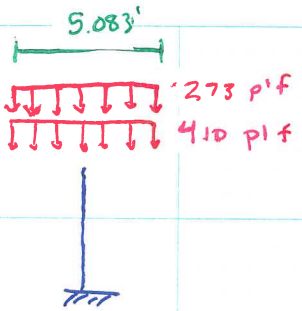
BRITT, PETERS & ASSOCIATES, INC.
Consulting Engineers (864) 271-8869 Fax (864) 233-5140
101 Falls Park Drive, Ste. 601 • Greenville, SC 29601
www.brittpeters.com

Subject: TACO BELL - TAKOMA PARK, MD
Project No: _____ Sheet: _____
By: DRS Date: 4/5/2016

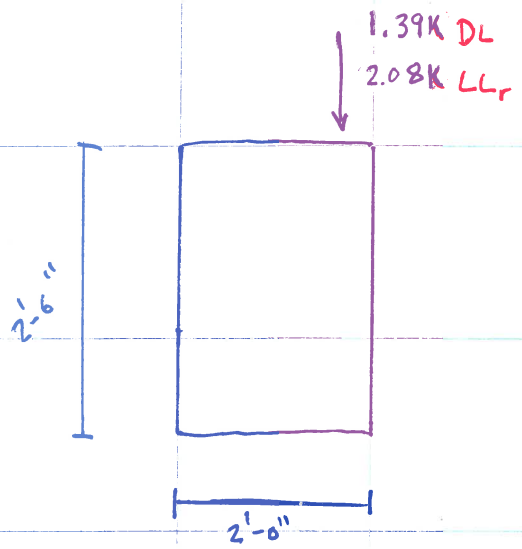
WALL FTG UNDER POST @ SIDE WINDOWS



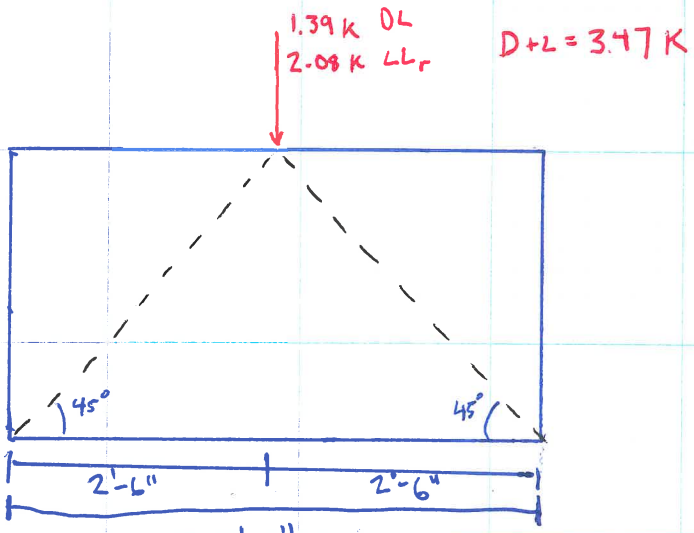
TRIBUTARY WIDTH = 5'-1" = 5.083'

DL = 20 PSF • 27.33'/2 = 273.4 plf
LL_r = 30 PSF • 27.33'/2 = 410.1 plf

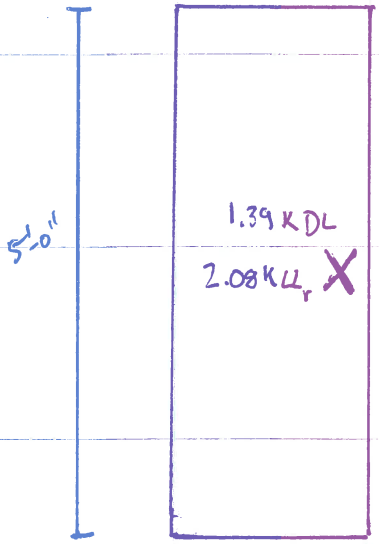
DL = 273.4 • 5.083 = 1.39 K
LL_r = 410.1 • 5.083 = 2.08 K



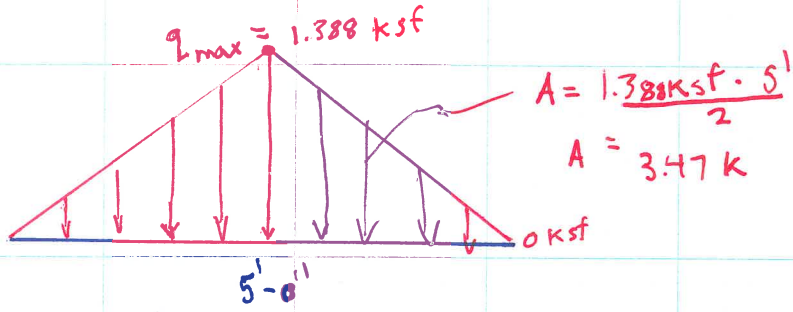
SECTION



ELEVATION



PLAN



PRESSURE DISTRIBUTION ALONG BOTTOM OF FOOTING

1.388 ksf < 2.5 ksf ∴ OK

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101 W. Camperdown Way, Suite 601
Greenville, SC 29601

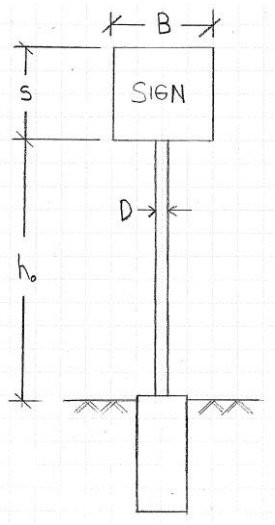
Job Name:	TB - Takoma Park, MD		
		Page No.:	1/1
Client:		**By:**	DRS
Job No.:	150699	**Date:**	4/5/16

Embedded Post Foundation Design

	V	Exposure	K_{zt}	K_d	I	G	K_z	q_z
Wind Criteria:	115 mph	B	1	0.85	1	0.85	0.69	19.8 psf

Pole Geometry

Pole Shape:	Square	
Side length, D =	5	in
Height above grade, h_o =	28	ft
h_o/D =	67.2	
C_f =	1.5	
F pole(ultimate) =	416	lb applied at 14 ft above grade
F pole(service) =	**250**	



Sign Geometry

Sign height, s =	1	ft
Sign width, B =	2	ft
C_f =	1.95	
F sign(Ultimate) =	66	lb applied at 28.5 ft above grade
F sign(Service) =	**39**	

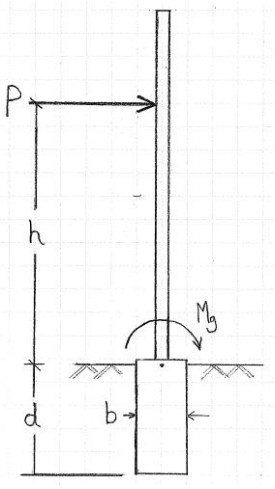
Equivalent Force for Foundation Design

F =	289	lb
h =	26.6	ft above grade

☑ Use wind load from above

Loading

P =	0	lbs
h =	0	ft
M_g =	7689.4	lb-ft
P_{EQ} =	288.8	lbs
h_{EQ} =	26.6	ft



Soil

Allowable Bearing	2000 psf/f
Lateral Bearing	150 psf/f

☐ Pole is not adversely affected by a 0.5 in. deflection

☐ Slab/Pavement is present to constrain Pole/Post at ground level

S = 300 psf

Foundation

Shape:	Round	
Diameter, b =	30	in
d =	72	in
$d_{REQ'D}$ =	67.0	in

Use a 30 in diameter footing with a 72 in embedment

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Subject:	Taco Bell - Takoma, MD
Project No.:	150699
By:	DRS
Date:	10/19/2015

BRITT, PETERS & ASSOCIATES, INC.
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Shear Wall Design Spreadsheet

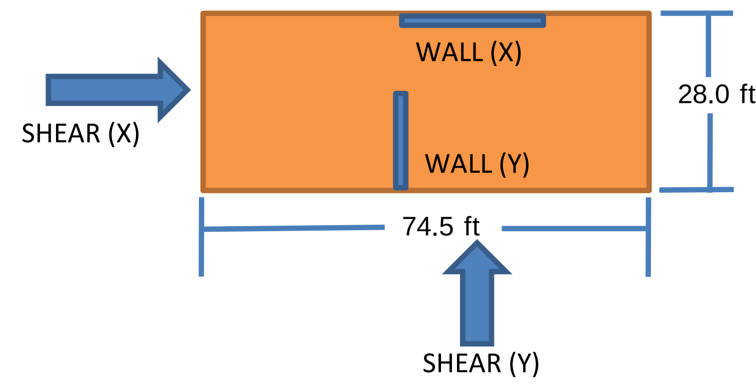
Code:	ASCE 7-10
Seismic Design Category:	B
Wood Species:	SP
Nails:	10d
Wall DL (psf)	10.0
Roof DL (psf)	20.0
Wood Species Factor =	1
Sill Anch. Dia.:	5/8

Base Shears

	Ultimate Design Loads		Service Loads	
Wind Y =	40.0	kips	24	kips
Wind X =	15.0	kips	9	kips
Seismic=	4.0	kips	3	kips

Controlling Case Y-direction:	24	kips
Controlling Case X-direction:	9	kips

Wind Controls in Y Direction
Wind Controls in X Direction



Shear Wall End Holdown and Sill Anchorage

X-Direction Shear Walls

											15/32" Plywood		DBL	DBL
SW#	Location	Trib Width	Length (ft)	Wall Height (ft)	Aspect Ratio	Perforated SW	Fwall (kips)	Shear(plf)	V/1.4 (Wind)	Use V (plf)	Nail	Spacing	Sheathing Nail	Sheathing Spacing
1	Drive-thru	14.00	41.50	13.17	0.32	NO	4.5	108	77	77	10d	6	Not Used	6
1	Dining	14.00	12.25	14.00	1.14	NO	4.5	367	262	262	10d	6	Not Used	6
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
		28.0	ft											

X-Direction Shear Walls

							Holdown		Anchor Bolts	
Tension(k)	Roof Trib (ft)	Wall/Roof DL (plf)	Segment Length	Tnet (kips)	Shear (plf)	Sill Thickness (in)	Type	Anchor Dia.	Diameter	Spacing
1.4	14.00	412	41.50	3.7	77	1.5"	NR	NG	5/8	172
5.1	14.00	420	12.25	-3.6	262	1.5"	HDU4	5/8	5/8	51
#DIV/0!	1.00	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.00	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.00	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.00	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.00	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.00	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.00	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.00	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!

Y-Direction Shear Walls

											15/32" Plywood		DBL	DBL
SW#	Location	Trib Width	Length (ft)	Wall Height (ft)	Aspect Ratio	Perforated SW	Fwall (Kips)	Shear(plf)	V/1.4 (Wind)	Use V (plf)	Nail	Spacing	Sheathing Nail	Sheathing Spacing
2	Tower	12.50	5.50	14.00	2.55	NO	4.0	732	523	523	10d	3	10d B.S.	6
3	Interior	37.25	8.17	10.67	1.31	NO	12.0	1469	1050	1050	10d	BS	10d B.S.	3
2	Rear Wall	24.75	26.00	14.00	0.54	NO	8.0	307	219	219	10d	6	Not Used	6
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
						NO	0.0	#DIV/0!	#DIV/0!	#DIV/0!	10d	#DIV/0!	#DIV/0!	#DIV/0!
		74.5	ft											

Y-Direction Shear Walls

							Holdown		Anchor Bolts	
Tension(k)	Roof Trib (ft)	Wall/Roof DL (plf)	Segment Length	Tnet (kips)	Shear (plf)	Sill Thickness (in)	Type	Anchor Dia.	Diameter	Spacing
10.3	1.000	160	5.50	-10.0	523	1.5"	HDU14	5/8	5/8	25
15.7	1.000	127	8.17	-15.368	1050	1.5"	HD19	5/8	5/8	13
4.3	1.000	160	26.00	-3.0	219	#DIV/0!	HDU2	5/8	5/8	61
#DIV/0!	1.000	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.000	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.000	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.000	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.000	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.000	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!
#DIV/0!	1.000	20	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5/8	#DIV/0!

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Subject:	Taco Bell - Takoma, MD
Project No.:	150699
By:	DRS
Date:	10/19/2015

Nominal Framing Width: 2"
Sheathing and Fastening Used: 19/32" PS1/PS2 10d

Shear Wall Collectors and Diaphragm Blocking

X-Direction Shear Walls

Diaphragm Load Case: Case 3

SW#	Location	Trib Width	Segment Length	Shear(plf)	Force	Blocking & Nailing	Diaphragm Capacity (plf)	Collector Force (lb)	Collector Length (ft)	Collector Required	Collector
1	Drive-thru	14.00	41.50	77	4.5	Blocked 4,6,12	425	0	0	NO	
1	Dining	14.00	12.25	262	4.5	Blocked 4,6,12	425	0	0	NO	
0	0	0.00	0.00	#DIV/0!	0.0	Unblocked 6,12	425	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.00	0.00	#DIV/0!	0.0	Unblocked 6,12	215	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.00	0.00	#DIV/0!	0.0	Unblocked 6,12	215	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.00	0.00	#DIV/0!	0.0	Unblocked 6,12	215	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.00	0.00	#DIV/0!	0.0	Unblocked 6,12	215	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.00	0.00	#DIV/0!	0.0	Unblocked 6,12	215	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.00	0.00	#DIV/0!	0.0	Unblocked 6,12	215	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.00	0.00	#DIV/0!	0.0	Unblocked 6,12	215	#DIV/0!	#DIV/0!	#DIV/0!	
		28.0	ft								

Y-Direction Shear Walls

Diaphragm Load Case: Case 1

SW#	Location	Trib Width	Segment Length	Shear(plf)	Force	Blocking & Nailing	Diapghram Capacity (plf)	Collector Force (lb)	Collector Length (ft)	Collector Required	Collector
2	Tower	12.5	5.5	523	4.0	Blocked 4,6,12	425	539	1	YES	2x6 Ledger at front wall will collect load
3	Interior	37.3	8.2	1050	12.0	Blocked 4,6,12	425	5101	12	YES	Drag Truss
2	Rear Wall	24.8	26.0	219	8.0	Blocked 4,6,12	425	0	0	NO	
0	0	0.0	0.0	#DIV/0!	0.0	Unblocked 6,12	285	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.0	0.0	#DIV/0!	0.0	Unblocked 6,12	285	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.0	0.0	#DIV/0!	0.0	Unblocked 6,12	285	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.0	0.0	#DIV/0!	0.0	Unblocked 6,12	285	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.0	0.0	#DIV/0!	0.0	Unblocked 6,12	285	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.0	0.0	#DIV/0!	0.0	Unblocked 6,12	285	#DIV/0!	#DIV/0!	#DIV/0!	
0	0	0.0	0.0	#DIV/0!	0.0	Unblocked 6,12	285	#DIV/0!	#DIV/0!	#DIV/0!	
		74.5	ft								

Project:	TB - Takoma Park, MD	
BPA No.:	150699	
Date:	10/19/2015	
By:	DRS	

Description:
Interior Shear Wall Footing

q'_a =	2.5	ksf
Allowable increase	1	
input L =	14.5	ft
input B =	4	ft
x offset=	0	ft
y offset=	0	ft
footing thickness	30	in
Depth of Footing	0.00001	ft
Soil Density	120	psf
Slab Thickness	4	in
Slab Extension	6.62	ft
Soil Friction Angle	45	degrees

L (y)
B (x)

q_{eff} =	2.8	ksf
q'_{max}=	0.87	ksf

Dead load factor for footin and soil wt.= 0.6
Edge "E", Interior "I", or Corner "C" I

Suggested L = ft
Suggested B = ft

	Dim	Area
SQ =	8.50	72.25
Rect B =	4.00	58
Rect L =	14.50	

Largest Rect. Area
21.75
Largest Square Area
72.25

	P(k)	Mx'(kft)	My'(kft)	P+Footing	Mx(kft)	My(kft)	eL(ft)	eB(ft)	OR
3	0.6	91.5		25.9	91.5	0	3.537	0.000	

Rectangular Footing Per Load Case

	Suggested L =	A2(ft^2)	L	B	L'	B'	Optimal Shape
1	10.5	22	14.5	1.50	7.425	1.240	RECTANGULAR

Rectangular Footing Check For All Cases

L'(ft)	B'(ft)	A'(ft)	q'equiv	
7.4	4.0	29.7	0.9	OK

Project: TB - Takoma Park, MD
BPA No.: 150699
Date: 10/19/2015
By: DRS

Description:
Front Tower Shear Wall Footing

q'_a =	2.5	ksf
Allowable increase	1	
input L =	27	ft
input B =	2	ft
x offset=	0	ft
y offset=	7	ft
footing thickness	30	in
Depth of Footing	0.00001	ft
Soil Density	120	psf
Slab Thickness	4	in
Slab Extension	6.62	ft
Soil Friction Angle	45	degrees

L (y)
B (x)

q_{eff} =	2.8	ksf
q'_{max}=	0.46	ksf

Dead load factor for footin and soil wt.= 0.6
Edge "E", Interior "I", or Corner "C" E

Suggested L = ft
Suggested B = ft

	Dim	Area
SQ =	6.00	36.00
Rect B =	2.00	54
Rect L =	27.00	

Largest Rect. Area
13.50
Largest Square Area
36.00

	P(k)	Mx'(kft)	My'(kft)	P+Footing	Mx(kft)	My(kft)	eL(ft)	eB(ft)	OR		Rectangular Footing Per Load Case Suggested L =	A2(ft^2)	L	B	L'	B'	Optimal Shape	Rectangular Footing Check For All Cases L'(ft)	B'(ft)	A'(ft)	q'equiv	
3	0.5	40.3		20.8	43.8	0	2.109	0.000		1	7	14	27	0.50	22.782	0.328	RECTANGULAR	22.8	2.0	45.6	0.5	OK