Attachment 1. What Size Should A Sign Be? Using the USCC Rule of Thumb Calculations for Sign Area

Objective: Use an objective, research-based methodology rather than a subjective approach to assess an appropriate maximum sign area for an Off Premise Sign.

United States Sign Council Foundation (USSC) Rule of Thumb Calculation

The USSC, a non-profit organization founded in 1998, is an industry leader in performing on-premise, university level, sign research and publication of industry standards.

The USSC provides a rule of thumb formula for determining appropriate sign area.[1] The rule of thumb calculation chart is shown in Table 1 below.

Table 1. USSC Sign Size/Sign Area Calculation[1]

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	

Inputs for Calculations:

1. Determining Character Height in Inches

For Table 1, one of the variables is the Height of Characters (inches) or Letter Height. USCC provides a look up chart for determining Letter Height (Table 2):

Table 2. USSC Letter Height in Inches Based on Curb Offset

	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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1.a. Offset from Curb

To arrive at a letter height using the lookup chart, however, one must know the Offset from Curb distance. As an example, a subdivision plat of the Cottonwood Addition from 1957 details a 16-foot easement for sidewalk and parking for lots facing the highway.2 However, present day maps show the highway Right of Way varies widely along Highway 191.

Figure 1. Snapshot of West Bluff from Town of Bluff Zoning Map Showing Varying Highway Right of Way[3]

Figure 2. Snapshot of West Bluff Showing Building Placement from Utah.gov[4]

For the example in Table 2, assume that the Offset from the Curb is 16 feet. Also assume this is a check on the appropriateness of the proposed 20 square foot sign for off-premises signs in the proposed sign ordinance. One possible configuration would be a sign sized 5 feet wide and 4 feet high.

Since signs cannot be placed in the Right of Way, if a sign is 5 feet wide, then the offset from the curb would be 18.5 feet (16 feet + ½ of a 5 foot wide sign). Using Table 2 above, the Letter Size would be ~ 7.5 inches for a 2 lane road.

However, assume that the Offset from the Curb is 32 feet due to the non-uniform actual plot lines in Bluff along Highway 191. Again, since signs can't be placed in the Right of Way, and assuming a 5 ft wide sign, then the Offset from the Curb is 34.5 feet (32 = ½ of a 5 foot wide sign). Using Table 2, the Letter Height in inches for a 2 lane road with a ~35 foot Offset from the Curb is over 10 inches.

2. Letter Height and Letter Width

The USSC advises using the same dimension for Letter Height and Letter Width. If a letter height of 6 inches is needed, then the letter width would also be 6 inches. This approach accounts for letter width and spacing between letters.

3. # of Characters in the Sign

For Off-Premise signs, we assumed that text for the business name would be required, but an additional line of text would be needed for wayfinding. For # of Characters or Letters, a quick analysis was done on Bluff business names, along with potential second line of text. Note this does not include logos or other graphics, only letters. If a business name were to be combined with a second line of text, this could easily account for 30 or more letters.

Table 3. Number of Letters in Bluff Businesses

Using the names below, the average number of letters is 17.

Bluff Art & Curiosity Shoppe	24
Coral Sands RV Park	16
Cottonwood RV Park	16
Cow Canyon Trading Post	20
Willow Street Cottages	20
Twin Rocks Trading Post	19
La Posada Pintada	15
Cottonwood Steakhouse	20
Recapture Lodge	14
Canyon Smokehouse	16
Comb Ridge Eat and Drink	20
Desert Rose Resort & Cabins	23
Bluff Dwellings	13
Cadillac Ranch RV Park	19
Bluff Fort	9
Bluff Gardens	12

Kokopelli Inn	12
Tse’ Kooh Outfitters	18
Wild Expeditions	15
Twin Rocks Trading Post	18
K & C Convenience Store	19

Examples of Number of Letters in Second Line of Text

Possible second lines of text were developed and analyzed.

Boutique Inn	11
Historic Site	12
Turn Here	8
Ahead on right	12
Smoked Meats | Serious Eats	23
Pool, Slide Shows	14

4. Multiply # of Characters by Character Area

The next step in the calculation is to multiple the # of characters by the character area. In our example, assume 32 characters or letters and each letter requires an area of .44 sq feet (8 x 8 inches)

5. Determining Negative Space

The USSC uses a standard of 60% negative space to 40% space with text/graphics. In the calculation, negative space is 1.5 times the area needed for letters/characters.

Putting It All Together: Excel Model for USSC Rule of Thumb Calculations

Using USSC,’s Rule of Thumb Calculations for Sign Area, an Excel model was developed and is shown in Tables 4a and 4b below. Items in yellow are input variables.

As shown in Table 4a, for a sign with Letter Height of 7.5 inches and 32 letters, a 31 square foot sign is needed. This exceeds the 20 square foot sign parameter proposed for Off Premise Signs. Please note this does not include a logo, just text.

Table 4b provides the calculations for a Letter Height of 10 inches and 32 letters. A sign area of over 50 square feet should be planned using USSC guidelines. Again, this well exceeds the 20 square foot sign area proposed for Off Premise signs.

**Table 4a. USSC Rule of Thumb Calculation for 8 Inch Letters
(2 lane road, sign is 18.5 feet from curb, 32 letters on sign)**

Parameter	Value
Height of letter (inches)	7.5
Width of letter (inches)	7.5
Number of sq inches for Each Letter	56.25
Conversion to sq feet (sq inches/foot)	144
# of Sq Ft/Letter	0.39
# of letters for brand	17
# of letters for other text	15
Total # of letters	32
Space needed for characters (sq feet)	13
Ratio of Characters to Neg Space	1.5
Space needed for Neg Space	19
Total Space needed (sq feet)	**31**

Values in yellow shaded fields are input variables.

**Table 4b. USSC Rule of Thumb Calculations for 10 Inch Letters
(2 lane road; sign is 32 feet from curb, 32 letters on sign)**

Parameter	Value
Height of letter (inches)	10
Width of letter (inches)	10
Number of sq inches for Each Letter	100
Conversion to sq feet (sq inches/foot)	144
# of Sq Ft/Letter	0.69
# of letters for brand	17
# of letters for other text	15
Total # of letters	32
Space needed for characters (sq feet)	22
Ratio of Characters to Neg Space	1.5
Space needed for Neg Space	33
Total Space needed (sq feet)	**56**

Values in yellow shaded fields are input variables.

Sources:

1. *Parallel Sign Computation Rules of Thumb. USSCF On-Premise Signs/Research & Standards*. USSC Foundation. https://usscfoundation.org/wp-content/uploads/2019/08/USSCF-Parallel-Sign-Computation-Rules-of-Thumb-Aug-7-2019.pdf . Accessed January 30, 2024.

2. Record of Subdivision Plat/Bluff/Cottonwood Addition Subdivision, 1957. San Juan County. https://sanjuancounty.org/subdivision . Accessed January 30, 2024.

3. Town of Bluff Zoning Map. https://www.townofbluff.org/planning-zoning/maps/ Accessed January 30, 2024.

4. Utah San Juan County Parcels LIR. Accessed January 30, 2024. https://opendata.gis.utah.gov/datasets/utah-san-juan-county-parcels-lir/explore?location=37.281084%2C-109.567836%2C-1.00

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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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