TK CONSULTING GROUP LLC

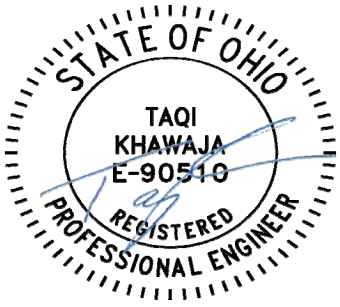
3/9/2026

RE:	Structural Certification Letter		
Project Name:	Taste Buds Kitchen - Rocky River, OH		
Project Address:	21844 Center Ridge Rd Rocky River, OH 44116		
Design Codes:	2024 Ohio Building Code ASCE 7-16 Minimum Design Loads for Associated Criteria for Buildings and Other Structures		
Site Criteria:	Risk Category	II	
	Exposure Category	C	
	Wind Speed	109	MPH
	Ground Snow Load	20	PSF
	Seismic Design Category	C	

To Whom It May Concern,

TKCG has performed a structural analysis for the installation of a Wall Mounted sign structure at the address referenced above. The analysis was performed via TKCG proprietary calculation tool and Risa 3D, a Finite Element Analysis software. The results are shown in the attached pages. All structural members of the sign and fasteners have been found to have adequate structural capacity.

Sincerely,



Taqi Khawaja, PE
Chief Engineer
OH PE #:PE.90510

Sign Geometry

Sign Height	1.00	ft	Sign Type	Solid Attached to Wall	
Sign Length	6.83	ft	Sign Height:	8.5	ft
Sign Depth	0.42	ft	Mean Roof Ht:	8.5	ft
Raceway Depth	0.25	ft	Mounting Direction	X	
Raceway Height	2.29	ft	Open Face %	0%	
Bottom of Sign to Bottom Bolt, Y1	0.25	ft			
Bolt Spacing	0.50	ft			

Dead Load

Sign Weight	101.00	lb
Dead Load Moment Arm	0.33	ft
Dead Load Moment	33.67	lb-ft
Dead Load Shear in Fasteners	101.00	lb
Dead Load Tension in Fasteners	67.33	lb

Live Load:

No live load considered for the design of the Wall Mounted sign.

Snow Load

p_g=	20	psf
C_e=	1.00	Exposure Factor
C_t=	1.00	Thermal Factor
I=	1.00	Important Factor
p_f=	14.00	psf
Total Snow Load	63.78	lb
Snow Load Moment Arm	0.33	ft
Snow Load Moment	21.26	lb-ft
Snow Load Shear in Fasteners	63.78	lb
Snow Load Tension in Fasteners	42.52	lb

Ice Loads:

t_d=	2.62 in	
t=	1.50	Nominal Ice Thickness
I_i =	1	Importance Factor
h=	8.5	ft, Height Above ground
f_z =	0.873	Height Factor
k_{zt} =	1	Topographic Factor
Ice Load Pressure	12.22 psf	
Ice Density	56 pcf	
Ice Load on Face	83.53	lbs
Ice Load on Top	55.69	lbs
Total Ice Load	139.22	lbs
Face Moment Arm	0.78	ft
Top Moment Arm	0.33	ft
Total Moment	83.37	lb-ft
Ice Load Shear in Fasteners	139.22	lbs
Ice Load Tension in Fasteners	166.73	lbs

Wind on Ice:

$q_z=0.00256\ K_z\ K_{zt}\ K_d\ V^2$

V =	40 mph	Simplified wind pressure
K_z =	0.848884152	Velocity Pressure Exposure
K_{zt} =	1	Topographic Factor
K_d =	0.85	Wind Directionality Factor
I_w =	1	Importance Factor
q_z =	2.96 psf	Velocity Pressure

$p=q_h[(GC_p)-(GC_{pi})]$

p=	2.96 psf	
q_h =	2.96 psf	
GC_P =	1	
GC_{PI} =	0	
Wind Load on Face	15.15	lbs
Wind Load Moment Arm	0.38	ft
Wind Moment	5.68	ft-lb
Wind Load Shear	0.00	lbs
Wind Load Tension	11.36	lbs

Wind Load

$q_z=0.00256\ K_z\ K_{zt}\ K_d\ V^2$

V =	109	Simplified wind pressure
K_z =	0.85	Velocity Pressure Exposure
K_e =	1	Ground Elevation Factor
K_{zt} =	1	Topographic Factor
K_d =	0.85	Wind Directionality Factor
I =	1	Importance Factor
Wind Load on Face	157.46	lbs
Wind Load Moment Arm	0.38	ft
Wind Moment	59.05	ft-lb
Wind Load Shear	0.00	lbs
Wind Load Tension	118.10	lbs
q_z =	21.95 psf	Velocity Pressure
GC_P =	1.40	External Pressure Co-efficient
GC_{PI} =	0	Internal Pressure Co-efficient
p=qh[(GCp)-(GCpi)] =	30.72 psf	

Seismic (Non Structural Architectural Component)

Spectral Acceleration, Short Period, S_{ds} =	0.22		F_p	21.92	Eq. 13.3-1	**Governs**
Response Modification Factor, R_p =	3.00	For Signs	F_{pMax}	35.07	Eq. 13.3-2	
Amplification Factor, a_p =	2.50	For Signs	F_{pmin}	6.58	Eq. 13.3-3	
Height of Structure, z =	8.50	ft				
Mean Height of Roof, h =	8.50	ft				
Importance Factor, I_p =	1.00					
Horizontal Seismic Force, F_p =	21.92	lbs	Vertical Seismic Force, F_v =	4.38	lbs	
Horizontal Seismic Shear	21.92	lbs	Vertical Seismic Moment	1.46	lb-ft	
Horizontal Seismic Tension	21.92	lbs	Vertical Seismic Shear	4.38	lbs	
			Vertical Seismic Tension	2.92	lbs	

ASCE 7-16 Basic Load Combinations	Dead Load	Live Load	Snow Load	Ice Load	Wind on Ice	Wind Load	Earthquake Load (v)	Earthquake Load (h)
1	1.4	0	0	0	0	0	0	0
2a	1.2	0	0.5	0	0	0	0	0
2b	1.2	0	0.5	0.2	0	0	0	0
3a	1.2	0	1.6	0	0	0.5	0	0
3b	1.2	0	1.6	0	0	0	0	0
4a	1.2	0.5	0	0	0	1	0	0
4b	1.2	0	0.5	0	0	1	0	0
4c	1.2	0	0.5	1	1	0	0	0
4d	1.2	0	0	1	0	0	0	0
5a	0.9	0	0	0	0	1	0	0
5b	0.9	0	0	1	1	0	0	0
6	1.2	1	0.2	0	0	0	1	1
7	0.9	0	0	0	0	0	-1	1

Load Summary								
	Dead Load	Live Load	Snow Load	Ice Load	Wind on Ice	Wind	Earthquake Load (v)	Earthquake Load (h)
Moment	33.67	0.00	21.26	83.37	5.68	59.05	1.46	0.00
Shear	101.00	0.00	63.78	139.22	0.00	0.00	4.38	21.92
Tension/Compression	67.33	0.00	42.52	166.73	11.36	118.10	2.92	21.92

ASCE 7-16 Basic Load Combinations	Moment	Shear	Tension
1	47.13	141.40	94.27
2a	51.03	153.09	102.06
2b	67.70	180.93	135.41
3a	103.94	223.24	207.88
3b	74.41	223.24	148.83
4a	99.45	121.20	198.90
4b	110.08	153.09	220.16
4c	140.08	292.31	280.15
4d	89.35	90.90	178.70
5a	89.35	90.90	178.70
5b	119.35	230.12	238.69
6	46.11	160.26	114.14
7	28.84	108.43	79.59

FASTENER SCHEDULE							
FASTENER			HORIZONTAL SPACING PER WALL CONSTRUCTION (INCHES)				
HARDWARE	DIA.	QTY. PER SPACING	MASONRY	WOOD STUDS	EIFS/DRYVIT OVER 1/2" MIN PLYWOOD	EIFS/DRYVIT OVER 1/2" MIN GYPSUM/DENGLASS	METAL PANEL OVER METAL STUD[7]
WOOD SCREW[1]	#10	2	NO	24	24	24	NO
TEK SCREW[2]	#10	2	NO	NO	NO	NO	24
LAG BOLT[3]	3/8"	2	NO	36	24	24	NO
THRU-BOLT[4]	3/8"	2	48	NO	24	24	24
EXPANSION ANCHOR[5]	3/8"	2	48	NO	NO	NO	NO
CARBON STEEL SCREW ANCHOR[6]	3/8"	2	48	NO	NO	NO	NO
TOGGLE BOLT[7]	3/8"	2	24	NO	16	16	24
ALUMINUM STUDS[8]	1/4"	2	24	NO	24	24	NO

1) *MINIMUM 1.5" EMBEDMENT INTO WOOD STUDS, OR MIN 1/4" PROTUDED FROM THE BACK OF PLYWOOD.*

2) *MIN 1/4" PROTUDED FROM THE BACK OF METAL STUD. MINIMUM 20 GAUGE METAL THICKNESS.*

3) *MINIMUM 2.5" EMBEDMENT INTO WOOD STUDS, OR MIN 1/4" PROTUDED FROM THE BACK OF PLYWOOD.*

4) *REQUIRES 2"x2"x1/4" STEEL BACKING PLATE.*

5) *USE HILTI HLC SLEEVE ANCHOR OR EQUIVALENT WITH 1-1/4" MIN EMBEDMENT. ANCHOR SHALL BE INSTALLED IN CONCRETE OR GROUT FILLED CMU UNITS ONLY.*

6) *USE HILTI KWIK HUS-E OR APPROVED EQUIVALENT WITH 1-5/8" MIN EMBEDMENT. ANCHOR SHALL BE INSTALLED IN CONCRETE OR GROUT FILLED CMU UNITS ONLY.*

7) *THROUGH BLOCK FACE FOR CLAY BRICKS.*

8) *STUDS TO BE 6061 ALUMINUM. MINIMUM SILICONE STRENGTH TO BE 300PSI.*

9) *IF THE CONTRACTOR ENCOUNTERS A METAL/WOODEN STUD, HE/SHE SHALL FOLLOW THE LAG/TEK SCREW GUIDELINE AS SHOWN ON THE SCHEDULE ABOVE. THE CONTRACTOR SHALL MAKE EVERY ATTEMPT TO USE STUDS WHENEVER POSSIBLE.*

NOTE: *THIS FASTENER SCHEDULE IS INTENDED FOR USE WITH SIGN CONNECTION TO BUILDING ONLY. IT IS ASSUMED THAT THE BUILDING IS RIGID, FREE OF STRUCTURAL DEFECTS, AND STRUCTURALLY SUFFICIENT TO CARRY THE LOAD OF THE SIGN. CONTRACTOR SHALL FOLLOW FASTENER SCHEDULE TO DETERMINE FASTENER TYPE TO BE USED FOR INSTALLATION AND SHALL ENSURE THE FASTENER HAS A RIGID AND STRONG CONNECTION. CONTRACTOR SHALL FOLLOW MANUFACTURERS SPECS FOR FASTENER/ANCHOR INSTALLATION. CONTRACTOR SHALL ENSURE THAT FASTENER BEARS ON WALL FACADE IMMEDIATELY AFTER INSTALLATION. CONTRACTOR SHALL NOT USE EXISTING HOLES PRESENT IN THE CURRENT FASCIA FOR FASTENER INSTALLATION.*