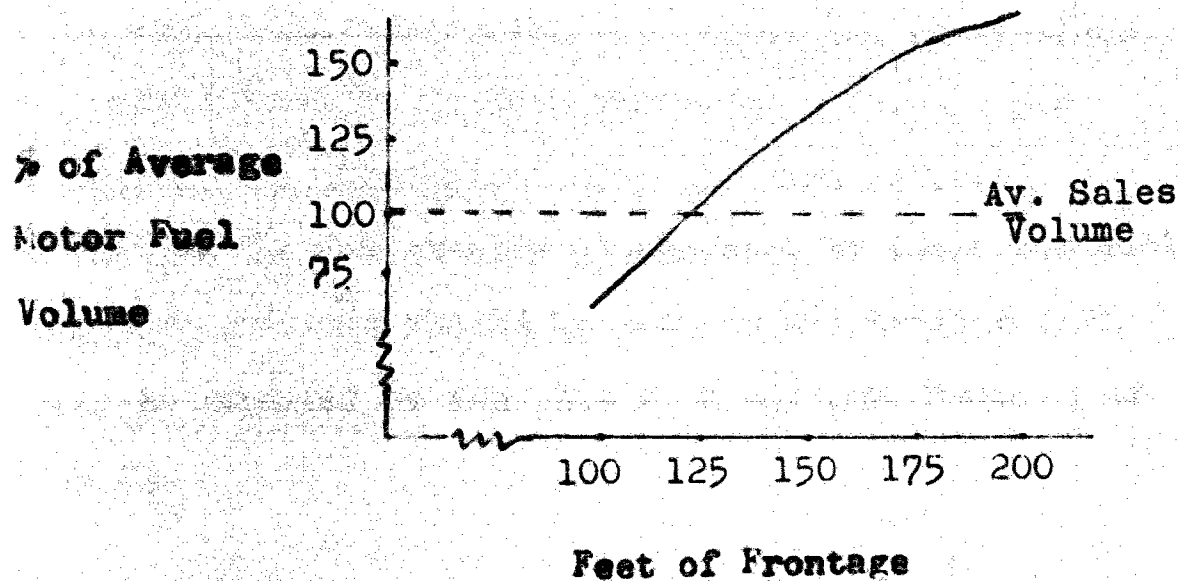
Source: ESB, Inc., Retail Sales Development,
"Site Selection and Evaluation."

(ii) Physical Site Characteristics Dimensions:

The frontage and area of a particular site cannot be stated in terms of any absolute ideal dimensions. The requirements are determined on bases of traffic patterns and speed as well as the size of competing outlets in the immediate area. Also traffic entry from secondary streets and particular design of buildings will determine the minimum square footage of the station.

Generally, a station with a large frontage will enhance accessibility thus creating a higher potential

of sales. The relationship between frontage of a station site and the average sale volume may be depicted as follows:



Source: ESR, Inc., Retail Sales Development,
Site Selection and Evaluation.

The graph indicates that as the dimension of the frontage of a station site increases, the sale potential in terms of percent of average sale volume also increases.

However this does not mean that the frontage must be unnecessarily large.

Visibility

This is a measure of both the number of directions and distance from which a site is visible. The ideal situation, in the case of a corner site,

is one where the Esso oval, as well as the pump islands and building are visible from all four directions. For an inside lot, the ideal situation is one where the Esso oval is visible from a distance of over 200 ft. This will tell a motorist who is looking for a place to refuel that he is fast approaching it. It can therefore be generalised that although an ideal situation is not usually attainable, at least the oval and pump islands should be seen by all traffic that will be exposed to the site at a minimum distance of 200 ft.

Accessibility

This is a measure of the ease with which a car can enter and leave the site. Ordinances or regulations affecting the manner in which a station can be built may impose restrictions on accessibility. However, adequate space should be provided so that the traffic exposed to the site will find it easy to enter it.

(iii) The Neighbourhood

In addition to traffic and physical considerations, the following economic characteristics which influence sales volume must also be considered.

Competition

The number of competing stations within a

short distance away from the site is an important factor. Other stations in the vicinity do attract business, but there is a definite limit to attraction. No universal maximum can be placed on the number of competitive outlets. However, more than what is the ideal number of stations in an area will certainly cause volume dilution. Studies of this problem carried out and experience indicate that high sales volume can occur in an area with one to three other stations in the vicinity.²² Station density within an area, thus, needs careful analysis.

Business practices of the competing outlets such as discounts, quality of service, etc. must also be viewed. In view of keen competition in the petroleum market, such consideration must not be ignored.

Shopping area

The ability of shopping areas in the vicinity to generate service station sales has long been recognised. A station site that is located opposite to, or within a short distance of such establishments will benefit from the high trip-frequency and better

²²
ESE, Inc., Retail Sales Development, January, 1, 1963. "Site Selection and Evaluation", p.15.

exposure.

Certain types of shopping area are better than others. The so-called "strip developments" that are built up along the traffic arteries and provide no specific parking facilities are not especially desirable. The "planned developments" that include a group of stores, carefully balanced by type, and providing ample parking space are by far the most desirable.

Population and Its Growth

It can be generalise that an area where land is available for residential construction and with a gradual rate of development can reflect quite favourable conditions for an outlet contemplated in the area. Sales volume will tend to increase in the future where there is development potential.

Estimation of Sales Volume Potential

Having discussed the basis of site evaluation the estimated sales volume potential can now be calculated. ²³

²³ The guide book, Retail Sales Development, suggests that a Comparative Evaluation and an Inherent Evaluation may be worked out, more so for the purpose of counter-checking the accuracy of the estimated volume potential derived. The writer uses only the Inherent Evaluation method and devises a counter-check. The reason for not using the Comparative Evaluation is mainly because data are not available. Such data include sales volumes of outlets, including competitors' since 1959, and the stations' ages. For Comparative Evaluation Form, refer to appendix 3.

Inherent Evaluation

1) Traffic exposed to site	:	2,222 cars passing
2) Multiplier (Trading hrs. per week sample hrs.).	:	$\frac{13 \times 7}{3} = 30.$
3) Estimated Weekly Exposure (1 x 2)	:	66,660 cars.
4) Percent of Weekly Traffic making purchases.	:	$1.88\%^{24}$
5) Estimated number of cars making purchases weekly (3 x 4)	:	1,253 cars
6) Gasoline volume per purchase	:	3.7 gallons ²⁵
7) Estimated gallons sale per week	:	4,706 gallons
8) Estimate gallons sale per month (4.3 weeks)	:	20,236 gallons
9) Estimate gallons sales per year	:	242,838 gallons (base volume)
Base Volume	:	242,838 gallons

Adjustment to Base Volume.

% Adjustment (+ or -)²⁶

1. Dimension

0

²⁴ This percentage is derived from a table in the guide book which relates the percentage of total traffic exposed to site which enters a station to the total traffic exposure. ESE, Inc., Retail Sales Development, "Site Selection and Evaluation."

²⁵ See Appendix 2.

²⁶ See Appendix 4 Inherent Evaluation Work Sheet.

2. Type	0
3. Location	5
4. Signals	-10
5. Speed	-5
6. Curb cuts	5
7. Visibility	-5
8. Income level	0
9. Age	0
10. Competition	0

Net % Adjustment	-10
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∴ Adjusted volume

- Base Volume x (1.0 - Net % adjustment)
- 242,838 x 0.90
- 218,554
- 218,000 gallons.

Note: No adjustment for population density factor is made due to lack of data.

Cross-check of Estimated Volume Potential²⁷

The reason for providing this cross check is that the percentage of weekly traffic exposed to the site making purchases may not be accurate now since it

was prepared some years ago. Nevertheless this percentage is a very significant factor in the calculation of estimated volume. As such, the writer has devised this cross check which incorporates a recent survey finding of the Marketing Analysis Department.

1. Exposure taken from 10.00 - 1.00 p.m. : 2,222 cars
 2. Exposure per day
(1 x $\frac{\text{No of hrs. taken in survey}}{\text{Sampling hrs.}}$): $2,222 \times \frac{10}{3}$
= 7,407 cars
 3. Exposure per week. : 51,849 cars
 4. Percent of traffic coming into station: 2.3%²⁸
 5. No. of cars coming into station :
per week. : 1,193 cars
 6. No. of cars coming into station per
month. : 5,130 cars
 7. No. of cars coming into station per
year. : 61,560 cars
 8. Less no. of cars coming into station
for servicing or other businesses. : 3,600 cars²⁹
-

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Loc. cit.

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It is estimated that a service station with 2 or 3 bays is capable of servicing about 300 cars a month, or 3,600 cars a year. This number of cars is deducted because such cars seldom make purchases after servicing.

9. Adjusted No. of cars coming into station
for gasoline purchases : 57,960 cars
10. Av. purchase per car : 3.7 gallons
11. Estimated volume sales : 214,452 gallons
= 214,000
gallons.

The Inherent Evaluation Method shows that the estimated volume potential is 218,000 gallons and the cross-check provides a very similar estimate of 214,000 gallons per year.

For the analysis, the average of these 2 estimates is used, i.e., 216,000 gallons per year. This will represent the estimated volume potential for the base year, i.e. the second year of operation of the outlet.