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PARALLEL SIGN COMPUTATION RULES OF THUMB

USSCF ON-PREMISE SIGNS / RESEARCH & STANDARDS

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Parallel Sign Computation Rules of Thumb

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Parallel Sign Size Rules of Thumb

How to determine Parallel Sign / Wall Sign Size based on research

For signs mounted on buildings - this includes or applies to all types of building-mounted on-premise signs, including but not limited to: Illuminated sign cabinets, illuminated individual letters, individual illuminated letters mounted on raceways, illuminated signs and letters mounted on staging panels, non-lit carved wood and HDU signs*, non-lit sign panels*.

1. Use the USSCF Sign Area Calculator

(also found in the *USSCF Guideline Standards for On Premise Signs* 2018, *USSCF Computation Equations* 2018 and the APA's *Street Graphics & the Law* 2015)

This calculator applies to the primary copy on an on-premise sign, not all the copy; primary copy is typically the name of the establishment and branding that may go along with it; in most cases no more than (20-40) characters, but there can be exceptions.

SIGN SIZE / SIGN AREA CALCULATION

1. Determine Height of Characters (in inches)	
2. Determine the area for each Character + convert to square feet; assume Character width = Character height For instance, 12" letter x 12" = 144 square inches or 1 SF	
3. Determine area the number of Characters in the primary copy on the sign	
4. Mulitply the number of Characters in the primary copy by the area of each character (in SF)	
5. Determine the negative space of the sign, based on the Character area determined above: Character area x 1.6 = the negative space required	
6. Total sign size / sign area Character area + Negative space area = Total sign area	

* Non-illuminated and externally illuminated parallel signs may need further size adjustment based on sign lighting research conducted by the USSCF. Because internally illuminated signs are easier for motorists to see and read, non-lit and externally illuminated signs may need additional size adjustment in order to compensate.

Parallel Sign Size Rules of Thumb

2. Determine the “letter height” for the parallel sign / wall sign

Use the chart and/or forumlae provided in the USSCF’s 2006 study on parallel signs : *USSCF Parallel Sign Legibility* 2018. Both the chart and the formulae will provide the necessary adjustment in parallel sign letter height based upon the research. This publication is avaliable in printed form, or via fee download at: www.usscfoundation.org/research-library/

Here is the look-up chart:

	Letter Height in Inches Number of Lanes				
Offset from Curb (ft)	1	2	3	4	5
10	4	6	8	10	12
20	6	8	10	12	14
40	10	12	14	16	18
60	14	16	18	20	22
80	18	20	22	24	26
100	22	24	26	28	30
125	27	29	31	33	35
150	32	34	36	38	40
175	37	39	41	43	45
200	42	44	46	48	50
225	47	49	51	53	55
250	52	54	56	58	60
275	57	59	61	63	65
300	62	64	66	68	70
325	67	69	71	73	75
350	72	74	76	78	80
375	77	79	81	83	85
400	82	84	86	88	90

Note that parallel sign / wall sign letter height for any particular sign is determined based on specific roadway conditions (number of lanes of traffic) and the distance from the sign to the roadway curb or roadway edge (Offset from Curb).

Parallel Sign Size Rules of Thumb

Or, use the formulae for determining letter height provided in the 2006 study.

Here are the formulae:

Equation 1 - Legibility Index Unknown

$$LH = \frac{LN \times 10 + LO}{5}$$

LH = Letter Height in Inches
LN = Number of Lanes of Traffic
LO = Lateral Offset from Curb in Feet

Equation 2 - Legibility Index Known
See Table 1

$$LH = \frac{LN \times 10 + LO}{(LI / 6)}$$

LH = Letter Height in Inches
LN = Number of Lanes of Traffic
LO = Lateral Offset from Curb in Feet
LI = Legibility Index (Table 1)

* NOTE: The Table 1 referred to above is the original USSCF Legibilty Index, found in the USSCF Sign Standards and other publications. The standard Legibility Index value is 30; a Legibility Index value of 30 will yield correct results in virtually all situations.

Parallel Sign Size Rules of Thumb

3. Return to the USSCF Sign Area Calculator shown on Page 1

Input the parallel sign letter height value found from the chart or the formulae and perform the calculations in (6) easy steps.

Here is an example - for a building-mounted sign on a (4) lane roadway with an offset of 100'-0" and primary sign copy: **RICHARD'S RESTAURANT** (18 Characters):

SIGN SIZE / SIGN AREA CALCULATION

1. Determine Height of Characters (in inches)	28"
2. Determine the area for each Character + convert to square feet; assume Character width = Character height For instance, 12" letter x 12" = 144 square inches or 1 SF	784 sq inches or 5.44 SF
3. Determine the number of Characters in the primary copy on the sign	18
4. Mulitply the number of Characters in the primary copy by the area of each character (in SF)	97.92 SF
5. Determine the negative space of the sign, based on the Character area determined above: Character area x 1.5 = the negative space required	146.88SF
6. Total sign size / sign area Character area + Negative space area = Total sign area	244.80 SF

4. The resulting sign area / sign size applies to the proposed sign, regardless of style of construction

255 SF (rounded) then is the recommended sign area / sign size for a parallel sign or wall sign at this particular location to insure sign visibility and sign legibility based on the needs of the motorist and traffic safety. The sign design itself could be cabinet style or individual letters. If individual letters, the sign message will fit within the sign area / sign size recommended. The final calculation does not determine a particular "letter height" if the sign consists individual letters or characters. The critical issue is the sign area.

Parallel Sign Research

All sign codes in the United States have regulations establishing the size of building mounted and/or wall mounted on-premise signs. Building mounted sign size is an example of content-neutral time, place and manner regulation of speech (on signs) that is permitted under First Amendment case law, and that the US Supreme Court recently discussed in the 2015 *Reed v Gilbert* case.

The *USSCF On-Premise Sign Standards*, published in 2003, were based on numerous university level scientific studies aimed at quantifying various aspects of on-premise sign functionality, including sign size, legibility and height for on-premise signs that are oriented in a perpendicular fashion to the driver. These signs are typically referred to as freestanding signs, pylon signs, monument signs, projecting signs or any type of sign that is situated alongside a roadway and is installed in a perpendicular fashion to the roadway and facing a driver's line of sight.

The USSCF research published in 2006 extended this inquiry to the subject of "parallel" signs. *On-Premise Signs: Determination of Parallel Sign Legibility and Letter Heights*, Pennsylvania State University (2006) describes the development of, and rationale for, a mathematical model that calculates letter heights for parallel-mounted on-premise signs. The parallel sign research integrated the original legibility standards described earlier in these standards, so that the letter heights developed for perpendicular signs form the basis for letter heights on parallel signs with various lateral offsets (distance from the edge of the roadway to the sign).

Finally, the most recent parallel sign study further refines the work done in 2006 and completes the integration of parallel sign area / sign size with the original USSCF "Sign Area Calculator": *Parallel-mounted On-premise Letter Height and Sign Size*, Garvey & Associates (2019).

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