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Carwash Signage Program

Institute of Signage Research

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The Institute of Signage Research is a nonprofit organization established in 1976, which directs its efforts to improving the use and quality of signage through public informational programs and assistance to all who are concerned with environmental visual communication.

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CARWASH SIGNAGE PROGRAM

Signage Quarterly is a series of manuscripts specifically tailored for the on-premise or business sign community. Each issue is designed to offer insight into specific problems in the sign community.

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INTRODUCTION

The first issue of this year's *Signage Quarterly* contained an example of an on-premise corporate identification program. The purpose of this article was to facilitate the interaction between sign users and manufacturers by providing a specific model to which both parties could refer in developing their own ideas for a business signage program.

This idea has been expanded in a joint project undertaken by the Institute and the International Carwash Association. The Carwash Signage project represents the first time that a major trade association has asked NESA/ISR to develop a complete signage guide specifically for its membership. Because the venture marks an industry first, we believe that, distributed as a *Signage Quarterly,* it can serve as a useful reference for all members of the sign industry.

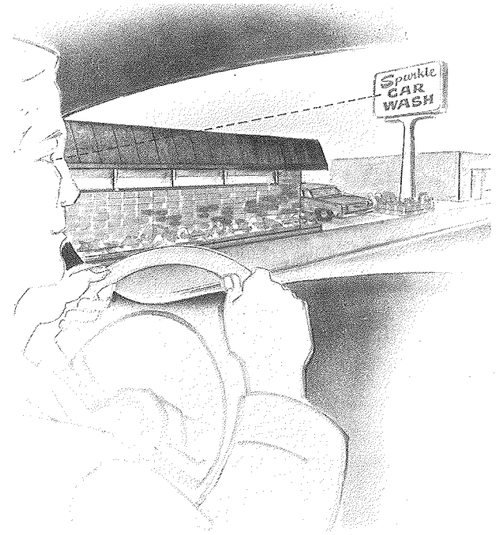
The purpose of the Carwash Signage booklet is to provide carwash operators with the information necessary to establish effective on-premise commercial communication. This includes design considerations and plans and drawings for both conveyorized and self-service washes. Because the booklet discusses the relationship between marketing priorities and the use of signs, it should help sign manufacturers and designers to better assess the needs of their customers, particularly those with automobile-oriented businesses.

We should note that the material contained in the Carwash Signage program is presented as a reference model, and that the specifications and the signs illustrated here are not endorsed in any way over other possible designs or arrangements between the customer and sign manufacturer.

I. AN INTRODUCTION TO SIGNAGE

A sign is basically a communication device which remains stationary in the landscape and circulates its message through the mobility of the viewers. This direct relationship with the mobile public makes it a form of communication essential for carwashes and other automobile-oriented businesses.

Because signs are used by most businesses and are read daily by nearly everyone, their full range of functions is frequently overlooked. Most carwash owners would agree that their business signs are necessary, but too few may give careful consideration to combining advertising, architectural, identification, and communication functions with a signage program adapted specifically to their marketing needs. Advertising, for example, is generally associated with television, magazines, and other mass media, while, in fact, on-premise signs may be the most effective and important advertising investment that most small businesses will make.



Unlike other forms of communication, the sign has a fixed presence in the environment. Though it is perhaps the oldest advertising medium, it remains uniquely suited to our highly mobile modern society.

WHAT IS ADVERTISING?

At its simplest, advertising can be called a form of commercial communication whose purpose is to persuade a large number of prospective customers on behalf of a product or service.

Advertising works in several ways. It builds a memory or awareness of a product or business name and transmits certain information about that product or business. It works to create a favorable attitude about a product or service and to enhance a business image.

Advertising can stimulate people to purchase a product or to patronize an establishment. That stimulation can create a need that may be satisfied immediately or one that can be held in abeyance until a later time. Advertising communicates an awareness of a product and reinforces this awareness by consistently repeating the message.

The on-premise sign can provide both immediate advertising for a business location and reinforcement of a larger marketing campaign. The use of a company logo on signs helps to develop long-term memory or awareness of a product or business name.

MEASURING THE IMPACT OF SIGNS

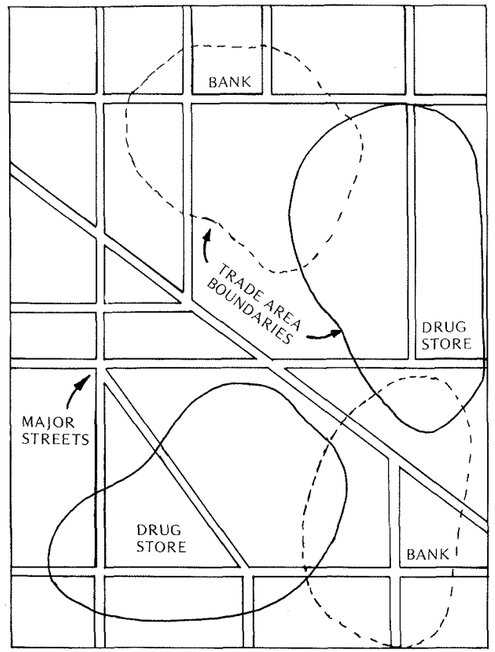
Since signs are a form of advertising, it is important to be able to assess their effectiveness in communicating about a carwash or any other business. Advertisers are generally interested in three related questions concerning the effectiveness of advertising media. First, what percentage of the market is exposed to the message? Second, how many repetitions of the message are received by the average resident or consumer? And third, how much does it cost to reach a given number of people?

For a carwash, the on-premise sign can be a powerful advertising medium. It provides a great number of exposures of its message to potential customers in the traffic flow passing the business.

The following standard measures used to evaluate advertising effectiveness are also applicable to signs. This makes comparison among various media possible for the carwash owner interested in getting the greatest exposure for the lowest cost.

Reach

Reach is the term applied to the total number of different people who are exposed to or given the opportunity to view an advertising message. It is important for the business owner to know how many people his sign will reach. This figure is important in determining the trade area around the business. On-premise signs are generally oriented to people traveling in automobiles, but a measure of reach may also include pedestrian traffic.



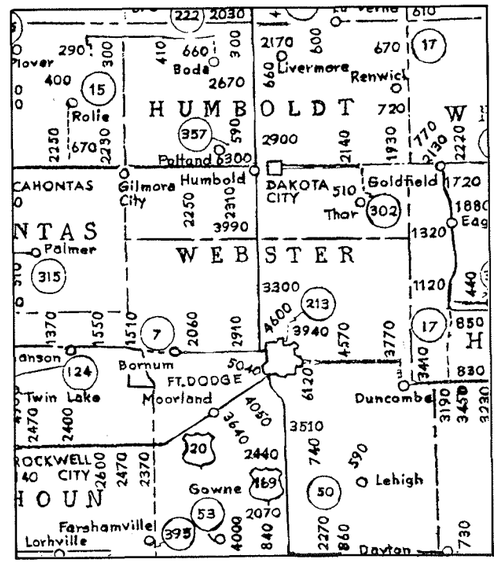
Advertising effectiveness measures can be used to estimate the size of a business trade area.

Coverage

Coverage of a market by an advertising medium refers to the percentage of the total market population represented by all the people who are reached by the message. It may also be useful for a business person to find out the percentage of the market which is not reached by a message, in order to extend his advertising strategies to include that segment.

Because of basic differences in advertising media, the techniques used for assessing coverage show significant differences. Newspapers, for example, compare daily circulation of the paper to the total number of households in the market area. To measure the coverage of an outdoor on-premise sign, traffic information must be analyzed. A local traffic engineer or city planner can help you to determine gross traffic counts on your street. This will help to give you an idea of your potential customers.

It is best to have an understanding of the traffic patterns beyond your individual location, as well as the nature and mode of transportation in the area. Different types of signs and different locations should be used for pedestrians, mass transit or automobile-oriented areas. Similarly, signs located along high-speed, non-stop freeways demand different consideration than do signs in areas of slow-moving, urban traffic.



A traffic flow map available from your local traffic engineer or city planner includes the type of information shown in the above figure.

It is also helpful to have information about the habits and travel patterns of local residents when going to work, shopping, etc. This information gives you a profile of the traffic. Table 1 is an example of the kind of information available from origin and destination studies. This helps the on-premise sign owner to learn who sees the message on the sign, which is very valuable information for any advertiser.

TABLE 1

Destinations of Traffic Approaching Various Size Cities

POPULATION GROUP (THOUSANDS)	NUMBER OF CITIES	% OF THROUGH (BY-PASSABLE) TRAFFIC	% OF TRAFFIC BOUND FOR CITY	% OF TRAFFIC BOUND FOR CBD	% BOUND FOR OTHER LOCATIONS
less than 5	11	53.9	46.1	22.9	23.2
5–10	29	52.4	47.6	23.6	24.0
10–25	43	38.5	61.6	26.0	35.5
25–50	36	26.6	73.4	24.8	48.6
50–100	25	21.7	78.3	21.6	56.7
100–250	31	17.9	82.1	20.2	61.9
250–500	6	10.7	89.3	21.4	67.9
500–1000	9	8.6	91.4	12.5	78.9
over 1000	3	10.3	89.7	9.5	80.2

from Louis J. Pignataro, *Traffic Engineering: Theory and Practice,* Englewood Cliffs, N.J.: Prentice-Hall, 1973, p. 58.

On-Premise Sign Coverage

In a town of 25,000 people, an on-premise sign on Main Street will have very high coverage. That is, about 80% of the people in the trade area will make at least one trip past that sign in a month. In contrast, the local newspaper of a town of that size may go to about 50% or 60% of the homes in the market. This means that as many as 40% to 50% of the market will not see a message printed in the newspaper. Radio advertising generally has even more limited coverage. The market coverage for one commercial a day is the estimated number of people who were tuned to the station at the minute the message was broadcast. In a town of this size, that percentage might average between 1% and 5% of the total market.

Frequency

Frequency refers to how often the same person receives an advertising message in a specified time interval. It is the standard measure of repetition. In order to determine frequency for on-premise signs it is important to know something about the travel patterns of the people in the market. If a segment of the market goes to work along a certain road past the sign, the number of days that the people go to work is the frequency of repeated exposures to the sign.

Many studies have been made of travel patterns and habits in business districts, and reliable estimates of the average frequency of exposures to a sign have been made. A typical on-premise sign will be passed a minimum of 12 times per month by the average trade area resident. The travel patterns of urban America have become extremely concentrated along major thoroughfares and traffic arteries. This can be shown by the example that if all of the 250,000 outdoor advertising posters currently in existence showed the same message, about 89% of the American population would be reached—and this message would be seen 60 or 70 times a month.

Cost-Per-Thousand Exposures

Cost-per-thousand exposures refers to how much it costs an advertiser to send a message to one thousand receivers. It is calculated by dividing the amount of money spent for a given advertising medium by the number of people known to have been exposed to it. For signs, the number of exposures is based on the number of vehicles traveling past the sign. Signs

excel all other advertising media in delivering a very low cost-per-thousand exposures. This is because they are a permanent part of the landscape around which the audience circulates. Unlike radio and television, signs provide a very great number of repeated "announcements" for one initial investment.

Formula

$$\text{cost per thousand exposures} = \frac{\text{monthly cost}}{\text{monthly exposures}} \times 1000$$

Example. The following example is from a comparative media analysis done in Terre Haute, Indiana (National Advertising Company, 1976). Assume that a typical on-premise sign with readerboard is located on a main street in this trade area with a household population of 84,484. The monthly rent or 84 month amortization for such a sign, including maintenance costs, is $200. The traffic flow past the sign has an average daily total of 21,785. In a month, then, the total number of exposures would be 653,550. To find the cost per thousand household exposures, we divide the monthly cost by the number of monthly exposures and multiply by 1000. In this case, each 1000 household exposures costs $0.31.

Table 2 gives a comparison of these measures for six standard advertising media in a single area of trade. The figures will, of course, vary in different cities and for different periods of time. While such comparisons should not be considered a completely accurate description of the value of each medium, they do serve to indicate the relative cost-effectiveness of these different types of advertising.

The on-premise sign is clearly one of the best advertising investments a business can make. Since the effectiveness of the sign will depend largely on the traffic passing it, it is important for the sign owner to have information about the traffic count and profile. Such information can be obtained from a traffic engineer, a local planning department, or from such standard references as *Automotive Facts and Figures* and *Traffic Engineering: Theory and Practice* (Pignataro, 1973).

SIGNS AS MARKETING DEVICES

When we speak of signage as a marketing device, we are referring to both subtle and overt ways signs can reach the potential customer. Signs do more than advertise, although this is probably their most important marketing function for a carwash owner. Signs can simply identify a carwash. They can also provide information and direction, they can aid in site planning, and they can be used to enhance architecture. Because a sign is part of the landscape, people will derive meaning from its presence without paying strict attention to the actual message.

Signs combine a number of essential marketing functions. They identify, direct, inform, and enhance both site planning and architecture.

TABLE 2

MEDIA COMPARISON CHART

Basis: 30 Days of Advertising
Trading Area Households 84,484

Advertising Medium	Gross Monthly Exposures (Households)	Market Coverage	Repetitions Per Month	Total Cost	Net Cost Per Thousand Households
Newspaper (168 Lines)	176,760	52%	4	$ 295.68	$ 1.67
Television (CBS) 30 Second Spot Prime Time	118,280	14%	10	$1,470.00	$ 12.43
Direct Mail 10,000 Mailings at 24¢ each	10,000	12%	1	$2,400.00	$240.00
Radio (WAAC) 30 Second Spot	42,240	5%	10	$ 70.00	$ 1.66
Yellow Pages 1/4 Page	1,620	2%	6.6	$ 156.00	$ 92.31
On-Premise Sign With Copyboard and Photographics	653,550	77%*	10	$ 200.00	$ .31

Source: National Advertising Company, *On-Premise Sign Advertising: Comparative Media Analysis*, 1976.

Note: The figures given here are for 1975. Since then, most media costs have risen considerably. The chart may be used as a general comparison of the relative efficiency of the media, but should not be considered a complete representation of their values.

*Using total trading area households as base.

Signs Identify Your Business

There is a certain uniformity of architectural style in most business districts that makes it difficult for customers to differentiate shops and businesses by outward appearances. The on-premise business sign may be the only way a carwash owner has of telling the public that he and his business are located within those walls. Even this form of identification is a type of advertising, as most business signs will impart a certain ambiance or mood.

One of the best ways for people to remember your particular service is for you to use the identifying characteristics of your sign as a company logo. Most corporate identification programs and large logo programs such as those of Coca Cola, Union 76, or Shell concentrate on developing long-term memory for their product. The logo becomes the shorthand identifier for the business and can greatly increase the relationship between the customers' needs for service and their patronizing a particular business establishment. The company sign should

carry the same logo and color and graphics as the company cars, matchbooks, key chains, pens and pencils, billings, invoices, and business cards. In this way a memory is developed for the product.

Obviously, developing a memory of a business name and the products and services it sells is one of the primary aims of advertising. People tend to buy products and services from businesses that they know and have confidence in. Name or brand awareness has been shown to correspond directly with that brand's share of business in the market.

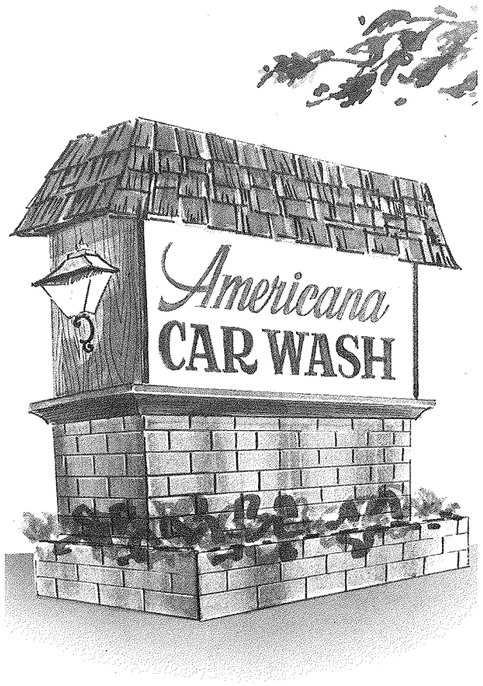
Consistency Is Important

The greater the consistency in the overall indentification program, the greater will be your share of the consumer's "top-of-the-mind awareness" of your services. Attention should be paid to each aspect of the identifying logo—letter

Signs identify a place of business.

styles, angles, color, shape, form, and the graphics of the presentation—in order for consistency to be maintained when projecting that logo through the various means described above. For example, the most difficult task may be maintaining the same density, intensity and hue of the colors you've chosen for use on illuminated plastic signs, painted surfaces, and paper business cards. Another important factor concerns the angles, shape or form of the sign or logo. For instance, if you plan to mass-produce your sign or modify it in some way, you should probably stay away from odd shapes and angles.* These will be much more difficult to modify later, and may also entail greater expense initially than more common shapes. Numerous psychological studies have also shown that people prefer the more simple, recognizable shapes over ambiguous or complex shapes and forms (Zusne, 1970).

With consistent use of logos and designs, even the smallest business can accomplish a number of the advertising effects achieved in large national campaigns. In developing an identification system, most businesses may find it best to begin with the design of their on-premise sign. It may be difficult to duplicate a design developed for matches or business cards with the construction techniques and materials used for the business sign. The sign design, however, can generally become a versatile logo.

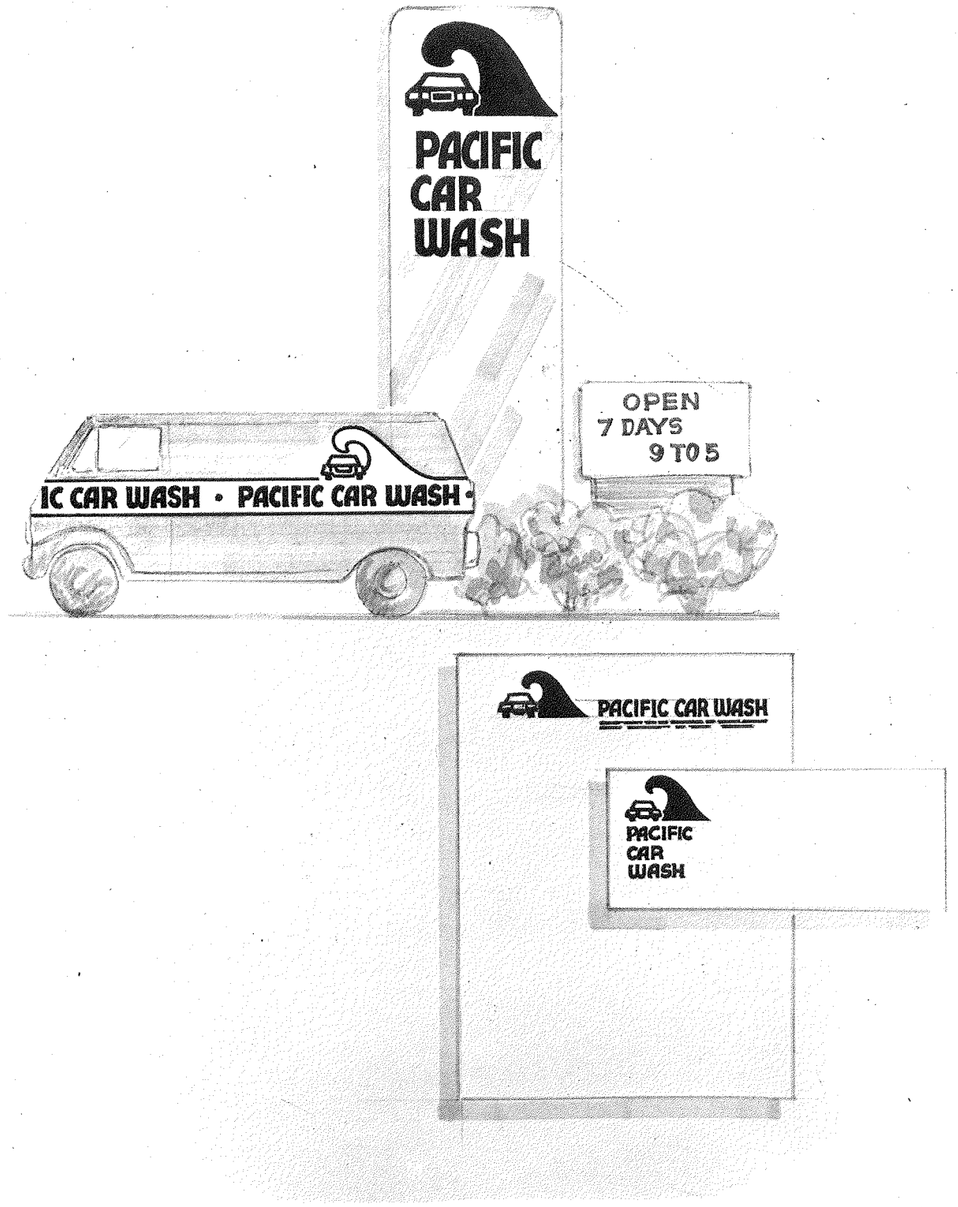


Design factors such as color, letter style, and layout work with the message content of a sign to project an image of the business.

Signs Build Your Image

Most carwash owners will need a sign that does more than just identify. They require signage that builds a certain image for their business, whether it emphasizes strength, cleanliness, modernness, quality, or economy, to name just a few examples. There are two components of image building. One is the immediate effect that a sign has on the buying behavior of prospective customers on the street. The second is the more subtle, emotional load a sign carries. The design, the colors, the wording and letter style, the formal arrangement of the copy area and the actual form that the sign takes will all project a certain image.

*There are some instances where an odd shape has worked very well, for example, the Shell logo and the Chevron "bow tie." These symbols have become so familiar that no copy is necessary.



Developing public memory of a business name and image is a primary aim of advertising. A sign is an integral part of a successful business identification program.

Signs Give Information and Direction

Signs direct people to the business location and are the primary communication devices used by people to obtain information about a business. Signs are a means of indexing the environment, which can be especially important for travelers, new members of a community, and impulse shoppers who may be persuaded to stop at your carwash on their way to another destination. It is essential that your traffic profile information include data about peak movement times of these segments of the market. An example of a traffic flow chart is given in Table 3, which lists traffic counts by time of day for a street in a North American metropolitan area. Similar charts are available for most cities.

TABLE 3

Traffic Flow Chart

Time	Point A:		Point B:		Point C:		Point D:	
A.M.	N.	S.	N.	S.	N.	S.	N.	S.
1:00	251	447	265	534	220	596	261	261
2:00	157	346	160	350	50	168	94	133
3:00	215	220	95	205	35	87	35	59
4:00	167	88	60	93	21	60	9	20
5:00	84	1	37	51	24	30	18	22
6:00	84	28	75	99	57	104	30	60
7:00	135	109	276	313	249	305	196	241
8:00	340	308	1250	552	1145	574	957	589
9:00	568	475	1407	854	1407	730	1078	652
10:00	475	349	381	842	774	552	647	541
11:00	451	292	735	853	684	726	486	582
12:00	535	667	884	927	777	836	601	651
P.M.								
1:00	556	639	846	997	710	931	571	671
2:00	570	570	825	1075	850	889	612	686
3:00	564	663	855	1149	788	982	578	688
4:00	539	717	778	1229	779	1157	668	848
5:00	468	860	832	1605	818	1609	816	1100
6:00	405	880	665	1482	620	1740	651	1424
7:00	384	499	641	1009	529	867	589	777
8:00	506	541	803	799	766	700	666	580
9:00	573	672	728	819	607	620	448	618
10:00	547	749	672	951	505	706	429	607
11:00	435	656	478	752	474	637	406	530
12:00	423	581	454	770	333	613	292	468
Total	9438	11358	14640	18318	13262	16029	11139	12868

Source: Claus and Claus, 1975

People look to signs to direct them to a place of business. Travelers, new members of a community and impulse shoppers rely on signs to direct them to goods and services they need.

The residential make-up of the area may affect aspects of your signage program too. Whether it is an apartment or single-family dwelling area, whether young or older residents predominate, these are factors which could influence the wording on your sign.

Signs Can Improve Your Site Characteristics

When your carwash is removed from the centers of activity, signs can be used to correct a poor location by substituting effective communication for poor site characteristics. Signs can direct people from other streets to your location. If the layout of your carwash is slightly less than desirable, signs are the easiest way to correct those difficulties. Probably one of the most misunderstood aspects of site planning is the importance of signage. Often a carwash is designed or laid out and then the signs are introduced, almost as an afterthought. If traffic and site characteristics are analyzed first, and then a signage program developed to maximize the benefits and minimize the weaknesses of the particular location, better building placement and site layout will be possible. This can only be done on a case-by-case basis, but avoids the problem of having to correct design weaknesses with additional signs at a later date.

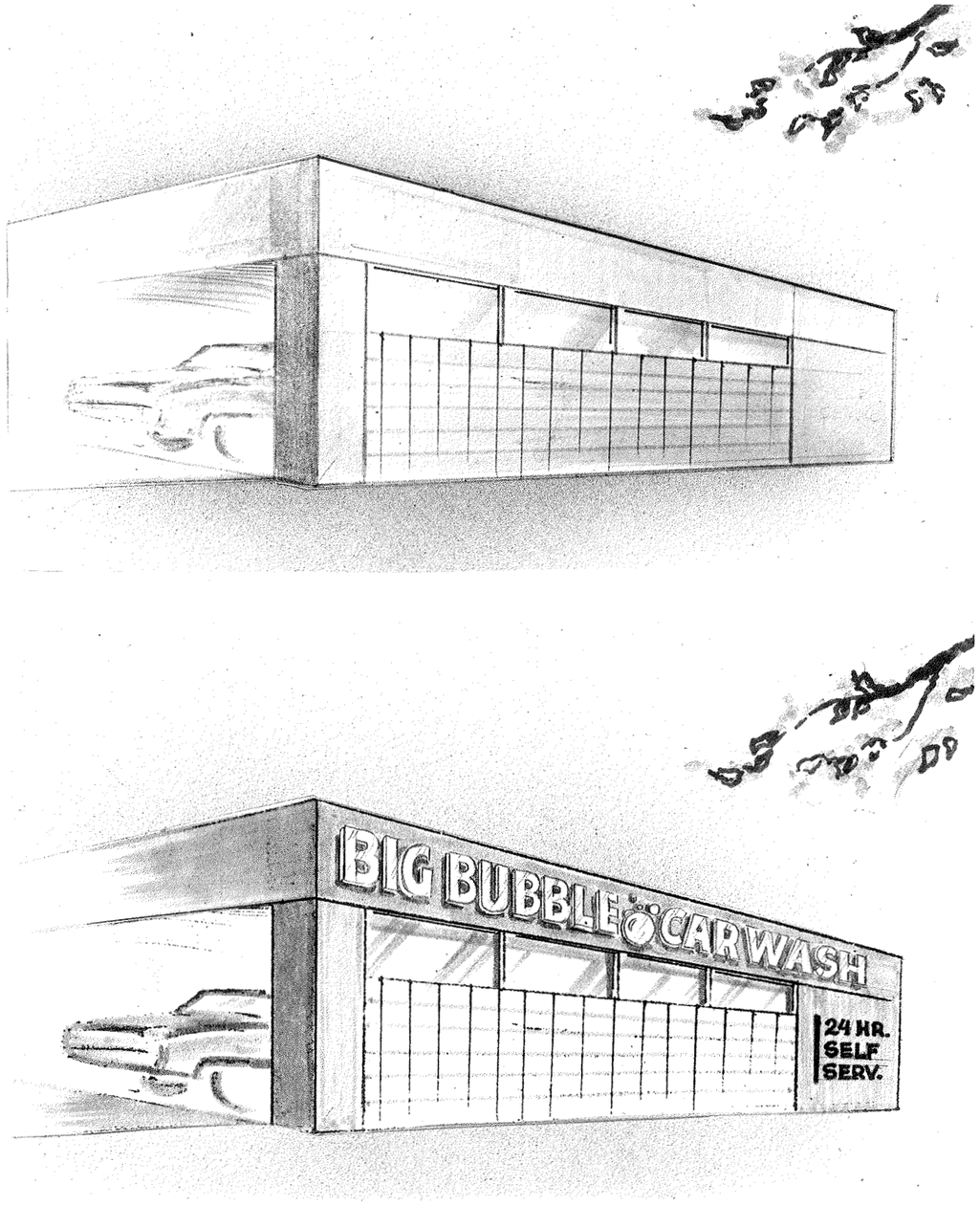
A high-rise sign can give a location multiple street frontage by reaching people on adjacent traffic arteries.

In many cases, it may be unwise to purchase a site on which you will be unable to use adequate signage. A simple way of testing a potential site is to use a helium balloon with lettering to determine how tall and large a sign must be to be visible from any nearby major street or highway. You can then check your local ordinances to see if the necessary dimensions will be allowed.

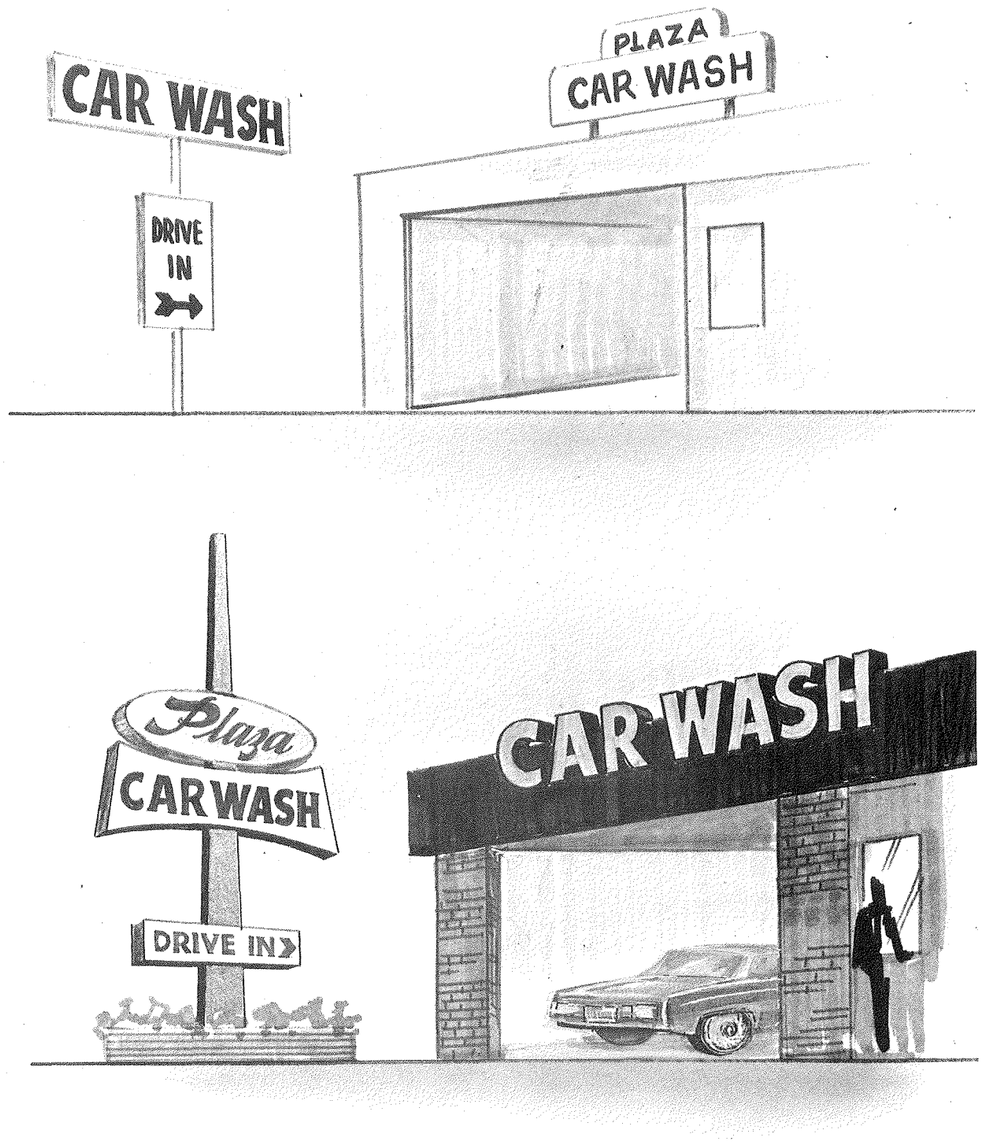
If your site does not provide you with the necessary exposure and you are unable to use high-rise signs because of local ordinances, you may want to consider "third-party" advertising. In the sign industry this term applies to any sign which is not located on the actual business premises. Typical examples of third-party advertising include billboards, and signs on trucks, buses, and bus stops. This type of advertising helps to extend and reinforce local awareness of your carwash and provides you with additional copy space in which to advertise special sales or services. It can also be used simply to direct customers from areas of greater traffic density, and, in effect, creates additional street frontage for your business.

Signs can also be used in a decorative capacity to improve a neutral or uninteresting building as well as a poor location. A signage program can effectively renovate an older building at a fraction of the cost of architectural remodeling.

Third-party advertising can help direct business to your site.



Modern architecture seldom expresses a building's function. Signs serve as a form of supplementary and fluent architecture that identifies commercial uses.



Changing signs gives a building a new face at a fraction of the cost of major architectural remodeling.

PLANNING YOUR CARWASH SIGNAGE PROGRAM

The most effective use of signage will depend on the nature of each individual carwash. If traffic profiles show that your business depends primarily on through traffic rather than local customers, building a consistent business image may be less important than simple high visibility. In a competitive market situation, expanded services may be emphasized, in which case changeable copy signs will be useful for advertising gifts, accessories, or specials.

Many full service carwashes are associated with major gas companies. With these companies, strong brand identification is emphasized through a variety of media, and often the individual service station will have a larger than average share of local business. In this case, the carwash would probably do well to use signs that strengthen its identification with the national corporate advertising. If, on the other hand, the carwash is associated with a small dealer, it may want to minimize company identification and use signs that emphasize the carwash and its services.

SUMMARY

If your carwash has an ideal market position—that is, with a high-traffic location, a monopoly protected by zoning, and a building that clearly expresses its function—there is probably no need for signs of any type. However, it is unlikely that such a ideal situation can be attained. Signs can correct a number of typical business deficiencies, turning weaknesses into strengths. It would be a mistake for any business owner to overlook the potential and cost-efficiency of signs as marketing tools, identification, advertising, sources of information, and supplementary architecture.

Since signs are perhaps the best method of communicating with motorists, they are especially appropriate for carwashes and other businesses that provide automobile-oriented services. Their effective use requires careful consideration of design factors, traffic characteristics, and the business's particular marketing needs.

II. DESIGNING A SIGN

The design of a sign must take into consideration two important and related problems. The first has to do with characteristics of the observer of the sign: the observer's visual acuity, his sensitivity to color, contrast, glare, brightness, and reaction or response time. The second has to do with characteristics of the sign, such as its visibility, legibility, readability, and noticeability.

HOW PEOPLE SEE YOUR SIGN

Several factors affect how people see your sign. These factors include visual acuity, color vision, contrast, glare, illumination and response time. The following discussion will overview these considerations.

Visual Acuity

Visual acuity is the ability to recognize letters. Traditionally, the Snellen chart is used to measure acuity. Visual acuity is usually measured under optimal conditions in a doctor's office where the viewer is not required to attend to any other tasks. A 20/20 size Snellen letter is one designed such that a letter placed 20 feet from the eye will subtend an angle of five minutes of arc at the eye. Therefore a 20/20 letter designed to be viewed at 20 feet is 8.75 mm wide.

In many states the minimum visual acuity for driver licensing is 20/40. The 20/40 letter is double the size of the 20/20 letter. However, the actual visual acuity of a driver may be considerably less due to the requirements of operating a vehicle in traffic situations. Table 4 shows the minimum size at which letters can be read at varying distances by people with different measures of visual acuity. This table describes viewing requirements in a doctor's office, with no distractions or time pressure, and with no consideration of the influences of color or motion.

There is no universal norm for visual acuity even in optimal viewing conditions. In the outside environment, even if acuity were a

TABLE 4

Minimum Resolvable Snellen Letter Size Of Eyes With 20/20, 20/40, and 20/60 Visual Acuity at Distances Between 100 Feet and 1/4 Mile

DISTANCE (Feet)	LETTER SIZE MINIMUM RESOLVABLE (Inches)		
	20/20	20/40	20/60
100	1.8	3.5	5.2
200	3.5	7.0	10.5
400	7.0	14.0	20.9
600	10.5	21.0	31.4
800	14.0	28.0	41.9
1000	17.5	35.0	52.4
1320	23.1	46.1	69.1

Source: Claus and Claus, 1978

constant figure, we would still have many other variables to consider. Because of this, sign designers have adopted the general rule of one inch of letter height to twenty-five feet of viewing distance. Highway signs have a standard of one inch to forty feet of viewing distance; however, their close proximity to traffic and standardized format are advantages that are not available to private business.

Color Vision

The ability to perceive color is also not an absolute measure, since it is greatly affected by luminance as well as contrast. When illumination is decreased, color sensitivity deteriorates proportionately, until at very low illumination levels even the brightest colors appear to be a shade of grey. It has been found that colors which induce a response most effectively are those whose wavelengths are near the center of the visible spectrum—this means that yellows and greens are noticed before reds and blues. However, this does not mean that all signs should be yellow or green; legibility and readability of letters on a sign will also be affected by contrast with the background color, overall brightness, and the materials used to make the sign, e.g. neon tubing, painted wood, or illuminated plastic. These factors are discussed further under "Characteristics of Your Sign."

Technically, colors are combinations of hue, saturation, and brightness. Therefore, it has been stated that theoretically millions of colors are possible. In the visible spectrum, however, only 150 wavelengths are discriminable, and from that range only about 12 colors can be consistently identified without error (Chapanis, 1965). Table 5 lists these colors.

TABLE 5

Colors Consistently Identified Without Error

Red	Green	Blue
Yellow	Black	White
Orange	Purple	Brown
Strong yellow-green	Light blue	Coral

Contrast

Contrast refers to the illumination relationship between an object and its background. Up to a certain point, an increase in contrast enhances an object's discriminability. However, too much contrast results in a reduction of visual discrimination. When, for example, contrast approaches a ratio of 60 to 1, one experiences an unpleasant effect rather than superior legibility (Richards, 1952). When the object and its background are subject to a uniform increase in illumination or intensity, visual acuity progressively improves. But if the object is much brighter than the background, acuity decreases.

Driving at twilight is a situation which manifests several problems of contrast and luminance. The brightness of the sky hampers the adjustment of the eye's retina to road level conditions where smaller amounts of light are available. It was found that letters visible under higher light levels may need to be made five times as large and have their contrast made 6 to 20 times greater if they are to be visible under lower light levels typical of dusk and dawn (Richards, 1958).

Glare

An excessive amount of light that suffuses the retina causes glare. The effect is to reduce the contrast between an object and its background, reducing the object's discriminability. If glare is anticipated, for example, from either direct or reflected sunlight, it may be necessary to change the position of a sign. If this is not possible, other techniques must be used to increase contrast so that the glare will not make visibility impossible. In some cases, the dulling of the finish on a sign may help reduce glare. Increasing the contrast can also be achieved by manipulating the colors used on a sign and by modifying the size and spacing of letters.

Illumination

Everyone knows that increasing luminance levels aids our ability to see. Research has confirmed the fact that general visual acuity and color perception, in particular, benefit from raised luminance levels (Soar, 1955). But when luminance is too far beyond its optimal level, visual perception suffers because glare will appear and, as noted above, contrast and discriminability will degenerate accordingly (Bartley, 1951). This happens often at night when bright, dazzling artificial lights cause "islands of light" against the dark background of the night sky.

Response Time

The time it takes a person to read a message is a debatable topic, and the time it takes a motorist to read a message and respond to it is even more complex. Highway engineers have long been concerned with the problem especially as it relates to the design of warning and regulatory signs. A useful concept is that of reaction distance. Reaction distance is a measure of the amount of time it takes a viewer to react to a situation. Simple reaction distance as shown in Table 6 includes the time needed for seeing, braking, and stopping.

TABLE 6

Simple Reaction Distance

Speed (mph)	Reaction distance (ft.)
30	470
45	700
55	825

Source: Claus and Claus, 1978

Another measure, called anticipatory reaction distance, adds on extra time during which the driver prepares to stop. This is an important concept, since it allows the driver more time to judge the situation and take any necessary precautionary action. This is particularly important in areas of potential hazard and at points requiring complex driver decisions, such as at intersections, interchange exits, railroad crossings, speed reduction zones, etc.

Each of these examples presents complex driving situations which require that the driver be aware of the change in conditions and be able to adjust his driving behavior before encountering them. In these cases, ordinary or simple reaction distance may be inadequate and unsafe. Table 7 gives anticipatory sight distances for different speeds of traffic.

TABLE 7

Anticipatory Sight Distances For Standard Traffic Speeds

	Highway Design Speed (mph)					
	30	40	50	60	70	80
Anticipatory sight distance (ft.)	600	800	1100	1500	2000	3000

FORMULA FOR CALCULATING SIGN SIZE

Reaction distance is an important concept for the designing of highway signs. It is also an important concept when applied to commercial signage, and may be critical for carwash owners who wish to draw customers from highway traffic. If a substantial number of people who view the sign are new to the trade area, either as vacationers or business travelers, the amount of time needed to react will be greater than that of people familiar with the area. A basic formula may be applied to determine the minimum size necessary for safe sign viewing. This formula was initially developed by R.J. Claus to aid planners in determining an average allowable size for signs within various commercial zones. The formula can aid the carwash owner in determining the basic minimum requirements for a sign in order for it to be an effective advertising and communications medium.

Three important numbers are needed in order to calculate the minimum optimal copy area for a free-standing sign to be viewed from vehicular traffic. These measures are:

A = Reaction Distance (simple or anticipatory, depending on site characteristics);

B = Optimal Letter Height (using height to distance ratio of 1 inch to 25 feet—may change with letter style or color);

C = Number of Letters in Message.

When the above figures are known, the following formula may be applied:

$$\textit{Minimum Required Sign Area (MRSA)} = \frac{B^2C}{144} + .40\,\frac{B^2C}{144}$$

= Copy area plus borders and margins

Example. The following calculation illustrates how MRSA can be determined for a typical free-standing sign located on an average urban street, displaying a message of 70 letters using a standard sans serif letter.

1. *A = (Simple) Reaction Distance* = 470 feet at 30 mph.
2. *B = Optimal Letter Height* = 470 feet ÷ 25 feet (using height to distance ratio of one inch to 25 feet) = 18.8 inches.
3. *C = Number of Letters in Message* = 70.
4. $\textit{Copy Area} = \frac{B^2C}{144} = \frac{24{,}740.8}{144} = 171.81$ sq. feet
5. *Borders and Margins* = 40% of copy area = 68.72 sq. feet.
6. *MRSA* = 171.81 + 68.72 = 240.53 sq. feet.

Although we present a "formula," it is not meant to be taken as a strict and unvarying means of calculating an ideal size for all businesses. Rather, it is a flexible average model, which can be and should be modified depending on the type of sign used, the amount of copy, the type of business, and graphic considerations such as lettering and colors used.

Although the formula must be qualified in many instances, nearly every business can use it to estimate minimum required sign sizes. The MRSA formula is most useful for businesses which are oriented toward motorists who are somewhat unfamiliar with the area and who will be stopping immediately by pulling into the parking lot on the premises. This would apply to carwash customers who must prepare to turn into a wash bay or conveyorized line.

CHARACTERISTICS OF YOUR SIGN

When designing your sign, you should remember that much of the advertising is expressed indirectly through the means of presentation. As well as communicating concrete and direct information, a well-designed sign will create a mood, tell you something about the style of the carwash, and convey something about the product or service that it sells. The choice of colors, the lettering style, and the overall graphic design send out valuable and necessary clues about a business to prospective customers.

Design should complement your carwash. If you wish to emphasize high quality service, your sign should reflect a high quality image. If, on the other hand, you wish to provide low-cost value to your customers, a fancy, expensive sign may actually turn away a percentage of your potential buyers. The carwash owner should be aware that most advertisers direct their message to a specific portion of the marketplace. Advertisers often aim for a certain demographic market, such as people within a certain age group, or income group, or area of the country. There has also been a trend towards "psychographics," which bases its appeal on the lifestyle of certain market segments. Signs can take advantage of this and be designed to project an image to a specific psychographic group. For the carwash this may relate closely to the lifestyles associated with different types of automobiles.

Factors To Help You Communicate

Good lettering is essential on a sign. The lettering is the means through which the viewer receives the information which the sign is communicating. Before we discuss the different types of lettering available and the different images they convey, we need to mention some communication factors which must be preserved if the sign message is to reach potential customers. The three most important factors for advertising purposes are visibility, noticeability, and readability. A fourth factor, legibility, is an important design consideration.

Visibility. In order to be useful, a sign must be seen. Visibility refers to the qualities that enable a sign to be distinguished from its surroundings. Factors which affect visibility are viewing distance and environmental obstructions. Landscaping should be carefully planned so that it does not grow to conceal your on-premise signage from the view of potential customers. Visibility may also refer to the individual letters of a word on your sign, that is, the quality of the letter or number which enables the observer to distinguish it from its surroundings.

Noticeability. For a sign to be an effective advertising device it must attract people's attention. Noticeability refers to the quality of a sign which encourages people to look at it. Even though a sign is visible, it must have attributes which make it stand out against a background of competing messages.

Readability. If a sign is to communicate a message it must be readable. People must be able to recognize familiar words and symbols which express meaningful information. Readability is the quality of a sign which enables the observer to correctly perceive the information content of letters or numbers grouped together in words, sentences, or other meaningful groupings. For a sign to be effective, it is not always necessary that each letter be discernable, though content readability is usually helped by design which enhances the distinction of each letter. Readability is a critical factor in encouraging a potential customer to make a purchase decision. Your sign must be readable early enough for a traveling viewer to decide to stop at your carwash. It is helpful to know the real speed on a street in order to check readability. You can check the readability of your sign by driving or walking past it and noting two things. First, when can the sign be seen? Second, when can the message be discerned? Speed of travel should be noted and a stopwatch can be used to determine when the sign first becomes visible and then readable.

For example, in studies using 10-inch black block letters on a light background readerboard, words became readable at about 600 feet from the sign. When the speed of traffic on the street is 30 miles per hour, your potential customer has approximately 10 seconds to decide whether or not to stop. At 60 miles per hour, the viewer has about 5 seconds to make a decision. Although this seems a short amount of time, 5 seconds is all it takes for most people to read and comprehend a newspaper advertising headline, some brief information about the advertisement, and the signature. Table 8 shows visibility and readability times and distances for people walking, and driving at 30 and 60 miles per hour.

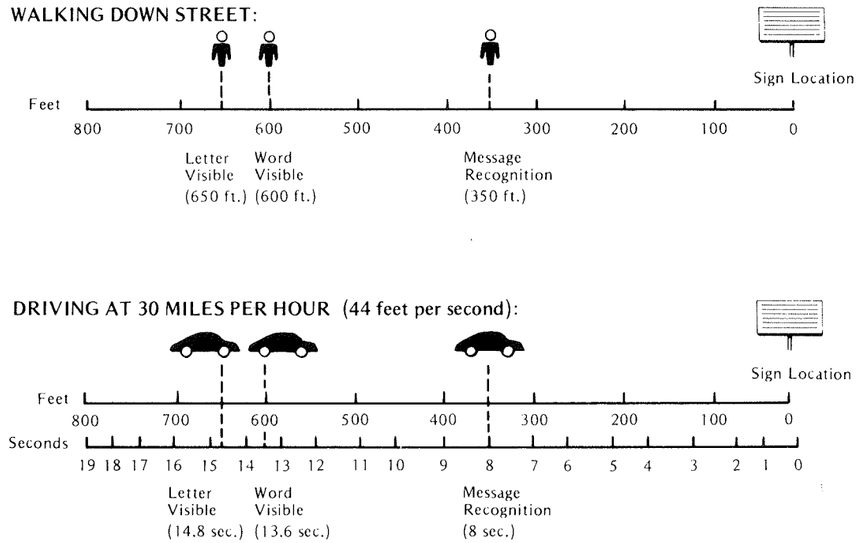
Legibility. The legibility of a sign refers to the characteristics of letters or numbers which make it possible to differentiate one from another. Various studies have been conducted over the years to determine the relative legibility of different letters and different sizes, styles, and spacing of letters. In general, most early investigators agreed that individual capital letters

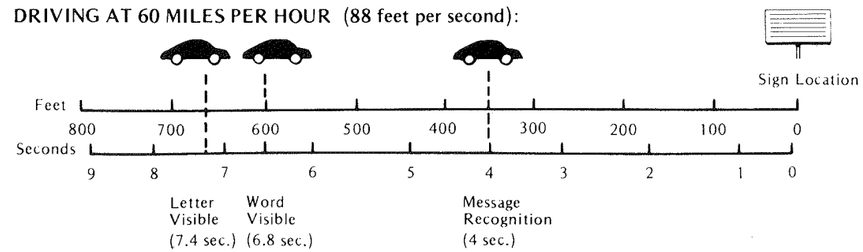
Since signs are generally viewed from a distance, the effective use of "white space" or background is important. Attempting to maximize letter size within a restricted sign area often results in illegibility due to crowding. When the two examples above are held at arm's length, most people will find the "sign" on the right more difficult to read.

TABLE 8

Sign Visibility Chart

For 10″ Black Block Letters on White Background





Source: W.S. Meyers and R.T. Anderson, 1974.

were more legible than lowercase letters because of the importance of strokes and junctions (straight lines and sharp angles) which occur more frequently in capital letters. In comparing single letters of the alphabet, capital letters *A, L, I, J,* and *U* were the most legible and *M, W, B, Q,* and *S* were among the least legible. For lowercase letters, high legibility was found for *d, m, p, q,* and *w,* while low legibility was found for *c, e, i, n,* and *1* (NESA, 1960; Tinker, 1963). More recent evidence suggests, however, that greater readability and legibility can be achieved through a combination of uppercase and lowercase lettering. This is partly because a combination of uppercase and lowercase lettering resembles the typographical style we are accustomed to reading. (Not many of us are accustomed to reading a text which is in capital letters alone.) In addition, people tend to recognize words more by their size and shape (their "configuration") than by individually scanning each letter (Oliphant, Claus and Claus, 1971). In this respect, words with lowercase letters are more readable since the outline form of a lowercase word is characteristically more recognizable than its all-capital counterpart.

Effects of Color

Color can have many psychological connotations and effects. Much of human visual processing is successive, that is, it occurs in stages. Research indicates that simple physical properties of a stimulus such as its color, brightness, and size, are first processed by a "pre-attentive stage," followed by a second stage which extracts higher order properties such as letter identity and meaning. Color is a simple physical property that is attended to immediately by the visual system. A letter's or number's identity may then be processed due to the attention-getting effects of its color or the background color of the sign.

The design of a sign, therefore, can be greatly enhanced through the effective use of color. Numerous studies of visibility and color have concluded that the most important factor for a sign's visibility, readability, and legibility is contrast between the colors used for the lettering and the background. Table 9 shows the results of these studies in ranking color combinations according to their effectiveness.

TABLE 9

Color Combinations for Lettering Ranked in Order of Legibility

1. BLACK on YELLOW	9. WHITE on BROWN
2. BLACK on WHITE	10. BROWN on YELLOW
3. YELLOW on BLACK	11. BROWN on WHITE
4. WHITE on BLUE	12. YELLOW on BROWN
5. YELLOW on BLUE	13. RED on WHITE
6. GREEN on WHITE	14. YELLOW on RED
7. BLUE on YELLOW	15. RED on YELLOW
8. WHITE on GREEN	16. WHITE on RED

Source: Claus and Claus, 1974

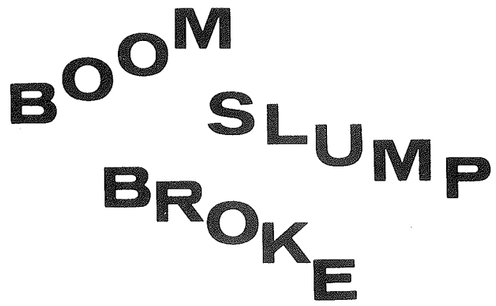
Note: The above are color combinations commonly used in outdoor displays. Atmospheric and ambient light conditions as well as type of letter may affect the legibility of these combinations.

After legibility, the most important point to keep in mind when designing a sign is the overall importance of boldness of color. When color is used in painting, photography, or other media where it will be seen from a short distance, subtlety can be used effectively. However, when designing for an outdoor milieu where your sign must be seen from a greater distance and perceived immediately, a bold contrast between colors is very important. The reader who is interested in more detailed information on the use of color in signage is referred to *Visual Communication Through Signage,* Vols. 1 and 3 (Claus and Claus, 1976).

Psychological Effects of Lettering

As well as conveying a message to the viewer, lettering conveys certain psychological impressions. There is a considerable degree of subconscious interpretation of abstract designs by the human brain. Lettering is one of the many things from which our minds will take cues. The impression or image of your carwash is given by the lettering used on your sign. Several factors affect the psychological connotations of lettering and a number of these are discussed below. A more detailed discussion of these factors may be found in *Psychological Considerations of Lettering for Identification* (Oliphant, Claus and Claus, 1971).

Slope. Lettering which is written with an upward slope is usually associated with positive attributes, happiness, enthusiasm, etc. A downward slope conveys a generally negative feeling, such as depression or unhappiness.



Slant. Letters which are straight up-and-down or slanted slightly to the right are commonplace and do not convey a specific emotion to the viewer. Forward slants tend to be associated with positive emotional attributes and can convey activity or motion. Backward slants are generally perceived as indicating coldness and sometimes calculation. Extreme forward slants may indicate nervousness and excessive emotionality. A mixture of slants may indicate moodiness and inconsistency.

Letter Thickness. Thick lettering suggests self-confidence and solidness. The thicker the letter, the stronger the will or dominance conveyed. Thin lettering, on the other hand, tends to be associated with simplicity, modesty, and refinement.

Letter Compression. Compression refers to the overall spacing between letters. A highly compressed word indicates clannishness and reserve. Lettering which is extended and large, however, usually indicates a friendly and open nature.

Height of Capitals. When capital letters are almost the same size as the lowercase letters, they tend to project humility and simplicity. Capitals slightly higher than usual give an impression of self-respect or pride. Capital letters

which are extremely large compared to the lowercase letters may give the viewer an impression of conceit.

Shape. Letters which are pointed or triangularly shaped convey an impression of energy and quick thinking; letters which are rounded indicate a more passive and gentle atmosphere. Again, going to the extreme in either direction is undesirable; very pointy letters appear overly aggressive, and very rounded letters imply laziness and indolence.

PONDEROUS

WISE

Elegant

The proper choice of lettering style for your on-premise sign or signage program is an important marketing decision. For any choice of script or print letter style, you need to understand the psychological and emotional associations that will be conveyed, since your sign or logo is the most visible aspect of your public image. If you are particularly interested in attracting a specific group of consumers, you may want to analyze in even greater detail the personality correlates of that group to determine the style and image which will most appeal to them.

Psychological Effects of Color

In selecting colors for a sign which will be appropriate for your business, it is helpful to understand the psychological connotations of colors. Although these are not to be taken as hard and fast rules, there are a number of attributes which have come to be associated with certain colors which we feel deserve mentioning. In all situations though, the sign user should be guided by his own sense of what is appropriate.

Red. Red is an exciting and active color. It is used to suggest boldness, quickness, and efficiency. It is a warm color which is appetite-inspiring, and is often used in restaurant color schemes. Perhaps its strongest attribute is its quality of attracting short-term attention.

Yellow. Yellow is also a warm color often used by fast-food restaurants which want to create a welcoming atmosphere. Yellow is inviting, suggests light and activity, and is highly visible. Its visibility suits it to safety and warning signs. It may also be used to compensate for large vaulted spaces or dim illumination.

Green. Greens and blue-greens have a pacifying tendency, and have been associated with freshness, youth, purity, and health. It suggests naturalness and vitality while at the same time representing peacefulness.

Blue. The properties of blue are opposite to those of red. Its coolness tends to connote dignity, serenity, wisdom, and quietude. It tends to suggest stability and calmness, rather than speed and efficiency.

Purple. This color has come to be associated with royalty, pomp, and luxuriousness. It has a low visibility rating and is therefore not used for freeway signs. It is unsuitable for large areas because it disturbs the focus of the eye.

Brown. Brown is the color of the earth and tends to connote naturalness, strength, and mainstream values. Because of its association with wood and earth, it is basically a neutral color and is not particularly eye-catching.

White. White is an emotionally neutral color which on a sign can be used to suggest cleanliness and purity.

Black. Black is also emotionally neutral, which in signage can be used to create an impression of low-keyed crispness or sedateness. Sophistication is also suggested if large areas are used.

In choosing the colors to be used on an outdoor sign, the sign designer must keep several considerations in mind—color symbolism, the psychological effects of color, and the psychographic characteristics of the group toward whom the message is directed. For example, research has shown that men generally prefer blues over reds, and prefer deep shades of a color, while women tend to prefer reds over blues, especially in delicate tints rather than deep or bold shades. Older people tend to prefer blue because it is easier for them to see. Children are attracted to bright colors such as yellow and red. There is also some evidence that people in lower income brackets prefer bright, undiluted, pure colors, while those in higher income brackets prefer more subtle shades and tints.

SIGN MATERIALS

The three primary materials from which signs are constructed today are plastic, metal, and wood. Each offers different qualities and design features when used separately or in combination with each other.

Plastic

Plastic is the material most commonly used for illuminated or electric signs. Besides the fact that it can be backlit, offering a high degree of visibility and legibility, its greatest virtue is its versatility. A plastic sign may be made to look like wood, or glass, or even stained glass. It can utilize almost any typeface desired, and it is available in a wide range of colors.

Metal

Metal signs are not as commonly used as plastic or wooden signs. They have some of the advantages of plastics in that they are quite durable. Metals, however, lack the versatility of plastics. They have the additional disadvantages of requiring indirect lighting, and of being very expensive. They can be an asset to the carwash image by giving a suggestion of high quality, stability, and modernity. Because of their durability, they are well suited to areas where weather conditions might create problems with other kinds of materials.

Wood

Wooden signs have enjoyed recent popularity in the trend towards the natural look. Wood signs are effective for businesses that wish to emphasize their smallness, or affiliation with handcrafted or natural objects. They require external illumination and are more vulnerable to damage from weather changes. Wood signs tend to be difficult to read from vehicular traffic. A sign user who wishes to take advantage of the look of wood while avoiding the disadvantages can utilize a combination of wood and plastic.

Within these general categories, there is a wide range of materials available, such as pre-oxidized steel and anodized aluminum. In the case of a carwash, it would be advisable for interior signs that are close to water and detergent to be particularly tolerant of those conditions. In deciding on the kind or kinds of materials to use in your signage program, especially for the outdoor on-premise sign, it is again important to consider the motif and public image you wish to convey.

ENERGY CONSERVATION IN SIGN DESIGN

During past energy shortages, electric signs have frequently been singled out for excessive restriction. However, the fact that signs actually use very little energy and are a valuable and efficient combination of commercial information, street lighting, and traffic direction has become more generally acknowledged. In addition, signs are being designed for greater energy efficiency, and sign users should be aware of design options that may help them to save energy.

Efficient Use of Signs

Carwash owners may want to consider using illuminated signs which will provide all or part of their necessary parking or safety lighting while also serving as effective advertising.

Another obvious way to save energy is to use illuminated signs only as necessary. This will, of course, depend on the marketing needs of each carwash. If the sign is used for advertising or lighting after closing hours, an automatic time switch can control the hours of operation. For a business which closes at 5:00 p.m. and reopens at 9:00 a.m., the sign's energy requirements will be reduced by 50% if the sign is turned off at 1:00 a.m. rather than illuminated all night.

Automatic dimmers can also be used to accurately regulate the amount of light output necessary according to surrounding light conditions.

Energy Efficiency in Sign Design

When establishing a new signage program or altering an old one, carwash owners should consult with sign manufacturing representatives concerning design alternatives that affect energy efficiency. In doing so, however, they should realize that energy efficiency will not always correlate with cost efficiency.

In an internally illuminated sign it may be possible to space the lamps so that fewer are necessary. In a 10 foot sign, for example, if the lights are spaced 12 inches rather than 10 inches apart, energy use may be reduced by about 17%.

Proper ventilation may aid efficiency. The lumen output of hot or cold cathode fluorescent lighting, for example, will decrease in extremely hot or cold temperatures.

In the choice of materials, the white plastics commonly used in backgrounds may vary considerably as to the amount of light they will transmit. The use of white paint or reflective materials around the light source will also increase lighting efficiency, as will the simple cleaning of both interior and exterior surfaces.

With luminous tubing, high power factor transformers can increase lighting efficiency, and sign users should consult manufacturers concerning their possible applications.

Light Sources

Efficiency in lighting is measured in lumens per watt and varies between the different light sources as shown in Table 10. Generally, incandescent is the least efficient, and metal halide and high- and low-pressure sodium are the most efficient light sources. However, the best choice of a light source in terms of quality and energy efficiency will depend largely on application.

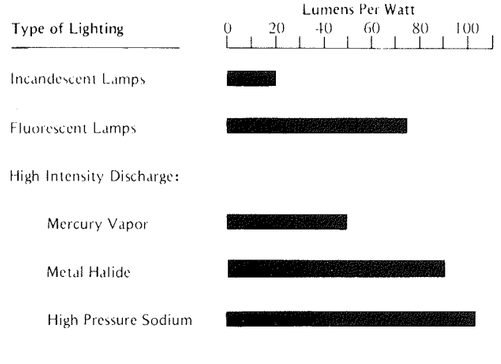
Both mercury vapor and high- and low-pressure sodium have a limited spectrum and would be poor quality illumination for a sign message. They are generally used for security and street lighting. We should note, however, that a white high-pressure sodium lamp, comparable to metal halide, has recently been developed.

Metal halide is the most efficient of the light sources with good color rendition. It is used increasingly for exterior illumination of outdoor bulletins and wall signs, but requires special fixtures and is impractical for internally illuminated signs.

Most internally illuminated signs use (hot cathode) fluorescent lamps, which evenly distribute the light without concentrated heat. Though cold cathode lights (often mistakenly referred to as "neon") are less efficient than hot cathode, they can be used for individually illuminated letters which may require less total light output for optimal readability than a sign in which the entire background is lit.

TABLE 10

Energy Efficiency of Different Types of Lighting



Note: The efficiencies given in this table are averages. Metal halide, for example, produces from 80 to 100 lumens per watt, while "super" metal halide may reach 125.

SUMMARY

Carwashes generally use highly visible on-premise signs to attract immediate attention. Continuity and repetition are the key factors of a more extensive marketing plan. A well-designed signage program will use logos, symbols, and graphics in a manner consistent with the business image as presented through other media. The result is a synergistic effect in which the total advertising impact is greater than the sum of its parts.

The design of a sign conveys subtle mood and image associations, as well as concrete information. The design of the sign should complement your carwash through letter style, choice of colors and overall layout. It should also ideally appeal to that segment of the market which includes your major purchasing customers.

The effectiveness of a sign in communicating its message will be determined by the factors of visibility, noticeability, readability and legibility. The careful use of color combinations for the lettering and background of a sign can enhance these four necessary attributes. Lettering style, including a letter's slope, slant, thickness, compression, height, and shape, will convey certain psychological and emotional associations which affect the image of your business. Similarly, colors have certain attributes associated with them which need to be understood when a signage program is being developed. Psychographic characteristics of certain groups (males, females, young, old, high and low economic status) may be important in determining some sign design elements.

III. TYPES OF SIGNS

The carwash owner can choose from a wide variety of sign types differentiated by design, function, and structure. Common structural types include free-standing, roof, projecting, and wall signs. Often, smaller structural types are associated with specific functions and may be referred to as instructional, promotional, or directional signs. Other choices will involve the design and manufacture of the sign itself—for example, whether it will be a custom or quantity produced sign.

Each type of sign offers a different range of communication functions. An understanding of the different types of signs available helps the sign user select the structure which will best serve the needs of his business and reach the most customers. The type of sign selected will have a direct impact on the marketing strategy of your business. It will be an essential element in your advertising presentation and in your business image as a whole.

The effective use of the various structural and functional types will, of course, depend on the nature of the carwash—whether it is self-service or conveyorized—and on such physical characteristics as location and architecture. Following is an introductory outline of the various types of signs a carwash owner may want to consider.

STRUCTURAL VARIATIONS OF ON-PREMISE SIGNAGE

These signs will function as the carwash's primary means of advertising and identification. Their most immediate purpose will be to reach the attention of the largest possible percentage of the traffic flow around the carwash and to communicate information about the carwash. For this reason they must be placed in prominent positions and should bear the company's standard logo and name. The most "prominent position" in terms of size, height, placement, and setback will, of course, be interrelated with the choice of structural type. In more sophisticated signage planning, ideally, only one sign should be visible from any one direction to avoid a cluttered effect.

Free-Standing Signs

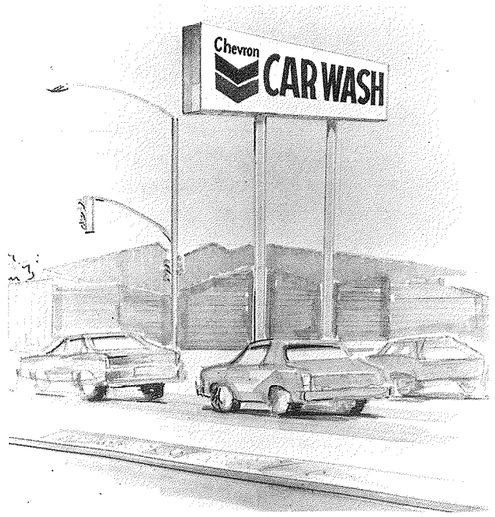
Also called a "pole" or "ground" sign, the free-standing sign is one which is not actually attached to the building itself. It is supported by one or more columns, uprights, or braces in the ground.

High-rise or tower signs are supported by a tall pole or column and can be seen from a great distance. They offer greater visibility than most other signs and are often used by motels, gasoline service stations, and other automobile-oriented businesses.

Low-profile, free-standing signs are built close to the ground and offer a somewhat more subdued impression. Also called "monument" signs, they can be used in communities which discourage taller free-standing signs, as is the case in many resort towns.

In addition to the on-premise, free-standing sign, this structural type is often used for third-party or future location signs, both of which may provide valuable advertising.

Pole sign of moderate height

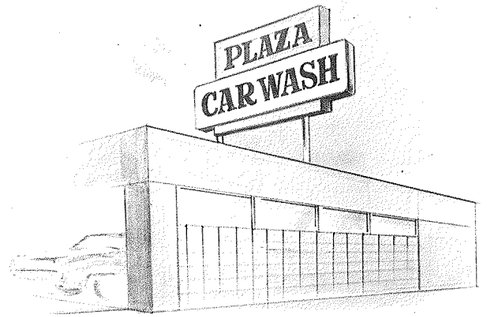


High-rise sign

Freestanding low-profile sign

Roof Signs

The roof sign is erected on or above the roofline of a building and may be wholly or partially supported by the building. Like the high-rise sign, the roof sign is generally best for reaching motorists on nearby highways or major streets. It can provide effective communication over a considerable distance, but may be less apparent to slower traffic on an immediately adjacent street. Before planning to use a roof sign, carwash owners should be aware that they are often restricted in local ordinances. With proper design, a roof sign can be architecturally integrated into the structure of the building, creating a visually pleasing balance.



Roof sign

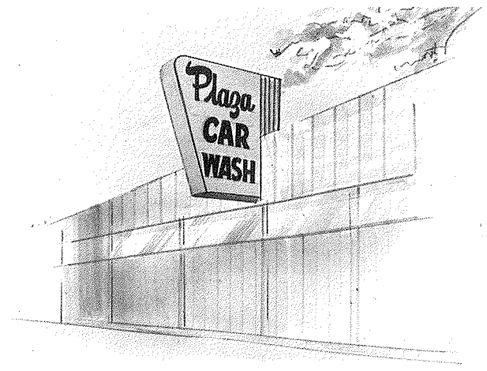
Wall Signs

The wall sign is affixed parallel to the exterior wall of a building and generally projects less than 18 inches from the building. It usually has only one face. It can be constructed as either a box-type sign with the wording attached to the cabinet, or it can be formed of individual letters mounted directly on the wall. Wall signs have the disadvantage of being more difficult to read from a passing vehicle than signs which face traffic directly. Therefore, the lettering on a wall sign must be fairly large and the sign cannot usually contain as much copy as one which faces the street. On the other hand, wall signs are easily integrated into the overall architecture of a building.

Wall sign

Projecting Signs

A projecting sign is one which is attached to and projects from a structure or building face. It is usually double-faced and at a right angle to the building itself, allowing it to be seen by traffic headed in either direction on a street. Many local sign ordinances strictly limit the size of projecting signs.



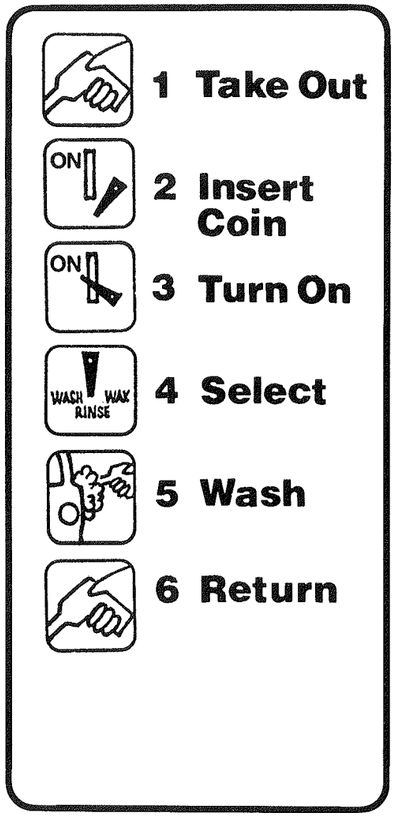
Projecting sign

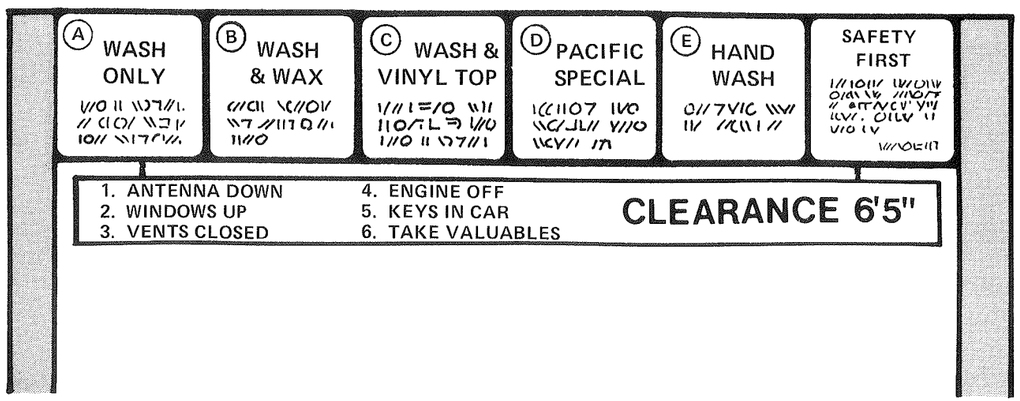
FUNCTIONAL TYPES

A number of smaller functional sign types will be necessary at most carwashes to inform and direct the customer. While these signs will not be essential for company advertising and identification, they should follow the company motif and display the name or logo of the carwash. In this way, they will extend and reinforce the overall marketing and advertising effort.

Instructional Signs

Instructional signs are essential for self-service washes and should be designed as a total, integrated system. Slightly less emphasis on instructional signs may be needed for conveyorized washes. Wall signs have traditionally been used but you might also consider the use of small free-standing signs to attract the customer's attention. Signs should convey information simply and briefly. Customers should be aware of optional equipment available (e.g., tire cleaner, degreaser) and how to use it. The use of pictograms which illustrate the text of instructional signs could improve the use and understanding of the signs—especially in communities in which languages other than English are spoken.

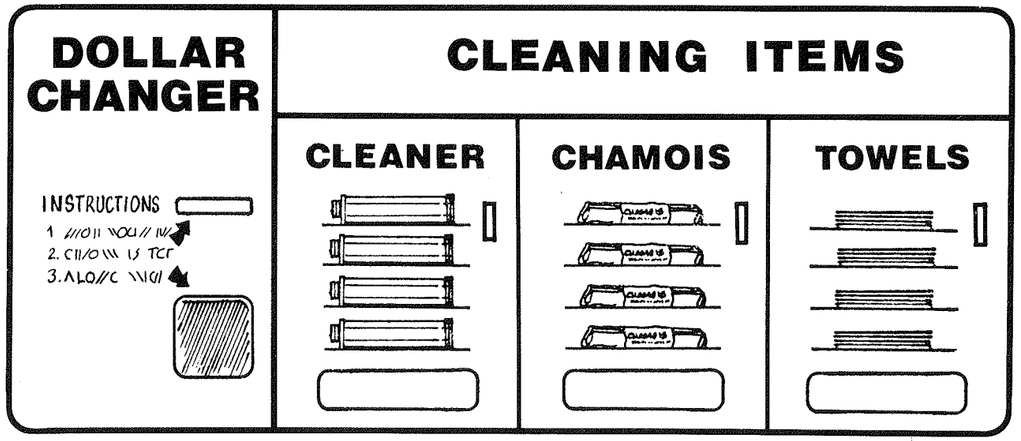


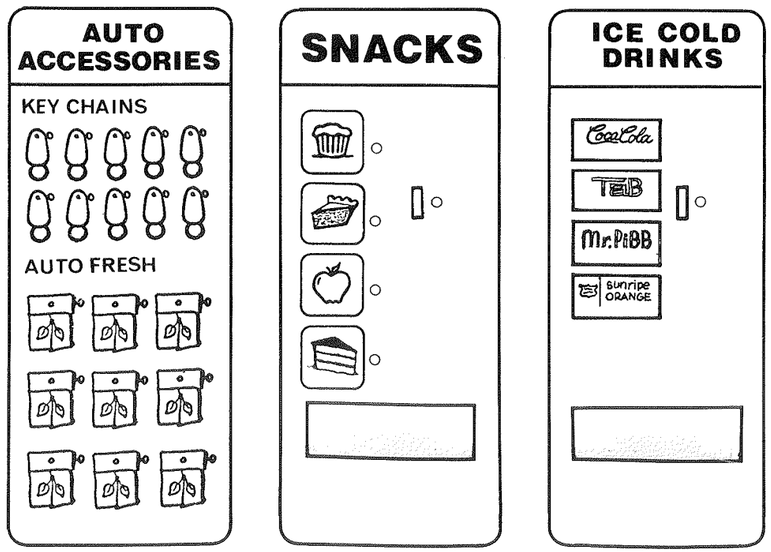


Instructional signs

Promotional Signs

Promotional advertising of specific equipment or automobile products can be integrated into instructional signage or may stand alone, so to speak, as a pure advertising device. This is a decision the individual owner may want to make; however, it is important to remember that the average American is a very sophisticated consumer, easily turned off by the typical "hard sell."





Promotional signs

Directional Signs

The number of signs used for parking and other directional information will vary according to the traffic requirements of each wash, but should be limited to those necessary for efficient operation. Informational and directional signs, e.g., "entrance," "exit," "follow your lane," "stop," etc., may be small free-standing or wall-mounted signs subject to site layout and appropriateness. Wall-mounted letters or signs should be consistent with the basic exterior design.

Directional sign

In many cases, words and arrows painted directly on the pavement will help motorists as they drive through the facility. Clearance signs should be installed for all self-service carwash bays with numerals indicating actual clearance height. Additional portable traffic signs should be available to indicate maintenance or closed lanes.

CUSTOM AND QUANTITY PRODUCTION

An ideal signage program will present information in a way that is aesthetically coordinated with the marketing efforts of the carwash. The practical limitations of local regulation, budget requirements, and construction necessities must also be considered. In many cases, a sign illustrated in the best of environments may, in fact, be very difficult or impossible to build. Most sign companies will be able to provide expert advice on design, construction, and, often, on basic legal requirements.

When a sign is actually designed by a sign company, it is usually through input from experts in each level of production. The combination of requirements and priorities may often result in a sign that is actually more effective than an original presented in illustration.

Many marketing and advertising programs will require signs which are custom built for the company or individual carwash. However, a number of sign types are also available in quantity production. Substantial savings can be achieved if signs are designed to be produced in quantity or in a single manufacturing run. Production sign manufacturers purchase large quantities of materials directly from raw materials suppliers and standardized components can also be utilized for additional savings.

Quantity produced sign

IV. CARWASH SIGNAGE PROGRAMS

It is becoming more and more common to find carwashes housed in attractive brick buildings with carpeted waiting rooms and architectural designs that appeal to the customer's need for cleanliness, efficiency, simplicity, and good taste. Carwash owners can benefit from equally tasteful and well-designed signage programs which address these same needs.

The following section presents drawings for two hypothetical signage programs, one for a self-service and one for a conveyorized carwash. Also included here are basic policy statements and contract specifications which would be applicable to both programs. We should note that the designs, specifications, and contract requirements given here are examples only and are not endorsed by this publication over other possible alternatives. The material should help carwash owners developing their own signage programs to avoid oversights and misunderstandings when dealing with sign designers and manufacturers.

Both the conveyorized and the self-service carwashes have a number of basic requirements for sign design which reflect essential similarities. First, the end goal of both is a clean car and a satisfied customer. The appeal to people's needs structure revolves around the desire to have a clean and well-operating vehicle. Automobiles are an important part of American life, and many car owners feel their automobiles are a reflection of themselves or their personalities. A general similarity in sign design between conveyorized and self-service carwashes might reasonably be in the choices of colors, symbols, lettering, and styles which emphasize cleanliness, efficiency, trustworthiness, etc.

Differences in sign design for the two services might reflect subtle but real differences in the market segments which patronize them, resulting, for example, in an emphasis on high quality service for the conveyorized wash, and low-cost, "do-it-yourself" emphasis for the

self-service wash. Physical differences in site layout will certainly mean different signage requirements. Self-service washes will have a much greater need for a thorough and integrated system of instructional signs to assist the customer in operating the equipment efficiently and safely. The additional amenities in the conveyorized wash, i.e., snack bar, washrooms, small items store, etc., will also require special signage considerations.

POLICY OF THE CARWASH SIGNAGE PROGRAM

For any carwash developing a signage program, a complete statement of policy and objectives will be helpful. Essentially, this will be a checklist of the basic points already discussed in preceding chapters. Objectives will include identification, the establishment of a desirable business image, and advertising of services. All of this must be accomplished within the architectural, budgetary, and regulatory requirements of each site.

Business identity and advertising should be reinforced through a consistency in design which extends to all other products associated with the carwash's marketing effort. The most prominent sign used by the carwash—for example, a tower sign—should serve as the standard to which all other sign designs are coordinated. Signs in the program should adhere to the following basic characteristics.

Legibility. The graphic design should ensure a maximum legibility within the increasingly restrictive size requirements of local sign ordinances.

Readability. Color, letter spacing, and letter stroke should be used to achieve optimum readability.

Conciseness. Since there are numerous brief individual exposures to a sign each day, the signs should be designed to be read easily. The copy of all signs should be concise and clear in meaning.

Consistent Lighting. Illuminated signs should be consistent in their day and night readability and image.

Quality. All signs associated with the carwash should be of a consistent high quality and should be maintained according to a high standard of quality.

Economy. All signs should be durable and acquired and maintained at a reasonable cost.

Color Consistency. The standard color combination for both interior and exterior signs should be consistent. When plastic is used, a particular color brand should be specified.

Letter Consistency. A letter style consistent with the standard business logo should be used wherever possible for sign lettering.

Size and Height. Signs should be reduced to the minimum size at which readability from a normal viewing distance is maintained. Smaller signs to be viewed at close range (window signs, small plaques) normally have a distance of 5'0" between the bottom edge of the sign and grade. As signs increase in size, the distance from grade will generally increase.

Number. All signs should serve a necessary function. In general, the number of signs should be limited and duplication should be avoided.

CONTRACT REQUIREMENTS AND SPECIFICATIONS

The following example may serve as a guideline for agreements with the sign contractor and manufacturer. Actual specifications will, of course, vary according to the location and nature of each job. Before completing arrangements, the carwash owner should be sure to discuss his own marketing priorities with the sign designer and manufacturer, as well as energy conservation possibilities and local sign regulation.

RESPONSIBILITIES OF THE SIGN CONTRACTOR

Scope

Upon the approval of his bid, the contractor agrees to furnish all materials, tools, equipment, transportation, services, and labor required to perform and complete the installation of shop-fabricated letters or signs, columns and column covers as indicated in the drawings attached and bidding instructions.

The contractor agrees to include in his bid the cost of permits, taxes, a service guarantee, and electrical connection of the sign, all of which shall be his responsibility. In addition, he agrees to make all necessary arrangements with other trades concerning the supplying and locating of all materials and items required for the work.

The contractor's responsibilities shall *not* include the primary feed wires to sign locations. However, primary wiring to an existing sign being replaced will satisfy the purchaser's obligation to furnish electrical to a sign location.

Standards and Accreditation

In the acceptance of this work, the following requirements must be fulfilled:

1. The contractor must hold, in good standing, Municipal, State Contractor's, Master Electrician's and all other licenses required by law for the performance of the work specified.
2. Such work shall comply with all applicable legal codes, ordinances, and state and federal regulations.
3. The contractor shall supply all necessary permits and present evidence of final inspection, including the label on electrical materials from an accredited testing laboratory.
4. All material shall be new and of the best quality and grades currently available.
5. All labor shall be performed under competent engineering supervision by specialized workmen skilled in their respective crafts, and displays shall bear the label of any trade unions with which the company is affiliated in all major crafts.
6. The company shall certify that it is financially able to complete all the work undertaken, that it has no labor liens or unsatisfied judgments outstanding, and that the agreement with the purchaser will not be assigned for the purpose of financing the work specified herein.

Insurance

The contractor shall maintain insurance as follows:

1. Workmen's Compensation as provided by the statutes of the individual state.
2. A minimum of_____/_____public liability insurance and a minimum of property damage insurance.
3. The contractor shall, at his own expense, carry all employer's liability insurance and

public liability insurance necessary for the full protection of contractor and owner during the progress of the work. The contractor shall be wholly responsible in case of any loss or damage to any person or property resulting from the performance of this contract and shall agree to save owner harmless from all liability and expense resulting therefrom.

4. A certificate of insurance of all types shall be filed with the owner at the time of execution of the contract and shall provide that cancellation shall not be effective except on ten (10) days' written notice to the owner. All premiums covering the insurance furnished under the above provisions shall be paid for by the contractor and said insurance shall be in full effect until the alterations are complete and accepted.

Installation

The sign shall be delivered and installed as directed. No work shall be commenced until all fabricated parts necessary to complete the work are available. Once started, the work shall be diligently pursued to completion.

The sign contractor shall provide the electrical and building permits for the sign and support.

The sign shall be level and true, accurately placed, and lined up with adjoining parts.

When the sign installation is completed, interior and exterior surfaces of plastic faces and exposed trim (sign cabinet edging, pylon cover) shall be clean and free of all dirt, dust, smudges, and finger marks. All finishing screws shall be touched up where required.

Lifting eyebolts or clips shall be removed after installation and the resulting holes sealed.

At the completion of the installation work, the sign contractor shall remove from the premises all surplus materials, equipment, and debris which are the result of his operations.

Service Warranty

The sign contractor shall include in the FOB price of his sign such cost as he deems necessary to issue a service warranty covering the items listed below.

The contractor shall guarantee the installation for a period of_____(__) days from the date of final acceptance of the installation.

The sign contractor warrants and agrees to perform the following services for a period of three years. All parts, labor, and service required to accomplish the following are to be included in the initial sign cost. The warranty covers all signs included in the bid and purchase orders.

1. If any portion of the sign purchased under this proposal fails due to wind damage of ___ miles per hour or less, the sign company, at its own cost, shall repair such portion.

2. If any portion of the sign fails due to heat expansion or contraction including any separation of welded joints, or any opening of metal retainers due to plastic movement, and any cracking or buckling of the plastic faces—the sign company, at its own cost, shall repair such portion.

3. The warranty shall not include the maintenance of the color or painting; the replacement of tubes or electrical parts other than ballasts; or the repair of damage due to fire, earthquake, or any act of God other than wind and heat damage as specified.

SIGN SPECIFICATIONS

Patterns and Drawings

Shop drawings shall be furnished to the purchaser on all signs installed. Where structural drawings or engineering calculations are required, a copy of each shall be given the purchaser.

All full-size patterns and detail drawings shall be approved in writing by purchaser, as specified, prior to commencement of fabrication. Fabrication before receipt of approved drawings and patterns shall be at the risk of the sign contractor.

Sign Cabinet Framing

Basic cabinet construction shall be to U/L specification. The main structural framework of this sign shall consist of an all-welded, double-angle truss frame designed for a windload of _____(__) pounds per square foot. The plastic face and metal edges of this sign shall be designed for a windload of_____(__) pounds per square foot. The frame shall be jig-welded and assembled to insure a straight, true, and plumb frame.

All struts, tie rods, and frame bracing shall be installed in such a manner as to insure that no sag in the structural frame exists when it is removed from the jig, and sign faces and all other internal components are in place.

Steel for the sign frame shall conform to the standards of *Specifications for Structural Steel*, as adopted by the American Society for Testing Materials (A.S.T.M.), Serial and Designation No. A36-62T, latest edition.

Steel frame members within the sign shall be cleaned of grease and oil, after which all metal not shop-primed, or where prime coat is damaged, shall receive one (1) coat of metal primer. Steel frame will then receive two (2) coats of white in accordance with Section VII of *Specifications for Structural Steel.*

Electrical Components

All wiring and electrical components shall be to U/L standards.

Lamps. The translucent plastic face letters shall be illuminated from within by suitable lamps mounted pursuant to the layout required.

Wiring. All wiring shall be 90° C. type AWM 600V/1000V (thermo-plastic insulated) standard wire listed with an approved electrical testing laboratory.

Wiring connectors for wire splicing shall be listed with an approved electrical testing laboratory, 1000V capacity, mechanically secure connections.

Splices shall be so placed that all splices are accessible for easy inspection and repair.

Lampholders. All lampholders shall have silver-coated contacts and pitch-sealed backs for 800 MA ballasts. A U/L or ETL listed brand of lampholder shall be used.

The sign shall be equipped with an approved brand of waterproof external disconnect switch, flush-mounted.

Ballasts. All lamps shall be powered by ballasts approved by a recognized testing lab with the number and arrangement of lamps per ballast exactly as specified by the ballast manufacturer. No more than four (4) lamps shall be permitted on one (1) ballast. Each ballast shall be easily accessible for maintenance.

Plastic Faces and Lettering

Sign faces shall be of the shape and configuration shown on standard construction detail drawings. Each sign face shall be composed of plastic sheet sections, as shown on the

drawing. Faces shall be jig-routed to the control size; trimming to size by sawing shall not be acceptable.

All other welded seams and joints between plastic parts shall be made by the solvent-soaking process or polymerizable adhesive in such a manner that complete cohesion is obtained. Seams and joints shall be cleaned and polished smooth, with minimum discoloration or shadow, thoroughly annealed, and free from stains. No seams shall be permitted on the letter faces or return edges.

The fabricated letters reading "_____ Carwash" and the carwash symbol shall have faces made of_____ plastic. The returns shall be measured from face of letter to face of background, or as approved. Letters or symbols to be mounted on a plastic background will be mechanically attached and sealed around the edges with silicone.

The main background face shall have a fabricated plastic return made of_____ plastic.

The final size of the plastic face, when placed in the sign cabinet retainer, shall allow for the natural temperature expansion and contraction of the plastic.

Sheet Metal Fabrication and Service Access

The sign cabinet shall be designed and fabricated with a minimum of visible seams and exposed hardware. Service access shall be provided through suitable waterproofed access doors, as required to maintain lamps and lampholders. Waterproofed access doors shall be provided at the ends of panels for servicing ballasts.

All outside metal surfaces (cabinet edging and pylon covers) shall be a minimum of 20-gauge, electro-galvanized and chromate-treated steel sheet to insure paint adhesion.

The finished metal work shall be of high quality with all joints and breaks true to line. All reinforcing and attachment members necessary to fasten the metal work to the structural frame and column support shall be provided. Reinforcing members shall be spaced as required to assure flat, unyielding edging and pylon cover panels.

The sheet metal cover shall be in the minimum number of fabricated parts. Construction shall be in accordance with detailed drawings.

Where the column cover is applied to an existing column that is not square tube in construction, the column and column cover shall be modified to affect standard design.

Support Structure and Footing

The support column shall be furnished and installed as specified on the drawing. The square pipe shall be Grade B, electric furnace, open-hearth, or basic-oxygen, seamless or electric welded pipe (sulphur not to exceed 0.05%).

Those portions of the column support extending above grade shall be given a lacquer thinner wash, then painted with one (1) shop coat of zinc chromate primer. Exposed portion of column shall be painted to match pylon cover.

All column splice and column sign connections shall be welded. No bolted connections shall be substituted.

All weld slag shall be removed before priming and painting.

The concrete caisson footing shall be poured against natural soil. The top of the caisson shall have a one-inch wash-away from the pipe column to prevent water from collecting around the pipe.

The standard drawing calls for regular cylindrical caisson-type footing. If special or spread-type footing is needed due to certain soil conditions, this shall be taken into account. The owner's representative shall be the final authority in such deviation from the specifications. Adverse soil conditions shall be referred to the person responsible for engineering drawings.

Windload

The sign contractor shall prepare or approve final shop drawings for the sign frame and for the construction of the sign face capable of sustaining a windload of_____(__) pounds per square foot, and prepare structural drawings for the column, the column footing, or column structure capable of sustaining a windload of _____(__) pounds per square foot. A copy of the drawings shall be furnished to the purchaser.

Finish

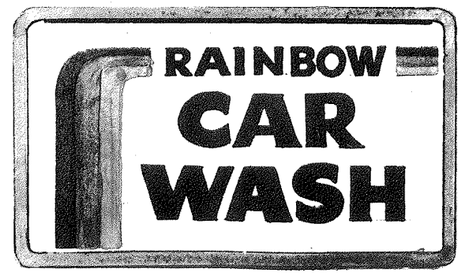
All metal surfaces shall have chalk or other marks removed with steel wool; shall be brushed thoroughly with clean #1000 lacquer thinner and blown off with compressed air (particularly in all corners and seams); and shall be wiped with a clean rag and air dried approximately two hours, or oven dried until no moisture remains.

Final color of sign cabinet edging and border shall match the plastic of the sign face returns. The final paint specification for the surface shall be approved by the purchaser.

All interior surfaces of sign cabinet, excluding surface area directly behind letters, shall be painted with two (2) coats of white, metal surfaces with standard synthetic enamel, and plastic surfaces with _____ base paint.

SIGNS FOR A SELF-SERVICE CARWASH

The basic exterior signs for the self-service carwash—called in this model the Rainbow Carwash—should be used according to the aesthetic requirements of the site location and the specifications of local sign ordinances. In order of preference, a tower, monument, or large wall sign should be displayed on the carwash's primary frontage or in a visually prominent position. The instructional signs needed for self-service should be consistently placed and no larger than is necessary for readability. Changeable copy signs should be used near the entrance to advertise competitive specials.



Company logo

Tower and Roof Signs

The tower sign will be the Rainbow Carwash's basic signature and all other signs should be coordinated to its design. A roof sign can be a modification of the tower sign, or a more elongated design may be used. A roof sign should be used where the site is at a distance from a major street or highway.

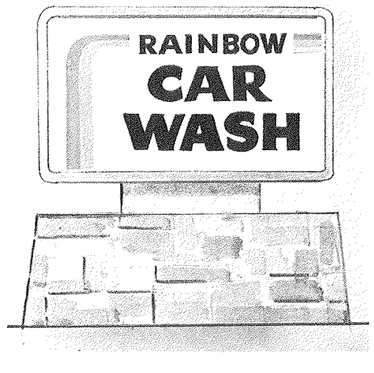
The figure shown here incorporates a readerboard into the tower sign design. The readerboard allows copy changes which may help to stimulate reader interest and which will be used to advertise specials.

Tower sign

Tower sign with readerboard

Monument Signs

Where local ordinances will not allow the standard tower sign, monument signs may be used. Monument signs may also contain changeable copy. They will normally be accompanied by the carwash hours.



Monument sign

Monument sign with readerboard

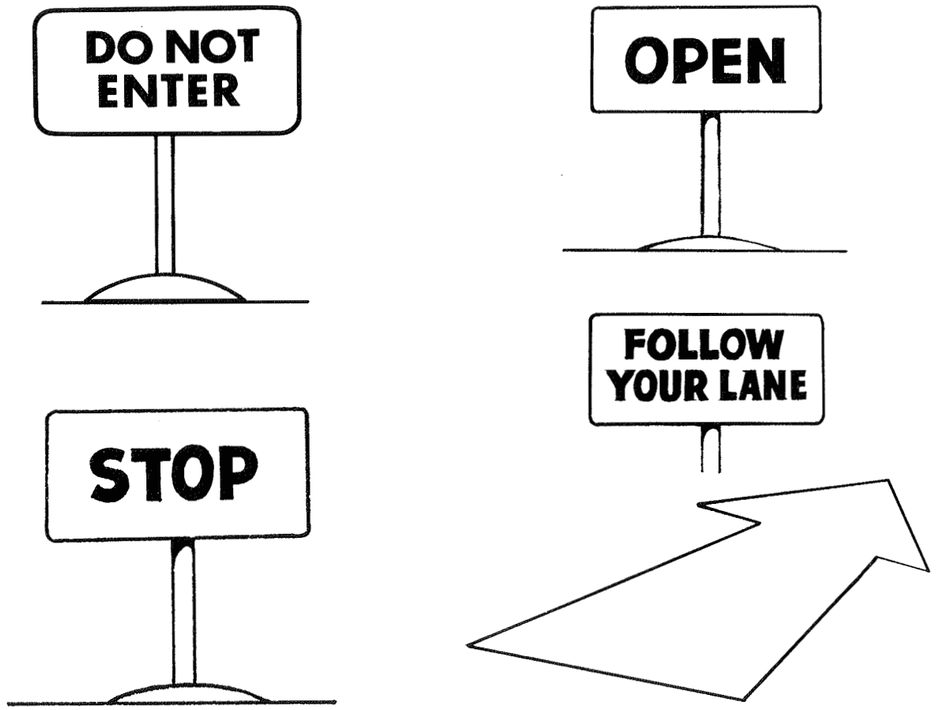
Wall and Under-Canopy Signs

All wall and under-canopy signs should be consistent with the design standards of the signage program. If a tower sign is not permitted through lease or ordinance, then an increased number of wall and panel signs are usually allowed for identification. Both illuminated and non-illuminated signs can be used.

Wall sign

Informational, Directional and Parking Signs

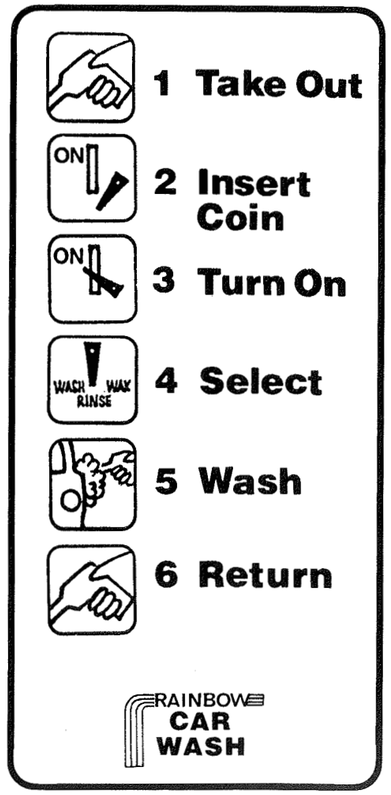
The number of informational and directional signs will vary according to the traffic requirements of each carwash. Portable traffic signs may augment stop and go signals and indicate maintenance or lanes closed.



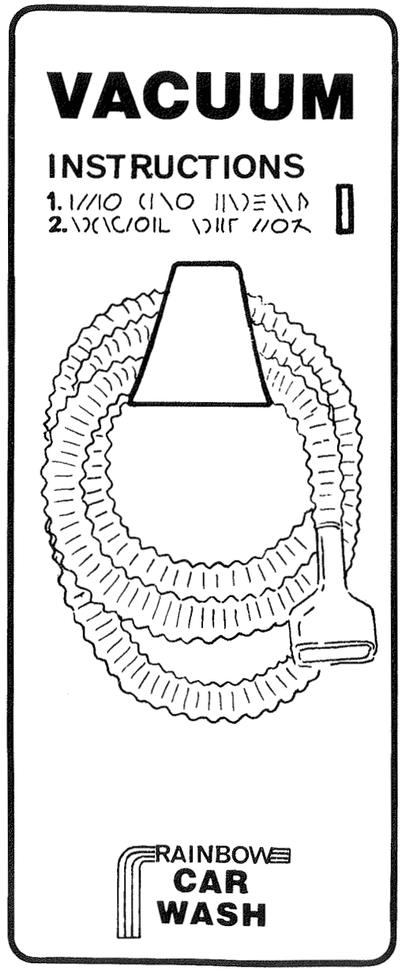
Informational and directional signs: portable and permanent

Informational and Instructional Signs

The self-service carwash requires a number of informational and instructional signs on its premises. Signs should include directions for how to operate the equipment, types of cleaning products or services available, company liability policy, vacuum instructions, hours of operation, and clearance signs. These should be permanent signs.



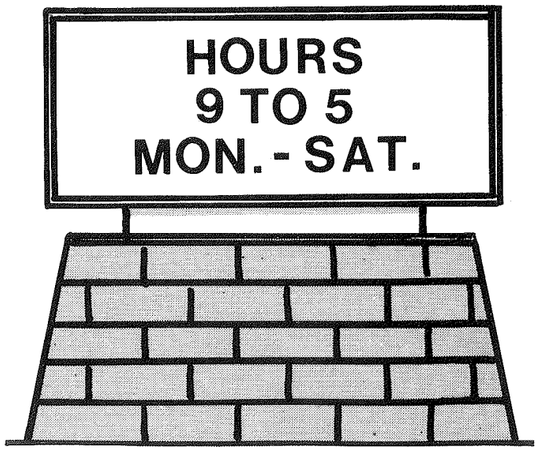
Instructional sign for a self-service carwash



Instructional sign

Instructional signs for a self-service carwash

Liability sign



Hours of operation sign

Clearance Signs

Carwash facilities should display a panel clearance sign with numerals according to actual clearance height.

Clearance sign

Auxiliary Signs

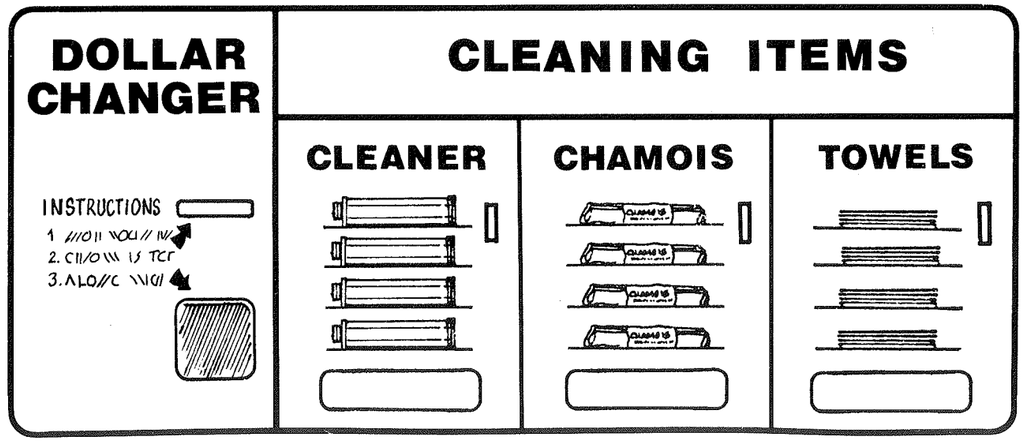
Self-service carwashes often provide auxiliary services such as money changing, towel and special cleaner purchases. If hours of operation are after dark, these signs will need to be illuminated.

Wall-Mounted Letters

Wall-mounted letters consistent with designs in the basic exterior sections may be used for directions at carwash facilities.

Information Plaques

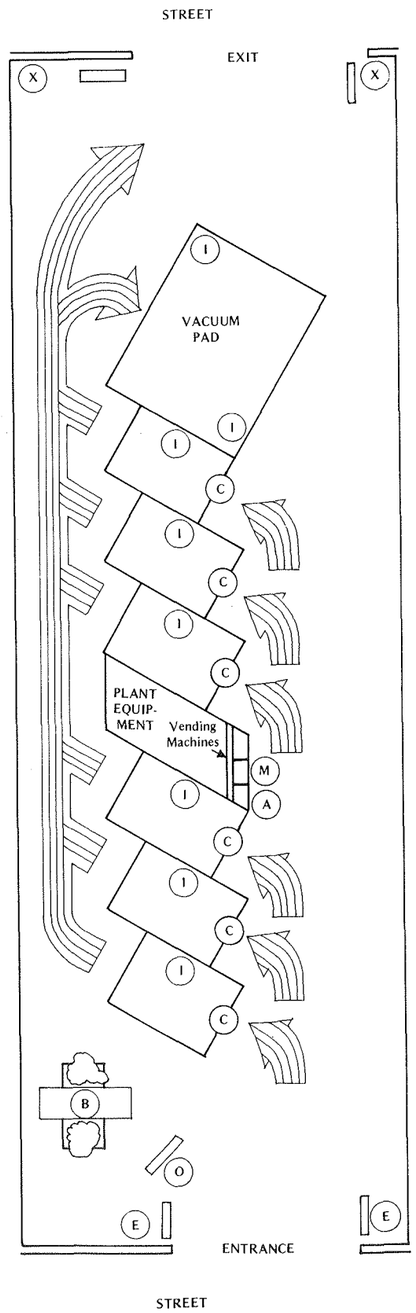
Information plaques made of detergent- and water-resistant materials may be used to indicate hours and service information as well as safety information, instructions and accessory sales.



Accessory sales and service signs

Site Placement of Signs on a Self-Service Carwash Site

The following diagram is an overview of a hypothetical self-service carwash site for the "Rainbow Carwash" company. Logo colors used on the signs are carried through in directional pavement markers.



LEGEND

A = Accessories and Cleaning Items
B = Business Identification Sign
C = Clearance
E = Entrance
I = Instructional
M = Money Changer
O = Open
X = Exit

SIGNS FOR THE CONVEYORIZED CARWASH

The basic exterior signs for the Pacific Carwash will be designed according to local regulations and architectural requirements. Landscaping and subdued displays will be used wherever possible to appeal to higher income levels and to emphasize the full-service nature of the carwash. Ideally, only one major display should be visible from each side of the building. One tower or roof sign will be used for locations near major roads; otherwise monument or wall signs will identify the business. Changeable copy displays will be used to promote special services and products available for purchase. Interior signage will be consistent in color and design with exterior identification signs.

Company logo

Tower and Roof Signs

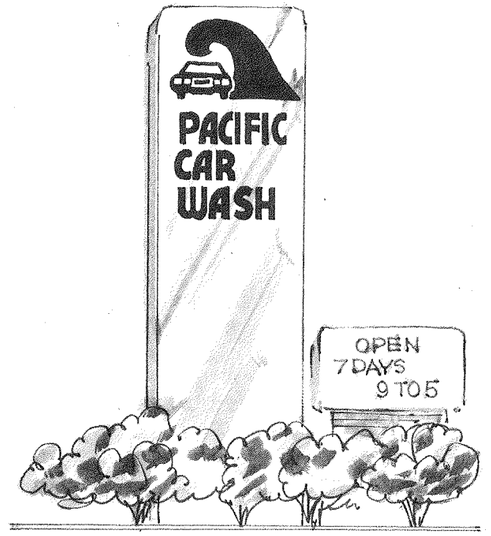
Tower and roof signs for the conveyorized Pacific Carwash will be used primarily where the location is near but not directly on a major street or highway. Landscaping will be used around the tower sign. A readerboard may be used to advertise specials where there is direct competition from other carwashes.

Tower sign without readerboard

Tower sign with readerboard

Monument Signs

Where subdued landscaping is desirable, monument signs will be used. Monument signs may also contain changeable copy and will normally display the carwash hours.



Two types of monument signs

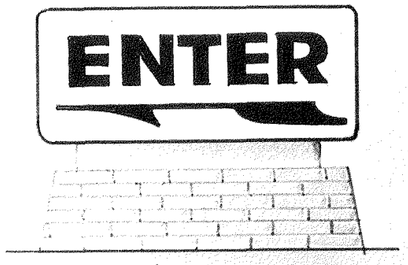
Wall and Under-Canopy Signs

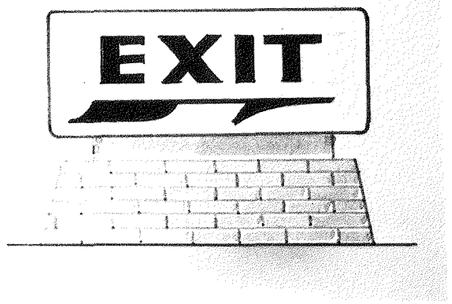
Wall and under-canopy signs will be integrated into the architecture of the building. When used for identification, they will display only the logo and name. These signs will generally be illuminated.

Wall sign

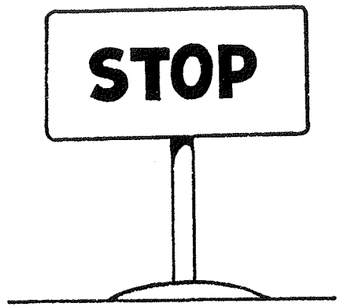
Informational and Parking and Directional Signs

The number of informational and directional signs will vary according to the traffic requirements of each carwash, but should be limited to those necessary for efficient operation of the business. Free-standing portable traffic signs may augment stop and go signals and indicate maintenance or lanes closed.





Permanent directional signs for a full-service carwash



Temporary directional signs are needed to direct traffic at a conveyorized carwash

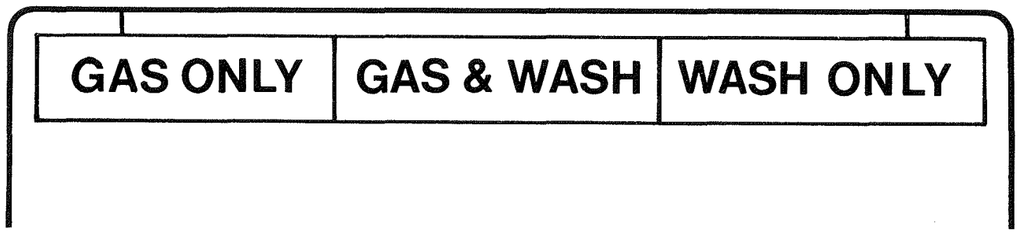
Painted Pavement Directional Signs

The conveyorized carwash operation may wish to use painted arrows and other graphics on the pavement areas of the wash in order to facilitate traffic flow.

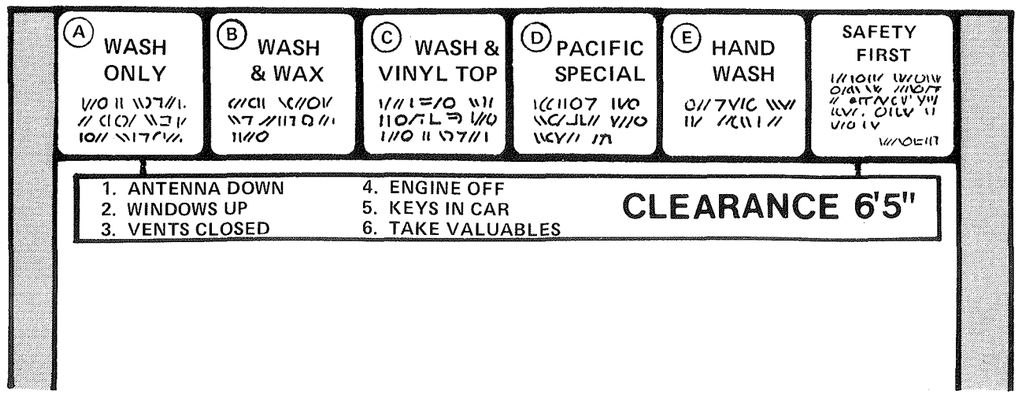
Additional Informational Directional or Instructional Signs

The conveyorized carwash requires a number of additional instructional and informational signs. Lane indicator signs and menu signs are often used to direct traffic to service areas. They may also give instructions and clearance information.

Pavement directional sign



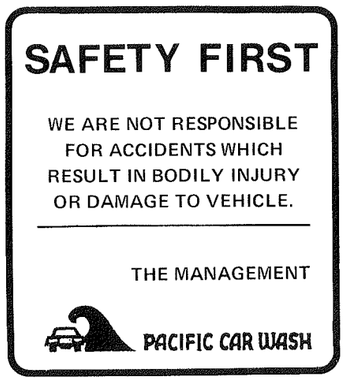
Lane indicator overhanging sign



Menu sign listing services and giving instructions

Information Plaques

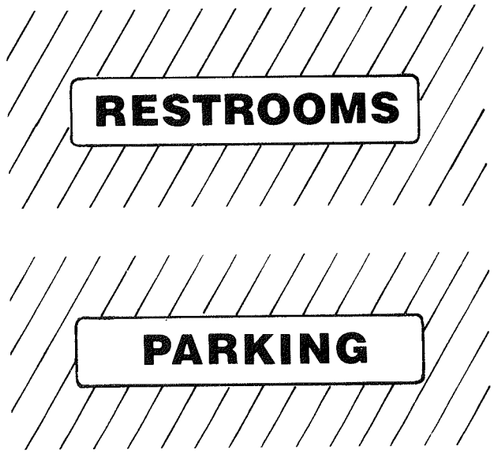
Information plaques made of detergent- and water-resistant materials may be used to indicate hours and service information as well as safety information, instructions and accessory sales. They should contain the Pacific logo.



Liability statement

Additional Signs

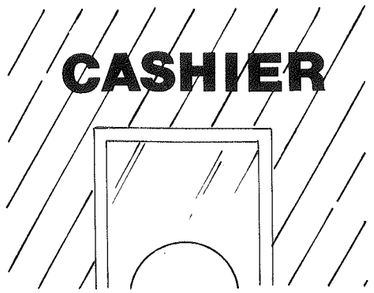
Additional directional and information signs may be used and will follow the basic exterior design pattern. The number of such signs will be the minimum necessary for efficient operation of the carwash.



Wall signs

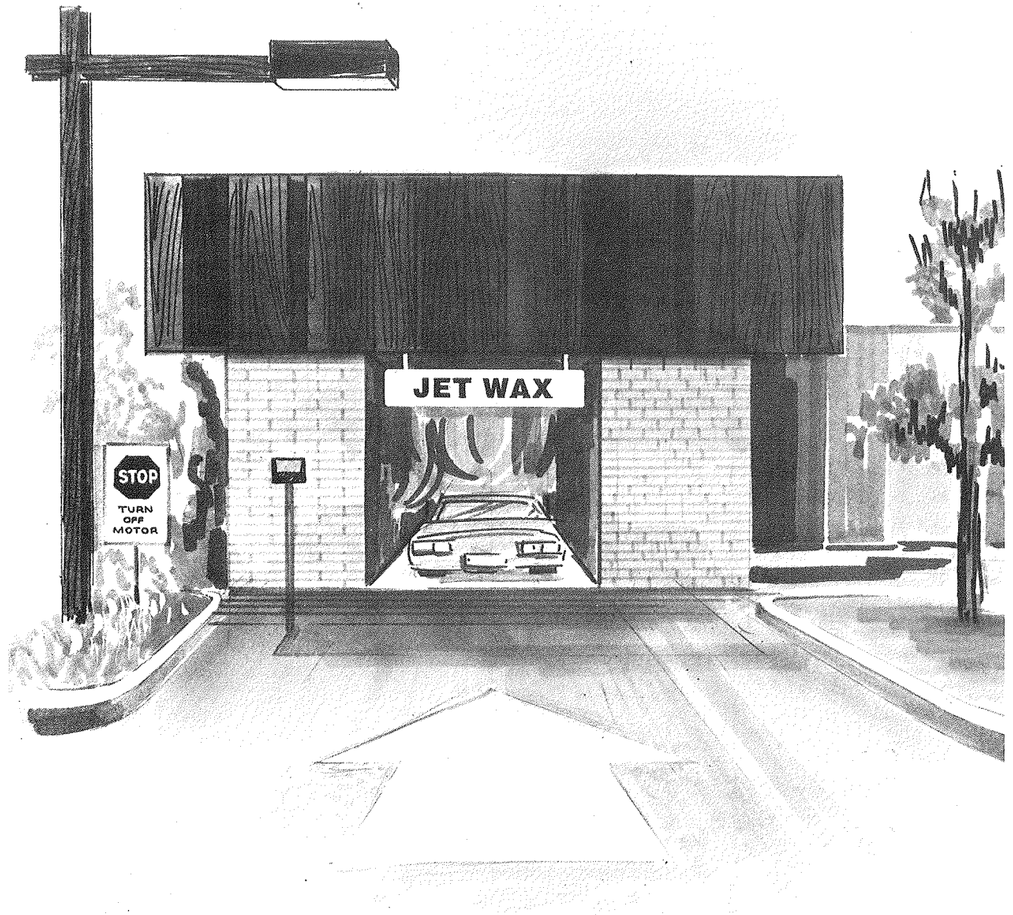
Cashier Window Signs

Cashier window signs will generally be non-illuminated. If required, additional information and direction signs will be consistent with designs presented in the basic exterior and parking sign sections. The following walk-up window signs may be used.



Cashier window sign for a conveyorized wash

Movable accessory service sign



Pavement arrow and promotional sign

Changeable Copy Wall Signs

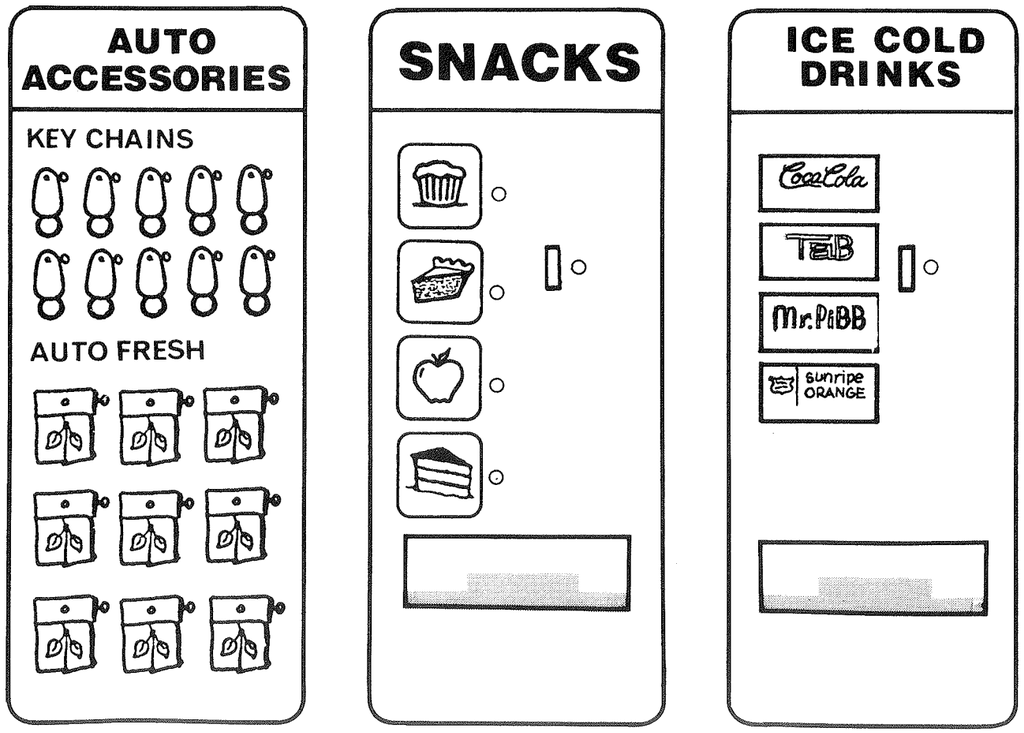
Copy indicating services, promotional items and sales will be used on a wall-mounted sign with changeable face.

Decals

For immediate identification, a window decal with the carwash name and logo may be used. Decals showing various credit cards and emergency telephone numbers are also available. Except for these decals, the use of window signs and graphics should be limited.

Interior Signs

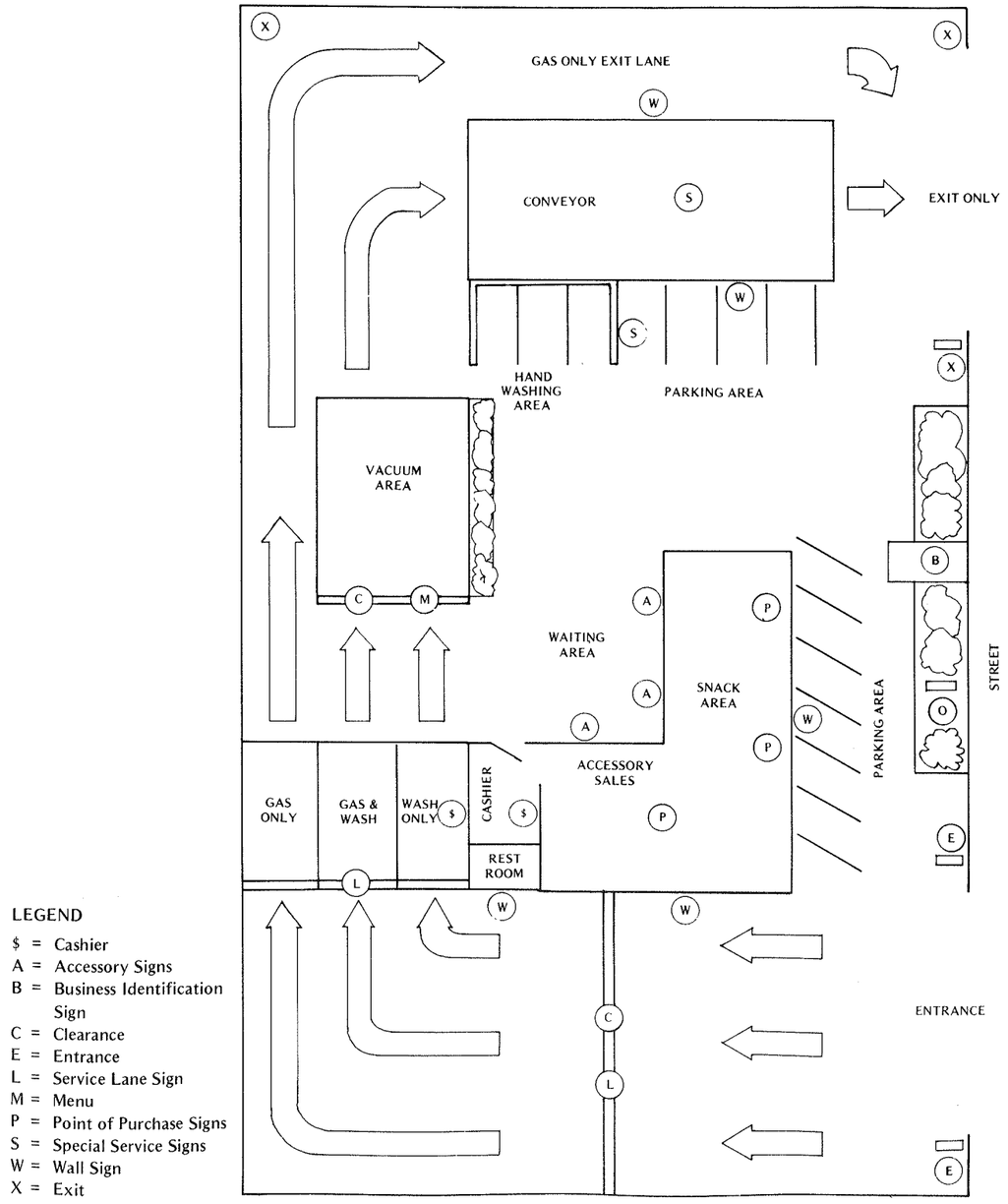
All interior signs should be coordinated to the basic design standards of the Pacific Carwash signage program, but need not bear the company name and logo. They may be used to direct and inform or to identify personnel. Interior promotion displays will also be used.



Interior or exterior signs

Site Placement of Signs on a Conveyorized Carwash Site

This diagram is an overview of a conveyorized carwash site for the hypothetical Pacific Carwash. Note how plantings and amenities serve to enhance this large facility.



LEGEND

- $ = Cashier
- A = Accessory Signs
- B = Business Identification Sign
- C = Clearance
- E = Entrance
- L = Service Lane Sign
- M = Menu
- P = Point of Purchase Signs
- S = Special Service Signs
- W = Wall Sign
- X = Exit

REFERENCES

Bartley, S.H. The Psychophysiology of Vision. In S.S. Stevens (Ed.), *Handbook of Experimental Psychology.* New York: John Wiley and Sons, 1951.

Chapanis, A. Color Names for Color Space. *American Scientist,* 1965, *53,* 327-346.

Claus, K., & Claus, R.J. *Visual Communication Through Signage. Volume 1: Perception of the Message.* Cincinnati, Ohio: Signs of the Times Publishing Co., 1974.

Claus, K., & Claus, R.J. *Visual Communication Through Signage. Volume 2: Sign Evaluation.* Cincinnati, Ohio: Signs of the Times Publishing Co., 1975.

Claus, K. & Claus, R.J. *Visual Communication Through Signage. Volume 3: Design of the Message.* Cincinnati, Ohio: Signs of the Times Publishing Co., 1976.

Claus, K. & Claus, R.J. *The Sign User's Guide: A Marketing Aid.* Palo Alto, California: Institute of Signage Research, 1978.

Meyers, W.S. & Anderson, R.T. *The Advertising Media Value of the On-Premise Sign.* National Advertising Co., 1974.

Miller, David B. Traffic Engineering Principles Applied to On-Premise Signage. Evanston, Illinois: Jack E. Leisch and Associates, Transportation Engineering, 1977.

National Electric Sign Association (NESA). *Reference Manual.* Chicago, Illinois: Research and Development Foundation of NESA, 1960.

Oliphant, R., Claus, R.J. & Claus, K. *Psychological Considerations of Lettering for Identification.* Cincinnati, Ohio: Signs of the Times Publishing Co., 1971.

Richards, O.W. Vision of Levels of Night Road Illumination. *Highway Research Board Bulletin.* 1952, *56,* 36-65.

Richards, O.W. Night Driving Seeing Problems. *American Journal of Optometry.* 1958, *35,* 565-579.

Soar, R.S. Height-Width Proportion and Stroke Width in Numeric Visibility. *Journal of Applied Psychology,* 1955, *39,* 43-46.

Tinker, M.A. *Legibility of Print.* Ames, Iowa: Iowa State University Press, 1963.

Zusne, L. *Visual Perception of Form.* New York: Academic Press, 1970.

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