MESCALERO SERVICE UNIT RENOVATION & ADDITION DESIGN PROJECT

CALCULATIONS

SCOPE OF WORK
A&E DESIGN & CCA SERVICES

Renovation and Addition of approximately 11,740 Building Gross Square Feet of Pharmacy, IT Server, Training and Office, new Primary Care, Lab, Waiting Area, Radiology and Ultrasound, PIV Access Office, Existing Housekeeping and Bio-Med, Patient Registration and Patient Benefits spaces located on the First Floor. Compliance with 2016 A/E Design Guide and new Access Control per HSPD-12. Scope of work shall include Construction Administrative Services.

INDIAN HEALTH SERVICE
Division of Engineering

Project No.: 117043
Building No.: 02000
Contract No. / Task No.:
HSSI1612012000031 /
HHSI16109026T

2018 DESIGN TEAM

Rock Gap Engineering, LLC
Prime - Project Management

Rock Gap Engineering, LLC
Mechanical, Electrical and Plumbing

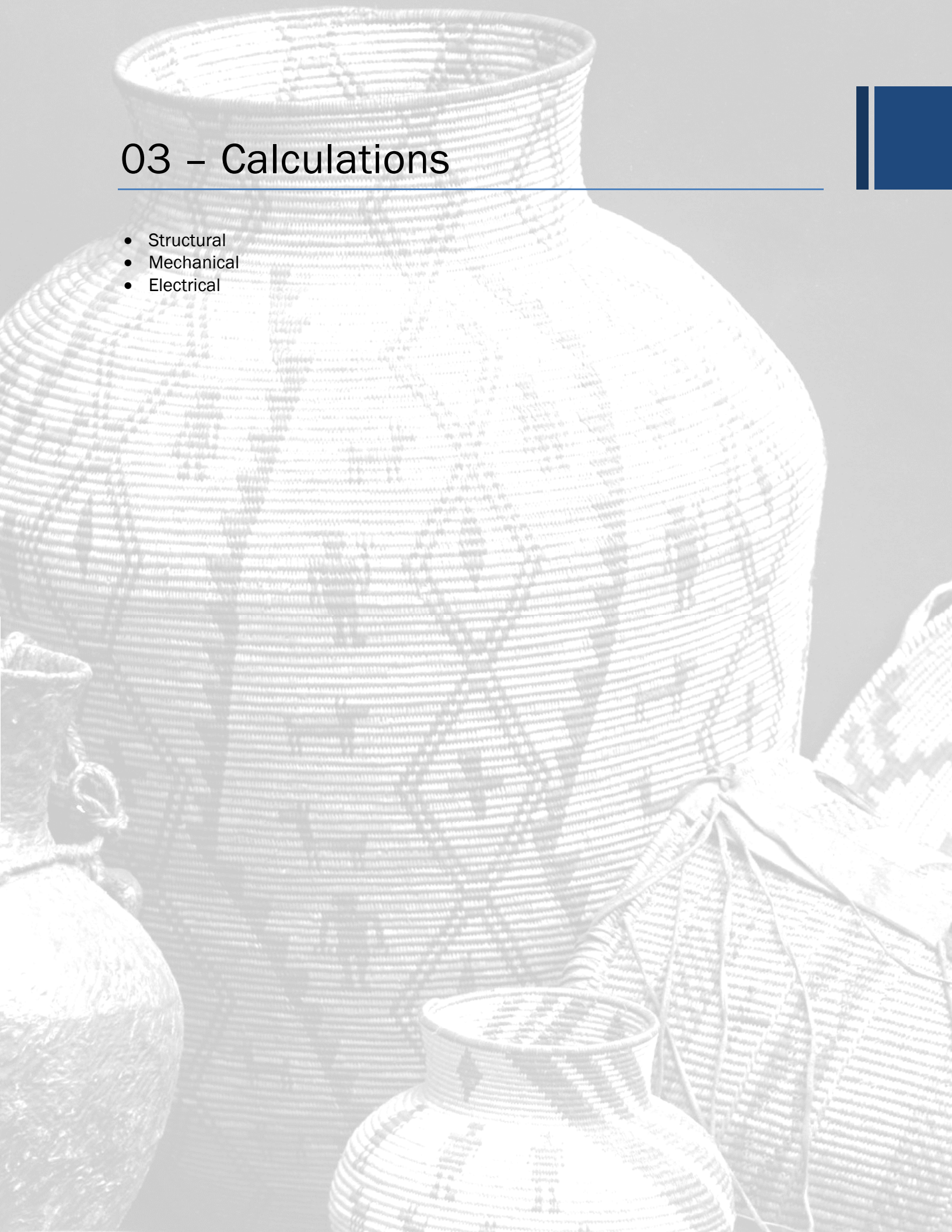
Indigenous Design Studio + Architecture, LLC
Architecture and Code Compliance

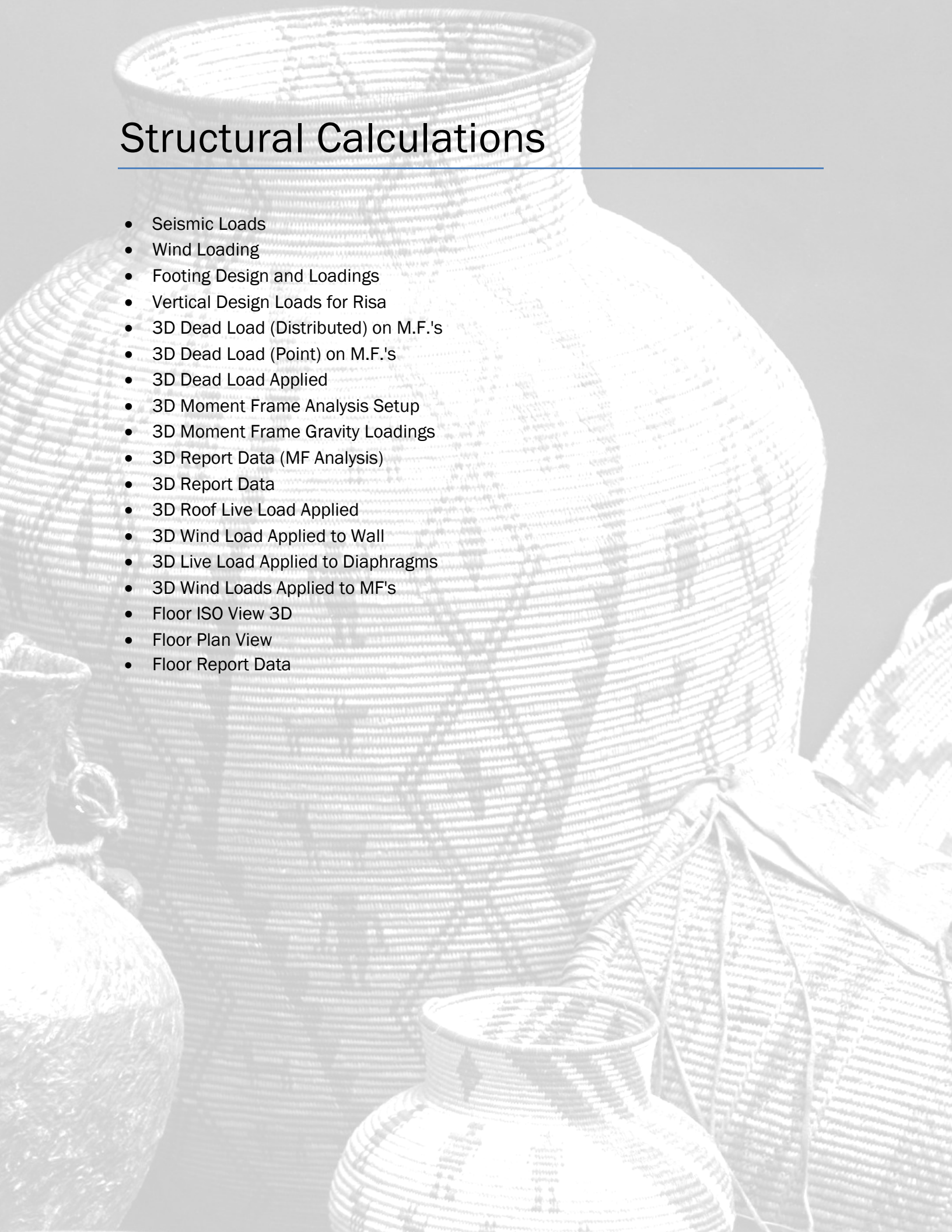
Forsgren Associates, Inc
Civil Engineering

Quiroga Pfeiffer Engineering Corporation
Structural Engineering

03 – Calculations

- Structural
- Mechanical
- Electrical



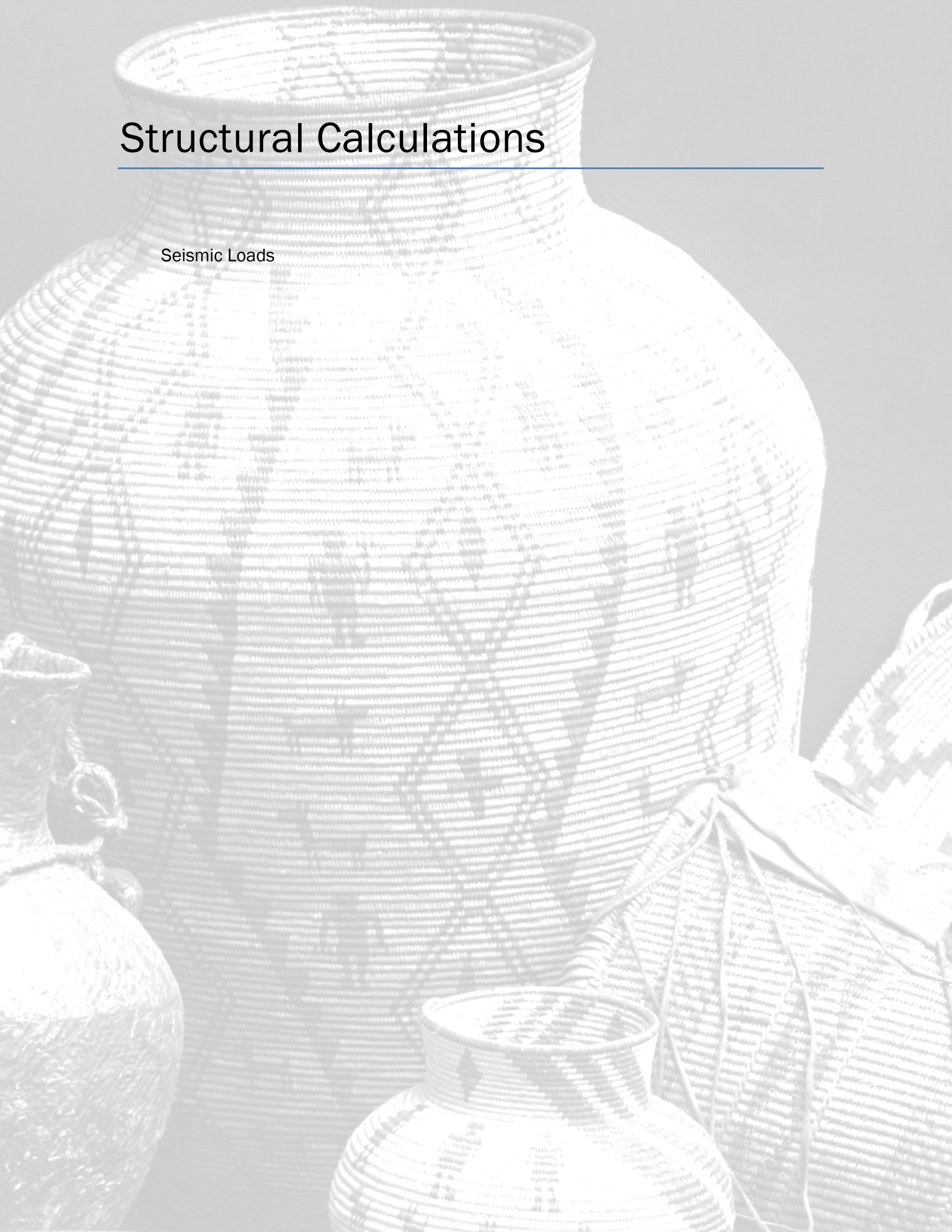


Structural Calculations

- Seismic Loads
- Wind Loading
- Footing Design and Loadings
- Vertical Design Loads for Risa
- 3D Dead Load (Distributed) on M.F.'s
- 3D Dead Load (Point) on M.F.'s
- 3D Dead Load Applied
- 3D Moment Frame Analysis Setup
- 3D Moment Frame Gravity Loadings
- 3D Report Data (MF Analysis)
- 3D Report Data
- 3D Roof Live Load Applied
- 3D Wind Load Applied to Wall
- 3D Live Load Applied to Diaphragms
- 3D Wind Loads Applied to MF's
- Floor ISO View 3D
- Floor Plan View
- Floor Report Data

Structural Calculations

Seismic Loads



QUIROGA • PFEIFFER ENGINEERING CORPORATION

PROJECT: Mescalero
JOB No. 5135.01
SUBJECT Seismic Loads

BY CP DATE 20-Jul-2018 CHECK _____ DATE _____

Equivalent Lateral Force Procedure (ASCE 7-10 12.8)

Determining Maximum considered earthquake and design spectral response accelerations (ASCE 7-10 Chapters 11,12 &13)

Site Coordinates 33.15865 -105.7731

Spectral Response Accelerations:

S_s =	0.266	g	(ASCE 7-10 Figure 22-1)
S_1 =	0.082	g	(ASCE 7-10 Figure 22-2)
Site Class =	D		(ASCE 7-10 11.4.2)

Site Coefficients and adjusted maximum considered earthquake spectral response acceleration parameters (11.4.3):

Fa =	1.587		(ASCE 7-10 Table 11.4-1)
Fv =	2.400		(ASCE 7-10 Table 11.4-2)
S_{MS} =	0.422	g	(ASCE 7-10 Eq. 11.4-1)
S_{M1} =	0.197	g	(ASCE 7-10 Eq. 11.4-2)

Design spectral response acceleration parameters (ASCE 7-05 11.4.4):

S_{DS} =	0.281	g	(ASCE 7-10 Eq. 11.4-3)
S_{D1} =	0.131	g	(ASCE 7-10 Eq. 11.4-4)

Determining Seismic Design Category:

Occupancy Category =	IV	(ASCE 7-10 Table 1-1)
I_E =	1.25	(ASCE 7-10 Table 11.5-1)
Seismic Design Category (S_{DS}) =	C	(ASCE 7-10 Table 11.6-1)
Seismic Design Category (S_{D1}) =	C	(ASCE 7-10 Table 11.6-2)

Seismic Base Shear (ASCE 7-10 12.8.1):

Seismic Force Resisting System: STEEL ORDINARY MOMENT FRAMES

R =	3.5	(ASCE 7-10 Table 12.2-1)
Ω_0=	3	(ASCE 7-10 Table 12.2-1)
C_d=	3	(ASCE 7-10 Table 12.2-1)
C_t=	0.028	(ASCE 7-10 Table 12.8-2)
x =	0.8	(ASCE 7-10 Table 12.8-2)
h_n	16	(Height above the base to the highest level of the structure (feet))
T_a =	0.26	(ASCE 7-10 Eq. 12.8-7 (Seconds))
T_L =	6	(ASCE 7-10 Figure 22-12)
Cs =	0.10	(ASCE 7-10 Eq. 12.8-2)

Need not greater than

Cs =	0.18	(ASCE 7-10 Eq. 12.8-3 & 12.8-4)

Shall not be taken less than

Cs =	0.01	(ASCE 7-10 Eq. 12.8-5 & 12.8-6)

Use C_s = 0.10

$V = C_s * W$ (ASCE 7-10 Eq.12.8-1)

QUIROGA · PFEIFFER ENGINEERING CORPORATION

PROJECT: Mescalero
JOB No. 5135.01
SUBJECT Seismic Loads

Calculate W

Roof Dead	(psf)		Section Ste	Length		Weight	Pound	Total
3" M. Deck	1.5		K Joists	20.4167		6.3	128.6252	771.7513
Memb. & Board	2		Beams	26.9167		26	699.8342	1399.668
5" R. Insulation	1		Area	549.5501889				
Sprinkler	1		PSF Load	3.951267243				
M/E/P	3							
Beams	4							
Misc.	2.5							
roof total	**15**	psf						
Partition Load	**10**	**psf**						

ROOF PROPERTIES

Total 7296 SQF

SEISMIC DESIGN

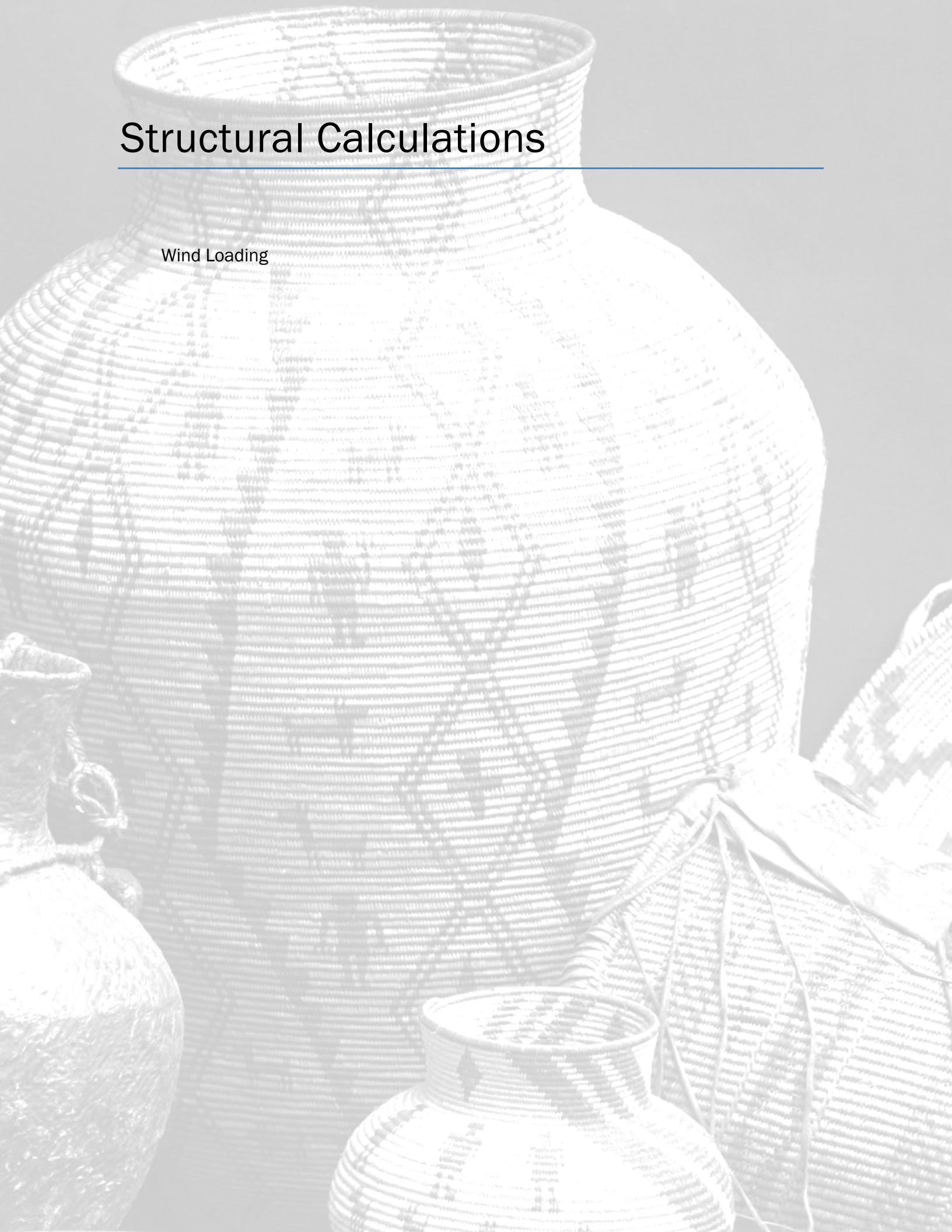
TOTAL STRUCTURE STORY WEIGHT

182.4 KIP

Base Shear 18.33302

Structural Calculations

Wind Loading



QUINDOCH · PFEIFFER ENGINEERING CORPORATION

SHEET 1 of 1

PROJECT: Mescalero Hospital
JOB No. 5135.01
SUBJECT Wind Loads

BY DATE CHECK DATE

Envelope Procedure Wind Load On Buildings - MWFRS (ASCE 7-10 Chapter 28)

$V_{3\ sec.\ Gust}$ (mph) =	120	(ASCE 7-10 Figure 26.5-1B)
Exposure =	C	(ASCE 7-10 26.7)
K_{zt} =	1.00	ASCE 7-10 Fig 26.8-1
K_d =	0.85	ASCE 7-10 Table 26.6-1
G =	0.85	ASCE 7-10 26.9.1
GC_{pi} =	-0.18	ASCE 7-10 26.11-1
q_h =	26.63	ASCE 7-10 Eq 27.3-1

						N/S				E/W			
Section	Diaphragm No.	Mean Height	Kz	qh	Parapet	B	L	L/B	C_p	B	L	L/B	C_p
	1	14.0	0.84	26.3	3.5	135.0	79.0	0.6	-0.6	79.0	135.0	1.7	-0.4

Entire Building

Trib. Total Wall Load

E/W		N/S	
42.81	kips	77.36	kips

At Base

E/W		N/S	
3.61	kips	7.29	kips

At Roof

E/W		N/S	
42.8	kips	77.4	kips

Wall Pressure per Height of Wall = qGCp - qi(Gcpi) [ASCE 7-10 Eq 27.4-1]

Combined Wall Press. (psf)

Effective Height Wall Pressure

Wall Loading

Section	Diaphragm No.	Wall Height	qz & qh	Windward	Leeward (E/W)	Leeward (N/S)	Wall Trib Length E/W	Wall Trib Length	Wall Trib Length N/S	N/S	E/W PSF	E/W PLF	N/S PSF	N/S PLF
Large Section	Mean	14.0	26.32	22.64	-3.28	-8.30	25.91	79.0	135.0	30.94	PSF	PLF	PSF	PLF
		0	26.63	22.85	-3.28	-8.30	22.85			31.15	22.85	22.85	31.15	31.15
		15	26.63	22.85	-3.28	-8.30	22.85			31.15	22.85	171.37	31.15	233.65
		16	26.95	23.06	-3.28	-8.30	23.06			31.37	23.06	11.53	31.37	15.68
Thin Section		14.00	26.32	22.64	-3.28	-8.30	25.91	79.00	135.00	30.94	PSF	PLF	PSF	PLF
		0	26.63	22.85	-3.28	-8.30	22.85			22.85	22.85	22.85	22.85	22.85
		15	26.63	22.85	-3.28	-8.30	22.85			22.85	22.85	171.37	22.85	171.37
		16	26.95	23.06	-3.28	-8.30	23.06			23.06	23.06	11.53	23.06	11.53

Parapet
ASCE 7-10 27.4-4 Height
q_p = 26.95 2.0
GC_{pn} = 2.5
p_p = 67.37 PSF
E/W 134.73792 PLF
N/S 134.73792 PLF

Trib. Wall Load (Pounds)

E/W	N/S
17413.33	33961.22

Total at Base (Pounds)

E/W	N/S
1805.07	4205.76

Parapet @ Ridge
ASCE 7-10 27.4-4 Height
q_p = 26.95 3.5
GC_{pn} = 2.5
p_p = 67.37 PSF
E/W 235.79136 PLF
N/S 235.79136 PLF

Trib. Wall Load (Pounds)

E/W	N/S
25396.55	43399.16

Total at Base (Pounds)

E/W	N/S
1805.07	3084.62

K_z & K_h (Table 27.3-1)

Height above gound level, z	Exposure		
ft	B	C	D
0	0.57	0.85	1.03
15	0.57	0.85	1.08
20	0.62	0.9	1.12
25	0.66	0.94	1.16
30	0.7	0.98	1.22
40	0.76	1.04	1.27
50	0.81	1.09	1.31
60	0.85	1.13	1.34
70	0.89	1.17	1.38
80	0.93	1.21	1.4
90	0.96	0.124	1.43
100	0.99	1.26	1.48

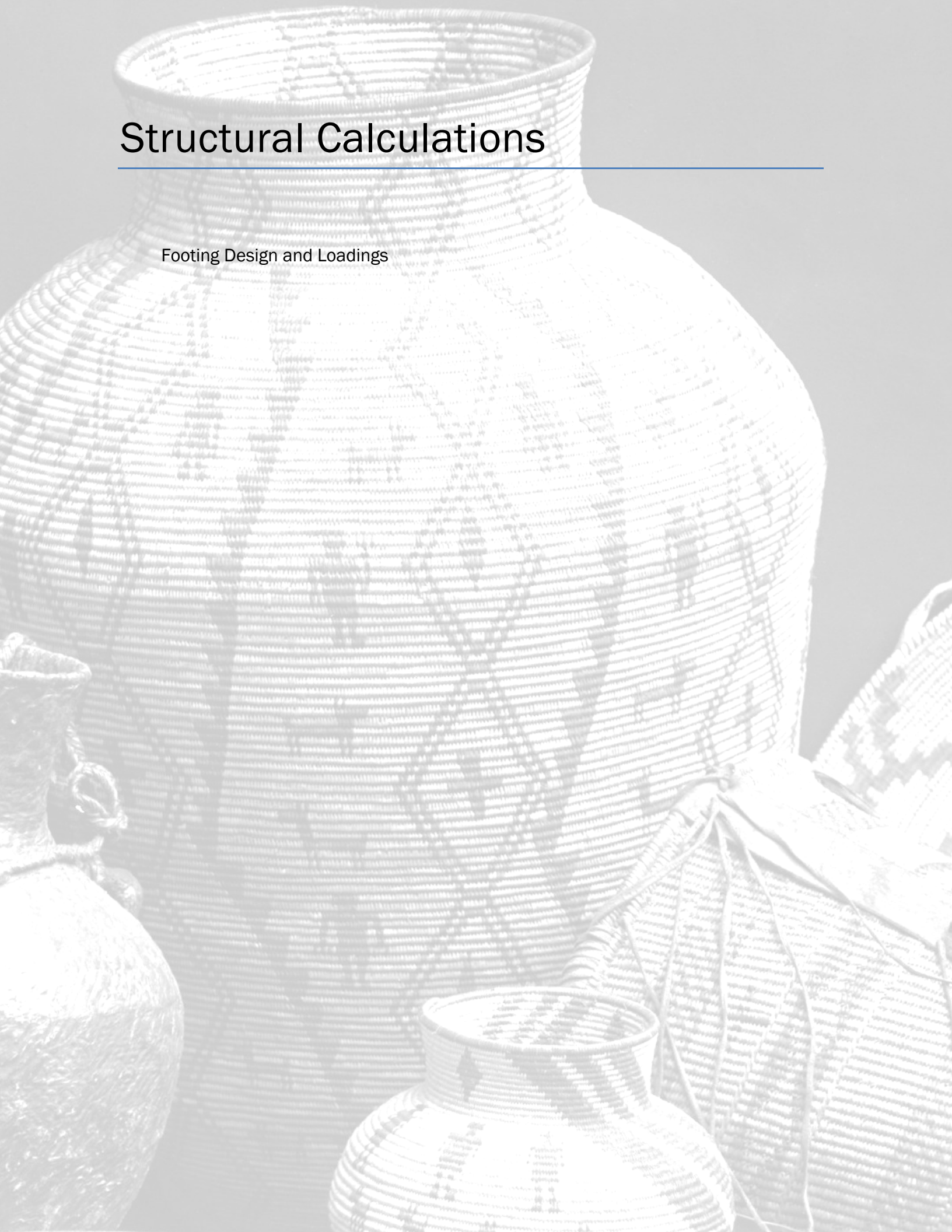
Wall Pressure Coefficients, C_p (Fig 27.4-1)

Surface	L/B	C_p	With
Windward	All	0.8	q_z
Leeward	1	-0.5	q_h
	2	-0.3	
	4	-0.2	
Side	All	-0.7	q_h

Exposure C					
Height ft	Kz	qz	Height ft	Kz	qz
0.00	0.85	26.63	18.00	0.88	27.57
15.00	0.85	26.63	21.00	0.91	28.45
20.00	0.90	28.20	32.00	0.99	31.08
25.00	0.94	29.45	37.00	1.02	32.02
30.00	0.98	30.71	17.00	0.87	27.26
40.00	1.04	32.59	25.67	0.95	29.62
50.00	1.09	34.15	29.50	0.98	30.58
			Height	Kz	qz
			0-15		
			11.00	0.85	26.63
			15-20		
			16.00	0.86	26.95
			20-25		
			25.00	0.94	29.45
			25-30		
			29.50	0.98	30.58
			30-40		
			33.50	1.00	31.37
			40-50		
			42.00	1.05	32.90
			50-60		
			52.00	1.10	34.41
			60-70		
			62.00	1.14	35.66
			70-80		
			72.00	1.18	36.91
			80-90		
			82.00	0.99	31.11
			90-100		
			92.00	0.35	11.00

Structural Calculations

Footing Design and Loadings



Location	Dead		Roof Live		Wind (+)		Wind (-)		Total	
	X	Y	X	Y	X	Y	X	Y	Y(+)	Y(-)
	kips	kips	kips	kips	kips	kips	kips	kips	kips	kips
MF1-B-(A9-10.3)	0.291	4.313	0.216	3.032	-12.565	-13.976	11.918	13.976	-6.631	21.321
MF1-B-(A6-10.3)	-0.291	9.234	-0.216	6.085	-11.893	13.976	12.54	-13.976	29.295	1.343
MF2-B-(A4-13)	0.262	9.292	0.194	6.332	-12.037	-16.016	11.338	16.016	-0.392	31.64
MF2-B-(A3-13)	-0.262	8.32	-0.194	5.714	-11.32	16.016	12.019	-16.016	30.05	-1.982
MF3-B-(A2-14)	0.527	3.51	0.44	2.746	-3.955	-3.986	3.711	3.986	2.27	10.242
MF3-B-(A2-15)	-0.527	4.775	-0.44	3.623	-3.708	3.986	3.952	-3.986	12.384	4.412
MF4-B-(A3-17)	0.099	4.853	0.074	3.341	-8.015	-10.515	7.327	10.515	-2.321	18.709
MF4-B-(A4-17)	-0.099	4.812	-0.074	3.263	-7.319	10.515	8.007	-10.515	18.59	-2.44
MF5-B-(A5-14)	0.79	9.851	0.658	7.503	-8.43	-11.449	7.936	11.449	5.905	28.803
MF5-B-(A5-16)	-0.79	13.581	-0.658	10.048	-7.926	11.449	8.42	-11.449	35.078	12.18
MF6-B-(A9-14)	1.709	9.267	1.424	7.171	0	0	0	0	16.438	16.438
MF6-B-(A9-16)	-1.709	7.055	-1.424	5.636	0	0	0	0	12.691	12.691

Raw Values

Dead				Roof Live				Wind			
1	F1-B-(A9-10	0.291	4.313	**2**	F1-B-(A9-10	0.216	3.032	3	F1-B-(A9-10		
1	F1-B-(A6-10	-0.291	9.234	2	F1-B-(A6-10	-0.216	6.085	3	F1-B-(A6-10		
1	F2-B-(A4-1	0.262	9.292	2	F2-B-(A4-1	0.194	6.332	3	F2-B-(A4-1		
1	F2-B-(A3-1	-0.262	8.32	2	F2-B-(A3-1	-0.194	5.714	3	F2-B-(A3-1		
1	F3-B-(A2-1	0.527	3.51	2	F3-B-(A2-1	0.44	2.746	3	F3-B-(A2-1		
1	F3-B-(A2-1	-0.527	4.775	2	F3-B-(A2-1	-0.44	3.623	3	F3-B-(A2-1		
1	F4-B-(A3-1	0.099	4.853	2	F4-B-(A3-1	0.074	3.341	3	F4-B-(A3-1		
1	F4-B-(A4-1	-0.099	4.812	2	F4-B-(A4-1	-0.074	3.263	3	F4-B-(A4-1		
1	F5-B-(A5-1	0.79	9.851	2	F5-B-(A5-1	0.658	7.503	3	F5-B-(A5-1		
1	F5-B-(A5-1	-0.79	13.581	2	F5-B-(A5-1	-0.658	10.048	3	F5-B-(A5-1		
1	F6-B-(A9-1	1.709	9.267	2	F6-B-(A9-1	1.424	7.171	3	F6-B-(A9-1		
1	F6-B-(A9-1	-1.709	7.055	2	F6-B-(A9-1	-1.424	5.636	3	F6-B-(A9-1		

Approximate Footing Dimensions									Design Checks		
Length	Width	Depth	SQ FT	Volume	Weight	Pressure	Pressure	UpLift	Pressure	UpLift	Bearing F
ft	ft	ft	ftt2	ft3	kips	psf	Difference	Difference			
6	6	2	36.00	72.00	10.80	-184.19	-177.56	4.17	OK	OK	2000
6	6	2	36.00	72.00	10.80	813.75	784.46	----	OK	----	Unit Wt
4.5	4.5	2	20.25	40.50	6.08	-19.36	-18.97	5.68	OK	OK	150
4.5	4.5	2	20.25	40.50	6.08	1483.95	1453.90	----	OK	----	
3.5	3.5	2	12.25	24.50	3.68	185.31	183.04	----	OK	----	
3.5	3.5	2	12.25	24.50	3.68	1010.94	998.55	----	OK	----	
3.5	3.5	2	12.25	24.50	3.68	-189.47	-187.15	1.35	OK	OK	
3.5	3.5	2	12.25	24.50	3.68	1517.55	1498.96	----	OK	----	
4.5	4.5	2	20.25	40.50	6.08	291.60	285.70	----	OK	----	
4.5	4.5	2	20.25	40.50	6.08	1732.25	1697.17	----	OK	----	
3.5	3.5	2	12.25	24.50	3.68	1341.88	1325.44	----	OK	----	
3.5	3.5	2	12.25	24.50	3.68	1036.00	1023.31	----	OK	----	

d (+)			Wind (-)			
-12.565	-13.976	4	F1-B-(A9-10	11.918	13.976
-11.893	13.976	4	F1-B-(A6-10	12.54	-13.976
-12.037	-16.016	4	F2-B-(A4-1	11.338	16.016
-11.32	16.016	4	F2-B-(A3-1	12.019	-16.016
-3.955	-3.986	4	F3-B-(A2-1	3.711	3.986
-3.708	3.986	4	F3-B-(A2-1	3.952	-3.986
-8.015	-10.515	4	F4-B-(A3-1	7.327	10.515
-7.319	10.515	4	F4-B-(A4-1	8.007	-10.515
-8.43	-11.449	4	F5-B-(A5-1	7.936	11.449
-7.926	11.449	4	F5-B-(A5-1	8.42	-11.449
0	0	4	F6-B-(A9-1	0	0
0	0	4	F6-B-(A9-1	0	0

Location	Shape
MF1-COL1	HSS12X10X5
MF1-COL2	HSS12X10X5
MF2-COL1	HSS16X4X6
MF2-COL2	HSS16X4X6
MF3-COL1	HSS10X5X4
MF3-COL2	HSS10X5X4
MF4-COL1	HSS9X5X10
MF4-COL2	HSS9X5X10
MF5-COL1	HSS14X4X6
MF5-COL2	HSS14X4X6
MF6-COL1	HSS9X5X4
MF6-COL2	HSS9X5X4
BEAM 1	W14X30
BEAM 2	W14X34
BEAM 3	W8X28
BEAM 4	W12X26
BEAM 5	W12X30
BEAM 6	W8X35

Presssure

psf
of Conc
pcf

BF1-COL1	HSS16X8X5	0.812
BF1-COL2	HSS16X8X5	0.819
BF2-COL1	HSS12X8X5	0.999
BF2-COL2	HSS12X8X5	0.996
BF3-COL1	HSS10X5X3	0.868
BF3-COL2	HSS10X5X3	0.876
BF4-COL1	HSS10X5X6	0.986
BF4-COL2	HSS10X5X6	0.985
BF5-COL1	HSS16X4X5	0.942
BF5-COL2	HSS16X4X5	0.935
BF6-COL1	HSS9X5X4	0.896
BF6-COL2	HSS9X5X4	0.882

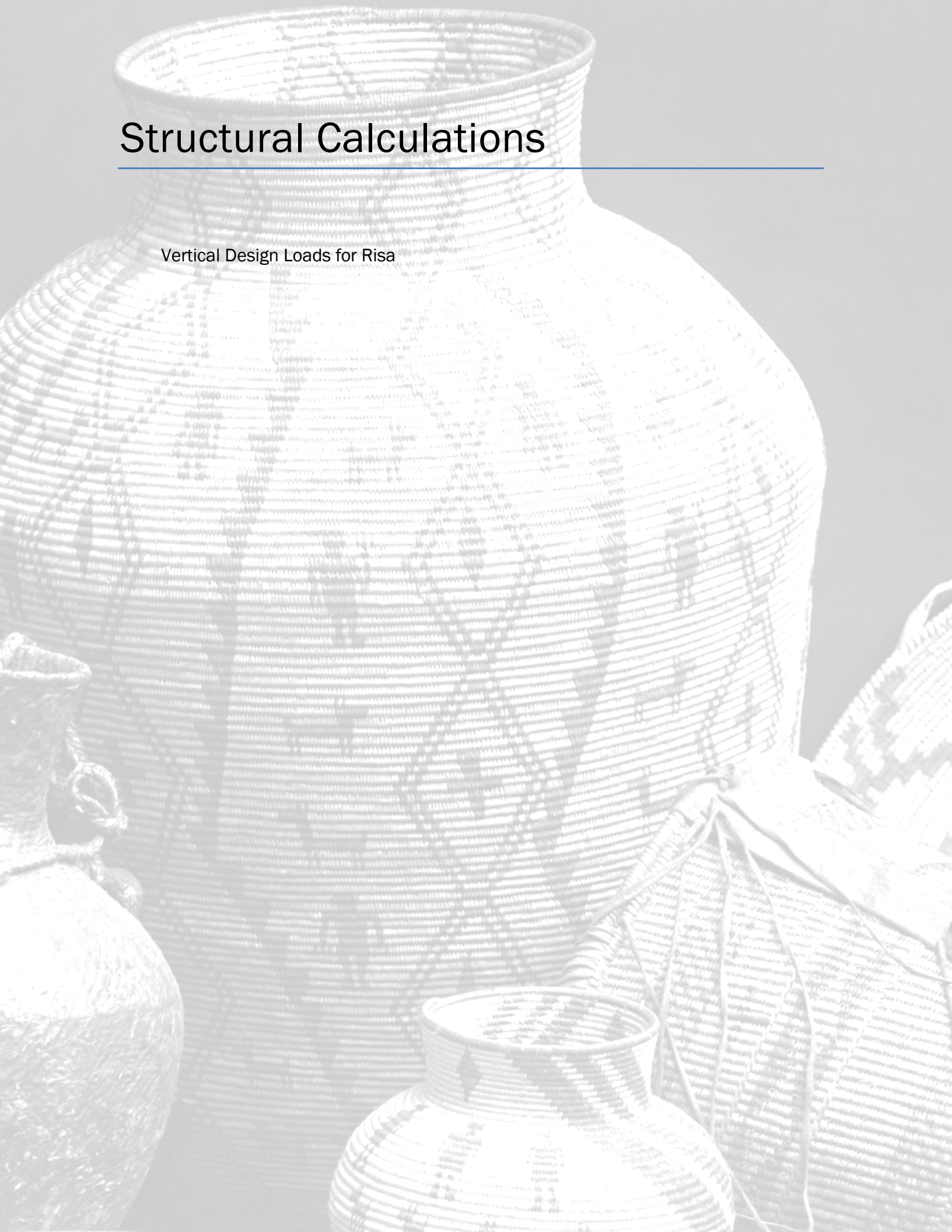
NON-MOMENT FRAME FOUNDATION SIZES

Location	Column Sizes		RLL	DL	DL	RLL	Total Load	Applied Pressure
CS1 (A7-8.8)	1 HSS5X5X2	1	5.535	8.489	8.489	5.535	14.024	1558.222
CS2 (A6-10.3)	1 HSS6X3X2	2	----	----	9.367	6.016		0
CS5 (A5-17)	1 HSS5X5X2	1	5.423	8.285	8.285	5.423	13.708	1523.111
CS6 (A4-17)	1 HSS6X3X2	2	----	----	5.069	3.261		0
CS7 (A4-15)	1 HSS5X5X2	1	7.817	11.6	11.6	7.817	19.417	1585.061
CS10 (A3-17)	1 HSS6X3X2	2	----	----	5.11	3.339		0
CS11 (A3-15)	1 HSS5X5X2	1	8.004	11.787	11.787	8.004	19.791	1615.592
CS13 (A2-17)	1 HSS5X5X2	1	1.432	2.338	2.338	1.432	3.77	418.8889
CS14 (A2-15)	1 HSS6X3X2	2	----	----	5.282	3.433		0
CS12 (A6-13)	1 HSS5X5X2	1	8.147	12.423	12.423	8.147	20.57	1679.184
CS13 (A5-14)	1 HSS6X3X2	3	----	----	11.276	7.649		0
CS14 (A4-14)	1 HSS5X5X2	1	7.023	10.422	10.422	7.023	17.445	1938.333
CS15 (A3-14)	1 HSS5X5X2	1	7.224	10.664	10.664	7.224	17.888	1987.556
CS16 (A2-14)	1 HSS6X3X2	2	----	----	4.775	3.099		0
CS17 (A4-13)	1 HSS6X3X2	2	----	----	9.547	6.33		0
CS18 (A3-13)	1 HSS6X3X2	2	----	----	8.547	5.713		0
CS19 (A2-13)	1 HSS5X5X2	1	2.45	3.854	3.854	2.45	6.304	700.4444
CS19 (-17)	1 HSS5X5X2	1	1.671	2.712	2.712	1.671	4.383	487
CS21 (-16)	1 HSS5X5X2	1	6.369	9.827	9.827	6.369	16.196	1799.556
CS22 (-14)	1 HSS5X5X2	1	6.881	10.591	10.591	6.881	17.472	1941.333
CS23 (-13)	1 HSS5X5X2	1	5.233	7.912	7.912	5.233	13.145	1460.556
CS24 (na)	1 HSS5X5X2	1	3.266	5.035	5.035	3.266	8.301	922.3333
CS25 (na)	1 HSS5X5X2	1	0.665	1.168	1.168	0.665	1.833	203.6667
CS26 (na)	1 HSS5X5X2	1	2.23	3.436	3.436	2.23	5.666	629.5556
CS27 (-8.8)	1 HSS5X5X2	1	0.356	0.737	0.737	0.356	1.093	121.4444
CS28 (-8)	1 HSS5X5X2	1	1.027	1.748	1.748	1.027	2.775	308.3333
CS29 (A6-8)	1 HSS5X5X2	1	0.399	0.825	0.825	0.399	1.224	136
CS29 (na)	1 HSS6X3X2	2	----	----	4.447	2.905		0
CS29 (A5-14.8)	1 HSS6X4X2	3	----	----	14.128	9.558		0

Area	Length	Width
9	3	3
9	3	3
9	3	3
9	3	3
12.25	3.5	3.5
9	3	3
12.25	3.5	3.5
9	3	3
9	3	3
12.25	3.5	3.5
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3
9	3	3

Structural Calculations

Vertical Design Loads for Risa



QPEC
QUIROGA • PFEIFFER
ENGINEERING CORPORATION

SHEET	
PROJECT:	Mescalero
JOB No.	5135.01
SUBJECT	Design Loads

BY CMP **DATE** 20-Jul-18 **CHECK** _____ **DATE** _____

RISA LOADING INPUT NUMBERS IN PEACH HATCH

ROOF LOADS:

DEAD:	TPO Membrane	1.00	
	Recovery Board	2.00	
	5" Rigid Insulation	3.00	
	1-1/2" Metal Deck	2.00	
	Steel K-Series Joists @ 6'-0" on Center	3.00	
	5/8" Gyp. Board Ceiling	3.00	
	Sprinkler System	4.00	
	M/E/P	4.00	
	Misc.	2.00	
	TOTAL VERTICAL LOAD FOR VERTICAL ANALYSIS	**24.0**	**psf**

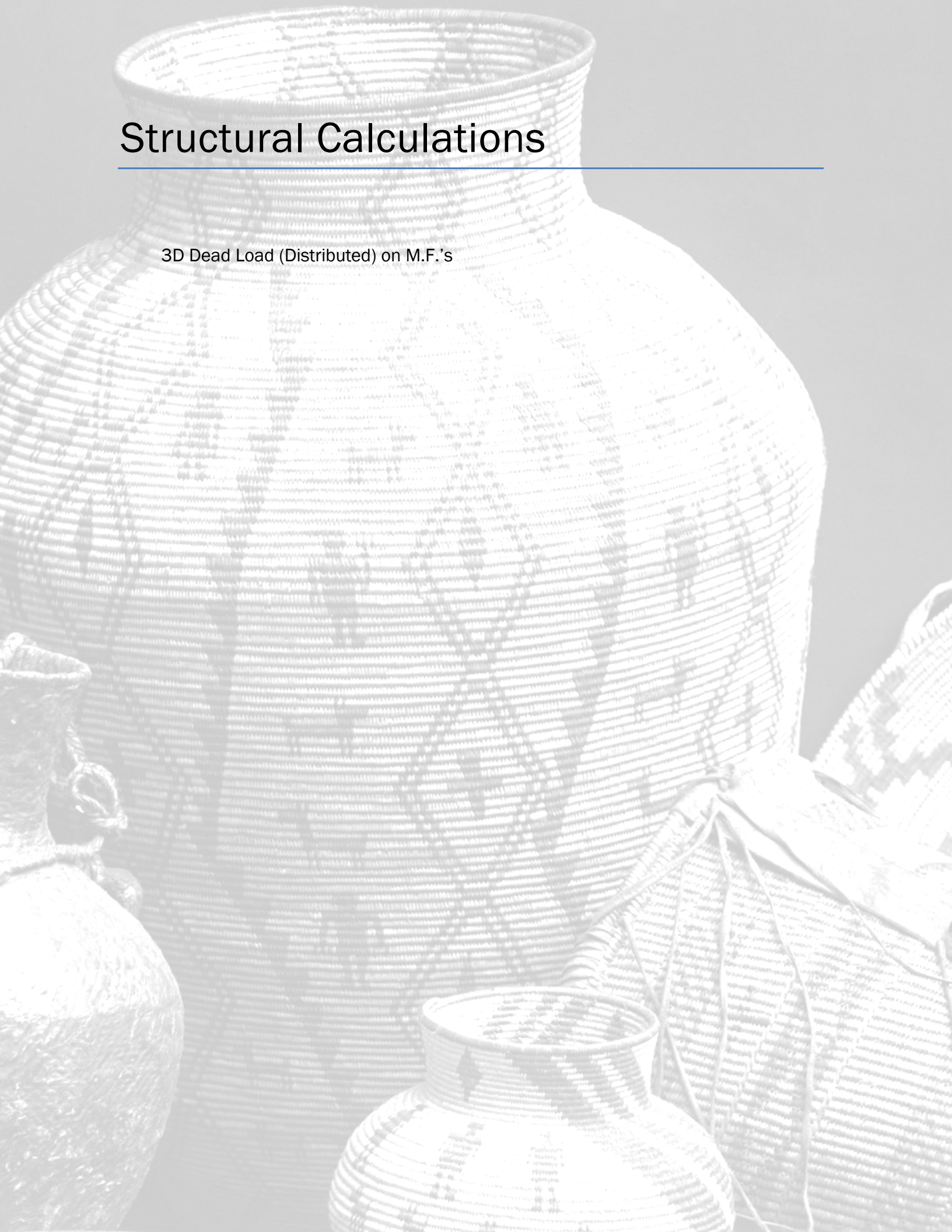
PRE-COMPOSITE LOADING (AREA LOAD DEFINITIONS TAB):	**0.000**	**ksf**
POST-COMPOSITE LOADING (AREA LOAD DEFINITIONS TAB):	**0.019**	**ksf**
SELF WEIGHT LOADING (DECK DEFINITIONS TAB):	**0.002**	**ksf**

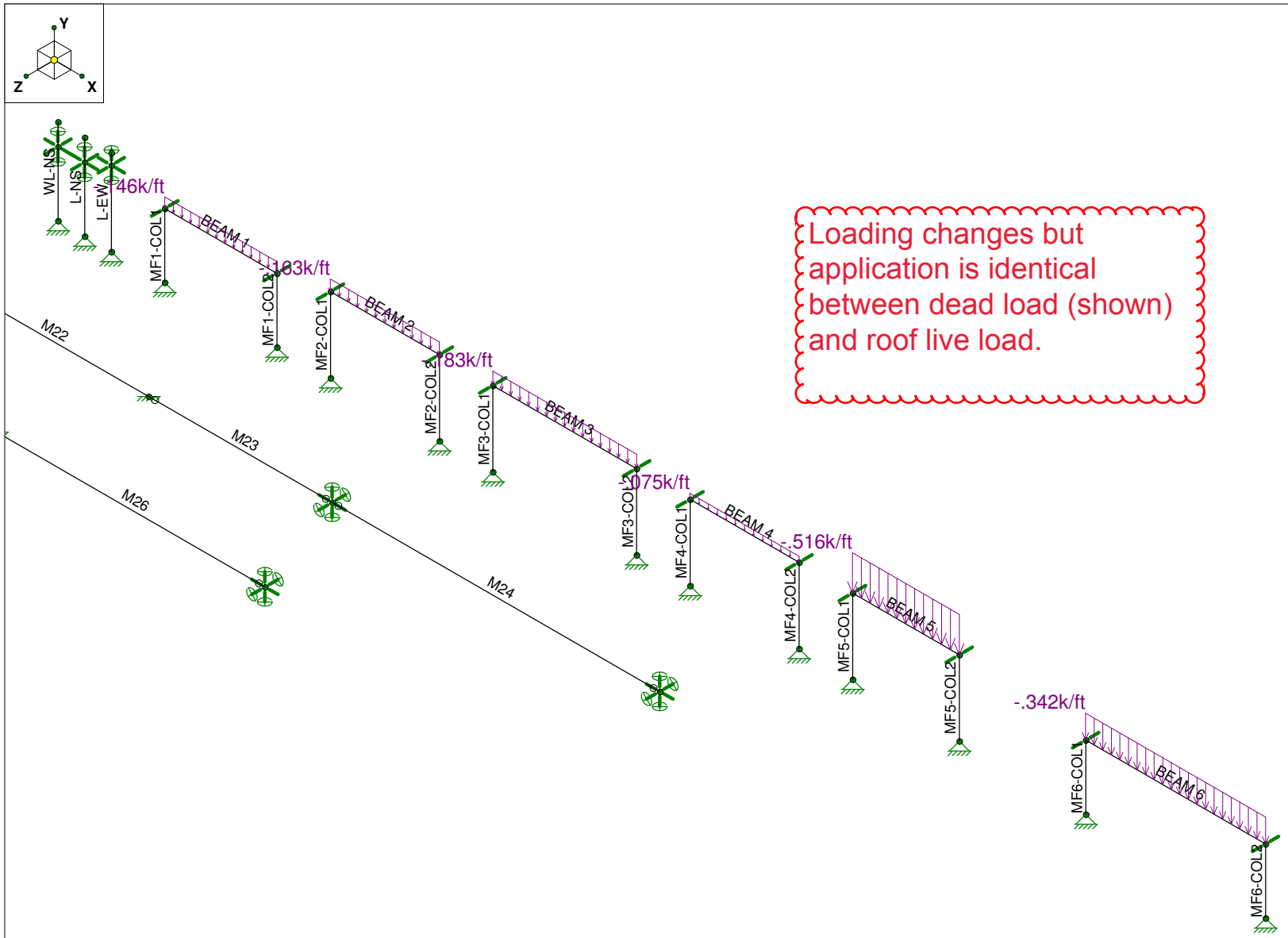
LIVE:	Construction (Non-reducible)	**20.0**	**psf**

LIVE LOAD LOADING (AREA LOAD DEFINITIONS TAB):	**0.020**	**ksf**
LIVE LOAD TYPE (AREA LOAD DEFINITIONS TAB):	**RLL-Non**	

Structural Calculations

3D Dead Load (Distributed) on M.F.'s



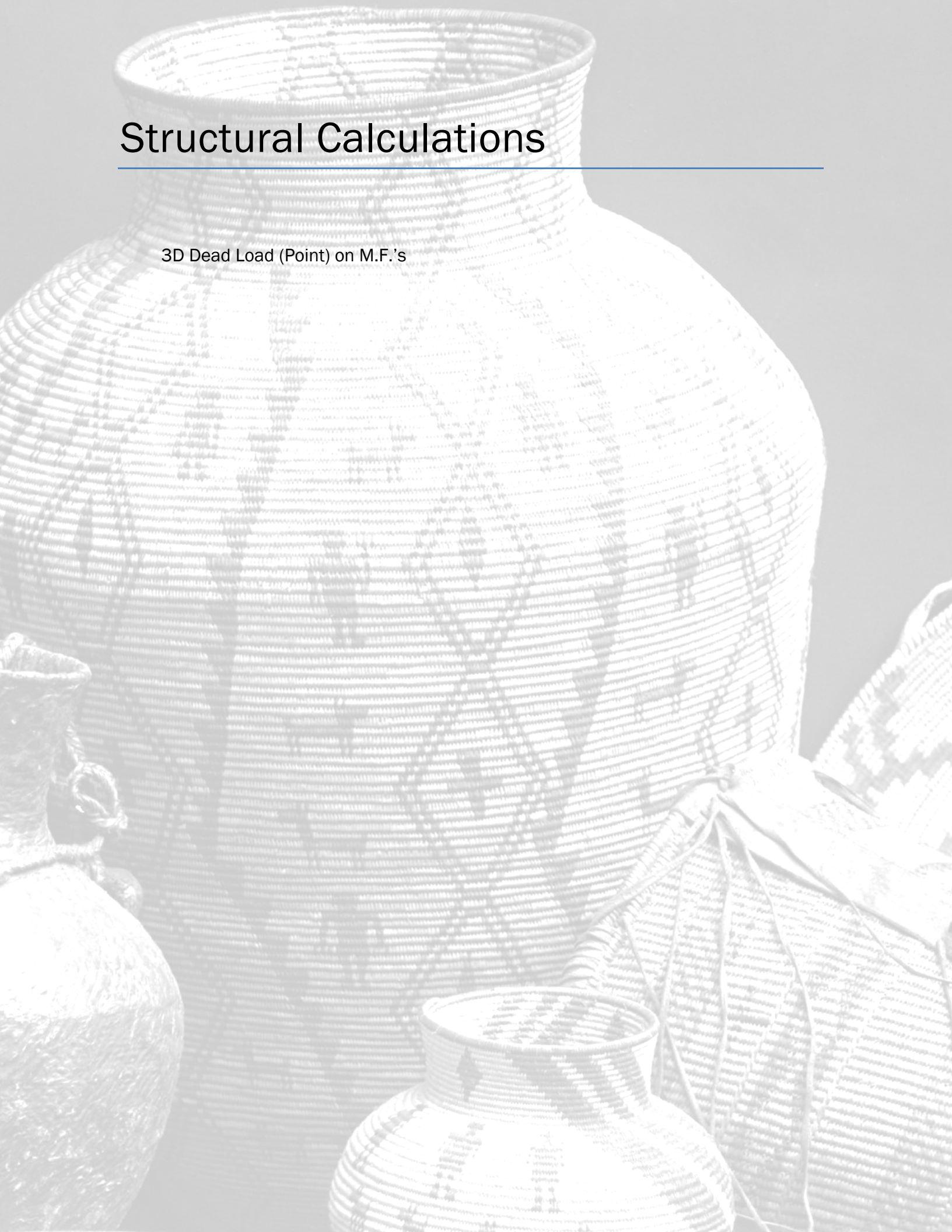


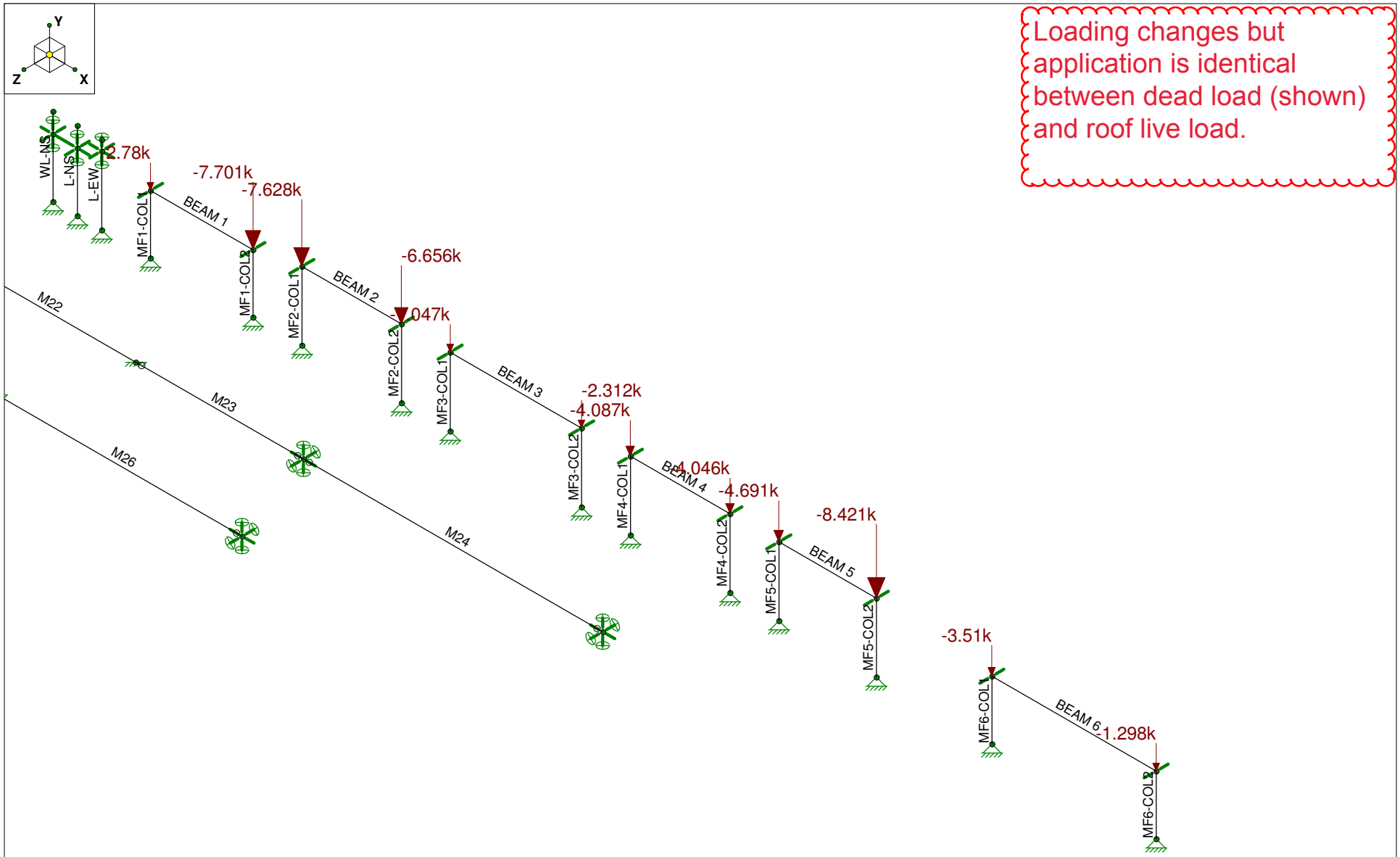
Loads: BLC 6, DEAD DIST LOADS

		SK - 4
		Jul 20, 2018 at 4:20 PM
		Braced Frames.r3d

Structural Calculations

3D Dead Load (Point) on M.F.'s



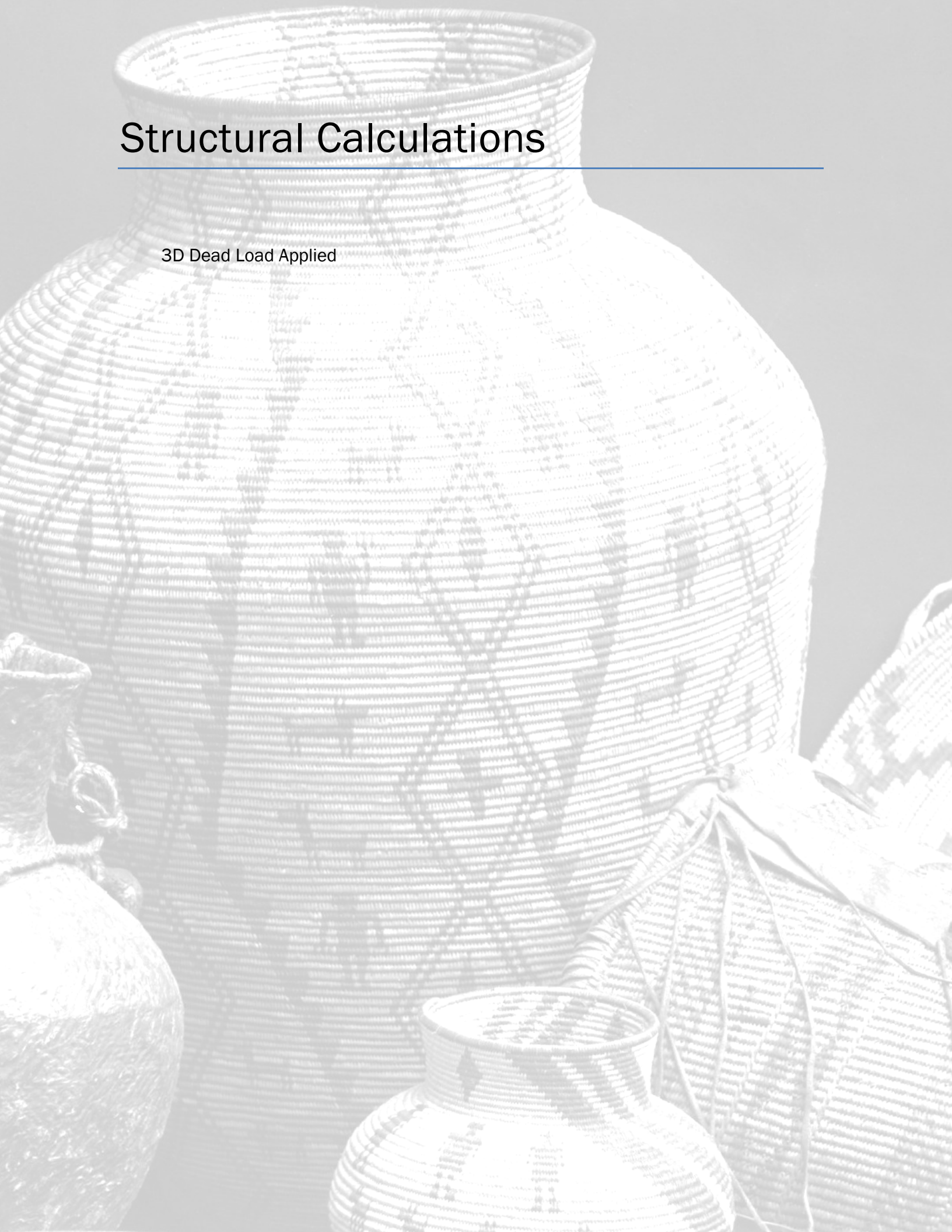


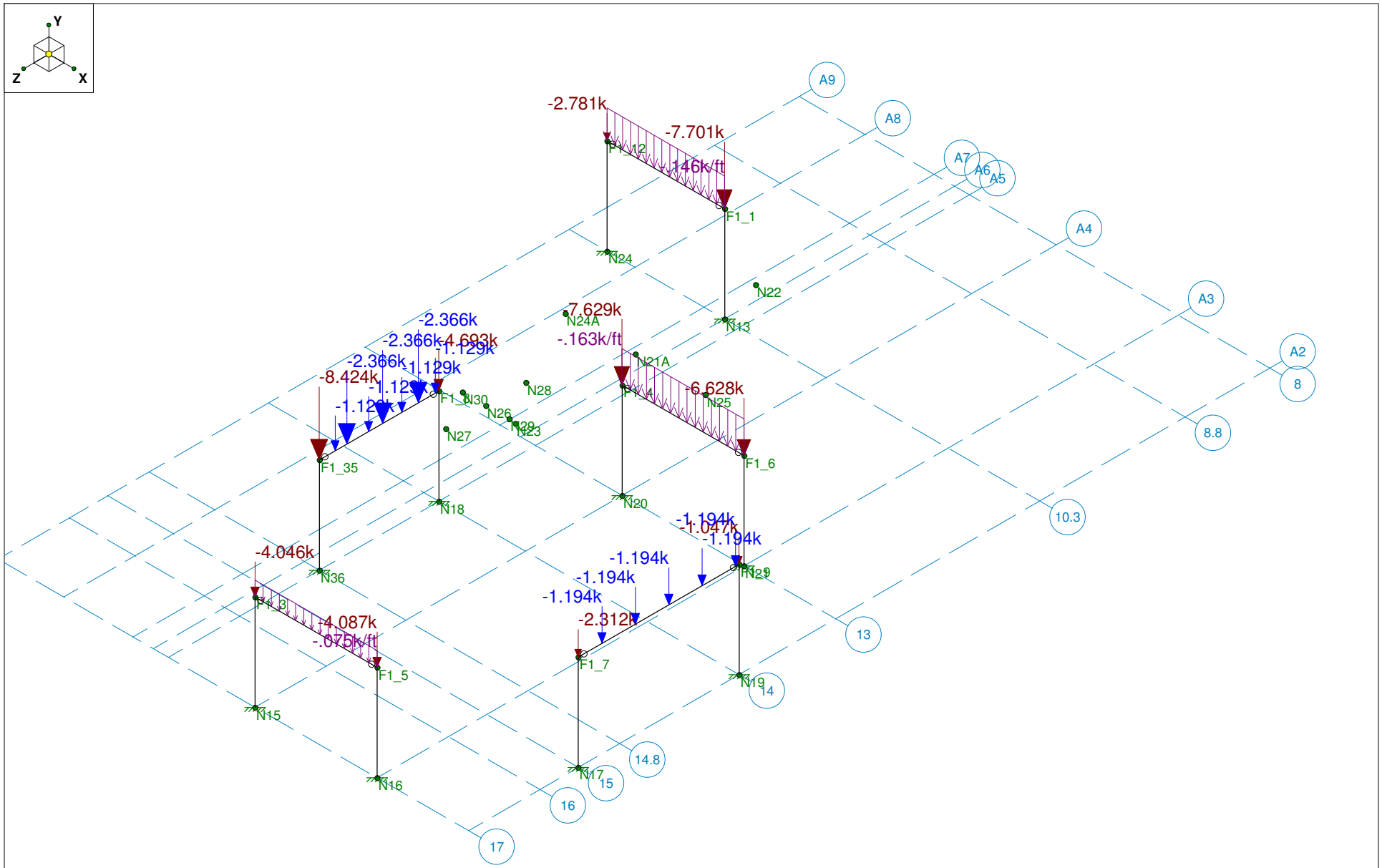
Loads: BLC 4, DEAD POINT LOADS

		SK - 3
		Jul 20, 2018 at 4:20 PM
		Braced Frames.r3d

Structural Calculations

3D Dead Load Applied



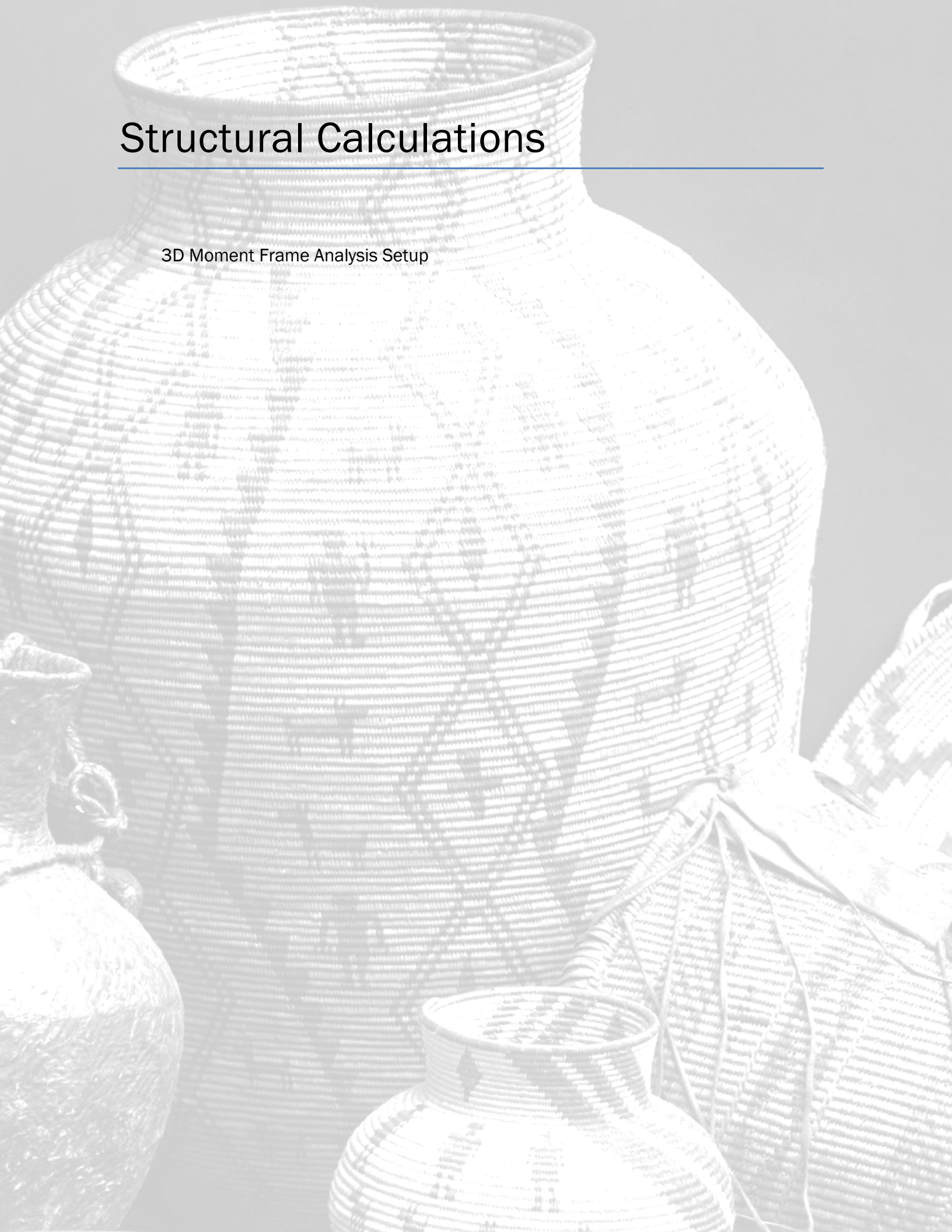


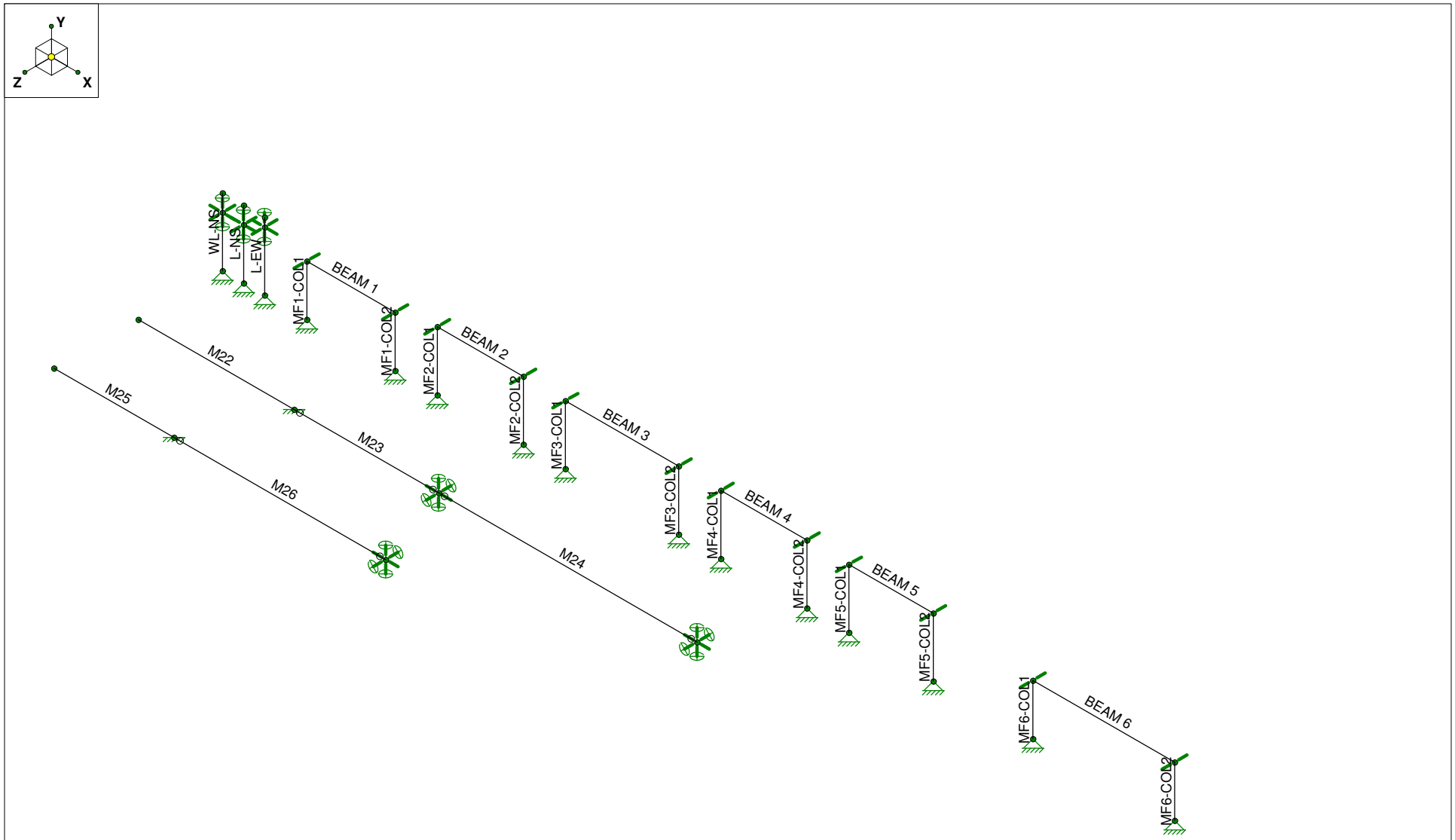
Loads: BLC 1, Dead Load

QPEC	Mescalero Hospital Addition	SK - 5
CMP		Jul 20, 2018 at 4:20 PM
5135.01		5135.01- Framing Plans.rfl

Structural Calculations

3D Moment Frame Analysis Setup

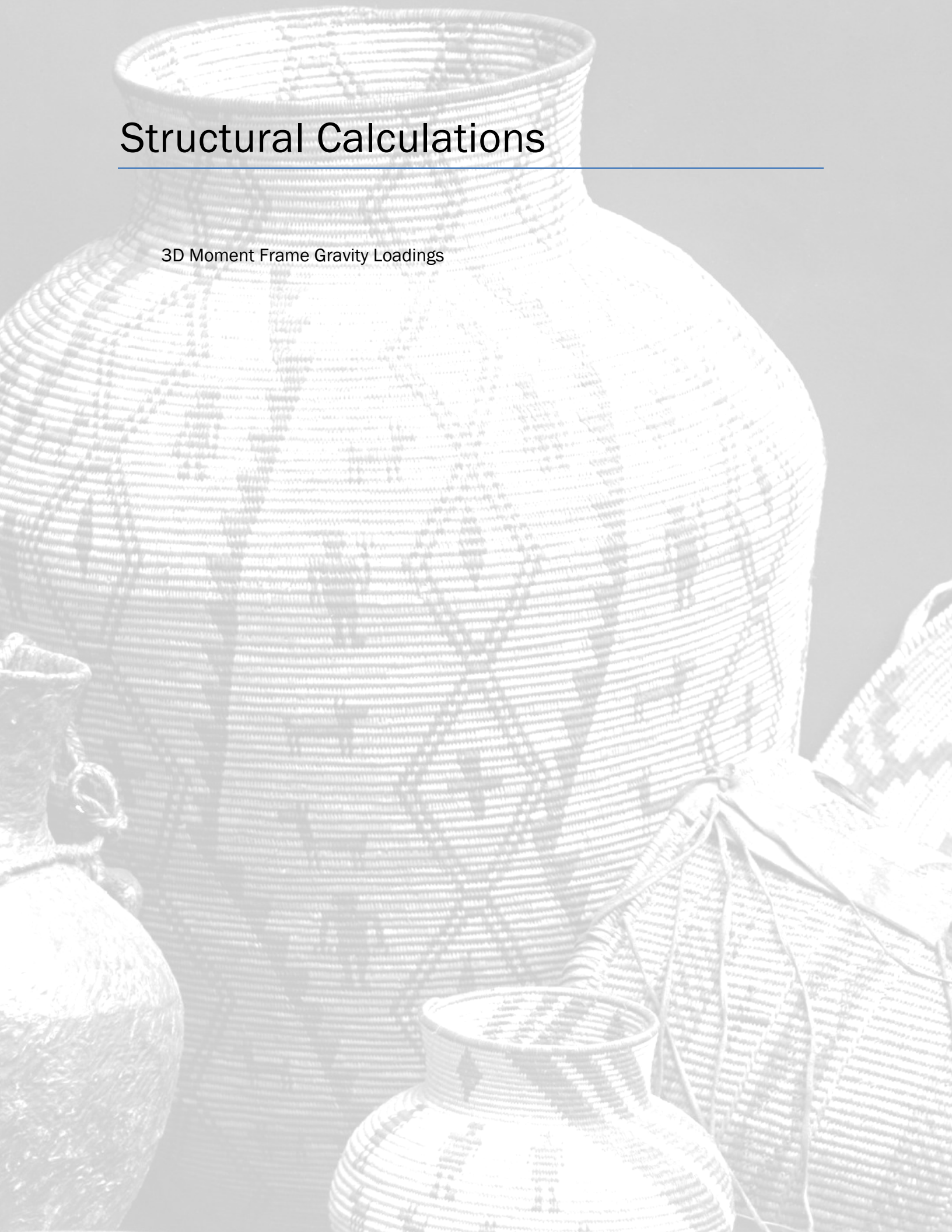


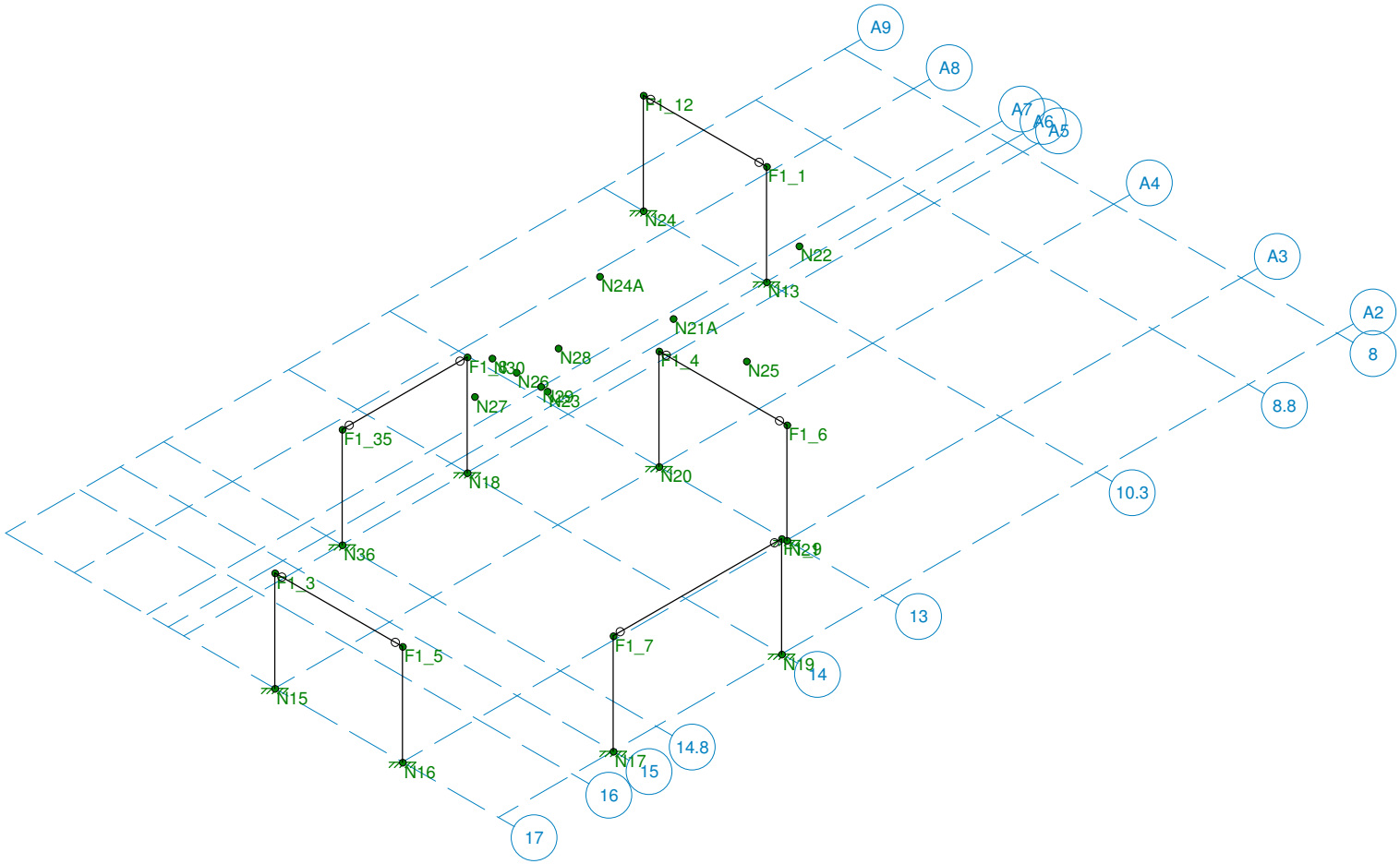


		SK - 1
		Jul 20, 2018 at 4:20 PM
		Braced Frames.r3d

Structural Calculations

3D Moment Frame Gravity Loadings

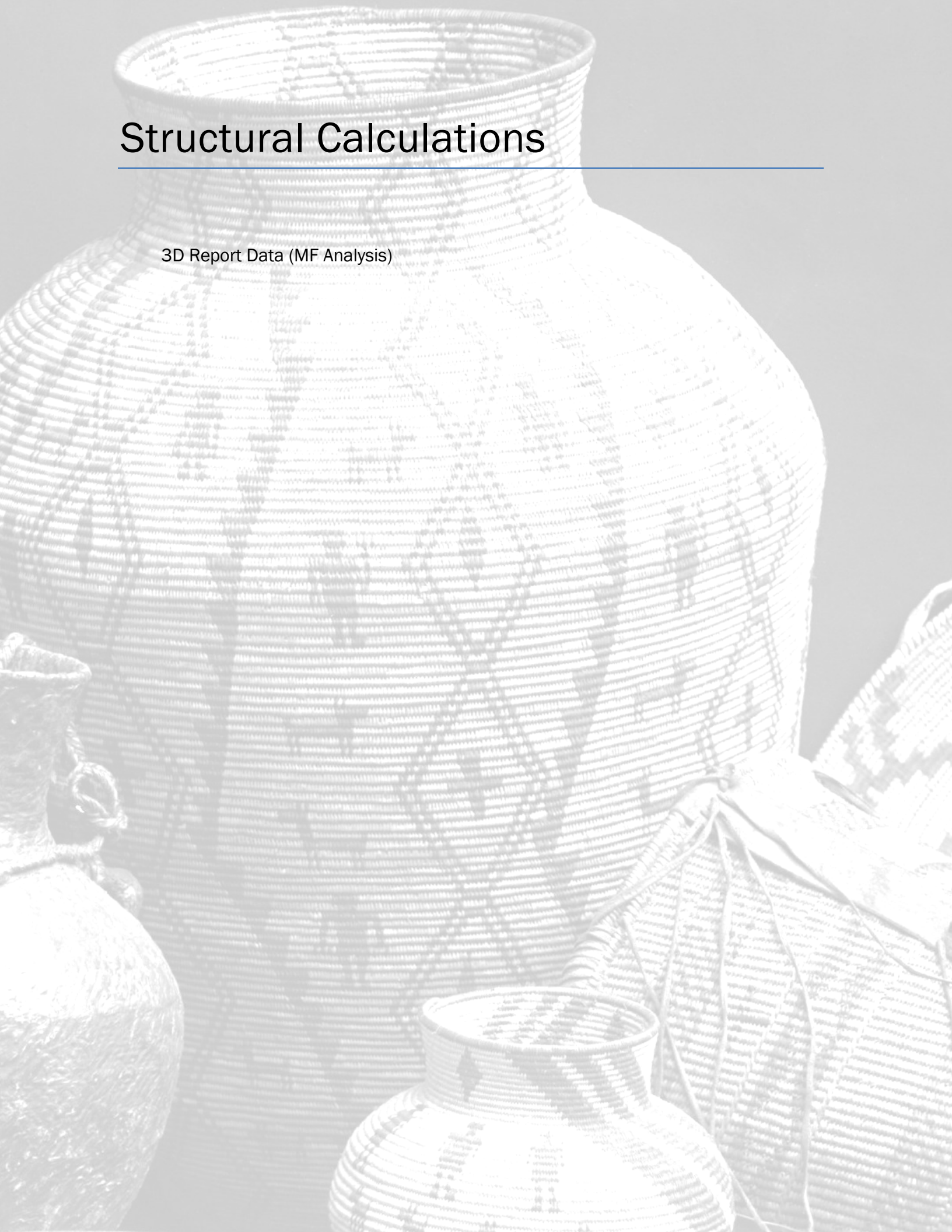




QPEC	Mescalero Hospital Addition	SK - 4
CMP		Jul 20, 2018 at 4:20 PM
5135.01		5135.01- Framing Plans.rfl

Structural Calculations

3D Report Data (MF Analysis)



Basic Load Cases

	BLC Description	Category	X Gr...	Y Gr...	Z Gr...	Joint	Point	Distr...	Area...	Surf...
1	WL-NS	WL						2		
2	L-NS	WL						2		
3	L-EW	WL						2		
4	DEAD POINT LOADS	DL				12				
5	RLL POINT LOADS	RLL				12				
6	DEAD DIST LOADS	DL						6		
7	RLL DIST LOADS	RLL						6		
8	WIND POINT LOADS	WL				6				
9	WIND DIST LOADS - ALONG DIA.	WL						6		

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-f...	Y Rot.[k-f...	Z Rot.[k-f...	Footing
1	WL-NS-B	Reaction	Reaction	Reaction				
2	W-NS-B	Reaction	Reaction	Reaction				
3	W-EW-B	Reaction	Reaction	Reaction				
4	W-EW-R	Reaction	Reaction	Reaction		Reaction		
5	W-NS-R	Reaction	Reaction	Reaction		Reaction		
6	WL-NS-R	Reaction	Reaction	Reaction		Reaction		
7	MF1-B-(A9-...	Reaction	Reaction	Reaction				
8	MF1-B-(A6-...	Reaction	Reaction	Reaction				
9	MF2-B-(A4-...	Reaction	Reaction	Reaction				
10	MF2-B-(A3-...	Reaction	Reaction	Reaction				
11	MF3-B-(A2-...	Reaction	Reaction	Reaction				
12	MF3-B-(A2-...	Reaction	Reaction	Reaction				
13	MF4-B-(A3-...	Reaction	Reaction	Reaction				
14	MF4-B-(A4-...	Reaction	Reaction	Reaction				
15	MF5-B-(A5-...	Reaction	Reaction	Reaction				
16	MF5-B-(A5-...	Reaction	Reaction	Reaction				
17	MF6-B-(A9-...	Reaction	Reaction	Reaction				
18	MF6-B-(A9-...	Reaction	Reaction	Reaction				
19	MF1-R-(A9-...			Reaction				
20	MF1-R-(A6-...			Reaction				
21	MF2-R-(A4-...			Reaction				
22	MF2-R-(A3-...			Reaction				
23	MF3-R-(A2-...			Reaction				
24	MF3-R-(A2-...			Reaction				
25	MF4-R-(A3-...			Reaction				
26	MF4-R-(A4-...			Reaction				
27	MF5-R-(A5-...			Reaction				
28	MF5-R-(A5-...			Reaction				
29	MF6-R-(A9-...			Reaction				
30	MF6-R-(A9-...			Reaction				
31	MF1-NS	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
32	MF2-NS	Reaction	Reaction	Reaction		Reaction	Reaction	
33	MF4-NS	Reaction	Reaction	Reaction		Reaction	Reaction	
34	CANTSECT2							
35	MF5-EW	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
36	MF3-EW	Reaction	Reaction	Reaction		Reaction	Reaction	
37	CANTSECT							

Hot Rolled Steel Design Parameters

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	Kyy	Kzz	Cm-yy	Cm-zz	Cb	y sw...	z sw...	Function
1	WL-NS	W6X9	16												Lateral
2	L-NS	W6X9	16												Lateral
3	L-EW	W6X9	16												Lateral
4	MF1-CO...	MF1-C	12												Lateral
5	MF1-CO...	MF1-C	12												Lateral
6	MF2-CO...	MF2-C	14												Lateral
7	MF2-CO...	MF2-C	14												Lateral
8	MF3-CO...	MF3-C	14												Lateral
9	MF3-CO...	MF3-C	14												Lateral
10	MF4-CO...	MF4-C	14												Lateral
11	MF4-CO...	MF4-C	14												Lateral
12	MF5-CO...	MF5-C	14												Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	Kyy	Kzz	Cm-yy	Cm-zz	Cb	y sw...	z sw...	Function
13	MF5-CO...	MF5-C	14												Lateral
14	MF6-CO...	MF6-C	12												Lateral
15	MF6-CO...	MF6-C	12												Lateral
16	BEAM 1	MF1-B	21			1	1								Lateral
17	BEAM 2	MF2-B	20.417			1									Lateral
18	BEAM 3	MF3-B	26.916			6	0								Lateral
19	BEAM 4	MF4-B	20.417			1									Lateral
20	BEAM 5	MF5-B	20			4									Lateral
21	BEAM 6	MF6-B	33.666			6									Lateral
22	M22	W16X67	37												Lateral
23	M23	W8X35	34.333												Lateral
24	M24	W12X87	61.334												Lateral
25	M25	W14X34	28.5												Lateral
26	M26	W12X53	50.25												Lateral

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
1	WL-NS-B	0	0	0	0	
2	WL-NS-R	0	12	0	0	
3	WL-NS-PA	0	16	0	0	
4	W-NS-B	5	0	0	0	
5	W-NS-R	5	12	0	0	
6	W-NS-PA	5	16	0	0	
7	W-EW-B	10	0	0	0	
8	W-EW-R	10	14	0	0	
9	W-EW-PA	10	16	0	0	
10	MF1-B-(A9-10.3)	20	0	0	0	
11	MF1-R-(A9-10.3)	20	12	0	0	
12	MF1-B-(A6-10.3)	41	0	0	0	
13	MF1-R-(A6-10.3)	41	12	0	0	
14	MF2-B-(A4-13)	51	0	0	0	
15	MF2-R-(A4-13)	51	14	0	0	
16	MF2-B-(A3-13)	71.417	0	0	0	
17	MF2-R-(A3-13)	71.417	14	0	0	
18	MF3-B-(A2-14)	81.417	0	0	0	
19	MF3-R-(A2-14)	81.417	14	0	0	
20	MF3-B-(A2-15)	108.333	0	0	0	
21	MF3-R-(A2-15)	108.333	14	0	0	
22	MF4-B-(A3-17)	118.333	0	0	0	
23	MF4-R-(A3-17)	118.333	14	0	0	
24	MF4-B-(A4-17)	138.75	0	0	0	
25	MF4-R-(A4-17)	138.75	14	0	0	
26	MF5-B-(A5-14)	148.75	0	0	0	
27	MF5-R-(A5-14)	148.75	14	0	0	
28	MF5-B-(A5-16)	168.75	0	0	0	
29	MF5-R-(A5-16)	168.75	14	0	0	
30	MF6-B-(A9-14)	192.417	0	0	0	
31	MF6-R-(A9-14)	192.417	12	0	0	
32	MF6-B-(A9-16)	226.083	0	0	0	
33	MF6-R-(A9-16)	226.083	12	0	0	
34	MF1-NS	37	0	20	0	
35	CANTSECT	0	0	20	0	
36	MF2-NS	71.333	0	20	0	
37	MF4-NS	132.667	0	20	0	
38	CANTSECT2	0	0	40	0	
39	MF5-EW	28.5	0	40	0	
40	MF3-EW	78.75	0	40	0	

Load Combination Design

	Description	ASIF	CD	ABIF	Service	Hot Rolled	Cold For...	Wood	Concrete	Masonry	Footings	Aluminum
1	DEAD					Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	ROOF LIVE					Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	WIND (+)					Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	WIND (-)					Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	ASCE 1 (a)					Yes	Yes		Yes	Yes	Yes	

Load Combination Design (Continued)

	Description	ASIF	CD	ABIF	Service	Hot Rolled	Cold For...	Wood	Concrete	Masonry	Footings	Aluminum
6	ASCE 2 (a) (a)					Yes	Yes		Yes	Yes	Yes	
7	ASCE 2 (b) (a)					Yes	Yes		Yes	Yes	Yes	
8	ASCE 3 (a) (a)					Yes	Yes		Yes	Yes	Yes	
9	ASCE 3 (b) (a)					Yes	Yes		Yes	Yes	Yes	
10	ASCE 3 (b) (b)					Yes	Yes		Yes	Yes	Yes	
11	ASCE 3 (d) (a)					Yes	Yes		Yes	Yes	Yes	
12	ASCE 3 (d) (b)					Yes	Yes		Yes	Yes	Yes	
13	ASCE 3 (f) (a)					Yes	Yes		Yes	Yes	Yes	
14	ASCE 4 (a) (a)					Yes	Yes		Yes	Yes	Yes	
15	ASCE 4 (a) (b)					Yes	Yes		Yes	Yes	Yes	
16	ASCE 4 (b) (a)					Yes	Yes		Yes	Yes	Yes	
17	ASCE 4 (b) (b)					Yes	Yes		Yes	Yes	Yes	
18	ASCE 4 (c) (a)					Yes	Yes		Yes	Yes	Yes	
19	ASCE 4 (c) (b)					Yes	Yes		Yes	Yes	Yes	
20	ASCE 6 (a)					Yes	Yes		Yes	Yes	Yes	
21	ASCE 6 (b)					Yes	Yes		Yes	Yes	Yes	

Load Combinations

	Description	Solve	PDelta	SRSS	BLC	Fact...	BLC	Fac...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Factor
1	DEAD		Y		DL	1														
2	ROOF LIVE		Y		RLL	1														
3	WIND (+)		Y		WL	1														
4	WIND (-)		Y		WL	-1														
5	ASCE 1 (a)	Yes	Y		DL	1.4	NL	1												
6	ASCE 2 (a) (a)	Yes	Y		DL	1.2	LL	1.6	LLS	1.6	RLL	.5	NL	1						
7	ASCE 2 (b) (a)	Yes	Y		DL	1.2	LL	1.6	LLS	1.6	NL	1								
8	ASCE 3 (a) (a)	Yes	Y		DL	1.2	RLL	1.6	LL	1	LLS	1	NL	1						
9	ASCE 3 (b) (a)	Yes	Y		DL	1.2	RLL	1.6	WL	.5										
10	ASCE 3 (b) (b)	Yes	Y		DL	1.2	RLL	1.6	WL	-.5										
11	ASCE 3 (d) (a)	Yes	Y		DL	1.2	WL	.5												
12	ASCE 3 (d) (b)	Yes	Y		DL	1.2	WL	-.5												
13	ASCE 3 (f) (a)	Yes	Y		DL	1.2	RL	1.6	WL	-.5										
14	ASCE 4 (a) (a)	Yes	Y		DL	1.2	WL	1	LL	1	LLS	1	RLL	.5						
15	ASCE 4 (a) (b)	Yes	Y		DL	1.2	WL	-1	LL	1	LLS	1	RLL	.5						
16	ASCE 4 (b) (a)	Yes	Y		DL	1.2	WL	1	LL	1	LLS	1								
17	ASCE 4 (b) (b)	Yes	Y		DL	1.2	WL	-1	LL	1	LLS	1								
18	ASCE 4 (c) (a)	Yes	Y		DL	1.2	WL	1	LL	1	LLS	1	RL	.5						
19	ASCE 4 (c) (b)	Yes	Y		DL	1.2	WL	-1	LL	1	LLS	1	RL	.5						
20	ASCE 6 (a)	Yes	Y		DL	.9	WL	1												
21	ASCE 6 (b)	Yes	Y		DL	.9	WL	-1												

Member Distributed Loads (BLC 1 : WL-NS)

	Member Label	Direction	Start Magnitude[k/ft,d...	End Magnitude[k/ft,d...	Start Location[ft,%]	End Location[ft,%]
1	WL-NS	X	.031	.031	0	12
2	WL-NS	X	.067	.067	12	16

Member Distributed Loads (BLC 2 : L-NS)

	Member Label	Direction	Start Magnitude[k/ft,d...	End Magnitude[k/ft,d...	Start Location[ft,%]	End Location[ft,%]
1	L-NS	X	.023	.023	0	12
2	L-NS	X	.067	.067	12	16

Member Distributed Loads (BLC 3 : L-EW)

	Member Label	Direction	Start Magnitude[k/ft,d...	End Magnitude[k/ft,d...	Start Location[ft,%]	End Location[ft,%]
1	L-EW	X	.023	.023	0	14
2	L-EW	X	.067	.067	14	16

Member Distributed Loads (BLC 6 : DEAD DIST LOADS)

	Member Label	Direction	Start Magnitude[k/ft,d...	End Magnitude[k/ft,d...	Start Location[ft,%]	End Location[ft,%]
1	BEAM 1	Y	-.146	-.146	0	0
2	BEAM 2	Y	-.163	-.163	0	0
3	BEAM 3	Y	-.183	-.183	0	0
4	BEAM 4	Y	-.075	-.075	0	0
5	BEAM 5	Y	-.516	-.516	0	0
6	BEAM 6	Y	-.342	-.342	0	0

Member Distributed Loads (BLC 7 : BLL DIST LOADS)

	Member Label	Direction	Start Magnitude[k/ft,d...	End Magnitude[k/ft,d...	Start Location[ft,%]	End Location[ft,%]
1	BEAM 1	Y	-.108	-.108	0	0
2	BEAM 2	Y	-.121	-.121	0	0
3	BEAM 3	Y	-.153	-.153	0	0
4	BEAM 4	Y	-.056	-.056	0	0
5	BEAM 5	Y	-.43	-.43	0	0
6	BEAM 6	Y	-.285	-.285	0	0

Member Distributed Loads (BLC 9 : WIND DIST LOADS - ALONG DIA.)

	Member Label	Direction	Start Magnitude[k/ft,d...	End Magnitude[k/ft,d...	Start Location[ft,%]	End Location[ft,%]
1	M22	Y	-.451	-.451	0	0
2	M23	Y	-.451	-.451	0	28
3	M23	Y	-.5	-.5	28	0
4	M24	Y	-.5	-.5	0	0
5	M25	Y	-.305	-.305	0	0
6	M26	Y	-.305	-.305	0	0

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	TOM	Inactive	Seismic Design ...
1	WL-NS						Yes			None
2	L-NS						Yes			None
3	L-EW						Yes			None
4	MF1-COL1						Yes			None
5	MF1-COL2						Yes			None
6	MF2-COL1						Yes			None
7	MF2-COL2						Yes			None
8	MF3-COL1						Yes			None
9	MF3-COL2						Yes			None
10	MF4-COL1						Yes			None
11	MF4-COL2						Yes			None
12	MF5-COL1						Yes			None
13	MF5-COL2						Yes			None
14	MF6-COL1						Yes			None
15	MF6-COL2						Yes			None
16	BEAM 1						Yes			None
17	BEAM 2						Yes			None
18	BEAM 3						Yes			None
19	BEAM 4						Yes			None
20	BEAM 5						Yes			None
21	BEAM 6						Yes			None
22	M22						Yes			None
23	M23	BenPIN	BenPIN				Yes			None
24	M24	BenPIN	BenPIN				Yes			None
25	M25						Yes			None
26	M26	BenPIN	BenPIN				Yes			None

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate...	Section/Shape	Type	Design Li...	Material	Design Rules
1	WL-NS	WL-N...	WL-N...			W6X9	Beam	Wide Fla...	A36 Gr.36	Typical
2	L-NS	W-NS...	W-NS...			W6X9	Beam	Wide Fla...	A36 Gr.36	Typical
3	L-EW	W-E...	W-E...			W6X9	Beam	Wide Fla...	A36 Gr.36	Typical
4	MF1-COL1	MF1-...	MF1-...			MF1-C	Column	Tube	A500 Gr.46	BF1
5	MF1-COL2	MF1-...	MF1-...			MF1-C	Column	Tube	A500 Gr.46	BF1
6	MF2-COL1	MF2-...	MF2-...			MF2-C	Column	Tube	A500 Gr.46	BF2
7	MF2-COL2	MF2-...	MF2-...			MF2-C	Column	Tube	A500 Gr.46	BF2
8	MF3-COL1	MF3-...	MF3-...			MF3-C	Column	Tube	A500 Gr.46	BF3
9	MF3-COL2	MF3-...	MF3-...			MF3-C	Column	Tube	A500 Gr.46	BF3
10	MF4-COL1	MF4-...	MF4-...			MF4-C	Column	Tube	A500 Gr.46	BF4
11	MF4-COL2	MF4-...	MF4-...			MF4-C	Column	Tube	A500 Gr.46	BF4
12	MF5-COL1	MF5-...	MF5-...			MF5-C	Column	Tube	A500 Gr.46	BF5
13	MF5-COL2	MF5-...	MF5-...			MF5-C	Column	Tube	A500 Gr.46	BF5
14	MF6-COL1	MF6-...	MF6-...			MF6-C	Column	Tube	A500 Gr.46	BF6
15	MF6-COL2	MF6-...	MF6-...			MF6-C	Column	Tube	A500 Gr.46	BF6
16	BEAM 1	MF1-...	MF1-...			MF1-B	HBrace	Wide Fla...	A992	BEAM1
17	BEAM 2	MF2-...	MF2-...			MF2-B	HBrace	Wide Fla...	A992	BEAM2
18	BEAM 3	MF3-...	MF3-...			MF3-B	HBrace	Wide Fla...	A992	BEAM3

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate...	Section/Shape	Type	Design Li...	Material	Design Rules
19	BEAM 4	MF4-...	MF4-...			MF4-B	HBrace	Wide Fla...	A992	BEAM4
20	BEAM 5	MF5-...	MF5-...			MF5-B	HBrace	Wide Fla...	A992	BEAM5
21	BEAM 6	MF6-...	MF6-...			MF6-B	HBrace	Wide Fla...	A992	BEAM6
22	M22	CANT...	MF1-...			W16X67	Beam	Wide Fla...	A36 Gr.36	Typical
23	M23	MF1-...	MF2-...			W8X35	Beam	Wide Fla...	A36 Gr.36	Typical
24	M24	MF2-...	MF4-...			W12X87	Beam	Wide Fla...	A36 Gr.36	Typical
25	M25	CANT...	MF5-...			W14X34	Beam	Wide Fla...	A36 Gr.36	Typical
26	M26	MF5-...	MF3-...			W12X53	Beam	Wide Fla...	A36 Gr.36	Typical

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	WL-NS-B	m...	.142	15	0	5	0	5	0	5	0	5	0	5
2		min	-.142	14	0	5	0	5	0	5	0	5	0	5
3	W-NS-B	m...	.093	15	0	5	0	5	0	5	0	5	0	5
4		min	-.093	14	0	5	0	5	0	5	0	5	0	5
5	W-EW-B	m...	.151	15	0	5	0	5	0	5	0	5	0	5
6		min	-.151	14	0	5	0	5	0	5	0	5	0	5
7	W-EW-R	m...	.305	15	0	5	0	5	0	5	0	5	0	5
8		min	-.305	14	0	5	0	5	0	5	0	5	0	5
9	W-NS-R	m...	.451	15	0	5	0	5	0	5	0	5	0	5
10		min	-.451	14	0	5	0	5	0	5	0	5	0	5
11	WL-NS-R	m...	.5	15	0	5	0	5	0	5	0	5	0	5
12		min	-.5	14	0	5	0	5	0	5	0	5	0	5
13	MF1-B-(A...	m...	12.45	15	20.949	15	0	5	0	5	0	5	0	5
14		min	-12.362	20	-10.258	20	0	5	0	5	0	5	0	5
15	MF1-B-(A...	m...	12.233	21	28.381	14	0	5	0	5	0	5	0	5
16		min	-12.25	14	-5.829	21	0	5	0	5	0	5	0	5
17	MF2-B-(A...	m...	11.713	15	30.75	15	0	5	0	5	0	5	0	5
18		min	-11.803	20	-7.894	20	0	5	0	5	0	5	0	5
19	MF2-B-(A...	m...	11.804	21	29.275	14	0	5	0	5	0	5	0	5
20		min	-11.729	14	-8.769	21	0	5	0	5	0	5	0	5
21	MF3-B-(A...	m...	4.58	15	10.773	10	0	5	0	5	0	5	0	5
22		min	-3.506	20	-.949	20	0	5	0	5	0	5	0	5
23	MF3-B-(A...	m...	3.468	21	13.694	9	0	5	0	5	0	5	0	5
24		min	-4.515	14	.189	21	0	5	0	5	0	5	0	5
25	MF4-B-(A...	m...	7.458	15	18.354	15	0	5	0	5	0	5	0	5
26		min	-7.938	20	-6.346	20	0	5	0	5	0	5	0	5
27	MF4-B-(A...	m...	7.932	21	18.265	14	0	5	0	5	0	5	0	5
28		min	-7.454	14	-6.383	21	0	5	0	5	0	5	0	5
29	MF5-B-(A...	m...	9.251	15	30.009	10	0	5	0	5	0	5	0	5
30		min	-7.771	20	-2.912	20	0	5	0	5	0	5	0	5
31	MF5-B-(A...	m...	7.687	21	38.559	9	0	5	0	5	0	5	0	5
32		min	-9.111	14	.446	21	0	5	0	5	0	5	0	5
33	MF6-B-(A...	m...	4.33	8	22.595	8	0	5	0	5	0	5	0	5
34		min	1.538	20	8.34	20	0	5	0	5	0	5	0	5
35	MF6-B-(A...	m...	-1.538	20	17.484	8	0	5	0	5	0	5	0	5
36		min	-4.33	8	6.349	20	0	5	0	5	0	5	0	5
37	MF1-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
38		min	0	5	0	5	0	5	0	5	0	5	0	5
39	MF1-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
40		min	0	5	0	5	0	5	0	5	0	5	0	5
41	MF2-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
42		min	0	5	0	5	0	5	0	5	0	5	0	5
43	MF2-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
44		min	0	5	0	5	0	5	0	5	0	5	0	5
45	MF3-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
46		min	0	5	0	5	0	5	0	5	0	5	0	5
47	MF3-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
48		min	0	5	0	5	0	5	0	5	0	5	0	5
49	MF4-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
50		min	0	5	0	5	0	5	0	5	0	5	0	5
51	MF4-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
52		min	0	5	0	5	0	5	0	5	0	5	0	5
53	MF5-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
54		min	0	5	0	5	0	5	0	5	0	5	0	5
55	MF5-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
56		min	0	5	0	5	0	5	0	5	0	5	0	5

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
57	MF6-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
58		min	0	5	0	5	0	5	0	5	0	5	0	5
59	MF6-R-(...	m...	0	5	0	5	0	5	0	5	0	5	0	5
60		min	0	5	0	5	0	5	0	5	0	5	0	5
61	MF1-NS	m...	0	5	24.458	14	0	5	0	5	0	5	308.709	15
62		min	0	5	-24.458	15	0	5	0	5	0	5	-308.7...	14
63	MF2-NS	m...	0	5	23.357	14	0	5	0	5	0	5	0	5
64		min	0	5	-23.357	15	0	5	0	5	0	5	0	5
65	MF4-NS	m...	0	5	15.334	14	0	5	0	5	0	5	0	5
66		min	0	5	-15.334	15	0	5	0	5	0	5	0	5
67	MF5-EW	m...	0	5	16.356	14	0	5	0	5	0	5	123.868	15
68		min	0	5	-16.356	15	0	5	0	5	0	5	-123.8...	14
69	MF3-EW	m...	0	5	7.663	14	0	5	0	5	0	5	0	5
70		min	0	5	-7.663	15	0	5	0	5	0	5	0	5
71	Totals:	m...	88.809	15	253.409	9	0	5						
72		min	-88.809	16	-7.192	21	0	5						

Envelope AISC 13th(360-05): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[...	LC	Shear...	Loc[...	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
1	WL-NS	W6X9	.045	11.7...	14	.012	12.2...	y	14	13.421	86.832	4.644	10.915	1...	H1-1b
2	L-NS	W6X9	.036	11.7...	14	.012	12.2...	y	14	13.421	86.832	4.644	13.959	1...	H1-1b
3	L-EW	W6X9	.053	6.737	14	.008	13.8...	y	14	13.421	86.832	4.644	9.435	1...	H1-1b
4	MF1-COL1	HSS12X1...	.960	12	15	.081	0	y	15	452.587	506.411	132.945	165.884	1...	H1-1b
5	MF1-COL2	HSS12X1...	.966	12	14	.080	0	y	14	452.587	506.411	132.945	165.884	1...	H1-1b
6	MF2-COL1	HSS16X4...	.893	14	15	.048	0	y	15	272.253	544.422	59.322	207.625	1...	H1-1b
7	MF2-COL2	HSS16X4...	.889	14	14	.048	0	y	14	272.253	544.422	59.322	207.625	1...	H1-1b
8	MF3-COL1	HSS10X5...	.964	14	15	.046	0	y	15	172.6	274.05	37.921	73.257	1...	H1-1b
9	MF3-COL2	HSS10X5...	.969	14	14	.046	0	y	14	172.6	274.05	37.921	73.257	1...	H1-1b
10	MF4-COL1	HSS9X5X...	.878	14	15	.039	0	y	15	347.93	581.817	87.338	132.821	1...	H1-1b
11	MF4-COL2	HSS9X5X...	.877	14	14	.039	0	y	14	347.93	581.817	87.338	132.821	1...	H1-1b
12	MF5-COL1	HSS14X4...	.896	14	15	.044	0	y	15	247.95	486.669	56.273	164.663	1...	H1-1b
13	MF5-COL2	HSS14X4...	.906	14	14	.044	0	y	14	247.95	486.669	56.273	164.663	1...	H1-1b
14	MF6-COL1	HSS9X5X4	.896	12	8	.045	0	y	8	183.618	254.799	36.393	62.239	1...	H1-1b
15	MF6-COL2	HSS9X5X4	.882	12	8	.045	0	y	8	183.618	254.799	36.393	62.239	1...	H1-1b
16	BEAM 1	W14X30	.962	21	14	.149	0	y	15	69.726	398.25	33.713	177.375	1	H1-1b
17	BEAM 2	W14X34	.979	20.4...	14	.159	0	y	15	87.69	450	39.75	190.12	2...	H1-1b
18	BEAM 3	W8X28	.720	26.9...	14	.122	26.9...	y	9	46.991	371.25	37.875	102	1	H1-1b
19	BEAM 4	W12X26	.994	20.4...	14	.143	0	y	15	65.109	344.25	30.637	120.648	2...	H1-1b
20	BEAM 5	W12X30	.962	20	14	.212	0	y	15	79.618	395.55	35.85	152.683	2...	H1-1b
21	BEAM 6	W8X35	.681	0	8	.193	0	y	8	58.966	463.5	60.375	80.593	1...	H1-1b
22	M22	W16X67	.880	37	15	.120	37	y	14	136.371	638.28	95.85	351	2...	H1-1b
23	M23	W8X35	.961	17.1...	14	.148	34.3...	y	14	56.697	333.72	43.47	69.625	1...	H1-1b
24	M24	W12X87	.987	30.6...	14	.110	0	y	14	100.506	829.44	163.08	238.161	1...	H1-1b
25	M25	W14X34	.977	28.5	14	.101	28.5	y	14	45.003	324	28.62	126.741	2...	H1-1b
26	M26	W12X53	.917	25.1...	14	.085	0	y	14	59.521	505.44	78.57	105.037	1...	H1-1b

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
1	WL-NS	1	m...	0	5	.142	14	0	5	0	5	0	5	0	5
2			min	0	5	-.142	15	0	5	0	5	0	5	0	5
3		2	m...	0	5	.116	14	0	5	0	5	0	5	.108	15
4			min	0	5	-.116	15	0	5	0	5	0	5	-.108	14
5		3	m...	0	5	.089	14	0	5	0	5	0	5	.194	15
6			min	0	5	-.089	15	0	5	0	5	0	5	-.194	14
7		4	m...	0	5	.063	14	0	5	0	5	0	5	.259	15
8			min	0	5	-.063	15	0	5	0	5	0	5	-.259	14
9		5	m...	0	5	.037	14	0	5	0	5	0	5	.301	15
10			min	0	5	-.037	15	0	5	0	5	0	5	-.301	14
11		6	m...	0	5	.011	14	0	5	0	5	0	5	.321	15
12			min	0	5	-.011	15	0	5	0	5	0	5	-.321	14
13		7	m...	0	5	.015	15	0	5	0	5	0	5	.319	15
14			min	0	5	-.015	14	0	5	0	5	0	5	-.319	14
15		8	m...	0	5	.042	15	0	5	0	5	0	5	.295	15
16			min	0	5	-.042	14	0	5	0	5	0	5	-.295	14
17		9	m...	0	5	.068	15	0	5	0	5	0	5	.249	15

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
18			min	0	5	-.068	14	0	5	0	5	0	5	-.249	14
19		10	m...	0	5	.094	15	0	5	0	5	0	5	.181	15
20			min	0	5	-.094	14	0	5	0	5	0	5	-.181	14
21		11	m...	0	5	.12	15	0	5	0	5	0	5	.091	15
22			min	0	5	-.12	14	0	5	0	5	0	5	-.091	14
23		12	m...	0	5	.146	15	0	5	0	5	0	5	.021	14
24			min	0	5	-.146	14	0	5	0	5	0	5	-.021	15
25		13	m...	0	5	.172	15	0	5	0	5	0	5	.155	14
26			min	0	5	-.172	14	0	5	0	5	0	5	-.155	15
27		14	m...	0	5	.198	15	0	5	0	5	0	5	.311	14
28			min	0	5	-.198	14	0	5	0	5	0	5	-.311	15
29		15	m...	0	5	.225	15	0	5	0	5	0	5	.489	14
30			min	0	5	-.225	14	0	5	0	5	0	5	-.489	15
31		16	m...	0	5	.226	14	0	5	0	5	0	5	.381	14
32			min	0	5	-.226	15	0	5	0	5	0	5	-.381	15
33		17	m...	0	5	.17	14	0	5	0	5	0	5	.214	14
34			min	0	5	-.17	15	0	5	0	5	0	5	-.214	15
35		18	m...	0	5	.113	14	0	5	0	5	0	5	.095	14
36			min	0	5	-.113	15	0	5	0	5	0	5	-.095	15
37		19	m...	0	5	.056	14	0	5	0	5	0	5	.024	14
38			min	0	5	-.056	15	0	5	0	5	0	5	-.024	15
39		20	m...	0	5	0	5	0	5	0	5	0	5	0	5
40			min	0	5	0	5	0	5	0	5	0	5	0	5
41	L-NS	1	m...	0	5	.093	14	0	5	0	5	0	5	0	5
42			min	0	5	-.093	15	0	5	0	5	0	5	0	5
43		2	m...	0	5	.073	14	0	5	0	5	0	5	.07	15
44			min	0	5	-.073	15	0	5	0	5	0	5	-.07	14
45		3	m...	0	5	.054	14	0	5	0	5	0	5	.123	15
46			min	0	5	-.054	15	0	5	0	5	0	5	-.123	14
47		4	m...	0	5	.035	14	0	5	0	5	0	5	.161	15
48			min	0	5	-.035	15	0	5	0	5	0	5	-.161	14
49		5	m...	0	5	.016	14	0	5	0	5	0	5	.182	15
50			min	0	5	-.016	15	0	5	0	5	0	5	-.182	14
51		6	m...	0	5	.004	15	0	5	0	5	0	5	.187	15
52			min	0	5	-.004	14	0	5	0	5	0	5	-.187	14
53		7	m...	0	5	.023	15	0	5	0	5	0	5	.176	15
54			min	0	5	-.023	14	0	5	0	5	0	5	-.176	14
55		8	m...	0	5	.042	15	0	5	0	5	0	5	.148	15
56			min	0	5	-.042	14	0	5	0	5	0	5	-.148	14
57		9	m...	0	5	.062	15	0	5	0	5	0	5	.105	15
58			min	0	5	-.062	14	0	5	0	5	0	5	-.105	14
59		10	m...	0	5	.081	15	0	5	0	5	0	5	.045	15
60			min	0	5	-.081	14	0	5	0	5	0	5	-.045	14
61		11	m...	0	5	.1	15	0	5	0	5	0	5	.031	14
62			min	0	5	-.1	14	0	5	0	5	0	5	-.031	15
63		12	m...	0	5	.12	15	0	5	0	5	0	5	.124	14
64			min	0	5	-.12	14	0	5	0	5	0	5	-.124	15
65		13	m...	0	5	.139	15	0	5	0	5	0	5	.233	14
66			min	0	5	-.139	14	0	5	0	5	0	5	-.233	15
67		14	m...	0	5	.158	15	0	5	0	5	0	5	.358	14
68			min	0	5	-.158	14	0	5	0	5	0	5	-.358	15
69		15	m...	0	5	.178	15	0	5	0	5	0	5	.499	14
70			min	0	5	-.178	14	0	5	0	5	0	5	-.499	15
71		16	m...	0	5	.226	14	0	5	0	5	0	5	.381	14
72			min	0	5	-.226	15	0	5	0	5	0	5	-.381	15
73		17	m...	0	5	.17	14	0	5	0	5	0	5	.214	14
74			min	0	5	-.17	15	0	5	0	5	0	5	-.214	15
75		18	m...	0	5	.113	14	0	5	0	5	0	5	.095	14
76			min	0	5	-.113	15	0	5	0	5	0	5	-.095	15
77		19	m...	0	5	.056	14	0	5	0	5	0	5	.024	14
78			min	0	5	-.056	15	0	5	0	5	0	5	-.024	15
79		20	m...	0	5	0	5	0	5	0	5	0	5	0	5
80			min	0	5	0	5	0	5	0	5	0	5	0	5
81	L-EW	1	m...	0	5	.151	14	0	5	0	5	0	5	0	5
82			min	0	5	-.151	15	0	5	0	5	0	5	0	5
83		2	m...	0	5	.131	14	0	5	0	5	0	5	.118	15
84			min	0	5	-.131	15	0	5	0	5	0	5	-.118	14
85		3	m...	0	5	.112	14	0	5	0	5	0	5	.221	15
86			min	0	5	-.112	15	0	5	0	5	0	5	-.221	14

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
87		4	m...	0	5	.093	14	0	5	0	5	0	5	.308	15
88			min	0	5	-.093	15	0	5	0	5	0	5	-.308	14
89		5	m...	0	5	.074	14	0	5	0	5	0	5	.378	15
90			min	0	5	-.074	15	0	5	0	5	0	5	-.378	14
91		6	m...	0	5	.054	14	0	5	0	5	0	5	.432	15
92			min	0	5	-.054	15	0	5	0	5	0	5	-.432	14
93		7	m...	0	5	.035	14	0	5	0	5	0	5	.469	15
94			min	0	5	-.035	15	0	5	0	5	0	5	-.469	14
95		8	m...	0	5	.016	14	0	5	0	5	0	5	.491	15
96			min	0	5	-.016	15	0	5	0	5	0	5	-.491	14
97		9	m...	0	5	.003	15	0	5	0	5	0	5	.496	15
98			min	0	5	-.003	14	0	5	0	5	0	5	-.496	14
99		10	m...	0	5	.023	15	0	5	0	5	0	5	.485	15
100			min	0	5	-.023	14	0	5	0	5	0	5	-.485	14
101		11	m...	0	5	.042	15	0	5	0	5	0	5	.458	15
102			min	0	5	-.042	14	0	5	0	5	0	5	-.458	14
103		12	m...	0	5	.061	15	0	5	0	5	0	5	.414	15
104			min	0	5	-.061	14	0	5	0	5	0	5	-.414	14
105		13	m...	0	5	.081	15	0	5	0	5	0	5	.354	15
106			min	0	5	-.081	14	0	5	0	5	0	5	-.354	14
107		14	m...	0	5	.1	15	0	5	0	5	0	5	.278	15
108			min	0	5	-.1	14	0	5	0	5	0	5	-.278	14
109		15	m...	0	5	.119	15	0	5	0	5	0	5	.186	15
110			min	0	5	-.119	14	0	5	0	5	0	5	-.186	14
111		16	m...	0	5	.139	15	0	5	0	5	0	5	.077	15
112			min	0	5	-.139	14	0	5	0	5	0	5	-.077	14
113		17	m...	0	5	.158	15	0	5	0	5	0	5	.048	14
114			min	0	5	-.158	14	0	5	0	5	0	5	-.048	15
115		18	m...	0	5	.113	14	0	5	0	5	0	5	.095	14
116			min	0	5	-.113	15	0	5	0	5	0	5	-.095	15
117		19	m...	0	5	.056	14	0	5	0	5	0	5	.024	14
118			min	0	5	-.056	15	0	5	0	5	0	5	-.024	15
119		20	m...	0	5	0	5	0	5	0	5	0	5	0	5
120			min	0	5	0	5	0	5	0	5	0	5	0	5
121	MF1-COL1	1	m...	20.949	15	12.121	20	0	5	0	5	0	5	0	5
122			min	-10.258	20	-12.946	15	0	5	0	5	0	5	0	5
123		2	m...	20.949	15	12.121	20	0	5	0	5	0	5	8.176	15
124			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-7.655	20
125		3	m...	20.949	15	12.121	20	0	5	0	5	0	5	16.353	15
126			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-15.311	20
127		4	m...	20.949	15	12.121	20	0	5	0	5	0	5	24.529	15
128			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-22.966	20
129		5	m...	20.949	15	12.121	20	0	5	0	5	0	5	32.705	15
130			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-30.622	20
131		6	m...	20.949	15	12.121	20	0	5	0	5	0	5	40.881	15
132			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-38.277	20
133		7	m...	20.949	15	12.121	20	0	5	0	5	0	5	49.058	15
134			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-45.933	20
135		8	m...	20.949	15	12.121	20	0	5	0	5	0	5	57.234	15
136			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-53.588	20
137		9	m...	20.949	15	12.121	20	0	5	0	5	0	5	65.41	15
138			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-61.244	20
139		10	m...	20.949	15	12.121	20	0	5	0	5	0	5	73.587	15
140			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-68.899	20
141		11	m...	20.949	15	12.121	20	0	5	0	5	0	5	81.763	15
142			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-76.555	20
143		12	m...	20.949	15	12.121	20	0	5	0	5	0	5	89.939	15
144			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-84.21	20
145		13	m...	20.949	15	12.121	20	0	5	0	5	0	5	98.116	15
146			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-91.866	20
147		14	m...	20.949	15	12.121	20	0	5	0	5	0	5	106.292	15
148			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-99.521	20
149		15	m...	20.949	15	12.121	20	0	5	0	5	0	5	114.468	15
150			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-107.176	20
151		16	m...	20.949	15	12.121	20	0	5	0	5	0	5	122.644	15
152			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-114.832	20
153		17	m...	20.949	15	12.121	20	0	5	0	5	0	5	130.821	15
154			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-122.487	20
155		18	m...	20.949	15	12.121	20	0	5	0	5	0	5	138.997	15

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
156			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-130.143	20
157		19	m...	20.949	15	12.121	20	0	5	0	5	0	5	147.173	15
158			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-137.798	20
159		20	m...	20.949	15	12.121	20	0	5	0	5	0	5	155.35	15
160			min	-10.258	20	-12.946	15	0	5	0	5	0	5	-145.454	20
161	MF1-COL2	1	m...	28.381	14	12.92	14	0	5	0	5	0	5	0	5
162			min	-5.829	21	-12.097	21	0	5	0	5	0	5	0	5
163		2	m...	28.381	14	12.92	14	0	5	0	5	0	5	7.64	21
164			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-8.16	14
165		3	m...	28.381	14	12.92	14	0	5	0	5	0	5	15.28	21
166			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-16.32	14
167		4	m...	28.381	14	12.92	14	0	5	0	5	0	5	22.921	21
168			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-24.48	14
169		5	m...	28.381	14	12.92	14	0	5	0	5	0	5	30.561	21
170			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-32.64	14
171		6	m...	28.381	14	12.92	14	0	5	0	5	0	5	38.201	21
172			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-40.799	14
173		7	m...	28.381	14	12.92	14	0	5	0	5	0	5	45.841	21
174			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-48.959	14
175		8	m...	28.381	14	12.92	14	0	5	0	5	0	5	53.482	21
176			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-57.119	14
177		9	m...	28.381	14	12.92	14	0	5	0	5	0	5	61.122	21
178			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-65.279	14
179		10	m...	28.381	14	12.92	14	0	5	0	5	0	5	68.762	21
180			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-73.439	14
181		11	m...	28.381	14	12.92	14	0	5	0	5	0	5	76.402	21
182			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-81.599	14
183		12	m...	28.381	14	12.92	14	0	5	0	5	0	5	84.043	21
184			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-89.759	14
185		13	m...	28.381	14	12.92	14	0	5	0	5	0	5	91.683	21
186			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-97.919	14
187		14	m...	28.381	14	12.92	14	0	5	0	5	0	5	99.323	21
188			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-106.078	14
189		15	m...	28.381	14	12.92	14	0	5	0	5	0	5	106.963	21
190			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-114.238	14
191		16	m...	28.381	14	12.92	14	0	5	0	5	0	5	114.604	21
192			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-122.398	14
193		17	m...	28.381	14	12.92	14	0	5	0	5	0	5	122.244	21
194			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-130.558	14
195		18	m...	28.381	14	12.92	14	0	5	0	5	0	5	129.884	21
196			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-138.718	14
197		19	m...	28.381	14	12.92	14	0	5	0	5	0	5	137.524	21
198			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-146.878	14
199		20	m...	28.381	14	12.92	14	0	5	0	5	0	5	145.165	21
200			min	-5.829	21	-12.097	21	0	5	0	5	0	5	-155.038	14
201	MF2-COL1	1	m...	30.75	15	11.627	20	0	5	0	5	0	5	0	5
202			min	-7.894	20	-12.404	15	0	5	0	5	0	5	0	5
203		2	m...	30.75	15	11.627	20	0	5	0	5	0	5	9.14	15
204			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-8.567	20
205		3	m...	30.75	15	11.627	20	0	5	0	5	0	5	18.28	15
206			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-17.135	20
207		4	m...	30.75	15	11.627	20	0	5	0	5	0	5	27.42	15
208			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-25.702	20
209		5	m...	30.75	15	11.627	20	0	5	0	5	0	5	36.559	15
210			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-34.27	20
211		6	m...	30.75	15	11.627	20	0	5	0	5	0	5	45.699	15
212			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-42.837	20
213		7	m...	30.75	15	11.627	20	0	5	0	5	0	5	54.839	15
214			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-51.405	20
215		8	m...	30.75	15	11.627	20	0	5	0	5	0	5	63.979	15
216			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-59.972	20
217		9	m...	30.75	15	11.627	20	0	5	0	5	0	5	73.119	15
218			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-68.539	20
219		10	m...	30.75	15	11.627	20	0	5	0	5	0	5	82.259	15
220			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-77.107	20
221		11	m...	30.75	15	11.627	20	0	5	0	5	0	5	91.398	15
222			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-85.674	20
223		12	m...	30.75	15	11.627	20	0	5	0	5	0	5	100.538	15
224			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-94.242	20

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
225		13	m...	30.75	15	11.627	20	0	5	0	5	0	5	109.678	15
226			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-102.809	20
227		14	m...	30.75	15	11.627	20	0	5	0	5	0	5	118.818	15
228			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-111.377	20
229		15	m...	30.75	15	11.627	20	0	5	0	5	0	5	127.958	15
230			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-119.944	20
231		16	m...	30.75	15	11.627	20	0	5	0	5	0	5	137.098	15
232			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-128.511	20
233		17	m...	30.75	15	11.627	20	0	5	0	5	0	5	146.238	15
234			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-137.079	20
235		18	m...	30.75	15	11.627	20	0	5	0	5	0	5	155.377	15
236			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-145.646	20
237		19	m...	30.75	15	11.627	20	0	5	0	5	0	5	164.517	15
238			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-154.214	20
239		20	m...	30.75	15	11.627	20	0	5	0	5	0	5	173.657	15
240			min	-7.894	20	-12.404	15	0	5	0	5	0	5	-162.781	20
241	MF2-COL2	1	m...	29.275	14	12.385	14	0	5	0	5	0	5	0	5
242			min	-8.769	21	-11.61	21	0	5	0	5	0	5	0	5
243		2	m...	29.275	14	12.385	14	0	5	0	5	0	5	8.555	21
244			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-9.126	14
245		3	m...	29.275	14	12.385	14	0	5	0	5	0	5	17.109	21
246			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-18.251	14
247		4	m...	29.275	14	12.385	14	0	5	0	5	0	5	25.664	21
248			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-27.377	14
249		5	m...	29.275	14	12.385	14	0	5	0	5	0	5	34.219	21
250			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-36.502	14
251		6	m...	29.275	14	12.385	14	0	5	0	5	0	5	42.774	21
252			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-45.628	14
253		7	m...	29.275	14	12.385	14	0	5	0	5	0	5	51.328	21
254			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-54.754	14
255		8	m...	29.275	14	12.385	14	0	5	0	5	0	5	59.883	21
256			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-63.879	14
257		9	m...	29.275	14	12.385	14	0	5	0	5	0	5	68.438	21
258			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-73.005	14
259		10	m...	29.275	14	12.385	14	0	5	0	5	0	5	76.993	21
260			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-82.131	14
261		11	m...	29.275	14	12.385	14	0	5	0	5	0	5	85.547	21
262			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-91.256	14
263		12	m...	29.275	14	12.385	14	0	5	0	5	0	5	94.102	21
264			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-100.382	14
265		13	m...	29.275	14	12.385	14	0	5	0	5	0	5	102.657	21
266			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-109.507	14
267		14	m...	29.275	14	12.385	14	0	5	0	5	0	5	111.212	21
268			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-118.633	14
269		15	m...	29.275	14	12.385	14	0	5	0	5	0	5	119.766	21
270			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-127.759	14
271		16	m...	29.275	14	12.385	14	0	5	0	5	0	5	128.321	21
272			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-136.884	14
273		17	m...	29.275	14	12.385	14	0	5	0	5	0	5	136.876	21
274			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-146.01	14
275		18	m...	29.275	14	12.385	14	0	5	0	5	0	5	145.431	21
276			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-155.135	14
277		19	m...	29.275	14	12.385	14	0	5	0	5	0	5	153.985	21
278			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-164.261	14
279		20	m...	29.275	14	12.385	14	0	5	0	5	0	5	162.54	21
280			min	-8.769	21	-11.61	21	0	5	0	5	0	5	-173.387	14
281	MF3-COL1	1	m...	10.773	10	3.476	20	0	5	0	5	0	5	0	5
282			min	-.949	20	-4.897	15	0	5	0	5	0	5	0	5
283		2	m...	10.773	10	3.476	20	0	5	0	5	0	5	3.608	15
284			min	-.949	20	-4.897	15	0	5	0	5	0	5	-2.561	20
285		3	m...	10.773	10	3.476	20	0	5	0	5	0	5	7.216	15
286			min	-.949	20	-4.897	15	0	5	0	5	0	5	-5.123	20
287		4	m...	10.773	10	3.476	20	0	5	0	5	0	5	10.824	15
288			min	-.949	20	-4.897	15	0	5	0	5	0	5	-7.684	20
289		5	m...	10.773	10	3.476	20	0	5	0	5	0	5	14.432	15
290			min	-.949	20	-4.897	15	0	5	0	5	0	5	-10.246	20
291		6	m...	10.773	10	3.476	20	0	5	0	5	0	5	18.04	15
292			min	-.949	20	-4.897	15	0	5	0	5	0	5	-12.807	20
293		7	m...	10.773	10	3.476	20	0	5	0	5	0	5	21.649	15

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
294			min	-.949	20	-4.897	15	0	5	0	5	0	5	-15.368	20
295		8	m...	10.773	10	3.476	20	0	5	0	5	0	5	25.257	15
296			min	-.949	20	-4.897	15	0	5	0	5	0	5	-17.93	20
297		9	m...	10.773	10	3.476	20	0	5	0	5	0	5	28.865	15
298			min	-.949	20	-4.897	15	0	5	0	5	0	5	-20.491	20
299		10	m...	10.773	10	3.476	20	0	5	0	5	0	5	32.473	15
300			min	-.949	20	-4.897	15	0	5	0	5	0	5	-23.053	20
301		11	m...	10.773	10	3.476	20	0	5	0	5	0	5	36.081	15
302			min	-.949	20	-4.897	15	0	5	0	5	0	5	-25.614	20
303		12	m...	10.773	10	3.476	20	0	5	0	5	0	5	39.689	15
304			min	-.949	20	-4.897	15	0	5	0	5	0	5	-28.175	20
305		13	m...	10.773	10	3.476	20	0	5	0	5	0	5	43.297	15
306			min	-.949	20	-4.897	15	0	5	0	5	0	5	-30.737	20
307		14	m...	10.773	10	3.476	20	0	5	0	5	0	5	46.905	15
308			min	-.949	20	-4.897	15	0	5	0	5	0	5	-33.298	20
309		15	m...	10.773	10	3.476	20	0	5	0	5	0	5	50.513	15
310			min	-.949	20	-4.897	15	0	5	0	5	0	5	-35.86	20
311		16	m...	10.773	10	3.476	20	0	5	0	5	0	5	54.121	15
312			min	-.949	20	-4.897	15	0	5	0	5	0	5	-38.421	20
313		17	m...	10.773	10	3.476	20	0	5	0	5	0	5	57.729	15
314			min	-.949	20	-4.897	15	0	5	0	5	0	5	-40.982	20
315		18	m...	10.773	10	3.476	20	0	5	0	5	0	5	61.337	15
316			min	-.949	20	-4.897	15	0	5	0	5	0	5	-43.544	20
317		19	m...	10.773	10	3.476	20	0	5	0	5	0	5	64.946	15
318			min	-.949	20	-4.897	15	0	5	0	5	0	5	-46.105	20
319		20	m...	10.773	10	3.476	20	0	5	0	5	0	5	68.554	15
320			min	-.949	20	-4.897	15	0	5	0	5	0	5	-48.667	20
321	MF3-COL2	1	m...	13.694	9	4.895	14	0	5	0	5	0	5	0	5
322			min	.189	21	-3.474	21	0	5	0	5	0	5	0	5
323		2	m...	13.694	9	4.895	14	0	5	0	5	0	5	2.56	21
324			min	.189	21	-3.474	21	0	5	0	5	0	5	-3.606	14
325		3	m...	13.694	9	4.895	14	0	5	0	5	0	5	5.12	21
326			min	.189	21	-3.474	21	0	5	0	5	0	5	-7.213	14
327		4	m...	13.694	9	4.895	14	0	5	0	5	0	5	7.68	21
328			min	.189	21	-3.474	21	0	5	0	5	0	5	-10.819	14
329		5	m...	13.694	9	4.895	14	0	5	0	5	0	5	10.24	21
330			min	.189	21	-3.474	21	0	5	0	5	0	5	-14.426	14
331		6	m...	13.694	9	4.895	14	0	5	0	5	0	5	12.8	21
332			min	.189	21	-3.474	21	0	5	0	5	0	5	-18.032	14
333		7	m...	13.694	9	4.895	14	0	5	0	5	0	5	15.359	21
334			min	.189	21	-3.474	21	0	5	0	5	0	5	-21.639	14
335		8	m...	13.694	9	4.895	14	0	5	0	5	0	5	17.919	21
336			min	.189	21	-3.474	21	0	5	0	5	0	5	-25.245	14
337		9	m...	13.694	9	4.895	14	0	5	0	5	0	5	20.479	21
338			min	.189	21	-3.474	21	0	5	0	5	0	5	-28.852	14
339		10	m...	13.694	9	4.895	14	0	5	0	5	0	5	23.039	21
340			min	.189	21	-3.474	21	0	5	0	5	0	5	-32.458	14
341		11	m...	13.694	9	4.895	14	0	5	0	5	0	5	25.599	21
342			min	.189	21	-3.474	21	0	5	0	5	0	5	-36.065	14
343		12	m...	13.694	9	4.895	14	0	5	0	5	0	5	28.159	21
344			min	.189	21	-3.474	21	0	5	0	5	0	5	-39.671	14
345		13	m...	13.694	9	4.895	14	0	5	0	5	0	5	30.719	21
346			min	.189	21	-3.474	21	0	5	0	5	0	5	-43.278	14
347		14	m...	13.694	9	4.895	14	0	5	0	5	0	5	33.279	21
348			min	.189	21	-3.474	21	0	5	0	5	0	5	-46.884	14
349		15	m...	13.694	9	4.895	14	0	5	0	5	0	5	35.839	21
350			min	.189	21	-3.474	21	0	5	0	5	0	5	-50.491	14
351		16	m...	13.694	9	4.895	14	0	5	0	5	0	5	38.399	21
352			min	.189	21	-3.474	21	0	5	0	5	0	5	-54.097	14
353		17	m...	13.694	9	4.895	14	0	5	0	5	0	5	40.958	21
354			min	.189	21	-3.474	21	0	5	0	5	0	5	-57.704	14
355		18	m...	13.694	9	4.895	14	0	5	0	5	0	5	43.518	21
356			min	.189	21	-3.474	21	0	5	0	5	0	5	-61.31	14
357		19	m...	13.694	9	4.895	14	0	5	0	5	0	5	46.078	21
358			min	.189	21	-3.474	21	0	5	0	5	0	5	-64.917	14
359		20	m...	13.694	9	4.895	14	0	5	0	5	0	5	48.638	21
360			min	.189	21	-3.474	21	0	5	0	5	0	5	-68.523	14
361	MF4-COL1	1	m...	18.354	15	7.767	14	0	5	0	5	0	5	0	5
362			min	-6.346	20	-8.079	15	0	5	0	5	0	5	0	5

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
363		2	m...	18.354	15	7.767	14	0	5	0	5	0	5	5.953	15
364			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-5.723	14
365		3	m...	18.354	15	7.767	14	0	5	0	5	0	5	11.906	15
366			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-11.445	14
367		4	m...	18.354	15	7.767	14	0	5	0	5	0	5	17.859	15
368			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-17.168	14
369		5	m...	18.354	15	7.767	14	0	5	0	5	0	5	23.812	15
370			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-22.891	14
371		6	m...	18.354	15	7.767	14	0	5	0	5	0	5	29.765	15
372			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-28.613	14
373		7	m...	18.354	15	7.767	14	0	5	0	5	0	5	35.717	15
374			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-34.336	14
375		8	m...	18.354	15	7.767	14	0	5	0	5	0	5	41.67	15
376			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-40.059	14
377		9	m...	18.354	15	7.767	14	0	5	0	5	0	5	47.623	15
378			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-45.782	14
379		10	m...	18.354	15	7.767	14	0	5	0	5	0	5	53.576	15
380			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-51.504	14
381		11	m...	18.354	15	7.767	14	0	5	0	5	0	5	59.529	15
382			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-57.227	14
383		12	m...	18.354	15	7.767	14	0	5	0	5	0	5	65.482	15
384			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-62.95	14
385		13	m...	18.354	15	7.767	14	0	5	0	5	0	5	71.435	15
386			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-68.672	14
387		14	m...	18.354	15	7.767	14	0	5	0	5	0	5	77.388	15
388			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-74.395	14
389		15	m...	18.354	15	7.767	14	0	5	0	5	0	5	83.341	15
390			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-80.118	14
391		16	m...	18.354	15	7.767	14	0	5	0	5	0	5	89.294	15
392			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-85.84	14
393		17	m...	18.354	15	7.767	14	0	5	0	5	0	5	95.247	15
394			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-91.563	14
395		18	m...	18.354	15	7.767	14	0	5	0	5	0	5	101.199	15
396			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-97.286	14
397		19	m...	18.354	15	7.767	14	0	5	0	5	0	5	107.152	15
398			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-103.008	14
399		20	m...	18.354	15	7.767	14	0	5	0	5	0	5	113.105	15
400			min	-6.346	20	-8.079	15	0	5	0	5	0	5	-108.731	14
401	MF4-COL2	1	m...	18.265	14	8.071	14	0	5	0	5	0	5	0	5
402			min	-6.383	21	-7.759	15	0	5	0	5	0	5	0	5
403		2	m...	18.265	14	8.071	14	0	5	0	5	0	5	5.717	15
404			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-5.947	14
405		3	m...	18.265	14	8.071	14	0	5	0	5	0	5	11.435	15
406			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-11.894	14
407		4	m...	18.265	14	8.071	14	0	5	0	5	0	5	17.152	15
408			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-17.84	14
409		5	m...	18.265	14	8.071	14	0	5	0	5	0	5	22.87	15
410			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-23.787	14
411		6	m...	18.265	14	8.071	14	0	5	0	5	0	5	28.587	15
412			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-29.734	14
413		7	m...	18.265	14	8.071	14	0	5	0	5	0	5	34.305	15
414			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-35.681	14
415		8	m...	18.265	14	8.071	14	0	5	0	5	0	5	40.022	15
416			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-41.628	14
417		9	m...	18.265	14	8.071	14	0	5	0	5	0	5	45.739	15
418			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-47.574	14
419		10	m...	18.265	14	8.071	14	0	5	0	5	0	5	51.457	15
420			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-53.521	14
421		11	m...	18.265	14	8.071	14	0	5	0	5	0	5	57.174	15
422			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-59.468	14
423		12	m...	18.265	14	8.071	14	0	5	0	5	0	5	62.892	15
424			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-65.415	14
425		13	m...	18.265	14	8.071	14	0	5	0	5	0	5	68.609	15
426			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-71.362	14
427		14	m...	18.265	14	8.071	14	0	5	0	5	0	5	74.327	15
428			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-77.309	14
429		15	m...	18.265	14	8.071	14	0	5	0	5	0	5	80.044	15
430			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-83.255	14
431		16	m...	18.265	14	8.071	14	0	5	0	5	0	5	85.761	15

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
432			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-89.202	14
433		17	m...	18.265	14	8.071	14	0	5	0	5	0	5	91.479	15
434			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-95.149	14
435		18	m...	18.265	14	8.071	14	0	5	0	5	0	5	97.196	15
436			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-101.096	14
437		19	m...	18.265	14	8.071	14	0	5	0	5	0	5	102.914	15
438			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-107.043	14
439		20	m...	18.265	14	8.071	14	0	5	0	5	0	5	108.631	15
440			min	-6.383	21	-7.759	15	0	5	0	5	0	5	-112.989	14
441	MF5-COL1	1	m...	30.009	10	7.706	20	0	5	0	5	0	5	0	5
442			min	-2.912	20	-9.879	15	0	5	0	5	0	5	0	5
443		2	m...	30.009	10	7.706	20	0	5	0	5	0	5	7.279	15
444			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-5.678	20
445		3	m...	30.009	10	7.706	20	0	5	0	5	0	5	14.558	15
446			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-11.357	20
447		4	m...	30.009	10	7.706	20	0	5	0	5	0	5	21.838	15
448			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-17.035	20
449		5	m...	30.009	10	7.706	20	0	5	0	5	0	5	29.117	15
450			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-22.714	20
451		6	m...	30.009	10	7.706	20	0	5	0	5	0	5	36.396	15
452			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-28.392	20
453		7	m...	30.009	10	7.706	20	0	5	0	5	0	5	43.675	15
454			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-34.07	20
455		8	m...	30.009	10	7.706	20	0	5	0	5	0	5	50.954	15
456			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-39.749	20
457		9	m...	30.009	10	7.706	20	0	5	0	5	0	5	58.234	15
458			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-45.427	20
459		10	m...	30.009	10	7.706	20	0	5	0	5	0	5	65.513	15
460			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-51.106	20
461		11	m...	30.009	10	7.706	20	0	5	0	5	0	5	72.792	15
462			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-56.784	20
463		12	m...	30.009	10	7.706	20	0	5	0	5	0	5	80.071	15
464			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-62.462	20
465		13	m...	30.009	10	7.706	20	0	5	0	5	0	5	87.351	15
466			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-68.141	20
467		14	m...	30.009	10	7.706	20	0	5	0	5	0	5	94.63	15
468			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-73.819	20
469		15	m...	30.009	10	7.706	20	0	5	0	5	0	5	101.909	15
470			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-79.498	20
471		16	m...	30.009	10	7.706	20	0	5	0	5	0	5	109.188	15
472			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-85.176	20
473		17	m...	30.009	10	7.706	20	0	5	0	5	0	5	116.467	15
474			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-90.854	20
475		18	m...	30.009	10	7.706	20	0	5	0	5	0	5	123.747	15
476			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-96.533	20
477		19	m...	30.009	10	7.706	20	0	5	0	5	0	5	131.026	15
478			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-102.211	20
479		20	m...	30.009	10	7.706	20	0	5	0	5	0	5	138.305	15
480			min	-2.912	20	-9.879	15	0	5	0	5	0	5	-107.89	20
481	MF5-COL2	1	m...	38.559	9	9.869	14	0	5	0	5	0	5	0	5
482			min	.446	21	-7.697	21	0	5	0	5	0	5	0	5
483		2	m...	38.559	9	9.869	14	0	5	0	5	0	5	5.671	21
484			min	.446	21	-7.697	21	0	5	0	5	0	5	-7.272	14
485		3	m...	38.559	9	9.869	14	0	5	0	5	0	5	11.343	21
486			min	.446	21	-7.697	21	0	5	0	5	0	5	-14.544	14
487		4	m...	38.559	9	9.869	14	0	5	0	5	0	5	17.014	21
488			min	.446	21	-7.697	21	0	5	0	5	0	5	-21.815	14
489		5	m...	38.559	9	9.869	14	0	5	0	5	0	5	22.685	21
490			min	.446	21	-7.697	21	0	5	0	5	0	5	-29.087	14
491		6	m...	38.559	9	9.869	14	0	5	0	5	0	5	28.356	21
492			min	.446	21	-7.697	21	0	5	0	5	0	5	-36.359	14
493		7	m...	38.559	9	9.869	14	0	5	0	5	0	5	34.028	21
494			min	.446	21	-7.697	21	0	5	0	5	0	5	-43.631	14
495		8	m...	38.559	9	9.869	14	0	5	0	5	0	5	39.699	21
496			min	.446	21	-7.697	21	0	5	0	5	0	5	-50.903	14
497		9	m...	38.559	9	9.869	14	0	5	0	5	0	5	45.37	21
498			min	.446	21	-7.697	21	0	5	0	5	0	5	-58.175	14
499		10	m...	38.559	9	9.869	14	0	5	0	5	0	5	51.042	21
500			min	.446	21	-7.697	21	0	5	0	5	0	5	-65.446	14

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
501		11	m...	38.559	9	9.869	14	0	5	0	5	0	5	56.713	21
502			min	.446	21	-7.697	21	0	5	0	5	0	5	-72.718	14
503		12	m...	38.559	9	9.869	14	0	5	0	5	0	5	62.384	21
504			min	.446	21	-7.697	21	0	5	0	5	0	5	-79.99	14
505		13	m...	38.559	9	9.869	14	0	5	0	5	0	5	68.055	21
506			min	.446	21	-7.697	21	0	5	0	5	0	5	-87.262	14
507		14	m...	38.559	9	9.869	14	0	5	0	5	0	5	73.727	21
508			min	.446	21	-7.697	21	0	5	0	5	0	5	-94.534	14
509		15	m...	38.559	9	9.869	14	0	5	0	5	0	5	79.398	21
510			min	.446	21	-7.697	21	0	5	0	5	0	5	-101.806	14
511		16	m...	38.559	9	9.869	14	0	5	0	5	0	5	85.069	21
512			min	.446	21	-7.697	21	0	5	0	5	0	5	-109.077	14
513		17	m...	38.559	9	9.869	14	0	5	0	5	0	5	90.74	21
514			min	.446	21	-7.697	21	0	5	0	5	0	5	-116.349	14
515		18	m...	38.559	9	9.869	14	0	5	0	5	0	5	96.412	21
516			min	.446	21	-7.697	21	0	5	0	5	0	5	-123.621	14
517		19	m...	38.559	9	9.869	14	0	5	0	5	0	5	102.083	21
518			min	.446	21	-7.697	21	0	5	0	5	0	5	-130.893	14
519		20	m...	38.559	9	9.869	14	0	5	0	5	0	5	107.754	21
520			min	.446	21	-7.697	21	0	5	0	5	0	5	-138.165	14
521	MF6-COL1	1	m...	22.595	8	-1.538	20	0	5	0	5	0	5	0	5
522			min	8.34	20	-4.33	8	0	5	0	5	0	5	0	5
523		2	m...	22.595	8	-1.538	20	0	5	0	5	0	5	2.735	8
524			min	8.34	20	-4.33	8	0	5	0	5	0	5	.972	20
525		3	m...	22.595	8	-1.538	20	0	5	0	5	0	5	5.47	8
526			min	8.34	20	-4.33	8	0	5	0	5	0	5	1.943	20
527		4	m...	22.595	8	-1.538	20	0	5	0	5	0	5	8.204	8
528			min	8.34	20	-4.33	8	0	5	0	5	0	5	2.915	20
529		5	m...	22.595	8	-1.538	20	0	5	0	5	0	5	10.939	8
530			min	8.34	20	-4.33	8	0	5	0	5	0	5	3.886	20
531		6	m...	22.595	8	-1.538	20	0	5	0	5	0	5	13.674	8
532			min	8.34	20	-4.33	8	0	5	0	5	0	5	4.858	20
533		7	m...	22.595	8	-1.538	20	0	5	0	5	0	5	16.409	8
534			min	8.34	20	-4.33	8	0	5	0	5	0	5	5.829	20
535		8	m...	22.595	8	-1.538	20	0	5	0	5	0	5	19.144	8
536			min	8.34	20	-4.33	8	0	5	0	5	0	5	6.801	20
537		9	m...	22.595	8	-1.538	20	0	5	0	5	0	5	21.878	8
538			min	8.34	20	-4.33	8	0	5	0	5	0	5	7.772	20
539		10	m...	22.595	8	-1.538	20	0	5	0	5	0	5	24.613	8
540			min	8.34	20	-4.33	8	0	5	0	5	0	5	8.744	20
541		11	m...	22.595	8	-1.538	20	0	5	0	5	0	5	27.348	8
542			min	8.34	20	-4.33	8	0	5	0	5	0	5	9.715	20
543		12	m...	22.595	8	-1.538	20	0	5	0	5	0	5	30.083	8
544			min	8.34	20	-4.33	8	0	5	0	5	0	5	10.687	20
545		13	m...	22.595	8	-1.538	20	0	5	0	5	0	5	32.818	8
546			min	8.34	20	-4.33	8	0	5	0	5	0	5	11.658	20
547		14	m...	22.595	8	-1.538	20	0	5	0	5	0	5	35.552	8
548			min	8.34	20	-4.33	8	0	5	0	5	0	5	12.63	20
549		15	m...	22.595	8	-1.538	20	0	5	0	5	0	5	38.287	8
550			min	8.34	20	-4.33	8	0	5	0	5	0	5	13.602	20
551		16	m...	22.595	8	-1.538	20	0	5	0	5	0	5	41.022	8
552			min	8.34	20	-4.33	8	0	5	0	5	0	5	14.573	20
553		17	m...	22.595	8	-1.538	20	0	5	0	5	0	5	43.757	8
554			min	8.34	20	-4.33	8	0	5	0	5	0	5	15.545	20
555		18	m...	22.595	8	-1.538	20	0	5	0	5	0	5	46.492	8
556			min	8.34	20	-4.33	8	0	5	0	5	0	5	16.516	20
557		19	m...	22.595	8	-1.538	20	0	5	0	5	0	5	49.226	8
558			min	8.34	20	-4.33	8	0	5	0	5	0	5	17.488	20
559		20	m...	22.595	8	-1.538	20	0	5	0	5	0	5	51.961	8
560			min	8.34	20	-4.33	8	0	5	0	5	0	5	18.459	20
561	MF6-COL2	1	m...	17.484	8	4.33	8	0	5	0	5	0	5	0	5
562			min	6.349	20	1.538	20	0	5	0	5	0	5	0	5
563		2	m...	17.484	8	4.33	8	0	5	0	5	0	5	-.972	20
564			min	6.349	20	1.538	20	0	5	0	5	0	5	-2.734	8
565		3	m...	17.484	8	4.33	8	0	5	0	5	0	5	-1.943	20
566			min	6.349	20	1.538	20	0	5	0	5	0	5	-5.469	8
567		4	m...	17.484	8	4.33	8	0	5	0	5	0	5	-2.915	20
568			min	6.349	20	1.538	20	0	5	0	5	0	5	-8.203	8
569		5	m...	17.484	8	4.33	8	0	5	0	5	0	5	-3.886	20

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
570			min	6.349	20	1.538	20	0	5	0	5	0	5	-10.938	8
571		6	m...	17.484	8	4.33	8	0	5	0	5	0	5	-4.858	20
572			min	6.349	20	1.538	20	0	5	0	5	0	5	-13.672	8
573		7	m...	17.484	8	4.33	8	0	5	0	5	0	5	-5.829	20
574			min	6.349	20	1.538	20	0	5	0	5	0	5	-16.407	8
575		8	m...	17.484	8	4.33	8	0	5	0	5	0	5	-6.801	20
576			min	6.349	20	1.538	20	0	5	0	5	0	5	-19.141	8
577		9	m...	17.484	8	4.33	8	0	5	0	5	0	5	-7.772	20
578			min	6.349	20	1.538	20	0	5	0	5	0	5	-21.876	8
579		10	m...	17.484	8	4.33	8	0	5	0	5	0	5	-8.744	20
580			min	6.349	20	1.538	20	0	5	0	5	0	5	-24.61	8
581		11	m...	17.484	8	4.33	8	0	5	0	5	0	5	-9.715	20
582			min	6.349	20	1.538	20	0	5	0	5	0	5	-27.345	8
583		12	m...	17.484	8	4.33	8	0	5	0	5	0	5	-10.687	20
584			min	6.349	20	1.538	20	0	5	0	5	0	5	-30.079	8
585		13	m...	17.484	8	4.33	8	0	5	0	5	0	5	-11.658	20
586			min	6.349	20	1.538	20	0	5	0	5	0	5	-32.814	8
587		14	m...	17.484	8	4.33	8	0	5	0	5	0	5	-12.63	20
588			min	6.349	20	1.538	20	0	5	0	5	0	5	-35.548	8
589		15	m...	17.484	8	4.33	8	0	5	0	5	0	5	-13.601	20
590			min	6.349	20	1.538	20	0	5	0	5	0	5	-38.283	8
591		16	m...	17.484	8	4.33	8	0	5	0	5	0	5	-14.573	20
592			min	6.349	20	1.538	20	0	5	0	5	0	5	-41.017	8
593		17	m...	17.484	8	4.33	8	0	5	0	5	0	5	-15.544	20
594			min	6.349	20	1.538	20	0	5	0	5	0	5	-43.752	8
595		18	m...	17.484	8	4.33	8	0	5	0	5	0	5	-16.516	20
596			min	6.349	20	1.538	20	0	5	0	5	0	5	-46.486	8
597		19	m...	17.484	8	4.33	8	0	5	0	5	0	5	-17.487	20
598			min	6.349	20	1.538	20	0	5	0	5	0	5	-49.221	8
599		20	m...	17.484	8	4.33	8	0	5	0	5	0	5	-18.459	20
600			min	6.349	20	1.538	20	0	5	0	5	0	5	-51.955	8
601	BEAM 1	1	m...	12.25	14	16.664	15	0	5	0	5	0	5	155.35	15
602			min	-12.233	21	-12.759	20	0	5	0	5	0	5	-145.454	20
603		2	m...	12.25	14	16.411	15	0	5	0	5	0	5	137.072	15
604			min	-12.233	21	-12.904	20	0	5	0	5	0	5	-131.272	20
605		3	m...	12.25	14	16.157	15	0	5	0	5	0	5	119.073	15
606			min	-12.233	21	-13.049	20	0	5	0	5	0	5	-117.593	14
607		4	m...	12.25	14	15.904	15	0	5	0	5	0	5	101.355	15
608			min	-12.233	21	-13.195	20	0	5	0	5	0	5	-103.796	14
609		5	m...	12.25	14	15.651	15	0	5	0	5	0	5	84.443	21
610			min	-12.233	21	-13.34	20	0	5	0	5	0	5	-89.719	14
611		6	m...	12.25	14	15.397	15	0	5	0	5	0	5	68.012	21
612			min	-12.233	21	-13.485	20	0	5	0	5	0	5	-75.361	14
613		7	m...	12.25	14	15.144	15	0	5	0	5	0	5	51.742	21
614			min	-12.233	21	-13.63	20	0	5	0	5	0	5	-60.724	14
615		8	m...	12.25	14	14.891	15	0	5	0	5	0	5	35.632	21
616			min	-12.233	21	-13.776	20	0	5	0	5	0	5	-45.807	14
617		9	m...	12.25	14	14.637	15	0	5	0	5	0	5	19.683	21
618			min	-12.233	21	-13.921	20	0	5	0	5	0	5	-30.61	14
619		10	m...	12.25	14	14.384	15	0	5	0	5	0	5	3.894	21
620			min	-12.233	21	-14.13	14	0	5	0	5	0	5	-15.133	14
621		11	m...	12.25	14	14.131	15	0	5	0	5	0	5	3.591	20
622			min	-12.233	21	-14.383	14	0	5	0	5	0	5	-14.832	15
623		12	m...	12.25	14	13.922	21	0	5	0	5	0	5	19.379	20
624			min	-12.233	21	-14.636	14	0	5	0	5	0	5	-30.31	15
625		13	m...	12.25	14	13.777	21	0	5	0	5	0	5	35.327	20
626			min	-12.233	21	-14.89	14	0	5	0	5	0	5	-45.509	15
627		14	m...	12.25	14	13.632	21	0	5	0	5	0	5	51.435	20
628			min	-12.233	21	-15.143	14	0	5	0	5	0	5	-60.427	15
629		15	m...	12.25	14	13.486	21	0	5	0	5	0	5	67.704	20
630			min	-12.233	21	-15.396	14	0	5	0	5	0	5	-75.065	15
631		16	m...	12.25	14	13.341	21	0	5	0	5	0	5	84.134	20
632			min	-12.233	21	-15.65	14	0	5	0	5	0	5	-89.423	15
633		17	m...	12.25	14	13.196	21	0	5	0	5	0	5	101.047	14
634			min	-12.233	21	-15.903	14	0	5	0	5	0	5	-103.502	15
635		18	m...	12.25	14	13.051	21	0	5	0	5	0	5	118.764	14
636			min	-12.233	21	-16.156	14	0	5	0	5	0	5	-117.3	15
637		19	m...	12.25	14	12.905	21	0	5	0	5	0	5	136.761	14
638			min	-12.233	21	-16.41	14	0	5	0	5	0	5	-130.981	21

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
639		20	m...	12.25	14	12.76	21	0	5	0	5	0	5	155.038	14
640			min	-12.233	21	-16.663	14	0	5	0	5	0	5	-145.165	21
641	BEAM 2	1	m...	11.729	14	19.049	15	0	5	0	5	0	5	173.657	15
642			min	-11.804	21	-14.759	20	0	5	0	5	0	5	-162.781	20
643		2	m...	11.729	14	18.774	15	0	5	0	5	0	5	153.335	15
644			min	-11.804	21	-14.917	20	0	5	0	5	0	5	-147.127	14
645		3	m...	11.729	14	18.498	15	0	5	0	5	0	5	133.31	15
646			min	-11.804	21	-15.074	20	0	5	0	5	0	5	-131.835	14
647		4	m...	11.729	14	18.223	15	0	5	0	5	0	5	113.579	15
648			min	-11.804	21	-15.232	20	0	5	0	5	0	5	-116.246	14
649		5	m...	11.729	14	17.948	15	0	5	0	5	0	5	94.433	21
650			min	-11.804	21	-15.389	20	0	5	0	5	0	5	-100.362	14
651		6	m...	11.729	14	17.673	15	0	5	0	5	0	5	76.116	21
652			min	-11.804	21	-15.547	20	0	5	0	5	0	5	-84.182	14
653		7	m...	11.729	14	17.398	15	0	5	0	5	0	5	57.968	21
654			min	-11.804	21	-15.705	20	0	5	0	5	0	5	-67.707	14
655		8	m...	11.729	14	17.122	15	0	5	0	5	0	5	39.989	21
656			min	-11.804	21	-15.862	20	0	5	0	5	0	5	-50.935	14
657		9	m...	11.729	14	16.847	15	0	5	0	5	0	5	22.18	21
658			min	-11.804	21	-16.023	16	0	5	0	5	0	5	-33.868	14
659		10	m...	11.729	14	16.572	15	0	5	0	5	0	5	4.54	21
660			min	-11.804	21	-16.295	14	0	5	0	5	0	5	-16.506	14
661		11	m...	11.729	14	16.297	15	0	5	0	5	0	5	4.284	20
662			min	-11.804	21	-16.571	14	0	5	0	5	0	5	-16.251	15
663		12	m...	11.729	14	16.025	17	0	5	0	5	0	5	21.923	20
664			min	-11.804	21	-16.846	14	0	5	0	5	0	5	-33.615	15
665		13	m...	11.729	14	15.864	21	0	5	0	5	0	5	39.73	20
666			min	-11.804	21	-17.121	14	0	5	0	5	0	5	-50.684	15
667		14	m...	11.729	14	15.706	21	0	5	0	5	0	5	57.707	20
668			min	-11.804	21	-17.396	14	0	5	0	5	0	5	-67.457	15
669		15	m...	11.729	14	15.548	21	0	5	0	5	0	5	75.854	20
670			min	-11.804	21	-17.671	14	0	5	0	5	0	5	-83.934	15
671		16	m...	11.729	14	15.391	21	0	5	0	5	0	5	94.17	20
672			min	-11.804	21	-17.947	14	0	5	0	5	0	5	-100.116	15
673		17	m...	11.729	14	15.233	21	0	5	0	5	0	5	113.314	14
674			min	-11.804	21	-18.222	14	0	5	0	5	0	5	-116.001	15
675		18	m...	11.729	14	15.076	21	0	5	0	5	0	5	133.042	14
676			min	-11.804	21	-18.497	14	0	5	0	5	0	5	-131.591	15
677		19	m...	11.729	14	14.918	21	0	5	0	5	0	5	153.067	14
678			min	-11.804	21	-18.772	14	0	5	0	5	0	5	-146.886	15
679		20	m...	11.729	14	14.76	21	0	5	0	5	0	5	173.387	14
680			min	-11.804	21	-19.047	14	0	5	0	5	0	5	-162.54	21
681	BEAM 3	1	m...	4.515	14	8.417	10	0	5	0	5	0	5	68.554	15
682			min	-3.468	21	-1.892	20	0	5	0	5	0	5	-48.667	20
683		2	m...	4.515	14	7.772	15	0	5	0	5	0	5	57.247	15
684			min	-3.468	21	-2.125	20	0	5	0	5	0	5	-45.822	20
685		3	m...	4.515	14	7.352	15	0	5	0	5	0	5	46.534	15
686			min	-3.468	21	-2.358	20	0	5	0	5	0	5	-42.879	14
687		4	m...	4.515	14	6.933	15	0	5	0	5	0	5	36.547	21
688			min	-3.468	21	-2.592	20	0	5	0	5	0	5	-41.08	14
689		5	m...	4.515	14	6.513	15	0	5	0	5	0	5	28.744	21
690			min	-3.468	21	-2.825	20	0	5	0	5	0	5	-38.686	14
691		6	m...	4.515	14	6.094	15	0	5	0	5	0	5	21.271	21
692			min	-3.468	21	-3.058	20	0	5	0	5	0	5	-35.699	14
693		7	m...	4.515	14	5.675	15	0	5	0	5	0	5	14.129	21
694			min	-3.468	21	-3.292	20	0	5	0	5	0	5	-32.117	14
695		8	m...	4.515	14	5.255	15	0	5	0	5	0	5	7.318	21
696			min	-3.468	21	-3.525	20	0	5	0	5	0	5	-28.118	9
697		9	m...	4.515	14	4.836	15	0	5	0	5	0	5	.837	21
698			min	-3.468	21	-3.758	20	0	5	0	5	0	5	-26.911	9
699		10	m...	4.515	14	4.416	15	0	5	0	5	0	5	-5.313	21
700			min	-3.468	21	-3.997	14	0	5	0	5	0	5	-24.773	9
701		11	m...	4.515	14	3.997	15	0	5	0	5	0	5	-5.343	20
702			min	-3.468	21	-4.416	14	0	5	0	5	0	5	-24.758	10
703		12	m...	4.515	14	3.758	21	0	5	0	5	0	5	.807	20
704			min	-3.468	21	-4.836	14	0	5	0	5	0	5	-26.896	10
705		13	m...	4.515	14	3.525	21	0	5	0	5	0	5	7.288	20
706			min	-3.468	21	-5.255	14	0	5	0	5	0	5	-28.102	10
707		14	m...	4.515	14	3.292	21	0	5	0	5	0	5	14.099	20

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
708			min	-3.468	21	-5.674	14	0	5	0	5	0	5	-32.087	15
709		15	m...	4.515	14	3.058	21	0	5	0	5	0	5	21.241	20
710			min	-3.468	21	-6.094	14	0	5	0	5	0	5	-35.669	15
711		16	m...	4.515	14	2.825	21	0	5	0	5	0	5	28.713	20
712			min	-3.468	21	-6.513	14	0	5	0	5	0	5	-38.657	15
713		17	m...	4.515	14	2.592	21	0	5	0	5	0	5	36.516	20
714			min	-3.468	21	-6.933	14	0	5	0	5	0	5	-41.05	15
715		18	m...	4.515	14	2.358	21	0	5	0	5	0	5	46.503	14
716			min	-3.468	21	-7.352	14	0	5	0	5	0	5	-42.85	15
717		19	m...	4.515	14	2.125	21	0	5	0	5	0	5	57.216	14
718			min	-3.468	21	-7.772	14	0	5	0	5	0	5	-45.793	21
719		20	m...	4.515	14	1.892	21	0	5	0	5	0	5	68.523	14
720			min	-3.468	21	-8.417	9	0	5	0	5	0	5	-48.638	21
721	BEAM 4	1	m...	7.454	14	12.065	15	0	5	0	5	0	5	113.105	15
722			min	-7.932	21	-10.024	20	0	5	0	5	0	5	-108.731	14
723		2	m...	7.454	14	11.938	15	0	5	0	5	0	5	100.209	15
724			min	-7.932	21	-10.097	20	0	5	0	5	0	5	-98.288	14
725		3	m...	7.454	14	11.811	15	0	5	0	5	0	5	87.448	15
726			min	-7.932	21	-10.169	20	0	5	0	5	0	5	-87.709	14
727		4	m...	7.454	14	11.685	15	0	5	0	5	0	5	74.824	15
728			min	-7.932	21	-10.242	20	0	5	0	5	0	5	-76.993	14
729		5	m...	7.454	14	11.558	15	0	5	0	5	0	5	62.336	15
730			min	-7.932	21	-10.314	20	0	5	0	5	0	5	-66.141	14
731		6	m...	7.454	14	11.431	15	0	5	0	5	0	5	50.384	21
732			min	-7.932	21	-10.387	20	0	5	0	5	0	5	-55.153	14
733		7	m...	7.454	14	11.304	15	0	5	0	5	0	5	38.559	21
734			min	-7.932	21	-10.459	20	0	5	0	5	0	5	-44.028	14
735		8	m...	7.454	14	11.177	15	0	5	0	5	0	5	26.812	21
736			min	-7.932	21	-10.543	14	0	5	0	5	0	5	-32.767	14
737		9	m...	7.454	14	11.051	15	0	5	0	5	0	5	15.144	21
738			min	-7.932	21	-10.669	14	0	5	0	5	0	5	-21.37	14
739		10	m...	7.454	14	10.924	15	0	5	0	5	0	5	3.553	21
740			min	-7.932	21	-10.796	14	0	5	0	5	0	5	-9.837	14
741		11	m...	7.454	14	10.797	15	0	5	0	5	0	5	3.444	20
742			min	-7.932	21	-10.923	14	0	5	0	5	0	5	-9.73	15
743		12	m...	7.454	14	10.67	15	0	5	0	5	0	5	15.035	20
744			min	-7.932	21	-11.05	14	0	5	0	5	0	5	-21.264	15
745		13	m...	7.454	14	10.543	15	0	5	0	5	0	5	26.703	20
746			min	-7.932	21	-11.177	14	0	5	0	5	0	5	-32.662	15
747		14	m...	7.454	14	10.46	21	0	5	0	5	0	5	38.448	20
748			min	-7.932	21	-11.303	14	0	5	0	5	0	5	-43.923	15
749		15	m...	7.454	14	10.387	21	0	5	0	5	0	5	50.272	20
750			min	-7.932	21	-11.43	14	0	5	0	5	0	5	-55.048	15
751		16	m...	7.454	14	10.315	21	0	5	0	5	0	5	62.224	14
752			min	-7.932	21	-11.557	14	0	5	0	5	0	5	-66.038	15
753		17	m...	7.454	14	10.242	21	0	5	0	5	0	5	74.711	14
754			min	-7.932	21	-11.684	14	0	5	0	5	0	5	-76.89	15
755		18	m...	7.454	14	10.17	21	0	5	0	5	0	5	87.334	14
756			min	-7.932	21	-11.811	14	0	5	0	5	0	5	-87.607	15
757		19	m...	7.454	14	10.097	21	0	5	0	5	0	5	100.094	14
758			min	-7.932	21	-11.937	14	0	5	0	5	0	5	-98.187	15
759		20	m...	7.454	14	10.025	21	0	5	0	5	0	5	112.989	14
760			min	-7.932	21	-12.064	14	0	5	0	5	0	5	-108.631	15
761	BEAM 5	1	m...	9.111	14	20.378	15	0	5	0	5	0	5	138.305	15
762			min	-7.687	21	-7.133	20	0	5	0	5	0	5	-107.89	20
763		2	m...	9.111	14	19.5	15	0	5	0	5	0	5	117.317	15
764			min	-7.687	21	-7.622	20	0	5	0	5	0	5	-100.124	20
765		3	m...	9.111	14	18.622	15	0	5	0	5	0	5	97.253	15
766			min	-7.687	21	-8.111	20	0	5	0	5	0	5	-92.929	14
767		4	m...	9.111	14	17.744	15	0	5	0	5	0	5	78.257	21
768			min	-7.687	21	-8.6	20	0	5	0	5	0	5	-86.729	14
769		5	m...	9.111	14	16.866	15	0	5	0	5	0	5	62.772	21
770			min	-7.687	21	-9.089	20	0	5	0	5	0	5	-79.606	14
771		6	m...	9.111	14	15.987	15	0	5	0	5	0	5	47.802	21
772			min	-7.687	21	-9.577	20	0	5	0	5	0	5	-71.558	14
773		7	m...	9.111	14	15.109	15	0	5	0	5	0	5	33.346	21
774			min	-7.687	21	-10.066	20	0	5	0	5	0	5	-62.586	14
775		8	m...	9.111	14	14.231	15	0	5	0	5	0	5	19.404	21
776			min	-7.687	21	-10.555	20	0	5	0	5	0	5	-52.69	14

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
777		9	m...	9.111	14	13.353	15	0	5	0	5	0	5	5.978	21
778			min	-7.687	21	-11.044	20	0	5	0	5	0	5	-45.523	9
779		10	m...	9.111	14	12.475	15	0	5	0	5	0	5	-6.934	21
780			min	-7.687	21	-11.597	14	0	5	0	5	0	5	-40.461	9
781		11	m...	9.111	14	11.597	15	0	5	0	5	0	5	-7.075	20
782			min	-7.687	21	-12.475	14	0	5	0	5	0	5	-40.39	10
783		12	m...	9.111	14	11.044	21	0	5	0	5	0	5	5.836	20
784			min	-7.687	21	-13.353	14	0	5	0	5	0	5	-45.451	10
785		13	m...	9.111	14	10.556	21	0	5	0	5	0	5	19.262	20
786			min	-7.687	21	-14.231	14	0	5	0	5	0	5	-52.55	15
787		14	m...	9.111	14	10.067	21	0	5	0	5	0	5	33.203	20
788			min	-7.687	21	-15.109	14	0	5	0	5	0	5	-62.446	15
789		15	m...	9.111	14	9.578	21	0	5	0	5	0	5	47.658	20
790			min	-7.687	21	-15.987	14	0	5	0	5	0	5	-71.418	15
791		16	m...	9.111	14	9.089	21	0	5	0	5	0	5	62.628	20
792			min	-7.687	21	-16.866	14	0	5	0	5	0	5	-79.466	15
793		17	m...	9.111	14	8.6	21	0	5	0	5	0	5	78.113	20
794			min	-7.687	21	-17.744	14	0	5	0	5	0	5	-86.59	15
795		18	m...	9.111	14	8.111	21	0	5	0	5	0	5	97.112	14
796			min	-7.687	21	-18.622	14	0	5	0	5	0	5	-92.789	15
797		19	m...	9.111	14	7.623	21	0	5	0	5	0	5	117.176	14
798			min	-7.687	21	-19.5	14	0	5	0	5	0	5	-99.988	21
799		20	m...	9.111	14	7.134	21	0	5	0	5	0	5	138.165	14
800			min	-7.687	21	-20.378	14	0	5	0	5	0	5	-107.754	21
801	BEAM 6	1	m...	4.33	8	14.584	8	0	5	0	5	0	5	51.961	8
802			min	1.538	20	5.181	20	0	5	0	5	0	5	18.459	20
803		2	m...	4.33	8	13.049	8	0	5	0	5	0	5	27.479	8
804			min	1.538	20	4.636	20	0	5	0	5	0	5	9.762	20
805		3	m...	4.33	8	11.514	8	0	5	0	5	0	5	5.718	8
806			min	1.538	20	4.09	20	0	5	0	5	0	5	2.031	20
807		4	m...	4.33	8	9.979	8	0	5	0	5	0	5	-4.734	20
808			min	1.538	20	3.545	20	0	5	0	5	0	5	-13.324	8
809		5	m...	4.33	8	8.444	8	0	5	0	5	0	5	-10.532	20
810			min	1.538	20	3	20	0	5	0	5	0	5	-29.645	8
811		6	m...	4.33	8	6.908	8	0	5	0	5	0	5	-15.364	20
812			min	1.538	20	2.454	20	0	5	0	5	0	5	-43.246	8
813		7	m...	4.33	8	5.373	8	0	5	0	5	0	5	-19.229	20
814			min	1.538	20	1.909	20	0	5	0	5	0	5	-54.127	8
815		8	m...	4.33	8	3.838	8	0	5	0	5	0	5	-22.129	20
816			min	1.538	20	1.363	20	0	5	0	5	0	5	-62.288	8
817		9	m...	4.33	8	2.303	8	0	5	0	5	0	5	-24.061	20
818			min	1.538	20	.818	20	0	5	0	5	0	5	-67.728	8
819		10	m...	4.33	8	.768	8	0	5	0	5	0	5	-25.028	20
820			min	1.538	20	.273	20	0	5	0	5	0	5	-70.449	8
821		11	m...	4.33	8	-.273	20	0	5	0	5	0	5	-25.028	20
822			min	1.538	20	-.767	8	0	5	0	5	0	5	-70.449	8
823		12	m...	4.33	8	-.818	20	0	5	0	5	0	5	-24.062	20
824			min	1.538	20	-2.303	8	0	5	0	5	0	5	-67.729	8
825		13	m...	4.33	8	-1.363	20	0	5	0	5	0	5	-22.129	20
826			min	1.538	20	-3.838	8	0	5	0	5	0	5	-62.289	8
827		14	m...	4.33	8	-1.909	20	0	5	0	5	0	5	-19.23	20
828			min	1.538	20	-5.373	8	0	5	0	5	0	5	-54.129	8
829		15	m...	4.33	8	-2.454	20	0	5	0	5	0	5	-15.364	20
830			min	1.538	20	-6.908	8	0	5	0	5	0	5	-43.249	8
831		16	m...	4.33	8	-3	20	0	5	0	5	0	5	-10.532	20
832			min	1.538	20	-8.443	8	0	5	0	5	0	5	-29.648	8
833		17	m...	4.33	8	-3.545	20	0	5	0	5	0	5	-4.734	20
834			min	1.538	20	-9.978	8	0	5	0	5	0	5	-13.327	8
835		18	m...	4.33	8	-4.09	20	0	5	0	5	0	5	5.713	8
836			min	1.538	20	-11.514	8	0	5	0	5	0	5	2.03	20
837		19	m...	4.33	8	-4.636	20	0	5	0	5	0	5	27.474	8
838			min	1.538	20	-13.049	8	0	5	0	5	0	5	9.761	20
839		20	m...	4.33	8	-5.181	20	0	5	0	5	0	5	51.955	8
840			min	1.538	20	-14.584	8	0	5	0	5	0	5	18.459	20
841	M22	1	m...	0	5	0	5	0	5	0	5	0	5	0	5
842			min	0	5	0	5	0	5	0	5	0	5	0	5
843		2	m...	0	5	.878	15	0	5	0	5	0	5	.855	14
844			min	0	5	-.878	14	0	5	0	5	0	5	-.855	15
845		3	m...	0	5	1.757	15	0	5	0	5	0	5	3.421	14

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
846			min	0	5	-1.757	14	0	5	0	5	0	5	-3.421	15
847		4	m...	0	5	2.635	15	0	5	0	5	0	5	7.696	14
848			min	0	5	-2.635	14	0	5	0	5	0	5	-7.696	15
849		5	m...	0	5	3.513	15	0	5	0	5	0	5	13.682	14
850			min	0	5	-3.513	14	0	5	0	5	0	5	-13.682	15
851		6	m...	0	5	4.391	15	0	5	0	5	0	5	21.379	14
852			min	0	5	-4.391	14	0	5	0	5	0	5	-21.379	15
853		7	m...	0	5	5.27	15	0	5	0	5	0	5	30.785	14
854			min	0	5	-5.27	14	0	5	0	5	0	5	-30.785	15
855		8	m...	0	5	6.148	15	0	5	0	5	0	5	41.902	14
856			min	0	5	-6.148	14	0	5	0	5	0	5	-41.902	15
857		9	m...	0	5	7.026	15	0	5	0	5	0	5	54.73	14
858			min	0	5	-7.026	14	0	5	0	5	0	5	-54.73	15
859		10	m...	0	5	7.904	15	0	5	0	5	0	5	69.267	14
860			min	0	5	-7.904	14	0	5	0	5	0	5	-69.267	15
861		11	m...	0	5	8.783	15	0	5	0	5	0	5	85.515	14
862			min	0	5	-8.783	14	0	5	0	5	0	5	-85.515	15
863		12	m...	0	5	9.661	15	0	5	0	5	0	5	103.473	14
864			min	0	5	-9.661	14	0	5	0	5	0	5	-103.473	15
865		13	m...	0	5	10.539	15	0	5	0	5	0	5	123.142	14
866			min	0	5	-10.539	14	0	5	0	5	0	5	-123.142	15
867		14	m...	0	5	11.417	15	0	5	0	5	0	5	144.521	14
868			min	0	5	-11.417	14	0	5	0	5	0	5	-144.521	15
869		15	m...	0	5	12.296	15	0	5	0	5	0	5	167.61	14
870			min	0	5	-12.296	14	0	5	0	5	0	5	-167.61	15
871		16	m...	0	5	13.174	15	0	5	0	5	0	5	192.409	14
872			min	0	5	-13.174	14	0	5	0	5	0	5	-192.409	15
873		17	m...	0	5	14.052	15	0	5	0	5	0	5	218.919	14
874			min	0	5	-14.052	14	0	5	0	5	0	5	-218.919	15
875		18	m...	0	5	14.93	15	0	5	0	5	0	5	247.139	14
876			min	0	5	-14.93	14	0	5	0	5	0	5	-247.139	15
877		19	m...	0	5	15.809	15	0	5	0	5	0	5	277.069	14
878			min	0	5	-15.809	14	0	5	0	5	0	5	-277.069	15
879		20	m...	0	5	16.687	15	0	5	0	5	0	5	308.709	14
880			min	0	5	-16.687	14	0	5	0	5	0	5	-308.709	15
881	M23	1	m...	0	5	7.771	14	0	5	0	5	0	5	0	5
882			min	0	5	-7.771	15	0	5	0	5	0	5	0	5
883		2	m...	0	5	6.956	14	0	5	0	5	0	5	13.305	15
884			min	0	5	-6.956	15	0	5	0	5	0	5	-13.305	14
885		3	m...	0	5	6.141	14	0	5	0	5	0	5	25.138	15
886			min	0	5	-6.141	15	0	5	0	5	0	5	-25.138	14
887		4	m...	0	5	5.326	14	0	5	0	5	0	5	35.498	15
888			min	0	5	-5.326	15	0	5	0	5	0	5	-35.498	14
889		5	m...	0	5	4.511	14	0	5	0	5	0	5	44.386	15
890			min	0	5	-4.511	15	0	5	0	5	0	5	-44.386	14
891		6	m...	0	5	3.696	14	0	5	0	5	0	5	51.801	15
892			min	0	5	-3.696	15	0	5	0	5	0	5	-51.801	14
893		7	m...	0	5	2.881	14	0	5	0	5	0	5	57.743	15
894			min	0	5	-2.881	15	0	5	0	5	0	5	-57.743	14
895		8	m...	0	5	2.066	14	0	5	0	5	0	5	62.212	15
896			min	0	5	-2.066	15	0	5	0	5	0	5	-62.212	14
897		9	m...	0	5	1.251	14	0	5	0	5	0	5	65.209	15
898			min	0	5	-1.251	15	0	5	0	5	0	5	-65.209	14
899		10	m...	0	5	.436	14	0	5	0	5	0	5	66.734	15
900			min	0	5	-.436	15	0	5	0	5	0	5	-66.734	14
901		11	m...	0	5	.379	15	0	5	0	5	0	5	66.785	15
902			min	0	5	-.379	14	0	5	0	5	0	5	-66.785	14
903		12	m...	0	5	1.194	15	0	5	0	5	0	5	65.364	15
904			min	0	5	-1.194	14	0	5	0	5	0	5	-65.364	14
905		13	m...	0	5	2.009	15	0	5	0	5	0	5	62.471	15
906			min	0	5	-2.009	14	0	5	0	5	0	5	-62.471	14
907		14	m...	0	5	2.824	15	0	5	0	5	0	5	58.105	15
908			min	0	5	-2.824	14	0	5	0	5	0	5	-58.105	14
909		15	m...	0	5	3.639	15	0	5	0	5	0	5	52.266	15
910			min	0	5	-3.639	14	0	5	0	5	0	5	-52.266	14
911		16	m...	0	5	4.454	15	0	5	0	5	0	5	44.955	15
912			min	0	5	-4.454	14	0	5	0	5	0	5	-44.955	14
913		17	m...	0	5	5.313	15	0	5	0	5	0	5	36.15	15
914			min	0	5	-5.313	14	0	5	0	5	0	5	-36.15	14

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
915		18	m...	0	5	6.217	15	0	5	0	5	0	5	25.733	15
916			min	0	5	-6.217	14	0	5	0	5	0	5	-25.733	14
917		19	m...	0	5	7.12	15	0	5	0	5	0	5	13.683	15
918			min	0	5	-7.12	14	0	5	0	5	0	5	-13.683	14
919		20	m...	0	5	8.024	15	0	5	0	5	0	5	0	5
920			min	0	5	-8.024	14	0	5	0	5	0	5	0	5
921	M24	1	m...	0	5	15.333	14	0	5	0	5	0	5	0	5
922			min	0	5	-15.333	15	0	5	0	5	0	5	0	5
923		2	m...	0	5	13.719	14	0	5	0	5	0	5	46.893	15
924			min	0	5	-13.719	15	0	5	0	5	0	5	-46.893	14
925		3	m...	0	5	12.105	14	0	5	0	5	0	5	88.576	15
926			min	0	5	-12.105	15	0	5	0	5	0	5	-88.576	14
927		4	m...	0	5	10.491	14	0	5	0	5	0	5	125.048	15
928			min	0	5	-10.491	15	0	5	0	5	0	5	-125.048	14
929		5	m...	0	5	8.877	14	0	5	0	5	0	5	156.31	15
930			min	0	5	-8.877	15	0	5	0	5	0	5	-156.31	14
931		6	m...	0	5	7.263	14	0	5	0	5	0	5	182.362	15
932			min	0	5	-7.263	15	0	5	0	5	0	5	-182.362	14
933		7	m...	0	5	5.649	14	0	5	0	5	0	5	203.203	15
934			min	0	5	-5.649	15	0	5	0	5	0	5	-203.203	14
935		8	m...	0	5	4.035	14	0	5	0	5	0	5	218.834	15
936			min	0	5	-4.035	15	0	5	0	5	0	5	-218.834	14
937		9	m...	0	5	2.421	14	0	5	0	5	0	5	229.255	15
938			min	0	5	-2.421	15	0	5	0	5	0	5	-229.255	14
939		10	m...	0	5	.807	14	0	5	0	5	0	5	234.465	15
940			min	0	5	-.807	15	0	5	0	5	0	5	-234.465	14
941		11	m...	0	5	.807	15	0	5	0	5	0	5	234.465	15
942			min	0	5	-.807	14	0	5	0	5	0	5	-234.465	14
943		12	m...	0	5	2.421	15	0	5	0	5	0	5	229.255	15
944			min	0	5	-2.421	14	0	5	0	5	0	5	-229.255	14
945		13	m...	0	5	4.035	15	0	5	0	5	0	5	218.834	15
946			min	0	5	-4.035	14	0	5	0	5	0	5	-218.834	14
947		14	m...	0	5	5.649	15	0	5	0	5	0	5	203.203	15
948			min	0	5	-5.649	14	0	5	0	5	0	5	-203.203	14
949		15	m...	0	5	7.263	15	0	5	0	5	0	5	182.362	15
950			min	0	5	-7.263	14	0	5	0	5	0	5	-182.362	14
951		16	m...	0	5	8.877	15	0	5	0	5	0	5	156.31	15
952			min	0	5	-8.877	14	0	5	0	5	0	5	-156.31	14
953		17	m...	0	5	10.491	15	0	5	0	5	0	5	125.048	15
954			min	0	5	-10.491	14	0	5	0	5	0	5	-125.048	14
955		18	m...	0	5	12.105	15	0	5	0	5	0	5	88.576	15
956			min	0	5	-12.105	14	0	5	0	5	0	5	-88.576	14
957		19	m...	0	5	13.719	15	0	5	0	5	0	5	46.893	15
958			min	0	5	-13.719	14	0	5	0	5	0	5	-46.893	14
959		20	m...	0	5	15.333	15	0	5	0	5	0	5	0	5
960			min	0	5	-15.333	14	0	5	0	5	0	5	0	5
961	M25	1	m...	0	5	0	5	0	5	0	5	0	5	0	5
962			min	0	5	0	5	0	5	0	5	0	5	0	5
963		2	m...	0	5	.457	15	0	5	0	5	0	5	.343	14
964			min	0	5	-.457	14	0	5	0	5	0	5	-.343	15
965		3	m...	0	5	.915	15	0	5	0	5	0	5	1.372	14
966			min	0	5	-.915	14	0	5	0	5	0	5	-1.372	15
967		4	m...	0	5	1.372	15	0	5	0	5	0	5	3.088	14
968			min	0	5	-1.372	14	0	5	0	5	0	5	-3.088	15
969		5	m...	0	5	1.83	15	0	5	0	5	0	5	5.49	14
970			min	0	5	-1.83	14	0	5	0	5	0	5	-5.49	15
971		6	m...	0	5	2.287	15	0	5	0	5	0	5	8.578	14
972			min	0	5	-2.287	14	0	5	0	5	0	5	-8.578	15
973		7	m...	0	5	2.745	15	0	5	0	5	0	5	12.352	14
974			min	0	5	-2.745	14	0	5	0	5	0	5	-12.352	15
975		8	m...	0	5	3.202	15	0	5	0	5	0	5	16.813	14
976			min	0	5	-3.202	14	0	5	0	5	0	5	-16.813	15
977		9	m...	0	5	3.66	15	0	5	0	5	0	5	21.96	14
978			min	0	5	-3.66	14	0	5	0	5	0	5	-21.96	15
979		10	m...	0	5	4.117	15	0	5	0	5	0	5	27.793	14
980			min	0	5	-4.117	14	0	5	0	5	0	5	-27.793	15
981		11	m...	0	5	4.575	15	0	5	0	5	0	5	34.312	14
982			min	0	5	-4.575	14	0	5	0	5	0	5	-34.312	15
983		12	m...	0	5	5.032	15	0	5	0	5	0	5	41.518	14

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[...	LC	z-z Moment[k-ft]	LC
984			min	0	5	-5.032	14	0	5	0	5	0	5	-41.518	15
985		13	m...	0	5	5.49	15	0	5	0	5	0	5	49.41	14
986			min	0	5	-5.49	14	0	5	0	5	0	5	-49.41	15
987		14	m...	0	5	5.947	15	0	5	0	5	0	5	57.988	14
988			min	0	5	-5.947	14	0	5	0	5	0	5	-57.988	15
989		15	m...	0	5	6.405	15	0	5	0	5	0	5	67.252	14
990			min	0	5	-6.405	14	0	5	0	5	0	5	-67.252	15
991		16	m...	0	5	6.862	15	0	5	0	5	0	5	77.203	14
992			min	0	5	-6.862	14	0	5	0	5	0	5	-77.203	15
993		17	m...	0	5	7.32	15	0	5	0	5	0	5	87.84	14
994			min	0	5	-7.32	14	0	5	0	5	0	5	-87.84	15
995		18	m...	0	5	7.777	15	0	5	0	5	0	5	99.163	14
996			min	0	5	-7.777	14	0	5	0	5	0	5	-99.163	15
997		19	m...	0	5	8.235	15	0	5	0	5	0	5	111.172	14
998			min	0	5	-8.235	14	0	5	0	5	0	5	-111.172	15
999		20	m...	0	5	8.692	15	0	5	0	5	0	5	123.868	14
1000			min	0	5	-8.692	14	0	5	0	5	0	5	-123.868	15
1001	M26	1	m...	0	5	7.663	14	0	5	0	5	0	5	0	5
1002			min	0	5	-7.663	15	0	5	0	5	0	5	0	5
1003		2	m...	0	5	6.856	14	0	5	0	5	0	5	19.2	15
1004			min	0	5	-6.856	15	0	5	0	5	0	5	-19.2	14
1005		3	m...	0	5	6.05	14	0	5	0	5	0	5	36.267	15
1006			min	0	5	-6.05	15	0	5	0	5	0	5	-36.267	14
1007		4	m...	0	5	5.243	14	0	5	0	5	0	5	51.201	15
1008			min	0	5	-5.243	15	0	5	0	5	0	5	-51.201	14
1009		5	m...	0	5	4.437	14	0	5	0	5	0	5	64.001	15
1010			min	0	5	-4.437	15	0	5	0	5	0	5	-64.001	14
1011		6	m...	0	5	3.63	14	0	5	0	5	0	5	74.668	15
1012			min	0	5	-3.63	15	0	5	0	5	0	5	-74.668	14
1013		7	m...	0	5	2.823	14	0	5	0	5	0	5	83.201	15
1014			min	0	5	-2.823	15	0	5	0	5	0	5	-83.201	14
1015		8	m...	0	5	2.017	14	0	5	0	5	0	5	89.601	15
1016			min	0	5	-2.017	15	0	5	0	5	0	5	-89.601	14
1017		9	m...	0	5	1.21	14	0	5	0	5	0	5	93.868	15
1018			min	0	5	-1.21	15	0	5	0	5	0	5	-93.868	14
1019		10	m...	0	5	.403	14	0	5	0	5	0	5	96.001	15
1020			min	0	5	-.403	15	0	5	0	5	0	5	-96.001	14
1021		11	m...	0	5	.403	15	0	5	0	5	0	5	96.001	15
1022			min	0	5	-.403	14	0	5	0	5	0	5	-96.001	14
1023		12	m...	0	5	1.21	15	0	5	0	5	0	5	93.868	15
1024			min	0	5	-1.21	14	0	5	0	5	0	5	-93.868	14
1025		13	m...	0	5	2.017	15	0	5	0	5	0	5	89.601	15
1026			min	0	5	-2.017	14	0	5	0	5	0	5	-89.601	14
1027		14	m...	0	5	2.823	15	0	5	0	5	0	5	83.201	15
1028			min	0	5	-2.823	14	0	5	0	5	0	5	-83.201	14
1029		15	m...	0	5	3.63	15	0	5	0	5	0	5	74.668	15
1030			min	0	5	-3.63	14	0	5	0	5	0	5	-74.668	14
1031		16	m...	0	5	4.437	15	0	5	0	5	0	5	64.001	15
1032			min	0	5	-4.437	14	0	5	0	5	0	5	-64.001	14
1033		17	m...	0	5	5.243	15	0	5	0	5	0	5	51.201	15
1034			min	0	5	-5.243	14	0	5	0	5	0	5	-51.201	14
1035		18	m...	0	5	6.05	15	0	5	0	5	0	5	36.267	15
1036			min	0	5	-6.05	14	0	5	0	5	0	5	-36.267	14
1037		19	m...	0	5	6.856	15	0	5	0	5	0	5	19.2	15
1038			min	0	5	-6.856	14	0	5	0	5	0	5	-19.2	14
1039		20	m...	0	5	7.663	15	0	5	0	5	0	5	0	5
1040			min	0	5	-7.663	14	0	5	0	5	0	5	0	5

Hot Rolled Steel Section Sets

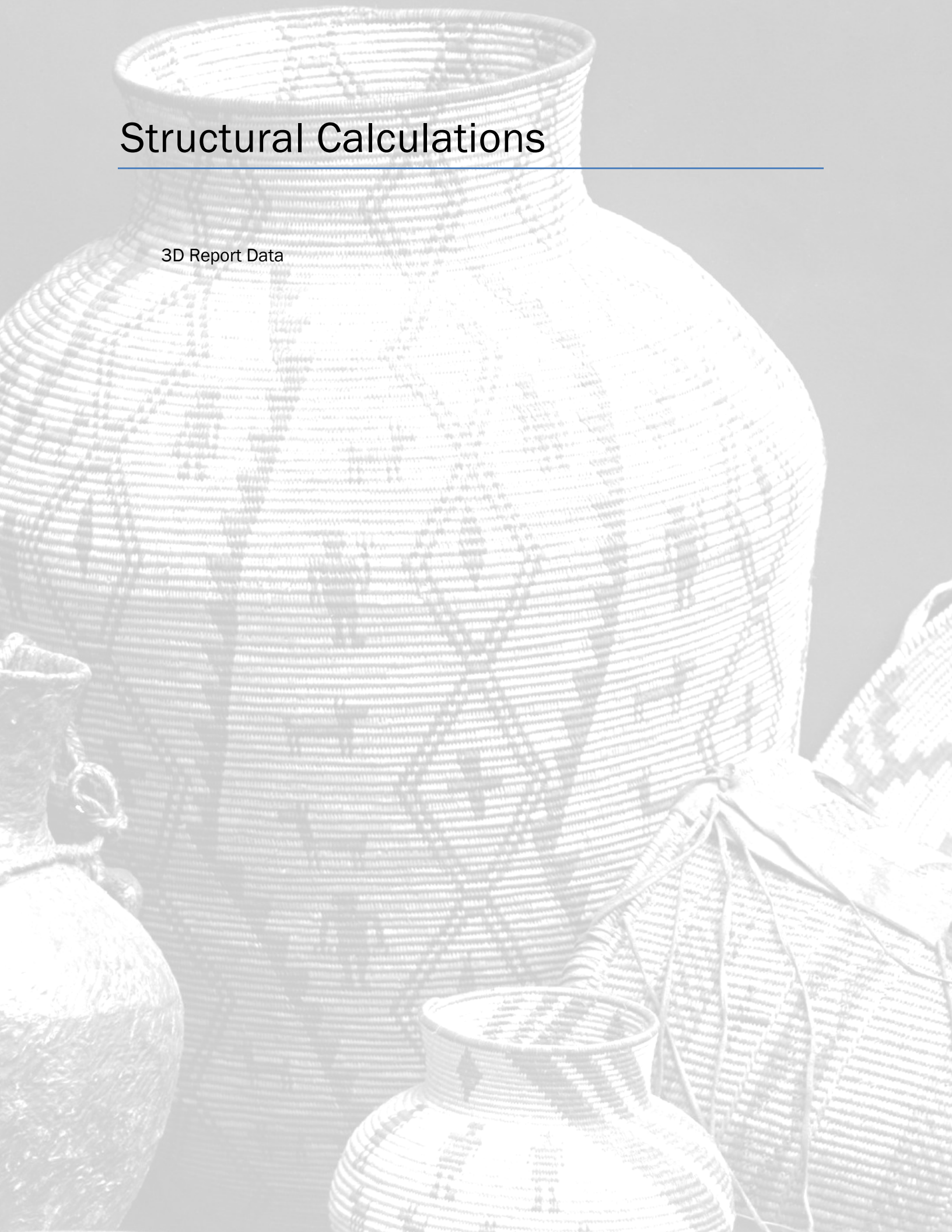
	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	MF1-C	HSS12X10X5	Column	Tube	A500 Gr.46	BF1	12.232	199.591	263.708	355.981
2	MF1-C2	HSS12X10X5	Column	Tube	A500 Gr.46	BF12	12.232	199.591	263.708	355.981
3	MF1-B	W14X30	HBrace	Wide Flange	A992	BEAM1	8.85	19.6	291	.38
4	MF2-C	HSS16X4X6	Column	Tube	A500 Gr.46	BF2	13.15	38.233	359.455	119.828
5	MF2-C2	HSS16X4X6	Column	Tube	A500 Gr.46	BF22	13.15	38.233	359.455	119.828
6	MF2-B	W14X34	HBrace	Wide Flange	A992	BEAM2	10	23.3	340	.57
7	MF3-C	HSS10X5X4	Column	Tube	A500 Gr.46	BF3	6.62	29.218	85.637	70.514

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
8	MF3-C2	HSS10X5X4	Column	Tube	A500 Gr.46	BF32	6.62	29.218	85.637	70.514
9	MF3-B	W8X28	HBrace	Wide Flange	A992	BEAM3	8.25	21.7	98	.54
10	MF4-C	HSS9X5X10	Column	Tube	A500 Gr.46	BF4	14.054	51.894	133.046	128.447
11	MF4-C2	HSS9X5X10	Column	Tube	A500 Gr.46	BF42	14.054	51.894	133.046	128.447
12	MF4-B	W12X26	HBrace	Wide Flange	A992	BEAM4	7.65	17.3	204	.3
13	MF5-C	HSS14X4X6	Column	Tube	A500 Gr.46	BF5	11.755	33.57	251.778	101.854
14	MF5-C2	HSS14X4X6	Column	Tube	A500 Gr.46	BF52	11.755	33.57	251.778	101.854
15	MF5-B	W12X30	HBrace	Wide Flange	A992	BEAM5	8.79	20.3	238	.46
16	MF6-C	HSS9X5X4	Column	Tube	A500 Gr.46	BF6	6.155	26.574	66.019	61.076
17	MF6-C2	HSS9X5X4	Column	Tube	A500 Gr.46	BF62	6.155	26.574	66.019	61.076
18	MF6-B	W8X35	HBrace	Wide Flange	A992	BEAM6	10.3	42.6	127	.77
19	General	W14X132	HBrace	Wide Flange	A992	Typical	38.8	548	1530	12.3

Structural Calculations

3D Report Data



Basic Load Cases

	BLC Description	Category	X Gr...	Y Gr...	Z Gr...	Joint	Point	Distr...	Area...	Surf...
1	Dead Load	DL		-1		16	12	3		
2	Live Load	LL								
3	Live Load Special (public assemb	LLS								
4	Roof Live Load	RLL				16	12	3		
5	Snow Load	SL								
6	Snow Load Nonshedding	SLN								
7	Rain Load	RL								
8	Wind Load X	WLX				1				
9	Partial X Wind Load 1	WLXP1				1				
10	Partial X Wind Load 2	WLXP2				1				
11	Wind Load Z	WLZ				1				
12	Partial Z Wind Load 1	WLZP1				1				
13	Partial Z Wind Load 2	WLZP2				1				
14	Earthquake Load X	ELX				1				
15	Earthquake Load X Plus Z Eccentr	ELX+Z				1				
16	Earthquake Load X Minus Z Eccent	ELX-Z				1				
17	Earthquake Load Z	ELZ				1				
18	Earthquake Load Z Plus X Eccentr	ELZ+X				1				
19	Earthquake Load Z Minus X Eccent	ELZ-X				1				
20	Other Load 1	OL1								
21	Other Load 2	OL2								
22	Other Load 3	OL3								
23	Other Load 4	OL4								
24	Wind Load Roof +X	WLX+R								
25	Wind Load Roof -X	WLX-R								
26	Wind Load Roof +Z	WLZ+R								
27	Wind Load Roof -Z	WLZ-R								

Hot Rolled Steel Design Parameters

	Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	Kyy	Kzz	Cm-yy	Cm-zz	Cb	y sw...	z sw...	Function
1	F1_B1	W12X19	26.917	Segment											Lateral
2	F1_B2	W12X14	20.417	Segment											Lateral
3	F1_B3	W12X14	20.417	Segment											Lateral
4	F1_B6	W10X12	19.667	Segment											Lateral
5	CS2 (A6...	HSS6X3...	16	Segment	Segment	Segment	Segment								Lateral
6	CS6 (A4...	HSS6X3...	16	Segment	Segment	Segment	Segment								Lateral
7	CS10 (A...	HSS6X3...	16	Segment	Segment	Segment	Segment								Lateral
8	CS14 (A...	HSS6X3...	16	Segment	Segment	Segment	Segment								Lateral
9	CS13 (A...	HSS6X3...	16	Segment	Segment	Segment	Segment								Lateral
10	CS16 (A...	HSS6X3...	16	Segment	Segment	Segment	Segment								Lateral
11	CS17 (A...	HSS6X3...	16	Segment	Segment	Segment	Segment								Lateral
12	CS18 (A...	HSS6X3...	16	Segment	Segment	Segment	Segment								Lateral
13	CS29 (n...	HSS6X3...	16	Segment	Segment	Segment	Segment								Lateral
14	F1_B19	W12X22	20	Segment											Lateral
15	CS29 (A...	HSS6X4...	16	Segment	Segment	Segment	Segment								Lateral

Load Combinations

	Description	Solve	PDelta	SRSS	BLC	Fact...	BLC	Fac...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Factor
1	ASCE 1 (a)		Y		DL	1.4	NL	1												
2	ASCE 2 (a) (a)		Y		DL	1.2	LL	1.6	LLS	1.6	RLL	.5	NL	1						
3	ASCE 2 (b) (a)		Y		DL	1.2	LL	1.6	LLS	1.6	NL	1								
4	ASCE 3 (a) (a)		Y		DL	1.2	RLL	1.6	LL	1	LLS	1	NL	1						
5	ASCE 3 (b) (a)		Y		DL	1.2	RLL	1.6	WL	.5										
6	ASCE 3 (b) (b)		Y		DL	1.2	RLL	1.6	WL	-.5										
7	ASCE 3 (d) (a)		Y		DL	1.2	WL	.5												
8	ASCE 3 (d) (b)		Y		DL	1.2	WL	-.5												
9	ASCE 3 (f) (a)		Y		DL	1.2	RL	1.6	WL	-.5										
10	ASCE 4 (a) (a)		Y		DL	1.2	WL	1	LL	1	LLS	1	RLL	.5						
11	ASCE 4 (a) (b)		Y		DL	1.2	WL	-1	LL	1	LLS	1	RLL	.5						
12	ASCE 4 (b) (a)		Y		DL	1.2	WL	1	LL	1	LLS	1								
13	ASCE 4 (b) (b)		Y		DL	1.2	WL	-1	LL	1	LLS	1								
14	ASCE 4 (c) (a)		Y		DL	1.2	WL	1	LL	1	LLS	1	RL	.5						
15	ASCE 4 (c) (b)		Y		DL	1.2	WL	-1	LL	1	LLS	1	RL	.5						
16	ASCE 6 (a)		Y		DL	.9	WL	1												

Load Combinations (Continued)

	Description	Solve	PDelta	SRSS	BLC	Fact...	BLC	Fac...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Factor
17	ASCE 6 (b)		Y		DL	.9	WL	-1														
18	Dead UF	Yes	Y		DL	1																
19	RLL UF	Yes	Y		RLL	1																

Joint Loads and Enforced Displacements (BLC 1 : Dead Load)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	F1_1	L	Y	-2.296
2	F1_1	L	Y	-5.404
3	F1_3	L	Y	-3.397
4	F1_3	L	Y	-.649
5	F1_5	L	Y	-3.401
6	F1_5	L	Y	-.686
7	F1_7	L	Y	-2.312
8	F1_8	L	Y	-4.693
9	F1_9	L	Y	-1.047
10	F1_4	L	Y	-2.215
11	F1_4	L	Y	-5.414
12	F1_6	L	Y	-1.359
13	F1_6	L	Y	-5.269
14	F1_12	L	Y	-.828
15	F1_12	L	Y	-1.953
16	F1_35	L	Y	-8.424

Joint Loads and Enforced Displacements (BLC 4 : Roof Live Load)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	F1_1	L	Y	-1.534
2	F1_1	L	Y	-3.417
3	F1_3	L	Y	-2.286
4	F1_3	L	Y	-.405
5	F1_5	L	Y	-2.341
6	F1_5	L	Y	-.428
7	F1_7	L	Y	-1.564
8	F1_8	L	Y	-3.203
9	F1_9	L	Y	-.687
10	F1_4	L	Y	-1.51
11	F1_4	L	Y	-3.587
12	F1_6	L	Y	-.926
13	F1_6	L	Y	-3.553
14	F1_12	L	Y	-.537
15	F1_12	L	Y	-1.302
16	F1_35	L	Y	-5.748

Joint Loads and Enforced Displacements (BLC 8 : Wind Load X)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N21A	L	X	12.517

Joint Loads and Enforced Displacements (BLC 9 : Partial X Wind Load 1)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N22	L	X	9.388

Joint Loads and Enforced Displacements (BLC 10 : Partial X Wind Load 2)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N23	L	X	9.388

Joint Loads and Enforced Displacements (BLC 11 : Wind Load Z)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N21A	L	Z	6.504

Joint Loads and Enforced Displacements (BLC 12 : Partial Z Wind Load 1)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N24A	L	Z	4.878

Joint Loads and Enforced Displacements (BLC 13 : Partial Z Wind Load 2)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N25	L	Z	4.878

Joint Loads and Enforced Displacements (BLC 14 : Earthquake Load X)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N26	L	X	12.585

Joint Loads and Enforced Displacements (BLC 15 : Earthquake Load X Plus Z Eccentr)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N27	L	X	12.585

Joint Loads and Enforced Displacements (BLC 16 : Earthquake Load X Minus Z Eccent)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N28	L	X	12.585

Joint Loads and Enforced Displacements (BLC 17 : Earthquake Load Z)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N26	L	Z	12.585

Joint Loads and Enforced Displacements (BLC 18 : Earthquake Load Z Plus X Eccentr)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N29	L	Z	12.585

Joint Loads and Enforced Displacements (BLC 19 : Earthquake Load Z Minus X Eccent)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft, k*ft^2)]
1	N30	L	Z	12.585

Member Point Loads (BLC 1 : Dead Load)

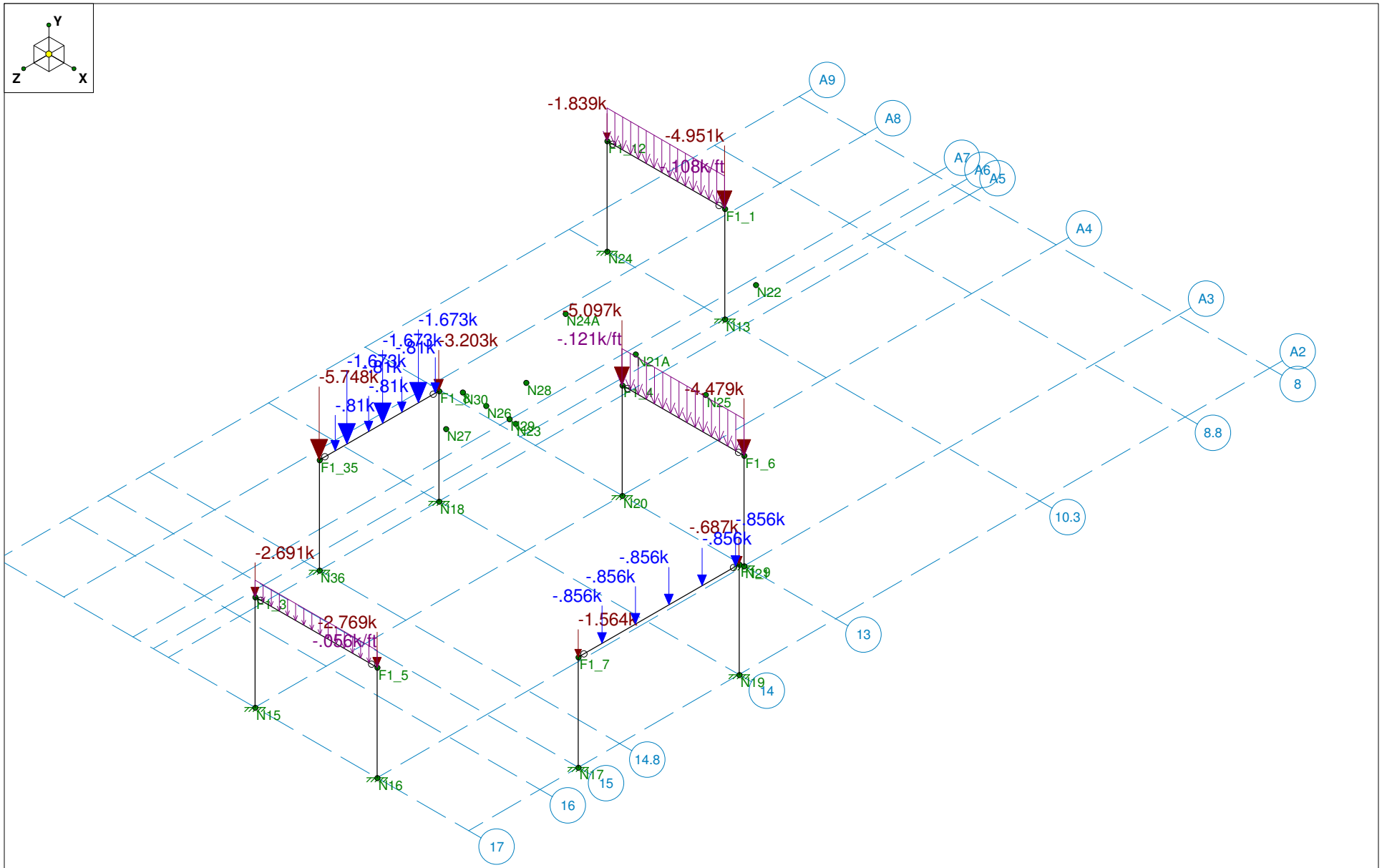
	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	F1_B1	Y	-1.194	22.917
2	F1_B1	Y	-1.194	17.334
3	F1_B1	Y	-1.194	11.75
4	F1_B1	Y	-1.194	6.167
5	F1_B1	Y	-1.194	.583
6	F1_B19	Y	-1.129	17.334
7	F1_B19	Y	-2.366	15.38
8	F1_B19	Y	-1.129	11.75
9	F1_B19	Y	-2.366	9.406
10	F1_B19	Y	-1.129	6.167
11	F1_B19	Y	-2.366	3.432
12	F1_B19	Y	-1.129	.583

Member Point Loads (BLC 4 : Roof Live Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	F1_B1	Y	-.856	22.917
2	F1_B1	Y	-.856	17.334
3	F1_B1	Y	-.856	11.75
4	F1_B1	Y	-.856	6.167
5	F1_B1	Y	-.856	.583
6	F1_B19	Y	-.81	17.334
7	F1_B19	Y	-1.673	15.38
8	F1_B19	Y	-.81	11.75
9	F1_B19	Y	-1.673	9.406
10	F1_B19	Y	-.81	6.167
11	F1_B19	Y	-1.673	3.432
12	F1_B19	Y	-.81	.583

Structural Calculations

3D Roof Live Load Applied

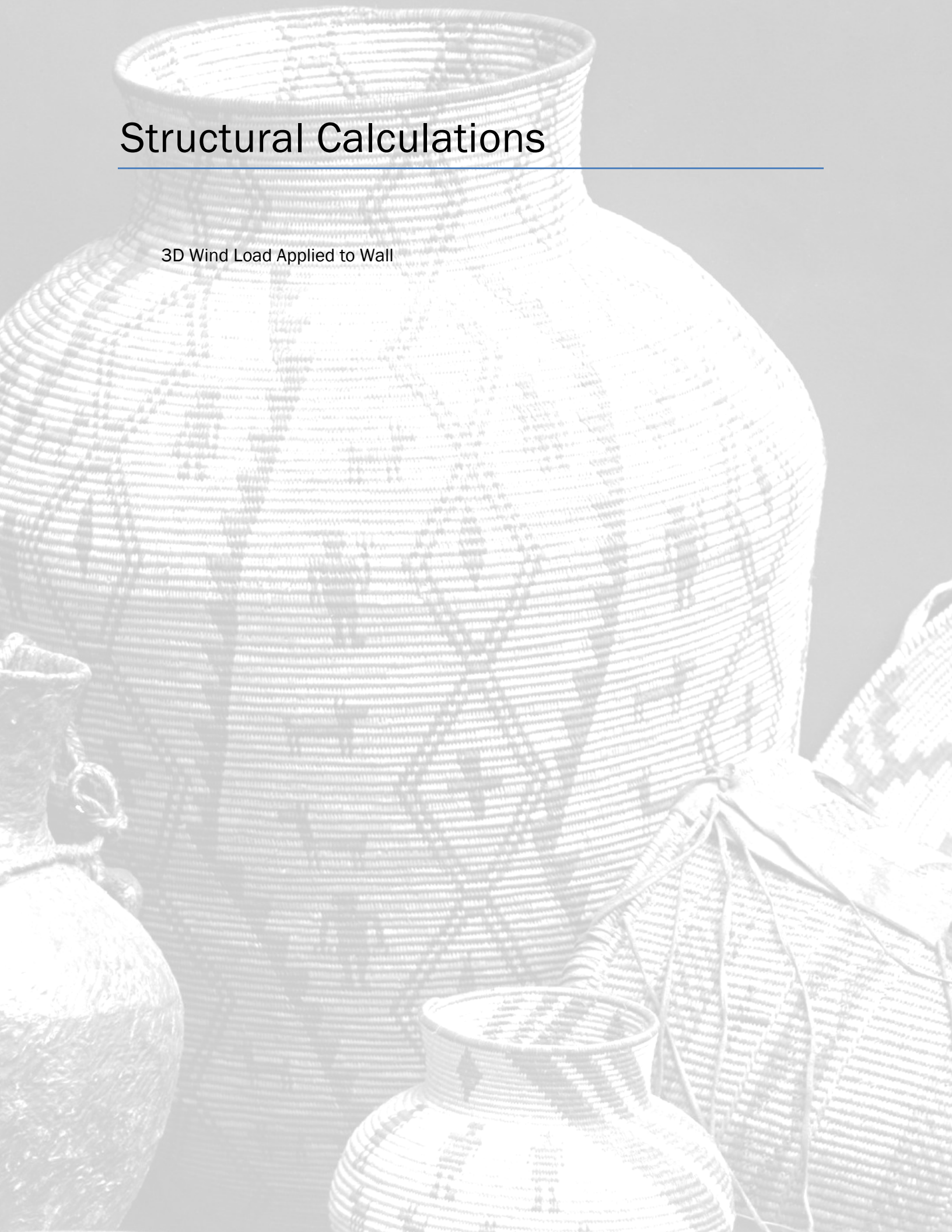


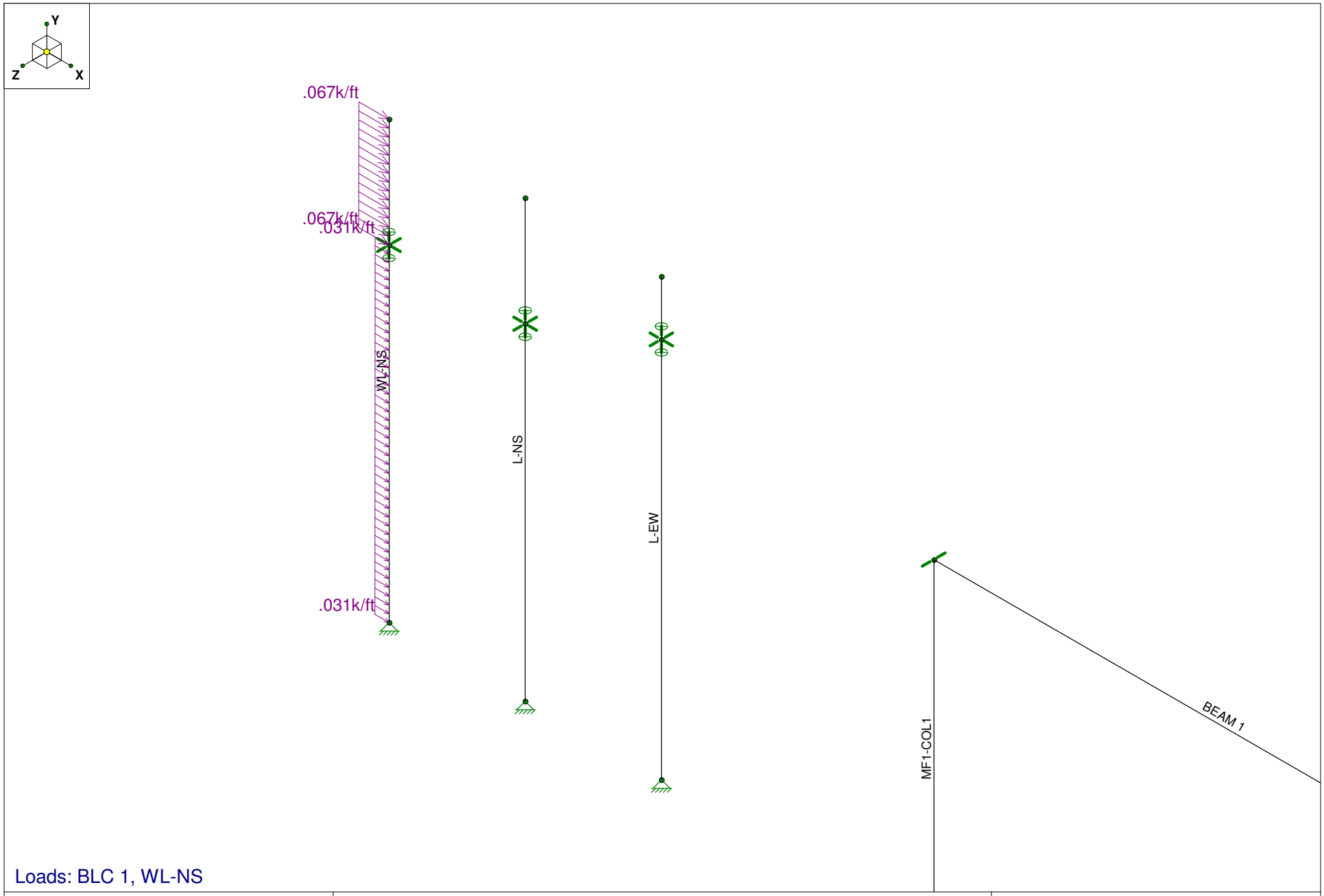
Loads: BLC 4, Roof Live Load

QPEC	Mescalero Hospital Addition	SK - 6
CMP		Jul 20, 2018 at 4:20 PM
5135.01		5135.01- Framing Plans.rfl

Structural Calculations

3D Wind Load Applied to Wall



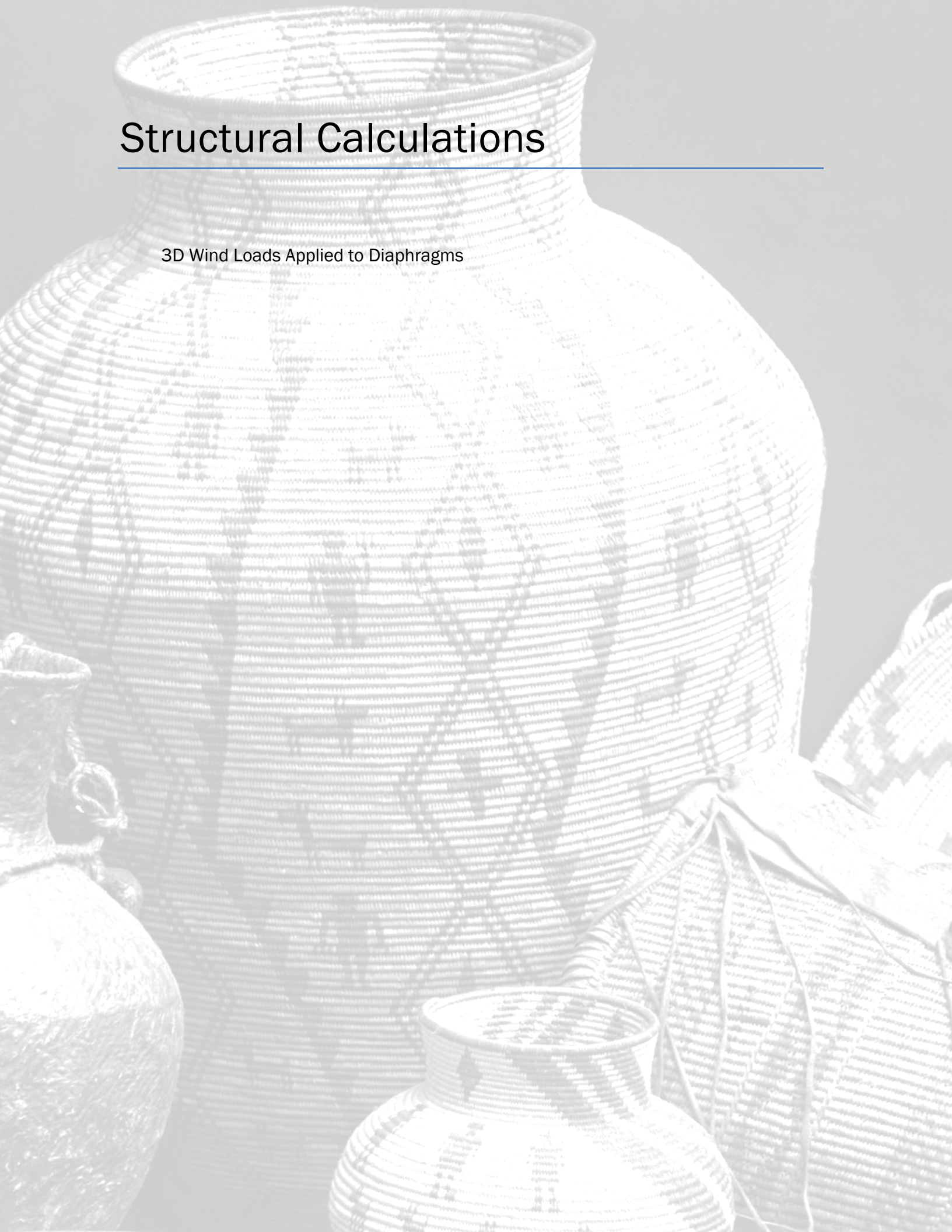


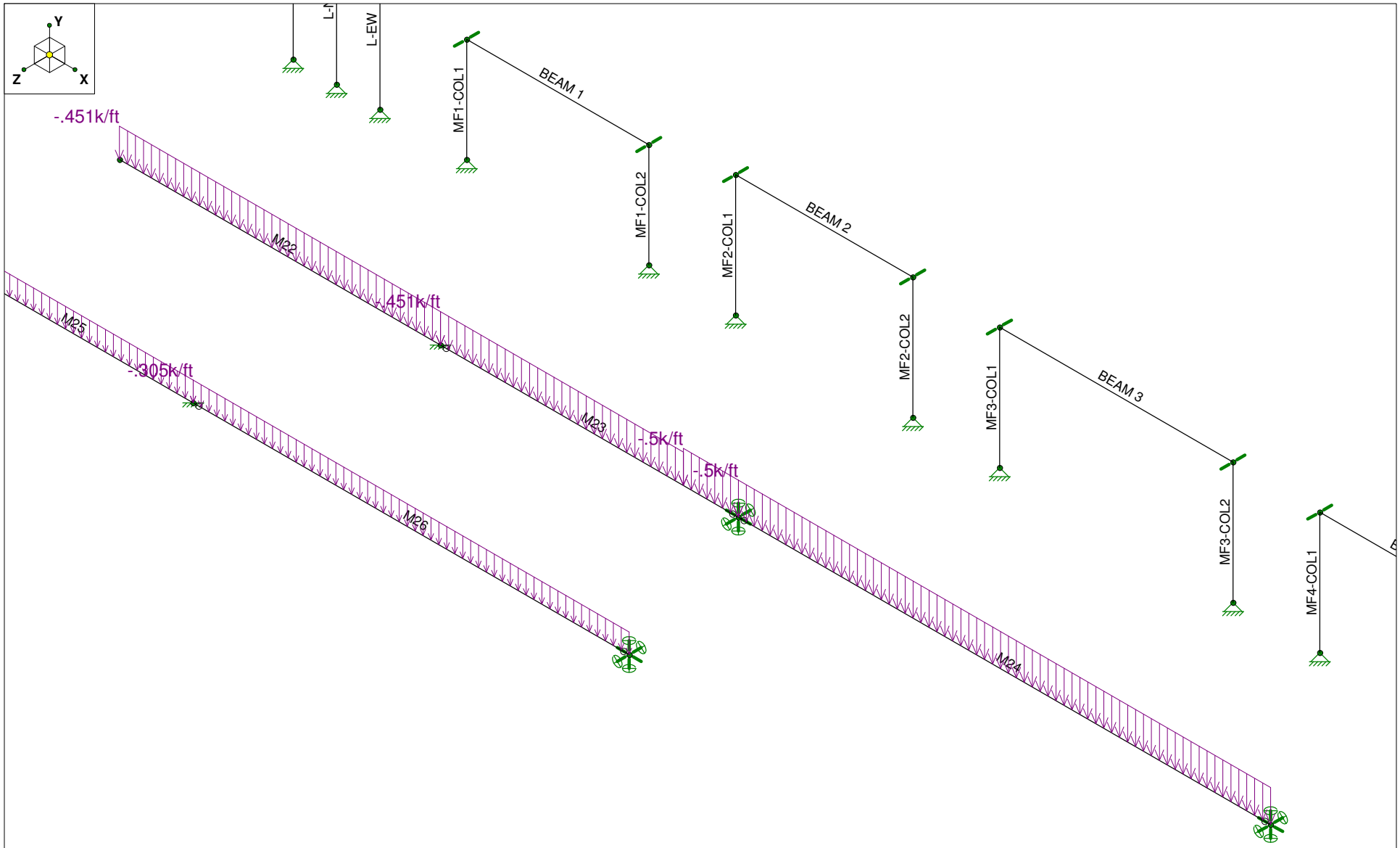
Loads: BLC 1, WL-NS

		SK - 2
		Jul 20, 2018 at 4:20 PM
		Braced Frames.r3d

Structural Calculations

3D Wind Loads Applied to Diaphragms



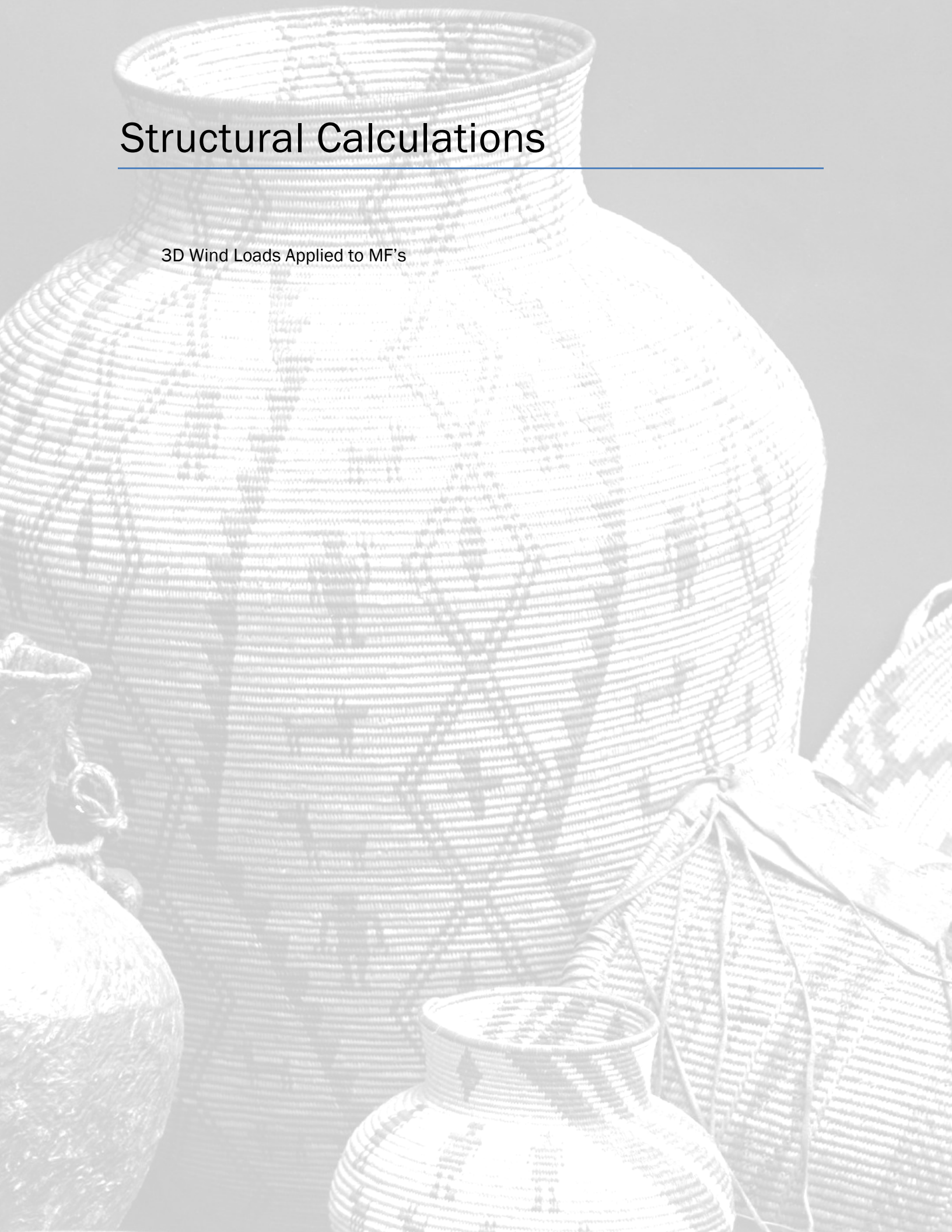


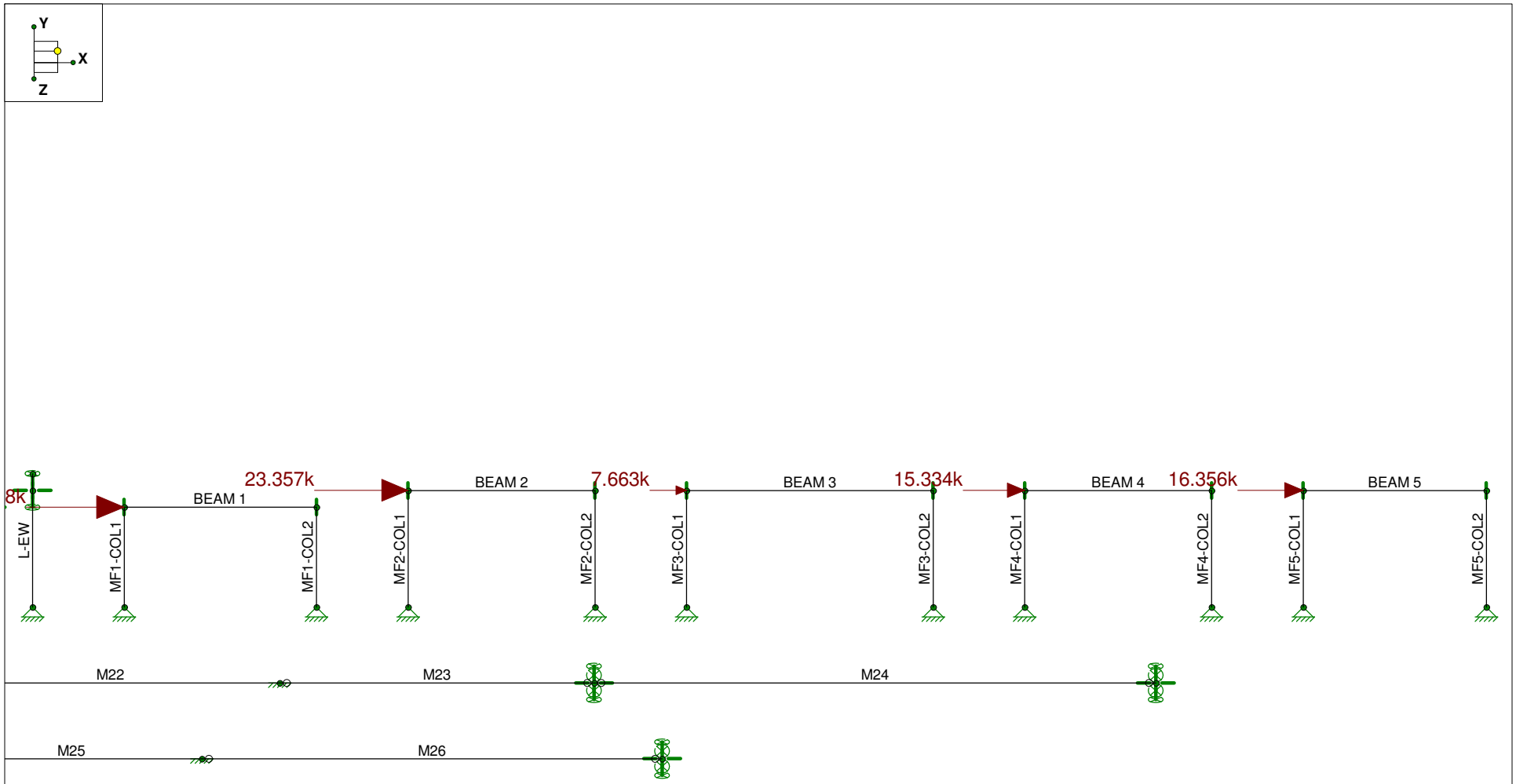
Loads: BLC 9, WIND DIST LOADS - ALONG DIA.

		SK - 7
		Jul 20, 2018 at 4:20 PM
		Braced Frames.r3d

Structural Calculations

3D Wind Loads Applied to MF's



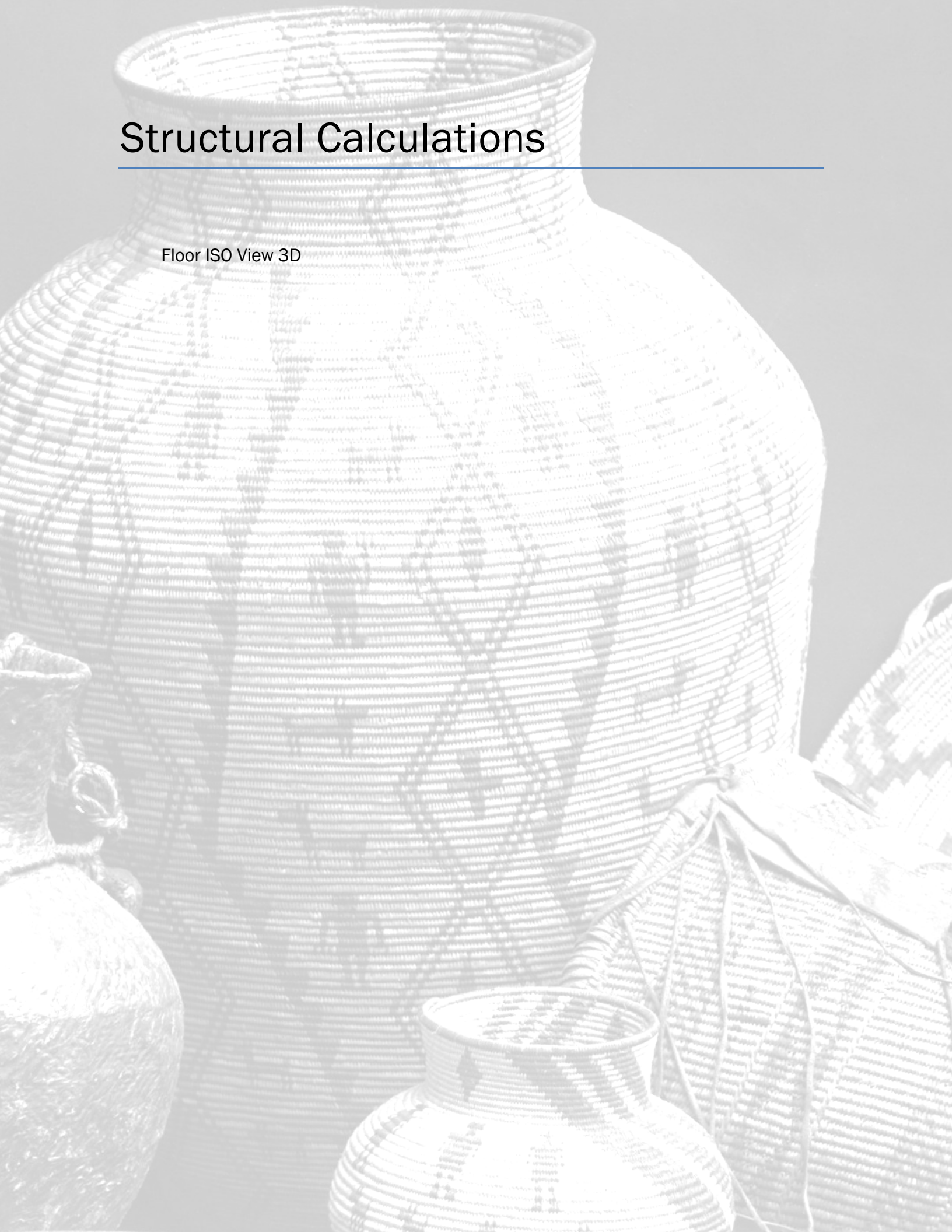


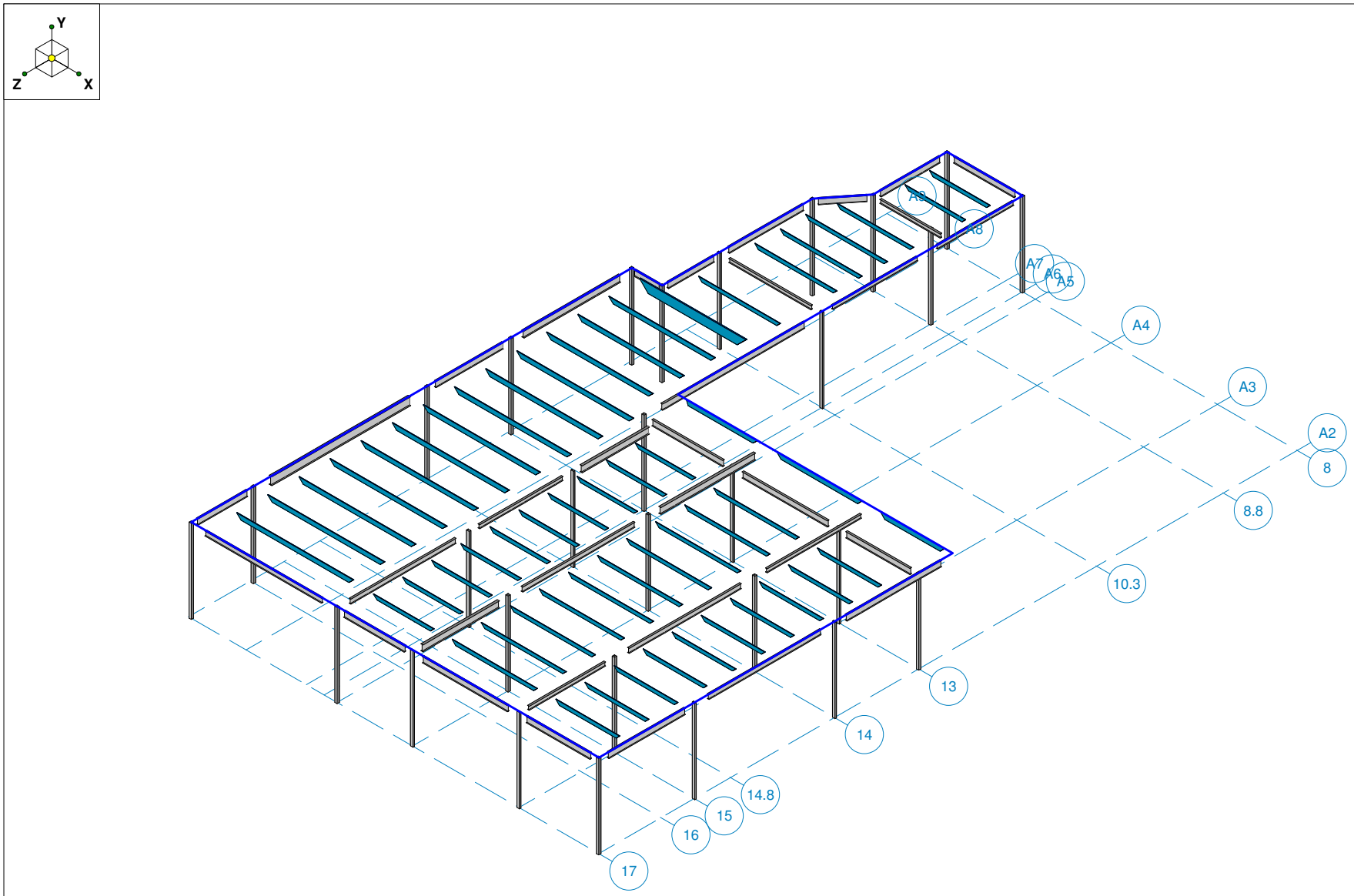
Loads: BLC 8, WIND POINT LOADS

		SK - 6
		Jul 20, 2018 at 4:20 PM
		Braced Frames.r3d

Structural Calculations

Floor ISO View 3D

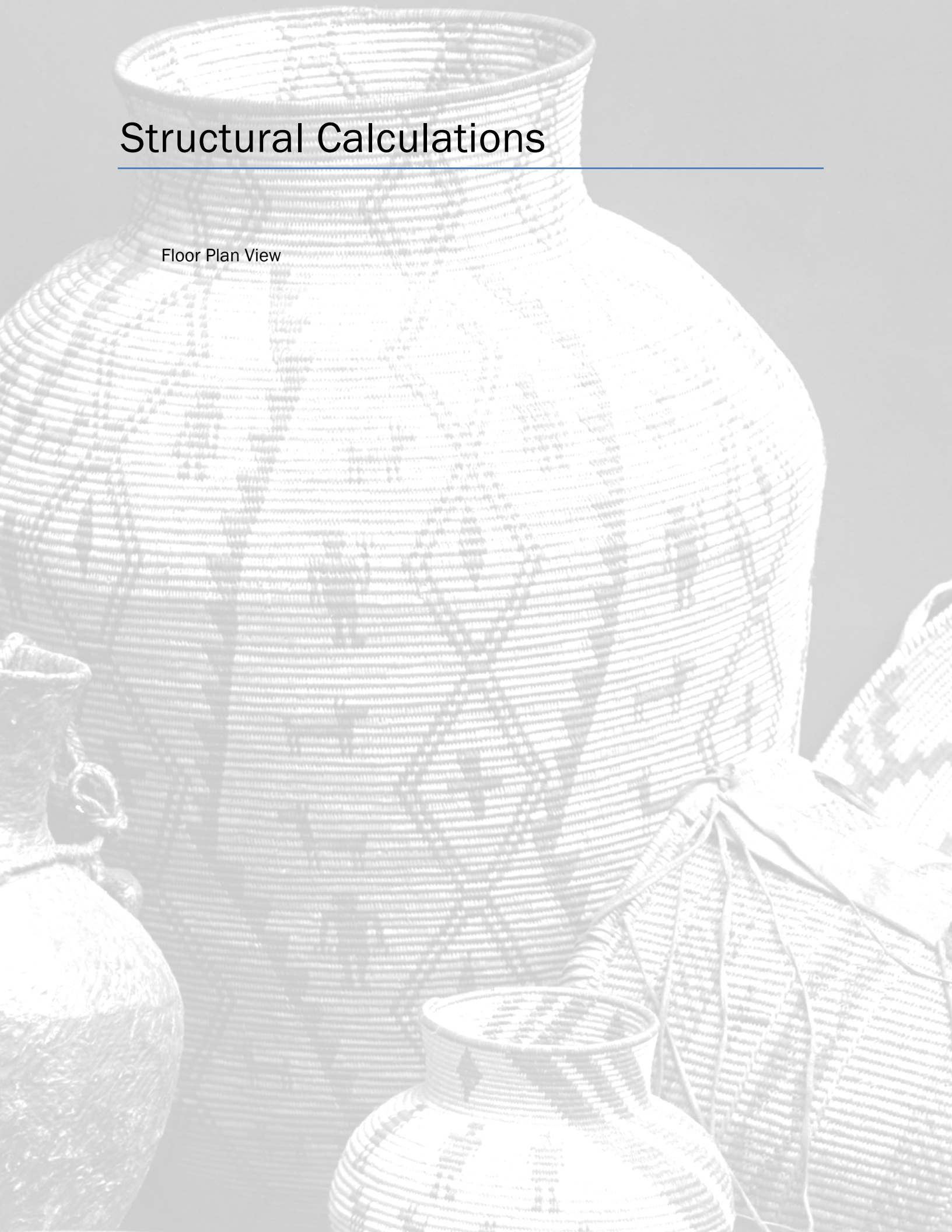


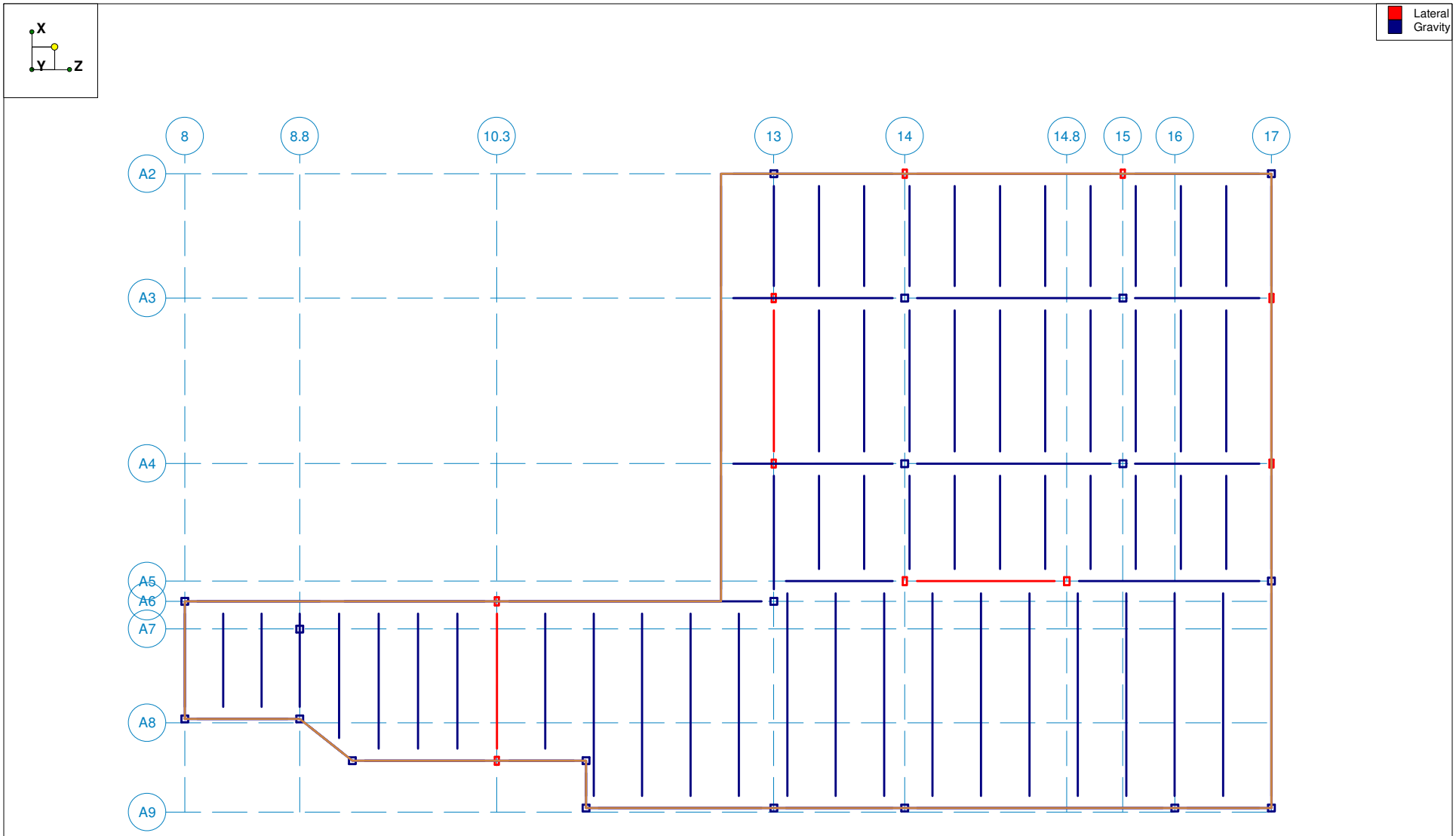


QPEC	Full Model	SK - 1
CMP	Mescalero Hospital Addition	Jul 20, 2018 at 4:20 PM
5135.01		5135.01- Framing Plans.rfl

Structural Calculations

Floor Plan View



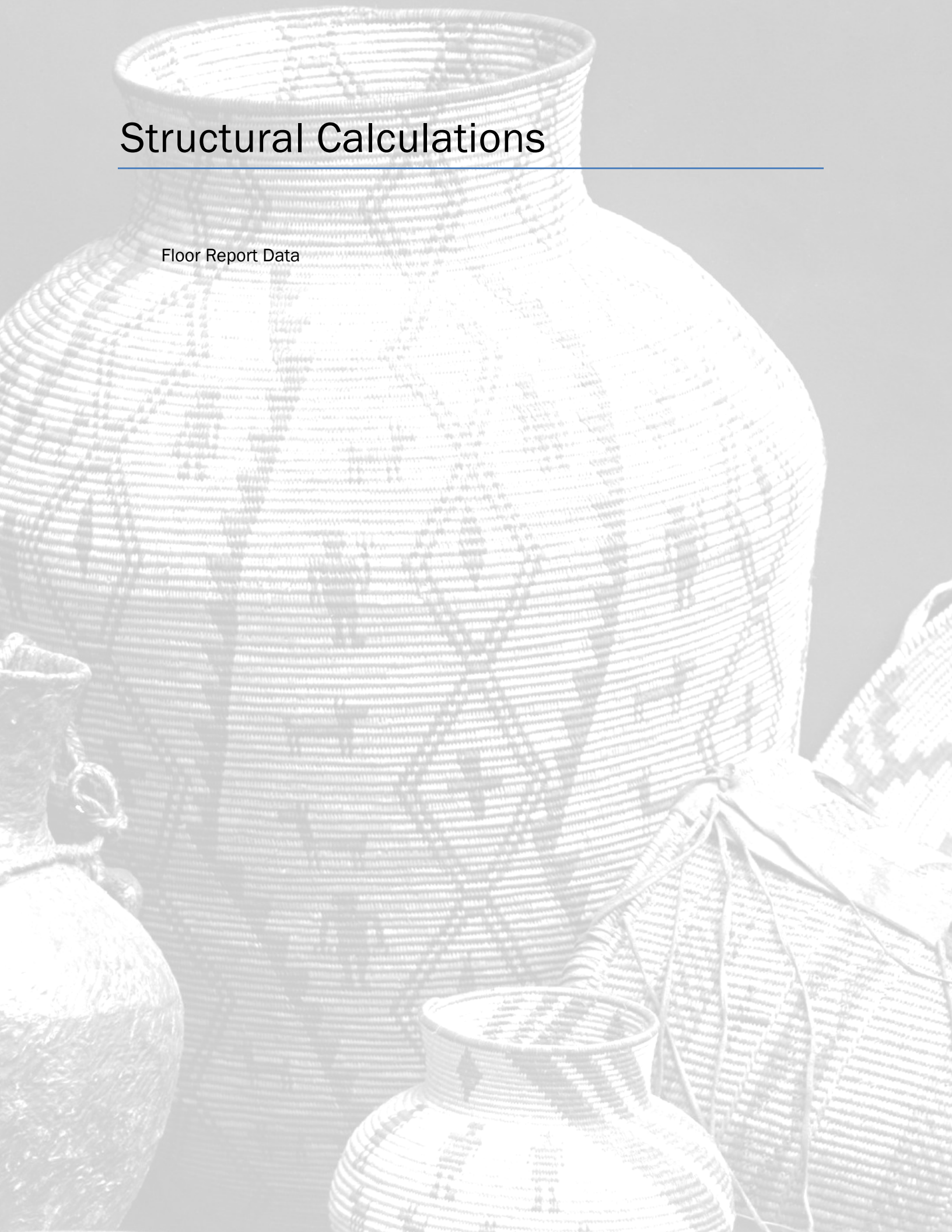


Loads: DL PreComp - PreComposite Dead Load

QPEC	Roof	SK - 3
CMP	Mescalero Hospital Addition	Jul 20, 2018 at 4:20 PM
5135.01		5135.01- Framing Plans.rfl

Structural Calculations

Floor Report Data



Uniform Area Loads

	Label	Additive	PreDL[ksf]	PostDL[ksf]	LL[ksf]	LL Type	VL[ksf]	Dyn Load[ksf]
1	Roof			.024	.02	RLL-Non	.011	.01

Deck General Properties

	Label	Thickness [in]	f'c [ksi]	Wt [k/ft^3]	Elastic Modu...	Max Span[ft]	Unbraced[ft]
1	Metal Deck	2	3	0	0	20	6

Deck Loads

	Label	Two Way	Self Wt [ksf]	Const DL [ksf]	Const LL [ksf]
1	Metal Deck		.003	0	.02

Global

Freeze Model Design	No
Base Elevation (ft)	0
Merge Tolerance (in)	.12
Area Load Mesh (in^2)	144
Include Shear Deformation	Yes
Show Factored End Reactions	No
Use Columns Springs	No
Move Invalid Joints on Sloped Member	Yes
Minimum Camber (in)	.75
Maximum Camber (in)	3
Camber Increment (in)	.25
Percent PreDL Used For Camber	75%
Minimum Beam Length to Camber (ft)	30

Floor Live Load Reduction	IBC - 00/03/06/09
Roof Live Load Reduction	IBC - 00/03/06/09
Joist Girder Load Tolerance (Kips)	.2
Hot Rolled Steel Code	AISC 13th(360-05): ASD
Cold Formed Steel Code	AISI NAS-01: ASD
Wood Code	AF&PA NDS-05/08: ASD
Wood Temperature	< 100F
Masonry Code	ACI 530-05/08: ASD
Aluminum Code	AA ADM1-05: ASD
Beam Vibrations	AISC DG 11
Vibration Damping Ratio	.03

Use Non-Composite Beam if Optimum	Yes
Effective Width End Offset (% Length)	10%
Orthogonal Beam Angle (degrees)	45
Beam / Deck Parallel Angle (degrees)	10
Use Global Uniform Studs Only	No
Minimum Percent Composite	25%
Maximum Percent Composite	100%
Maximum Stud Spacing (in)	36
Minimum Stud Spacing (in)	4.5
Stud End Offset (in)	0
Min. Width for 2 Stud Rows (in)	5.5
Min. Width for 3 Stud Rows (in)	8.5

Wind Code	ASCE 7-05
Wind Base Elevation (ft)	Not Entered
Wind Speed (mph)	90
Occupancy Category	1
Exposure Category	B
Topographic Multiplier K1	0
Topographic Multiplier K2	0
Topographic Multiplier K2	0
Directionality Factor Kd	1

Global, Continued

Seismic Code	ASCE 7-05
Seismic Base Elevation (ft)	Not Entered
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ct Exp. X	.75
Ct Exp. Z	.75
Ca	.36
Cv	.54
Nv	1
SD1	1
SDS	1
S1	1
TL (sec)	Not Entered
Occupancy Code	4
Seismic Zone	3
Occupancy Cat	I or II
Use Gravity Self Wt in Diaphragm Mass	Yes
Use Deck Self Wt in Diaphragm Mass	Yes
Use Lateral Self Wt in Diaphragm Mass	Yes
Seismic Detailing Code	None
Om X	1
Om Z	1
Rho X	1
Rho Z	1

Combinations

	Label	Sol...	Cat...	Fa...	Category	Fa...	Category	Fa...	Cat...	Fact...	Cat...	Fact...	Cat...	Fact...	Cat...	Fact...	Cat...	Fact...
1	Comb. 1...	Yes	DL	1														
2	Comb. 2...	Yes	DL	1	LL	1												

Beam Primary Data : Roof

	Label	Start Point	End Point	Shape	Material	Design Rul...	Function	Orientation	Start Rel...	End Rele...
1	M1	N111	N19	W12X14	A992	Typical	Gravity	Strong Axis	Fixed	Pinned
2	M2	N19	N14	Wide Flange	A992	Typical	Lateral	Strong Axis	Pinned	Pinned
3	M3	N14	N13	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
4	M4	N13	N10	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
5	M5	N10	N6	W12X14	A992	Typical	Lateral	Strong Axis	Pinned	Pinned
6	M6	N6	N5	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
7	M7	N7	N6	W14X22	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
8	M8	N10	N11	Wide Flange	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
9	M9	N18	N11	Wide Flange	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
10	M10	N7	N17	Wide Flange	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
11	M11	N17	N113	W14X22	A992	Typical	Gravity	Strong Axis	Pinned	Fixed
12	M12	N8	N12	W12X14	A992	Typical	Lateral	Strong Axis	Pinned	Pinned
13	M13	N109	N18	Wide Flange	A992	Typical	Gravity	Strong Axis	Fixed	Pinned
14	M14	N20	N12	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
15	M15	N8	N15	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
16	M16	N16	N3	W14X22	A992	Typical	Gravity	Strong Axis	Pinned	Fixed
17	M19	N2	N15	Wide Flange	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
18	M20	N66	N67	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
19	M21	N68	N69	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
20	M22	N70	N71	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
21	M23	N72	N73	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
22	M24	N74	N75	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
23	M25	N76	N77	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
24	M26	N78	N79	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
25	M27	N80	N81	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
26	M28	N82	N83	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
27	M29	N84	N85	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
28	M30	N67	N86	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
29	M31	N69	N87	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
30	M32	N71	N88	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
31	M33	N73	N89	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
32	M34	N75	N90	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned

Beam Primary Data : Roof (Continued)

	Label	Start Point	End Point	Shape	Material	Design Rul...	Function	Orientation	Start Rel...	End Rele...
33	M35	N77	N91	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
34	M36	N79	N92	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
35	M37	N81	N93	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
36	M38	N83	N94	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
37	M39	N85	N95	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
38	M40	N86	N96	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
39	M41	N87	N97	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
40	M42	N88	N98	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
41	M43	N89	N99	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
42	M44	N90	N100	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
43	M45	N91	N101	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
44	M46	N92	N102	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
45	M47	N93	N103	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
46	M48	N94	N104	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
47	M49	N95	N105	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
48	M50	N113	N109	10K1	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
49	M51	N109	N111	10K1	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
50	M52	N114	N113	10K1	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
51	M53	N127	N126	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
52	M54	N126	N125	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
53	M55	N122	N121	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
54	M56	N121	N120	W14X22	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
55	M57	N120	N119	W12X19	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
56	M58	N128	N127	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
57	M59	N119	N118	W18X35	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
58	M60	N118	N116	W12X19	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
59	M61	N106	N107	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
60	M62	N108	N110	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
61	M63	N2	N130	Wide Flange	A992	Typical	Lateral	Strong Axis	Pinned	Pinned
62	M64	N125	N130	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
63	M65	N130	N122	W12X14	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
64	M66	N135	N136	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
65	M67	N137	N138	20K4SP	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
66	M68	N139	N140	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
67	M69	N141	N142	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
68	M70	N143	N144	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
69	M71	N145	N146	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
70	M72	N147	N148	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
71	M73	N149	N150	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
72	M74	N151	N152	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
73	M75	N153	N154	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
74	M76	N155	N156	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
75	M77	N157	N158	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
76	M78	N159	N160	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
77	M79	N161	N162	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
78	M80	N163	N164	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
79	M81	N5	N116	Wide Flange	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
80	M82	N112	N117	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
81	M83	N123	N124	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
82	M84	N131	N132	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
83	M85	N133	N134	K Joist	Steel Joist Matl	Typical	Gravity	Strong Axis	Pinned	Pinned
84	M86	N126	N27	Wide Flange	A992	Typical	Gravity	Strong Axis	Pinned	Fixed
85	M87	N128	N165	Wide Flange	A992	Typical	Gravity	Strong Axis	Pinned	Fixed
86	M88	N165	N2	Wide Flange	A992	Typical	Gravity	Strong Axis	Pinned	Pinned
87	M89	N16	N166	Wide Flange	A992	Typical	Lateral	Strong Axis	Pinned	Pinned
88	M90	N166	N5	Wide Flange	A992	Typical	Gravity	Strong Axis	Pinned	Pinned

Columns : Roof

	Label	Point	Shape	Material	Function	Angle (d...	Orient Point	Splice	Distance Below [ft]	Splice Type	Parapet Hei...
1	L1_CS1 (A...	N1	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	NA
2	L1_CS2 (A...	N2	Tube	A500 Gr....	Lateral			Yes	Default (16)	Default (Mo...	0
3	L1_CS5 (A...	N5	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
4	L1_CS6 (A...	N6	Tube	A500 Gr....	Lateral			Yes	Default (16)	Default (Mo...	0
5	L1_CS7 (A...	N7	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	NA
6	L1_CS10 (...	N10	Tube	A500 Gr....	Lateral			Yes	Default (16)	Default (Mo...	0
7	L1_CS11 (...	N11	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	NA
8	L1_CS13 (...	N13	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
9	L1_CS14 (...	N14	Tube	A500 Gr....	Lateral			Yes	Default (16)	Default (Mo...	0

Columns : Roof (Continued)

	Label	Point	Shape	Material	Function	Angle (d...	Orient Point	Splice	Distance Below [ft]	Splice Type	Parapet Hei...
10	L1_CS12 (...	N15	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	NA
11	L1_CS13 (...	N16	Tube	A500 Gr....	Lateral			Yes	Default (16)	Default (Mo...	NA
12	L1_CS14 (...	N17	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	NA
13	L1_CS15 (...	N18	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	NA
14	L1_CS16 (...	N19	Tube	A500 Gr....	Lateral			Yes	Default (16)	Default (Mo...	0
15	L1_CS17 (...	N8	Tube	A500 Gr....	Lateral			Yes	Default (16)	Default (Mo...	NA
16	L1_CS18 (...	N12	Tube	A500 Gr....	Lateral			Yes	Default (16)	Default (Mo...	NA
17	L1_CS19 (...	N20	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
18	L1_CS19 (-...	N116	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
19	L1_CS21 (-...	N118	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
20	L1_CS22 (-...	N119	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
21	L1_CS23 (-...	N120	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
22	L1_CS24 (...	N121	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
23	L1_CS25 (...	N122	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
24	L1_CS26 (...	N125	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
25	L1_CS27 (-...	N126	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
26	L1_CS28 (-...	N127	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
27	L1_CS29 (...	N128	SquareTube	A500 Gr....	Gravity			Yes	Default (16)	Default (Mo...	0
28	L1_CS29 (...	N130	Tube	A500 Gr....	Lateral			Yes	Default (16)	Default (Mo...	0
29	L1_CS29 (...	N166	Tube	A500 Gr....	Lateral			Yes	Default (16)	Default (Mo...	NA

Diaphragm Parameters : Roof

	Floor	Diaphragm	Type	Region	Design Rule	SGAF
1	Roof	D1	Flexible		N/A	N/A

Floors

	Label	Elevation[ft]	Area Loa...	Deck Defa...	Deck Angle D...	Parent	Inactive	Splice Distance Bel...	Splice Type
1	Roof	16	Roof	Metal Deck	0	None		16	Moment

Horizontal Project Grid Locations

	Label	Distance [ft]	Increment [ft]
1	8	-14.167	-14.167
2	8.8	0	14.167
3	10.3	24.323	24.323
4	13	58.49	34.167
5	14	74.656	16.167
6	14.8	94.656	20
7	15	101.573	6.917
8	16	107.99	6.417
9	17	119.907	11.917

Vertical Project Grid Locations

	Label	Distance [ft]	Increment [ft]
1	A9	0	0
2	A8	11	11
3	A7	22.583	11.583
4	A6	26	3.417
5	A5	28.5	2.5
6	A4	43	14.5
7	A3	63.417	20.417
8	A2	78.75	15.333

Combination Design

	Label	ASIF	CD	Hot Rolled ...	Cold Forme...	Wood	Wood Produ...	Concrete	Masonry
1	Comb. 1 - DL			Yes	Yes	Yes	Yes	Yes	Yes
2	Comb. 2 - DL+LL			Yes	Yes	Yes	Yes	Yes	Yes

Cold Formed : Roof

Label	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp Top[ft]	Lcomp Bot[ft]	Cm	Cb	R
No Data to Print ...								

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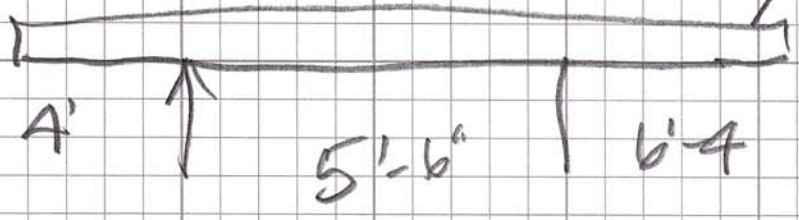
ENGINEERING CORPORATION

Project
Job No. 5135101
Subject

SHEET 1

By _____ Date _____ Ck _____ Date _____

Canopy Beam



USE 8x4x3/16"

USE 3N 20 gage deck
2 Span MIN W/ 2 4/4 Pattern of #12 Tek Screws to Support & #10 Tek Screws @ Sidelaps (3 per Span)

Reactions
DL = 2.48K
LL = 3.72K

USE HSS6x6x1/4 Column
& 2'-6" x 2'-6" x 1'-0" thick Column
12" x 12" x 3/4" Base plate
W/ (4) 3/4" ϕ A F1554 AB Embed 9"

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6621 GULTON COURT NE
ALBUQUERQUE, NM 87109
505-585-1456

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Steel Beam

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ENERCALC, INC. 1983-2012, Build:6.12.11.1, Ver:6.0.26

Lic. # : KW-06007555 — Licensee : quiroga-pfeiffer engineering group

Description : canopy beam

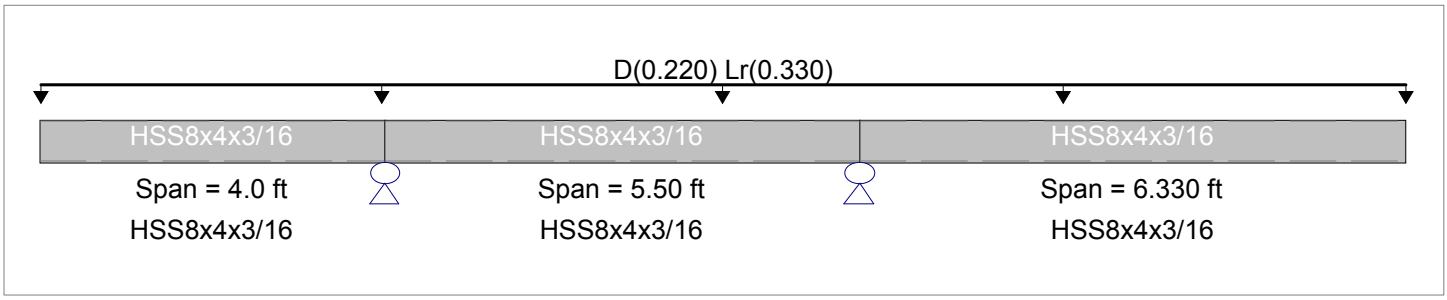
CODE REFERENCES

Calculations per AISC 360-05, IBC 2006, CBC 2007, ASCE 7-05
Load Combination Set : ASCE 7-02

Material Properties

Analysis Method : Load Resistance Factor Design
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling
Bending Axis : Major Axis Bending
Load Combination ASCE 7-02

Fy : Steel Yield : 46.0 ksi
E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Loads on all spans...
Uniform Load on ALL spans : D = 0.220, Lr = 0.330 k/ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.451 : 1	Maximum Shear Stress Ratio =	0.078 : 1
Section used for this span	HSS8x4x3/16	Section used for this span	HSS8x4x3/16
Mu : Applied	15.867 k-ft	Vu : Applied	5.013 k
Mn * Phi : Allowable	35.190 k-ft	Vn * Phi : Allowable	64.642 k
Load Combination	+1.20D+1.60Lr+0.50L	Load Combination	+1.20D+1.60Lr+0.50L
Location of maximum on span	5.500 ft	Location of maximum on span	5.500 ft
Span # where maximum occurs	Span # 2	Span # where maximum occurs	Span # 2

Maximum Deflection

Max Downward L+Lr+S Deflection	0.258 in	Ratio =	589
Max Upward L+Lr+S Deflection	-0.025 in	Ratio =	2,622
Max Downward Total Deflection	0.430 in	Ratio =	354
Max Upward Total Deflection	-0.042 in	Ratio =	1574

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	Summary of Shear Values VuMax	Vnx	Phi*Vnx
D Only													
Dsgn. L = 4.00 ft	1	0.070	0.019		-2.46	2.46	39.10	35.19	1.00	1.00	1.23	71.82	64.64
Dsgn. L = 5.50 ft	2	0.175	0.030	-0.00	-6.17	6.17	39.10	35.19	1.00	1.00	1.95	71.82	64.64
Dsgn. L = 6.33 ft	3	0.175	0.030		-6.17	6.17	39.10	35.19	1.00	1.00	1.95	71.82	64.64
+1.20D+0.50Lr+1.60L+1.60H													
Dsgn. L = 4.00 ft	1	0.098	0.027		-3.43	3.43	39.10	35.19	1.00	1.00	1.72	71.82	64.64
Dsgn. L = 5.50 ft	2	0.244	0.042	-0.00	-8.59	8.59	39.10	35.19	1.00	1.00	2.72	71.82	64.64
Dsgn. L = 6.33 ft	3	0.244	0.042		-8.59	8.59	39.10	35.19	1.00	1.00	2.72	71.82	64.64
+1.20D+1.60L+0.50S+1.60H													
Dsgn. L = 4.00 ft	1	0.060	0.016		-2.11	2.11	39.10	35.19	1.00	1.00	1.06	71.82	64.64
Dsgn. L = 5.50 ft	2	0.150	0.026	-0.00	-5.29	5.29	39.10	35.19	1.00	1.00	1.67	71.82	64.64
Dsgn. L = 6.33 ft	3	0.150	0.026		-5.29	5.29	39.10	35.19	1.00	1.00	1.67	71.82	64.64
+1.20D+1.60Lr+0.50L													
Dsgn. L = 4.00 ft	1	0.180	0.049		-6.34	6.34	39.10	35.19	1.00	1.00	3.17	71.82	64.64
Dsgn. L = 5.50 ft	2	0.451	0.078	-0.00	-15.87	15.87	39.10	35.19	1.00	1.00	5.01	71.82	64.64
Dsgn. L = 6.33 ft	3	0.451	0.078		-15.87	15.87	39.10	35.19	1.00	1.00	5.01	71.82	64.64
+1.20D+1.60Lr+0.80W													
Dsgn. L = 4.00 ft	1	0.180	0.049		-6.34	6.34	39.10	35.19	1.00	1.00	3.17	71.82	64.64
Dsgn. L = 5.50 ft	2	0.451	0.078	-0.00	-15.87	15.87	39.10	35.19	1.00	1.00	5.01	71.82	64.64
Dsgn. L = 6.33 ft	3	0.451	0.078		-15.87	15.87	39.10	35.19	1.00	1.00	5.01	71.82	64.64
+1.20D+0.50L+1.60S													
Dsgn. L = 4.00 ft	1	0.060	0.016		-2.11	2.11	39.10	35.19	1.00	1.00	1.06	71.82	64.64
Dsgn. L = 5.50 ft	2	0.150	0.026	-0.00	-5.29	5.29	39.10	35.19	1.00	1.00	1.67	71.82	64.64
Dsgn. L = 6.33 ft	3	0.150	0.026		-5.29	5.29	39.10	35.19	1.00	1.00	1.67	71.82	64.64

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6621 Gulton Court
Albuquerque, NM 87109
505-858-1456

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Steel Beam

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ENERCALC, INC. 1983-2012, Build:6.12.11.1, Ver:6.0.26

Lic. # : KW-06007555 — **Licensee : quiroga-pfeiffer engineering group**

Description : canopy beam

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	Summary of Shear Values VuMax	Vnx	Phi*Vnx
+1.20D+1.60S+0.80W													
Dsgn. L = 4.00 ft	1	0.060	0.016		-2.11	2.11	39.10	35.19	1.00	1.00	1.06	71.82	64.64
Dsgn. L = 5.50 ft	2	0.150	0.026	-0.00	-5.29	5.29	39.10	35.19	1.00	1.00	1.67	71.82	64.64
Dsgn. L = 6.33 ft	3	0.150	0.026		-5.29	5.29	39.10	35.19	1.00	1.00	1.67	71.82	64.64
+1.20D+0.50Lr+0.50L+1.60W													
Dsgn. L = 4.00 ft	1	0.098	0.027		-3.43	3.43	39.10	35.19	1.00	1.00	1.72	71.82	64.64
Dsgn. L = 5.50 ft	2	0.244	0.042	-0.00	-8.59	8.59	39.10	35.19	1.00	1.00	2.72	71.82	64.64
Dsgn. L = 6.33 ft	3	0.244	0.042		-8.59	8.59	39.10	35.19	1.00	1.00	2.72	71.82	64.64
+1.20D+0.50L+0.50S+1.60W													
Dsgn. L = 4.00 ft	1	0.060	0.016		-2.11	2.11	39.10	35.19	1.00	1.00	1.06	71.82	64.64
Dsgn. L = 5.50 ft	2	0.150	0.026	-0.00	-5.29	5.29	39.10	35.19	1.00	1.00	1.67	71.82	64.64
Dsgn. L = 6.33 ft	3	0.150	0.026		-5.29	5.29	39.10	35.19	1.00	1.00	1.67	71.82	64.64
+1.20D+0.50L+0.20S+E													
Dsgn. L = 4.00 ft	1	0.060	0.016		-2.11	2.11	39.10	35.19	1.00	1.00	1.06	71.82	64.64
Dsgn. L = 5.50 ft	2	0.150	0.026	-0.00	-5.29	5.29	39.10	35.19	1.00	1.00	1.67	71.82	64.64
Dsgn. L = 6.33 ft	3	0.150	0.026		-5.29	5.29	39.10	35.19	1.00	1.00	1.67	71.82	64.64
+0.90D+1.60W+1.60H													
Dsgn. L = 4.00 ft	1	0.045	0.012		-1.58	1.58	39.10	35.19	1.00	1.00	0.79	71.82	64.64
Dsgn. L = 5.50 ft	2	0.113	0.019	-0.00	-3.97	3.97	39.10	35.19	1.00	1.00	1.25	71.82	64.64
Dsgn. L = 6.33 ft	3	0.113	0.019		-3.97	3.97	39.10	35.19	1.00	1.00	1.25	71.82	64.64
+0.90D+E+1.60H													
Dsgn. L = 4.00 ft	1	0.045	0.012		-1.58	1.58	39.10	35.19	1.00	1.00	0.79	71.82	64.64
Dsgn. L = 5.50 ft	2	0.113	0.019	-0.00	-3.97	3.97	39.10	35.19	1.00	1.00	1.25	71.82	64.64
Dsgn. L = 6.33 ft	3	0.113	0.019		-3.97	3.97	39.10	35.19	1.00	1.00	1.25	71.82	64.64

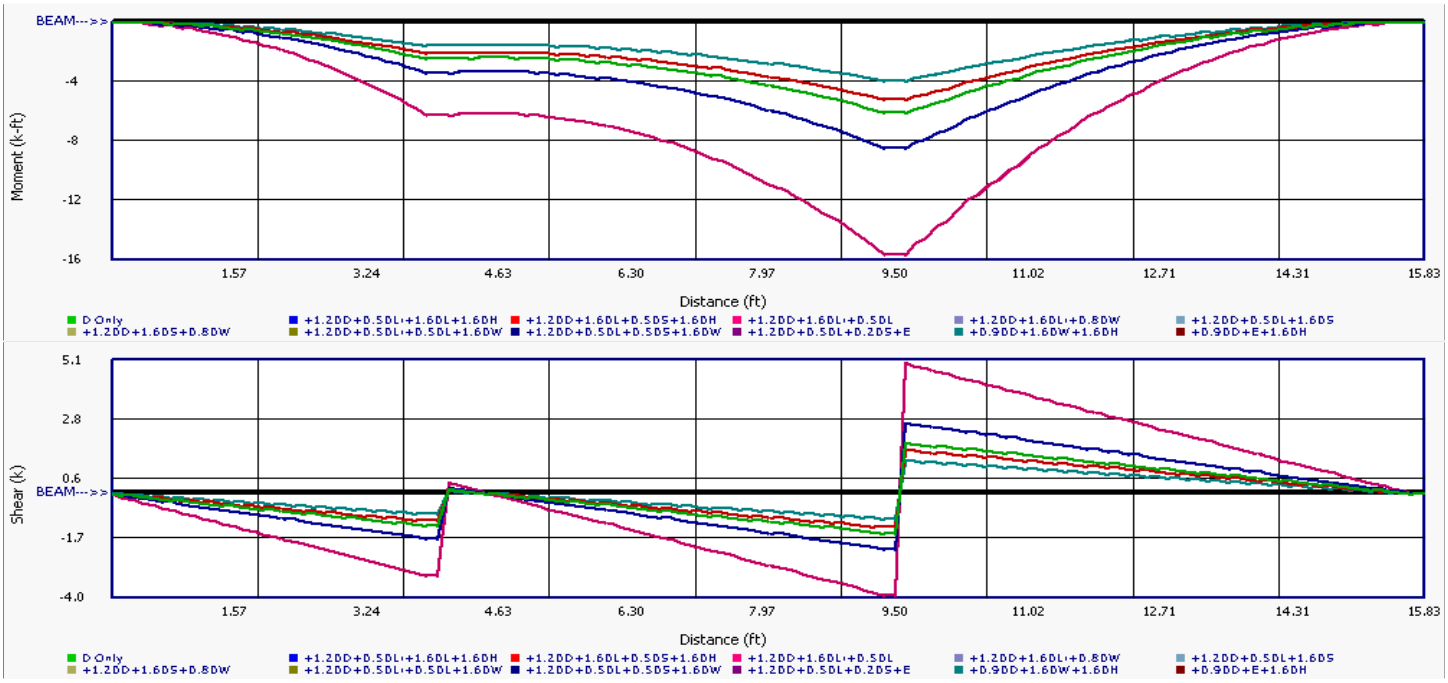
Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+Lr	1	0.1353	0.000		0.0000	0.000
	2	0.0000	0.000	D+Lr	-0.0419	3.063
D+Lr	3	0.4297	6.330		0.0000	3.063

Vertical Reactions - Unfactored

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Overall MAXimum		2.509	6.197	
D Only		1.004	2.479	
Lr Only		1.505	3.718	
D+Lr		2.509	6.197	



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6621 Gulton Court
Albuquerque, NM 87109
505-858-1456

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Steel Beam

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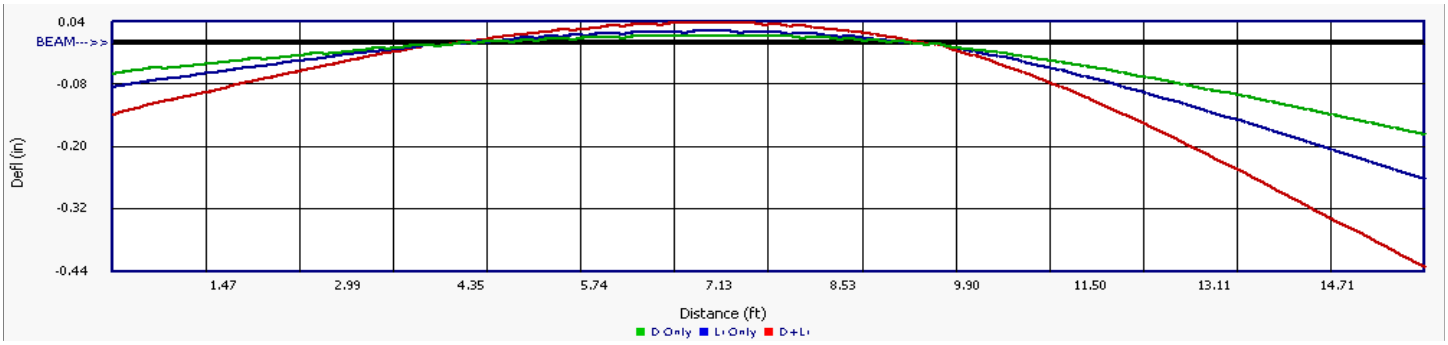
ENERCALC, INC. 1983-2012, Build:6.12.11.1, Ver:6.0.26

Lic. # : KW-06007555 **Licensee : quiroga-pfeiffer engineering group**

Description : canopy beam



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General Footing

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ENERCALC, INC. 1983-2012, Build:6.12.11.1, Ver:6.0.26

Lic. # : KW-06007555 — Licensee : quiroga-pfeiffer engineering group

Description : canopy columns

Code References

Calculations per ACI 318-05, IBC 2006, CBC 2007, ASCE 7-05
Load Combinations Used : ASCE 7-02

General Information

Material Properties

f'c : Concrete 28 day strength	=	3.0 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Bearing	=	1.50 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing Depth

Footing base depth below soil surface	=	0.0 ft
Allowable pressure increase per foot of depth	=	0.0 ksf
when footing base is below	=	0.0 ft

Increases based on footing plan dimension

Allowable pressure increase per foot of dep	=	0.0 ksf
when maximum length or width is greater	=	0.0 ft

Dimensions

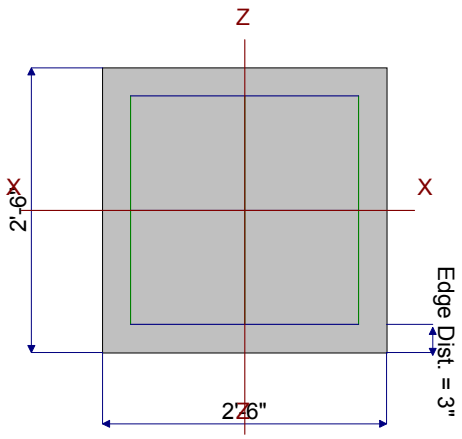
Width parallel to X-X Axis	=	2.50 ft
Length parallel to Z-Z Axis	=	2.50 ft
Footing Thicknes	=	12.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	0.0 in
pz : parallel to Z-Z Axis	=	0.0 in
Height	=	0.0 in

Rebar Centerline to Edge of Concrete.

at Bottom of footing	=	3.0 in

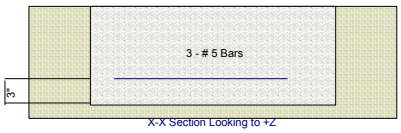


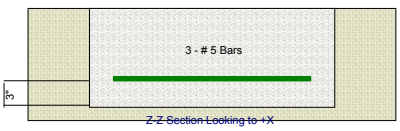
Reinforcing

Bars parallel to X-X Axis		
Number of Bars	=	3.0
Reinforcing Bar Size	=	# 5
Bars parallel to Z-Z Axis		
Number of Bars	=	3.0
Reinforcing Bar Size	=	# 5

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a





Applied Loads

		D	Lr	L	S	W	E	H
P : Column Load	=	2.70	3.720	0.0	0.0	0.0	0.0	0.0 k
OB : Overburden	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ksf
M-xx	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
M-zz	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
V-x	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k
V-z	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k

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General Footing

File: W:\~QPEC PROJECTS\5135.01\Calculations\Enercalc\5135.01 - framing.ec6
ENERCALC, INC. 1983-2012, Build:6.12.11.1, Ver:6.0.26

Lic. # : KW-06007555 — Licensee : quiroga-pfeiffer engineering group

Description : canopy columns

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7813	Soil Bearing	1.172 ksf	1.50 ksf	+D+Lr+H
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.08887	Z Flexure (+X)	1.285 k-ft	14.455 k-ft	+1.20D+1.60Lr+0.50L
PASS	0.08887	Z Flexure (-X)	1.285 k-ft	14.455 k-ft	+1.20D+1.60Lr+0.50L
PASS	0.08887	X Flexure (+Z)	1.285 k-ft	14.455 k-ft	+1.20D+1.60Lr+0.50L
PASS	0.08887	X Flexure (-Z)	1.285 k-ft	14.455 k-ft	+1.20D+1.60Lr+0.50L
PASS	0.09268	1-way Shear (+X)	7.614 psi	82.158 psi	+1.20D+1.60Lr+0.50L
PASS	0.09268	1-way Shear (-X)	7.614 psi	82.158 psi	+1.20D+1.60Lr+0.50L
PASS	0.09268	1-way Shear (+Z)	7.614 psi	82.158 psi	+1.20D+1.60Lr+0.50L
PASS	0.09268	1-way Shear (-Z)	7.614 psi	82.158 psi	+1.20D+1.60Lr+0.50L
PASS	0.1749	2-way Punching	28.743 psi	164.317 psi	+1.20D+1.60Lr+0.50L

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc	Actual Soil Bearing Stress +Z	+Z	-X	-X	Actual / Allowable Ratio
X-X, D Only	1.50	n/a	0.0	0.5770	0.5770	n/a	n/a	0.385
X-X, +D+L+H	1.50	n/a	0.0	0.5770	0.5770	n/a	n/a	0.385
X-X, +D+Lr+H	1.50	n/a	0.0	1.172	1.172	n/a	n/a	0.781
X-X, +D+S+H	1.50	n/a	0.0	0.5770	0.5770	n/a	n/a	0.385
X-X, +D+0.750Lr+0.750L+H	1.50	n/a	0.0	1.023	1.023	n/a	n/a	0.682
X-X, +D+0.750L+0.750S+H	1.50	n/a	0.0	0.5770	0.5770	n/a	n/a	0.385
X-X, +D+W+H	1.50	n/a	0.0	0.5770	0.5770	n/a	n/a	0.385
X-X, +D+0.70E+H	1.50	n/a	0.0	0.5770	0.5770	n/a	n/a	0.385
X-X, +D+0.750Lr+0.750L+0.750W+H	1.50	n/a	0.0	1.023	1.023	n/a	n/a	0.682
X-X, +D+0.750Lr+0.750L+0.5250E+H	1.50	n/a	0.0	1.023	1.023	n/a	n/a	0.682
X-X, +D+0.750L+0.750S+0.750W+H	1.50	n/a	0.0	0.5770	0.5770	n/a	n/a	0.385
X-X, +D+0.750L+0.750S+0.5250E+H	1.50	n/a	0.0	0.5770	0.5770	n/a	n/a	0.385
X-X, +0.60D+W+H	1.50	n/a	0.0	0.3462	0.3462	n/a	n/a	0.231
X-X, +0.60D+0.70E+H	1.50	n/a	0.0	0.3462	0.3462	n/a	n/a	0.231
Z-Z, D Only	1.50	0.0	n/a	n/a	n/a	0.5770	0.5770	0.385
Z-Z, +D+L+H	1.50	0.0	n/a	n/a	n/a	0.5770	0.5770	0.385
Z-Z, +D+Lr+H	1.50	0.0	n/a	n/a	n/a	1.172	1.172	0.781
Z-Z, +D+S+H	1.50	0.0	n/a	n/a	n/a	0.5770	0.5770	0.385
Z-Z, +D+0.750Lr+0.750L+H	1.50	0.0	n/a	n/a	n/a	1.023	1.023	0.682
Z-Z, +D+0.750L+0.750S+H	1.50	0.0	n/a	n/a	n/a	0.5770	0.5770	0.385
Z-Z, +D+W+H	1.50	0.0	n/a	n/a	n/a	0.5770	0.5770	0.385
Z-Z, +D+0.70E+H	1.50	0.0	n/a	n/a	n/a	0.5770	0.5770	0.385
Z-Z, +D+0.750Lr+0.750L+0.750W+H	1.50	0.0	n/a	n/a	n/a	1.023	1.023	0.682
Z-Z, +D+0.750Lr+0.750L+0.5250E+H	1.50	0.0	n/a	n/a	n/a	1.023	1.023	0.682
Z-Z, +D+0.750L+0.750S+0.750W+H	1.50	0.0	n/a	n/a	n/a	0.5770	0.5770	0.385
Z-Z, +D+0.750L+0.750S+0.5250E+H	1.50	0.0	n/a	n/a	n/a	0.5770	0.5770	0.385
Z-Z, +0.60D+W+H	1.50	0.0	n/a	n/a	n/a	0.3462	0.3462	0.231
Z-Z, +0.60D+0.70E+H	1.50	0.0	n/a	n/a	n/a	0.3462	0.3462	0.231

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio	Status
Footing Has NO Sliding				

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General Footing

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ENERCALC, INC. 1983-2012, Build:6.12.11.1, Ver:6.0.26

Lic. # : KW-06007555 — Licensee : quiroga-pfeiffer engineering group

Description : canopy columns

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, D Only	0.6310	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, D Only	0.6310	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	0.7733	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	0.7733	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+1.60L+0.50S+1.60H	0.5408	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+1.60L+0.50S+1.60H	0.5408	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+1.60Lr+0.50L	1.285	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+1.60Lr+0.50L	1.285	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+1.60Lr+0.80W	1.285	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+1.60Lr+0.80W	1.285	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+0.50L+1.60S	0.5408	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+0.50L+1.60S	0.5408	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+1.60S+0.80W	0.5408	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+1.60S+0.80W	0.5408	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	0.7733	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	0.7733	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+0.50L+0.50S+1.60W	0.5408	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+0.50L+0.50S+1.60W	0.5408	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+0.50L+0.20S+E	0.5408	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +1.20D+0.50L+0.20S+E	0.5408	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +0.90D+1.60W+1.60H	0.4056	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +0.90D+1.60W+1.60H	0.4056	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +0.90D+E+1.60H	0.4056	+Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
X-X, +0.90D+E+1.60H	0.4056	-Z	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, D Only	0.6310	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, D Only	0.6310	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	0.7733	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	0.7733	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	0.5408	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	0.5408	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+1.60Lr+0.50L	1.285	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+1.60Lr+0.50L	1.285	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+1.60Lr+0.80W	1.285	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+1.60Lr+0.80W	1.285	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+0.50L+1.60S	0.5408	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+0.50L+1.60S	0.5408	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+1.60S+0.80W	0.5408	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+1.60S+0.80W	0.5408	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+0.50Lr+0.50L+1.60W	0.7733	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+0.50Lr+0.50L+1.60W	0.7733	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+0.50L+0.50S+1.60W	0.5408	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+0.50L+0.50S+1.60W	0.5408	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+0.50L+0.20S+E	0.5408	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +1.20D+0.50L+0.20S+E	0.5408	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +0.90D+1.60W+1.60H	0.4056	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +0.90D+1.60W+1.60H	0.4056	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +0.90D+E+1.60H	0.4056	-X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK
Z-Z, +0.90D+E+1.60H	0.4056	+X	Bottom	0.2592	Min Temp %	0.3720	14.455	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
D Only	3.74 psi	3.74 psi	3.74 psi	3.74 psi	3.74 psi	82.158 psi	0.04552	OK
+1.20D+0.50Lr+1.60L+1.60H	4.583 psi	4.583 psi	4.583 psi	4.583 psi	4.583 psi	82.158 psi	0.05579	OK
+1.20D+1.60L+0.50S+1.60H	3.206 psi	3.206 psi	3.206 psi	3.206 psi	3.206 psi	82.158 psi	0.03902	OK
+1.20D+1.60Lr+0.50L	7.614 psi	7.614 psi	7.614 psi	7.614 psi	7.614 psi	82.158 psi	0.09268	OK
+1.20D+1.60Lr+0.80W	7.614 psi	7.614 psi	7.614 psi	7.614 psi	7.614 psi	82.158 psi	0.09268	OK
+1.20D+0.50L+1.60S	3.206 psi	3.206 psi	3.206 psi	3.206 psi	3.206 psi	82.158 psi	0.03902	OK
+1.20D+1.60S+0.80W	3.206 psi	3.206 psi	3.206 psi	3.206 psi	3.206 psi	82.158 psi	0.03902	OK
+1.20D+0.50Lr+0.50L+1.60W	4.583 psi	4.583 psi	4.583 psi	4.583 psi	4.583 psi	82.158 psi	0.05579	OK
+1.20D+0.50L+0.50S+1.60W	3.206 psi	3.206 psi	3.206 psi	3.206 psi	3.206 psi	82.158 psi	0.03902	OK
+1.20D+0.50L+0.20S+E	3.206 psi	3.206 psi	3.206 psi	3.206 psi	3.206 psi	82.158 psi	0.03902	OK
+0.90D+1.60W+1.60H	2.404 psi	2.404 psi	2.404 psi	2.404 psi	2.404 psi	82.158 psi	0.02926	OK
+0.90D+E+1.60H	2.404 psi	2.404 psi	2.404 psi	2.404 psi	2.404 psi	82.158 psi	0.02926	OK

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General Footing

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ENERCALC, INC. 1983-2012, Build:6.12.11.1, Ver:6.0.26

Lic. # : KW-06007555 **Licensee : quiroga-pfeiffer engineering group**

Description : canopy columns

Punching Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
D Only	14.117 psi	164.317psi	0.08591	OK
+1.20D+0.50Lr+1.60L+1.60H	17.301 psi	164.317psi	0.1053	OK
+1.20D+1.60L+0.50S+1.60H	12.1 psi	164.317psi	0.07364	OK
+1.20D+1.60Lr+0.50L	28.743 psi	164.317psi	0.1749	OK
+1.20D+1.60Lr+0.80W	28.743 psi	164.317psi	0.1749	OK
+1.20D+0.50L+1.60S	12.1 psi	164.317psi	0.07364	OK
+1.20D+1.60S+0.80W	12.1 psi	164.317psi	0.07364	OK
+1.20D+0.50Lr+0.50L+1.60W	17.301 psi	164.317psi	0.1053	OK
+1.20D+0.50L+0.50S+1.60W	12.1 psi	164.317psi	0.07364	OK
+1.20D+0.50L+0.20S+E	12.1 psi	164.317psi	0.07364	OK
+0.90D+1.60W+1.60H	9.075 psi	164.317psi	0.05523	OK
+0.90D+E+1.60H	9.075 psi	164.317psi	0.05523	OK

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Steel Column

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ENERCALC, INC. 1983-2012, Build:6.12.11.1, Ver:6.0.26

Lic. # : KW-06007555 — Licensee : quiroga-pfeiffer engineering group

Description : Canopy support column

Code References

Calculations per AISC 360-05, IBC 2006, CBC 2007, ASCE 7-05
Load Combinations Used : ASCE 7-02

General Information

Steel Section Name : **HSS6x6x1/4**
Analysis Method : Load Resistance Factor
Steel Stress Grade
Fy : Steel Yield 46.0 ksi
E : Elastic Bending Modulus 29,000.0 ksi
Load Combination : ASCE 7-02

Overall Column Height 14.0 ft
Top & Bottom Fixity Top & Bottom Pinned
Brace condition for deflection (buckling) along columns :
X-X (width) axis :
Unbraced Length for X-X Axis buckling = 10 ft, K = 1.0
Y-Y (depth) axis :
Unbraced Length for X-X Axis buckling = 10 ft, K = 1.0

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 265.809 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 14.0 ft, Xecc = 4.000 in, Yecc = 4.000 in, D = 2.480, LR = 3.720 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.06369** : 1
Load Combination +1.20D+1.60Lr+0.50L
Location of max.above base 13.906 ft
At maximum location values are . . .
Pu 9.247 k
0.9 * Pn 181.762 k
Mu-x -0.7390 k-ft
0.9 * Mn-x : 38.640 k-ft
Mu-y -0.7390 k-ft
0.9 * Mn-y : 38.640 k-ft

PASS Maximum Shear Stress Ratio = **0.001039** : 1
Load Combination +1.20D+1.60Lr+0.50L
Location of max.above base 0.0 ft
At maximum location values are . . .
Vu : Applied 0.05314 k
Vn * Phi : Allowable 51.135 k

Maximum SERVICE Load Reactions . .
Top along X-X 0.03691 k
Bottom along X-X 0.03691 k
Top along Y-Y 0.03691 k
Bottom along Y-Y 0.03691 k

Maximum SERVICE Load Deflections . . .
Along Y-Y -0.01365 in at 8.175 ft above base
for load combination : D+Lr
Along X-X -0.01365 in at 8.175 ft above base
for load combination : D+Lr

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
	Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.025	PASS	13.91 ft	0.000	PASS	0.00 ft
+1.20D+0.50Lr+1.60L+1.60H	0.035	PASS	13.91 ft	0.001	PASS	0.00 ft
+1.20D+1.60L+0.50S+1.60H	0.022	PASS	13.91 ft	0.000	PASS	0.00 ft
+1.20D+1.60Lr+0.50L	0.064	PASS	13.91 ft	0.001	PASS	0.00 ft
+1.20D+1.60Lr+0.80W	0.064	PASS	13.91 ft	0.001	PASS	0.00 ft
+1.20D+0.50L+1.60S	0.022	PASS	13.91 ft	0.000	PASS	0.00 ft
+1.20D+1.60S+0.80W	0.022	PASS	13.91 ft	0.000	PASS	0.00 ft
+1.20D+0.50Lr+0.50L+1.60W	0.035	PASS	13.91 ft	0.001	PASS	0.00 ft
+1.20D+0.50L+0.50S+1.60W	0.022	PASS	13.91 ft	0.000	PASS	0.00 ft
+1.20D+0.50L+0.20S+E	0.022	PASS	13.91 ft	0.000	PASS	0.00 ft
+0.90D+1.60W+1.60H	0.016	PASS	13.91 ft	0.000	PASS	0.00 ft
+0.90D+E+1.60H	0.016	PASS	13.91 ft	0.000	PASS	0.00 ft

Maximum Reactions - Unfactored

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction
	@ Base	@ Top	@ Base	@ Top	@ Base
D Only	0.015	0.015 k	0.015	0.015 k	2.746 k
Lr Only	0.022	0.022 k	0.022	0.022 k	3.720 k

QPEC
6621 Gulton Cou
Albuquerque, NM
505-858-1456

Project ID:

Printed: 20 July 2018, 3:41PM

Steel Column

File: W:\~QPEC PROJECTS\5135.01\Calculations\Enercalc\5135.01 - framing.ec6
ENERCALC, INC. 1983-2012, Build:6.12.11.1, Ver:6.0.26

Lic. # : KW-06007555 — Licensee : quiroga-pfeiffer engineering group

Description : Canopy support column

Maximum Reactions - Unfactored

Note: Only non-zero reactions are listed.

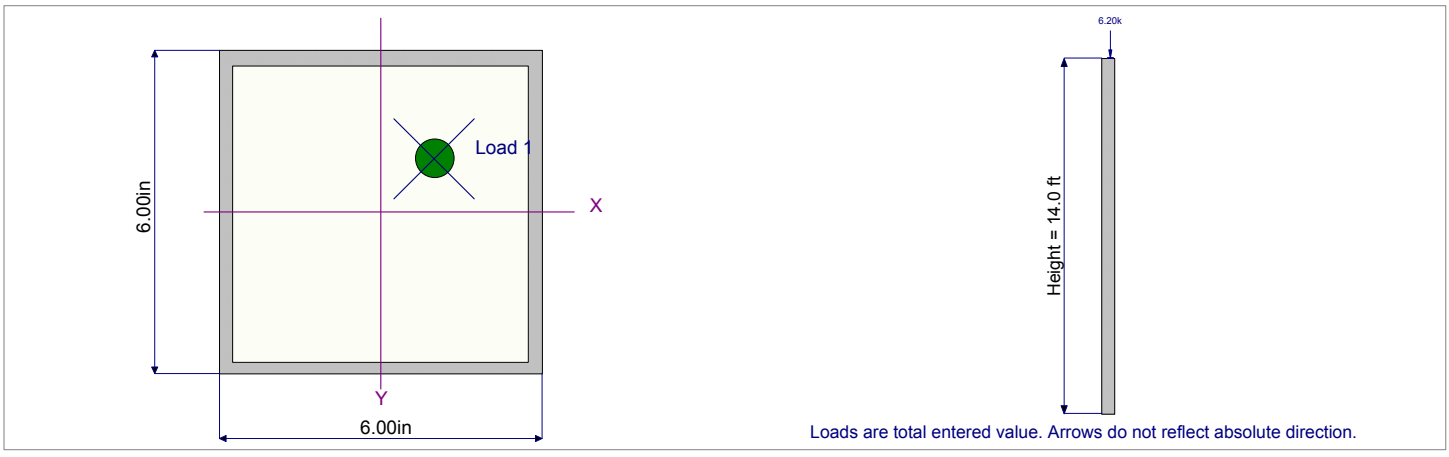
Load Combination	X-X Axis Reaction @ Base	X-X Axis Reaction @ Top	Y-Y Axis Reaction @ Base	Y-Y Axis Reaction @ Top	Axial Reaction @ Base
D+Lr	0.037	0.037 k	0.037	0.037 k	6.466 k

Maximum Deflections for Load Combinations - Unfactored Loads

Load Combination	Max. X-X Deflection		Distance		Max. Y-Y Deflection		Distance	
D Only	-0.0055	in	8.174	ft	-0.005	in	8.174	ft
Lr Only	-0.0082	in	8.174	ft	-0.008	in	8.174	ft
D+Lr	-0.0137	in	8.174	ft	-0.014	in	8.174	ft

Steel Section Properties : HSS6x6x1/4

Depth	=	6.000	in	I xx	=	28.60	in^4	J	= 45.600 in^4
				S xx	=	9.54	in^3		
Width	=	6.000	in	R xx	=	2.340	in		
Wall Thick	=	0.250	in	Zx	=	11.200	in^3		
Area	=	5.240	in^2	I yy	=	28.600	in^4	C	= 15.400 in^3
Weight	=	18.986	plf	S yy	=	9.540	in^3		
				R yy	=	2.340	in		
Ycg	=	0.000	in						

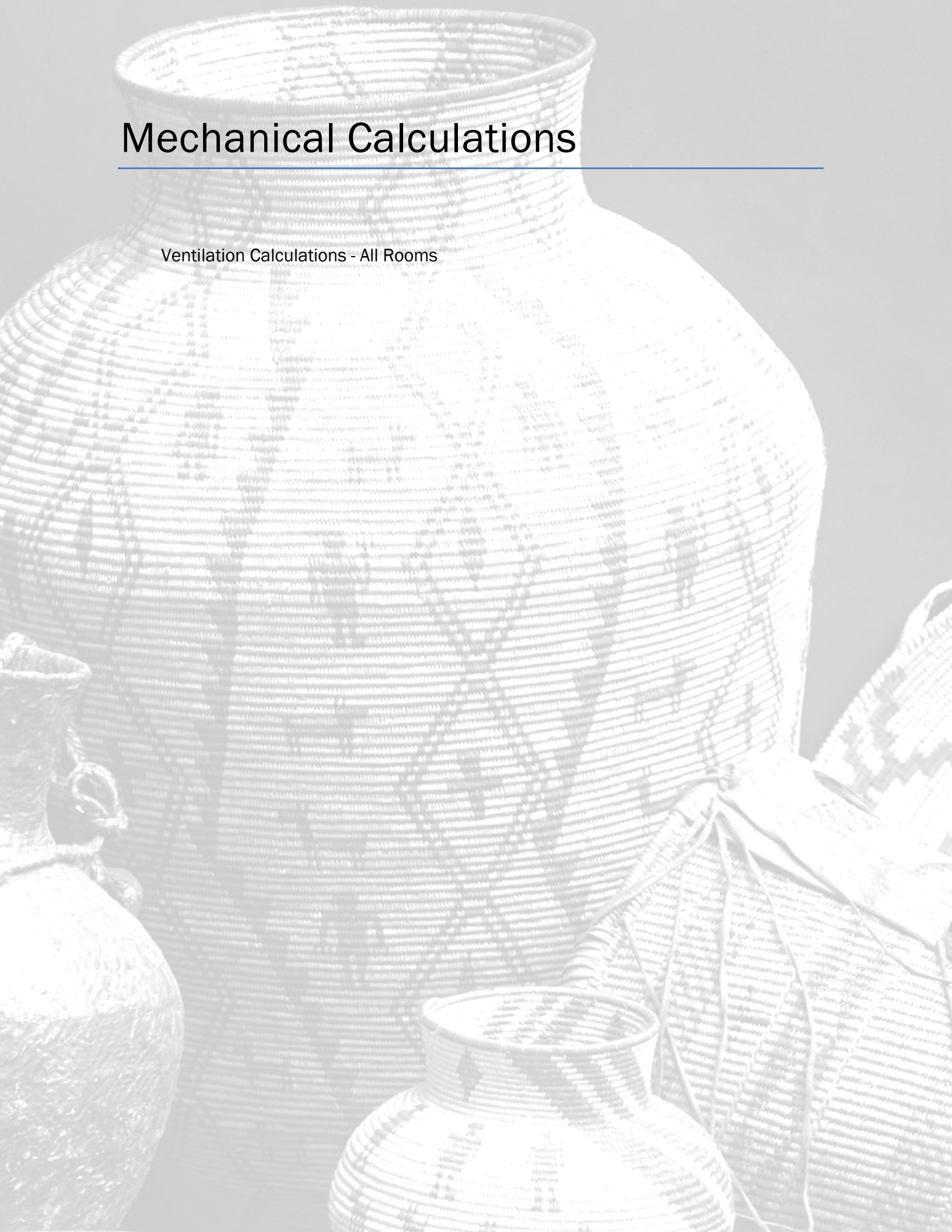


Mechanical Calculations

- Ventilation Calculations
  - All Rooms
  - RTU-1
  - RTU-2
  - RTU-3
  - RTU-4
  - RTU-5
  - VAV 1
- Load Checks-Sums
- Mechanical Master Equipment List
- RTU Submittal
- AC-1/CU-1 & AC-3/CU-3 Submittal
- AC-2/ CU-4 Submittal
- Pump Submittal
- CRAC-1/CU-1 & CRAC-2/CU-2, Submittal
- EUH-1 Submittal
- EF-1 Submittal
- EF-2 Submittal
- CEF-1 Submittal
- EF-3 Submittal
- CEF-2, CEF-3, CEF-4, CEF-5 & CEF-6 Submittal
- S1 & S2 Air Distribution Cut Sheets
- AMDC Air Distribution Cut Sheets
- R1, R2, R3, E-1, E-2 & E-3 Air Distribution Cut Sheets
- Touchless Faucet Plumbing Cut Sheet

Mechanical Calculations

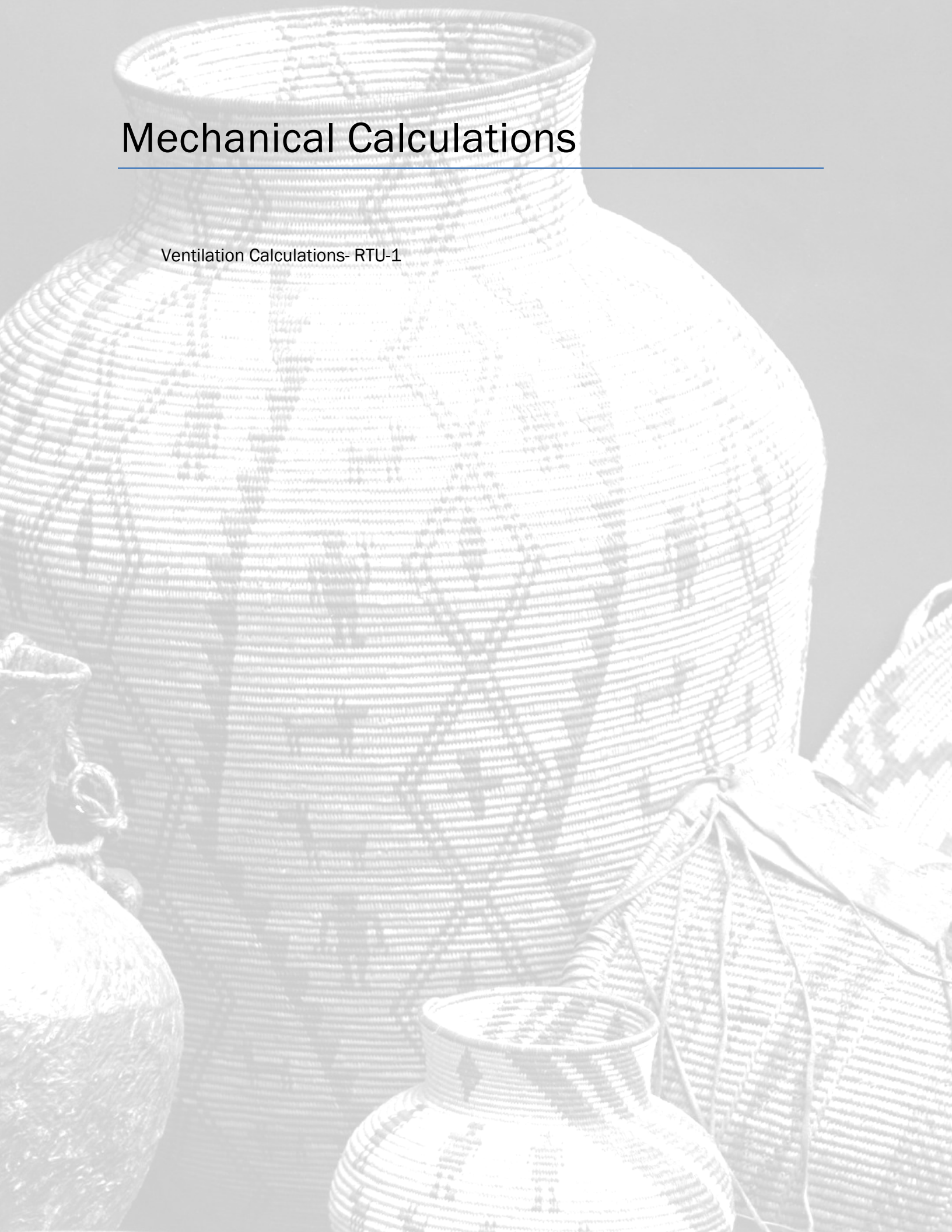
Ventilation Calculations - All Rooms



Room Information			Mechanical Ventilation Code Requirement						ASHRAE Standard 170-2017 Requirements								Airflow Provided				
			Outside Air					Supply	Outside Air		Room Supply Air					Room Pressure	SA	EA	Return	Offset	Total Air
Number/ Name	Area ft^2	Ceiling Height	Est No. of People	OA/p. cfm	OA per floor ara cfm/ft^2	Tot. OA Reqd. cfm	OA %	Total SA Reqd	ach	Tot. cfm	ach	cfm	100% EA	OSA Required By Code	Cooling Load Airflow CFM	+ = pos - = neg	cfm	100% E.A. cfm	cfm	+ = out - = in, cfm	ach
001 EXISTING IT	144	8	1	5	0.06	14	30%	50	0	0	0	0	NR	14	70	NR	70	0	70	0	3
003 ELEC	38	8	0	0	0.06	3	20%	15	0	0	0	0	NR	3	10	NR	15	0	15	0	2
EXISTING CORRIDOR	475	8	0	0	0.06	29	20%	145	0	0	2	127	NR	29	10	NR	150	0	150	0	2
1160 BLOOD DRAW	161	8	2	10	0.18	49	30%	165	2	43	4	86	NR	49	165	-	165	0	165	0	7
1167 OFFICE	102	8	1	5	0.06	12	30%	40	0	0	0	0	NR	12	80	NR	80	0	80	0	5
1164 LAB	731	8	18	10	0.18	312	30%	1040	2	195	10	975	1400	312	1400	-	1400	1680	0	-336	14
1166 ANTE	114	8	0	0	0.06	7	30%	25	0	0	10	152	NR	7	171	+	175	0	140	+35	11
1165 STORAGE	121	8	0	0	0.12	15	30%	50	0	0	2	33	NR	15	100	-	100	0	100	0	6
1136 MEDS	125	8	1	5	0.06	13	20%	65	2	34	4	67	NR	34	310	NR	310	0	310	0	18
1128 EXAM 8	109	8	1	5	0.06	12	30%	40	2	30	6	88	NR	30	175	NR	170	0	170	0	11
1130 EXAM 9	109	8	1	5	0.06	12	30%	40	2	30	6	88	NR	30	175	NR	170	0	170	0	11
1132 EXAM 10	109	8	1	5	0.06	12	30%	40	2	30	6	88	NR	30	175	NR	170	0	170	0	11
1134 EXAM 11	109	8	1	5	0.06	12	30%	40	2	30	6	88	NR	30	175	NR	170	0	170	0	11
1139 SOILED	82	8	0	5	0.18	15	20%	75	0	0	10	110	110	15	110	-	110	132	0	-26	10
1110 CORRIDOR	960	8	0	0	0.06	58	30%	195	0	0	2	256	NR	58	290	NR	290	0	290	0	2
1129 EQUIPT ALCOVE	25	8	0	0	0.06	2	30%	10	0	0	2	7	NR	2	5	NR	10	0	10	0	3
1137 CLEAN	85	8	0	5	0.06	6	20%	30	2	23	4	46	NR	23	45	+	50	0	40	+10	4
1126 EXAM 7	161	8	1	5	0.06	15	30%	50	3	65	15	322	NR	65	325	+	325	0	260	+65	15
1116 EXAM 2	97	8	1	5	0.06	11	30%	40	2	26	6	78	NR	26	165	NR	165	0	165	0	12
1114 TRIAGE	68	8	1	5	0.06	10	30%	35	2	19	12	109	109	19	130	-	130	156	0	-31	14
1112 TRIAGE	76	8	1	5	0.06	10	30%	35	2	21	12	122	122	21	130	-	130	156	0	-31	12
1118 EXAM 3	103	8	1	5	0.06	12	30%	40	2	28	6	83	NR	28	170	NR	170	0	170	0	12
1120 ISO EXAM 4	106	8	1	5	0.06	12	30%	40	2	29	12	170	170	29	170	-	170	204	0	-40	12
1122 EXAM 5	106	8	1	5	0.06	12	30%	40	2	29	6	85	NR	29	170	NR	170	0	170	0	12
1124 EXAM 6	106	8	1	5	0.06	12	30%	40	2	29	6	85	204	29	170	NR	170	205	0	0	12
1163 OFFICE	155	8	2	1	0.06	12	30%	40	0	0	0	0	NR	12	150	NR	150	0	150	0	7
1125 NURSE STATION	321	8	12	5	0.06	80	30%	270	2	86	6	257	NR	86	405	NR	405	0	405	0	9
1127 TEAM WORKROOM	373	8	10	5	0.06	73	30%	245	0	0	0	0	NR	73	475	NR	475	0	475	0	9
1105 WAITING	239	8	10	5	0.06	65	30%	220	2	64	4	128	NR	65	480	NR	480	0	480	0	15
1100 ENTRY VEST.	85	8	0	0	0.06	6	20%	30	0	0	2	23	NR	6	25	NR	25	0	25	0	2
1113 SCALE ALCOVE	49	8	0	0	0.06	3	30%	10	0	0	2	14	NR	3	50	NR	50	0	50	0	7
1115 EXAM 1	104	8	1	5	0.06	12	30%	40	2	28	6	84	NR	28	130	NR	130	0	130	0	9
1111 PAT TOILET	57	8	0	0	0	0	30%	0	0	0	10	76	80	0	40	-	60	80	0	-16	7
1101 PATIENT REGISTRATION	640	8	6	5	0.06	69	30%	230	2	171	6	512	NR	171	1215	NR	1215	0	1215	0	14
1103 STAFF TOILET	43	8	0	0	0	0	30%	0	0	0	10	58	60	0	40	-	50	60	0	-12	8
1177 ULTRASOUND	205	8	3	5	0.12	40	20%	200	2	55	6	164	NR	55	222	NR	225	0	225	0	8
1183 IT OFFICE	144	8	1	5	0.06	14	30%	50	0	0	0	0	NR	14	70	NR	70	0	70	0	3
1182 TRAINING ROOM	228	8	4	5	0.06	34	30%	115	0	0	0	0	NR	34	150	NR	150	0	150	0	4
1137 EXISTING X RAY	201	8	2	5	0.06	23	30%	80	2	54	6	161	NR	54	270	NR	270	0	270	0	10
1171 EQUIP STORAGE	119	8	0	0	0.12	15	30%	50	0	0	2	32	NR	15	55	NR	55	0	55	0	3
1173 OFFICE	156	8	1	0	0.12	19	30%	65	0	0	0	0	NR	19	40	NR	65	0	65	0	3
1147 IV PREP	56	8	1	5	0.18	16	30%	55	3	23	4	30	NR	23	40	-	70	0	70	0	9
1146 ANTE	85	8	0	0	0.06	6	20%	30	0	0	10	114	114	6	20	-	115	138	0	-27	10
1150 MANAGER OFFCE	120	8	1	5	0.06	13	30%	45	0	0	0	0	NR	13	60	NR	60	0	60	0	3
1141 STORAGE	83	8	0	0	0.12	10	20%	50	0	0	2	23	NR	10	17	NR	50	0	50	0	4
1151 PHARM	100	8	0	0	0.06	6	30%	20	0	0	0	0	NR	6	50	NR	50	0	50	0	3
1140 PHARMACY DISPENSING	799	8	9	10	0.18	234	30%	780	2	214	4	427	NR	234	935	+	935	0	748	+187	8
1143 DROP OFF	78	8	2	5	0.06	15	30%	50	0	0	0	0	NR	15	160	NR	160	0	160	0	15
1142 CONSULT	68	8	2	5	0.06	15	30%	50	0	0	0	0	NR	15	40	NR	50	0	50	0	5
1144 CONSULT	97	8	2	5	0.06	16	30%	55	0	0	0	0	NR	16	60	NR	60	0	60	0	4
1155 PATIENT BENEFITS	131	8	1	5	0.06	13	30%	45	0	0	0	0	NR	13	75	NR	75	0	75	0	4
1107 PUBLIC TOILET	51	8	0	0	0	0	30%	0	0	0	10	68	68	0	40	-	70	84	0	-16	10
1106 HKPG	45	8	0	0	0	0	30%	0	0	0	10	60	60	0	27	-	60	72	0	-14	10

Mechanical Calculations

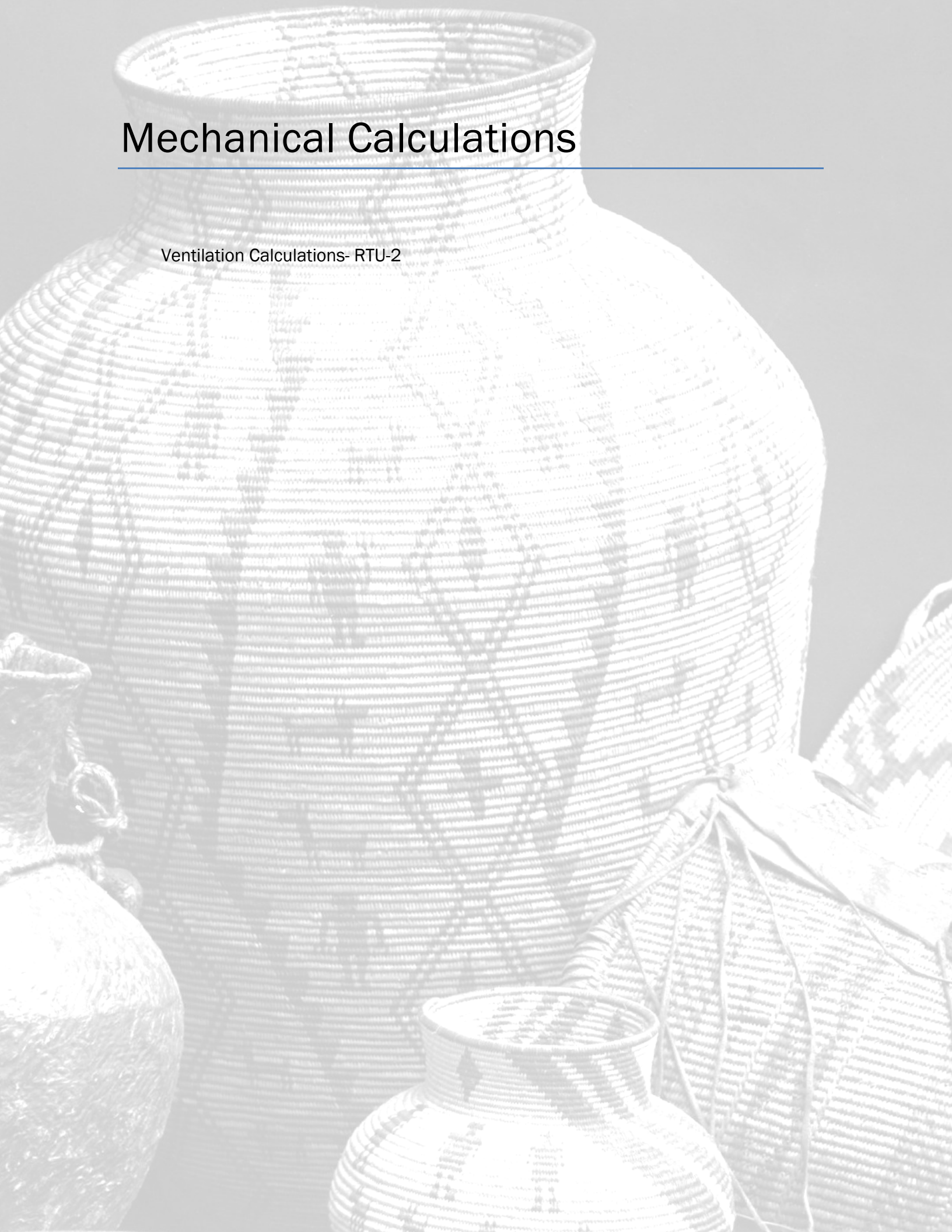
Ventilation Calculations- RTU-1



Room Information			Mechanical Ventilation Code Requirement						ASHRAE Standard 170-2017 Requirements							Room Pressure	Airflow Provided				
			Outside Air					Supply	Outside Air		Room Supply Air						SA	EA	Return	Offset	Total Air
Number/ Name	Area ft^2	Ceiling Height	Est No. of People	OA/p. cfm	OA per floor area cfm/ft^2	Tot. OA Reqd. cfm	OA %	Total SA Reqd	ach	Tot. cfm	ach	cfm	100% EA	OSA Required By Code	Cooling Load Airflow CFM	+ = pos - = neg	cfm	100% E.A. cfm	cfm	+ = out - = in, cfm	ach
1160 BLOOD DRAW	161	8	2	10	0.18	49	0.3	165	2	43	4	86	NR	49	165	-	165	0	165	0	7
1167 OFFICE	102	8	1	5	0.06	12	0.3	40	0	0	0	0	NR	12	80	NR	80	0	80	0	5
1164 LAB	731	8	18	10	0.18	312	0.3	1040	2	195	10	975	1400	312	1400	-	1400	1680	0	-336	14
1166 ANTE	114	8	0	0	0.06	7	0.3	25	0	0	10	152	NR	7	171	+	175	0	140	35	11
1165 STORAGE	121	8	0	0	0.12	15	0.3	50	0	0	2	33	NR	15	100	-	100	0	100	0	6

Mechanical Calculations

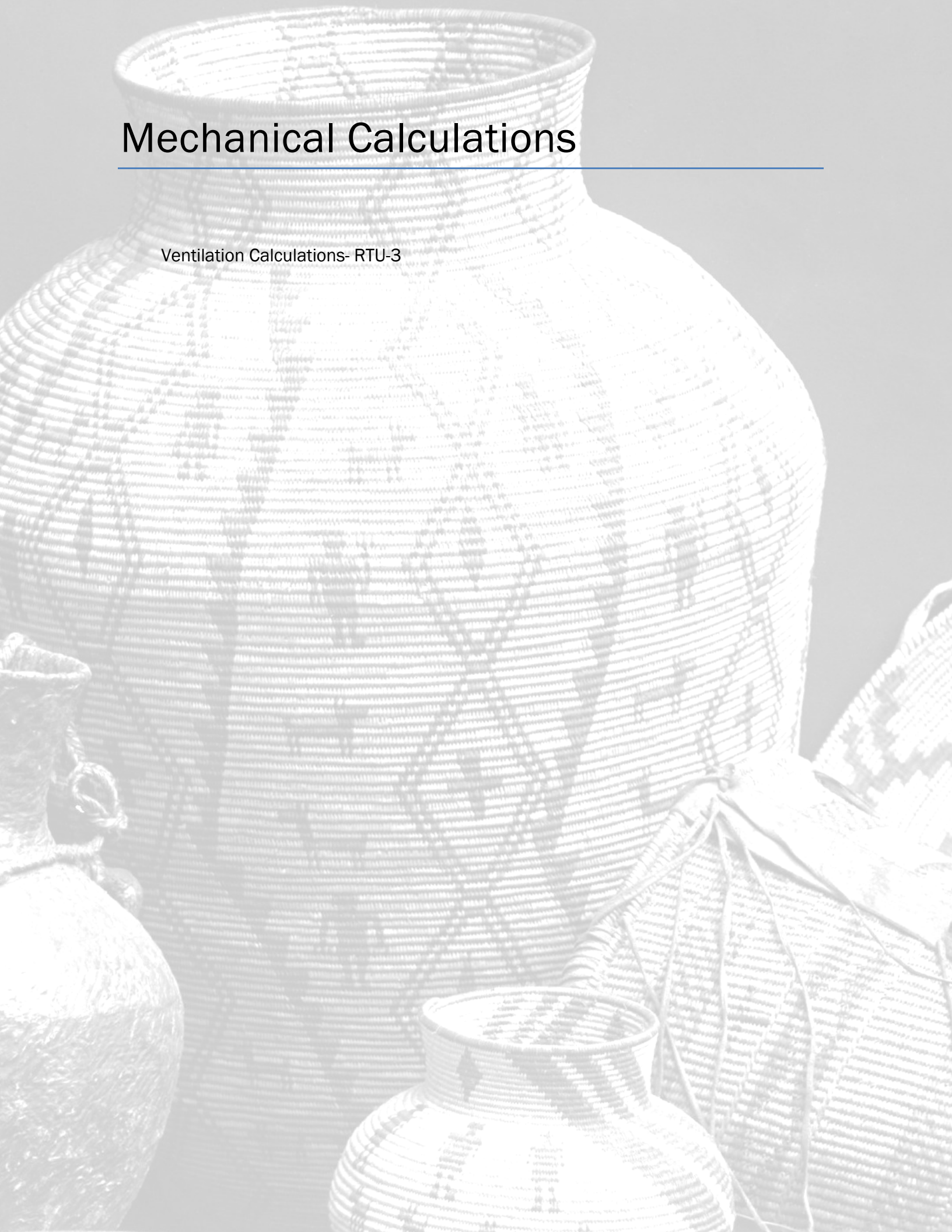
Ventilation Calculations- RTU-2



Room Information			Mechanical Ventilation Code Requirement						ASHRAE Standard 170-2017 Requirements							Room Pressure	Airflow Provided				
			Outside Air					Supply	Outside Air		Room Supply Air						SA	EA	Return	Offset	Total Air
Number/ Name	Area ft^2	Ceiling Height	Est No. of People	OA/p. cfm	OA per floor area cfm/ft^2	Tot. OA Reqd. cfm	OA %	Total SA Reqd	ach	Tot. cfm	ach	cfm	100% EA	OSA Required By Code	Cooling Load Airflow CFM	+ = pos - = neg	cfm	100% E.A. cfm	cfm	+ = out - = in, cfm	ach
1136 MEDS	125	8	1	5	0.06	13	0.2	65	2	34	4	67	NR	34	310	NR	310	0	310	0	18
1128 EXAM 8	109	8	1	5	0.06	12	0.3	40	2	30	6	88	NR	30	175	NR	170	0	170	0	11
1130 EXAM 9	109	8	1	5	0.06	12	0.3	40	2	30	6	88	NR	30	175	NR	170	0	170	0	11
1132 EXAM 10	109	8	1	5	0.06	12	0.3	40	2	30	6	88	NR	30	175	NR	170	0	170	0	11
1134 EXAM 11	109	8	1	5	0.06	12	0.3	40	2	30	6	88	NR	30	175	NR	170	0	170	0	11
1139 SOILED	82	8	0	5	0.18	15	0.2	75	0	0	10	110	110	15	110	-	110	132	0	-26	10
1110 CORRIDOR	960	8	0	0	0.06	58	0.3	195	0	0	2	256	NR	58	290	NR	290	0	290	0	2
1129 EQUIPT ALCOVE	25	8	0	0	0.06	2	0.3	10	0	0	2	7	NR	2	5	NR	10	0	10	0	3
1137 CLEAN	85	8	0	5	0.06	6	0.2	30	2	23	4	46	NR	23	45	+	50	0	40	10	4

Mechanical Calculations

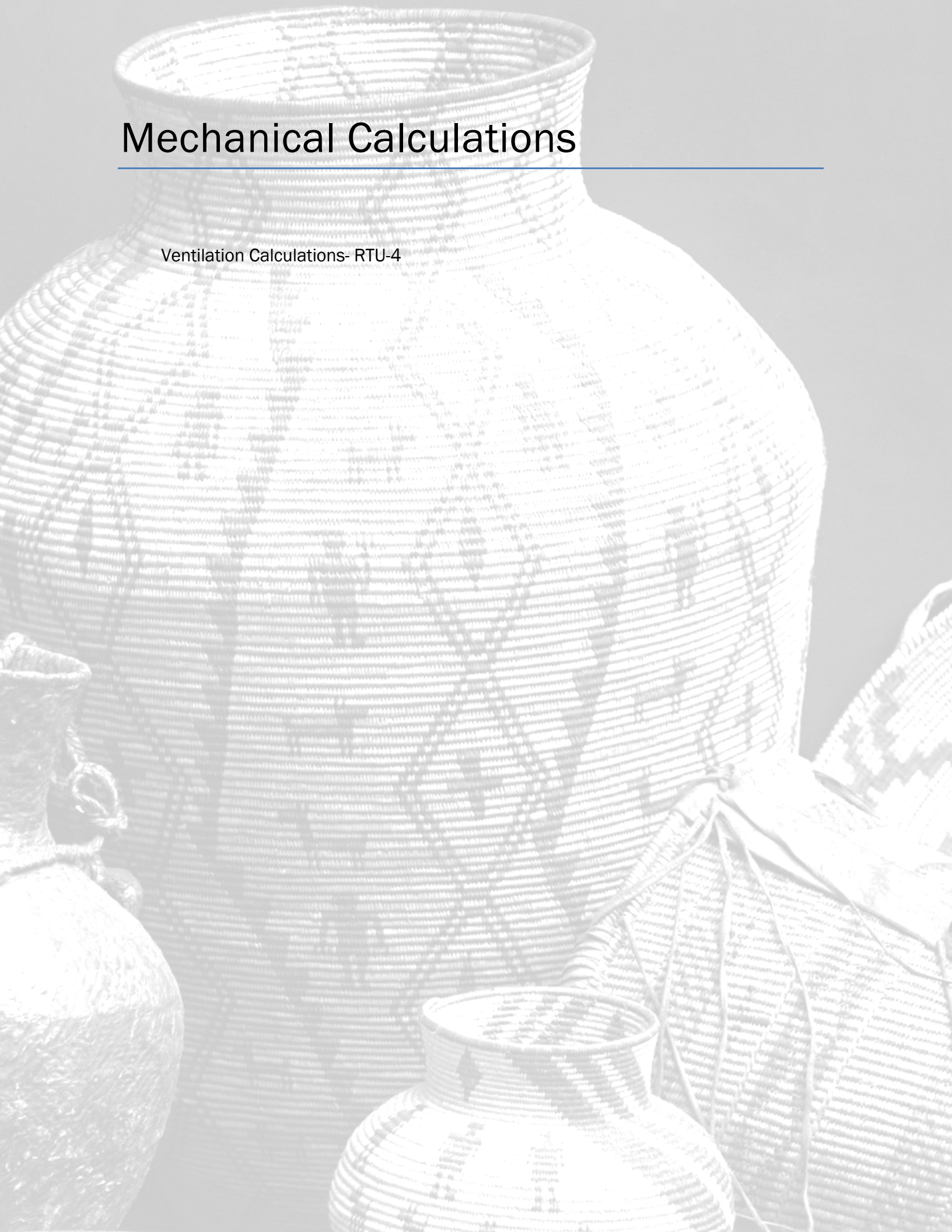
Ventilation Calculations- RTU-3



Room Information			Mechanical Ventilation Code Requirement						ASHRAE Standard 170-2017 Requirements							Room Pressure	Airflow Provided				
			Outside Air					Supply	Outside Air		Room Supply Air						SA	EA	Return	Offset	Total Air
Number/ Name	Area ft^2	Ceiling Height	Est No. of People	OA/p. cfm	OA per floor area cfm/ft^2	Tot. OA Reqd. cfm	OA %	Total SA Reqd	ach	Tot. cfm	ach	cfm	100% EA	OSA Required By Code	Cooling Load Airflow CFM	+ = pos - = neg	cfm	100% E.A. cfm	cfm	+ = out - = in, cfm	ach
1126 EXAM 7	161	8	1	5	0.06	15	0.3	50	3	65	15	322	NR	65	325	+	325	0	260	65	15
1116 EXAM 2	97	8	1	5	0.06	11	0.3	40	2	26	6	78	NR	26	165	NR	165	0	165	0	12
1114 TRIAGE	68	8	1	5	0.06	10	0.3	35	2	19	12	109	109	19	130	-	130	156	0	-31	14
1112 TRIAGE	76	8	1	5	0.06	10	0.3	35	2	21	12	122	122	21	130	-	130	156	0	-31	12
1118 EXAM 3	103	8	1	5	0.06	12	0.3	40	2	28	6	83	NR	28	170	NR	170	0	170	0	12
1120 ISO EXAM 4	106	8	1	5	0.06	12	0.3	40	2	29	12	170	170	29	170	-	170	204	0	-40	12
1122 EXAM 5	106	8	1	5	0.06	12	0.3	40	2	29	6	85	NR	29	170	NR	170	0	170	0	12
1124 EXAM 6	106	8	1	5	0.06	12	0.3	40	2	29	6	85	204	29	170	NR	170	205	0	0	12

Mechanical Calculations

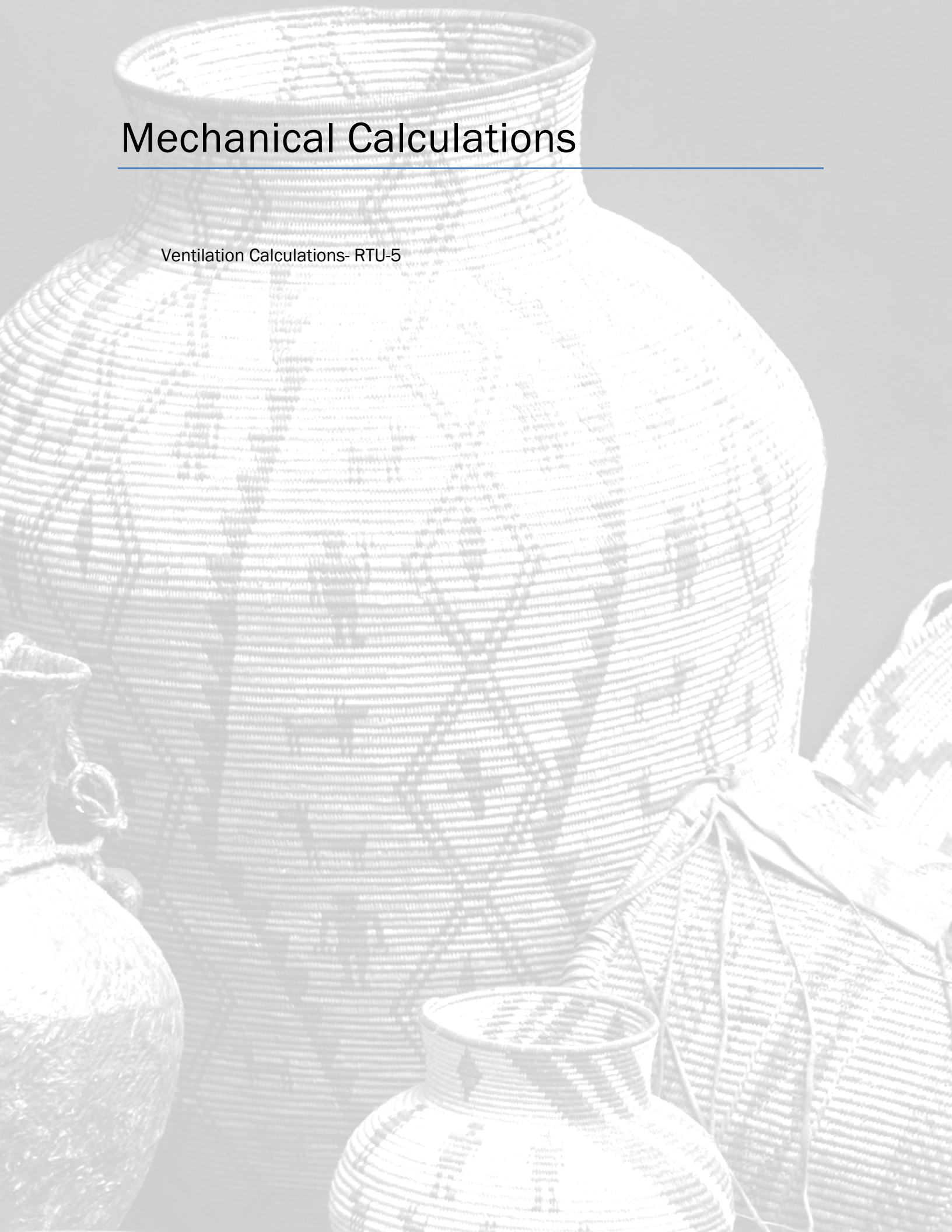
Ventilation Calculations- RTU-4



Room Information			Mechanical Ventilation Code Requirement						ASHRAE Standard 170-2017 Requirements							Room Pressure	Airflow Provided				
			Outside Air					Supply	Outside Air		Room Supply Air						SA	EA	Return	Offset	Total Air
Number/ Name	Area ft^2	Ceiling Height	Est No. of People	OA/p. cfm	OA per floor area cfm/ft^2	Tot. OA Reqd. cfm	OA %	Total SA Reqd	ach	Tot. cfm	ach	cfm	100% EA	OSA Required By Code	Cooling Load Airflow CFM	+ = pos - = neg	cfm	100% E.A. cfm	cfm	+ = out - = in, cfm	ach
1163 OFFICE	155	8	2	1	0.06	12	0.3	40	0	0	0	0	NR	12	150	NR	150	0	150	0	7
1125 NURSE STATION	321	8	12	5	0.06	80	0.3	270	2	86	6	257	NR	86	405	NR	405	0	405	0	9
1127 TEAM WORKROOM	373	8	10	5	0.06	73	0.3	245	0	0	0	0	NR	73	475	NR	475	0	475	0	9
1105 WAITING	239	8	10	5	0.06	65	0.3	220	2	64	4	128	NR	65	480	NR	480	0	480	0	15
1115 EXAM 1	104	8	1	5	0.06	12	0.3	40	2	28	6	84	NR	28	130	NR	130	0	130	0	9

Mechanical Calculations

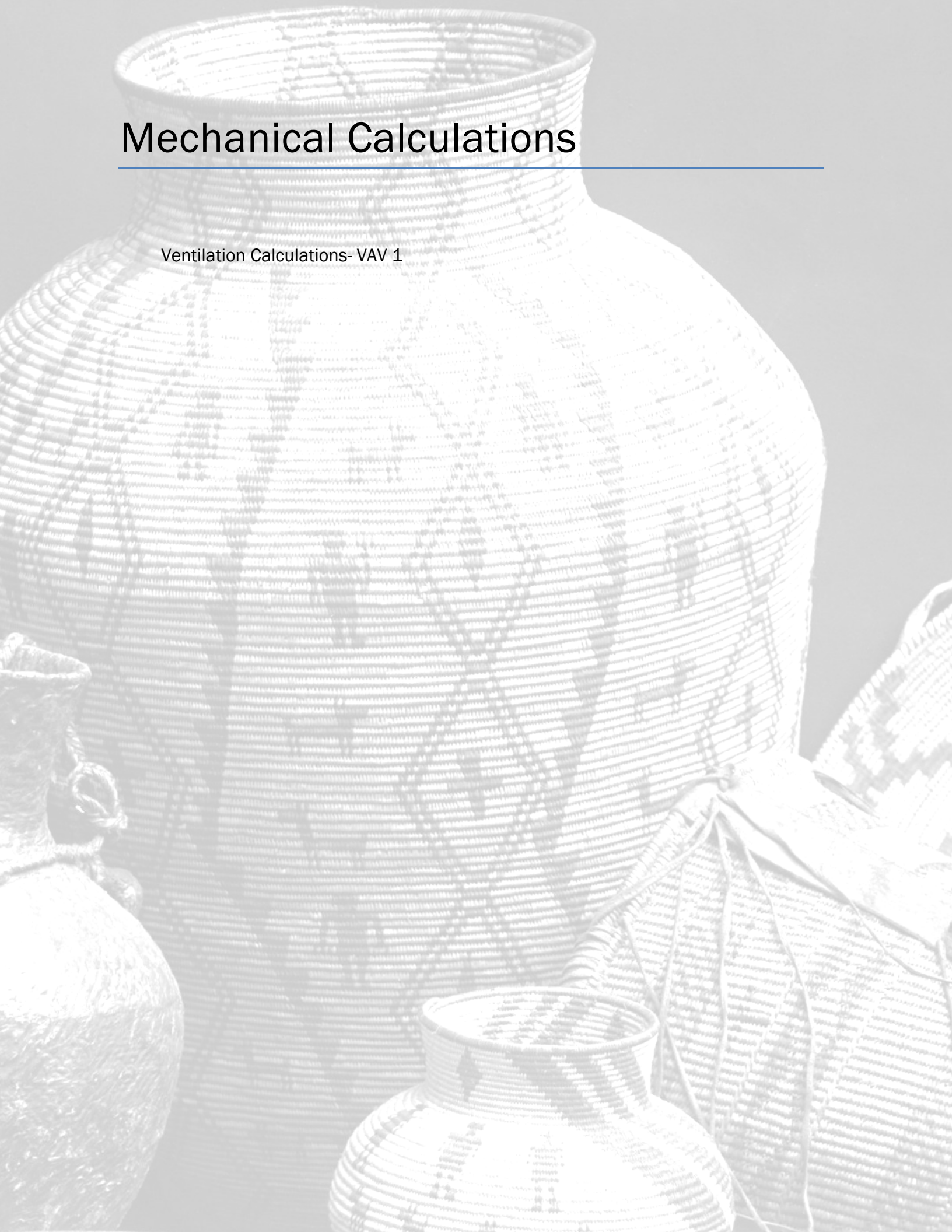
Ventilation Calculations- RTU-5



Room Information			Mechanical Ventilation Code Requirement						ASHRAE Standard 170-2017 Requirements							Room Pressure	Airflow Provided				
			Outside Air					Supply	Outside Air		Room Supply Air						SA	EA	Return	Offset	Total Air
Number/ Name	Area ft^2	Ceiling Height	Est No. of People	OA/p. cfm	OA per floor area cfm/ft^2	Tot. OA Reqd. cfm	OA %	Total SA Reqd	ach	Tot. cfm	ach	cfm	100% EA	OSA Required By Code	Cooling Load Airflow CFM	+ = pos - = neg	cfm	100% E.A. cfm	cfm	+ = out - = in, cfm	ach
1100 ENTRY VEST.	85	8	0	0	0.06	6	0.2	30	0	0	2	23	NR	6	25	NR	25	0	25	0	2
1113 SCALE ALCOVE	49	8	0	0	0.06	3	0.3	10	0	0	2	14	NR	3	50	NR	50	0	50	0	7
1111 PAT TOILET	57	8	0	0	0	0	0.3	0	0	0	10	76	80	0	40	-	60	80	0	-16	7
1101 PATIENT REGISTRATION	640	8	6	5	0.06	69	0.3	230	2	171	6	512	NR	171	1215	NR	1215	0	1215	0	14
1103 STAFF TOILET	43	8	0	0	0	0	0.3	0	0	0	10	58	60	0	40	-	50	60	0	-12	8

Mechanical Calculations

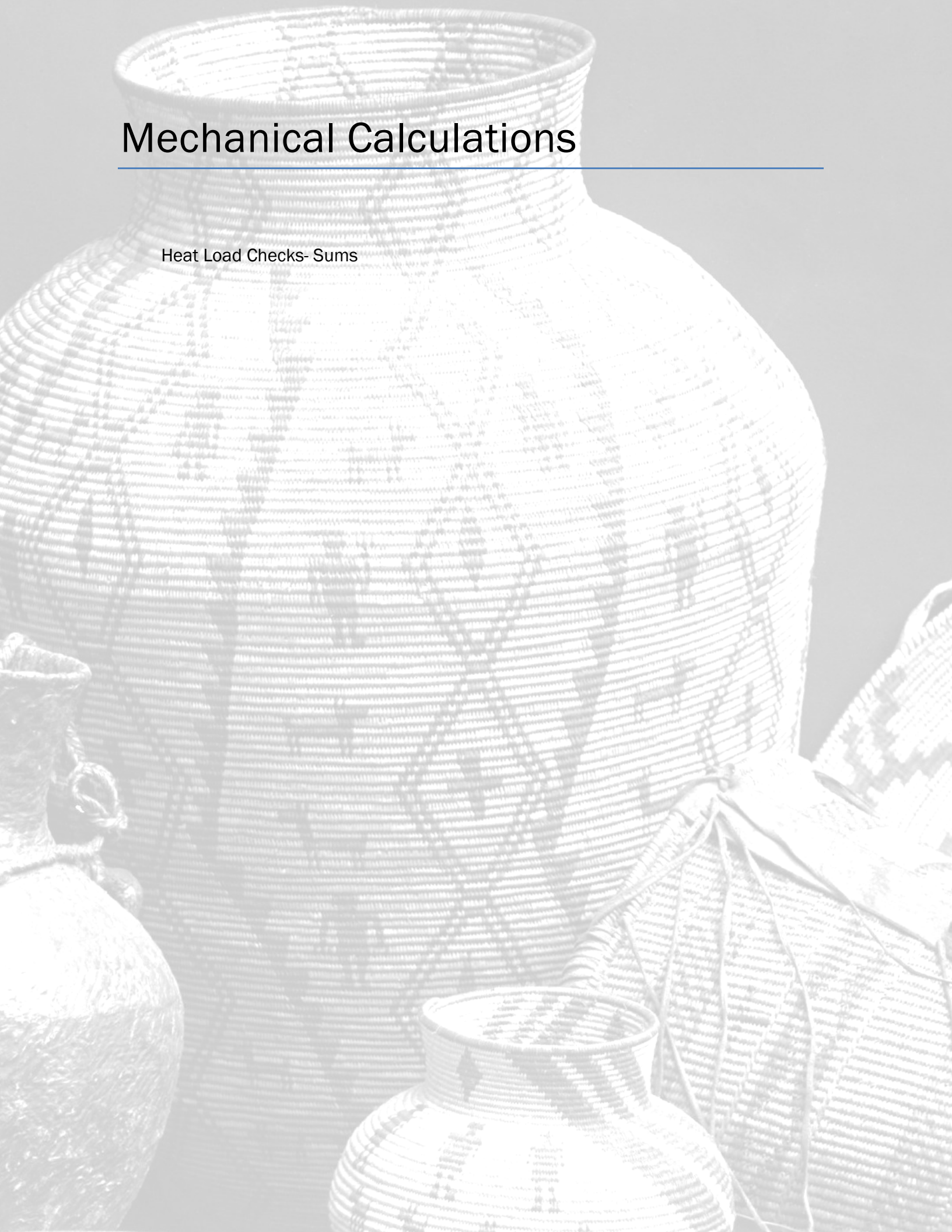
Ventilation Calculations- VAV 1



Room Information			Mechanical Ventilation Code Requirement						ASHRAE Standard 170-2017 Requirements							Room Pressure	Airflow Provided				
			Outside Air					Supply	Outside Air		Room Supply Air						SA	EA	Return	Offset	Total Air
Number/ Name	Area ft^2	Ceiling Height	Est No. of People	OA/p. cfm	OA per floor area cfm/ft^2	Tot. OA Reqd. cfm	OA %	Total SA Reqd	ach	Tot. cfm	ach	cfm	100% EA	OSA Required By Code	Cooling Load Airflow CFM	+ = pos - = neg	cfm	100% E.A. cfm	cfm	+ = out - = in, cfm	ach
001 EXISTING IT	144	8	1	5	0.06	14	0.3	50	0	0	0	0	NR	14	70	NR	70	0	70	0	3
003 ELEC	38	8	0	0	0.06	3	0.2	15	0	0	0	0	NR	3	10	NR	15	0	15	0	2
EXISTING CORRIDOR	475	8	0	0	0.06	29	0.2	145	0	0	2	127	NR	29	10	NR	150	0	150	0	2
1177 ULTRASOUND	205	8	3	5	0.12	40	0.2	200	2	55	6	164	NR	55	222	NR	225	0	225	0	8
1183 IT OFFICE	144	8	1	5	0.06	14	0.3	50	0	0	0	0	NR	14	70	NR	70	0	70	0	3
1182 TRAINING ROOM	228	8	4	5	0.06	34	0.3	115	0	0	0	0	NR	34	150	NR	150	0	150	0	4
1137 EXISTING X RAY	201	8	2	5	0.06	23	0.3	80	2	54	6	161	NR	54	270	NR	270	0	270	0	10
1171 EQUIP STORAGE	119	8	0	0	0.12	15	0.3	50	0	0	2	32	NR	15	55	NR	55	0	55	0	3
1173 OFFICE	156	8	1	0	0.12	19	0.3	65	0	0	0	0	NR	19	40	NR	65	0	65	0	3
1147 IV PREP	56	8	1	5	0.18	16	0.3	55	3	23	4	30	NR	23	40	-	70	0	70	0	9
1146 ANTE	85	8	0	0	0.06	6	0.2	30	0	0	10	114	114	6	20	-	115	138	0	-27	10
1150 MANAGER OFFCE	120	8	1	5	0.06	13	0.3	45	0	0	0	0	NR	13	60	NR	60	0	60	0	3
1141 STORAGE	83	8	0	0	0.12	10	0.2	50	0	0	2	23	NR	10	17	NR	50	0	50	0	4
1151 PHARM	100	8	0	0	0.06	6	0.3	20	0	0	0	0	NR	6	50	NR	50	0	50	0	3
1140 PHARMACY	799	8	9	10	0.18	234	0.3	780	2	214	4	427	NR	234	935	+	935	0	748	187	8
1143 DROP OFF	78	8	2	5	0.06	15	0.3	50	0	0	0	0	NR	15	160	NR	160	0	160	0	15
1142 CONSULT	68	8	2	5	0.06	15	0.3	50	0	0	0	0	NR	15	40	NR	50	0	50	0	5
1144 CONSULT	97	8	2	5	0.06	16	0.3	55	0	0	0	0	NR	16	60	NR	60	0	60	0	4
1155 PATIENT BENEFITS	131	8	1	5	0.06	13	0.3	45	0	0	0	0	NR	13	75	NR	75	0	75	0	4
1107 PUBLIC TOILET	51	8	0	0	0	0	0.3	0	0	0	10	68	68	0	40	-	70	84	0	-16	10
1106 HKPG	45	8	0	0	0	0	0.3	0	0	0	10	60	60	0	27	-	60	72	0	-14	10

Mechanical Calculations

Heat Load Checks- Sums



Room Checksums

By ROCKGAP

001 EXISTING IT

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	258	65	323	31
People	271	0	271	26
Misc	294	0	294	29
Sub Total ==>	822	65	887	86
Ceiling Load	19	-19	0	0
Ventilation Load	0	0	132	13
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-5	-5	0
Sup. Fan Heat			12	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-72	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	841	-31	1,026	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	258	36
People	150	21
Misc	294	41
Sub Total ==>	702	97
Ceiling Load	21	3
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	724	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-59	0	0.00
Ventilation Load	0	-383	21.87
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,247	-1,247	71.21
Exhaust Heat		15	-0.87
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-137	7.80
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,306	-1,751	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.0	57.7
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	42	42
Terminal	42	42
Main Fan	42	42
Sec Fan	0	0
Nom Vent	8	8
AHU Vent	8	8
Infil	0	0
MinStop/Rh	0	0
Return	42	42
Exhaust	8	8
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	19.6	19.6
cfm/ft²	0.48	0.48
cfm/ton	487.21	
ft²/ton	1,005.69	
Btu/hr·ft²	11.93	-20.36
No. People	0.6	7.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.0	0.9	42	78.0	60.2	71.3	52.7	50.5	66.5
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	86		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-1.8	42	57.7	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1.8			

Room Checksums

By ROCKGAP

ENTRY VESTIBULE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 15
Outside Air: OADB/WB/HR: 88 / 64 / 77

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	356	0	356	25
Glass/Door Cond	429	0	429	30
Wall Cond	160	104	264	18
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	80		80	6
Sub Total ==>	1,025	104	1,129	79
Internal Loads				
Lights	232	58	290	20
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	232	58	290	20
Ceiling Load	19	-19	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-2	-2	0
Sup. Fan Heat			21	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-124	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,276	18	1,438	100.00

CLG SPACE PEAK

Mo/Hr: 8 / 15
OADB: 88

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	356	29
Glass/Door Cond	429	35
Wall Cond	160	13
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	43	3
Sub Total ==>	988	80
Internal Loads		
Lights	232	19
People	0	0
Misc	0	0
Sub Total ==>	232	19
Ceiling Load	19	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	1,239	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	-1,971	-1,971	75.79
Wall Cond	-259	-424	16.30
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	-179	-179	6.90
Sub Total ==>	-2,409	-2,574	98.99
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-58	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		7	-0.27
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-33	1.28
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,467	-2,600	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	109.8
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	75.7	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	71	71
Terminal	71	71
Main Fan	71	71
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	4	4
MinStop/Rh	26	26
Return	75	75
Exhaust	4	4
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.84	0.84
cfm/ton	595.02	
ft²/ton	709.25	
Btu/hr·ft²	16.92	-30.59
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.4	1.4	71	75.7	57.1	59.4	52.7	48.7	59.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	85		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	150	56	37
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-2.6	71	67.9	109.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-2.6			

Room Checksums

By ROCKGAP

EXISTING CORRIDOR

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 14
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	774	774	22
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	774	774	22
Internal Loads				
Lights	1,297	324	1,621	46
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	1,297	324	1,621	46
Ceiling Load	119	-119	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	1,060		1,060	30
Exhaust Heat		0	0	0
Sup. Fan Heat			42	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-248	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,475	733	3,497	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	1,297	52
People	0	0
Misc	0	0
Sub Total ==>	1,297	52
Ceiling Load	119	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	1,060	43
Grand Total ==>	2,475	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-1,173	24.78
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-1,173	24.78
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-324	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-4,142	-4,142	87.53
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		582	-12.30
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-4,466	-4,732	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	75.8	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	143	143
Terminal	143	143
Main Fan	143	143
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	143	143
Return	143	143
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.30	0.30
cfm/ton	488.93	
ft²/ton	1,629.75	
Btu/hr·ft²	7.36	-9.96
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.3	3.5	3.5	143	75.8	59.1	69.3	52.7	49.2	61.2
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.3	3.5								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	475		
Part	0		
Int Door	0		
ExFlr	0		
Roof	475	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-4.7	143	67.9	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-4.7			

Room Checksums

By ROCKGAP

EXISTING VESTIBULE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	161	40	201	60
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	161	40	201	60
Ceiling Load	13	-13	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	132		132	39
Exhaust Heat		0	0	0
Sup. Fan Heat			5	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-31	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	305	-3	338	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	161	52
People	0	0
Misc	0	0
Sub Total ==>	161	52
Ceiling Load	15	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	132	43
Grand Total ==>	307	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-40	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-514	-514	87.53
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-73	12.47
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-555	-588	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	75.7	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	18	18
Terminal	18	18
Main Fan	18	18
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	18	18
Return	18	18
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.30	0.30
cfm/ton	628.00	
ft²/ton	2,093.34	
Btu/hr·ft²	5.73	-9.96
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.0	0.3	0.3	18	75.7	59.1	69.3	52.7	51.1	69.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.3								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	59		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.6	18	67.9	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.6			

Room Checksums

By ROCKGAP

IT 02 IT OFFICE AND WORK

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	433	108	541	37
People	453	0	453	31
Misc	246	0	246	17
Sub Total ==>	1,131	108	1,240	84
Ceiling Load	31	-31	0	0
Ventilation Load	0	0	220	15
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-8	-8	-1
Sup. Fan Heat			16	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-97	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,162	-28	1,468	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	433	45
People	252	26
Misc	246	25
Sub Total ==>	930	96
Ceiling Load	36	4
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	966	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-98	0	0.00
Ventilation Load	0	-641	26.04
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,645	-1,645	66.79
Exhaust Heat		26	-1.04
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-202	8.21
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,743	-2,463	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.5	55.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	56	56
Terminal	56	56
Main Fan	56	56
Sec Fan	0	0
Nom Vent	14	14
AHU Vent	14	14
Infil	0	0
MinStop/Rh	0	0
Return	56	56
Exhaust	14	14
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	24.6	24.6
cfm/ft²	0.39	0.39
cfm/ton	454.51	
ft²/ton	1,176.89	
Btu/hr·ft²	10.20	-17.10
No. People	1.0	7.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.5	1.2	56	78.5	60.4	71.8	52.7	50.0	64.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.5								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	144		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-2.5	56	55.1	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-2.5			

Room Checksums

By ROCKGAP

IT 03 TRAINING ROOM

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	282	91	373	8
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	282	91	373	8
Internal Loads				
Lights	872	218	1,089	22
People	1,900	0	1,900	39
Misc	389	0	389	8
Sub Total ==>	3,161	218	3,379	70
Ceiling Load	49	-49	0	0
Ventilation Load	0	0	1,102	23
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-40	-40	-1
Sup. Fan Heat			43	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-255	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	3,492	-35	4,857	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 16
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	284	11
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	284	11
Internal Loads		
Lights	872	34
People	950	37
Misc	389	15
Sub Total ==>	2,211	87
Ceiling Load	52	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,547	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-656	-866	10.89
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-656	-866	10.89
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-155	0	0.00
Ventilation Load	0	-3,208	40.35
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-3,784	-3,784	47.60
Exhaust Heat		128	-1.61
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-220	2.76
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-4,596	-7,950	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	81.1	43.7
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	147	147
Terminal	147	147
Main Fan	147	147
Sec Fan	0	0
Nom Vent	68	68
AHU Vent	68	68
Infil	0	0
MinStop/Rh	137	137
Return	147	147
Exhaust	68	68
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	46.6	46.6
cfm/ft²	0.64	0.64
cfm/ton	362.29	
ft²/ton	563.30	
Btu/hr·ft²	21.30	-34.87
No. People	3.8	16.7/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.4	4.9	3.5	147	81.1	61.6	74.0	52.7	48.6	58.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.4	4.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	228		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	162	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-8.0	147	43.7	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	-1.2	147	43.7	52.7
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-8.0			

Room Checksums

By ROCKGAP

L1 BLOOD DRAW

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	233	233	6
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	233	233	6
Internal Loads				
Lights	615	154	769	18
People	1,000	0	1,000	24
Misc	1,374	0	1,374	33
Sub Total ==>	2,989	154	3,143	75
Ceiling Load	35	-35	0	0
Ventilation Load	0	0	822	20
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-29	-29	-1
Sup. Fan Heat			43	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-253	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	3,024	71	4,213	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	615	24
People	500	20
Misc	1,374	54
Sub Total ==>	2,489	98
Ceiling Load	40	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,529	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-397	11.68
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-397	11.68
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-110	0	0.00
Ventilation Load	0	-2,297	67.51
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-815	-815	23.96
Exhaust Heat		92	-2.69
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		15	-0.45
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-925	-3,403	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	77.3
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	79.6	50.4
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	146	146
Terminal	146	146
Main Fan	146	146
Sec Fan	0	0
Nom Vent	49	49
AHU Vent	49	49
Infil	0	0
MinStop/Rh	145	145
Return	146	146
Exhaust	49	49
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	33.6	33.6
cfm/ft²	0.90	0.90
cfm/ton	414.79	
ft²/ton	458.60	
Btu/hr·ft²	26.17	-21.13
No. People	2.0	12.4/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.4	4.2	3.4	146	79.6	60.8	71.9	52.7	49.4	61.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.4	4.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	161		
Part	0		
Int Door	0		
ExFlr	0		
Roof	161	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.4	146	50.4	77.3
Aux Htg	0.0	0	0.0	0.0
Preheat	-0.3	146	50.4	52.7
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.4			

Room Checksums

By ROCKGAP

L2 OFFICE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 87 / 64 / 78

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	165	165	14
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	165	165	14
Internal Loads				
Lights	306	77	383	32
People	321	0	321	27
Misc	174	0	174	15
Sub Total ==>	801	77	878	73
Ceiling Load	25	-25	0	0
Ventilation Load	0	0	151	13
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-7	-7	-1
Sup. Fan Heat			12	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-68	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	827	141	1,199	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	306	45
People	178	26
Misc	174	25
Sub Total ==>	659	96
Ceiling Load	25	4
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	684	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-252	33.13
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-252	33.13
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-70	0	0.00
Ventilation Load	0	-454	59.78
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-181	-181	23.76
Exhaust Heat		18	-2.38
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		109	-14.29
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-250	-760	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	77.3
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	78.5	55.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	39	39
Terminal	39	39
Main Fan	39	39
Sec Fan	0	0
Nom Vent	10	10
AHU Vent	10	10
Infil	0	0
MinStop/Rh	0	0
Return	39	39
Exhaust	10	10
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	24.6	24.6
cfm/ft²	0.39	0.39
cfm/ton	394.41	
ft²/ton	1,021.26	
Btu/hr·ft²	11.75	-7.45
No. People	0.7	7.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.2	1.0	39	78.5	60.2	70.4	52.7	47.9	56.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	102		
Part	0		
Int Door	0		
ExFlr	0		
Roof	102	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.8	39	55.1	77.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.8			

Room Checksums

By ROCKGAP

L3 LAB

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,060	1,060	5
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	439	141	579	3
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	439	1,201	1,639	7
Internal Loads				
Lights	2,794	699	3,493	15
People	3,655	0	3,655	16
Misc	10,137	0	10,137	45
Sub Total ==>	16,587	699	17,285	76
Ceiling Load	157	-157	0	0
Ventilation Load	0	0	3,681	16
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-129	-129	-1
Sup. Fan Heat			262	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-1,538	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	17,182	75	22,738	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 16
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	453	3
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	453	3
Internal Loads		
Lights	2,794	18
People	1,828	12
Misc	10,137	66
Sub Total ==>	14,759	96
Ceiling Load	167	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	15,379	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-1,805	10.52
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-1,262	-1,666	9.71
Partition/Door	0	0	0.00
Floor	-1,206	-1,206	7.03
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-2,469	-4,677	27.27
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-499	0	0.00
Ventilation Load	0	-10,285	59.96
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-2,657	-2,657	15.49
Exhaust Heat		410	-2.39
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		55	-0.32
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-5,624	-17,153	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	77.3
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.6	55.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	885	885
Terminal	885	885
Main Fan	885	885
Sec Fan	0	0
Nom Vent	219	219
AHU Vent	219	219
Infil	0	0
MinStop/Rh	658	658
Return	885	885
Exhaust	219	219
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	24.8	24.8
cfm/ft²	1.21	1.21
cfm/ton	467.26	
ft²/ton	385.78	
Btu/hr·ft²	31.11	-23.47
No. People	7.3	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	1.9	22.7	19.6	885	78.6	60.3	70.9	52.7	50.1	65.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.9	22.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	731		
Part	0		
Int Door	0		
ExFlr	31		
Roof	731	0	0
Wall	367	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-17.2	885	55.0	77.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-17.2			

Room Checksums

By ROCKGAP

L4 ANTE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 16
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	175	175	5
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	185	59	244	7
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	185	234	419	13
Internal Loads				
Lights	342	86	428	13
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	342	86	428	13
Ceiling Load	26	-26	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	2,417		2,417	73
Exhaust Heat		0	0	0
Sup. Fan Heat			51	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-297	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,970	-3	3,315	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 16
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	185	6
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	185	6
Internal Loads		
Lights	342	12
People	0	0
Misc	0	0
Sub Total ==>	342	12
Ceiling Load	26	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	2,417	81
Grand Total ==>	2,970	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-281	20.02
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-516	-681	48.42
Partition/Door	0	0	0.00
Floor	-493	-493	35.05
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,008	-1,455	103.49
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-78	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		49	-3.49
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,086	-1,406	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	77.3
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	75.7	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	171	171
Terminal	171	171
Main Fan	171	171
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	171	171
Return	171	171
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	1.50	1.50
cfm/ton	619.09	
ft²/ton	412.73	
Btu/hr·ft²	29.07	-12.33
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.3	3.3	3.3	171	75.7	58.8	68.1	52.7	50.9	68.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.3	3.3								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	114		
Part	0		
Int Door	0		
ExFlr	13		
Roof	114	0	0
Wall	150	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-1.4	171	67.9	77.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1.4			

Room Checksums

By ROCKGAP

L5 OFFICE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 87 / 64 / 78

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	251	251	11
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	251	251	11
Internal Loads				
Lights	466	116	582	26
People	900	0	900	40
Misc	265	0	265	12
Sub Total ==>	1,630	116	1,746	78
Ceiling Load	38	-38	0	0
Ventilation Load	0	0	239	11
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-13	-13	-1
Sup. Fan Heat			22	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-127	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,668	189	2,245	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	466	37
People	500	39
Misc	265	21
Sub Total ==>	1,230	97
Ceiling Load	39	3
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	1,269	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-383	32.65
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-383	32.65
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-106	0	0.00
Ventilation Load	0	-905	77.23
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-61	-61	5.18
Exhaust Heat		36	-3.08
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		140	-11.98
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-166	-1,172	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	78.7	54.2
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	73	73
Terminal	73	73
Main Fan	73	73
Sec Fan	0	0
Nom Vent	19	19
AHU Vent	19	19
Infil	0	0
MinStop/Rh	0	0
Return	73	73
Exhaust	19	19
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	26.4	26.4
cfm/ft²	0.47	0.47
cfm/ton	390.44	
ft²/ton	828.50	
Btu/hr·ft²	14.48	-7.56
No. People	2.0	12.9/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.3	1.8	73	78.7	61.1	74.8	52.7	49.0	60.2
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.3								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	155		
Part	0		
Int Door	0		
ExFlr	0		
Roof	155	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-1.2	73	54.2	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1.2			

Room Checksums

By ROCKGAP

L7 PAT TOILET

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 14
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	73	73	6
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	73	73	6
Internal Loads				
Lights	111	28	138	11
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	111	28	138	11
Ceiling Load	11	-11	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	1,051		1,051	82
Exhaust Heat		0	0	0
Sup. Fan Heat			20	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-117	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,172	-27	1,282	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	111	9
People	0	0
Misc	0	0
Sub Total ==>	111	9
Ceiling Load	11	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	1,051	90
Grand Total ==>	1,172	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-111	72.22
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-111	72.22
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-31	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-123	-123	80.05
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		80	-52.28
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-154	-154	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	75.8	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	68	68
Terminal	68	68
Main Fan	68	68
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	68	68
Return	0	0
Exhaust	0	0
Rm Exh	68	68
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	1.50	1.50
cfm/ton	631.72	
ft²/ton	421.15	
Btu/hr·ft²	28.49	-6.22
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.3	1.3	68	75.8	60.0	73.8	52.7	52.2	73.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.3								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	45		
Part	0		
Int Door	0		
ExFlr	0		
Roof	45	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.3	68	67.9	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.3			

Room Checksums

By ROCKGAP

L8 STORAGE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 87 / 64 / 78

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	196	196	8
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	196	196	8
Internal Loads				
Lights	264	66	330	13
People	0	0	0	0
Misc	1,700	0	1,700	69
Sub Total ==>	1,964	66	2,030	82
Ceiling Load	30	-30	0	0
Ventilation Load	0	0	226	9
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-10	-10	0
Sup. Fan Heat			34	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-199	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,994	22	2,476	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	264	13
People	0	0
Misc	1,700	85
Sub Total ==>	1,964	98
Ceiling Load	30	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	1,995	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-299	18.69
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-299	18.69
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-83	0	0.00
Ventilation Load	0	-681	42.62
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-647	-647	40.48
Exhaust Heat		27	-1.70
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		2	-0.10
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-729	-1,598	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	77.3
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	77.2	61.3
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	115	115
Terminal	115	115
Main Fan	115	115
Sec Fan	0	0
Nom Vent	15	15
AHU Vent	15	15
Infil	0	0
MinStop/Rh	0	0
Return	115	115
Exhaust	15	15
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	12.6	12.6
cfm/ft²	0.95	0.95
cfm/ton	556.57	
ft²/ton	586.47	
Btu/hr·ft²	20.46	-13.21
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.5	2.4	115	77.2	59.5	69.3	52.7	51.0	68.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.5								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	121		
Part	0		
Int Door	0		
ExFlr	0		
Roof	121	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-1.6	115	61.3	77.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1.6			

Room Checksums

By ROCKGAP

P1 PHARMACY DISPENSING

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	2,627	657	3,283	19
People	3,200	0	3,200	19
Misc	6,063	0	6,063	35
Sub Total ==>	11,889	657	12,546	73
Ceiling Load	159	-159	0	0
Ventilation Load	0	0	3,763	22
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	734		734	4
Exhaust Heat		-131	-131	-1
Sup. Fan Heat			197	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-1,157	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	12,783	-790	17,110	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	2,627	23
People	1,960	17
Misc	6,063	52
Sub Total ==>	10,649	92
Ceiling Load	185	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	734	6
Grand Total ==>	11,568	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-505	0	0.00
Ventilation Load	0	-10,411	81.62
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,010	-1,010	7.92
Exhaust Heat		415	-3.25
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-1,749	13.71
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,515	-12,756	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	79.6	50.6
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	666	666
Terminal	666	666
Main Fan	666	666
Sec Fan	0	0
Nom Vent	222	222
AHU Vent	222	222
Infil	0	0
MinStop/Rh	666	666
Return	666	666
Exhaust	222	222
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	33.3	33.3
cfm/ft²	0.90	0.90
cfm/ton	467.10	
ft²/ton	519.00	
Btu/hr·ft²	23.12	-17.24
No. People	8.0	10.8/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	1.4	17.1	14.5	666	79.6	60.7	71.6	52.7	50.7	67.4
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.4	17.1								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	740		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-12.8	666	50.6	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	-1.2	666	50.6	52.7
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-12.8			

Room Checksums

By ROCKGAP

P10 STORAGE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	181	45	227	21
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	181	45	227	21
Ceiling Load	18	-18	0	0
Ventilation Load	0	0	169	16
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	663		663	62
Exhaust Heat		-6	-6	-1
Sup. Fan Heat			15	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-87	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	862	-65	1,067	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	181	21
People	0	0
Misc	0	0
Sub Total ==>	181	21
Ceiling Load	21	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	663	77
Grand Total ==>	865	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-57	0	0.00
Ventilation Load	0	-467	71.34
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-57	-57	8.65
Exhaust Heat		19	-2.84
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-150	22.86
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-113	-655	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.0	57.5
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	50	50
Terminal	50	50
Main Fan	50	50
Sec Fan	0	0
Nom Vent	10	10
AHU Vent	10	10
Infil	0	0
MinStop/Rh	0	0
Return	50	50
Exhaust	10	10
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	20.0	20.0
cfm/ft²	0.60	0.60
cfm/ton	559.91	
ft²/ton	933.18	
Btu/hr·ft²	12.86	-7.89
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.1	1.0	50	78.0	59.9	70.1	52.7	51.3	70.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.1								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	83		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.7	50	57.5	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.7			

Room Checksums

By ROCKGAP

P2 DROP OFF

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	234	59	293	11
People	900	0	900	34
Misc	1,200	0	1,200	45
Sub Total ==>	2,334	59	2,393	90
Ceiling Load	17	-17	0	0
Ventilation Load	0	0	237	9
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-9	-9	0
Sup. Fan Heat			33	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-195	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,351	-162	2,654	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	234	12
People	500	26
Misc	1,200	61
Sub Total ==>	1,934	99
Ceiling Load	19	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	1,954	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-53	0	0.00
Ventilation Load	0	-688	15.66
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-3,472	-3,472	78.97
Exhaust Heat		27	-0.62
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-263	5.99
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-3,525	-4,396	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	77.2	61.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	112	112
Terminal	112	112
Main Fan	112	112
Sec Fan	0	0
Nom Vent	15	15
AHU Vent	15	15
Infil	0	0
MinStop/Rh	0	0
Return	112	112
Exhaust	15	15
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	13.1	13.1
cfm/ft²	1.44	1.44
cfm/ton	508.58	
ft²/ton	352.67	
Btu/hr·ft²	34.03	-56.36
No. People	2.0	25.6/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.7	2.2	112	77.2	59.8	70.6	52.7	50.5	66.5
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	78		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-4.4	112	61.1	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-4.4			

Room Checksums

By ROCKGAP

P3 CONSULT

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	204	51	255	37
People	214	0	214	31
Misc	116	0	116	17
Sub Total ==>	534	51	585	84
Ceiling Load	15	-15	0	0
Ventilation Load	0	0	104	15
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-4	-4	-1
Sup. Fan Heat			8	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-46	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	549	-13	693	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	204	45
People	119	26
Misc	116	25
Sub Total ==>	439	96
Ceiling Load	17	4
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	456	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-46	0	0.00
Ventilation Load	0	-303	26.04
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-777	-777	66.79
Exhaust Heat		12	-1.04
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-95	8.21
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-823	-1,163	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.5	55.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	26	26
Terminal	26	26
Main Fan	26	26
Sec Fan	0	0
Nom Vent	6	6
AHU Vent	6	6
Infil	0	0
MinStop/Rh	0	0
Return	26	26
Exhaust	6	6
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	24.6	24.6
cfm/ft²	0.39	0.39
cfm/ton	454.52	
ft²/ton	1,176.88	
Btu/hr·ft²	10.20	-17.10
No. People	0.5	7.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	0.7	0.6	26	78.5	60.4	71.8	52.7	50.0	64.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	0.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	68		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-1.2	26	55.1	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1.2			

Room Checksums

By ROCKGAP

P4 CONSULT

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	291	73	364	37
People	305	0	305	31
Misc	166	0	166	17
Sub Total ==>	762	73	835	84
Ceiling Load	21	-21	0	0
Ventilation Load	0	0	148	15
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-5	-5	-1
Sup. Fan Heat			11	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-65	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	783	-19	989	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	291	45
People	170	26
Misc	166	25
Sub Total ==>	626	96
Ceiling Load	24	4
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	651	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-66	0	0.00
Ventilation Load	0	-432	26.04
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,108	-1,108	66.79
Exhaust Heat		17	-1.04
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-136	8.21
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,174	-1,659	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.5	55.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	37	37
Terminal	37	37
Main Fan	37	37
Sec Fan	0	0
Nom Vent	9	9
AHU Vent	9	9
Infil	0	0
MinStop/Rh	0	0
Return	37	37
Exhaust	9	9
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	24.6	24.6
cfm/ft²	0.39	0.39
cfm/ton	454.51	
ft²/ton	1,176.88	
Btu/hr·ft²	10.20	-17.10
No. People	0.7	7.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.0	0.8	37	78.5	60.4	71.8	52.7	50.0	64.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	97		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-1.7	37	55.1	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1.7			

Room Checksums

By ROCKGAP

P6 IV PREP

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	214	54	268	20
People	280	0	280	21
Misc	478	0	478	36
Sub Total ==>	972	54	1,025	76
Ceiling Load	12	-12	0	0
Ventilation Load	0	0	285	21
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	30		30	2
Exhaust Heat		-10	-10	-1
Sup. Fan Heat			15	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-88	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,013	-56	1,345	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	214	24
People	140	16
Misc	478	55
Sub Total ==>	832	95
Ceiling Load	14	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	30	3
Grand Total ==>	875	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-38	0	0.00
Ventilation Load	0	-788	81.62
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-76	-76	7.92
Exhaust Heat		31	-3.25
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-132	13.72
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-115	-965	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	79.6	50.6
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	50	50
Terminal	50	50
Main Fan	50	50
Sec Fan	0	0
Nom Vent	17	17
AHU Vent	17	17
Infil	0	0
MinStop/Rh	50	50
Return	50	50
Exhaust	17	17
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	33.3	33.3
cfm/ft²	0.90	0.90
cfm/ton	449.74	
ft²/ton	499.71	
Btu/hr·ft²	24.01	-17.24
No. People	0.6	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.3	1.1	50	79.6	60.7	71.6	52.7	50.3	65.6
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.3								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	56		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-1.0	50	50.6	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	-0.1	50	50.6	52.7
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1.0			

Room Checksums

By ROCKGAP

P7 ANTE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 16
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	130	130	5
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	96	31	127	5
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	96	161	257	10
Internal Loads				
Lights	255	64	319	13
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	255	64	319	13
Ceiling Load	19	-19	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	1,844		1,844	75
Exhaust Heat		0	0	0
Sup. Fan Heat			38	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-221	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,215	-16	2,458	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 16
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	96	4
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	96	4
Internal Loads		
Lights	255	12
People	0	0
Misc	0	0
Sub Total ==>	255	12
Ceiling Load	19	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	1,844	83
Grand Total ==>	2,215	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-210	4.96
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-268	-354	8.36
Partition/Door	0	0	0.00
Floor	-256	-256	6.05
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-524	-820	19.37
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-58	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-3,413	-3,413	80.62
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-1	0.02
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-3,996	-4,234	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	75.7	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	128	128
Terminal	128	128
Main Fan	128	128
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	128	128
Return	128	128
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	1.50	1.50
cfm/ton	622.46	
ft²/ton	414.98	
Btu/hr·ft²	28.92	-49.81
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.5	2.5	128	75.7	59.1	69.3	52.7	51.1	69.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.5								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	85		
Part	0		
Int Door	0		
ExFlr	7		
Roof	85	0	0
Wall	78	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-4.2	128	67.9	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-4.2			

Room Checksums

By ROCKGAP

P8 MANAGER OFFICE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	360	90	451	37
People	378	0	378	31
Misc	205	0	205	17
Sub Total ==>	943	90	1,033	84
Ceiling Load	26	-26	0	0
Ventilation Load	0	0	184	15
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-7	-7	-1
Sup. Fan Heat			14	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-81	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	969	-23	1,224	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	360	45
People	210	26
Misc	205	25
Sub Total ==>	775	96
Ceiling Load	30	4
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	805	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-82	0	0.00
Ventilation Load	0	-534	26.04
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,371	-1,371	66.79
Exhaust Heat		21	-1.04
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-168	8.21
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,452	-2,052	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.5	55.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	46	46
Terminal	46	46
Main Fan	46	46
Sec Fan	0	0
Nom Vent	11	11
AHU Vent	11	11
Infil	0	0
MinStop/Rh	0	0
Return	46	46
Exhaust	11	11
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	24.6	24.6
cfm/ft²	0.39	0.39
cfm/ton	454.51	
ft²/ton	1,176.89	
Btu/hr·ft²	10.20	-17.10
No. People	0.8	7.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.2	1.0	46	78.5	60.4	71.8	52.7	50.0	64.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	120		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-2.1	46	55.1	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-2.1			

Room Checksums

By ROCKGAP

P9 RECEIVING BREAKDOWN

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	273	68	341	60
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	273	68	341	60
Ceiling Load	22	-22	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	223		223	39
Exhaust Heat		0	0	0
Sup. Fan Heat			9	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-52	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	518	-5	573	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	273	52
People	0	0
Misc	0	0
Sub Total ==>	273	52
Ceiling Load	25	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	223	43
Grand Total ==>	521	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-68	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-124	100.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-68	-124	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	75.7	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	30	30
Terminal	30	30
Main Fan	30	30
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	30	30
Return	30	30
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.30	0.30
cfm/ton	627.99	
ft²/ton	2,093.31	
Btu/hr·ft²	5.73	-1.24
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.1	0.6	0.6	30	75.7	58.8	67.8	52.7	50.8	67.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	0.6								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	100		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.1	30	67.9	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.1			

Room Checksums

By ROCKGAP

PB1 PATIENT BENEFITS

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	393	98	492	37
People	412	0	412	31
Misc	224	0	224	17
Sub Total ==>	1,029	98	1,128	84
Ceiling Load	28	-28	0	0
Ventilation Load	0	0	200	15
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-7	-7	-1
Sup. Fan Heat			15	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-88	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,057	-25	1,336	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	393	45
People	229	26
Misc	224	25
Sub Total ==>	846	96
Ceiling Load	33	4
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	879	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-89	0	0.00
Ventilation Load	0	-583	26.04
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,496	-1,496	66.79
Exhaust Heat		23	-1.04
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-184	8.21
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,585	-2,240	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.5	55.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	51	51
Terminal	51	51
Main Fan	51	51
Sec Fan	0	0
Nom Vent	12	12
AHU Vent	12	12
Infil	0	0
MinStop/Rh	0	0
Return	51	51
Exhaust	12	12
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	24.6	24.6
cfm/ft²	0.39	0.39
cfm/ton	454.51	
ft²/ton	1,176.89	
Btu/hr·ft²	10.20	-17.10
No. People	0.9	7.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.3	1.1	51	78.5	60.4	71.8	52.7	50.0	64.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.3								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	131		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-2.2	51	55.1	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-2.2			

Room Checksums

By ROCKGAP

PC 22 1 EXISTING CLOSET

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 87 / 64 / 78

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	296	296	15
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	78	25	103	5
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	78	321	399	21
Internal Loads				
Lights	280	70	349	18
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	280	70	349	18
Ceiling Load	32	-32	0	0
Ventilation Load	0	0	228	12
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	941		941	49
Exhaust Heat		-10	-10	-1
Sup. Fan Heat			23	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-133	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,330	216	1,930	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 16
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	84	6
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	84	6
Internal Loads		
Lights	280	21
People	0	0
Misc	0	0
Sub Total ==>	280	21
Ceiling Load	29	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	941	71
Grand Total ==>	1,334	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-316	9.75
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-194	-257	7.92
Partition/Door	0	0	0.00
Floor	-158	-158	4.86
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-352	-730	22.52
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-87	0	0.00
Ventilation Load	0	-720	22.22
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,968	-1,968	60.69
Exhaust Heat		29	-0.89
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		147	-4.54
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,407	-3,242	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	78.0	57.5
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	77	77
Terminal	77	77
Main Fan	77	77
Sec Fan	0	0
Nom Vent	15	15
AHU Vent	15	15
Infil	0	0
MinStop/Rh	0	0
Return	77	77
Exhaust	15	15
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	20.0	20.0
cfm/ft²	0.60	0.60
cfm/ton	477.50	
ft²/ton	795.83	
Btu/hr·ft²	15.08	-25.33
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	1.9	1.9	77	78.0	60.1	71.0	52.7	50.2	65.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	1.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	128		
Part	0		
Int Door	0		
ExFlr	4		
Roof	128	0	0
Wall	48	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.2	77	57.5	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.2			

Room Checksums

By ROCKGAP

PC1 SCALE ALCOVE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 14
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	80	80	22
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	80	80	22
Internal Loads				
Lights	134	33	167	46
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	134	33	167	46
Ceiling Load	12	-12	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	109		109	30
Exhaust Heat		0	0	0
Sup. Fan Heat			4	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-26	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	255	76	361	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	134	52
People	0	0
Misc	0	0
Sub Total ==>	134	52
Ceiling Load	12	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	109	43
Grand Total ==>	255	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-121	22.57
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-121	22.57
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-33	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-475	-475	88.64
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		60	-11.21
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-509	-536	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	109.8
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	75.8	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	15	15
Terminal	15	15
Main Fan	15	15
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	15	15
Return	15	15
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.30	0.30
cfm/ton	488.94	
ft²/ton	1,629.80	
Btu/hr·ft²	7.36	-10.94
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.0	0.4	0.4	15	75.8	57.1	59.4	52.7	46.7	51.2
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	49		
Part	0		
Int Door	0		
ExFlr	0		
Roof	49	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.5	15	67.9	109.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.5			

Room Checksums

By ROCKGAP

PC10 NURSE STATION

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	876	219	1,096	18
People	3,150	0	3,150	51
Misc	548	0	548	9
Sub Total ==>	4,574	219	4,793	77
Ceiling Load	69	-69	0	0
Ventilation Load	0	0	1,315	21
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	91		91	1
Exhaust Heat		-57	-57	-1
Sup. Fan Heat			57	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-335	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	4,734	-241	6,199	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	876	26
People	1,750	52
Misc	548	16
Sub Total ==>	3,174	95
Ceiling Load	80	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	91	3
Grand Total ==>	3,345	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-219	0	0.00
Ventilation Load	0	-4,516	87.95
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-220	-220	4.29
Exhaust Heat		180	-3.51
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-579	11.27
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-439	-5,135	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	81.5	41.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	193	193
Terminal	193	193
Main Fan	193	193
Sec Fan	0	0
Nom Vent	96	96
AHU Vent	96	96
Infil	0	0
MinStop/Rh	193	193
Return	193	193
Exhaust	96	96
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	50.0	50.0
cfm/ft²	0.60	0.60
cfm/ton	372.83	
ft²/ton	621.38	
Btu/hr·ft²	19.31	-16.00
No. People	7.0	21.8/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.5	6.2	4.5	193	81.5	62.2	76.5	52.7	49.8	63.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.5	6.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	321		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-5.1	193	41.9	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	-1.8	193	41.9	52.7
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-5.1			

Room Checksums

By ROCKGAP

PC12 MEDS

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 12
Outside Air: OADB/WB/HR: 83 / 63 / 78

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	140	140	2
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	371	123	494	8
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	371	262	633	10
Internal Loads				
Lights	375	94	469	7
People	393	0	393	6
Misc	4,300	0	4,300	67
Sub Total ==>	5,069	94	5,163	81
Ceiling Load	17	-17	0	0
Ventilation Load	0	0	524	8
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-14	-14	0
Sup. Fan Heat			92	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-540	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	5,457	-214	6,398	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 11
OADB: 78

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	488	9
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	488	9
Internal Loads		
Lights	375	7
People	219	4
Misc	4,300	80
Sub Total ==>	4,894	91
Ceiling Load	13	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	5,395	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-309	4.29
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-474	-626	8.71
Partition/Door	0	0	0.00
Floor	-453	-453	6.30
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-928	-1,388	19.30
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-85	0	0.00
Ventilation Load	0	-1,759	24.45
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-3,910	-3,910	54.36
Exhaust Heat		70	-0.97
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-205	2.86
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-4,923	-7,192	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	88.3
Ra Plenum	75.4	67.9
Return	75.4	67.9
Ret/OA	76.3	61.6
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	311	311
Terminal	311	311
Main Fan	311	311
Sec Fan	0	0
Nom Vent	38	38
AHU Vent	38	38
Infil	0	0
MinStop/Rh	75	75
Return	311	311
Exhaust	38	38
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	12.1	12.1
cfm/ft²	2.49	2.49
cfm/ton	582.61	
ft²/ton	234.45	
Btu/hr·ft²	51.18	-57.53
No. People	0.9	7.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.5	6.4	6.0	311	76.3	58.7	66.7	52.7	50.5	66.6
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.5	6.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	125		
Part	0		
Int Door	0		
ExFlr	12		
Roof	125	0	0
Wall	138	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-7.2	311	61.6	88.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-7.2			

Room Checksums

By ROCKGAP

PC13 EXAM 7

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 12
Outside Air: OADB/WB/HR: 83 / 63 / 78

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	180	180	4
Glass Solar	960	0	960	22
Glass/Door Cond	108	0	108	2
Wall Cond	554	206	761	17
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	1,623	386	2,009	45
Internal Loads				
Lights	659	165	824	19
People	725	0	725	16
Misc	137	0	137	3
Sub Total ==>	1,521	165	1,686	38
Ceiling Load	21	-21	0	0
Ventilation Load	0	0	696	16
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-18	-18	0
Sup. Fan Heat			49	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-290	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	3,165	222	4,423	100.00

CLG SPACE PEAK

Mo/Hr: 10 / 11
OADB: 62

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	1,442	50
Glass/Door Cond	-271	-9
Wall Cond	551	19
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,722	59
Internal Loads		
Lights	659	23
People	403	14
Misc	137	5
Sub Total ==>	1,199	41
Ceiling Load	-21	-1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,901	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-397	6.86
Glass Solar	0	0	0.00
Glass/Door Cond	-1,056	-1,056	18.22
Wall Cond	-1,028	-1,401	24.18
Partition/Door	0	0	0.00
Floor	-1,114	-1,114	19.22
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-3,197	-3,968	68.48
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-110	0	0.00
Ventilation Load	0	-2,265	39.09
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		90	-1.56
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		348	-6.01
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-3,307	-5,794	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	92.8
Ra Plenum	75.4	67.9
Return	75.4	67.9
Ret/OA	77.6	52.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	167	167
Terminal	167	167
Main Fan	167	167
Sec Fan	0	0
Nom Vent	48	48
AHU Vent	48	48
Infil	0	0
MinStop/Rh	145	145
Return	167	167
Exhaust	48	48
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	28.9	28.9
cfm/ft²	1.04	1.04
cfm/ton	453.08	
ft²/ton	436.84	
Btu/hr·ft²	27.47	-35.99
No. People	1.6	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.4	4.4	3.7	167	77.6	59.5	68.3	52.7	48.8	59.5
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.4	4.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	161		
Part	0		
Int Door	0		
ExFlr	28		
Roof	161	0	0
Wall	339	30	9
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-5.8	167	52.9	92.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-5.8			

Room Checksums

By ROCKGAP

PC14 EXAM 8

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 11
Outside Air: OADB/WB/HR: 79 / 62 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	91	91	3
Glass Solar	780	0	780	27
Glass/Door Cond	20	0	20	1
Wall Cond	303	121	424	15
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	1,103	212	1,315	46
Internal Loads				
Lights	446	112	558	20
People	491	0	491	17
Misc	93	0	93	3
Sub Total ==>	1,030	112	1,142	40
Ceiling Load	7	-7	0	0
Ventilation Load	0	0	364	13
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-6	-6	0
Sup. Fan Heat			35	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-204	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,140	107	2,849	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 10
OADB: 75

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	897	44
Glass/Door Cond	-20	-1
Wall Cond	345	17
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,222	60
Internal Loads		
Lights	446	22
People	273	13
Misc	93	5
Sub Total ==>	812	40
Ceiling Load	2	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,036	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-269	7.58
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	14.87
Wall Cond	-344	-476	13.40
Partition/Door	0	0	0.00
Floor	-394	-394	11.11
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,266	-1,667	46.96
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-74	0	0.00
Ventilation Load	0	-1,534	43.21
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-518	-518	14.58
Exhaust Heat		61	-1.72
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		108	-3.03
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,858	-3,549	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	88.3
Ra Plenum	75.2	67.9
Return	75.2	67.9
Ret/OA	76.4	53.4
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	117	117
Terminal	117	117
Main Fan	117	117
Sec Fan	0	0
Nom Vent	33	33
AHU Vent	33	33
Infil	0	0
MinStop/Rh	98	98
Return	117	117
Exhaust	33	33
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	27.9	27.9
cfm/ft²	1.08	1.08
cfm/ton	493.77	
ft²/ton	459.08	
Btu/hr·ft²	26.14	-32.56
No. People	1.1	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.9	2.4	117	76.4	59.2	68.9	52.7	49.4	62.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	109		
Part	0		
Int Door	0		
ExFlr	10		
Roof	109	0	0
Wall	120	15	13
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.6	117	53.4	88.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.6			

Room Checksums

By ROCKGAP

PC15 EXAM 9

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 11
Outside Air: OADB/WB/HR: 79 / 62 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	91	91	3
Glass Solar	780	0	780	27
Glass/Door Cond	20	0	20	1
Wall Cond	303	121	424	15
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	1,103	212	1,315	46
Internal Loads				
Lights	446	112	558	20
People	491	0	491	17
Misc	93	0	93	3
Sub Total ==>	1,030	112	1,142	40
Ceiling Load	7	-7	0	0
Ventilation Load	0	0	364	13
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-6	-6	0
Sup. Fan Heat			35	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-204	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,140	107	2,849	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 10
OADB: 75

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	897	44
Glass/Door Cond	-20	-1
Wall Cond	345	17
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,222	60
Internal Loads		
Lights	446	22
People	273	13
Misc	93	5
Sub Total ==>	812	40
Ceiling Load	2	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,036	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-269	7.58
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	14.87
Wall Cond	-344	-476	13.40
Partition/Door	0	0	0.00
Floor	-394	-394	11.11
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,266	-1,667	46.96
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-74	0	0.00
Ventilation Load	0	-1,534	43.21
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-518	-518	14.58
Exhaust Heat		61	-1.72
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		108	-3.03
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,858	-3,549	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	88.3
Ra Plenum	75.2	67.9
Return	75.2	67.9
Ret/OA	76.4	53.4
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	117	117
Terminal	117	117
Main Fan	117	117
Sec Fan	0	0
Nom Vent	33	33
AHU Vent	33	33
Infil	0	0
MinStop/Rh	98	98
Return	117	117
Exhaust	33	33
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	27.9	27.9
cfm/ft²	1.08	1.08
cfm/ton	493.77	
ft²/ton	459.08	
Btu/hr·ft²	26.14	-32.56
No. People	1.1	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.9	2.4	117	76.4	59.2	68.9	52.7	49.4	62.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	109		
Part	0		
Int Door	0		
ExFlr	10		
Roof	109	0	0
Wall	120	15	13
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.6	117	53.4	88.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.6			

Room Checksums

By ROCKGAP

PC16 EXAM10

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 11
Outside Air: OADB/WB/HR: 79 / 62 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	91	91	3
Glass Solar	780	0	780	27
Glass/Door Cond	20	0	20	1
Wall Cond	303	121	424	15
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	1,103	212	1,315	46
Internal Loads				
Lights	446	112	558	20
People	491	0	491	17
Misc	93	0	93	3
Sub Total ==>	1,030	112	1,142	40
Ceiling Load	7	-7	0	0
Ventilation Load	0	0	364	13
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-6	-6	0
Sup. Fan Heat			35	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-204	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,140	107	2,849	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 10
OADB: 75

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	897	44
Glass/Door Cond	-20	-1
Wall Cond	345	17
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,222	60
Internal Loads		
Lights	446	22
People	273	13
Misc	93	5
Sub Total ==>	812	40
Ceiling Load	2	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,036	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-269	7.58
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	14.87
Wall Cond	-344	-476	13.40
Partition/Door	0	0	0.00
Floor	-394	-394	11.11
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,266	-1,667	46.96
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-74	0	0.00
Ventilation Load	0	-1,534	43.21
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-518	-518	14.58
Exhaust Heat		61	-1.72
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		108	-3.03
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,858	-3,549	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	88.3
Ra Plenum	75.2	67.9
Return	75.2	67.9
Ret/OA	76.4	53.4
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	117	117
Terminal	117	117
Main Fan	117	117
Sec Fan	0	0
Nom Vent	33	33
AHU Vent	33	33
Infil	0	0
MinStop/Rh	98	98
Return	117	117
Exhaust	33	33
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	27.9	27.9
cfm/ft²	1.08	1.08
cfm/ton	493.77	
ft²/ton	459.08	
Btu/hr·ft²	26.14	-32.56
No. People	1.1	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.9	2.4	117	76.4	59.2	68.9	52.7	49.4	62.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	109		
Part	0		
Int Door	0		
ExFlr	10		
Roof	109	0	0
Wall	120	15	13
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.6	117	53.4	88.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.6			

Room Checksums

By ROCKGAP

PC17 EXAM 11

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 11
Outside Air: OADB/WB/HR: 79 / 62 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	91	91	3
Glass Solar	780	0	780	27
Glass/Door Cond	20	0	20	1
Wall Cond	303	121	424	15
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	1,103	212	1,315	46
Internal Loads				
Lights	446	112	558	20
People	491	0	491	17
Misc	93	0	93	3
Sub Total ==>	1,030	112	1,142	40
Ceiling Load	7	-7	0	0
Ventilation Load	0	0	364	13
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-6	-6	0
Sup. Fan Heat			35	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-204	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,140	107	2,849	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 10
OADB: 75

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	897	44
Glass/Door Cond	-20	-1
Wall Cond	345	17
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,222	60
Internal Loads		
Lights	446	22
People	273	13
Misc	93	5
Sub Total ==>	812	40
Ceiling Load	2	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,036	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-269	7.58
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	14.87
Wall Cond	-344	-476	13.40
Partition/Door	0	0	0.00
Floor	-394	-394	11.11
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,266	-1,667	46.96
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-74	0	0.00
Ventilation Load	0	-1,534	43.21
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-518	-518	14.58
Exhaust Heat		61	-1.72
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		108	-3.03
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,858	-3,549	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	88.3
Ra Plenum	75.2	67.9
Return	75.2	67.9
Ret/OA	76.4	53.4
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	117	117
Terminal	117	117
Main Fan	117	117
Sec Fan	0	0
Nom Vent	33	33
AHU Vent	33	33
Infil	0	0
MinStop/Rh	98	98
Return	117	117
Exhaust	33	33
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	27.9	27.9
cfm/ft²	1.08	1.08
cfm/ton	493.77	
ft²/ton	459.08	
Btu/hr·ft²	26.14	-32.56
No. People	1.1	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.9	2.4	117	76.4	59.2	68.9	52.7	49.4	62.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	109		
Part	0		
Int Door	0		
ExFlr	10		
Roof	109	0	0
Wall	120	15	13
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.6	117	53.4	88.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.6			

Room Checksums

By ROCKGAP

PC18 EXAM 1

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	426	106	532	23
People	468	0	468	20
Misc	89	0	89	4
Sub Total ==>	983	106	1,089	46
Ceiling Load	22	-22	0	0
Ventilation Load	0	0	426	18
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	825		825	35
Exhaust Heat		-18	-18	-1
Sup. Fan Heat			28	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-163	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,830	-97	2,350	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	426	26
People	260	16
Misc	89	5
Sub Total ==>	775	48
Ceiling Load	26	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	825	51
Grand Total ==>	1,626	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-71	0	0.00
Ventilation Load	0	-1,463	81.60
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-142	-142	7.94
Exhaust Heat		58	-3.25
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-246	13.71
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-213	-1,793	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	79.6	50.6
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	94	94
Terminal	94	94
Main Fan	94	94
Sec Fan	0	0
Nom Vent	31	31
AHU Vent	31	31
Infil	0	0
MinStop/Rh	94	94
Return	94	94
Exhaust	31	31
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	33.3	33.3
cfm/ft²	0.90	0.90
cfm/ton	478.05	
ft²/ton	531.17	
Btu/hr·ft²	22.59	-17.24
No. People	1.0	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.4	2.1	94	79.6	61.5	75.6	52.7	51.9	72.6
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	104		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-1.8	94	50.6	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	-0.2	94	50.6	52.7
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1.8			

Room Checksums

By ROCKGAP

PC19 EQUIP STORAGE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 13
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	832	273	1,105	64
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	832	273	1,105	64
Internal Loads				
Lights	260	65	325	19
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	260	65	325	19
Ceiling Load	21	-21	0	0
Ventilation Load	0	0	185	11
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	108		108	6
Exhaust Heat		-7	-7	0
Sup. Fan Heat			21	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-124	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,221	186	1,737	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 12
OADB: 82

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	851	69
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	851	69
Internal Loads		
Lights	260	21
People	0	0
Misc	0	0
Sub Total ==>	260	21
Ceiling Load	21	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	108	9
Grand Total ==>	1,240	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-1,191	-1,572	52.15
Partition/Door	0	0	0.00
Floor	-966	-966	32.04
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-2,156	-2,538	84.19
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-81	0	0.00
Ventilation Load	0	-670	22.22
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		27	-0.89
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		166	-5.52
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,238	-3,014	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.6	67.9
Return	75.6	67.9
Ret/OA	77.6	57.5
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	71	71
Terminal	71	71
Main Fan	71	71
Sec Fan	0	0
Nom Vent	14	14
AHU Vent	14	14
Infil	0	0
MinStop/Rh	0	0
Return	71	71
Exhaust	14	14
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	20.0	20.0
cfm/ft²	0.60	0.60
cfm/ton	493.25	
ft²/ton	822.09	
Btu/hr·ft²	14.60	-25.33
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.7	1.7	71	77.6	59.9	70.7	52.7	50.3	65.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	119		
Part	0		
Int Door	0		
ExFlr	25		
Roof	0	0	0
Wall	294	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.0	71	57.5	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.0			

Room Checksums

By ROCKGAP

PC2 SOILED

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 16
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	127	127	5
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	284	91	376	16
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	284	218	502	21
Internal Loads				
Lights	134	34	168	7
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	134	34	168	7
Ceiling Load	19	-19	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	1,693		1,693	71
Exhaust Heat		0	0	0
Sup. Fan Heat			36	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-214	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,130	19	2,400	100.00

CLG SPACE PEAK

Mo/Hr: 6 / 18
OADB: 81

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	301	14
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	301	14
Internal Loads		
Lights	134	6
People	0	0
Misc	0	0
Sub Total ==>	134	6
Ceiling Load	8	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	1,693	79
Grand Total ==>	2,136	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-202	10.38
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-817	-1,078	55.31
Partition/Door	0	0	0.00
Floor	-781	-781	40.04
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,597	-2,061	105.74
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-56	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-296	-296	15.19
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		408	-20.93
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,949	-1,949	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	88.3
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	75.7	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	123	123
Terminal	123	123
Main Fan	123	123
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	123	123
Return	0	0
Exhaust	0	0
Rm Exh	123	123
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	1.50	1.50
cfm/ton	615.13	
ft²/ton	410.08	
Btu/hr·ft²	29.26	-26.57
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.4	2.4	123	75.7	58.2	65.1	52.7	50.2	65.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	82		
Part	0		
Int Door	0		
ExFlr	20		
Roof	82	0	0
Wall	238	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-2.2	123	67.9	88.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-2.2			

Room Checksums

By ROCKGAP

PC20 CORRIDOR 1

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 14
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	783	783	22
Glass Solar	0	0	0	0
Glass/Door Cond	139	0	139	4
Wall Cond	93	47	139	4
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	232	829	1,061	30
Internal Loads				
Lights	1,311	328	1,638	46
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	1,311	328	1,638	46
Ceiling Load	120	-120	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	839		839	23
Exhaust Heat		0	0	0
Sup. Fan Heat			43	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-250	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,501	787	3,581	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	139	6
Wall Cond	93	4
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	232	9
Internal Loads		
Lights	1,311	52
People	0	0
Misc	0	0
Sub Total ==>	1,311	52
Ceiling Load	120	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	839	34
Grand Total ==>	2,501	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-1,185	46.45
Glass Solar	0	0	0.00
Glass/Door Cond	-796	-796	31.21
Wall Cond	-172	-258	10.10
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-968	-2,239	87.75
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-327	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-987	-987	38.68
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		674	-26.43
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,282	-2,551	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	88.3
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	75.8	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	144	144
Terminal	144	144
Main Fan	144	144
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	144	144
Return	144	144
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.30	0.30
cfm/ton	482.54	
ft²/ton	1,608.45	
Btu/hr·ft²	7.46	-5.31
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.3	3.6	3.6	144	75.8	58.3	65.1	52.7	48.0	56.4
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.3	3.6								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	480		
Part	0		
Int Door	0		
ExFlr	0		
Roof	480	0	0
Wall	57	0	0
Ext Door	21	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-2.6	144	67.9	88.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-2.6			

Room Checksums

By ROCKGAP

PC20 CORRIDOR 2

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 14
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	783	783	22
Glass Solar	0	0	0	0
Glass/Door Cond	139	0	139	4
Wall Cond	93	47	139	4
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	232	829	1,061	30
Internal Loads				
Lights	1,311	328	1,638	46
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	1,311	328	1,638	46
Ceiling Load	120	-120	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	839		839	23
Exhaust Heat		0	0	0
Sup. Fan Heat			43	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-250	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,501	787	3,581	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	139	6
Wall Cond	93	4
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	232	9
Internal Loads		
Lights	1,311	52
People	0	0
Misc	0	0
Sub Total ==>	1,311	52
Ceiling Load	120	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	839	34
Exhaust Heat		
OA Preheat Diff.		
RA Preheat Diff.		
Additional Reheat		
System Plenum Heat		
Underflr Sup Ht Pkup		
Supply Air Leakage		
Grand Total ==>	2,501	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-1,185	37.97
Glass Solar	0	0	0.00
Glass/Door Cond	-796	-796	25.51
Wall Cond	-172	-258	8.26
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-968	-2,239	71.73
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-327	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,557	-1,557	49.87
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		674	-21.60
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,852	-3,121	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	92.8
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	75.8	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	144	144
Terminal	144	144
Main Fan	144	144
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	144	144
Return	144	144
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.30	0.30
cfm/ton	482.54	
ft²/ton	1,608.45	
Btu/hr·ft²	7.46	-6.50
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.3	3.6	3.6	144	75.8	58.1	64.3	52.7	47.8	55.6
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.3	3.6								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	480		
Part	0		
Int Door	0		
ExFlr	0		
Roof	480	0	0
Wall	57	0	0
Ext Door	21	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.1	144	67.9	92.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.1			

Room Checksums

By ROCKGAP

PC20 EXAM 2

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 15
Outside Air: OADB/WB/HR: 88 / 64 / 77

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	142	142	6
Glass Solar	428	0	428	17
Glass/Door Cond	115	0	115	5
Wall Cond	213	83	296	12
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	756	226	981	39
Internal Loads				
Lights	397	99	497	20
People	437	0	437	17
Misc	83	0	83	3
Sub Total ==>	917	99	1,016	40
Ceiling Load	21	-21	0	0
Ventilation Load	0	0	532	21
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-17	-17	-1
Sup. Fan Heat			31	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-183	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,693	104	2,543	100.00

CLG SPACE PEAK

Mo/Hr: 10 / 14
OADB: 69

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	921	50
Glass/Door Cond	-65	-4
Wall Cond	249	14
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,105	61
Internal Loads		
Lights	397	22
People	243	13
Misc	83	5
Sub Total ==>	723	40
Ceiling Load	-1	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	1,826	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-239	6.67
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	14.71
Wall Cond	-344	-476	13.26
Partition/Door	0	0	0.00
Floor	-394	-394	10.98
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,266	-1,637	45.62
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-66	0	0.00
Ventilation Load	0	-1,365	38.02
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-750	-750	20.91
Exhaust Heat		54	-1.52
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		109	-3.03
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,082	-3,589	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	92.8
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	79.1	53.5
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	105	105
Terminal	105	105
Main Fan	105	105
Sec Fan	0	0
Nom Vent	29	29
AHU Vent	29	29
Infil	0	0
MinStop/Rh	87	87
Return	105	105
Exhaust	29	29
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	27.7	27.7
cfm/ft²	1.08	1.08
cfm/ton	496.19	
ft²/ton	457.72	
Btu/hr·ft²	26.22	-37.00
No. People	1.0	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.5	2.2	105	79.1	59.8	67.9	52.7	50.3	65.6
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.5								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	97		
Part	0		
Int Door	0		
ExFlr	10		
Roof	97	0	0
Wall	120	15	13
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.6	105	53.5	92.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.6			

Room Checksums

By ROCKGAP

PC21 EQUIPMENT ALCOVE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 14
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	41	41	22
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	41	41	22
Internal Loads				
Lights	68	17	85	46
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	68	17	85	46
Ceiling Load	6	-6	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	56		56	30
Exhaust Heat		0	0	0
Sup. Fan Heat			2	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-13	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	130	39	184	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	68	52
People	0	0
Misc	0	0
Sub Total ==>	68	52
Ceiling Load	6	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	56	43
Grand Total ==>	130	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-62	198.68
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-62	198.68
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-17	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		31	-98.68
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-17	-31	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	75.8	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	8	8
Terminal	8	8
Main Fan	8	8
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	8	8
Return	8	8
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.30	0.30
cfm/ton	488.95	
ft²/ton	1,629.84	
Btu/hr·ft²	7.36	-1.24
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.0	0.2	0.2	8	75.8	60.0	73.8	52.7	50.3	65.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	25		
Part	0		
Int Door	0		
ExFlr	0		
Roof	25	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	0.0	8	67.9	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	0.0			

Room Checksums

By ROCKGAP

PC21 PAT TOILET

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 14
Outside Air: OADB/WB/HR: 86 / 63 / 76

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	70	70	6
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	70	70	6
Internal Loads				
Lights	106	26	132	11
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	106	26	132	11
Ceiling Load	11	-11	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	1,004		1,004	82
Exhaust Heat		0	0	0
Sup. Fan Heat			19	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-112	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,120	-26	1,225	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	106	9
People	0	0
Misc	0	0
Sub Total ==>	106	9
Ceiling Load	11	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	1,004	90
Grand Total ==>	1,120	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-106	4.76
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-106	4.76
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-29	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-2,202	-2,202	98.69
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		77	-3.44
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,232	-2,232	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	109.8
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	75.8	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	65	65
Terminal	65	65
Main Fan	65	65
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	65	65
Return	0	0
Exhaust	0	0
Rm Exh	65	65
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	1.50	1.50
cfm/ton	631.72	
ft²/ton	421.15	
Btu/hr·ft²	28.49	-54.70
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.2	1.2	65	75.8	57.1	59.4	52.7	48.8	59.4
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	43		
Part	0		
Int Door	0		
ExFlr	0		
Roof	43	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-2.4	65	67.9	109.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-2.4			

Room Checksums

By ROCKGAP

PC22 SUPPLY STORAGE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 87 / 64 / 78

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	296	296	15
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	175	56	231	12
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	175	352	527	27
Internal Loads				
Lights	280	70	349	18
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	280	70	349	18
Ceiling Load	32	-32	0	0
Ventilation Load	0	0	228	12
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	833		833	43
Exhaust Heat		-10	-10	-1
Sup. Fan Heat			23	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-133	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,319	247	1,950	100.00

CLG SPACE PEAK

Mo/Hr: 6 / 18
OADB: 81

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	208	16
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	208	16
Internal Loads		
Lights	280	21
People	0	0
Misc	0	0
Sub Total ==>	280	21
Ceiling Load	13	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	833	62
Grand Total ==>	1,334	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-316	9.75
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-437	-577	17.81
Partition/Door	0	0	0.00
Floor	-355	-355	10.94
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-792	-1,248	38.50
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-87	0	0.00
Ventilation Load	0	-720	22.22
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,527	-1,527	47.11
Exhaust Heat		29	-0.89
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		225	-6.94
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,407	-3,242	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.8	67.9
Return	75.8	67.9
Ret/OA	78.0	57.5
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	77	77
Terminal	77	77
Main Fan	77	77
Sec Fan	0	0
Nom Vent	15	15
AHU Vent	15	15
Infil	0	0
MinStop/Rh	0	0
Return	77	77
Exhaust	15	15
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	20.0	20.0
cfm/ft²	0.60	0.60
cfm/ton	472.51	
ft²/ton	787.52	
Btu/hr·ft²	15.24	-25.33
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.0	1.9	77	78.0	60.1	71.0	52.7	50.1	64.9
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	128		
Part	0		
Int Door	0		
ExFlr	9		
Roof	128	0	0
Wall	108	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.2	77	57.5	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.2			

Room Checksums

By ROCKGAP

PC23 POS

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	177	44	222	37
People	186	0	186	31
Misc	101	0	101	17
Sub Total ==>	464	44	508	84
Ceiling Load	13	-13	0	0
Ventilation Load	0	0	95	16
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-3	-3	-1
Sup. Fan Heat			7	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-40	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	476	-11	606	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	177	45
People	103	26
Misc	101	25
Sub Total ==>	381	96
Ceiling Load	15	4
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	396	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-40	0	0.00
Ventilation Load	0	-263	75.80
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-12	-12	3.33
Exhaust Heat		10	-3.02
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-83	23.89
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-52	-347	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.5	55.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	23	23
Terminal	23	23
Main Fan	23	23
Sec Fan	0	0
Nom Vent	6	6
AHU Vent	6	6
Infil	0	0
MinStop/Rh	0	0
Return	23	23
Exhaust	6	6
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	24.6	24.6
cfm/ft²	0.39	0.39
cfm/ton	451.00	
ft²/ton	1,167.75	
Btu/hr·ft²	10.28	-5.88
No. People	0.4	7.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	0.6	0.5	23	78.5	60.2	70.6	52.7	49.7	63.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	0.6								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	59		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.4	23	55.1	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.4			

Room Checksums

By ROCKGAP

PC23 TEAM WORKROOM

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	541	541	7
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	541	541	7
Internal Loads				
Lights	1,426	356	1,782	23
People	3,108	0	3,108	40
Misc	637	0	637	8
Sub Total ==>	5,171	356	5,527	71
Ceiling Load	80	-80	0	0
Ventilation Load	0	0	1,528	20
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	178		178	2
Exhaust Heat		-66	-66	-1
Sup. Fan Heat			66	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-389	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	5,429	362	7,773	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	1,426	37
People	1,554	40
Misc	637	16
Sub Total ==>	3,617	93
Ceiling Load	93	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	178	5
Grand Total ==>	3,887	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-921	15.43
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-921	15.43
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-254	0	0.00
Ventilation Load	0	-5,248	87.95
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-256	-256	4.29
Exhaust Heat		209	-3.51
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		248	-4.16
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-510	-5,967	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	81.5	41.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	224	224
Terminal	224	224
Main Fan	224	224
Sec Fan	0	0
Nom Vent	112	112
AHU Vent	112	112
Infil	0	0
MinStop/Rh	224	224
Return	224	224
Exhaust	112	112
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	50.0	50.0
cfm/ft²	0.60	0.60
cfm/ton	345.48	
ft²/ton	575.81	
Btu/hr·ft²	20.84	-16.00
No. People	6.2	16.7/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.7	7.8	5.9	224	81.5	62.2	76.5	52.7	48.7	59.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.7	7.8								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	373		
Part	0		
Int Door	0		
ExFlr	0		
Roof	373	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-6.0	224	41.9	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	-2.1	224	41.9	52.7
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-6.0			

Room Checksums

By ROCKGAP

PC3 CLEAN

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	123	123	10
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	133	43	176	14
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	133	166	299	24
Internal Loads				
Lights	186	46	232	18
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	186	46	232	18
Ceiling Load	18	-18	0	0
Ventilation Load	0	0	188	15
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	543		543	43
Exhaust Heat		-6	-6	0
Sup. Fan Heat			15	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-89	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	880	100	1,272	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 16
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	138	16
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	138	16
Internal Loads		
Lights	186	21
People	0	0
Misc	0	0
Sub Total ==>	186	21
Ceiling Load	19	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	543	61
Grand Total ==>	886	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-210	15.40
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-384	-506	37.16
Partition/Door	0	0	0.00
Floor	-367	-367	26.90
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-750	-1,083	79.46
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-58	0	0.00
Ventilation Load	0	-478	35.10
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		19	-1.40
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		179	-13.16
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-808	-1,363	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	88.3
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.0	57.5
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	51	51
Terminal	51	51
Main Fan	51	51
Sec Fan	0	0
Nom Vent	10	10
AHU Vent	10	10
Infil	0	0
MinStop/Rh	0	0
Return	51	51
Exhaust	10	10
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	20.0	20.0
cfm/ft²	0.60	0.60
cfm/ton	481.32	
ft²/ton	802.20	
Btu/hr·ft²	14.96	-16.03
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.3	1.2	51	78.0	59.5	67.9	52.7	49.6	62.6
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.3								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	85		
Part	0		
Int Door	0		
ExFlr	9		
Roof	85	0	0
Wall	112	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-1.4	51	57.5	88.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1.4			

Room Checksums

By ROCKGAP

PC4 TRIAGE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 9 / 14
Outside Air: OADB/WB/HR: 80 / 61 / 72

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	66	66	2
Glass Solar	737	0	737	26
Glass/Door Cond	41	0	41	1
Wall Cond	136	58	194	7
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	915	125	1,040	37
Internal Loads				
Lights	279	70	348	12
People	900	0	900	32
Misc	58	0	58	2
Sub Total ==>	1,237	70	1,306	46
Ceiling Load	6	-6	0	0
Ventilation Load	0	0	180	6
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	267		267	9
Exhaust Heat		0	0	0
Sup. Fan Heat			36	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-213	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,425	-25	2,829	100.00

CLG SPACE PEAK

Mo/Hr: 10 / 14
OADB: 69

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	921	43
Glass/Door Cond	-65	-3
Wall Cond	167	8
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,023	48
Internal Loads		
Lights	279	13
People	500	24
Misc	58	3
Sub Total ==>	837	39
Ceiling Load	-1	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Exhaust Heat		
OA Preheat Diff.		
RA Preheat Diff.		
Additional Reheat		
System Plenum Heat		
Underflr Sup Ht Pkup		
Supply Air Leakage		
Grand Total ==>	2,126	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-168	4.97
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	15.62
Wall Cond	-230	-326	9.64
Partition/Door	0	0	0.00
Floor	-394	-394	11.66
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,152	-1,416	41.88
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-46	0	0.00
Ventilation Load	0	-957	28.30
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,225	-1,225	36.24
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		217	-6.42
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,424	-3,381	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	92.8
Ra Plenum	75.3	67.9
Return	75.3	67.9
Ret/OA	76.2	59.2
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	122	122
Terminal	122	122
Main Fan	122	122
Sec Fan	0	0
Nom Vent	20	20
AHU Vent	20	20
Infil	0	0
MinStop/Rh	122	122
Return	0	0
Exhaust	0	0
Rm Exh	122	122
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	16.7	16.7
cfm/ft²	1.80	1.80
cfm/ton	519.23	
ft²/ton	288.46	
Btu/hr·ft²	41.60	-52.52
No. People	2.0	29.4/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.8	2.4	122	76.2	58.5	65.5	52.7	49.1	60.6
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.8								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	68		
Part	0		
Int Door	0		
ExFlr	10		
Roof	68	0	0
Wall	87	15	17
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.6	122	59.2	92.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.6			

Room Checksums

By ROCKGAP

PC5 TRIAGE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 15
Outside Air: OADB/WB/HR: 88 / 64 / 77

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	112	112	3
Glass Solar	428	0	428	13
Glass/Door Cond	115	0	115	4
Wall Cond	294	108	402	12
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	837	220	1,057	32
Internal Loads				
Lights	311	78	389	12
People	900	0	900	27
Misc	65	0	65	2
Sub Total ==>	1,276	78	1,354	41
Ceiling Load	17	-17	0	0
Ventilation Load	0	0	417	13
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	409		409	12
Exhaust Heat		0	0	0
Sup. Fan Heat			41	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-238	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,538	44	3,277	100.00

CLG SPACE PEAK

Mo/Hr: 10 / 14
OADB: 69

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	921	39
Glass/Door Cond	-65	-3
Wall Cond	236	10
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,092	46
Internal Loads		
Lights	311	13
People	500	21
Misc	65	3
Sub Total ==>	876	37
Ceiling Load	-1	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Exhaust Heat		
OA Preheat Diff.		
RA Preheat Diff.		
Additional Reheat		
System Plenum Heat		
Underflr Sup Ht Pkup		
Supply Air Leakage		
Grand Total ==>	2,376	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-188	4.97
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	13.97
Wall Cond	-517	-704	18.64
Partition/Door	0	0	0.00
Floor	-394	-394	10.43
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,439	-1,814	48.01
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-52	0	0.00
Ventilation Load	0	-1,069	28.30
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,218	-1,218	32.24
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		323	-8.56
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,709	-3,779	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	92.8
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	77.7	59.2
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	137	137
Terminal	137	137
Main Fan	137	137
Sec Fan	0	0
Nom Vent	23	23
AHU Vent	23	23
Infil	0	0
MinStop/Rh	137	137
Return	0	0
Exhaust	0	0
Rm Exh	137	137
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	16.7	16.7
cfm/ft²	1.80	1.80
cfm/ton	500.99	
ft²/ton	278.33	
Btu/hr·ft²	43.11	-52.52
No. People	2.0	26.3/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.3	3.3	2.7	137	77.7	59.1	66.4	52.7	49.5	62.5
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.3	3.3								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	76		
Part	0		
Int Door	0		
ExFlr	10		
Roof	76	0	0
Wall	170	15	9
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-4.0	137	59.2	92.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-4.0			

Room Checksums

By ROCKGAP

PC6 EXAM 3

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 15
Outside Air: OADB/WB/HR: 88 / 64 / 77

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	151	151	6
Glass Solar	428	0	428	16
Glass/Door Cond	115	0	115	4
Wall Cond	238	92	330	12
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	781	243	1,024	38
Internal Loads				
Lights	422	105	527	20
People	464	0	464	17
Misc	88	0	88	3
Sub Total ==>	973	105	1,079	40
Ceiling Load	22	-22	0	0
Ventilation Load	0	0	565	21
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-18	-18	-1
Sup. Fan Heat			32	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-190	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,777	117	2,682	100.00

CLG SPACE PEAK

Mo/Hr: 10 / 14
OADB: 69

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	921	48
Glass/Door Cond	-65	-3
Wall Cond	278	15
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,135	60
Internal Loads		
Lights	422	22
People	258	14
Misc	88	5
Sub Total ==>	767	40
Ceiling Load	-1	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	1,901	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-254	6.76
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	14.03
Wall Cond	-385	-530	14.09
Partition/Door	0	0	0.00
Floor	-394	-394	10.47
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,307	-1,707	45.35
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-70	0	0.00
Ventilation Load	0	-1,449	38.51
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-790	-790	20.99
Exhaust Heat		58	-1.53
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		125	-3.31
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,167	-3,763	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	92.8
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	79.2	53.2
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	109	109
Terminal	109	109
Main Fan	109	109
Sec Fan	0	0
Nom Vent	31	31
AHU Vent	31	31
Infil	0	0
MinStop/Rh	93	93
Return	109	109
Exhaust	31	31
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	28.2	28.2
cfm/ft²	1.06	1.06
cfm/ton	489.72	
ft²/ton	460.91	
Btu/hr·ft²	26.04	-36.54
No. People	1.0	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.7	2.3	109	79.2	59.9	67.9	52.7	50.2	65.2
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	103		
Part	0		
Int Door	0		
ExFlr	10		
Roof	103	0	0
Wall	132	15	11
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.8	109	53.2	92.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.8			

Room Checksums

By ROCKGAP

PC7 EXAM 4

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 15
Outside Air: OADB/WB/HR: 88 / 64 / 77

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	156	156	6
Glass Solar	428	0	428	16
Glass/Door Cond	115	0	115	4
Wall Cond	238	92	330	12
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	781	247	1,028	38
Internal Loads				
Lights	434	109	543	20
People	477	0	477	17
Misc	90	0	90	3
Sub Total ==>	1,002	109	1,110	41
Ceiling Load	23	-23	0	0
Ventilation Load	0	0	581	21
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-19	-19	-1
Sup. Fan Heat			33	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-192	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,806	121	2,734	100.00

CLG SPACE PEAK

Mo/Hr: 10 / 14
OADB: 69

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	921	48
Glass/Door Cond	-65	-3
Wall Cond	278	14
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,135	59
Internal Loads		
Lights	434	23
People	265	14
Misc	90	5
Sub Total ==>	790	41
Ceiling Load	-1	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	1,923	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-262	6.83
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	13.78
Wall Cond	-385	-530	13.84
Partition/Door	0	0	0.00
Floor	-394	-394	10.29
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,307	-1,714	44.73
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-72	0	0.00
Ventilation Load	0	-1,491	38.92
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-813	-813	21.23
Exhaust Heat		59	-1.55
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		128	-3.33
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,193	-3,832	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	92.8
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	79.2	53.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	111	111
Terminal	111	111
Main Fan	111	111
Sec Fan	0	0
Nom Vent	32	32
AHU Vent	32	32
Infil	0	0
MinStop/Rh	95	95
Return	111	111
Exhaust	32	32
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	28.7	28.7
cfm/ft²	1.04	1.04
cfm/ton	486.02	
ft²/ton	465.29	
Btu/hr·ft²	25.79	-36.15
No. People	1.1	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.7	2.3	111	79.2	59.9	68.0	52.7	50.1	65.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	106		
Part	0		
Int Door	0		
ExFlr	10		
Roof	106	0	0
Wall	132	15	11
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.8	111	53.0	92.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.8			

Room Checksums

By ROCKGAP

PC8 EXAM 5

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 15
Outside Air: OADB/WB/HR: 88 / 64 / 77

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	156	156	6
Glass Solar	428	0	428	16
Glass/Door Cond	115	0	115	4
Wall Cond	238	92	330	12
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	781	247	1,028	38
Internal Loads				
Lights	434	109	543	20
People	477	0	477	17
Misc	90	0	90	3
Sub Total ==>	1,002	109	1,110	41
Ceiling Load	23	-23	0	0
Ventilation Load	0	0	581	21
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-19	-19	-1
Sup. Fan Heat			33	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-192	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,806	121	2,734	100.00

CLG SPACE PEAK

Mo/Hr: 10 / 14
OADB: 69

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	921	48
Glass/Door Cond	-65	-3
Wall Cond	278	14
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,135	59
Internal Loads		
Lights	434	23
People	265	14
Misc	90	5
Sub Total ==>	790	41
Ceiling Load	-1	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	1,923	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-262	6.83
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	13.78
Wall Cond	-385	-530	13.84
Partition/Door	0	0	0.00
Floor	-394	-394	10.29
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,307	-1,714	44.73
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-72	0	0.00
Ventilation Load	0	-1,491	38.92
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-813	-813	21.23
Exhaust Heat		59	-1.55
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		128	-3.33
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,193	-3,832	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	92.8
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	79.2	53.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	111	111
Terminal	111	111
Main Fan	111	111
Sec Fan	0	0
Nom Vent	32	32
AHU Vent	32	32
Infil	0	0
MinStop/Rh	95	95
Return	111	111
Exhaust	32	32
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	28.7	28.7
cfm/ft²	1.04	1.04
cfm/ton	486.02	
ft²/ton	465.29	
Btu/hr·ft²	25.79	-36.15
No. People	1.1	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.7	2.3	111	79.2	59.9	68.0	52.7	50.1	65.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	106		
Part	0		
Int Door	0		
ExFlr	10		
Roof	106	0	0
Wall	132	15	11
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.8	111	53.0	92.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.8			

Room Checksums

By ROCKGAP

PC9 EXAM 6

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 15
Outside Air: OADB/WB/HR: 88 / 64 / 77

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	156	156	6
Glass Solar	428	0	428	16
Glass/Door Cond	115	0	115	4
Wall Cond	238	92	330	12
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	781	247	1,028	38
Internal Loads				
Lights	434	109	543	20
People	477	0	477	17
Misc	90	0	90	3
Sub Total ==>	1,002	109	1,110	41
Ceiling Load	23	-23	0	0
Ventilation Load	0	0	581	21
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-19	-19	-1
Sup. Fan Heat			33	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-192	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,806	121	2,734	100.00

CLG SPACE PEAK

Mo/Hr: 10 / 14
OADB: 69

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	921	48
Glass/Door Cond	-65	-3
Wall Cond	278	14
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	1,135	59
Internal Loads		
Lights	434	23
People	265	14
Misc	90	5
Sub Total ==>	790	41
Ceiling Load	-1	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	1,923	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-262	6.83
Glass Solar	0	0	0.00
Glass/Door Cond	-528	-528	13.78
Wall Cond	-385	-530	13.84
Partition/Door	0	0	0.00
Floor	-394	-394	10.29
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,307	-1,714	44.73
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-72	0	0.00
Ventilation Load	0	-1,491	38.92
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-813	-813	21.23
Exhaust Heat		59	-1.55
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		128	-3.33
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,193	-3,832	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	92.8
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	79.2	53.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	111	111
Terminal	111	111
Main Fan	111	111
Sec Fan	0	0
Nom Vent	32	32
AHU Vent	32	32
Infil	0	0
MinStop/Rh	95	95
Return	111	111
Exhaust	32	32
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	28.7	28.7
cfm/ft²	1.04	1.04
cfm/ton	486.02	
ft²/ton	465.29	
Btu/hr·ft²	25.79	-36.15
No. People	1.1	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.2	2.7	2.3	111	79.2	59.9	68.0	52.7	50.1	65.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	106		
Part	0		
Int Door	0		
ExFlr	10		
Roof	106	0	0
Wall	132	15	11
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.8	111	53.0	92.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.8			

Room Checksums

By ROCKGAP

PR1 PATIENT REGISTRATION

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 9 / 15
Outside Air: OADB/WB/HR: 81 / 61 / 73

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	238	238	1
Glass Solar	13,017	0	13,017	56
Glass/Door Cond	955	0	955	4
Wall Cond	0	190	190	1
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	13,972	428	14,400	62
Internal Loads				
Lights	848	212	1,060	5
People	2,400	0	2,400	10
Misc	4,026	0	4,026	17
Sub Total ==>	7,274	212	7,486	32
Ceiling Load	24	-24	0	0
Ventilation Load	0	0	912	4
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-20	-20	0
Sup. Fan Heat			367	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-2,152	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	21,271	-1,556	23,146	100.00

CLG SPACE PEAK

Mo/Hr: 1 / 15
OADB: 58

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	18,263	85
Glass/Door Cond	-3,035	-14
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	15,229	71
Internal Loads		
Lights	848	4
People	1,470	7
Misc	4,026	19
Sub Total ==>	6,344	29
Ceiling Load	-55	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	21,518	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-590	1.22
Glass Solar	0	0	0.00
Glass/Door Cond	-9,595	-9,595	19.82
Wall Cond	0	-300	0.62
Partition/Door	0	0	0.00
Floor	-1,120	-1,120	2.31
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-10,715	-11,605	23.97
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-163	0	0.00
Ventilation Load	0	-3,363	6.95
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-31,983	-31,983	66.07
Exhaust Heat		134	-0.28
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-1,589	3.28
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-42,861	-48,405	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	109.8
Ra Plenum	75.3	67.9
Return	75.3	67.9
Ret/OA	75.7	64.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	1,239	1,239
Terminal	1,239	1,239
Main Fan	1,239	1,239
Sec Fan	0	0
Nom Vent	72	72
AHU Vent	72	72
Infil	0	0
MinStop/Rh	215	215
Return	1,239	1,239
Exhaust	72	72
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	5.8	5.8
cfm/ft²	5.18	5.18
cfm/ton	642.28	
ft²/ton	123.91	
Btu/hr·ft²	96.84	-202.53
No. People	6.0	25.1/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	1.9	23.2	21.7	1,239	75.7	57.2	60.2	52.7	49.0	60.2
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.9	23.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	239		
Part	0		
Int Door	0		
ExFlr	28		
Roof	239	0	0
Wall	341	273	80
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-48.4	1,239	64.9	109.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-48.4			

Room Checksums

By ROCKGAP

PR2 STAFF TOILET

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 10 / 14
Outside Air: OADB/WB/HR: 69 / 54 / 56

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	22	22	2
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	215	72	287	23
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	215	94	309	25
Internal Loads				
Lights	106	26	132	10
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	106	26	132	10
Ceiling Load	-1	1	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	800		800	63
Exhaust Heat		0	0	0
Sup. Fan Heat			19	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-112	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,120	9	1,261	100.00

CLG SPACE PEAK

Mo/Hr: 10 / 14
OADB: 69

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	215	19
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	215	19
Internal Loads		
Lights	106	9
People	0	0
Misc	0	0
Sub Total ==>	106	9
Ceiling Load	-1	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Exhaust Heat		
OA Preheat Diff.		
RA Preheat Diff.		
Additional Reheat		
System Plenum Heat		
Underflr Sup Ht Pkup		
Supply Air Leakage		
Grand Total ==>	800	71

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-106	4.76
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-297	-392	17.57
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-297	-498	22.33
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-29	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,905	-1,905	85.38
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		172	-7.70
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,232	-2,232	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	109.8
Ra Plenum	75.0	67.9
Return	75.0	67.9
Ret/OA	75.0	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	65	65
Terminal	65	65
Main Fan	65	65
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	65	65
Return	0	0
Exhaust	0	0
Rm Exh	65	65
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	1.50	1.50
cfm/ton	614.03	
ft²/ton	409.35	
Btu/hr·ft²	29.31	-54.70
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.3	1.3	65	75.0	56.8	59.4	52.7	48.7	59.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.3								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	43		
Part	0		
Int Door	0		
ExFlr	0		
Roof	43	0	0
Wall	86	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-2.4	65	67.9	109.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-2.4			

Room Checksums

By ROCKGAP

R 03 EXISTING X RAY

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	376	122	498	10
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	376	122	498	10
Internal Loads				
Lights	768	192	960	19
People	1,000	0	1,000	19
Misc	1,715	0	1,715	33
Sub Total ==>	3,483	192	3,675	71
Ceiling Load	43	-43	0	0
Ventilation Load	0	0	972	19
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-36	-36	-1
Sup. Fan Heat			58	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-342	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	3,903	-107	5,168	100.00

CLG SPACE PEAK

Mo/Hr: 6 / 18
OADB: 81

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	416	12
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	416	12
Internal Loads		
Lights	768	22
People	500	15
Misc	1,715	50
Sub Total ==>	2,983	87
Ceiling Load	21	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	3,421	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-875	-1,155	12.48
Partition/Door	0	0	0.00
Floor	-710	-710	7.67
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	-1,584	-1,864	20.14
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-137	0	0.00
Ventilation Load	0	-2,828	30.56
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-4,450	-4,450	48.09
Exhaust Heat		113	-1.22
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-225	2.43
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-6,172	-9,255	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	79.3	52.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	197	197
Terminal	197	197
Main Fan	197	197
Sec Fan	0	0
Nom Vent	60	60
AHU Vent	60	60
Infil	0	0
MinStop/Rh	181	181
Return	197	197
Exhaust	60	60
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	30.6	30.6
cfm/ft²	0.98	0.98
cfm/ton	457.31	
ft²/ton	466.75	
Btu/hr·ft²	25.71	-46.04
No. People	2.0	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.4	5.2	4.3	197	79.3	60.8	72.4	52.7	50.5	66.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.4	5.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	201		
Part	0		
Int Door	0		
ExFlr	18		
Roof	0	0	0
Wall	216	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-9.3	197	52.0	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	-0.1	197	52.0	52.7
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-9.3			

Room Checksums

By ROCKGAP

R 05 EXISTING OFFICE

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	315	79	394	37
People	330	0	330	31
Misc	179	0	179	17
Sub Total ==>	825	79	904	84
Ceiling Load	23	-23	0	0
Ventilation Load	0	0	161	15
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-6	-6	-1
Sup. Fan Heat			12	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-70	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	848	-20	1,071	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	315	45
People	184	26
Misc	179	25
Sub Total ==>	678	96
Ceiling Load	26	4
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	704	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-72	0	0.00
Ventilation Load	0	-468	26.04
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,199	-1,199	66.79
Exhaust Heat		19	-1.04
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-147	8.21
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,271	-1,796	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.5	55.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	41	41
Terminal	41	41
Main Fan	41	41
Sec Fan	0	0
Nom Vent	10	10
AHU Vent	10	10
Infil	0	0
MinStop/Rh	0	0
Return	41	41
Exhaust	10	10
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	24.6	24.6
cfm/ft²	0.39	0.39
cfm/ton	454.51	
ft²/ton	1,176.88	
Btu/hr·ft²	10.20	-17.10
No. People	0.7	7.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.1	0.9	41	78.5	60.4	71.8	52.7	50.0	64.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.1								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	105		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-1.8	41	55.1	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1.8			

Room Checksums

By ROCKGAP

R 08 ULTRASOUND

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	382	96	478	15
People	500	0	500	16
Misc	1,707	0	1,707	53
Sub Total ==>	2,589	96	2,684	84
Ceiling Load	22	-22	0	0
Ventilation Load	0	0	483	15
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-18	-18	-1
Sup. Fan Heat			40	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-236	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,610	-180	3,190	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	382	16
People	250	11
Misc	1,707	72
Sub Total ==>	2,339	99
Ceiling Load	25	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,364	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-68	0	0.00
Ventilation Load	0	-1,407	23.97
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-4,197	-4,197	71.49
Exhaust Heat		56	-0.96
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-323	5.50
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-4,265	-5,870	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	106.1
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.3	56.4
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	136	136
Terminal	136	136
Main Fan	136	136
Sec Fan	0	0
Nom Vent	30	30
AHU Vent	30	30
Infil	0	0
MinStop/Rh	90	90
Return	136	136
Exhaust	30	30
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	22.0	22.0
cfm/ft²	1.36	1.36
cfm/ton	511.86	
ft²/ton	376.13	
Btu/hr·ft²	31.90	-58.70
No. People	1.0	10.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.3	3.2	2.8	136	78.3	60.3	71.5	52.7	51.1	69.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.3	3.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	100		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-5.9	136	56.4	106.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-5.9			

Room Checksums

By ROCKGAP

S2 PUBLIC TOILET

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	125	31	157	11
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	125	31	157	11
Ceiling Load	11	-11	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	1,191		1,191	87
Exhaust Heat		0	0	0
Sup. Fan Heat			23	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-133	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	1,327	-113	1,370	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	125	9
People	0	0
Misc	0	0
Sub Total ==>	125	9
Ceiling Load	13	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	1,191	90
Grand Total ==>	1,329	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-35	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-139	-139	80.01
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-35	19.99
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-174	-174	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	75.7	67.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	77	77
Terminal	77	77
Main Fan	77	77
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	77	77
Return	0	0
Exhaust	0	0
Rm Exh	77	77
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	1.50	1.50
cfm/ton	670.06	
ft²/ton	446.71	
Btu/hr·ft²	26.86	-6.22
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	1.4	1.4	77	75.7	58.8	67.8	52.7	50.8	67.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	51		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.3	77	67.9	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.3			

Room Checksums

By ROCKGAP

S3 HKPG

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	98	25	123	21
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	98	25	123	21
Ceiling Load	10	-10	0	0
Ventilation Load	0	0	92	16
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	359		359	62
Exhaust Heat		-3	-3	-1
Sup. Fan Heat			8	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-47	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	467	-35	579	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	98	21
People	0	0
Misc	0	0
Sub Total ==>	98	21
Ceiling Load	11	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	359	77
Grand Total ==>	469	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	0	0.00
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-31	0	0.00
Ventilation Load	0	-253	71.34
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-31	-31	8.64
Exhaust Heat		10	-2.84
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-81	22.86
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-61	-355	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	78.0	57.5
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	27	27
Terminal	27	27
Main Fan	27	27
Sec Fan	0	0
Nom Vent	5	5
AHU Vent	5	5
Infil	0	0
MinStop/Rh	0	0
Return	27	27
Exhaust	5	5
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	20.0	20.0
cfm/ft²	0.60	0.60
cfm/ton	559.91	
ft²/ton	933.19	
Btu/hr·ft²	12.86	-7.89
No. People	0.0	0.0/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	0.1	0.6	0.5	27	78.0	59.9	70.1	52.7	51.3	70.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	0.6								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	45		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.4	27	57.5	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.4			

Room Checksums

By ROCKGAP

S6 WAITING

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 8 / 16
Outside Air: OADB/WB/HR: 87 / 64 / 79

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	934	934	3
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	934	934	3
Internal Loads				
Lights	2,286	571	2,857	10
People	9,908	0	9,908	35
Misc	0	0	0	0
Sub Total ==>	12,194	571	12,765	45
Ceiling Load	139	-139	0	0
Ventilation Load	0	0	2,637	9
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	11,619		11,619	41
Exhaust Heat		0	0	0
Sup. Fan Heat			343	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		-2,013	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	23,952	-647	28,299	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 14
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	2,286	11
People	6,068	30
Misc	0	0
Sub Total ==>	8,354	41
Ceiling Load	161	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	11,619	58
Grand Total ==>	20,135	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 16

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-1,590	13.58
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0.00
Infiltration	0	0	0.00
Sub Total ==>	0	-1,590	13.58
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-439	0	0.00
Ventilation Load	0	-9,061	77.42
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-2,203	-2,203	18.82
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		1,151	-9.83
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,642	-11,703	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.6
Ra Plenum	75.7	67.9
Return	75.7	67.9
Ret/OA	77.6	59.2
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	1,159	1,159
Terminal	1,159	1,159
Main Fan	1,159	1,159
Sec Fan	0	0
Nom Vent	193	193
AHU Vent	193	193
Infil	0	0
MinStop/Rh	1,159	1,159
Return	0	0
Exhaust	0	0
Rm Exh	1,159	1,159
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	16.7	16.7
cfm/ft²	1.80	1.80
cfm/ton	491.55	
ft²/ton	273.08	
Btu/hr·ft²	43.94	-20.98
No. People	24.8	38.5/1000 ft²

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter gr/lb	Leave DB °F	Leave WB °F	Leave gr/lb
Main Clg	2.4	28.3	23.9	1,159	77.6	60.7	74.7	52.7	51.3	69.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	2.4	28.3								

AREAS

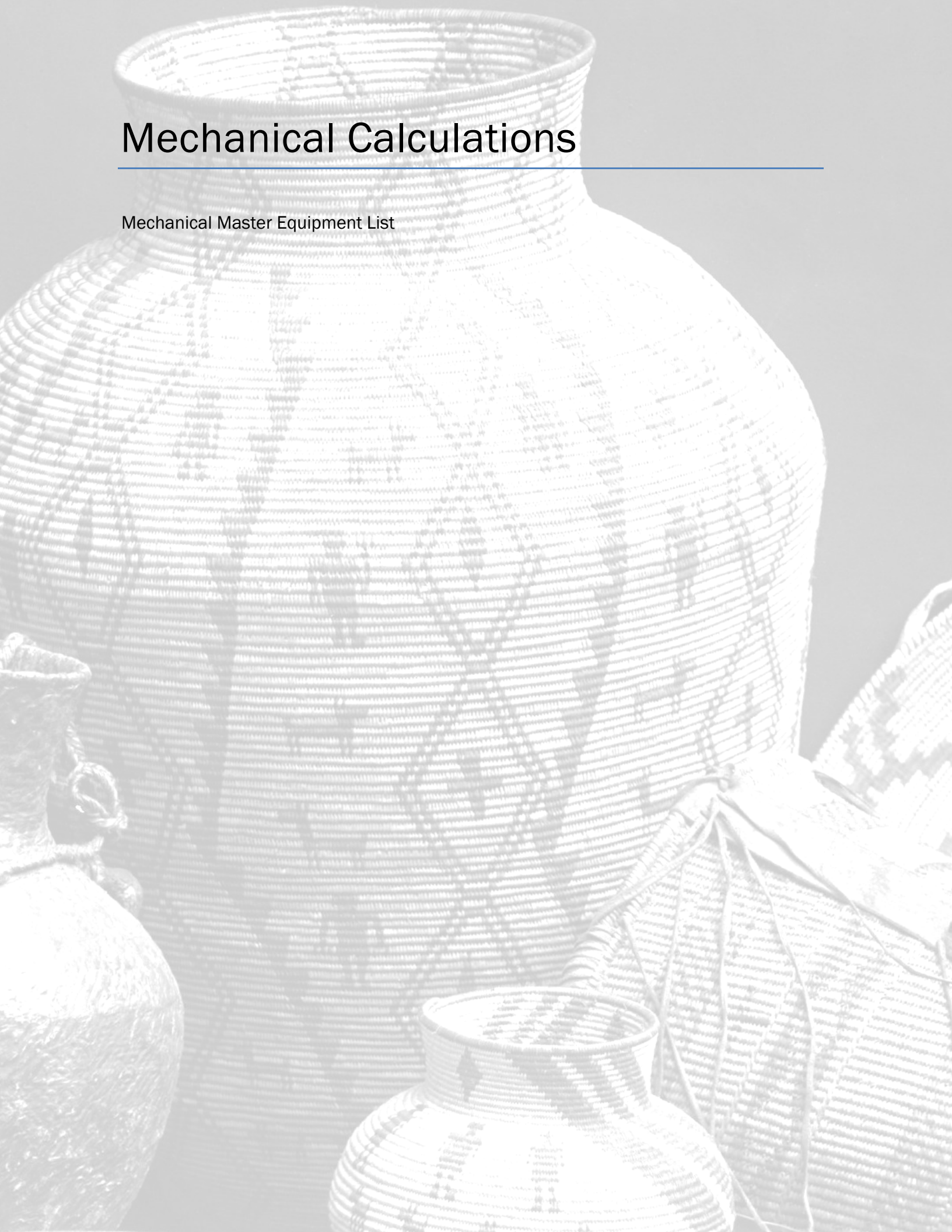
	Gross Total	Glass ft²	Glass (%)
Floor	644		
Part	0		
Int Door	0		
ExFlr	0		
Roof	644	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-13.5	1,159	59.2	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-13.5			

Mechanical Calculations

Mechanical Master Equipment List



MASTER EQUIPMENT LIST

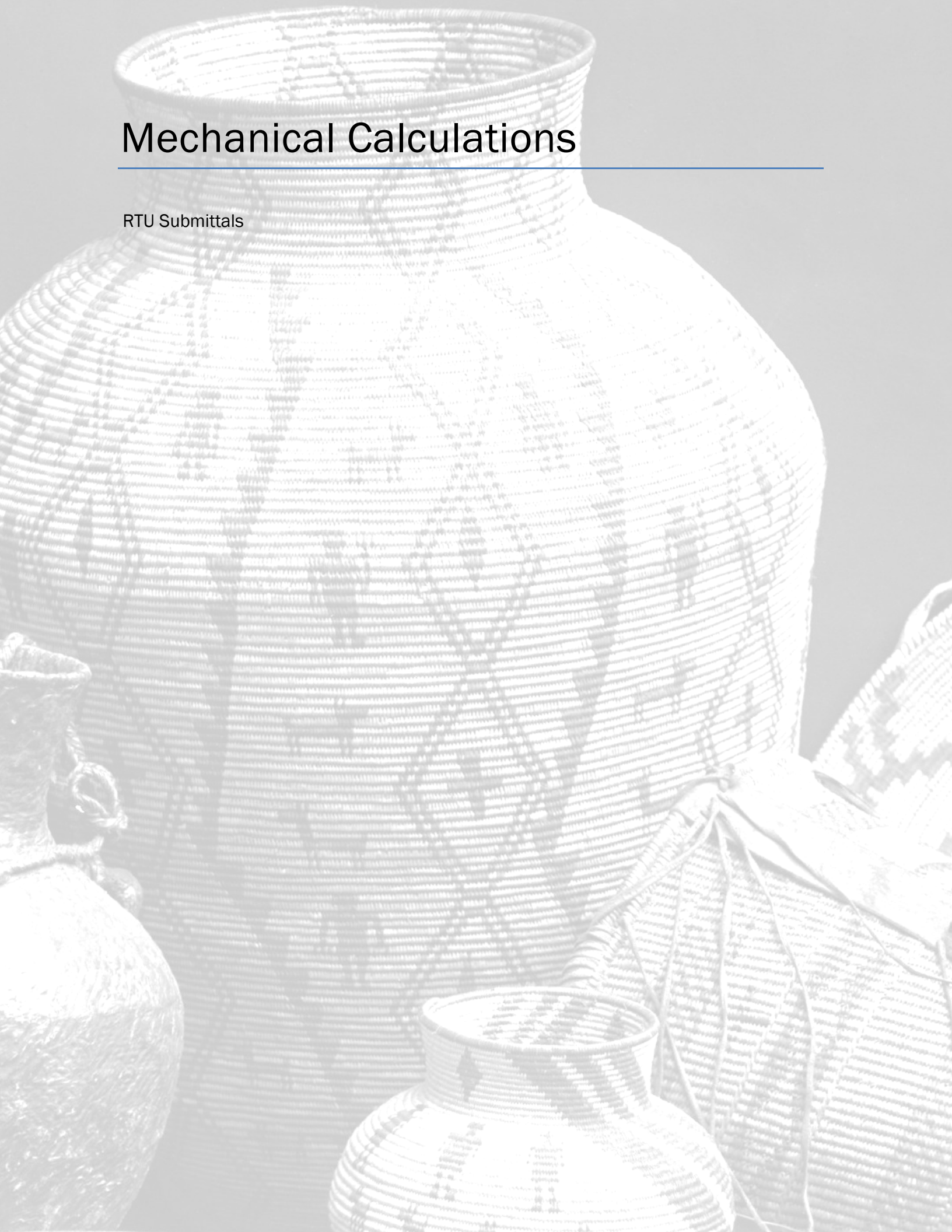
Project Name: **Mescalero Service Unit Renovation and Addition**
Project Number: **117043**
Completed by: **Architectural/Engineering (A/E) Firm**

Building: **02000**
IHS Contract No / Task No : **HHSI16120120003I / HSSI16109026T**
IHS Requisition No : **IHS1361037**

Equipment List #	Name Plate Info	System (Level 2)	Component (Level 3)	Section (Level 4)	Section Subtype (Level 5)	LOCATION				CONTRACTOR						
						Floor	Room	Above Ceiling	Quadrant	Manufacturer	Model #	Serial #	Install Date	Warranty Date	Access Requirements	Comments
CEF -1		HVAC	DISTRIBUTION_SYSTEMS	EXHAUST_SYSTEMS	Fan System, Room Mounted	1	1139	Yes	NE							
CEF-2		HVAC	DISTRIBUTION_SYSTEMS	EXHAUST_SYSTEMS	Fan System, Room Mounted	1	1162	Yes	NE							
CEF-3		HVAC	DISTRIBUTION_SYSTEMS	EXHAUST_SYSTEMS	Fan System, Room Mounted	1	1107	Yes	NE							
CEF-4		HVAC	DISTRIBUTION_SYSTEMS	EXHAUST_SYSTEMS	Fan System, Room Mounted	1	1106	Yes	NW							
CEF-5		HVAC	DISTRIBUTION_SYSTEMS	EXHAUST_SYSTEMS	Fan System, Room Mounted	1	1111	Yes	NW							
CEF-6		HVAC	DISTRIBUTION_SYSTEMS	EXHAUST_SYSTEMS	Fan System, Room Mounted	1	1103	Yes	NE							
RTU-1		HVAC	TERMINAL_AND_PACKAGE_UNITS	PACKAGE_UNITS	DOAS - 5 ton	Roof	-	-	NE							
RTU-2		HVAC	TERMINAL_AND_PACKAGE_UNITS	PACKAGE_UNITS	Rooftop Unit - 3 ton	Roof	-	-	NE							
RTU-3		HVAC	TERMINAL_AND_PACKAGE_UNITS	PACKAGE_UNITS	Rooftop Unit - 3 ton	Roof	-	-	SE							
RTU-4		HVAC	TERMINAL_AND_PACKAGE_UNITS	PACKAGE_UNITS	Rooftop Unit - 3 ton	Roof	-	-	Center							
RTU-5		HVAC	TERMINAL_AND_PACKAGE_UNITS	PACKAGE_UNITS	Rooftop Unit - 3 ton	Roof	-	-	SW							
AC-1 / CU-1		HVAC	COOLING_GENERATING_SYSTEMS	DIRECT_EXPANSION_SYSTEMS	Mini-Split - 2 ton	1	2100	No	SE							
AC-3/CU-4		HVAC	COOLING_GENERATING_SYSTEMS	DIRECT_EXPANSION_SYSTEMS	Mini-Split - 2 ton	1	2100	No	SE							
AC-2/CU-5		HVAC	COOLING_GENERATING_SYSTEMS	DIRECT_EXPANSION_SYSTEMS	Mini-Split - 1 ton	1	2100	No	SE							
EUH-1		HVAC	TERMINAL_AND_PACKAGE_UNITS	UNIT_HEATERS	Electric - 3kW	1	2102	No	SE							
EF-1		HVAC	DISTRIBUTION_SYSTEMS	EXHAUST_SYSTEMS	Fan System, Roof Exhaust - 200 CFM	Roof	-	-	NW							
EF-2		HVAC	DISTRIBUTION_SYSTEMS	EXHAUST_SYSTEMS	Fan System, Roof Exhaust - 300 CFM	Roof	-	-	SW							
EF-3		HVAC	DISTRIBUTION_SYSTEMS	EXHAUST_SYSTEMS	Fan System, Roof Exhaust - 2000 CFM	Roof	-	-	SW							
CRAC-1		HVAC	TERMINAL_AND_PACKAGE_UNITS	PACKAGE_UNITS	A/C Unit, Computer Room - Air Cooled, 6.5 ton	1	1181	No	SW							
CRAC-2		HVAC	TERMINAL_AND_PACKAGE_UNITS	PACKAGE_UNITS	A/C Unit, Computer Room - Air Cooled, 6.5 ton	1	1181	No	NW							
CU-2		HVAC	COOLING_GENERATING_SYSTEMS	DIRECT_EXPANSION_SYSTEMS	Condenser, DX, Air Cooled Direct Drive, 6.5 ton, R-410a	Roof	-	-	NW							
CU-3		HVAC	COOLING_GENERATING_SYSTEMS	DIRECT_EXPANSION_SYSTEMS	Condenser, DX, Air Cooled Direct Drive, 6.5 ton, R-410a	Roof	-	-	NW							
PH-1		HVAC	DISTRIBUTION_SYSTEMS	EXHAUST_SYSTEMS	Fume Hood	1	1106	Yes	NE							
S3		HVAC	DISTRIBUTION_SYSTEMS	AIR_DISTRIBUTION_HEATING_AND_COOLING	Diffuser - HEPA Filter Housing	1	1120	Yes	SW							

Mechanical Calculations

RTU Submittals



SUBMITTAL

Project

IHS Mescalero Service Unit

Date

Friday, September 10, 2021

RTU-1

Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report

Unit Report For RTU-1

Project: IHS Mescalero Service Unit 09/10/2021
Prepared By: 11:51AM

Unit Parameters

Unit Size: **06 (6 Tons)**
Volts-Phase-Hertz: **460-3-60**
Configuration: **100% OA Vertical Supply / Vertical Return**
Cabinet: **B Cabinet**
Evaporator Coil Depth: **6 Row Evaporator**
Heating Capacity: **200 MBH Natural Gas Heat**
Filter Option: **4" MERV 14 Filters**

Unit Dimensions

Unit Length: **10' 10"**
Unit Width: **5' 4"**
Unit Height: **5' 6"**
Shipping Weight: **2350** lb
Operating Weight: **2350** lb

***Weights and Dimensions are approximate. Weight does not include curbs and accessories. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions refer to certified drawings.

** Shipping Weight does not include added weight for special order units (ETO).

Control Configuration

Factory installed and programmed ALC812u controller with DOAS control program. Unit will enable cooling/dehumidification and heating based on configurable supply air setpoints. Will control to maintain supply air dry bulb setpoint and dew point setpoint.

Factory installed and programmed ALC812u controller with DOAS control program. Unit will enable cooling/dehumidification and heating based on configurable supply air setpoints. Will control to maintain supply air dry bulb setpoint and dew point setpoint. Special control configuration needed for space pressure control and for supply air dry bulb temperature reset control options.

Exhaust

Exhaust Fan Type: **Backward Inclined Exhaust Fan**
P.E./ R.F. Motor HP: **ECM Exhaust Fan Motor**
Exhaust Fan Motor Type: **ECM Exhaust Fan Motor**

Supply Fan

Supply Fan Type: **Backward Inclined Supply Fan**
Supply Fan Motor HP: **ECM Supply Fan Motor**
Supply Fan Motor Type: **ECM Supply Fan Motor**

No Optional Warranty Specified

NOTE: Please see Commercial Start-Up and Optional Extended Warranty price page for explanation of policies and ordering methods.

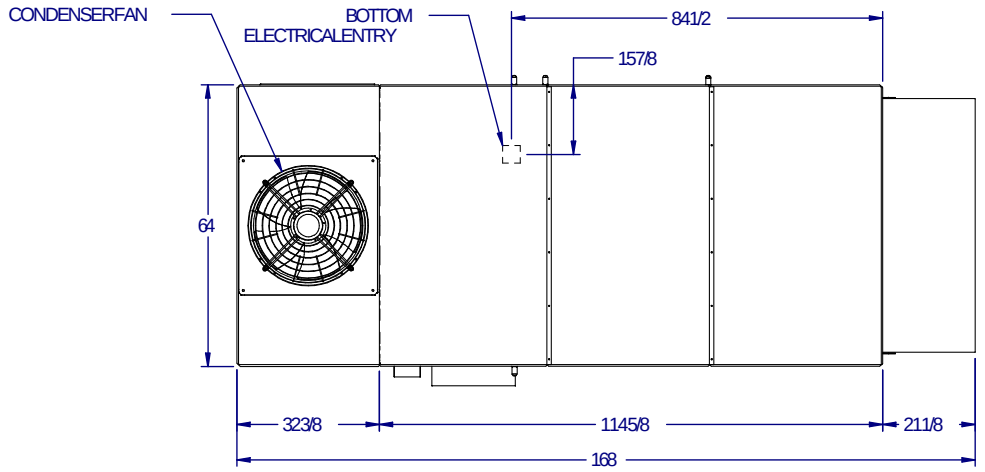
Ordering Information

Part Number	Description	Quantity
62XK06-DJTCJG2T3AG	Dedicated Outdoor Air Unit	1
	Base Unit	
	350 mm Backward Inclined Supply Fan, Direct Drive	
	450 mm Low Backward Inclined Exhaust Fan, Direct Drive	
	Non-Fused Disconnect	
	200 MBH Natural Gas Heat	
	460V/3Ph/60Hz, Variable Capacity Compressor on Lead Circuit, Standard Efficiency Condenser	
	6 Row Evaporator, Modulating HGRH on Lead Circuit	
	4" MERV 14 Filter	

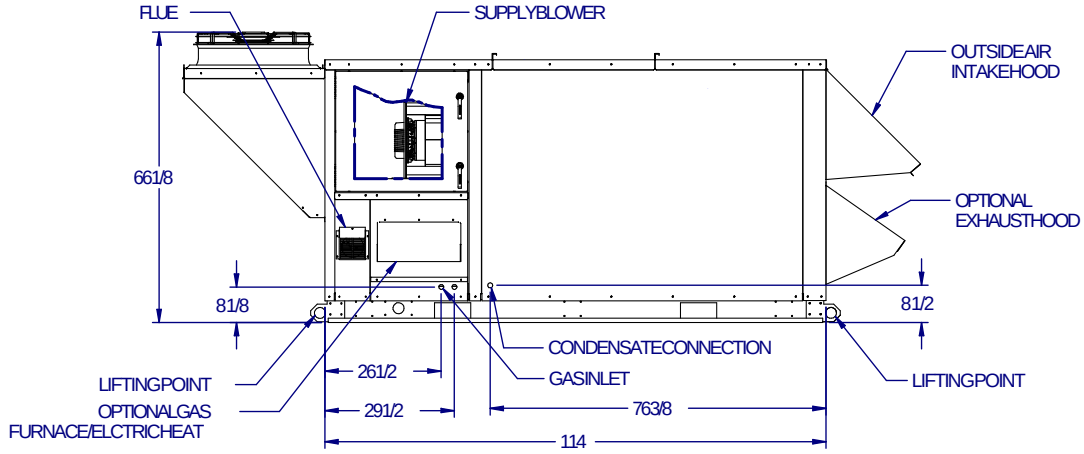
Accessories

Accessory Part #	Description	Quantity
EQT1-4-CAR	i-Vu Equipment Touch	1

62XBCabinet(3-8tons)withOptionalERV,VerticalSupply,VerticalExhaust



TOPVIEW



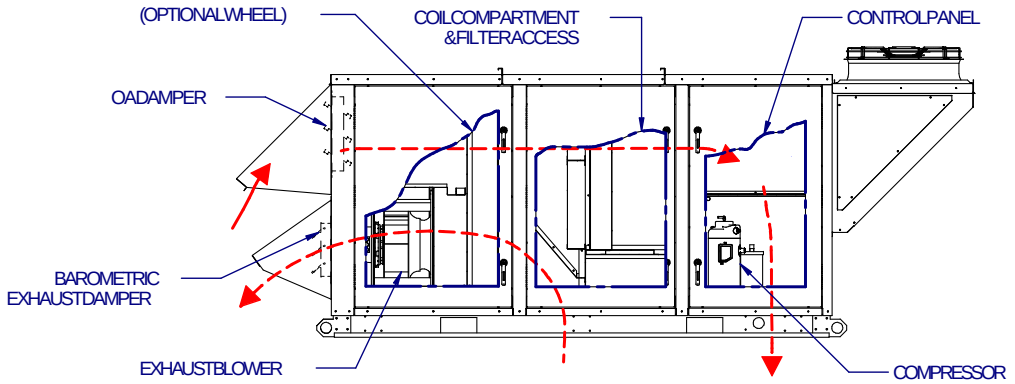
BACKVIEW

Certified Drawing for RTU-1

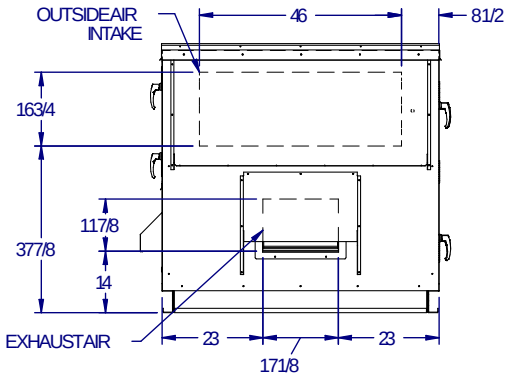
Project: IHS Mescalero Service Unit
Prepared By:

09/10/2021
11:51AM

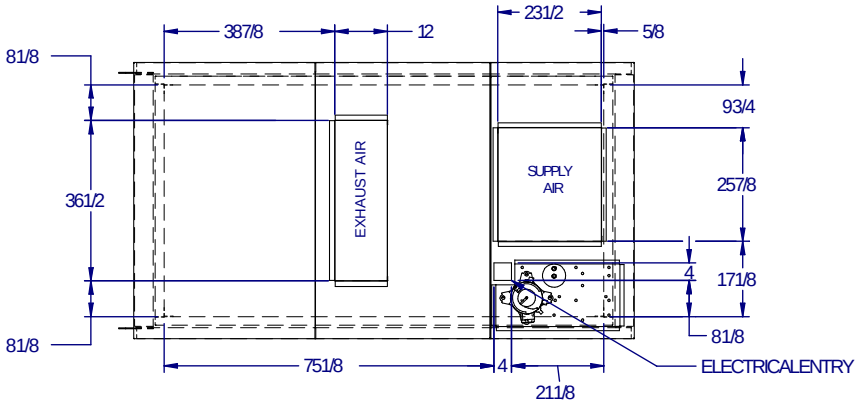
62XBCabinet(3-8tons)withOptionalERV,VerticalSupply,VerticalExhaust



FRONTVIEW

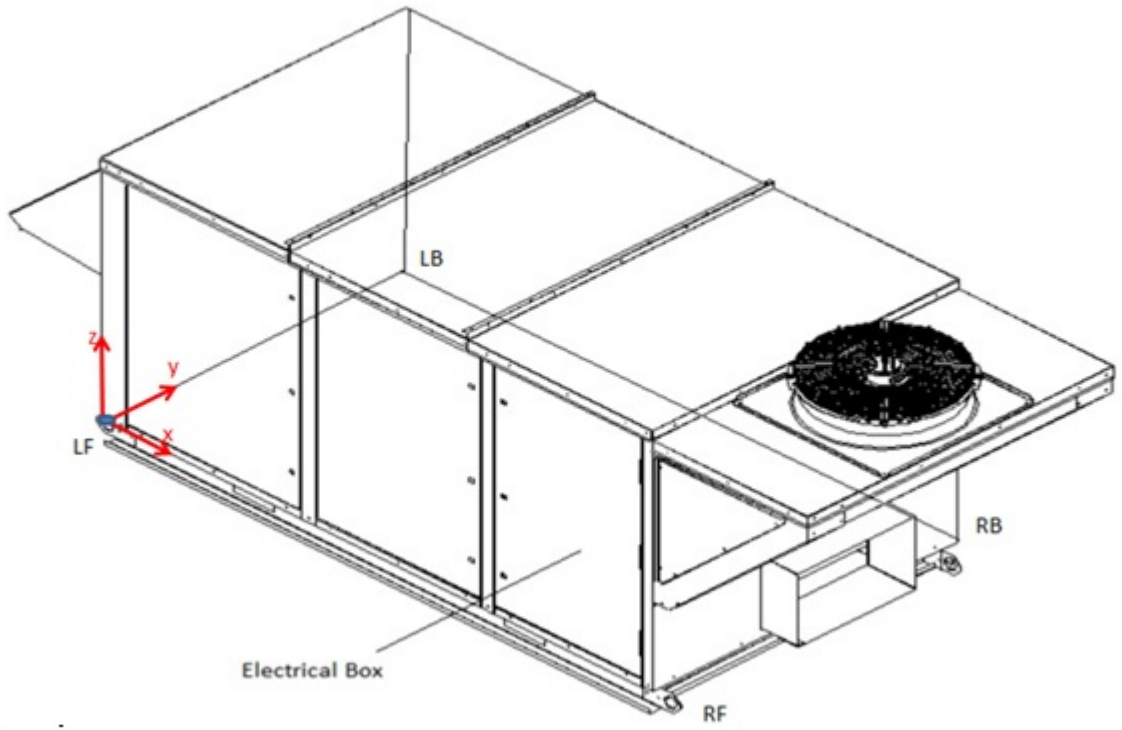


LEFTSIDEVIEW



TOPPLANVIEW
CONDENSINGSIDE
NOTSHOWN

Corner Weights



Corner Weights

Corner Weight (LF):	**330.0**	lb
Corner Weight (LB):	**270.0**	lb
Corner Weight (RF):	**970.0**	lb
Corner Weight (RB):	**780.0**	lb

Performance Summary For RTU-1

Project: IHS Mescalero Service Unit — 09/10/2021
Prepared By: — 11:51AM

Part Number: **62XK06-DJTCJG2T3AG**

Unit Refrigerant:	**R410A**	
Application MRC:	**-17.2**	lb/hr
Application MRE:	**-3.3**	

Unit Dimensions

Unit Length:	**10' 10"**	
Unit Width:	**5' 4"**	
Unit Height:	**5' 6"**	
Shipping Weight:	**2350**	lb
Operating Weight:	**2350**	lb

Unit

Heat Options:	**Natural Gas Heat**	
Configuration:	**100% OA Vertical Supply / Vertical Return**	
Voltage:	**460-3-60**	
Altitude:	**6700**	ft

Cooling/Dehumidification Performance

Cooling Airflow:	**1920**	CFM
Ambient Air Temp:	**95.0**	F
Ent. Coil Air Dry Bulb:	**68.0**	F
Ent. Coil Air Wet Bulb:	**63.0**	F
Evap Lvg. Air Dry Bulb:	**52.2**	F
Evap Lvg. Air Wet Bulb:	**51.9**	F
Lvg. Air Dry Bulb (Max. Reheat):	**69.6**	F
Lvg. Air Wet Bulb (Max. Reheat):	**57.9**	F
Gross Cooling Capacity:	**52.20**	MBH
Gross Sensible Clg. Cap:	**28.20**	MBH
Compressor Power:	**5.25**	kW

Heating Performance

Heating Airflow:	**1920**	CFM
Input Capacity:	**200**	MBH
Output Capacity:	**128**	MBH
Heating Ent. Air Temp:	**5.0**	F
Heating Lvg. Air Temp:	**85.0**	F

Supply Fan Performance:

Ext. Static Pressure:	**0.75**	in wg
Total Static Pressure:	**1.90**	in wg
Supply Fan Type:	**Backward Inclined Supply Fan**	
Supply Fan Size:	**350 mm Backward Inclined Supply Fan, Direct Drive**	
Supply Fan Motor Type:	**ECM Supply Fan Motor**	
Supply Fan Motor Size:	**ECM Supply Fan Motor**	
Supply Fan RPM:	**2056**	
Supply Fan BHP:	**0.90**	BHP

Exhaust Fan Performance:

Exhaust Airflow:	**2000**	CFM
Ext. Static:	**0.50**	in wg
Total Static Pressure:	**0.62**	in wg
Power Exhaust Fan Type:	**Backward Inclined Exhaust Fan**	
Power Exhaust Fan Size:	**450 mm Low Backward Inclined Exhaust Fan, Direct Drive**	
Power Exhaust Motor Type:	**ECM Exhaust Fan Motor**	
Power Exhaust Motor Size:	**ECM Exhaust Fan Motor**	
Fan RPM:	**985**	
Fan BHP:	**0.47**	BHP

Electrical Data

Performance Summary For RTU-1

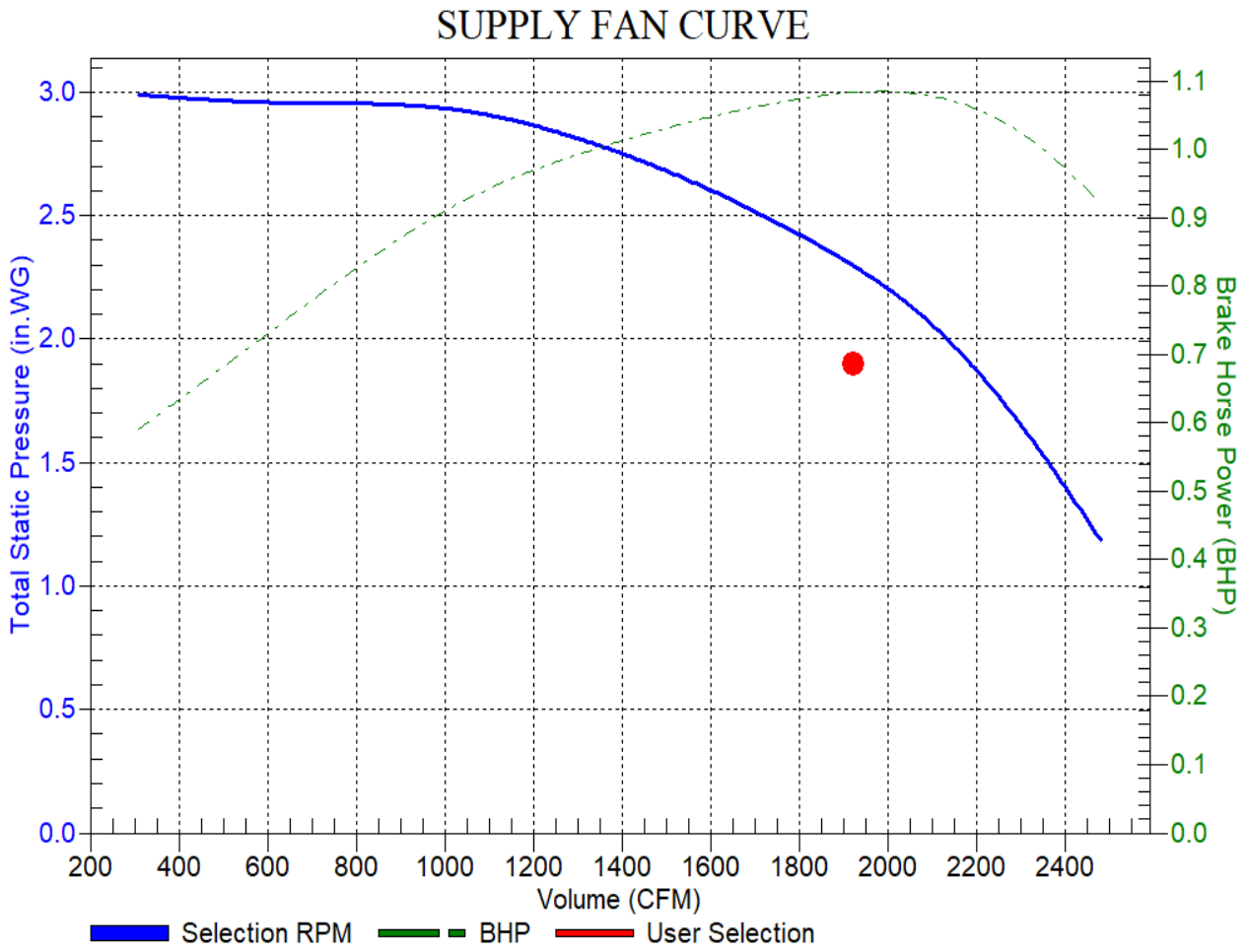
Project: IHS Mescalero Service Unit
Prepared By:

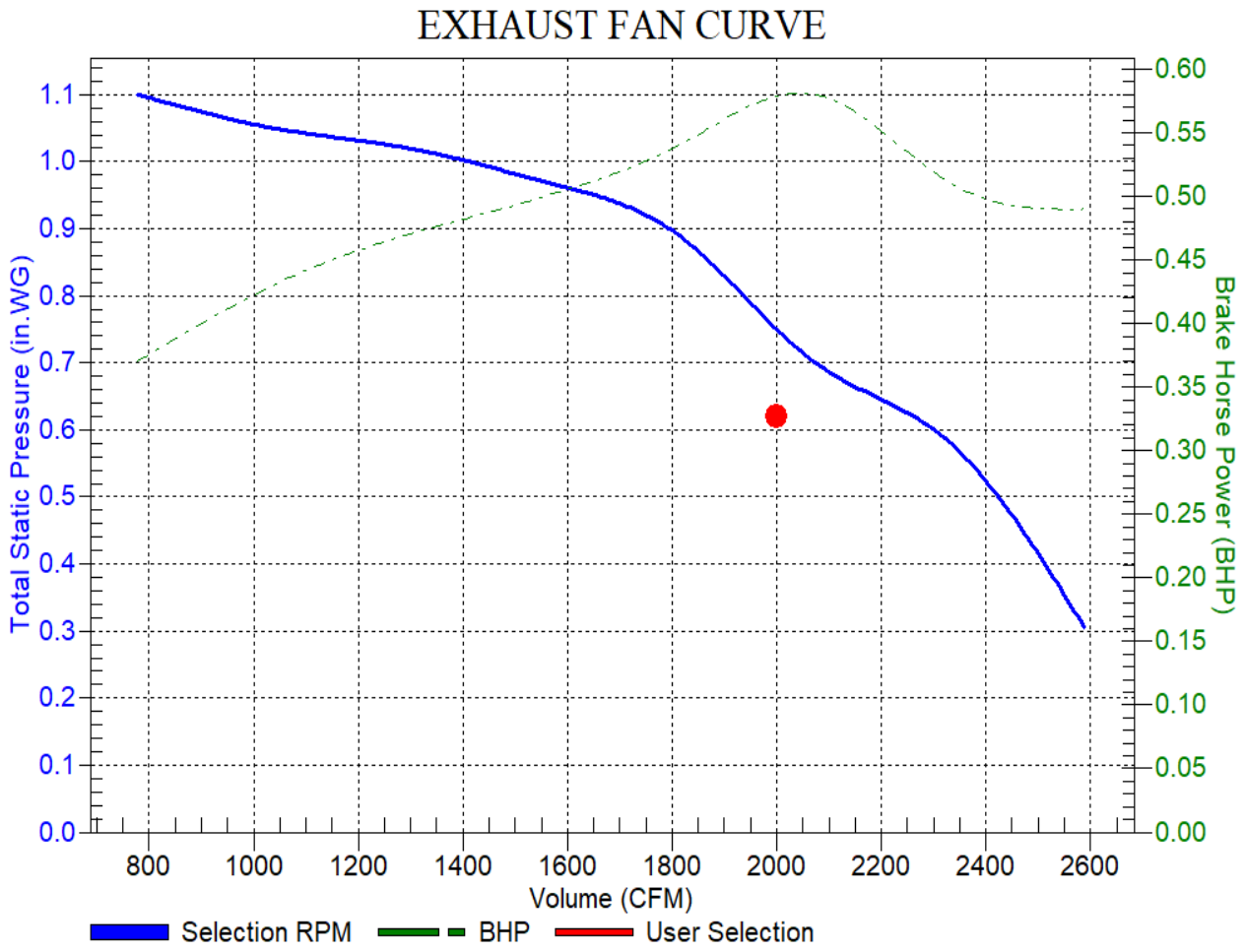
09/10/2021
11:51AM

Unit Voltage:	**460-3-60**
Unit Amps - FLA:	**18**
Min. Circuit Ampacity - MCA:	**20**
Maximum Fuse Size - MFS:	**25**
Compressor RLA (ea.):	**8.1**
Compressor LRA (ea.):	**62**
Supply Fan FLA:	**4.6**
Power Exhaust FLA:	**3.7**
Condenser FLA (ea.):	**1.6**

Sound Power Data

	Cabinet	Supply	Exhaust
63 Hz	66.5	47.0	NA
125 Hz	84.1	54.0	NA
250 Hz	82.0	70.0	NA
500 Hz	86.9	73.0	NA
1000 Hz	85.3	78.0	NA
2000 Hz	80.5	77.0	NA
4000 Hz	75.0	71.0	NA
8000 Hz	69.8	67.0	NA




EXHAUST FAN CURVE
Total Static Pressure (in.WG)
Brake Horse Power (BHP)
Volume (CFM)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
Selection RPM
BHP
User Selection

RTU-2, 3

Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report

Unit Report For RTU-2, 3

Project: IHS Mescalero Service Unit
Prepared By:

09/10/2021
11:51AM

Unit Parameters

Unit Model: **48GCRM04A2M6-2B3C0**
Unit Size: **04 (3 Tons)**
Volts-Phase-Hertz: **460-3-60**
Heating Type: **Gas**
Duct Cfg: **Vertical Supply / Vertical Return**
Stainless Steel, Medium Heat
Two Stage Cooling Models

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length: **6' 2.375"**
Unit Width: **3' 10.625"**
Unit Height: **2' 9.375"**
*** Total Operating Weight: **585** lb

*** Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Lines and Filters

Gas Line Size: **1/2**
Condensate Drain Line Size: **3/4**
Return Air Filter Type: **Throwaway**
Return Air Filter Quantity: **2**
Return Air Filter Size: **16 x 25 x 2**

Unit Configuration

Direct Drive - EcoBlue - Medium Static
Al/Cu - Al/Cu - Louvered Hail Guards
RTU Open Controller
Temperature Economizer w/ Barometric Relief
Hinged Access Panels
Non-Fused Disconnect
Standard Packaging

Warranty Information

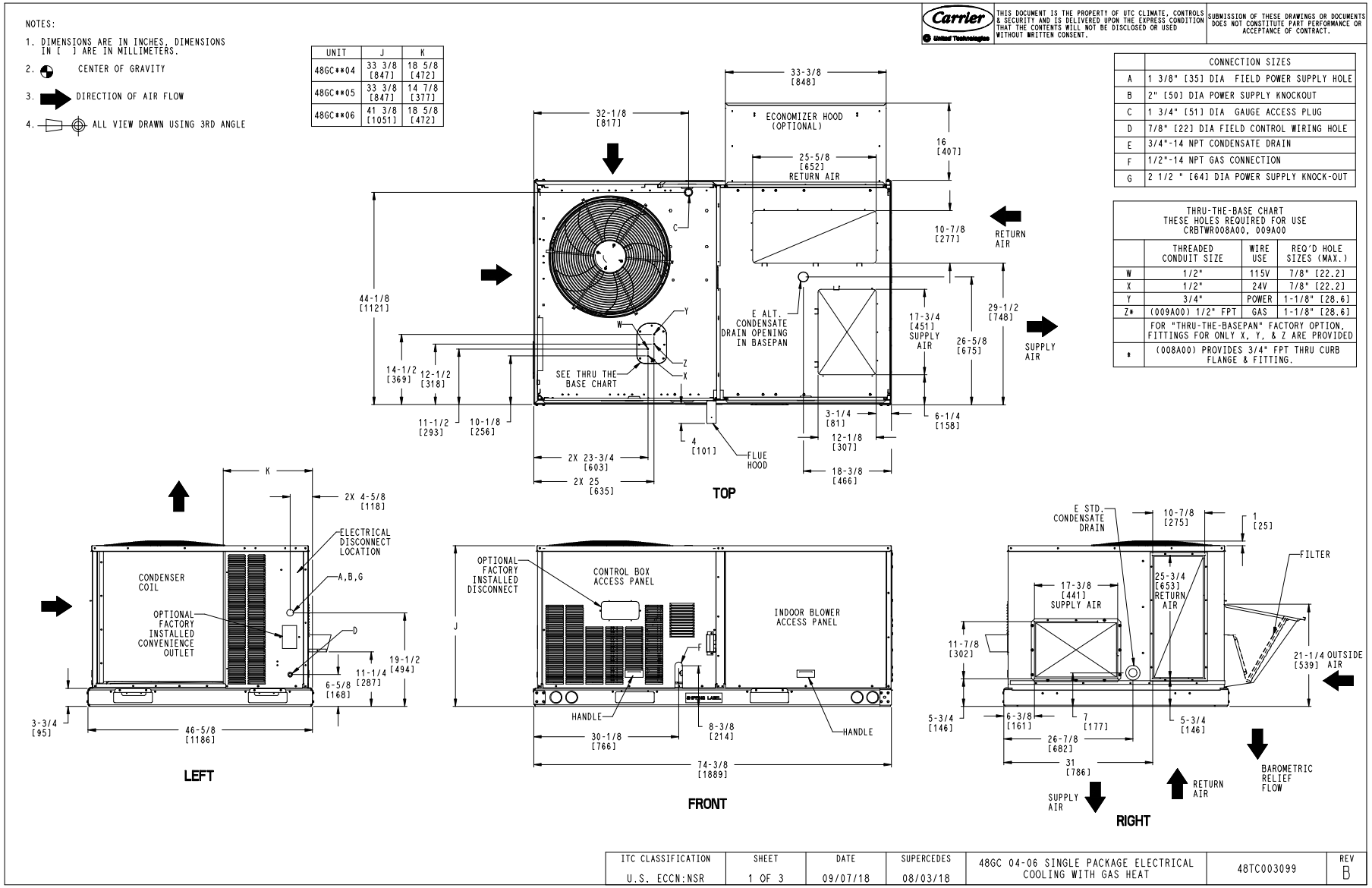
1-Year parts(std.)
5-Year compressor parts(std.)
15-Year heat exchanger - Stainless Steel(std.)

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
48GCRM04A2M6-2B3C0	Rooftop Unit	1
Accessories		
CRPHASE3001A02	Phase Monitor Control	1


NOTES:
1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4. ALL VIEW DRAWN USING 3RD ANGLE
Carrier
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UNIT | J | K
48GC**04 | 33 3/8 [847] | 18 5/8 [472]
48GC**05 | 33 3/8 [847] | 14 7/8 [377]
48GC**06 | 41 3/8 [1051] | 18 5/8 [472]
CONNECTION SIZES
A 1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B 2" [50] DIA POWER SUPPLY KNOCKOUT
C 1 3/4" [51] DIA GAUGE ACCESS PLUG
D 7/8" [22] DIA FIELD CONTROL WIRING HOLE
E 3/4"-14 NPT CONDENSATE DRAIN
F 1/2"-14 NPT GAS CONNECTION
G 2 1/2 " [64] DIA POWER SUPPLY KNOCK-OUT
THRU-THE-BASE CHART
THESE HOLES REQUIRED FOR USE CRBTWR008A00, 009A00
THREADED CONDUIT SIZE | WIRE USE | REQ'D HOLE SIZES (MAX.)
W 1/2" | 115V | 7/8" [22.2]
X 1/2" | 24V | 7/8" [22.2]
Y 3/4" | POWER | 1-1/8" [28.6]
Z* (009A00) 1/2" FPT | GAS | 1-1/8" [28.6]
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED
* (008A00) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING.
33-3/8 [848]
32-1/8 [817]
ECONOMIZER HOOD (OPTIONAL)
25-5/8 [652] RETURN AIR
16 [407]
10-7/8 [277]
RETURN AIR
SUPPLY AIR
44-1/8 [1121]
E ALT. CONDENSATE DRAIN OPENING IN BASEPAN
17-3/4 [451] SUPPLY AIR
29-1/2 [748]
26-5/8 [675]
14-1/2 [369]
12-1/2 [318]
SEE THRU THE BASE CHART
11-1/2 [293]
10-1/8 [256]
3-1/4 [81]
6-1/4 [158]
12-1/8 [307]
4 [101]
FLUE HOOD
2X 23-3/4 [603]
2X 25 [635]
18-3/8 [466]
TOP
K
2X 4-5/8 [118]
ELECTRICAL DISCONNECT LOCATION
A,B,G
CONDENSER COIL
OPTIONAL FACTORY INSTALLED CONVENIENCE OUTLET
D
19-1/2 [494]
11-1/4 [287]
6-5/8 [168]
3-3/4 [95]
46-5/8 [1186]
LEFT
OPTIONAL FACTORY INSTALLED DISCONNECT
CONTROL BOX ACCESS PANEL
INDOOR BLOWER ACCESS PANEL
J
F
HANDLE
8-3/8 [214]
HANDLE
30-1/8 [766]
74-3/8 [1889]
FRONT
E STD. CONDENSATE DRAIN
10-7/8 [275]
1 [25]
FILTER
17-3/8 [441] SUPPLY AIR
25-3/4 [653] RETURN AIR
11-7/8 [302]
21-1/4 OUTSIDE [539] AIR
5-3/4 [146]
6-3/8 [161]
7 [177]
5-3/4 [146]
26-7/8 [682]
31 [786]
RETURN AIR
BAROMETRIC RELIEF FLOW
SUPPLY AIR
RIGHT
ITC CLASSIFICATION: U.S. ECCN:NSR
SHEET: 1 OF 3
DATE: 09/07/18
SUPERCEDES: 08/03/18
48GC 04-06 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT
48TC003099
REV: B

UNIT	STD. UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48GC**04	513	233	131	59	127	58	125	57	130	59	36 1/2 [927]	23 1/4 [591]	18 1/4 [464]
48GC**05	555	252	142	64	137	62	135	61	141	64	36 1/2 [927]	23 1/4 [591]	18 [457]
48GC**06	600	272	161	73	151	68	140	64	149	68	36 [914]	22 1/2 [572]	19 3/8 [492]

*- STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTINS AND ACCESSORIES REFER TO THE PRODUCT DATA CATALOG.

Carrier
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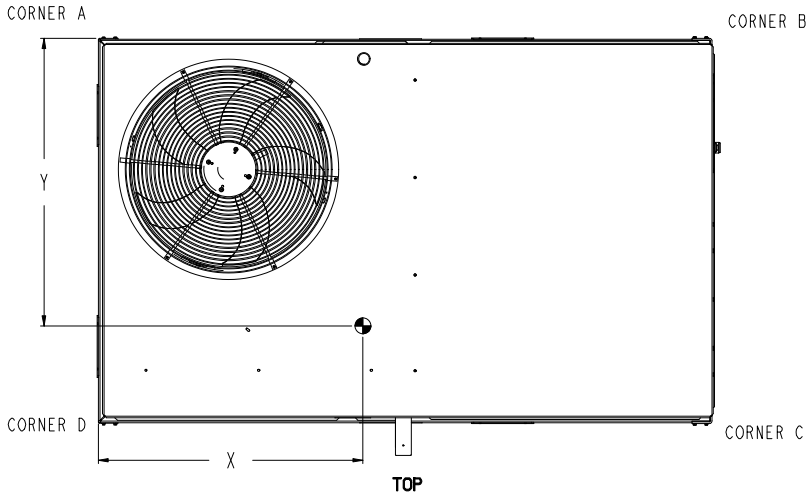
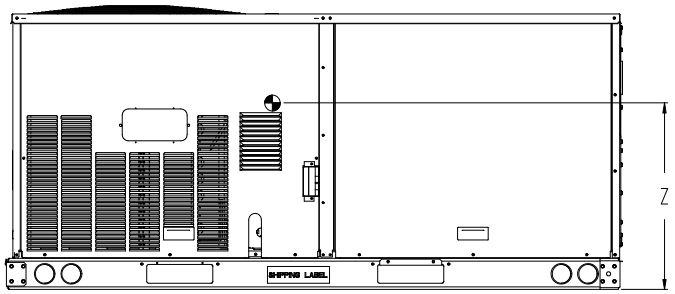


TOP



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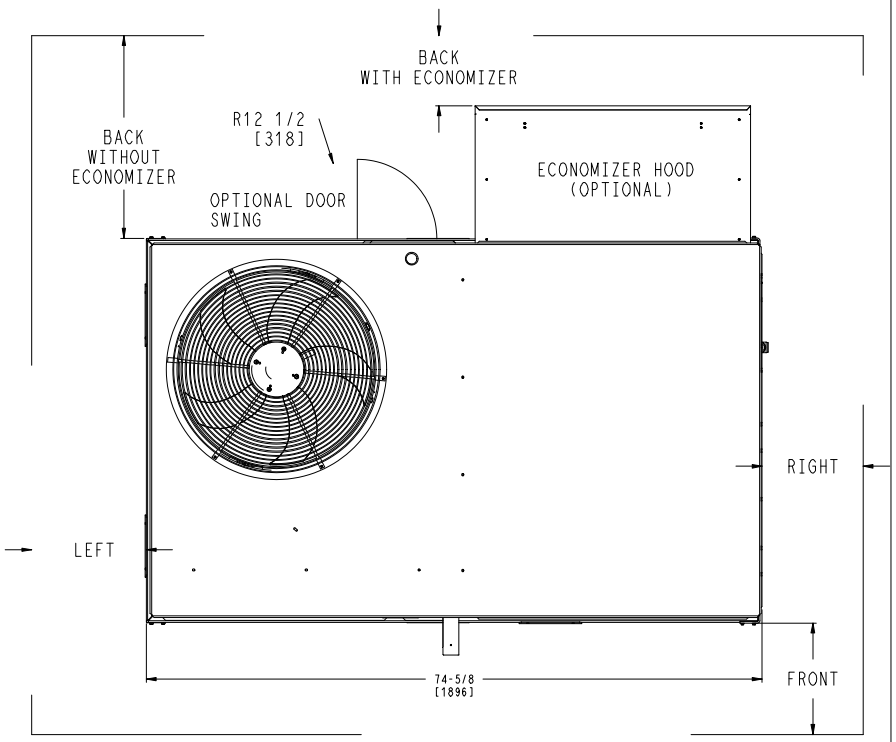

NOTES:

1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

	CLEARANCE		
	SERVICE WITH:	SERVICE WITH:	OPERATING
SURFACE	CONDUCTIVE BARRIER	NONCONDUCTIVE BARRIER	CLEARANCE
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	2 OF 3	09/07/18	08/03/18	48GC 04-06 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC003099	B

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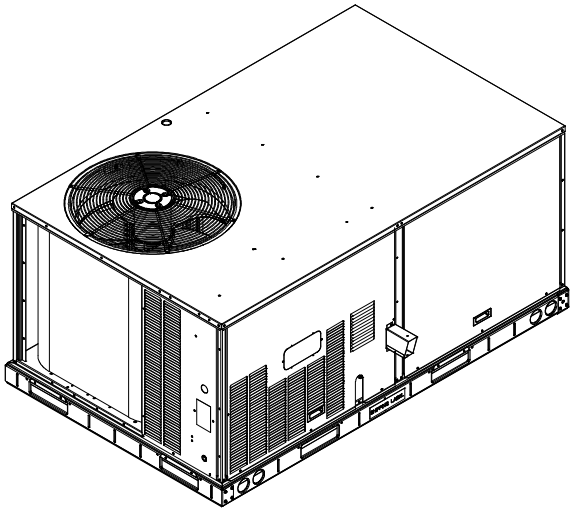
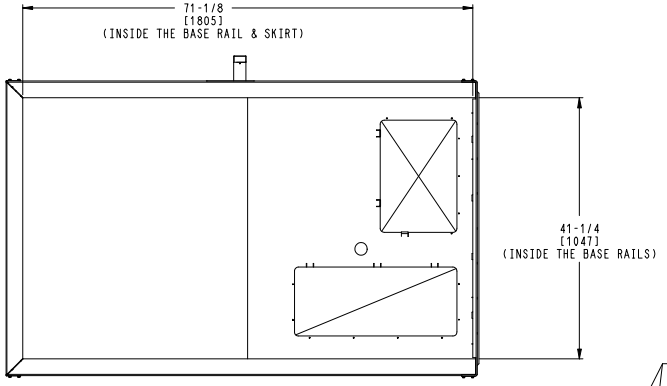
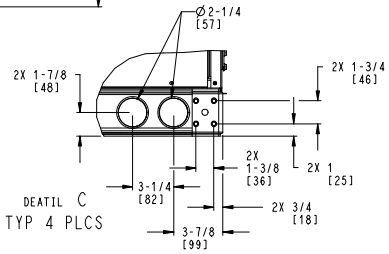
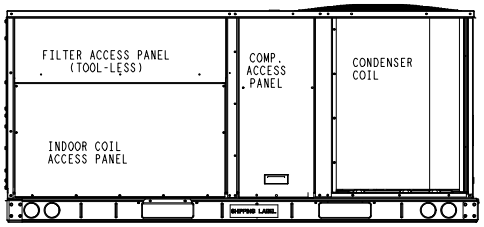




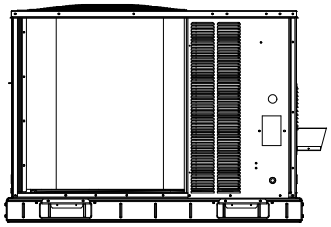
INSIDE BASERAIL DIMENSIONS

BOTTOM





BACK



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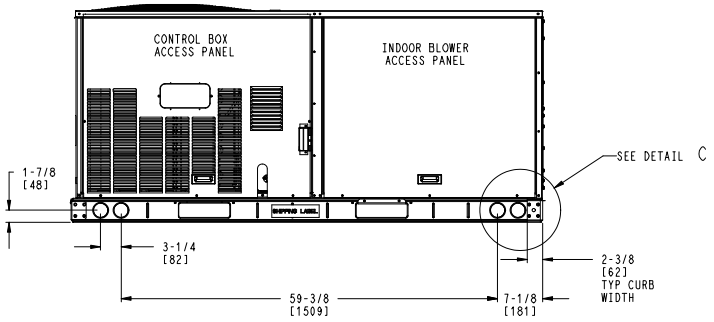


FRONT

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	3 OF 3	09/07/18	08/03/18	48GC 04-06 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC003099	B

Performance Summary For RTU-2, 3

Project: IHS Mescalero Service Unit 09/10/2021
Prepared By: 11:51AM

Part Number:48GCRM04A2M6-2B3C0

ARI SEER:	**16.10**	

Base Unit Dimensions

Unit Length:	**74.4**	in
Unit Width:	**46.6**	in
Unit Height:	**33.4**	in

Operating Weight

Base Unit Weight:	**468**	lb
Stainless Steel, Medium Heat:	**57**	lb
Al/Cu - Al/Cu - Louvered Hail Guards:	**13**	lb
RTU Open Controller:	**2**	lb
Temperature Economizer w/ Barometric Relief:	**35**	lb
Hinged Access Panels:	**5**	lb
Non-Fused Disconnect:	**5**	lb
Total Operating Weight:	**585**	lb

Unit

Unit Voltage-Phase-Hertz:	**460-3-60**	
Air Discharge:	**Vertical**	
Fan Drive Type:	**Direct**	
Actual Airflow:	**1450**	CFM
Site Altitude:	**6700**	ft

Cooling Performance

Condenser Entering Air DB:	**94.0**	F
Evaporator Entering Air DB:	**82.0**	F
Evaporator Entering Air WB:	**55.0**	F
Entering Air Enthalpy:	**25.89**	BTU/lb
Evaporator Leaving Air DB:	**56.4**	F
Evaporator Leaving Air WB:	**45.3**	F
Evaporator Leaving Air Enthalpy:	**19.75**	BTU/lb
Gross Cooling Capacity:	**31.26**	MBH
Gross Sensible Capacity:	**31.26**	MBH
Compressor Power Input:	**2.42**	kW
Coil Bypass Factor:	**0.525**	

Heating Performance

Heating Airflow:	**1450**	CFM
Entering Air Temp:	**50.0**	F
Leaving Air Temp:	**101.8**	F
Gas Heating Input Capacity:	**59.0 / 79.2****	MBH
Gas Heating Output Capacity:	**46.8 / 63.4****	MBH
Sea Level Gas Heating Input Capacity:	**82.0 / 110.0**	MBH
Temperature Rise:	**51.8**	F
Thermal Efficiency (%):	**80.0**	
NOTE:	**** - Input/Output Capacities are at Site Altitude**	

Supply Fan

External Static Pressure:	**0.75**	in wg
Options / Accessories Static Pressure		
Economizer:	**0.06**	in wg
Total Application Static (ESP + Unit Opts/Acc.):	**0.81**	in wg
Fan RPM:	**2123**	
Fan Power:	**0.54**	BHP
NOTE:	**Selected IFM RPM Range: 1129 - 2190**	
Supply Fan Motor Maximum Continuous BHP:	**0.7**	HP
Supply Fan Motor Application HP:	**0.7**	HP

NOTE:**Motors with application horse power are specifically designed and tested for Carrier rooftop units therefore do not have a standard HP rating.**

Electrical Data

Voltage Range:	**414 - 506**
Compressor #1 RLA:	**5.7**
Compressor #1 LRA:	**38**
Indoor Fan Motor Type:	**MED**
Indoor Fan Motor FLA:	**1.2**
Combustion Fan Motor FLA (ea):	**0.25**
Power Supply MCA:	**10**
Power Supply MOCP (Fuse or HACR):	**15**
Disconnect Size FLA:	**9**
Disconnect Size LRA:	**42**
Electrical Convenience Outlet:	**None**
Outdoor Fan [Qty / FLA (ea)]:	**1 / 0.8**

Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	92.0	86.7	85.6
125 Hz	83.0	79.7	84.7
250 Hz	91.8	70.6	80.5
500 Hz	70.3	63.8	76.0
1000 Hz	68.6	77.5	72.4
2000 Hz	71.1	65.2	68.0
4000 Hz	60.2	54.2	62.8
8000 Hz	58.9	50.7	59.3
A-Weighted	84.0	78.3	79.0

RTU-4

Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report

Unit Report For RTU-4

Project: IHS Mescalero Service Unit
Prepared By:

09/10/2021
11:51AM

Unit Parameters

Unit Model: **48GCRM05A3M6-2B3C0**
Unit Size: **05 (4 Tons)**
Volts-Phase-Hertz: **460-3-60**
Heating Type: **Gas**
Duct Cfg: **Vertical Supply / Vertical Return**
Stainless Steel, Medium Heat
Two Stage Cooling Models

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length: **6' 2.375"**
Unit Width: **3' 10.625"**
Unit Height: **2' 9.375"**
*** Total Operating Weight: **638** lb

*** Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Lines and Filters

Gas Line Size: **1/2**
Condensate Drain Line Size: **3/4**
Return Air Filter Type: **Throwaway**
Return Air Filter Quantity: **2**
Return Air Filter Size: **16 x 25 x 2**

Unit Configuration

Direct Drive - EcoBlue - High Static
Al/Cu - Al/Cu - Louvered Hail Guards
RTU Open Controller
Temperature Economizer w/ Barometric Relief
Hinged Access Panels
Non-Fused Disconnect
Standard Packaging

Warranty Information

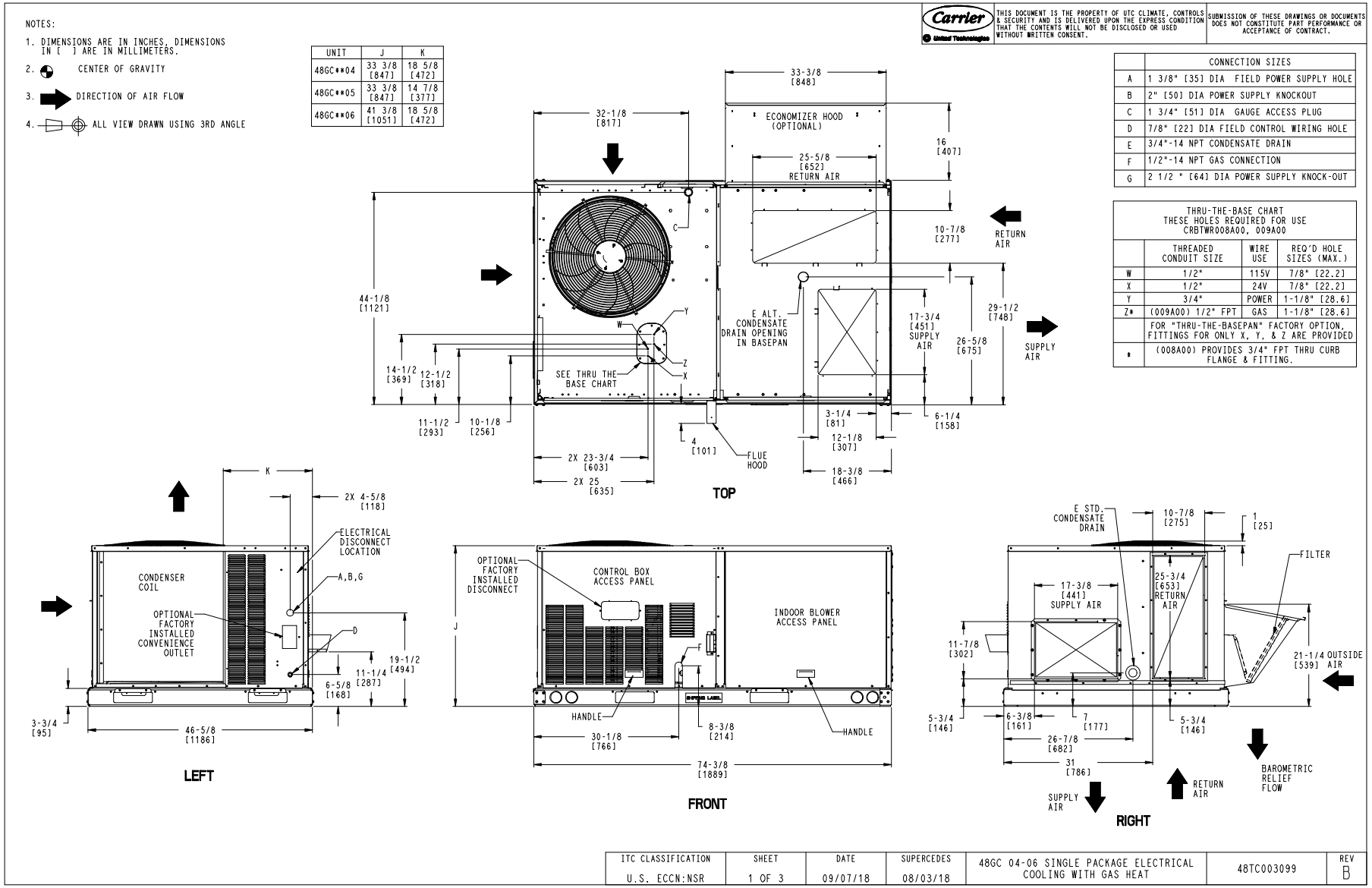
1-Year parts(std.)
5-Year compressor parts(std.)
15-Year heat exchanger - Stainless Steel(std.)

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
48GCRM05A3M6-2B3C0	Rooftop Unit	1
Accessories		
CRPHASE3001A02	Phase Monitor Control	1


NOTES:
1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4. ALL VIEW DRAWN USING 3RD ANGLE
Carrier
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UNIT | J | K
48GC**04 | 33 3/8 [847] | 18 5/8 [472]
48GC**05 | 33 3/8 [847] | 14 7/8 [377]
48GC**06 | 41 3/8 [1051] | 18 5/8 [472]
CONNECTION SIZES
A | 1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B | 2" [50] DIA POWER SUPPLY KNOCKOUT
C | 1 3/4" [51] DIA GAUGE ACCESS PLUG
D | 7/8" [22] DIA FIELD CONTROL WIRING HOLE
E | 3/4"-14 NPT CONDENSATE DRAIN
F | 1/2"-14 NPT GAS CONNECTION
G | 2 1/2 " [64] DIA POWER SUPPLY KNOCK-OUT
THRU-THE-BASE CHART
THESE HOLES REQUIRED FOR USE CRBTWR008A00, 009A00
THREADED CONDUIT SIZE | WIRE USE | REQ'D HOLE SIZES (MAX.)
W | 1/2" | 115V | 7/8" [22.2]
X | 1/2" | 24V | 7/8" [22.2]
Y | 3/4" | POWER | 1-1/8" [28.6]
Z* | (009A00) 1/2" FPT | GAS | 1-1/8" [28.6]
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED
* (008A00) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING.
33-3/8 [848]
32-1/8 [817]
ECONOMIZER HOOD (OPTIONAL)
25-5/8 [652] RETURN AIR
16 [407]
10-7/8 [277]
RETURN AIR
SUPPLY AIR
44-1/8 [1121]
E ALT. CONDENSATE DRAIN OPENING IN BASEPAN
17-3/4 [451] SUPPLY AIR
29-1/2 [748]
26-5/8 [675]
SEE THRU THE BASE CHART
14-1/2 [369]
12-1/2 [318]
11-1/2 [293]
10-1/8 [256]
3-1/4 [81]
6-1/4 [158]
12-1/8 [307]
4 [101]
FLUE HOOD
2X 23-3/4 [603]
2X 25 [635]
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TOP
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2X 4-5/8 [118]
ELECTRICAL DISCONNECT LOCATION
A,B,G
CONDENSER COIL
OPTIONAL FACTORY INSTALLED CONVENIENCE OUTLET
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LEFT
OPTIONAL FACTORY INSTALLED DISCONNECT
CONTROL BOX ACCESS PANEL
INDOOR BLOWER ACCESS PANEL
J
F
HANDLE
30-1/8 [766]
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HANDLE
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FRONT
E STD. CONDENSATE DRAIN
10-7/8 [275]
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17-3/8 [441] SUPPLY AIR
25-3/4 [653] RETURN AIR
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21-1/4 OUTSIDE [539] AIR
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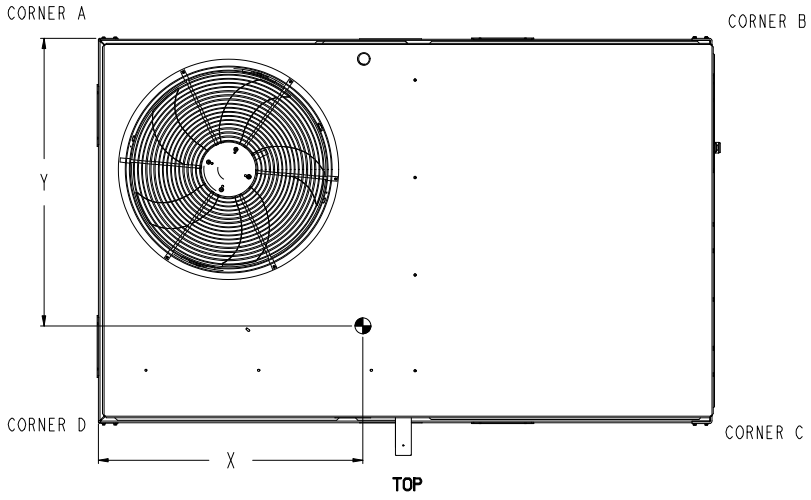
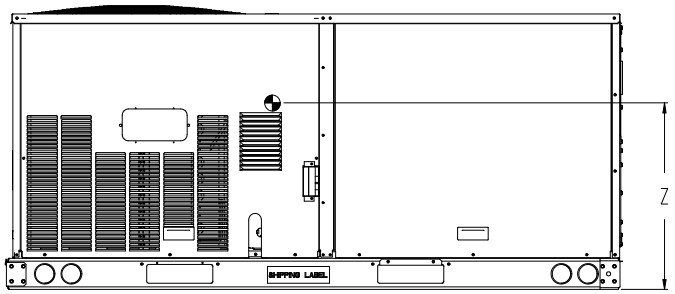
RETURN AIR
BAROMETRIC RELIEF FLOW
SUPPLY AIR
RIGHT
ITC CLASSIFICATION: U.S. ECCN:NSR
SHEET: 1 OF 3
DATE: 09/07/18
SUPERCEDES: 08/03/18
48GC 04-06 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT
48TC003099
REV: B

UNIT	STD. UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48GC**04	513	233	131	59	127	58	125	57	130	59	36 1/2 [927]	23 1/4 [591]	18 1/4 [464]
48GC**05	555	252	142	64	137	62	135	61	141	64	36 1/2 [927]	23 1/4 [591]	18 [457]
48GC**06	600	272	161	73	151	68	140	64	149	68	36 [914]	22 1/2 [572]	19 3/8 [492]

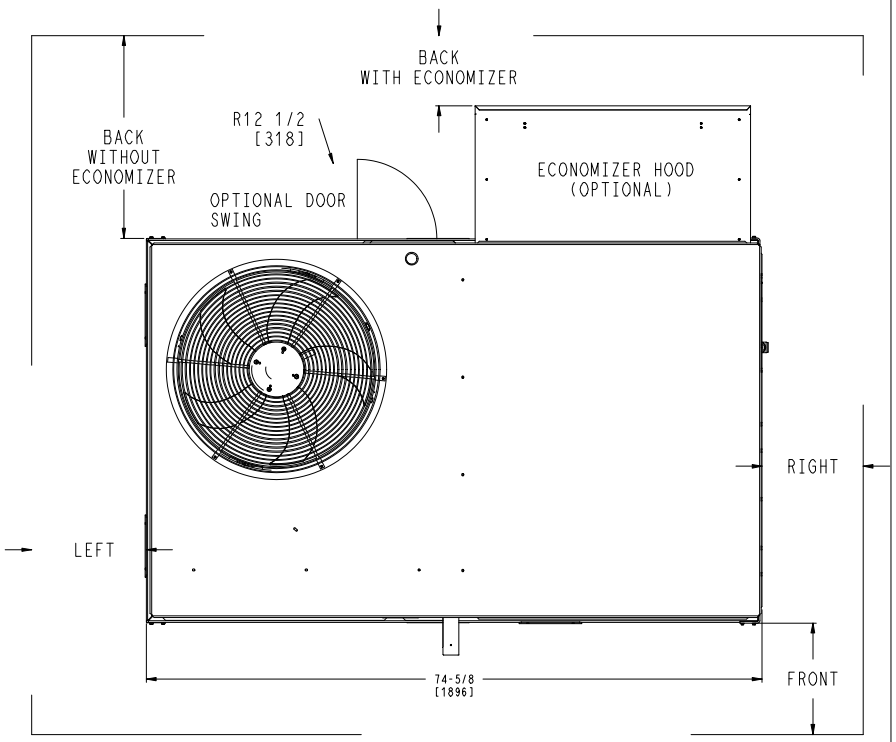
*- STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTINS AND ACCESSORIES REFER TO THE PRODUCT DATA CATALOG.



TOP



FRONT



NOTES:

1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

	CLEARANCE		
	SERVICE WITH:	SERVICE WITH:	OPERATING
SURFACE	CONDUCTIVE BARRIER	NONCONDUCTIVE BARRIER	CLEARANCE
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	2 OF 3	09/07/18	08/03/18	48GC 04-06 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC003099	B

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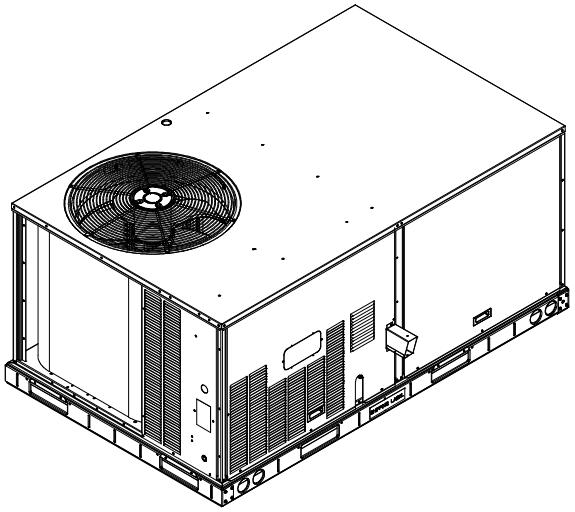
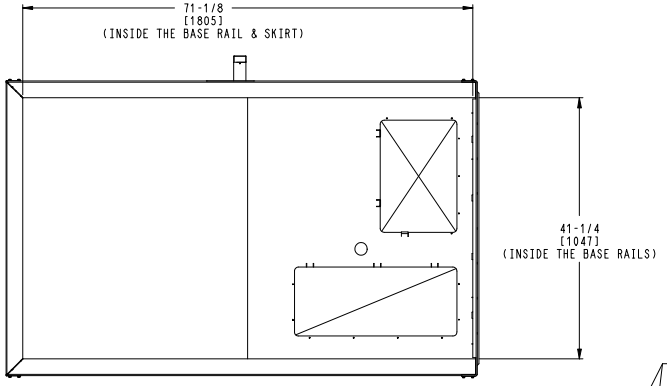
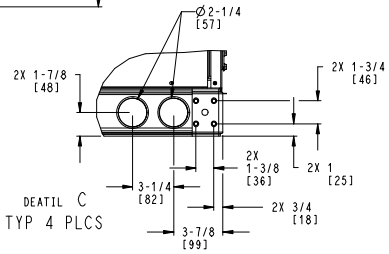
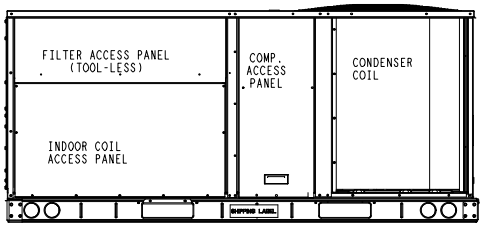




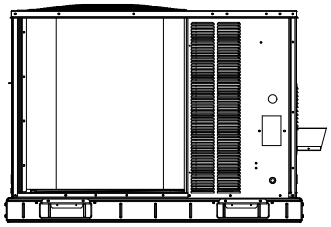
INSIDE BASERAIL DIMENSIONS

BOTTOM

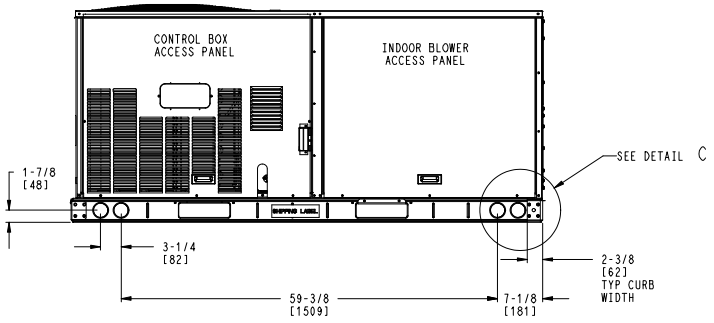




BACK



LEFT



FRONT

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	3 OF 3	09/07/18	08/03/18	48GC 04-06 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC003099	B

Performance Summary For RTU-4

Project: IHS Mescalero Service Unit 09/10/2021
Prepared By: 11:51AM

Part Number:48GCRM05A3M6-2B3C0

ARI SEER:	**16.10**	

Base Unit Dimensions

Unit Length:	**74.4**	in
Unit Width:	**46.6**	in
Unit Height:	**33.4**	in

Operating Weight

Base Unit Weight:	**510**	lb
Stainless Steel, Medium Heat:	**63**	lb
Direct Drive - EcoBlue - High Static:	**5**	lb
Al/Cu - Al/Cu - Louvered Hail Guards:	**13**	lb
RTU Open Controller:	**2**	lb
Temperature Economizer w/ Barometric Relief:	**35**	lb
Hinged Access Panels:	**5**	lb
Non-Fused Disconnect:	**5**	lb
Total Operating Weight:	**638**	lb

Unit

Unit Voltage-Phase-Hertz:	**460-3-60**	
Air Discharge:	**Vertical**	
Fan Drive Type:	**Direct**	
Actual Airflow:	**1650**	CFM
Site Altitude:	**6700**	ft

Cooling Performance

Condenser Entering Air DB:	**94.0**	F
Evaporator Entering Air DB:	**76.0**	F
Evaporator Entering Air WB:	**61.0**	F
Entering Air Enthalpy:	**30.57**	BTU/lb
Evaporator Leaving Air DB:	**51.5**	F
Evaporator Leaving Air WB:	**51.3**	F
Evaporator Leaving Air Enthalpy:	**23.48**	BTU/lb
Gross Cooling Capacity:	**41.12**	MBH
Gross Sensible Capacity:	**34.11**	MBH
Compressor Power Input:	**3.20**	kW
Coil Bypass Factor:	**0.179**	

Heating Performance

Heating Airflow:	**1650**	CFM
Entering Air Temp:	**58.0**	F
Leaving Air Temp:	**103.6**	F
Gas Heating Input Capacity:	**59.0 / 79.2****	MBH
Gas Heating Output Capacity:	**46.8 / 63.4****	MBH
Sea Level Gas Heating Input Capacity:	**82.0 / 110.0**	MBH
Temperature Rise:	**45.6**	F
Thermal Efficiency (%):	**80.0**	
NOTE:	**** - Input/Output Capacities are at Site Altitude**	

Supply Fan

External Static Pressure:	**0.75**	in wg
Options / Accessories Static Pressure		
Economizer:	**0.08**	in wg
Total Application Static (ESP + Unit Opts/Acc.):	**0.83**	in wg
Fan RPM:	**2179**	
Fan Power:	**0.87**	BHP
NOTE:	**Selected IFM RPM Range: 1262 - 2660**	
Supply Fan Motor Maximum Continuous BHP:	**2.0**	HP

Supply Fan Motor Application HP: **2.0** HP

NOTE:**Motors with application horse power are specifically designed and tested for Carrier rooftop units therefore do not have a standard HP rating.**

Electrical Data

Voltage Range:	**414 - 506**
Compressor #1 RLA:	**6.4**
Compressor #1 LRA:	**41**
Indoor Fan Motor Type:	**HIGH**
Indoor Fan Motor FLA:	**2.4**
Combustion Fan Motor FLA (ea):	**0.25**
Power Supply MCA:	**12**
Power Supply MOCP (Fuse or HACR):	**15**
Disconnect Size FLA:	**11**
Disconnect Size LRA:	**46**
Electrical Convenience Outlet:	**None**
Outdoor Fan [Qty / FLA (ea)]:	**1 / 0.8**

Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	95.0	71.7	85.6
125 Hz	85.5	81.2	84.7
250 Hz	79.5	73.6	80.5
500 Hz	74.1	66.2	76.0
1000 Hz	70.4	68.4	72.4
2000 Hz	77.5	68.0	68.0
4000 Hz	63.9	53.1	62.8
8000 Hz	60.7	53.2	59.3
A-Weighted	81.1	73.8	79.0

RTU-5

Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report

Unit Report For RTU-5

Project: IHS Mescalero Service Unit
Prepared By:

09/10/2021
11:51AM

Unit Parameters

Unit Model: **48GCRM04A2M6-2B3C0**
Unit Size: **04 (3 Tons)**
Volts-Phase-Hertz: **460-3-60**
Heating Type: **Gas**
Duct Cfg: **Vertical Supply / Vertical Return**
Stainless Steel, Medium Heat
Two Stage Cooling Models

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length: **6' 2.375"**
Unit Width: **3' 10.625"**
Unit Height: **2' 9.375"**
*** Total Operating Weight: **585** lb

*** Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Lines and Filters

Gas Line Size: **1/2**
Condensate Drain Line Size: **3/4**
Return Air Filter Type: **Throwaway**
Return Air Filter Quantity: **2**
Return Air Filter Size: **16 x 25 x 2**

Unit Configuration

Direct Drive - EcoBlue - Medium Static
Al/Cu - Al/Cu - Louvered Hail Guards
RTU Open Controller
Temperature Economizer w/ Barometric Relief
Hinged Access Panels
Non-Fused Disconnect
Standard Packaging

Warranty Information

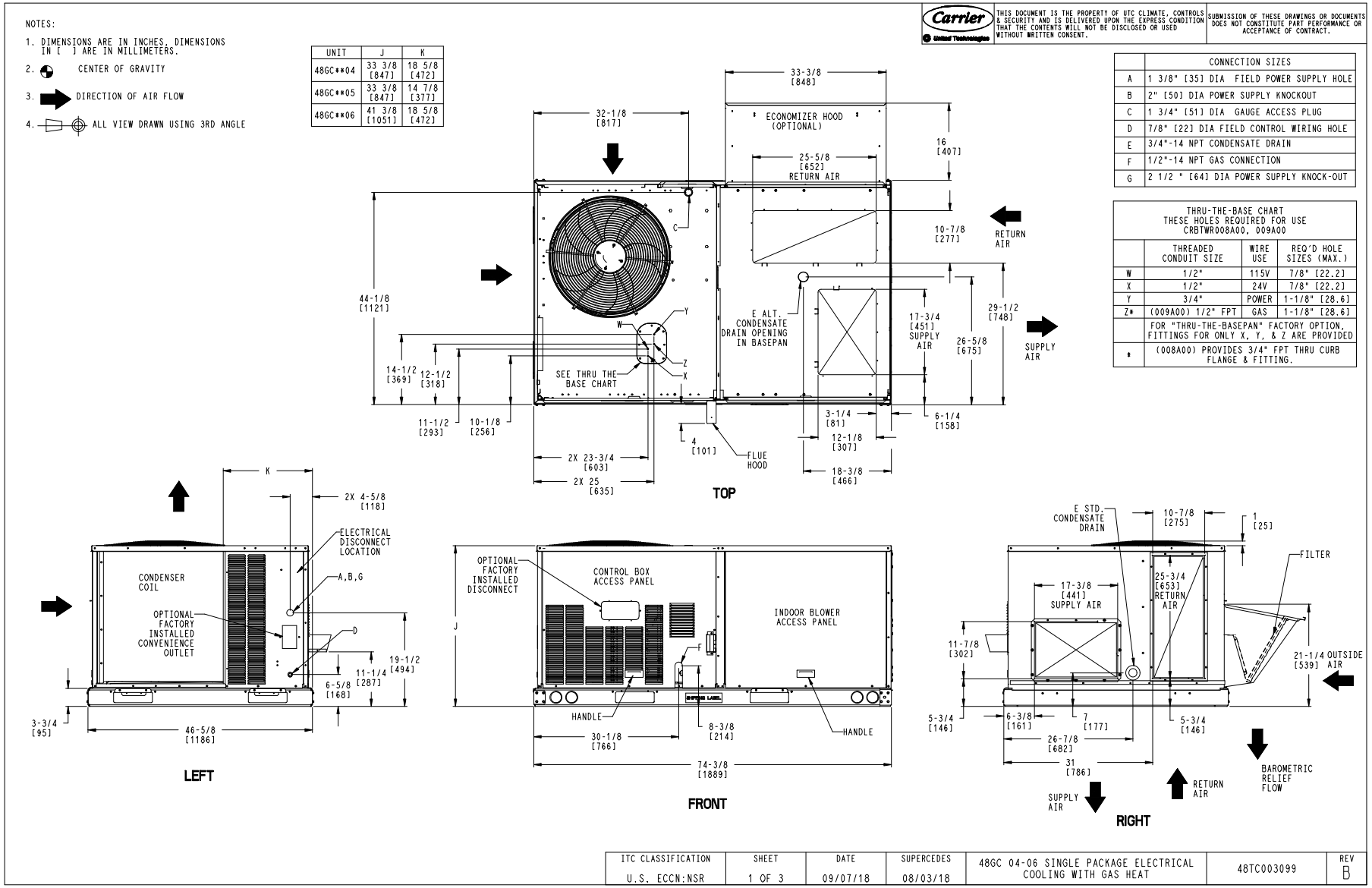
1-Year parts(std.)
5-Year compressor parts(std.)
15-Year heat exchanger - Stainless Steel(std.)

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
48GCRM04A2M6-2B3C0	Rooftop Unit	1
Accessories		
CRPHASE3001A02	Phase Monitor Control	1


NOTES:
1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4. ALL VIEW DRAWN USING 3RD ANGLE
Carrier
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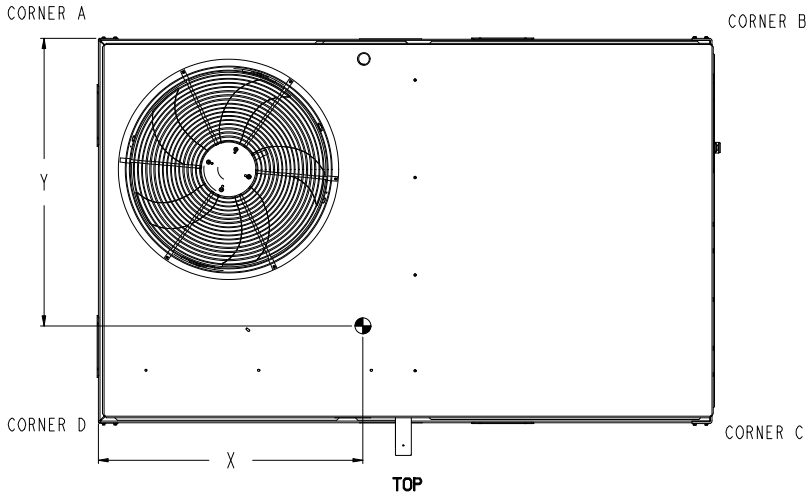
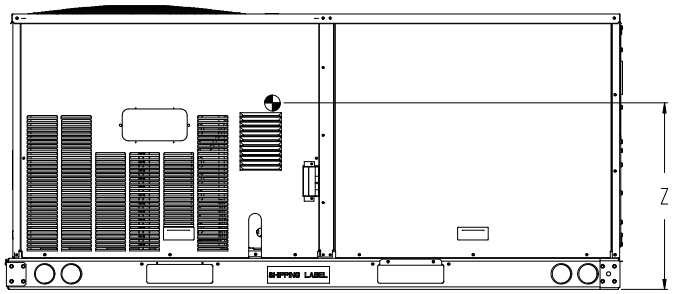
UNIT | J | K
48GC**04 | 33 3/8 [847] | 18 5/8 [472]
48GC**05 | 33 3/8 [847] | 14 7/8 [377]
48GC**06 | 41 3/8 [1051] | 18 5/8 [472]
CONNECTION SIZES
A | 1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B | 2" [50] DIA POWER SUPPLY KNOCKOUT
C | 1 3/4" [51] DIA GAUGE ACCESS PLUG
D | 7/8" [22] DIA FIELD CONTROL WIRING HOLE
E | 3/4"-14 NPT CONDENSATE DRAIN
F | 1/2"-14 NPT GAS CONNECTION
G | 2 1/2 " [64] DIA POWER SUPPLY KNOCK-OUT
THRU-THE-BASE CHART
THESE HOLES REQUIRED FOR USE CRBTWR008A00, 009A00
THREADED CONDUIT SIZE | WIRE USE | REQ'D HOLE SIZES (MAX.)
W | 1/2" | 115V | 7/8" [22.2]
X | 1/2" | 24V | 7/8" [22.2]
Y | 3/4" | POWER | 1-1/8" [28.6]
Z* | (009A00) 1/2" FPT | GAS | 1-1/8" [28.6]
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED
* (008A00) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING.
33-3/8 [848]
32-1/8 [817]
ECONOMIZER HOOD (OPTIONAL)
25-5/8 [652] RETURN AIR
16 [407]
10-7/8 [277]
RETURN AIR
44-1/8 [1121]
E ALT. CONDENSATE DRAIN OPENING IN BASEPAN
17-3/4 [451] SUPPLY AIR
29-1/2 [748]
26-5/8 [675]
SUPPLY AIR
14-1/2 [369]
12-1/2 [318]
SEE THRU THE BASE CHART
11-1/2 [293]
10-1/8 [256]
3-1/4 [81]
6-1/4 [158]
12-1/8 [307]
4 [101]
FLUE HOOD
2X 23-3/4 [603]
2X 25 [635]
18-3/8 [466]
TOP
K
2X 4-5/8 [118]
ELECTRICAL DISCONNECT LOCATION
A,B,G
CONDENSER COIL
OPTIONAL FACTORY INSTALLED CONVENIENCE OUTLET
D
19-1/2 [494]
11-1/4 [287]
6-5/8 [168]
3-3/4 [95]
46-5/8 [1186]
LEFT
OPTIONAL FACTORY INSTALLED DISCONNECT
CONTROL BOX ACCESS PANEL
INDOOR BLOWER ACCESS PANEL
J
F
HANDLE
30-1/8 [766]
8-3/8 [214]
HANDLE
74-3/8 [1889]
FRONT
E STD. CONDENSATE DRAIN
10-7/8 [275]
1 [25]
FILTER
17-3/8 [441] SUPPLY AIR
25-3/4 [653] RETURN AIR
11-7/8 [302]
21-1/4 OUTSIDE [539] AIR
5-3/4 [146]
6-3/8 [161]
7 [177]
5-3/4 [146]
26-7/8 [682]
31 [786]
BAROMETRIC RELIEF FLOW
RETURN AIR
SUPPLY AIR
RIGHT
ITC CLASSIFICATION | SHEET | DATE | SUPERCEDES | 48GC 04-06 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT | 48TC003099 | REV
U.S. ECCN:NSR | 1 OF 3 | 09/07/18 | 08/03/18 | B

UNIT	STD. UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48GC**04	513	233	131	59	127	58	125	57	130	59	36 1/2 [927]	23 1/4 [591]	18 1/4 [464]
48GC**05	555	252	142	64	137	62	135	61	141	64	36 1/2 [927]	23 1/4 [591]	18 [457]
48GC**06	600	272	161	73	151	68	140	64	149	68	36 [914]	22 1/2 [572]	19 3/8 [492]

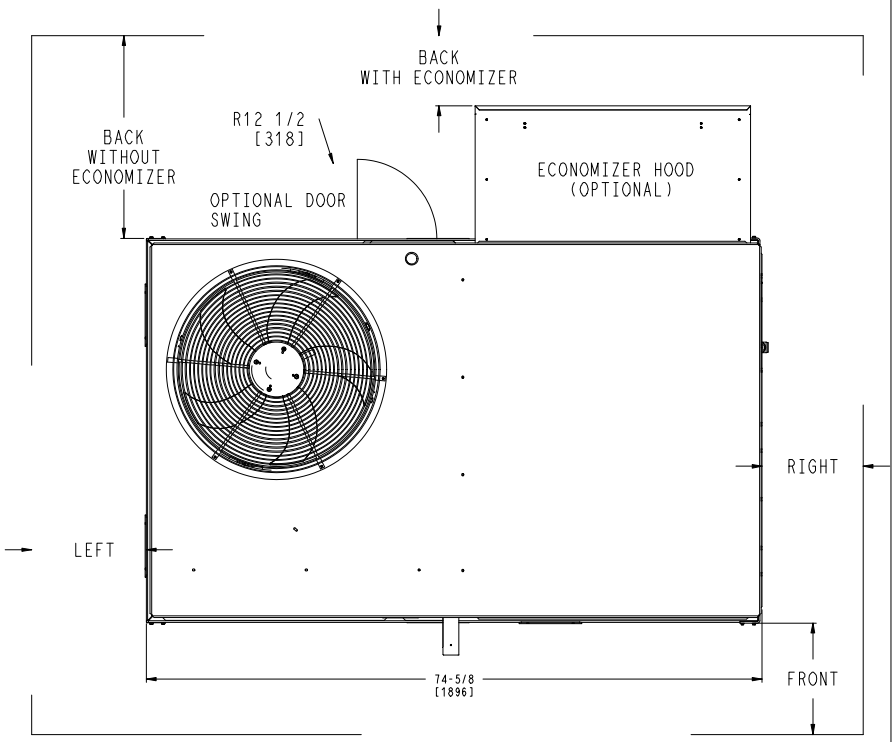
*- STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTINS AND ACCESSORIES REFER TO THE PRODUCT DATA CATALOG.



TOP



FRONT



NOTES:

1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

	CLEARANCE		
	SERVICE WITH:	SERVICE WITH:	OPERATING
SURFACE	CONDUCTIVE BARRIER	NONCONDUCTIVE BARRIER	CLEARANCE
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	2 OF 3	09/07/18	08/03/18	48GC 04-06 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC003099	B

Carrier
United Technologies

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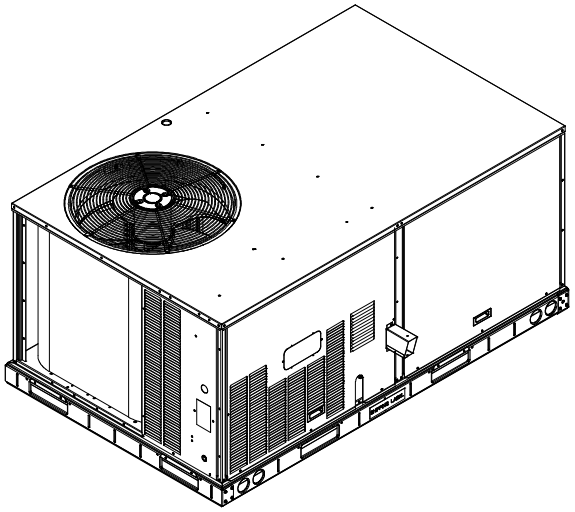
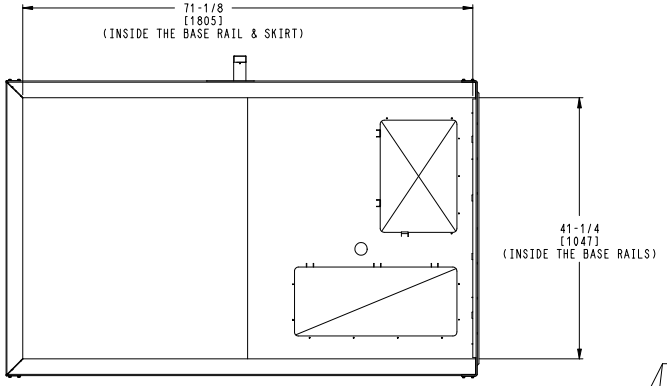
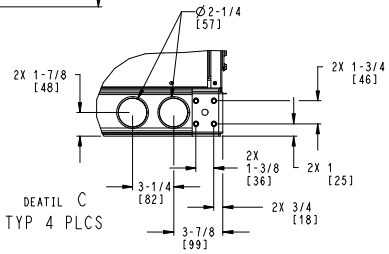
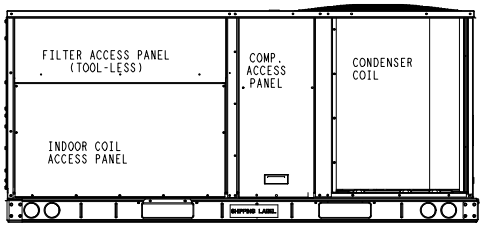




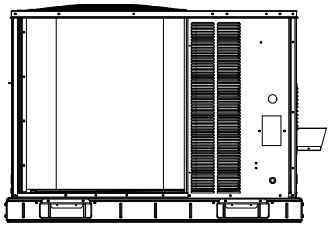
INSIDE BASERAIL DIMENSIONS

BOTTOM

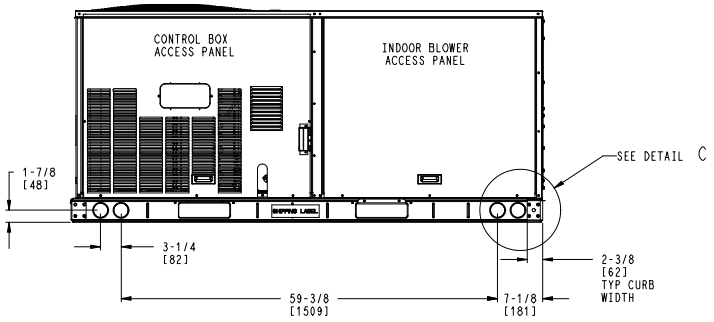




BACK



LEFT



FRONT

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	3 OF 3	09/07/18	08/03/18	48GC 04-06 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC003099	B

Performance Summary For RTU-5

Project: IHS Mescalero Service Unit 09/10/2021
Prepared By: 11:51AM

Part Number:48GCRM04A2M6-2B3C0

ARI SEER:	**16.10**	

Base Unit Dimensions

Unit Length:	**74.4**	in
Unit Width:	**46.6**	in
Unit Height:	**33.4**	in

Operating Weight

Base Unit Weight:	**468**	lb
Stainless Steel, Medium Heat:	**57**	lb
Al/Cu - Al/Cu - Louvered Hail Guards:	**13**	lb
RTU Open Controller:	**2**	lb
Temperature Economizer w/ Barometric Relief:	**35**	lb
Hinged Access Panels:	**5**	lb
Non-Fused Disconnect:	**5**	lb
Total Operating Weight:	**585**	lb

Unit

Unit Voltage-Phase-Hertz:	**460-3-60**	
Air Discharge:	**Vertical**	
Fan Drive Type:	**Direct**	
Actual Airflow:	**1415**	CFM
Site Altitude:	**6700**	ft

Cooling Performance

Condenser Entering Air DB:	**94.0**	F
Evaporator Entering Air DB:	**82.0**	F
Evaporator Entering Air WB:	**55.0**	F
Entering Air Enthalpy:	**25.89**	BTU/lb
Evaporator Leaving Air DB:	**56.0**	F
Evaporator Leaving Air WB:	**45.2**	F
Evaporator Leaving Air Enthalpy:	**19.66**	BTU/lb
Gross Cooling Capacity:	**30.99**	MBH
Gross Sensible Capacity:	**30.99**	MBH
Compressor Power Input:	**2.42**	kW
Coil Bypass Factor:	**0.516**	

Heating Performance

Heating Airflow:	**1415**	CFM
Entering Air Temp:	**50.0**	F
Leaving Air Temp:	**103.1**	F
Gas Heating Input Capacity:	**59.0 / 79.2****	MBH
Gas Heating Output Capacity:	**46.8 / 63.4****	MBH
Sea Level Gas Heating Input Capacity:	**82.0 / 110.0**	MBH
Temperature Rise:	**53.1**	F
Thermal Efficiency (%):	**80.0**	
NOTE:	**** - Input/Output Capacities are at Site Altitude**	

Supply Fan

External Static Pressure:	**0.75**	in wg
Options / Accessories Static Pressure		
Economizer:	**0.06**	in wg
Total Application Static (ESP + Unit Opts/Acc.):	**0.81**	in wg
Fan RPM:	**2100**	
Fan Power:	**0.53**	BHP
NOTE:	**Selected IFM RPM Range: 1129 - 2190**	
Supply Fan Motor Maximum Continuous BHP:	**0.7**	HP
Supply Fan Motor Application HP:	**0.7**	HP

Performance Summary For RTU-5

Project: IHS Mescalero Service Unit 09/10/2021
Prepared By: 11:51AM

NOTE:**Motors with application horse power are specifically designed and tested for Carrier rooftop units therefore do not have a standard HP rating.**

Electrical Data

Voltage Range:	**414 - 506**
Compressor #1 RLA:	**5.7**
Compressor #1 LRA:	**38**
Indoor Fan Motor Type:	**MED**
Indoor Fan Motor FLA:	**1.2**
Combustion Fan Motor FLA (ea):	**0.25**
Power Supply MCA:	**10**
Power Supply MOCP (Fuse or HACR):	**15**
Disconnect Size FLA:	**9**
Disconnect Size LRA:	**42**
Electrical Convenience Outlet:	**None**
Outdoor Fan [Qty / FLA (ea)]:	**1 / 0.8**

Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

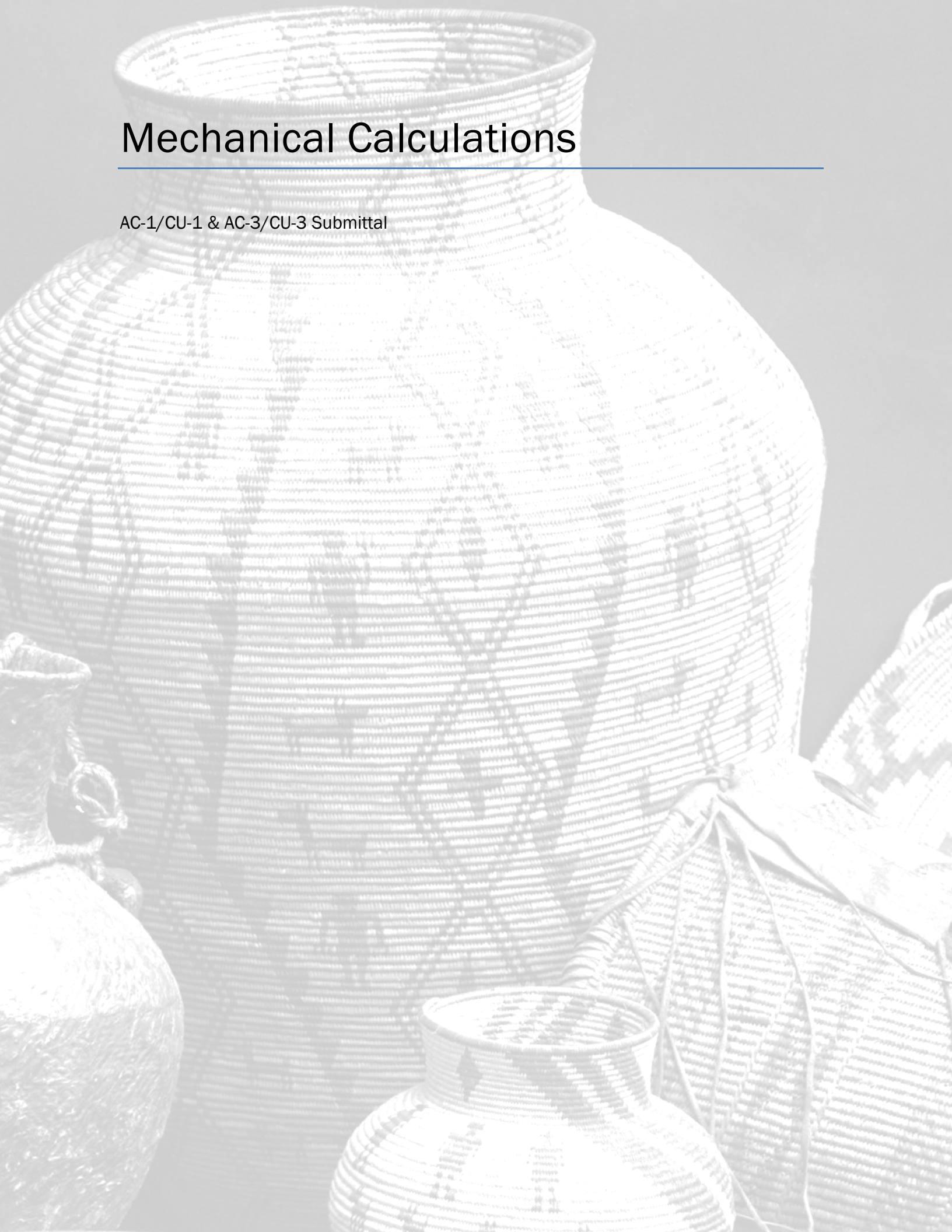
Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	92.0	86.6	85.6
125 Hz	82.9	79.6	84.7
250 Hz	91.6	70.5	80.5
500 Hz	70.2	63.7	76.0
1000 Hz	68.3	77.3	72.4
2000 Hz	70.9	64.9	68.0
4000 Hz	60.1	54.0	62.8
8000 Hz	58.8	50.6	59.3
A-Weighted	83.7	78.0	79.0

Mechanical Calculations

AC-1/CU-1 & AC-3/CU-3 Submittal



MITSUBISHI ELECTRIC

COOLING & HEATING

Mr.SLIM®

Split-ductless A/C and Heat Pumps

SUBMITTAL DATA: PKA-A24KA4 & PUY-A24NHA4 . . . . . 24,000 BTU/H WALL-MOUNTED AIR-CONDITIONING SYSTEM

Job Name:	Location:	Date:
Purchaser:	Engineer:	
Submitted to:	For ☐Reference ☐Approval ☐Construction	
System Designation:	Schedule No.:	

GENERAL FEATURES

- Wall-mounted indoor unit for residential and commercial applications
- Shiny-white–exterior plastic; compact design
- Quiet operation—both indoor and outdoor units
- Self-check function—integrated diagnostics
- Limited warranty: five years on parts and defects and seven years on compressors

OPTIONAL ACCESSORIES

Indoor Unit

- ☐ Mini Condensate Pump (SI3100-230, 230V)
- ☐ L-Connector Pipe (PAC-SC84PI; for left side unit piping installation)

Outdoor Unit

- ☐ Drain Pan (PAC-SG63DP)
- ☐ Drain Socket (PAC-SG61DS)
- ☐ Three-pole Disconnect Switch (TAZ-MS303)
- ☐ Wind Baffle (WB-PA2)
- ☐ Air Outlet Guide (PAC-SG59SG)
- ☐ Mounting Base (DSD-400N)
- ☐ Mounting Pad (ULTRILITE2)
- ☐ Wall-mounting Brackets (CWMB1)

Controller Options

- ☐ Wireless Remote Controller Kit (MHK1) with Remote Controller (MRCH1), Wireless Receiver (MIFH1), and cable (MRC1)*
- ☐ Setback down to 50°F when used with MRCH1 Remote Controller
- ☐ Portable Controller (MCCH1; for use with Wireless Remote Controller Kit MHK1)*
- ☐ Outdoor Air Sensor (MOS1; for use with Remote Controller (MRCH1), Wireless Remote Controller Kit (MHK1) and Portable Controller (MCCH1)*

*See Submittal for information on each option.

- ☐ Wall-mounted Wired Remote Controller (PAR-21MAA)
- ☐ M-NET Adapter (PAC-SF81MA)
- ☐ CN51 Connector for Multiple Remote Controller Adapters/Duct Fan Controller (PAC-725AD)
- ☐ CN32 Connector for Remote On/Off (PAC-715AD)
- ☐ Remote Temperature Sensor (PAC-SE41TS)
- ☐ Remote Operation Adapter - Display and On/Off (PAC-SF40RM)
- ☐ Hand-held Wireless Remote Controller (PAR-FL32MA)
- ☐ Lockdown Bracket for Hand-held Controller (RCMKP1CB)
- ☐ Control/Service Tool (PAC-SK52ST)

Cooling*

Rated Capacity . . . . . 24,000 Btu/h
Minimum Capacity . . . . . 12,000 Btu/h
SEER . . . . . 17.0 Btu/h/W
EER . . . . . 10.6 Btu/h/W
Total Input . . . . . 2,270 W

* Rating Conditions (Cooling) - Indoor: 80°F (27°C) DB / 67°F (19°C) WB. Outdoor: 95°F (35°C) DB / 75°F (24°C) WB.

Electrical Requirements

Power Supply . . . . . 208 / 230V, 1-Phase, 60 Hz
Recommended Fuse/Breaker Size . . . . . 25 A

Voltage

Indoor - Outdoor S1-S2 . . . . . AC 208 / 230V
Indoor - Outdoor S2-S3 . . . . . DC 24V

OPERATING CONDITIONS

		Indoor Intake Air Temp.	Outdoor Intake Air Temp.
Cooling	Maximum	95°F (35°C) DB, 71°F (22°C) WB	115°F (46°C) DB
	Minimum	67°F (19°C) DB, 57°F (14°C) WB	0°F** (-18°C) DB

** With optional wind baffle accessory installed. If not installed, the minimum temperature will be 23°F (-5°C) DB.

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Indoor Unit: PKA-A24KA4

Outdoor Unit: PUY-A24NHA4

Indoor Unit

MCA . . . . . 1 A
Fan Motor . . . . . 0.36 F.L.A.
Fan Motor Output . . . . . 56 W
Airflow (Lo - Mid - Hi) . . . . . 635 - 705 - 775 Dry CFM
570 - 635 - 700 Wet CFM
Air Filter . . . . . Polypropylene Honeycomb
Sound Pressure Level (Lo - Mid - Hi) . . . . . 39 - 42 - 45 dB(A)
SHF 0.77
Moisture Removal . . . . . 5.0 pt./h

DIMENSIONS	UNIT INCHES / MM
W	46-1/16 / 1,170
D	11-5/8 / 295
H	14-3/8 / 365

Weight . . . . . 46 lbs. / 21 kg
External Finish . . . . . Munsell No. 1.0Y 9.2 / 0.2
Field Drainpipe Size O.D . . . . . 5/8" / 16 mm

Outdoor Unit

Compressor . . . . . DC Inverter-driven Twin Rotary
MCA . . . . . 18 A
MOCP . . . . . 30 A
Fan Motor . . . . . 0.75 F.L.A.
Sound Pressure Level
Cooling . . . . . 48 dB(A)

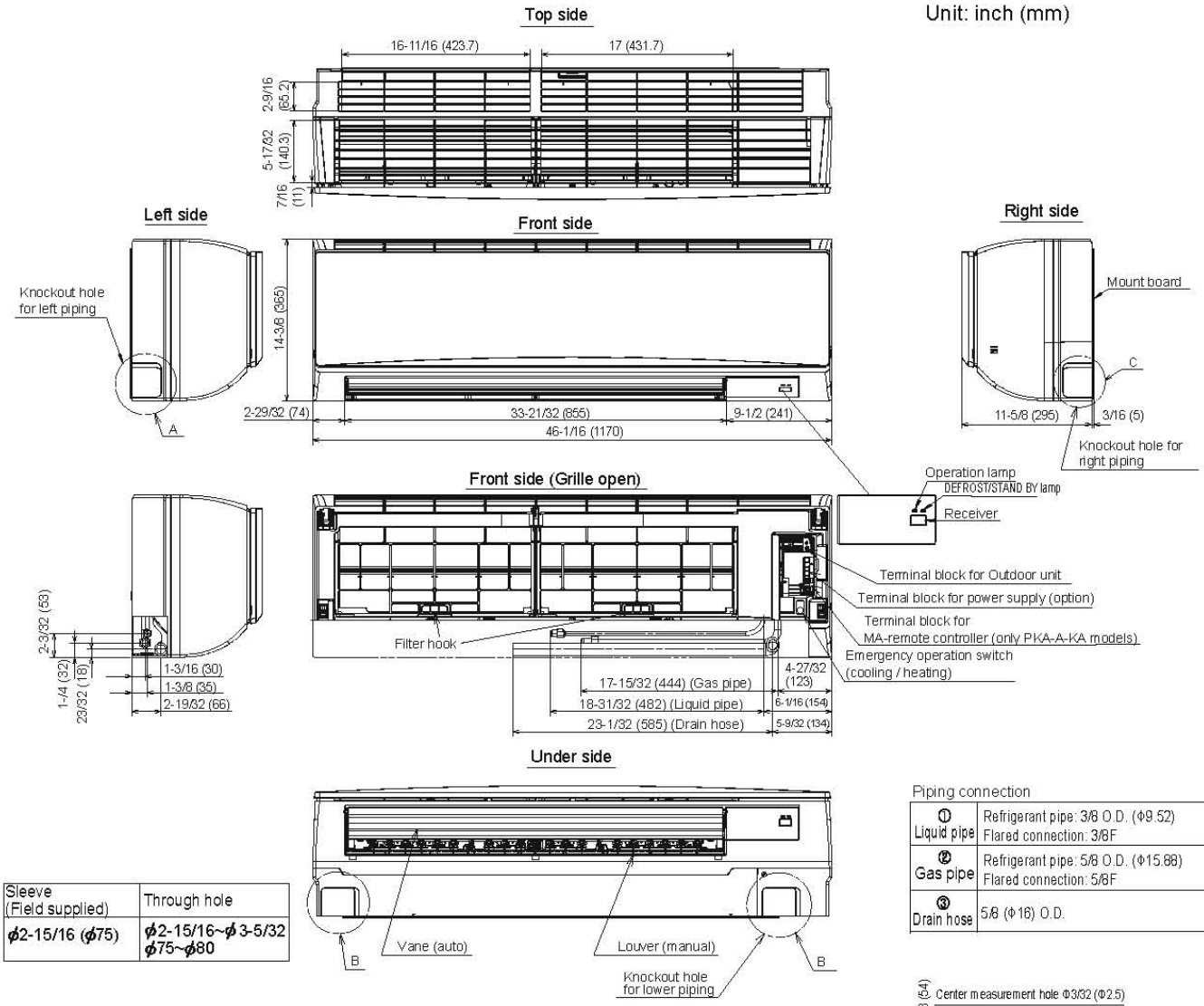
DIMENSIONS	INCHES / MM
W	37-3/8 / 950
D	13 + 1-3/16 / 330 + 30
H	37-1/8 / 943

Weight . . . . . 163 lbs. / 74 kg
External Finish . . . . . Munsell No. 3Y 7.8 / 1.1
Refrigerant Type R410A
Refrigerant Pipe Size O.D.
Gas Side . . . . . 5/8" / 15.88 mm
Liquid Side . . . . . 3/8" / 9.52 mm
Max. Refrigerant Pipe Length . . . . . 165' / 50 m
Max. Refrigerant Pipe Height Difference . . . . . 100' / 30 m
Connection Method . . . . . Flared

R410A INVERTER

DIMENSIONS: PKA-A24KA4

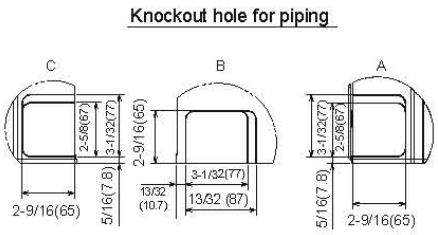
Unit: inch (mm)

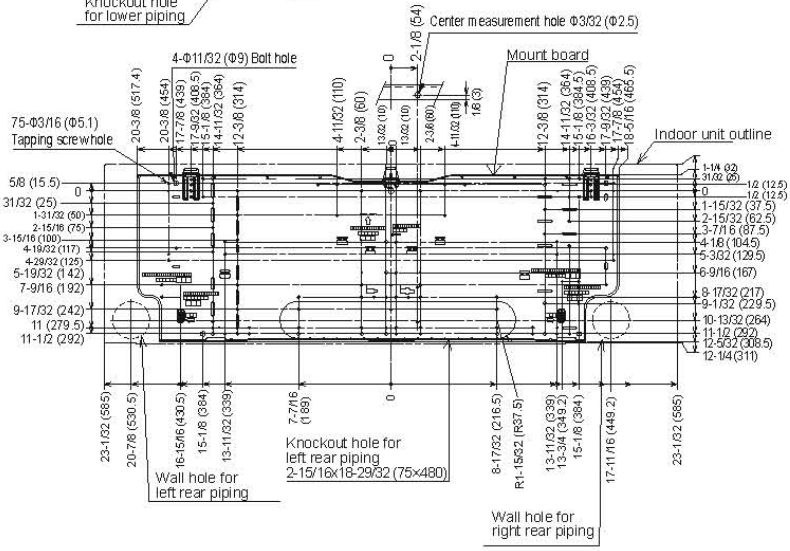


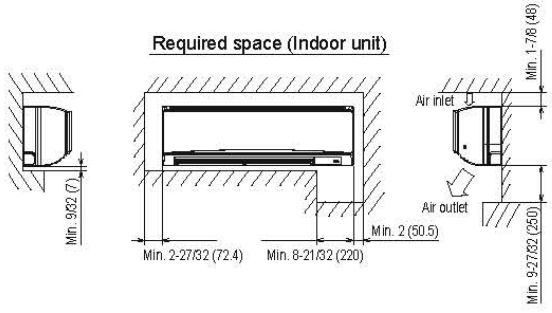
Sleeve (Field supplied)	Through hole
ϕ2-15/16 (ϕ75)	ϕ2-15/16~ϕ3-5/32 ϕ75~ϕ80

Piping connection

① Liquid pipe	Refrigerant pipe: 3/8 O.D. (Φ9.52) Flared connection: 3/8F
② Gas pipe	Refrigerant pipe: 5/8 O.D. (Φ15.88) Flared connection: 5/8F
③ Drain hose	5/8 (Φ16) O.D.







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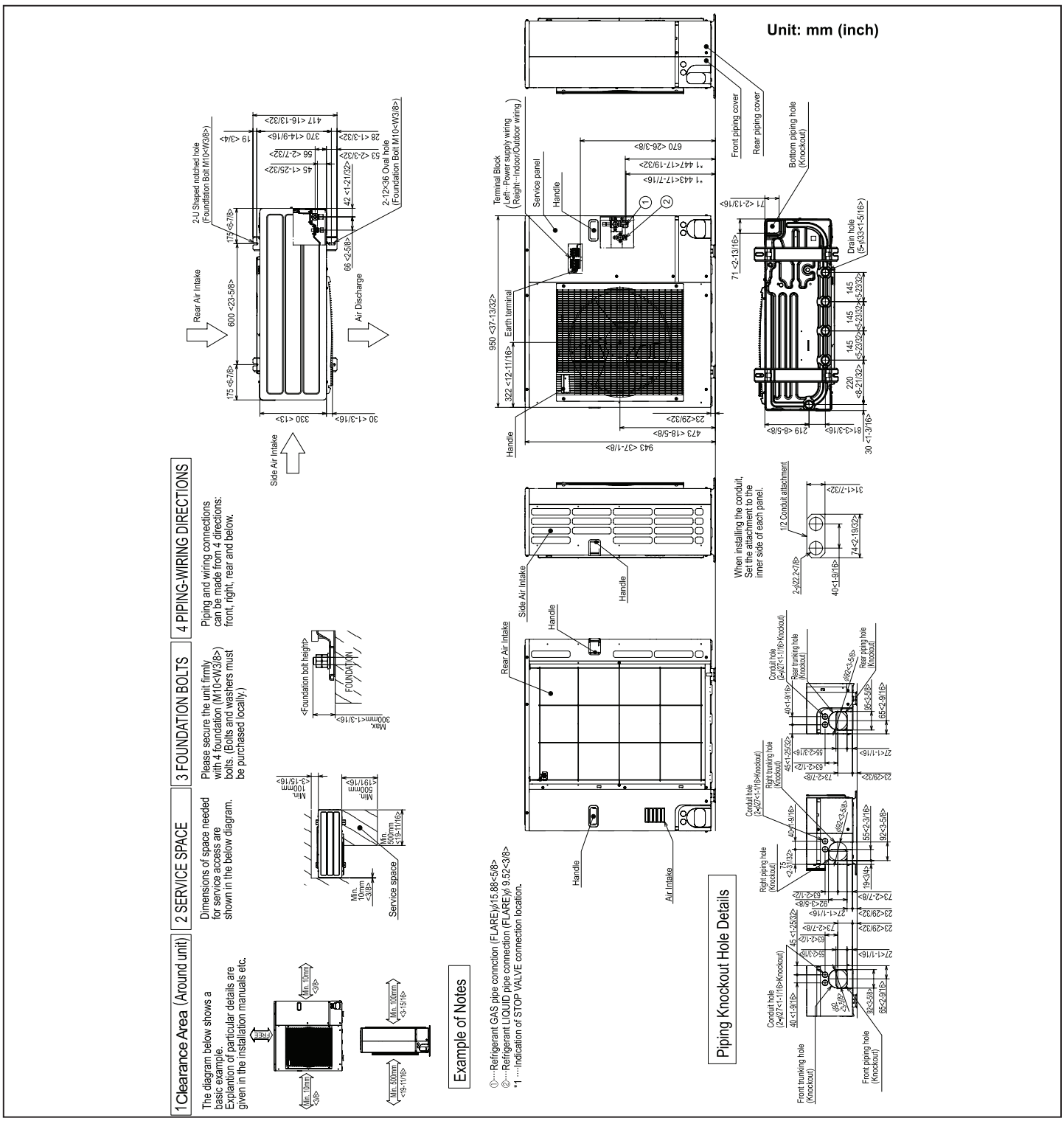
DIMENSIONS: PUY-A24NHA4



AHRI CERTIFIED™ www.ahridirectory.org
Unitary Small AC
AHRI Standard 210/240
Certification applies only when the complete system is listed with AHRI.

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FORM# PKA-A24KA4 - PUY-A24NHA4 - 201111
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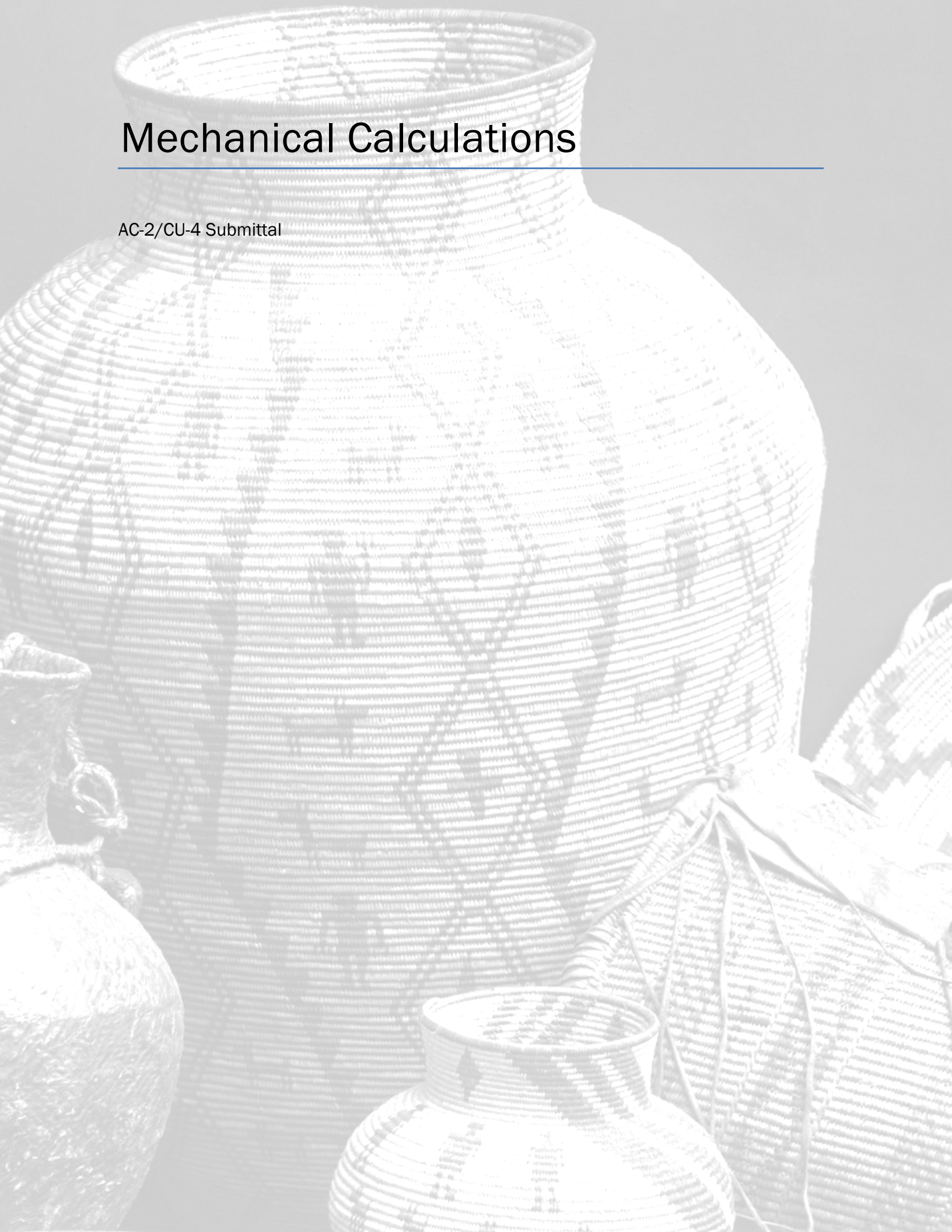
Mechanical Calculations

AC-2/CU-4 Submittal



P-SERIES

SUBMITTAL DATA: PKA-A12HA7 & PUY-A12NKA7(-BS)

12,000 BTU/H WALL-MOUNTED AIR-CONDITIONING SYSTEM

MITSUBISHI ELECTRIC

Job Name:	
System Reference:	Date:

Indoor Unit: PKA-A12HA7	Outdoor Unit: □ PUY-A12NKA7 □ PUY-A12NKA7-BS

INDOOR UNIT FEATURES

- Sleek, compact design
- Simple installation
- Vane setting for air flow direction control
- Auto fan speed mode
- Ideal for spaces such as server rooms, daycare centers, classrooms, churches, small offices, and more

OUTDOOR UNIT FEATURES

- Variable speed INVERTER-driven compressor
- Suction accumulator pre-charged with refrigerant volume for piping length up to 100 ft (70 ft. for A12/18/24/30)
- Low ambient cooling down to -20ºF providing 100% capacity (only for PUY models with wind baffles installed)
- 24-hour continuous operation (cooling mode)
- High pressure protection
- Fast restart due to bypass valve make it ideal for equipment cooling applications, such as data centers
- Superior energy and operational efficiency

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SPECIFICATIONS: PKA-A12HA7 & PUY-A12NKA7(-BS)

Model Number	Indoor Unit		PKA-A12HA7
	Outdoor Unit		PUY-A12NKA7
			PUY-A12NKA7-BS
Cooling*1	Maximum Capacity	Btu/h	12,000
	Rated Capacity	Btu/h	12,000
	Minimum Capacity	Btu/h	5,800
	Maximum Power Input	W	1,000
	Rated Power Input	W	1,000
	Moisture Removal	Pints/h	2.0
	Sensible Heat Factor		0.81
	Power Factor	%	94.5
Efficiency	SEER		20.8
	EER *1		12.0
Electrical	Voltage, Phase, Frequency		208 / 230V, 1-phase, 60 Hz
	Guaranteed Voltage Range	V AC	198 – 253
	Voltage: Indoor - Outdoor, S1-S2	V AC	208 / 230
	Voltage: Indoor - Outdoor, S2-S3	V DC	24
	Voltage: Indoor - Remote controller	V DC	12
	Recommended Fuse/Breaker Size	A	15
	Recommended Wire Size (Indoor - Outdoor)	AWG	14
Indoor Unit	MCA	A	1
	Fan Motor Full Load Amperage	A	0.33
	Fan Motor Output	W	30
	Airflow Rate, Dry	CFM	320-370-425
	Airflow Rate, Wet	CFM	290-335-380
	External Static Pressure	in.WG	n/a
	Sound Pressure Level	dB(A)	36-40-43
	Drain Pipe Size	In. (mm)	5/8 (16)
	Condensate Lift Mechanism, Max. Distance	In. (mm)	n/a
	Heat Exchanger Type		Plate fin coil
	External Finish Color		White Munsell 1.0Y 9.2/0.2
	Unit Dimensions	W: In. (mm)	35-3/8 (898)
		D: In. (mm)	9-13/16 (249)

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SPECIFICATIONS: PKA-A12HA7 & PUY-A12NKA7(-BS)

Model Number	Indoor Unit		PKA-A12HA7
	Outdoor Unit		PUY-A12NKA7
			PUY-A12NKA7-BS
		H: In. (mm)	11-5/8 (295)
	Package Dimensions	W: In.	39-6/16
		D: In.	15-12/16
		H: In.	13-6/16
	Unit Weight	Lbs. (kg)	29 (13)
	Package Weight	Lbs.	33
Indoor Unit Operating Temperature range	Cooling Intake Air Temp (Maximum / Minimum)	°F	90 DB, 73 WB / 66 DB, 59 WB
Outdoor Unit	MCA	A	11
	MOCP	A	28
	Fan Motor Full Load Amperage	A	0.50
	Fan Motor Output	W	46
	Airflow Rate	CFM	1,590
	Refrigerant Control		Electronic Expansion Valve
	Heat Exchanger Type		Cross fin
	Sound Pressure Level, Cooling*1	dB(A)	44
	Sound Pressure Level, Heating*2	dB(A)	46
	Compressor Type		INVERTER-driven twin rotary
	Compressor Model		SNB092FNCM
	Compressor Rated Load Amps	A	7
	Compressor Locked Rotor Amps	A	12
	Compressor Oil Type // Charge	oz.	FV50S // 12
	External Finish Color		Ivory Munsell 3Y 7.8/1.1
	Base Pan Heater		n/a
	Unit Dimensions	W: In. (mm)	31-13/16 + 7/16 (809+62)
		D: In. (mm)	11-3/16 (300)
		H: In. (mm)	24-13/16 (630)
	Package Dimensions	W: In.	37-1/16
		D: In.	16-3/16
		H: In.	27-7/16

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SPECIFICATIONS: PKA-A12HA7 & PUY-A12NKA7(-BS)

Model Number	Indoor Unit		PKA-A12HA7
	Outdoor Unit		PUY-A12NKA7
			PUY-A12NKA7-BS
	Unit Weight	Lbs. (kg)	92 (41)
	Package Weight	Lbs. (kg)	104 (47)
Outdoor Unit Operating Temperature Range	Cooling Intake Air Temp (Maximum / Minimum)	°F	115 DB / -20* DB
Refrigerant	Type		R410A
	Charge	Lbs, oz	4 lbs, 7 oz
Piping	Gas Pipe Size O.D. (Flared)	In.(mm)	1/2 (12.7)
	Liquid Pipe Size O.D. (Flared)	In.(mm)	1/4 (6.35)
	Maximum Piping Length	Ft. (m)	165 (50)
	Maximum Height Difference	Ft. (m)	100 (30)
	Maximum Number of Bends		15

AHRI Rated Conditions (Rated data is determined at a fixed compressor speed)	*1 Cooling (Indoor // Outdoor)	°F	80°F DB, 67°F WB // 95°F DB, 75°F WB

Notes
*Wind baffles required to operate below 23°F DB in cooling mode. PUY with wind baffle: -20°F - 115°F. Refer to wind baffle documentation for further information.
**System cuts out in heating mode to avoid thermistor error and automatically restarts at these temperatures

SEACOAST PROTECTION
- External Outer Panel: Phosphate coating + Acrylic-Enamel coating
- Fan Motor Support: Epoxy resin coating (at edge face)
- Separator Assembly; Valve Bed: Epoxy resin coating (at edge face)
- “Blue Fin” treatment is an anti-corrosion treatment that is applied to the condenser coil to protect it against airborne contaminants.

Notes:

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ACCESSORIES: PKA-A12HA7

3-Pole Disconnect Switch (30A/600V/UL) [fits 2" X 4" utility box]	□ TAZ-MS303
Drain Pan Level Sensor (Control for indoor unit shut off to prevent drain pan overflow)	□ DPLS2
MaxiBlue Advanced Blue Diamond Mini-Condensation pump w/ Reservoir & Sensor (110V) up to 48,000 Btu/h [recommended]	□ X87-711 - 110
MaxiBlue Advanced Blue Diamond Mini-Condensation pump w/ Reservoir & Sensor (208/230V) up to 48,000 Btu/h [recommended]	□ X87-721 - 208/230
MicroBlue Blue Diamond Mini Condensate Pump (110/208/230V)	□ XA5-003
Fascia Kit for MicroBlue Pump – mounts beneath pump	□ T18-016
Extension Cord for Blue Diamond Pump	□ C13-103
Sauermann Mini-Condensation pump (115V)	□ SI30-115
Sauermann Mini-Condensation pump (230V)	□ SI30-230
MegaBlue Blue Diamond Condensate Pump (110-230V)	□ X87-835
Remote Sensor (extensible)	□ PAC-SE41TS-E
Connector for CN32 (remote ON/OFF)	□ PAC-SE55RA-E
Connector for CN152 (Back up heating)	□ PAC-SE59RA-E
External fan / Heater control relay adapter	□ CN24RELAY-KIT-CM3
Backlit, wall-mounted, wireless	□ MHK1
Wireless Remote Controller	□ MRCH1
Wireless Receiver	□ MFH1
Portable Central Controller	□ MCCH1
Outside Air Sensor	□ MOS1
Wireless adapter	□ PAC-USWHS002-WF-1
BACnet® and Modbus Interface	□ PAC-UKPRC001-CN-1
Wall-mounted, Wired	□ PAC-YT53CRAU-J
Wired Remote Controller	□ PAR-33MAA-J
T-STAT Interface	□ PAC-US444CN-1
Simple remote controller	□ PAC-YT53CRAU
Wireless Remote Controller	□ PAR-FL32MA-E
Wire for Remote ON/OFF with CN32 connector	□ PAC-715AD
Lockdown Bracket for wireless, hand-held, remote controllers	□ RCMKP1CB

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ACCESSORIES: PUY-A12NKA7(-BS)

Air Outlet Guide	□ PAC-SJ07SG-E
Front Wind Baffle	□ WB-PA4
Side Advanced Wind Baffle	□ WB-SD4
Rear Advanced Wind Baffle	□ WB-RE4
Hail Guard	□ HG-A5
Drain Socket	□ PAC-SJ08DS-E
Centralized Drain Pan	□ PAC-SG63DP-E
Control/Service Tool	□ PAC-SK52ST
Wall Mounting Bracket (Powder-coated Steel)	□ QCWB2000M-1
Wall Mounting Bracket (316 Series Stainless Steel)	□ QSWBSS
M-NET Control Adapter for Building Management System	□ PAC-SJ19MA-E
Outdoor Unit Mounting Pad 16" x 36" x 3"	□ ULTRILITE1
Outdoor Unit 3-1/4 inch Mounting Base - Pair (Plastic)	□ DSD-400N
MiniSplit Mounting Stand-Single Fan Models - 12"	□ QSMS1201M
MiniSplit Mounting Stand-Single Fan Models - 18"	□ QSMS1801M
MiniSplit Mounting Stand-Single Fan Models - 24"	□ QSMS2401M
1/4 x 1/2 x 15' / 1/2" Lineset (Twin-Tube Insulation)	□ MLS141212T-15
1/4 x 1/2 x 30' / 1/2" Lineset (Twin-Tube Insulation)	□ MLS141212T-30
1/4 x 1/2 x 50' / 1/2" Lineset (Twin-Tube Insulation)	□ MLS141212T-50
1/4 x 1/2 x 65' / 1/2" Lineset (Twin-Tube Insulation)	□ MLS141212T-65
1/4 x 1/2 x 100' / 1/2" Lineset (Twin-Tube Insulation)	□ MLS141212T-100

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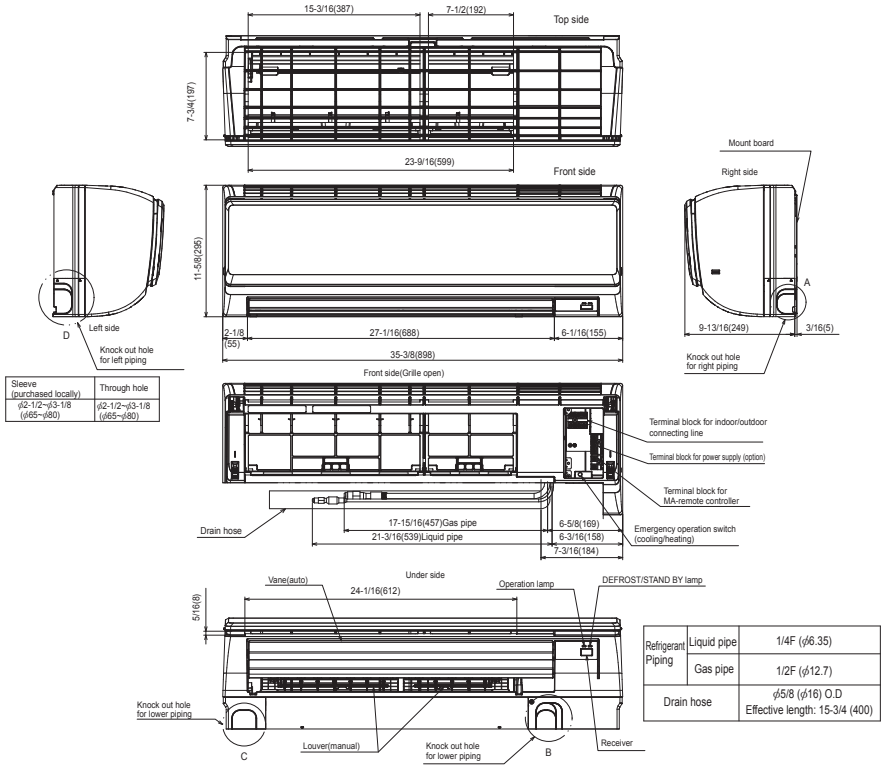
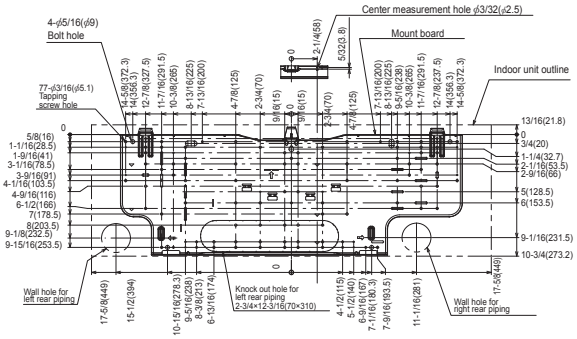
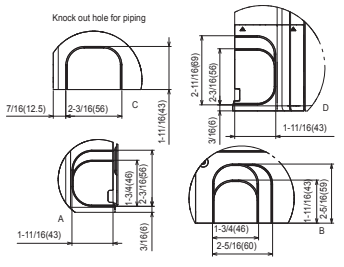
6 OUTLINES AND DIMENSIONS

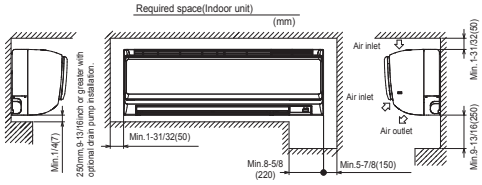
Unit: inch (mm)



Refrigerant Piping	Liquid pipe	1/4F (ϕ6.35)
	Gas pipe	1/2F (ϕ12.7)
Drain hose		ϕ5/8 (ϕ16) O.D Effective length: 15-3/4 (400)







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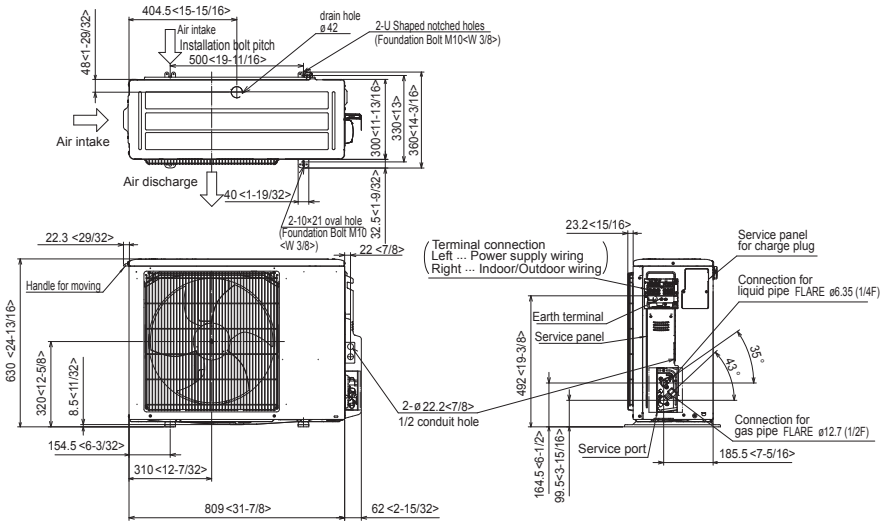
DIMENSIONS: PKA-A12HA7 & PUY-A12NKA7 (-BS)

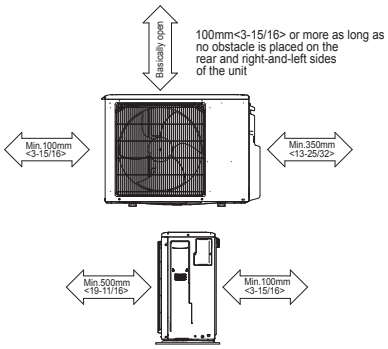
6 OUTLINES AND DIMENSIONS

PUZ-A12NKA7 PUZ-A18NKA7 PUY-A12NKA7 PUY-A18NKA7
PUZ-A12NKA7-BS PUZ-A18NKA7-BS PUY-A12NKA7-BS PUY-A18NKA7-BS

Unit: mm<in>



Free space around the outdoor unit (basic example)

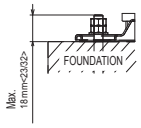


2 sides should be open in the right, left and rear side.

FOUNDATION BOLTS

Please secure the unit firmly with 4 foundation (M10<W3/8>) bolts. (Bolts, washers and nut must be purchased locally).

<Foundation bolt height>



PIPING-WIRING DIRECTION

Piping and wiring connection can be made from the rear direction only.

MITSUBISHI ELECTRIC
COOLING & HEATING

1340 Satellite Boulevard, Suwanee, GA 30024
Toll Free: 800-433-4822 www.mehvac.com

FORM# PKA-A12HA7 / PUY-A12NKA7(-BS) - 201709

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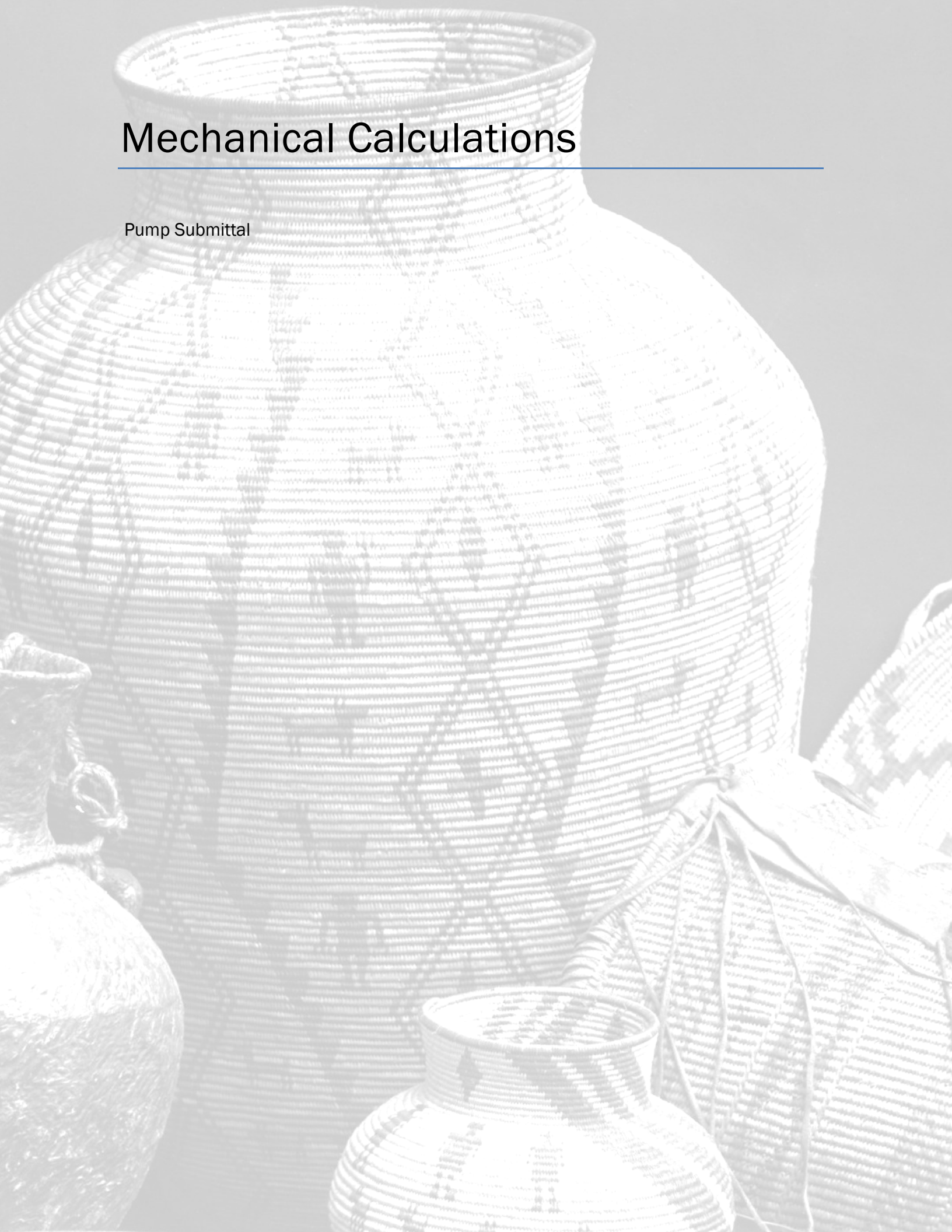
Mechanical Calculations

Pump Submittal



GRUNDFOS

Submittal Data

PROJECT:		UNIT TAG:		QUANTITY:	
		TYPE OF SERVICE:			
REPRESENTATIVE:		SUBMITTED BY:		DATE:	
ENGINEER:		APPROVED BY:		DATE:	
CONTRACTOR:		ORDER NO.:		DATE:	

MAGNA3 40-80 F N

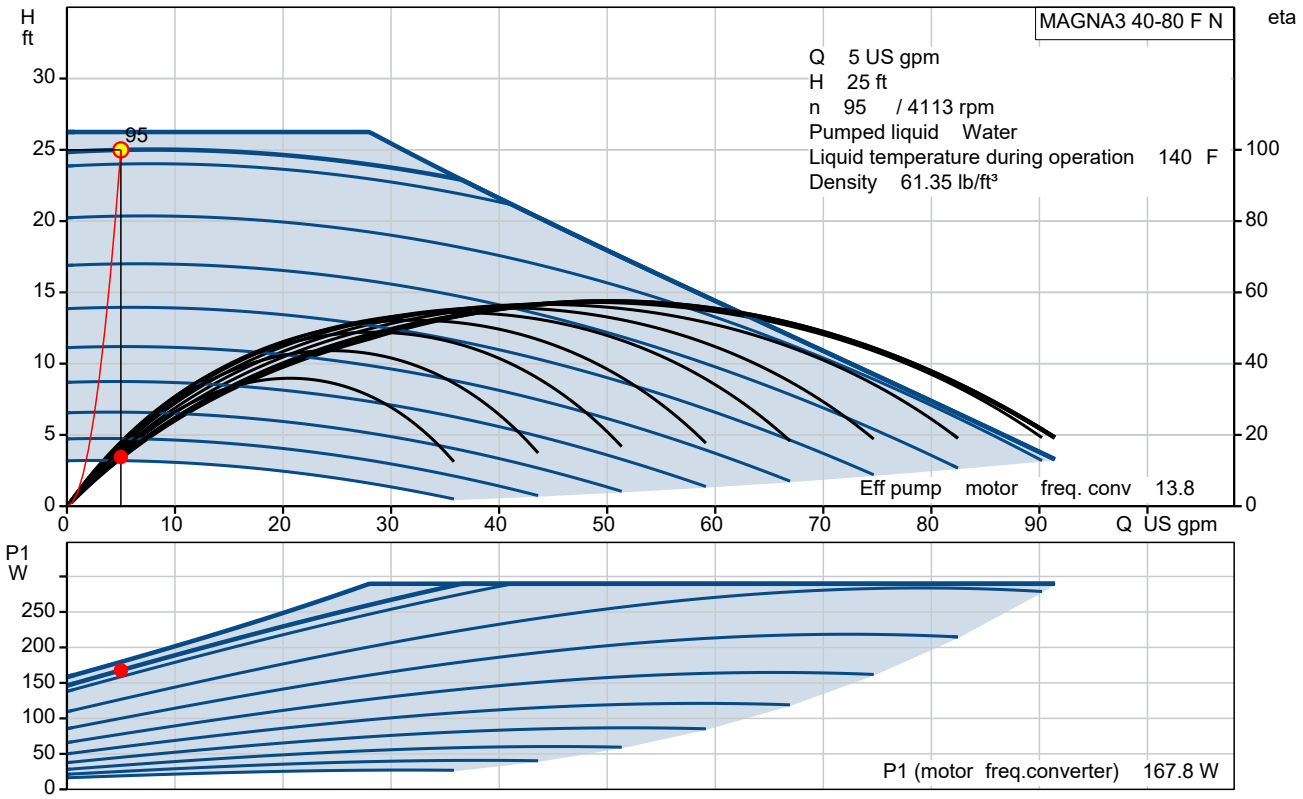
Full range of intelligent, high-efficiency circulators for heating, cooling, ground source heat pump systems and domestic hot water applications

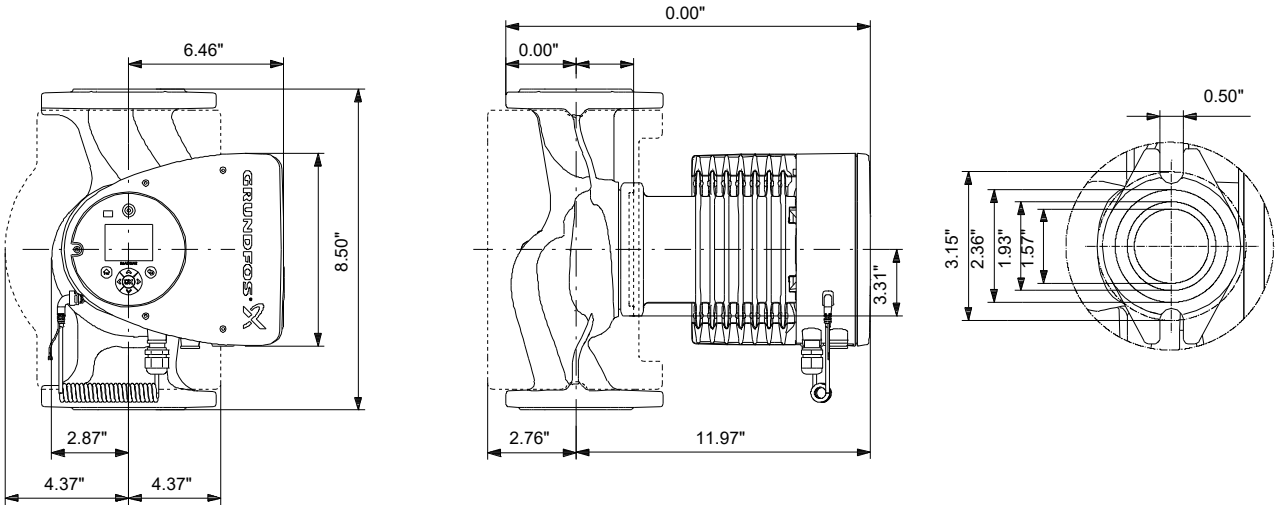
Product photo could vary from the actual product

Conditions of Service	
Flow:	5 US gpm
Head:	25 ft
Efficiency:	13.8
Liquid:	Water
Temperature:	140 F
NPSH required:	ft
Viscosity:	
Specific Gravity:	0.985

Pump Data	
Maximum operating pressure:	174 psi
Liquid temperature range:	14 .. 230 F
Maximum ambient temperature:	104 F
Approvals:	98544604
Flange standard:	GF
Pipe connection:	GF15/26/40/43
Product number:	98126802

Motor Data	
P1 max:	16 .. 290 W
Rated voltage:	115 V
Main frequency:	60 H
Enclosure class:	X4D
Insulation class:	F





Materials:

Pump housing:	Stainless steel EN 1.4308 ASTM 351 CF8
Impeller:	PES 30 GF

Company name:
Created by:
Phone:

Date: 4/20/2018

Position	Count	Description
	1	**MAGNA3 40-80 F N**

Product photo could vary from the actual product

Product No.: 98126802

MAGNA3 More than a pump
With its unrivalled efficiency, all-encompassing range and built-in communication capabilities plus functionalities replacing system components, the MAGNA3 is ideal for engineers and specifiers looking to create high-performance systems for buildings.

This pump in the Grundfos Master Class will fit both heating and cooling applications perfectly, making it the obvious choice for almost any building project old or new.

The MAGNA3 is of the canned-rotor type, i.e. pump and motor form an integral unit without shaft seal and with only two gaskets for sealing. The bearings are lubricated by the pumped liquid.

The innovative clamp with only one screw enables easy repositioning of the pump head.
The MAGNA3 is a pump with no maintenance requirements and with extremely low Life Cycle Cost.

The pump is characterised by the following:
- controller integrated in the control box
- control panel with TFT display on the control box
- control box prepared for optional CIM modules
- built-in differential-pressure and temperature sensor
- cast-iron pump housing (depending on model)
- carbon-fiber-reinforced composite rotor can
- stainless-steel bearing plate and rotor cladding
- aluminium alloy stator housing
- air-cooled power electronics

The MAGNA3 is a single-phase pump.

Characteristic features
- AUTOADAPT.
- FLOWADAPT and FLOWLIMIT (more than a pump function as it reduces the need for pump throttling valves).
- Proportional-pressure control.
- Constant-pressure control.
- Constant-temperature control.
- Constant-curve duty.
- Max. or min. curve duty.
- Automatic Night Setback.
- No external motor protection required.
- Insulating shells supplied with single-head pumps for heating systems.
- Large temperature range where the liquid temperature and the ambient temperature are independent of each other.

Communication
The MAGNA3 enables communication via the following:
- wireless Grundfos GO Remote

Position	Count	Description

fieldbus communication via CIM modules
digital inputs
relay outputs
analog input (more than a pump function as heat energy meter)

Motor and electronic controller
The MAGNA3 incorporates a 4-pole synchronous, permanent-magnet motor (PM motor). This motor type is characterised by higher efficiency than a conventional asynchronous squirrel-cage motor.
The pump speed is controlled by an integrated frequency converter.
A differential-pressure and temperature sensor is incorporated in the pump.

Liquid:

Pumped liquid:	Water
Liquid temperature range:	14 .. 230 F
Liquid temperature during operation:	140 F
Density:	61.35 lb/ft³

Technical:

Actual calculated flow:	5 US gpm
Resulting head of the pump:	25 ft
TF class:	110
Approvals on nameplate:	98544604

Materials:

Pump housing:	Stainless steel EN 1.4308 ASTM 351 CF8
Impeller:	PES 30 GF

Installation:

Range of ambient temperature:	32 .. 104 F
Maximum operating pressure:	174 psi
Flange standard:	GF
Pipe connection:	GF15/26/40/43
Pressure stage:	PN12
Port-to-port length:	8 9/16 in

Electrical data:

Power input - P1:	16 .. 290 W
Main frequency:	60 H
Rated voltage:	1 x 115 V
Maximum current consumption:	0.3 .. 2.57 A
Enclosure class (IEC 34-5):	X4D
Insulation class (IEC 85):	F

Others:

Energy (EEI):	0.20
Net weight:	36.2 lb
Gross weight:	40 lb
Shipping volume:	1060 ft³

Company name:
Created by:
Phone:

Date: 4/20/2018

Description	Value
General information:	
Product name:	MAGNA3 40-80 F N
Product No.:	98126802
EAN:	5710629499646
Technical:	
Actual calculated flow:	5 US gpm
Resulting head of the pump:	25 ft
Head max:	26.25 ft
TF class:	110
Approvals on nameplate:	98544604
Model:	D
Materials:	
Pump housing:	Stainless steel
	EN 1.4308
	ASTM 351 CF8
Impeller:	PES 30 GF
Installation:	
Range of ambient temperature:	32 .. 104 F
Maximum operating pressure:	174 psi
Flange standard:	GF
Pipe connection:	GF15/26/40/43
Pressure stage:	PN12
Port-to-port length:	8 9/16 in
Liquid:	
Pumped liquid:	Water
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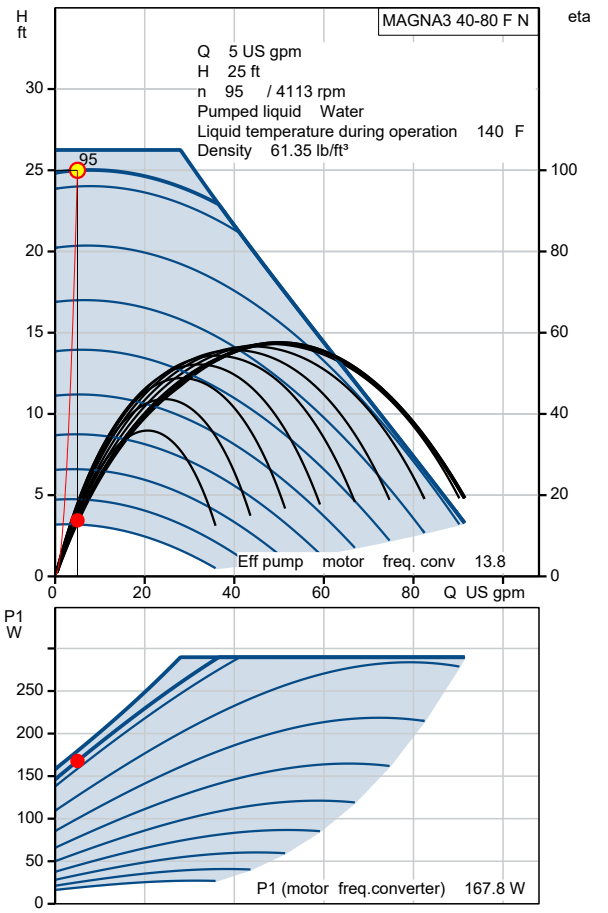
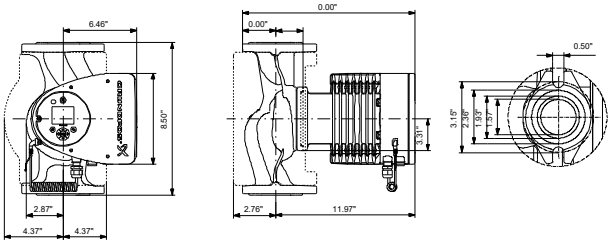
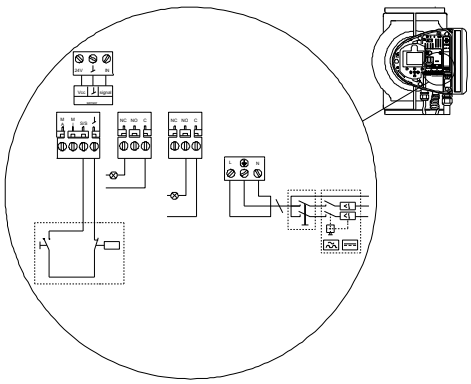
Rated voltage:	1 x 115 V
Maximum current consumption:	0.3 .. 2.57 A
Enclosure class (IEC 34-5):	X4D
Insulation class (IEC 85):	F
Others:	
Energy (EEI):	0.20
Net weight:	36.2 lb
Gross weight:	40 lb
Shipping volume:	1060 ft³



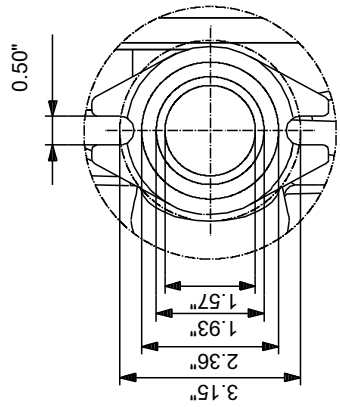


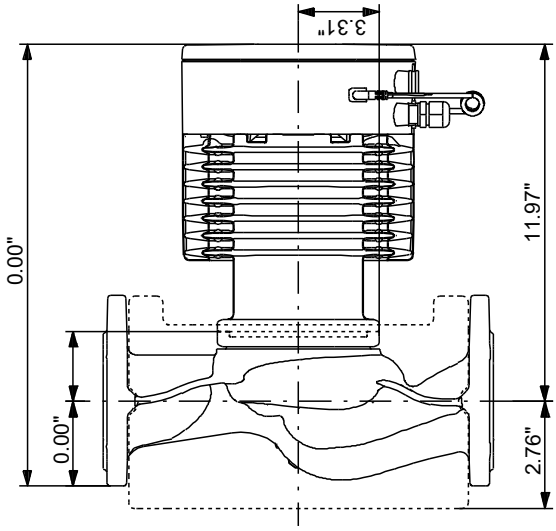


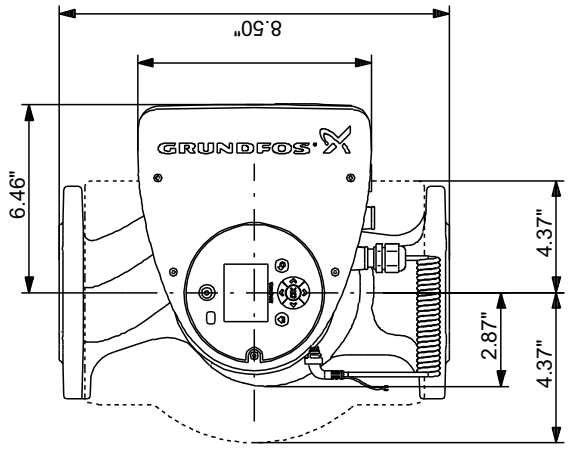
Company name:
Created by:
Phone:

Date: 4/20/2018

98126802 MAGNA3 40-80 F N 60 Hz





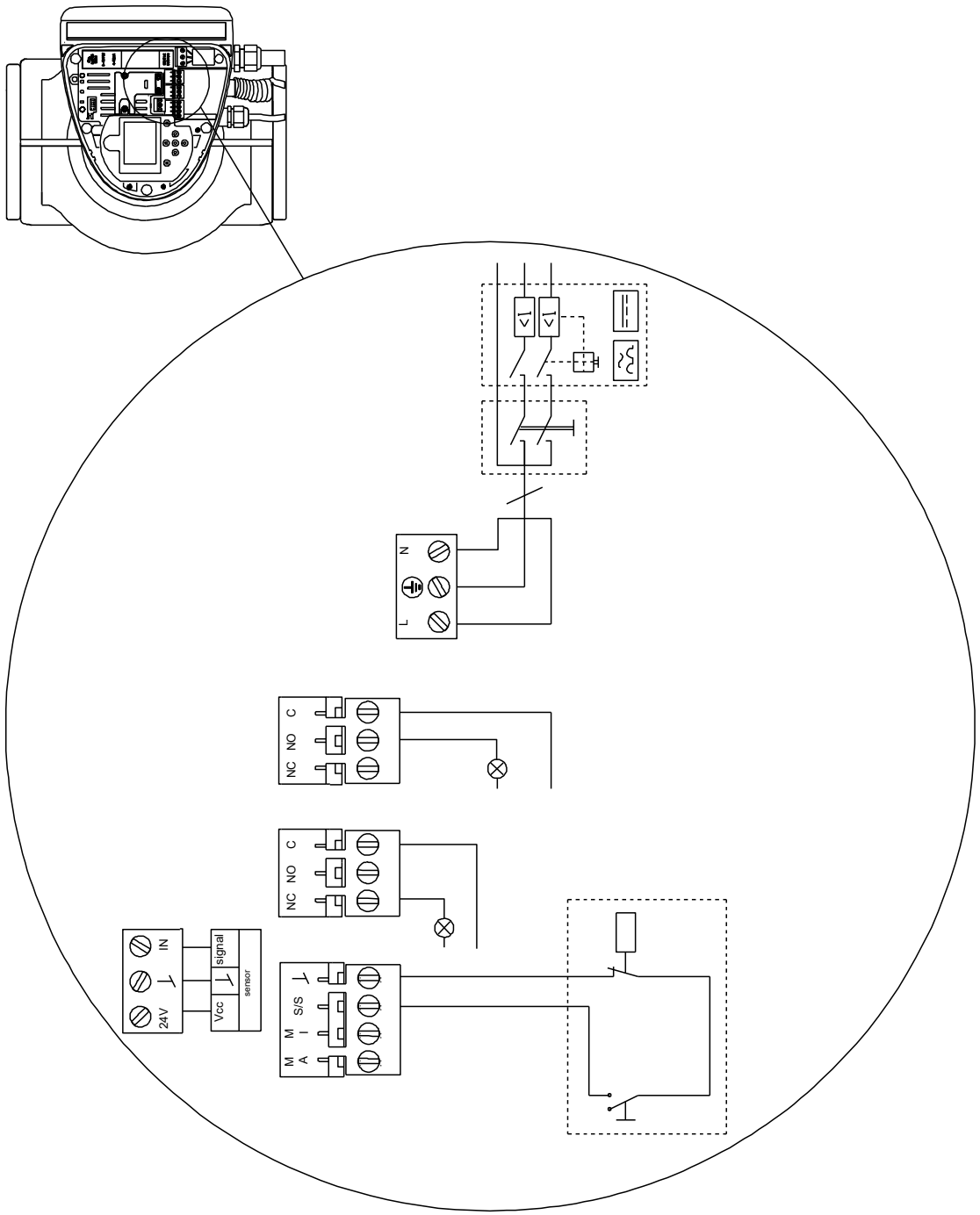


Note! All units are in mm unless otherwise stated.
Disclaimer: This simplified dimensional drawing does not show all details.

Company name:
Created by:
Phone:

Date: 4/20/2018

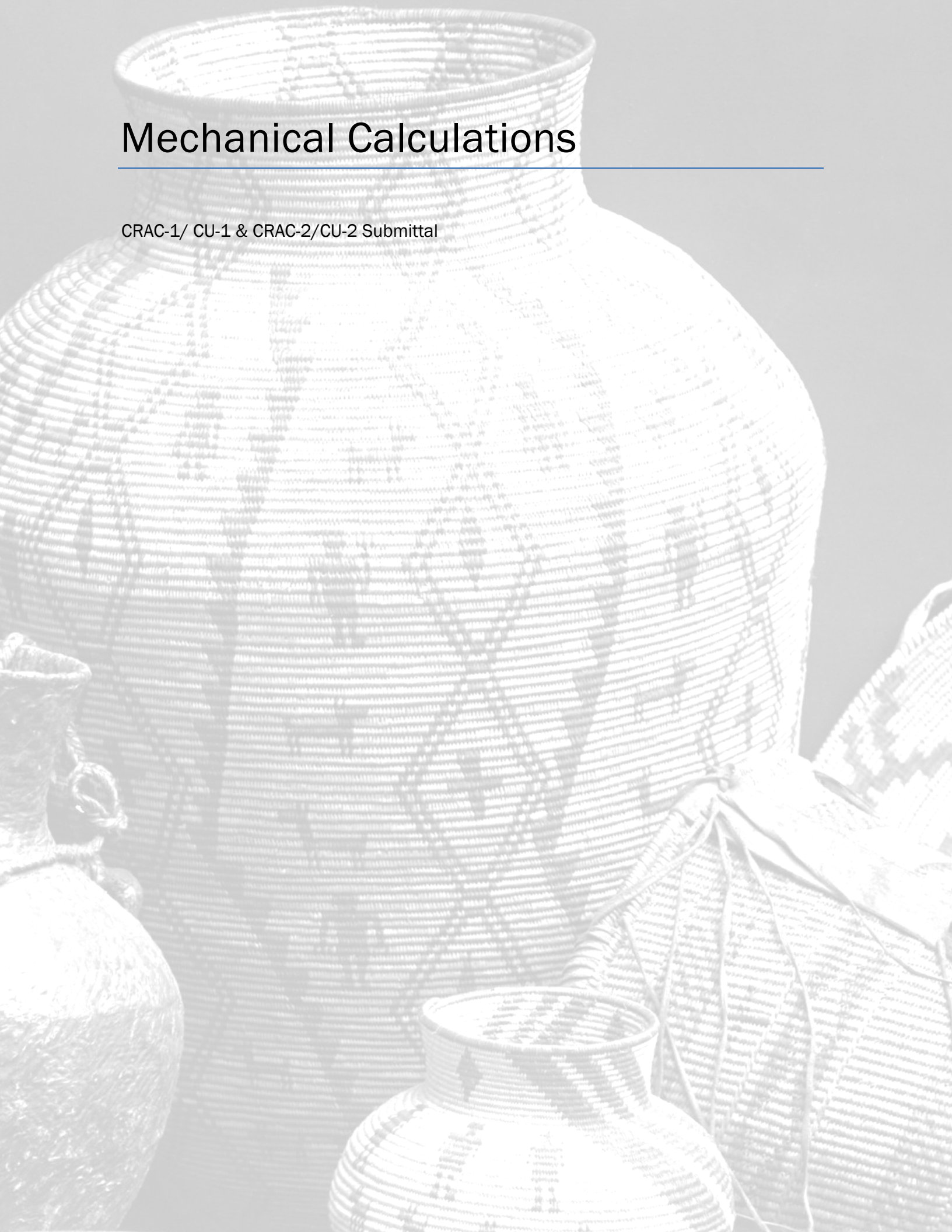
98126802 MAGNA3 40-80 F N 60 Hz



All units are mm unless otherwise presented.

Mechanical Calculations

CRAC-1/ CU-1 & CRAC-2/CU-2 Submittal



c/o AC New Mexico
2709 Pan American Freeway NE, Suite J **PH: (505) 343-9910**
Albuquerque, NM 87107 **FAX: (505) 343-9914**

COMPANY:	Rock Gap Engineering	**PROPOSAL #:**	Q02796140
ATTN:	Kyle Best	**PAGES:**	7
FROM:	Gordon Dixon, AC New Mexico	**DATE:**	Apr 23, 2018
PROJECT:	MESCALERO SERVICE PDX UNITS - REVISED		

We are pleased to provide our quotation for the following Liebert PDX/PCW System:

Quantity (2) Liebert PDX Air-Cooled System

- Configuration Number: PX023UA1ADHH2801P0UKPD664 / Model Number: PX023UA1ADD664
- 460 Voltage, 3 Phase, 60 Hz
- Nominal 22.9 kW, 78.1 kBtuh at approximately 75°F, 45% RH
- Each system will provide 79.3 MBH total cooling capacity and 63.5 MBH sensible cooling capacity at 75°F EDB, 45% RH, 95°F ambient, and 6,700' elevation (site conditions).

System Details:

- Upflow with Front Air Return
- Liebert iCOM Control with 9 inch Color Touchscreen Display
- Variable speed EC plug fans
- Digital scroll, variable capacity compressor utilizing R-410A
- Crankcase Heater
- Thermal Expansion Valve
- Evaporator Type: tilted- slab, copper tubes - aluminum fins with hydrophilic coating
- Two-Stage 12kW Electric Reheat.
- Infrared Humidifier
- 65,000 Amp, rms Short Circuit Current Rating
- Locking Disconnect Switch
- Dual-float condensate pump factory-mounted internal to unit
- Filter Rating: MERV 8 per ASHRAE 52.2-2007
- 1 Extra sets of filters - MERV 8
- The Liebert IntelliSlot Unity Card (IS-UNITY-DP) provides ground fault isolated RS-485 Modbus, BACnet IP & Modbus IP network connectivity to Building Management Systems for unit monitoring and management. Also, provides ground fault isolated 10/100 baseT Ethernet connectivity for unit monitoring and management. The supported management interfaces include: SNMP for Network Management Systems, HTTP for web page viewing, SMTP for email, and SMS for mobile messaging. This card can support dual IP and 485 protocols simultaneous. IS-UNITY-DP card is factory-installed in an IntelliSlot.
- Unit Color: RAL 7021 Black Gray Matte
- Supply Air Sensor
- High Temperature Sensor
- Smoke Sensor
- Compressor Overload Sensor
- Temperature/Humidity Sensors internal for return air sensing
- One Remote Shut Down Contact
- Three Alarm Contacts
- Full Duct Collar Plenum (Plenum Color : RAL 7021 Black Gray Matte)
- LT410 Point Leak-Detection Sensor, quantity 1 per unit

Quantity (2) Liebert MC Air-Cooled Microchannel Condenser(s)

- Configuration Number: MCM040E1AD0A0VU000000K468
- Model Number: MCM040E1ADK468
- Outdoor Design Ambient : 95°F
- Voltage: 460V/3ph/60Hz

The Liebert MC is an air-cooled condenser featuring an all-aluminum microchannel coil and a variable speed EC motor on every fan. Constructed with an aluminum cabinet, the Liebert MC is a low-profile, direct-drive propeller fan-type air-cooled unit suitable for mounting outdoors. It provides for the heat rejection of one refrigeration circuit, matching heat rejection capacity varying with the outdoor ambient temperatures and compressor heat rejection requirements. The unit is quiet and corrosion resistant. All electrical connections and controls are enclosed in a factory mounted NEMA 3R electrical panel.

Liebert MC Condenser Details:

- Microchannel aluminum coil
- Variable Speed EC Fans
- Premium electronic control board providing communication with iCOM using CANbus
- Short Circuit Current Rating of 65,000 Amps, rms
- R-410A factory set points and single refrigerant circuit
- Aluminum exterior panels and 18" aluminum legs
- Domestic packaging

Services Include:

- Liebert 1 Year Prime Labor Warranty (Reimburse Labor to Repair +2 hr travel & 2 hr troubleshooting) – Liebert PDX/PCW Unit
- Liebert 1 Year Prime Labor Warranty (Reimburse Labor to Repair +2 hr travel & 2 hr troubleshooting) – Liebert Heat Rejection Unit
- Warranty Inspection Included (Includes Liebert Heat Rejection)

Total Price Including Freight but NOT TAX **USD $50,725.00**

Terms & Conditions:

- Quotation Valid for 45 days
- Price does not include tax
- Terms are Net 30 Days, subject to manufacturer's approval
- INFORMATION TO BUYER: This order between the Buyer and Seller is limited to Seller's Terms and Conditions located at http://termsconditions.vertivco.com/ unless a formal agreement governing this Purchase Order/transaction has been executed by the parties, in which case the Terms and Conditions of the signed agreement shall govern. Seller hereby objects to all Buyer's terms and conditions received by Seller and/or issued by Buyer.

- Please address Purchase Orders to:
Liebert Corporation c/o AC New Mexico
1050 Dearborn Drive
Columbus, OH 43085

Leasing is available for qualified buyers from First American Vendor Finance (www.favf.com). Try our lease calculator for estimated monthly payments (http://calc.faef.com/calc/vertiv) or speak with your representative to learn more.

GORDON DIXON
Account Representative

Liebert Corporation
TERMS AND CONDITIONS OF SALE

Liebert Corporation is herein referred to as the "Seller" and the customer or person or entity purchasing goods and/or services ("Goods") and/or licensing software and/or firmware, which are preloaded, or to be used with Goods ("Software") from Seller is referred to as the "Buyer." These Terms and Conditions, any price list or schedule, quotation, acknowledgment, Seller's scope or statement of work, or invoice from Seller relevant to the sale of the Goods and licensing of Software by Seller or its affiliate Avocent Corporation, and all associated terms, conditions and documents incorporated by specific reference herein or therein, constitute the complete and exclusive statement of the terms of the agreement governing the sale of Goods and/or license of Software by Seller to Buyer. Seller's acceptance of Buyer's purchase order is expressly conditional on Buyer's assent to all of Seller's terms and conditions of sale, including terms and conditions that are different from or additional to the terms and conditions of Buyer's purchase order. Buyer's acceptance of the Goods and/or Software will manifest Buyer's assent to these Terms and Conditions. Seller reserves the right in its sole discretion to refuse orders.

1. **PRICES**: Unless otherwise specified in writing by Seller, the price quoted or specified by Seller for the Goods and/or Software shall remain in effect for thirty (30) days after the date of Seller's quotation provided an unconditional authorization from Buyer for the shipment of the Goods and/or Software is received and accepted by Seller within such time period. If such authorization is not received by Seller within such thirty (30) day period, Seller shall have the right to change the price for the Goods and/or Software to Seller's price for the Goods and/or Software at the time of shipment. All prices and licensee fees are exclusive of taxes, transportation and insurance, which are to be borne by Buyer. Unless otherwise specified by Seller, parts ("Parts") that are required for the performance of services will be furnished at Seller's then prevailing prices. Seller assigns to Buyer any warranties which are made by manufacturers and suppliers of Parts and which are assignable. Except as specified above, Parts furnished hereunder are furnished AS IS, WHERE IS, WITH NO WARRANTY WHATSOEVER.

2. **TAXES**: Any current or future tax or governmental charge (or increase in same) affecting Seller's costs of production, sale, or delivery or shipment, or which Seller is otherwise required to pay or collect in connection with the sale, purchase, delivery, storage, processing, use or consumption of Goods, Parts, and/or Software, shall be for Buyer's account and shall be added to the price or billed to Buyer separately, at Seller's election..

3. **TERMS OF PAYMENT**: Unless otherwise specified by Seller, terms are net thirty (30) days from date of Seller's invoice in U.S. currency. Seller shall have the right, among other remedies, either to terminate this agreement or to suspend further performance under this and/or other agreements with Buyer in the event Buyer fails to make any payment when due, which other agreements Buyer and Seller hereby amend accordingly. Buyer shall be liable for all expenses, including attorneys' fees, relating to the collection of past due amounts. If any payment owed to Seller is not paid when due, it shall bear interest, at a rate to be determined by Seller, which shall not exceed the maximum rate permitted by law, from the date on which it is due until it is paid. Should Buyer's financial responsibility become unsatisfactory to Seller, cash payments or security satisfactory to Seller may be required by Seller for future deliveries of Goods and/or Software. If such cash payment or security is not provided, in addition to Seller's other rights and remedies, Seller may discontinue deliveries. Buyer hereby grants Seller a security interest in all Goods and/or Software sold to Buyer by Seller, which security interest shall continue until all such Goods and/or Software are fully paid for, and Buyer, upon Seller's demand, will execute and deliver to Seller such instruments as Seller requests to protect and perfect such security interest. All purchases paid by credit card shall be charged a 2.0% usage surcharge of the invoice total, for fees paid by Seller to accept credit card transactions.

4. **SHIPMENT AND DELIVERY**: While Seller will use all reasonable commercial efforts to maintain the delivery date(s) and/or performance dates acknowledged or quoted by Seller, all shipping dates and/or performance dates are approximate and not guaranteed. Seller reserves the right to make partial shipments. Seller, at its option, shall not be bound to tender delivery of any Goods, Parts, and/or Software for which Buyer has not provided shipping instructions and other required information. If the shipment of the Goods, Parts, and/or Software is postponed or delayed by Buyer for any reason, Buyer agrees to reimburse Seller for any and all storage costs and other additional expenses resulting therefrom. For sales in which the end destination of the Goods, Parts, and/or Software is outside of the United States (except for those international sales to Seller's affiliated companies), risk of loss and legal title to the Goods, Parts, and/or Software shall transfer to Buyer immediately after the Goods, Parts, and/or Software have passed beyond the territorial limits of the United States. For international sales to Seller's affiliated companies, all shipments of Goods, Parts, and/or Software are made on a Delivered at Terminal (DAT) basis, per Incoterms 2010, with freight charges from Seller's facility to destination terminal invoiced to buyer either on a Prepaid or PPD/Add basis, as agreed to by Seller and Buyer. All other shipments of Goods, Parts, and/or Software are made on an Ex Works (EXW) Seller's Shipping Point basis, per Incoterms 2010, with Seller responsible to load goods on Buyer's nominated vehicle. Any claims for shortages or damages suffered in transit are the responsibility of Buyer and shall be submitted by Buyer directly to the carrier. Shortages or damages must be identified and signed for at the time of delivery.

5. **LIMITED WARRANTY**: Subject to the limitations of Section 6, Seller's standard warranty that is applicable to the Goods and/or Software at the time of purchase is the only warranty applicable to the sale of Seller's Goods and/or Software and its terms, conditions and limitations are incorporated by reference herein. **THE WARRANTY SET FORTH IN THIS SECTION 5 AND THE WARRANTY SET FORTH IN SECTION 8 ARE THE SOLE AND EXCLUSIVE WARRANTIES GIVEN BY SELLER WITH RESPECT TO THE GOODS AND/OR SOFTWARE AND ARE IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHETHER OR NOT THE PURPOSE OR USE HAS BEEN DISCLOSED TO SELLER IN SPECIFICATIONS, DRAWINGS OR OTHERWISE, AND WHETHER OR NOT SELLER'S PRODUCTS ARE SPECIFICALLY DESIGNED AND/OR MANUFACTURED BY SELLER FOR BUYER'S USE OR PURPOSE.**

SELLER'S WARRANTY EXTENDS ONLY TO PURCHASERS WHO BUY FOR INDUSTRIAL OR COMMERCIAL USE. This warranty does not extend to any losses or damages due to misuse, accident, abuse, neglect, normal wear and tear, negligence (other than Seller's), unauthorized modification or alteration, use beyond rated capacity, unsuitable power sources or environmental conditions, improper installation, repair, handling, maintenance or application or any other cause not the fault of Seller. To the extent that Buyer or its agents have supplied specifications, information, representation of operating conditions or other data to Seller in the selection or design of the Goods and/or Software and the preparation of Seller's quotation, and in the event that actual operating conditions or other conditions differ from those represented by Buyer, any warranties or other provisions contained herein that are affected by such conditions shall be null and void. Buyer assumes all other responsibility for any loss, damage, or injury to persons or property arising out of, connected with, or resulting from the use of Goods and/or Software, either alone or in combination with other products/components.

6. **LIMITATION OF REMEDY AND LIABILITY**: **THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY WARRANTY HEREUNDER (OTHER THAN THE WARRANTY PROVIDED UNDER SECTION 8) SHALL BE LIMITED TO REPAIR, CORRECTION OR REPLACEMENT, OR REFUND OF THE PURCHASE PRICE UNDER SECTION 5. SELLER SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE AND THE REMEDIES OF BUYER SET FORTH IN THIS AGREEMENT ARE EXCLUSIVE. IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PRICE PAID BY BUYER FOR THE SPECIFIC GOODS, PARTS, AND/OR SOFTWARE PROVIDED BY SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION.**

BUYER AGREES THAT SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS SHALL NOT EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES. The term "consequential damages" shall include, but not be limited to, loss of anticipated profits, business interruption, loss of use, revenue, reputation and data, costs incurred, including without limitation, for capital, fuel, power and loss or damage to property or equipment. It is expressly understood that any technical advice furnished by Seller with respect to the use of the Goods and/or Software is given without charge, and Seller assumes no obligation or liability for the advice given, or results obtained, all such advice being given and accepted at Buyer's risk.

7. **INSURANCE:** Seller shall maintain the following insurance or self-insurance coverage: **Worker's Compensation** in accordance with the statutory requirements of the state in which the work is performed. **Employer's Liability** with a limit of liability of $2,000,000 per occurrence for bodily injury by accident or bodily injury by disease. **Commercial General Liability (CGL)** for bodily injury and property damage with a limit of $2,000,000 per occurrence and aggregate. CGL includes Contractual Liability. CGL does not include Products and Completed Operations coverage, which is self-insured. **Automobile Liability** insurance that covers usage of all owned, non-owned and leased vehicles and which is subject to a combined single limit per occurrence of $2,000,000. Automobile Liability insurance includes Contractual Liability, but no special endorsements. **Buyer expressly acknowledges and agrees that Seller has set its prices and entered into this Agreement in reliance upon the limitations of liability, insurance coverage, and other terms and conditions specified herein, which allocate the risk between Seller and Buyer and form a basis of this bargain between the parties.**

8. **PATENTS AND COPYRIGHTS**: Subject to the limitations of the second paragraph of Section 6, Seller warrants that the Goods and/or Software sold, except as are made specifically for Buyer according to Buyer's specifications, do not infringe any valid U.S. patent or copyright in existence as of the date of shipment. This warranty is given upon the condition that Buyer promptly notify Seller of any claim or suit involving Buyer in which such infringement is alleged and cooperate fully with Seller and permit Seller to control completely the defense, settlement or compromise of any such allegation of infringement. Seller's warranty as to utility patents only applies to infringement arising solely out of the inherent operation according to Seller's specifications and instructions of such Goods and/or Software. In the event (i) such Goods and/or Software are held to infringe such a U.S. patent or copyright in such suit, and the use of such Goods and/or Software is enjoined, or (ii)a compromise or settlement is made by Seller, Seller shall have the right, at its option and expense, to procure for Buyer the right to continue using such Goods and/or Software, or replace them with non-infringing Goods and/or Software, or modify same to become non-infringing, or grant Buyer a credit for the depreciated value of such Goods and/or Software and accept return of them. In the event of the foregoing, Seller may also, at its option, cancel the agreement as to future deliveries of such Goods and/or Software, without liability.

9. **EXCUSE OF PERFORMANCE**: Seller shall not be liable for delays in performance or for non-performance due to acts of God; acts of Buyer; war; epidemic; fire; flood; weather; sabotage; strikes or labor disputes; civil disturbances or riots; governmental requests, restrictions, allocations, laws, regulations, orders or actions; unavailability of or delays in transportation; default of suppliers; or unforeseen circumstances or any events or causes beyond Seller's reasonable control. Deliveries or other performance may be suspended for an appropriate period of time or canceled by Seller upon notice to Buyer in the event of any of the foregoing, but the balance of the agreement shall otherwise remain unaffected as a result of the foregoing. If Seller determines that its ability to supply the total demand for the Goods, Parts, and/or Software, or to obtain material used directly or indirectly in the manufacture of the Goods, Parts, and/or Software, is hindered, limited or made impracticable due to causes set forth in the preceding paragraph, Seller may allocate its available supply of the Goods, Parts, Software, and/or such material (without obligation to acquire other supplies of any such Goods, Parts, Software, or material) among its purchasers on such basis as Seller determines to be equitable without liability for any failure of performance which may result therefrom.

10. **CANCELLATION**: Buyer may cancel orders only upon reasonable advance written notice and upon payment to Seller of Seller's cancellation charges which include, among other things, all costs and expenses incurred, and, to cover commitments made, by the Seller and a reasonable profit thereon. Seller's determination of such cancellation charges shall be conclusive.

11. **CHANGES**: Buyer may request changes or additions to the Goods and/or Software consistent with Seller's specifications and criteria. In the event such changes or additions are accepted by Seller, Seller may revise the price, license fees, and dates of delivery and/or performance dates. Seller reserves the right to change designs and specifications for the Goods, Parts, and/or Software without prior notice to Buyer, except with respect to Goods and/or Software being made-to-order for Buyer. Seller shall have no obligation to install or make such change in any Goods and/or Software manufactured prior to the date of such change.

12. **NUCLEAR/MEDICAL**: GOODS, PARTS, AND SOFTWARE SOLD HEREUNDER ARE NOT FOR USE IN CONNECTION WITH ANY NUCLEAR, MEDICAL, LIFE-SUPPORT AND RELATED APPLICATIONS. Buyer accepts Goods, Parts, and Software with the foregoing understanding, agrees to communicate the same in writing to any subsequent purchasers or users and to defend, indemnify and hold harmless Seller from any claims, losses, suits, judgments and damages, including incidental and consequential damages, arising from such use, whether the cause of action be based in tort, contract or otherwise, including allegations that the Seller's liability is based on negligence or strict liability.

13. **ASSIGNMENT**: Buyer shall not assign its rights or delegate its duties hereunder or any interest herein without the prior written consent of Seller, and any such assignment, without such consent, shall be void.

14. **SOFTWARE**: Notwithstanding any other provision herein to the contrary, Seller or applicable third party licensor to Seller shall retain all rights of ownership and title in its respective Software, including without limitation all rights of ownership and title in its respective copies of such Software. Except as otherwise provided herein, Buyer is hereby granted a nonexclusive, non-transferable royalty free license to use the Software incorporated into the Goods solely for purposes of Buyer properly utilizing such Goods purchased from Seller. All other Software shall be furnished to, and used by, Buyer only after execution of Seller's (or the licensor's) applicable standard license agreement, the terms of which are incorporated herein by reference.

15. **TOOLING**: Tool, die, and pattern charges, if any, are in addition to the price of the Goods and are due and payable upon completion of the tooling. All such tools, dies and patterns shall be and remain the property of Seller. Charges for tools, dies, and patterns do not convey to Buyer, title, ownership interest in, or rights to possession or removal, or prevent their use by Seller for other purchasers, except as otherwise expressly provided by Seller and Buyer in writing with reference to this provision.

16. **DOCUMENTATION**: Seller shall provide Buyer with that data/documentation which is specifically identified in Seller's quotation. If additional copies of data/documentation are to be provided by Seller, it shall be provided to Buyer at Seller's applicable prices then in effect.

17. **INSPECTION/TESTING**: Buyer, at its option and expense, may observe the inspection and testing by Seller of the Goods and/or Software for compliance with Seller's standard test procedures prior to shipment, which inspection and testing shall be conducted at Seller's plant at such reasonable time as is specified by Seller. Any rejection of the Goods and/or Software must be made promptly by Buyer before shipment. Tests shall be deemed to be satisfactorily completed and the test fully met when the Goods and/or Software meet Seller's criteria for such procedures. If Buyer does not inspect the Goods and/or Software at Seller's plant as provided herein, Buyer shall have ten (10) days from (i) the date of delivery of goods and/or Software and (ii) from the date of completion of each portion of the services to inspect the Goods and/or Software, and in the event of any non-conformity, Buyer must give written notice to Seller within said period stating why the Goods and/or Software are not conforming. Failure by Buyer to give such notice constitutes unqualified acceptance of the Goods and/or Software. Buyer's sole remedy for non-conforming services shall be correct performance of services incorrectly performed by Seller.

18. **RETURNED GOODS**: Advance written permission to return Goods and/or Software must be obtained from Seller in accordance with Seller's then current Return Material Authorization (RMA) procedures and a return authorization number issued. Such Goods and/or Software must be (i) current, unused Goods and/or Software, (ii) free of all liens, encumbrances, or other claims, and (iii) shipped, transportation prepaid, to Seller's specified location. Returns made without proper written permission will not be accepted by Seller. Seller reserves the right to inspect Goods and/or Software prior to authorizing return.

19. **BILLABLE SERVICES**: Additional charges will be billed to Buyer at Seller's then prevailing labor rates and Parts prices for any of the following: a) any services not specified in Seller's quotation, Seller's order acknowledgement, or other documents referenced herein and therein; b) any services performed at times other than Seller's normal service hours; c) if reasonable site and/or equipment access is denied the Seller service representative; and d) if it is necessary, due to local circumstances, to use union labor or hire an outside contractor, Seller service personnel will provide supervision only and the cost of such union or contract labor will be charged to Buyer.

20. **DRAWINGS**: Seller's prints and drawings (including without limitation, the underlying technology) furnished by Seller to Buyer in connection with this agreement are the property of Seller and Seller retains all rights, including without limitation, exclusive rights of use, licensing and sale. Possession of such prints or drawings does not convey to Buyer any rights or license, and Buyer shall return all copies (in whatever medium) of such prints or drawings to Seller immediately upon request therefor.

21. **BUYER SUPPLIED DATA**: To the extent that Seller has been provided by, or on behalf of, Buyer any specifications, description of operating conditions or other data and information in connection with the selection or design of the Goods and/or Software, and/or the provision of Services, and the actual operating conditions or other circumstances differ from those provided by Buyer and relied upon by Seller, any warranties or other provisions contained herein which are affected by such conditions shall be null and void.

22. **EXPORT/IMPORT**: Buyer agrees that all applicable import and export control laws, regulations, orders and requirements, including without limitation those of the United States and the European Union, and the jurisdictions in which the Seller and Buyer are established or from which Goods, Parts, Software, and Services may be supplied, will apply to their receipt and use. In no event shall Buyer use, transfer, release, import, export, Goods, Parts, or Software in violation of such applicable laws, regulations, orders or requirements.

23. **NON-SOLICITATION**: Buyer shall not solicit, directly or indirectly, or employ any employee of Seller during the period any Goods are being provided to Buyer and for a period of one (1) year after the last provision of Goods.

24. **GENERAL PROVISIONS**: These terms and conditions supersede all other communications, negotiations and prior oral or written statements regarding the subject matter of these terms and conditions. No change, modification, rescission, discharge, abandonment, or waiver of these terms and conditions shall be binding upon the Seller unless made in writing and signed on its behalf by a duly authorized representative of Seller. No conditions, usage of trade, course of dealing or performance, understanding or agreement purporting to modify, vary, explain, or supplement these terms and conditions shall be binding unless hereafter made in writing and signed by the party to be bound, and no modification or additional terms shall be applicable to this agreement by Seller's receipt, acknowledgment, or acceptance of purchase orders, shipping instruction forms, or other documentation containing terms at variance with or in addition to those set forth herein. Any such modifications or additional terms are specifically rejected and deemed a material alteration hereof. If this document shall be deemed an acceptance of a prior offer by Buyer, such acceptance is expressly conditional upon Buyer's assent to any additional or different terms set forth herein. No waiver by either party with respect to any breach or default or of any right or remedy, and no course of dealing, shall be deemed to constitute a continuing waiver of any other breach or default or of any other right or remedy, unless such waiver be expressed in writing and signed by the party to be bound. All typographical or clerical errors made by Seller in any quotation, acknowledgment or publication are subject to correction.

The validity, performance, and all other matters relating to the interpretation and effect of this agreement shall be governed by the law of the state of Ohio without regard to its conflict of laws principles. Buyer and Seller agree that the proper venue for all actions arising in connection herewith shall be only in Ohio and the parties agree to submit to such jurisdiction. No action, regardless of form, arising out of transactions relating to this contract, may be brought by either party more than two (2) years after the cause of action has accrued. The U.N. Convention on Contracts for the International Sales of Goods shall not apply to this agreement.

25. **INDEMNITY:** Each party shall indemnify and hold the other party harmless from loss, damage, liability or expense resulting from damage to personal property of a third party, or injuries, including death, to third parties to the extent caused by a negligent act or omission of the party providing indemnification or a party's subcontractors, agents or employees during performance of services hereunder. Such indemnification shall be reduced to the extent damage or injuries are attributable to others. The indemnifying party shall defend the other party in accordance with and to the extent of the above indemnification, provided that the indemnifying party is: i) promptly notified by the other party, in writing, of any claims, demands or suits for such damages or injuries; ii) given all reasonable information and assistance by the other party; iii) given full control over any resulting negotiation, arbitration or litigation, including the right to choose counsel and settle claims, or the indemnifying party's obligations herein shall be deemed waived.

Liebert Corp Terms & Conditions Rev 2016

LIMITED WARRANTY FOR INTELLISLOT INTERFACE CARDS, LEAK DETECTION PRODUCTS, STANDALONE MONITORING PRODUCTS, RACK MONITORING PRODUCTS, AND AUTOMATED SHUTDOWN PRODUCTS

Warrantor: Liebert Corporation (referred to herein as "Liebert") offers the following **One Year Limited Warranty Against Defects in Material and Workmanship** ("**Warranty**") for applicable Product.

Products Covered:

- IntelliSlot Interface Cards
- Leak Detection Products
- Standalone Monitoring Panels
- Rack Monitoring Products
- Automated Shutdown Products

Terms of Limited Warranty:

As provided herein, Liebert warrants that during the Warranty Period (as defined below) the Product:

- is free of defects in material and workmanship; and
- conforms to the descriptions contained in any applicable certified drawings for such Product, to Liebert's final invoices, and to applicable Liebert Product brochures and manuals current as of the date of Product shipment ("Descriptions")

Warranty Period: a period of thirteen (13) months from date of product shipment. Product shipment date is determined only from the bill of lading.

If any part or portion of the Liebert Product fails to conform to the Warranty within the Warranty Period, Liebert, at its option, will furnish new or factory remanufactured Products for repair or replacement of that failed portion or part. REPAIR OR REPLACEMENT OF A DEFECTIVE PRODUCT OR PART THEREOF DOES NOT EXTEND OR RESTART THE ORIGINAL WARRANTY PERIOD. Liebert does not control the use of any Product and, accordingly, materials classified as "Descriptions" are NOT WARRANTIES OF PERFORMANCE and NOT WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE.

Who is Covered:

This Warranty extends to the **original end-user** (the "User") and only within the fifty states of the USA and Canada. This Warranty is not transferable or assignable without the prior written permission of Liebert. This Warranty is given ONLY to purchasers who buy for commercial or industrial use in the ordinary course of business. Liebert assigns to User any warranties which are made by manufacturers and suppliers of components of, or accessories to, the Liebert Product and which are assignable, but Liebert makes NO REPRESENTATIONS as to the effectiveness or extent of such warranties, assumes NO RESPONSIBILITY for any matters which may be warranted by such manufacturers or suppliers and extends no coverage under this Warranty to such components or accessories.

Warranty Claims Procedure and Services:

Within thirty (30) days after User's discovery of a defect, User must contact their local Liebert representative and provide all material information relating to such alleged defect. User may contact Liebert at (800) 543-2378 for local Liebert representative information.

Liebert, in its sole discretion, shall either repair or replace defective Products. User shall bear all labor or shipping charges associated with de-installation, shipment and transportation of the returned Product and the transportation and installation of the Product replaced under warranty. Warranty coverage will be extended only after Liebert or its representative's inspection discloses the claimed defect and shows no signs of treatment or use that would void the coverage of this Warranty. All defective Products and parts thereof replaced under this Warranty become the property of Liebert.

Items Not Covered:

THIS WARRANTY DOES NOT COVER DAMAGE OR DEFECT CAUSED BY misuse, improper application, wrong or inadequate electrical current or connection, negligence, inappropriate on site operating conditions, repair by non-Liebert designated personnel, accident in transit, tampering, alterations, a change in location or operating use, exposure to the elements, Acts of God, theft or installation contrary to Liebert's recommendations or specifications, or in any event if the Liebert serial number has been altered, defaced, or removed.

THIS WARRANTY DOES NOT COVER unauthorized shipping costs, Product installation/removal costs, travel costs, external circuit breaker resetting or maintenance or service items and further, except as may be provided herein, does NOT include labor costs or transportation, arising from the replacement of the Liebert Product or any part thereof or charges to remove or reinstall same at any premises of User, nor for site inspections that determine no corrective action was required nor any other services not expressly provided for by the terms of the Warranty. Consumables, including but not limited to air filters, are not covered by this Warranty.

THIS WARRANTY IS VOID UPON THE FOLLOWING: (1) the Product having been stored in an unsuitable environment after Product shipment, and/or (2) if the Product contains an internal battery, User allows such battery to discharge below the minimum battery voltage cutoff point or if the User does not start recharging a discharged, or partially discharged, battery within forty-eight (48) hours of the discharge period. No salesperson, employee or agent of Liebert is authorized to add to or vary the terms of this Warranty. Liebert retains the right to cancel the Warranty, subject to reinstatement at Liebert's sole discretion, for late- or non-payment of the Product purchase price and any other amounts due. Warranty terms may only be modified, if at all, if in writing and signed by a Liebert officer.

Other Limitations:

THIS LIMITED WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. USER'S SOLE AND EXCLUSIVE REMEDY IS REPAIR OR REPLACEMENT OF THE LIEBERT PRODUCT AS SET FORTH HEREIN. IF USER'S REMEDY IS DEEMED TO FAIL OF ITS ESSENTIAL PURPOSE BY A COURT OF COMPETENT JURISDICTION, LIEBERT'S RESPONSIBILITY FOR PROPERTY LOSS OR DAMAGE SHALL NOT EXCEED THE NET PRODUCT PURCHASE PRICE. IN NO EVENT SHALL LIEBERT ASSUME ANY LIABILITY FOR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES OF ANY KIND WHATSOEVER, INCLUDING WITHOUT LIMITATION LOST PROFITS, BUSINESS INTERRUPTION OR LOSS OF DATA, WHETHER ANY CLAIM IS BASED UPON THEORIES OF CONTRACT, NEGLIGENCE, STRICT LIABILITY, TORT, OR OTHERWISE. THE PRODUCTS LISTED IN THIS WARRANTY ARE NOT FOR USE IN CONNECTION WITH ANY NUCLEAR, MEDICAL, LIFE-SUPPORT AND RELATED APPLICATIONS.

OPTIONAL LIMITED WARRANTY FOR THERMAL MANAGEMENT PRODUCTS

Warrantor: Liebert Corporation (referred to herein as "Liebert") offers the following **Optional Limited Warranty Against Defects in Material and Workmanship** ("**Warranty**") for applicable Product.

Products Covered:

- Liebert™ Thermal Management Products-First Year Prime Labor Warranty

Terms of Limited Warranty:

As provided herein, Liebert warrants that during the Warranty Period (as defined below):

- Liebert, at its option, will provide labor support pursuant to the terms below.
- Liebert Warranty inspection allowance must be sold with this Warranty, and the Warranty inspection information must be submitted through the local Liebert representative to Liebert Product Support.

Warranty Period: a period of one (1) year from a valid, documented Product warranty inspection performed by Liebert personnel, which period shall expire no later than eighteen (18) months from the Product shipment date.

Who is Covered:

This Warranty extends to the **original end-user** (the "User") and only within the fifty states of the USA and Canada. This Warranty is not transferable or assignable without the prior written permission of Liebert. This Warranty is given ONLY to purchasers who buy for commercial or industrial use in the ordinary course of business. Liebert assigns to User any warranties which are made by manufacturers and suppliers of components of, or accessories to, the Liebert Product and which are assignable, but Liebert makes NO REPRESENTATIONS as to the effectiveness or extent of such warranties, assumes NO RESPONSIBILITY for any matters which may be warranted by such manufacturers or suppliers and extends no coverage under this Warranty to such components or accessories.

Warranty Claims Procedure and Services:

Within thirty (30) days after User's discovery of a defect, User must contact their local Liebert representative to obtain pre-authorization from Liebert Product Support and provide all material information relating to such alleged defect. User may contact Liebert at (800) 543-2378 for local Liebert representative information.

Subject to Product Warranty inspection and the other limitations specified herein, a Liebert field service representative will repair the non-conforming Liebert Product warranted hereunder, without charge for labor, including appropriate troubleshooting of the Product during the Warranty Period. Warranty coverage will be extended only after Liebert's inspection confirms the claimed defect and shows no signs of treatment or use voiding the coverage of this Warranty. All defective Products and component parts replaced under this Warranty become the property of Liebert. Liebert may utilize third parties in the performance of Warranty work, including repair or replacement hereunder, where, in Liebert's opinion, such work can be performed in less time, with less expense, or in closer proximity to the Liebert Product.

Items Not Covered:

THIS WARRANTY DOES NOT COVER DAMAGE OR DEFECT CAUSED BY misuse, improper application, wrong or inadequate electrical current or connection, inadequate water or drain services, negligence, inappropriate on site operating conditions, repair by non-Liebert designated personnel, accident in transit, tampering, alterations, a change in location or operating use, exposure to the elements, Acts of God, theft or installation contrary to Liebert's recommendations or specifications, or in any event if the Liebert serial number has been altered, defaced, or removed.

THIS WARRANTY DOES NOT COVER shipping costs, external circuit breaker resetting, or loss of refrigerant, maintenance or service items

THIS WARRANTY IS VOID UPON THE FOLLOWING: (1) the Product having been stored in an unsuitable environment after Product shipment and/or (2) if applicable, Product warranty inspection performed by a third party other than Liebert and/or its authorized representatives. No salesperson, employee or agent of Liebert is authorized to add to or vary the terms of this Warranty. Liebert retains the right to cancel the Warranty, subject to reinstatement at Liebert's sole discretion, for late- or non-payment of the Product purchase price and any other amounts due. Warranty terms may only be modified, if at all, if in writing and signed by a Liebert officer.

Other Limitations:

THIS LIMITED WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. USER'S SOLE AND EXCLUSIVE REMEDY IS REPAIR OR REPLACEMENT OF THE LIEBERT PRODUCT AS SET FORTH HEREIN. IF USER'S REMEDY IS DEEMED TO FAIL OF ITS ESSENTIAL PURPOSE BY A COURT OF COMPETENT JURISDICTION, LIEBERT'S RESPONSIBILITY FOR PROPERTY LOSS OR DAMAGE SHALL NOT EXCEED THE NET PRODUCT PURCHASE PRICE. IN NO EVENT SHALL LIEBERT ASSUME ANY LIABILITY FOR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES OF ANY KIND WHATSOEVER, INCLUDING WITHOUT LIMITATION LOST PROFITS, BUSINESS INTERRUPTION OR LOSS OF DATA, WHETHER ANY CLAIM IS BASED UPON THEORIES OF CONTRACT, NEGLIGENCE, STRICT LIABILITY, TORT, OR OTHERWISE. THE PRODUCTS LISTED IN THIS WARRANTY ARE NOT FOR USE IN CONNECTION WITH ANY NUCLEAR, MEDICAL, LIFE-SUPPORT AND RELATED APPLICATIONS.

LIMITED WARRANTY FOR THERMAL MANAGEMENT PRODUCTS

Warrantor: Liebert Corporation (referred to herein as "Liebert") offers the following **One-Year Limited Warranty Against Defects in Material and Workmanship** ("**Warranty**") for applicable Product.

Products Covered:

- Liebert Thermal Management Products

Terms of Limited Warranty:

As provided herein, Liebert warrants that during the Warranty Period (as defined below) the Product:

- is free of defects in material and workmanship; and
- conforms to the descriptions contained in any applicable certified drawings for such Product, to Liebert's final invoices, and to applicable Liebert Product brochures and manuals current as of the date of Product shipment ("Descriptions")

Warranty Period: a period of one (1) year from a valid, documented Product warranty inspection performed by Liebert personnel, which period shall expire no later than eighteen (18) months from the Product shipment date. Product shipment date is determined only from the bill of lading. If Product warranty inspection is not performed, the Warranty Period is thirteen (13) months from the date of purchase by the original end-user.

If any part or portion of the Liebert Product fails to conform to the Warranty within the Warranty Period, Liebert, at its option, will furnish new or factory remanufactured Products for repair or replacement of that failed portion or part. REPAIR OR REPLACEMENT OF A DEFECTIVE PRODUCT OR PART THEREOF DOES NOT EXTEND OR RESTART THE ORIGINAL WARRANTY PERIOD. Liebert does not control the use of any Product and, accordingly, materials classified as "Descriptions" are NOT WARRANTIES OF PERFORMANCE and NOT WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE.

Who is Covered:

This Warranty extends to the **original end-user** (the "User") and only within the fifty states of the USA and Canada. This Warranty is not transferable or assignable without the prior written permission of Liebert. This Warranty is given ONLY to purchasers who buy for commercial or industrial use in the ordinary course of business. Liebert assigns to User any warranties which are made by manufacturers and suppliers of components of, or accessories to, the Liebert Product and which are assignable, but Liebert makes NO REPRESENTATIONS as to the effectiveness or extent of such warranties, assumes NO RESPONSIBILITY for any matters which may be warranted by such manufacturers or suppliers and extends no coverage under this Warranty to such components or accessories.

Warranty Claims Procedure and Services:

Within thirty (30) days after User's discovery of a defect, User must contact their local Liebert representative and provide all material information relating to such alleged defect. User may contact Liebert at (800) 543-2378 for local Liebert representative information.

Liebert, in its sole discretion, shall either repair or replace defective Products. User shall bear all labor or shipping charges associated with de-installation, shipment and transportation of the returned Product and the transportation and installation of the Product replaced under warranty. Warranty coverage will be extended only after Liebert or its representative's inspection discloses the claimed defect and shows no signs of treatment or use that would void the coverage of this Warranty. All defective Products and parts thereof replaced under this Warranty become the property of Liebert.

Items Not Covered:

THIS WARRANTY DOES NOT COVER DAMAGE OR DEFECT CAUSED BY misuse, improper application, wrong or inadequate electrical current or connection, inadequate water or drain services, negligence, inappropriate on site operating conditions, repair by non-Liebert designated personnel, accident in transit, tampering, alterations, a change in location or operating use, exposure to the elements, Acts of God, theft or installation contrary to Liebert's recommendations or specifications, or in any event if the Liebert serial number has been altered, defaced, or removed.

THIS WARRANTY DOES NOT COVER shipping costs, Product installation/removal costs, travel costs, external circuit breaker resetting, loss of refrigerant, maintenance or service items and further, except as may be provided herein, does NOT include labor costs or transportation, arising from the replacement of the Liebert Product or any part thereof or charges to remove or reinstall same at any premises of User, nor for site inspections that determine no corrective action was required nor any other services not expressly provided for by the terms of the Warranty. Consumables, including but not limited to air filters, are not covered by this Warranty. Drive packages and heat exchangers in certain Thermal Management Products are warranted separately.

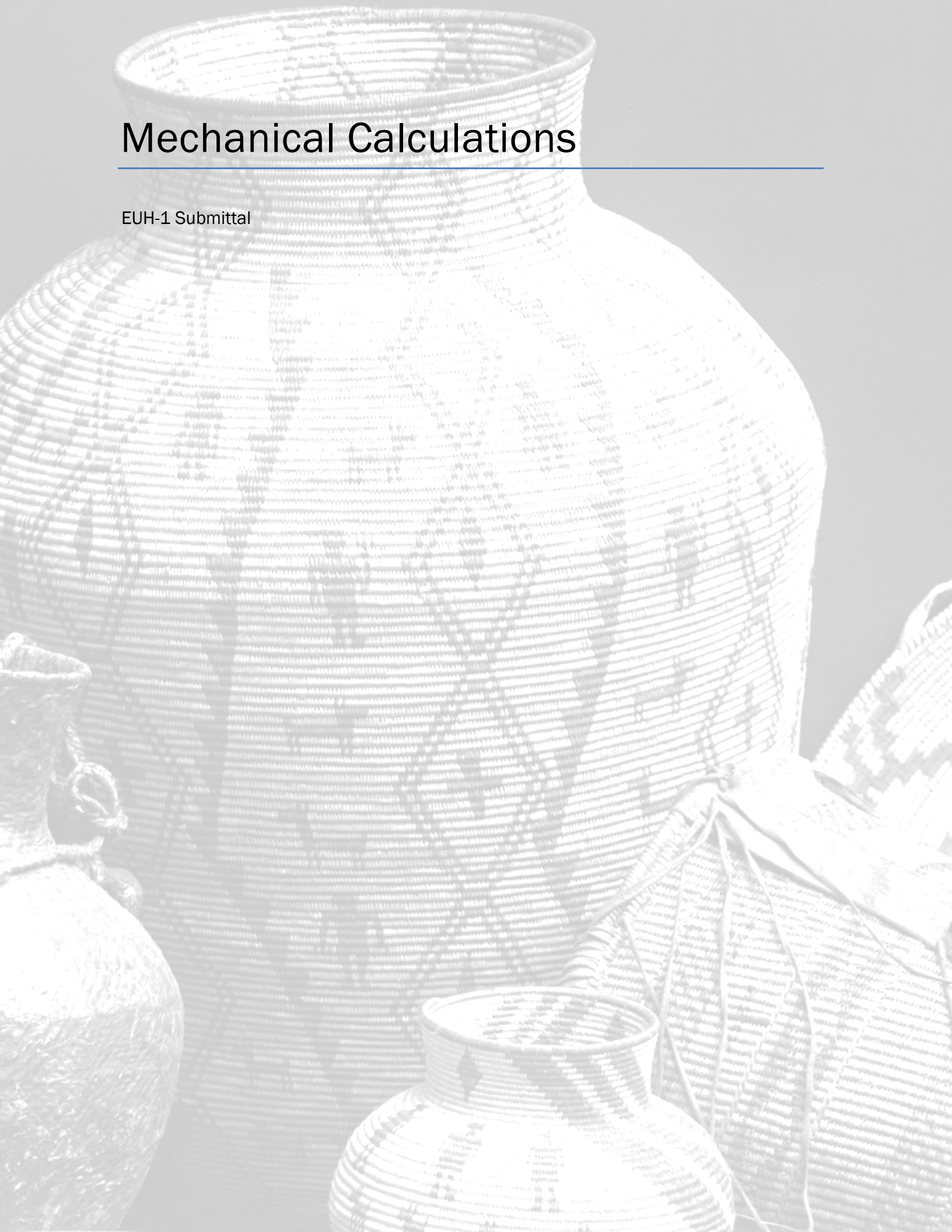
THIS WARRANTY IS VOID UPON THE FOLLOWING: (1) the Product having been stored in an unsuitable environment after Product shipment and/or (2) if applicable, Product warranty inspection performed by a third party other than Liebert and/or its authorized representatives. No salesperson, employee or agent of Liebert is authorized to add to or vary the terms of this Warranty. Liebert retains the right to cancel the Warranty, subject to reinstatement at Liebert's sole discretion, for late- or non-payment of the Product purchase price and any other amounts due. Warranty terms may only be modified, if at all, if in writing and signed by a Liebert officer.

Other Limitations:

THIS LIMITED WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. USER'S SOLE AND EXCLUSIVE REMEDY IS REPAIR OR REPLACEMENT OF THE LIEBERT PRODUCT AS SET FORTH HEREIN. IF USER'S REMEDY IS DEEMED TO FAIL OF ITS ESSENTIAL PURPOSE BY A COURT OF COMPETENT JURISDICTION, LIEBERT'S RESPONSIBILITY FOR PROPERTY LOSS OR DAMAGE SHALL NOT EXCEED THE NET PRODUCT PURCHASE PRICE. IN NO EVENT SHALL LIEBERT ASSUME ANY LIABILITY FOR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES OF ANY KIND WHATSOEVER, INCLUDING WITHOUT LIMITATION LOST PROFITS, BUSINESS INTERRUPTION OR LOSS OF DATA, WHETHER ANY CLAIM IS BASED UPON THEORIES OF CONTRACT, NEGLIGENCE, STRICT LIABILITY, TORT, OR OTHERWISE. THE PRODUCTS LISTED IN THIS WARRANTY ARE NOT FOR USE IN CONNECTION WITH ANY NUCLEAR, MEDICAL, LIFE-SUPPORT AND RELATED APPLICATIONS.

Mechanical Calculations

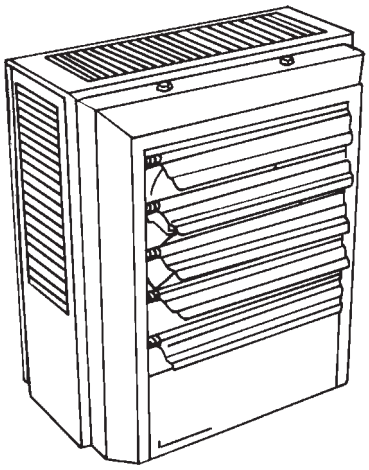
EUH-1 Submittal



BERKO®
A Marley Engineered Products Brand

470 Beauty Spot Rd. E, Bennettsville, SC 29512

SUBMITTAL SHEET
HUHAA SERIES
HORIZONTAL / VERTICAL UNIT HEATER



CAPACITIES
3KW through 50KW **208, 240, 277, 480V** **1Ø or 3Ø** **(Voltage & Phase varies with model)**

See Selection Chart

c UL US

TAG	QTY.	CATALOG NUMBER	HEATER			AMPS	CONTROL CKT. VOLTS	MOTOR VOLTS	AIR FLOW		NO. OF STAGES
			KW	VOLTS	Ø				CFM	F* RISE	

ACCESSORIES AND CONTROLS

TAG	QTY.	CAT. NO.	DESCRIPTION

SUBMITTED BY:	DATE

APPROVED BY:	DATE

CATALOG NUMBER	VOLTS	KW	AMPS	PH	2-STAGE ELEM.	STD. CONTROL VOLTS	Air Delivery CFM	FPM	^T (F)	Motor RPM	HP	HORIZ. AIR THROW	SHIP. WT)
HUHAA320	208	3	14.5	1	NA	208	350	800	27	1600	1/100	12	24
HUHAA520	208	5	24	1-3	5A	208	350	800	45	1600	1/100	12	24
HUHAA720	208	7.5	36	1-3	5B	24	650	970	37	1600	1/30	18	36
HUHAA1020	208	10	48	1-3	5B	24	650	970	49	1600	1/30	18	36
HUHAA1520	208	15	72	1-3	5A	24	910	1640	52	1530	1/20	35	56
HUHAA2020	208	20	56	3	5A	24	1320	2060	48	1500	1/10	41	63
HUHAA3020	208	30	84	3	5A	24	2100/1800	2100/2030	45/53	1600/1375	1/4	50	91
HUHAA5020	208	50	139	3	5A	24	3000/2600	3260/2900	53/61	1525/1420	1/2	60	125
HUHAA324	208/240	2.2/3.0	11.0/12.5	1	NA	208/240	350	800	27	1600	1/100	12	24
HUHAA524	208/240	3.7/5.0	18.0/21.0	1-3	5A	208/240	350	800	45	1600	1/100	12	24
HUHAA724	208/240	5.6/7.5	27.0/31.3	1-3	5B	24	650	970	37	1600	1/30	18	36
HUHAA1024	208/240	7.5/10.0	36.0/42.0	1-3	5B	24	650	970	49	1600	1/30	18	36
HUHAA1524	208/240	11.2/15.0	31.3/36.1	3	5C	24	910	1640	52	1530	1/20	35	56
HUHAA2024	208/240	15.0/20.0	41.2/48	3	5C	24	1320	2060	48	1500	1/10	41	33
HUHAA2524	208/240	18.7/25.0	52.0/60.0	3	5A	24	2100/1800	2100/2030	38/44	1600/1375	1/4	50	91
HUHAA3024	208/240	22.5/30.0	63.0/72.3	3	5A	24	2100/1800	2100/2030	45/53	1600/1375	1/4	50	91
HUHAA4024	208/240	30.0/40.0	83.4/96.4	3	5A	24	3000/2600	3260/2900	42/49	1525/1420	1/2	60	125
HUHAA5024	208/240	37.5/50.0	104.2/120.0	3	5A	24	3000/2600	3260/2900	53/61	1525/1420	1/2	60	125
HUHAA327	277	3	11	1	NA	277	350	800	27	1600	1/100	12	24
HUHAA527	277	5	18	1	NA	277	350	800	45	1600	1/100	12	24
HUHAA727	277	7.5	27	1	5B	24	650	970	37	1600	1/30	18	36
HUHAA1027	277	10	36	1	5B	24	650	970	49	1600	1/30	18	36
HUHAA348	480	3	3.6	3	NA	24	350	800	27	1600	1/100	12	24
HUHAA548	480	5	6	3	NA	24	350	800	45	1600	1/100	12	24
HUHAA748	480	7.5	9	3	5B	24	650	970	37	1600	1/30	18	36
HUHAA1048	480	10	12	3	5B	24	650	970	49	1600	1/30	18	36
HUHAA1548	480	15	18	3	5C	24	910	1640	52	1530	1/20	35	56
HUHAA2048	480	20	24	3	5C	24	1320	2060	48	1500	1/10	41	63
HUHAA2548	480	25	30	3	5C	24	2100/1800	2100/2030	38/44	1600/1375	1/4	50	91
HUHAA3048	480	30	36	3	5C	24	2100/1800	2100/2030	45/53	1600/1375	1/4	50	91
HUHAA4048	480	40	48	3	5A	24	3000/2600	3260/2900	42/49	1525/1420	1/2	60	125
HUHAA5048	480	50	60.2	3	5A	24	3000/2600	3260/2900	53/61	1525/1420	1/2	60	125

NOTE:

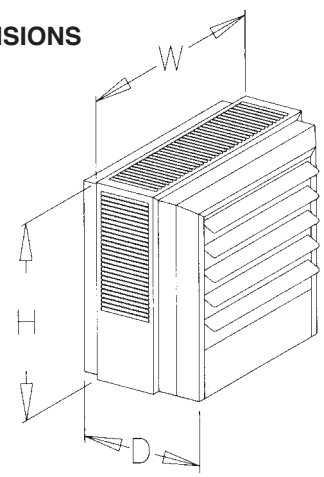
1. All standard units are supplied with a low voltage control transformer and contactor (24V) except HUHAA-3 & 5 Kw, 208, 240, & 277 volt models. Low voltage control on these units is available on made-to-order. All units are also available on special order 120 volt control; internal with transformer or external without transformer.
2. On dual voltage units, CFM, FPM, and RPM are shown at higher voltage.
3. On dual phase units, maximum amp draw is listed for respective voltage.
4. 25 thru 50 Kw models have two speed motors and dual CFM ratings.

5A. Standard

5B. Optional-made to order-amp load unbalanced on 3 phase.

5C. Optional-made to order-amp load balanced on 3 phase.
** Must use 2-stage thermostat on 3Ø operation.

DIMENSIONS



HEATER	HEIGHT	WIDTH	DEPTH
3 & 5	16"	14"	8-1/2"
7.5 & 10	21-3/4"	19"	8-1/2"
15 & 20	21-3/4"	19"	13-3/4"
25 & 30	30"	26-5/8"	13-3/4"
40 & 50	30"	26-5/8"	18-1/8"

MOUNTING LIMITATIONS

Unit heaters should not be used in potentially explosive atmospheres. The finish is not intended for direct salt spray exposure in marine applications or the highly corrosive atmospheres of swimming pools, chemical storage bins, etc.
Do not install unit heaters above recommended maximum mounting height. Obstructions must not block unit heater air inlet or discharge. Heaters must be mounted at least 7' above the floor to prevent accidental contact with the heating element or fan blade which could cause injury.

OPTIONAL FACTORY INSTALLED CONTROLS & ACCESSORIES

(Factory Installed Only - Not to be Field Installed)

3 & 5 KW Heaters with 208, 208/240 or 277 Volt Supply • Control Transformer (120 or 24 Volt Sec.) • Power Contactor (120 or 24 Volt Holding Coil)
Optional 120 Volt control • 3 & 5 KW with 480 Volt supply and 7.5 KW thru 50 KW.
Two Stage Element Control (See Note 5 Page 2)
Manual Reset
Bird Screen (Outlet Mesh)

OPTIONAL FIELD INSTALLED ELECTRICAL CONTROLS

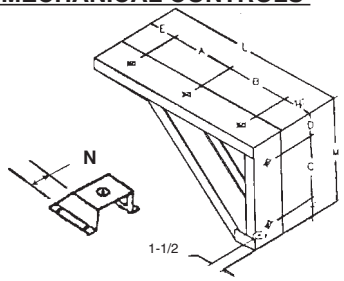
CAT. NO.	ACCESSORY	ELECTRICAL RATING	USE WITH
UHMT1 **	Single Pole Internal Thermostat - Temp. Range: 40F - 85F	25A @ 120, 240VAC Res. 22A @ 277VAC Res.	All HUHAA Series Heaters (except 5KW, 208 volt, 3 ph and 208/240 volt 3 ph which use HUHAAMT-2)
UHMT2 **	Two-Stage Internal Thermostat - Temp. Range: 40F - 85F	22A @ 120, 240VAC Res. 22A @ 277VAC Res 125V, A: Pilot Duty	5 KW, 208 volt 3 ph & 208/240 volt 3 ph, 208 volt:15, 20, 30 & 50 KW, 208/240 volt: 25, 30, 40 & 50 KW, 480 volt: 40 &* 50 KW heaters.
HUHAAFS *	Internal Summer Fan Switch	6A, 600VAC Res 2 Hp - 250, 480, 600VAC	All HUHAA Series Heaters
HUHAARFS1	Remote Summer Fan Switch (Line Voltage)	2 HP, 250-480VAC	All HUHAA Series Heaters
HUHAARFS2 *	Remote Summer Fan Switch with Relay (24V Coil-Single Pole Normally Open)	6 AFL, 35 ALR, 250VAC, 60Hz 3 AFL, 18 ALR, 480VAC, 60Hz	All HUHAA Series Heaters (except 3 & 5 KW & 208, 208/240 & 277 volt units, unless optional control transformer is supplied)
HUHAAHRT *	Heat Recovery Thermostat with Relay (24V Coil-Single Pole Normally Open) Hi - 120F, Low - 60F	6 AFL, 35 ALR, 250VAC, 60Hz 3 AFL, 18 ALR, 480VAC, 60Hz	All HUHAA Series Heaters (except 3 & 5 KW & 208, 208/240 & 277 volt units, unless optional control transformer is supplied)
HUHAADS25	Power Disconnect Switch (3 Pole)	25A @ 600VAC, Res	All 3 and 5 KW Heaters and 7.5, 10, 15 & 20 KW 480 volt heaters.
HUHAADS60	Power Disconnect Switch (3 Pole)	63A @ 600VAC, Res.	208 volt: 7.5, 10, 15 (3 ph only) & 20 KW, 208/240 volt: 7.5, 10, 15, 20 & 25 KW, 277 volt: 7.5 & 10 KW, 480 volt: 25, 30, 40 & 50 KW heaters.

NOTE: *Summer Fan Switch HUHAAFS cannot be used with Remote Fan Switch/Relay HUHAARFS2 or with Heat Recovery Thermostat/Relay HUHAAHRT.

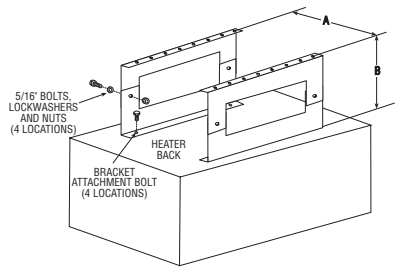
* *HUHAAHRT cannot be used with UHMT1 or UHMT2

OPTIONAL FIELD INSTALLED MECHANICAL CONTROLS

UNIVERSAL WALL & CEILING MOUNTING BRACKET CATALOG NO.	CEILING MOUNTING BRACKET CATALOG NO.	USED ON HEATER KW
B10	**CMB10**	3.5, 7.5, & 10
B20	**CMB20**	15 & 20
B30	**CMB30**	25 & 30
B50	**CMB50**	40 & 50



DIM	3-20KW	25-50KW
A	7-1/4"	9-7/16"
B	9-1/2"	14-3/8"
C	7-1/4"	12-1/8"
D	1-15/16"	2-1/16"
E	2-1/4"	3"
L	20-1/2"	28-5/16"
N	3-1/4"	4-1/2"

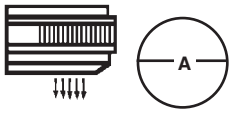


CATALOG NO.	KW	A	B
VDMB5	3 - 5 KW	6" (152mm)	6 1/8" (156mm)
VDMB20	7.5 - 20 KW	8 7/8" (225mm)	6 1/8" (156mm)
VDMB50	25 - 50 KW	12 1/2" (318 mm)	12 1/8" (308mm)

BERKO®
A Marley Engineered Products Brand
470 Beauty Spot Rd. E, Bennettsville, SC 29512

DIFFUSER	HEATER KW	MAX MNT. HT.	A DIM
NONE	3 & 5	9	18
NONE	7.5 & 10	14	26
NONE	15	20	35
NONE	20	23	40
NONE	25	23	63
NONE	30	20	55
NONE	40	28	70
NONE	50	25	63

DIFFUSER PATTERN AND AREA

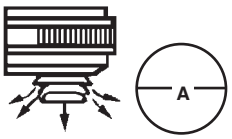


NO DIFFUSER

DIFFUSER CAT. NO.	USED ON HEATER KW	MAX. MNT. HT.	A DIM	B DIM
HUHAALDS	3 & 5	9	25	12
HUHAALDM	7.5 & 10	14	39	19
HUHAALDM	15	18	50	25
HUHAALDM	20	20	56	28
HUHAALDL	25	23	68	32
HUHAALDL	30	20	72	36
HUHAALDL	40	24	88	44
HUHAALDL	50	22	80	40

LOUVER DIFFUSER

DIFFUSER CAT. NO.	USED ON HEATER KW	MAX. MNT. HT.	A DIM.
HUHAAADS	3 & 5	8	18
HUHAAADM	7.5 & 10	12	26
HUHAAADM	15	15	35
HUHAAADM	20	17	40
HUHAAADL	25	19	60
HUHAAADL	30	17	55
HUHAAADL	40	22	77
HUHAAADL	50	20	70



ANEMOSTAT DIFFUSER

DIFFUSER CAT. NO.	USED ON HEATER KW	MAX. MNT. HT.	A DIM.
HUHAARDS	3 & 6	9	20
HUHAARDM	7.5 & 10	14	31
HUHAARDM	15	18	40
HUHAARDM	20	20	45
HUHAARDL	25	23	69
HUHAARDL	30	20	60
HUHAARDL	40	24	75
HUHAARDL	50	22	68

RADIAL DIFFUSER

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS*

Furnish and install type HUHAA horizontal / vertical unit heaters as manufactured by Berko, A Marley Engineered Products Brand, Bennettsville, SC with heating and air delivery capacities as shown on the heating schedule.

The cabinet shall be made of 18 gauge die formed furniture grade steel. Individual adjustable louvers with 30 degrees downward stops shall be furnished to provide desired control of discharge air. All metal surfaces of the enclosure shall be phosphate coated to resist corrosion and finished in a durable polyester powder coat finish. Mounting brackets designed for either ceiling or wall swivel mounting shall be furnished as shown on the heating schedule.

Heaters shall be of the draw-through air flow design to eliminate the element hot spots and extend design life.

Fans shall be aluminum, directly connected to fan motor, and designed specifically for unit heater application.

Low voltage control 24 volt transformers shall be standard on models 7.5 KW and greater (Optional 120V), to allow safer more precise temperature control.

Individual optional field installable control kits shall be available for all models. All controls shall have pig tails and spade terminals for ease of wiring to centrally located terminal board. All heaters of 63 amperes or less shall be provided with power disconnect switches (field installed kits or factory installed).

All heaters shall be UL Listed and meet the requirements of the National Electrical Code.

For safety, the electric heating bank shall consist of metal sheath heating elements. The elements shall consist of 80/20 Nichrome wire encased in refractory material (MGO) and have a copper clad steel sheath for strength and corrosion resistance, and aluminum fins for faster heat transfer. Automatic reset thermal overheat protection shall be of the linear capillary type wired for instantaneous de-energizing in case of the thermal overload. Heating bank to have protective air inlet louvers.

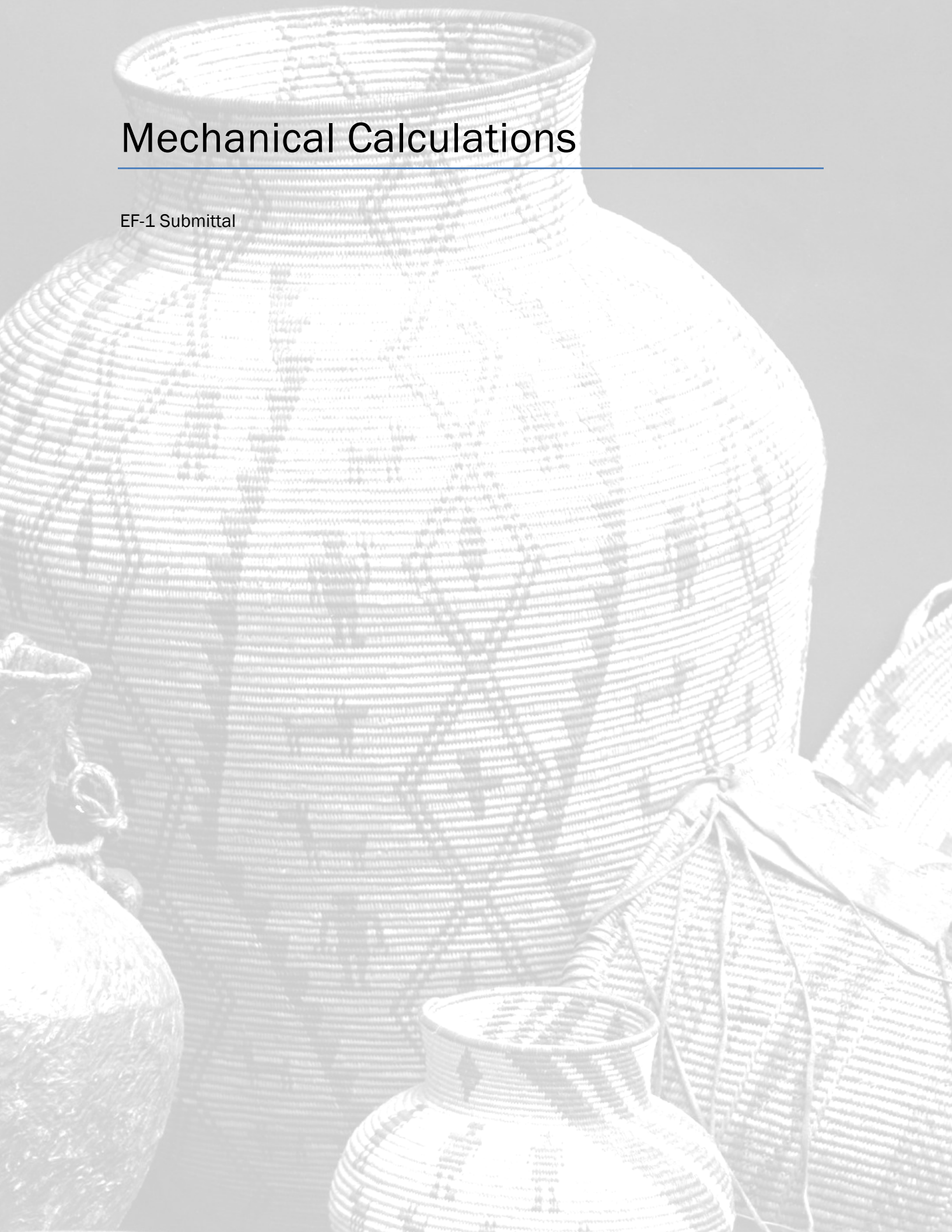
All heaters drawing in excess of 48 amperes shall be provided with factory installed subdivided and fused circuits of 48 amps or less.

Motors shall be totally enclosed, designed for continuous heavy-duty all-angle operation and equipped with built-in thermal overload protection. Motors used on 25 thru 50 KW models shall be rated for two speed operation.

* *Berko reserves the right to change specifications without prior notice.*

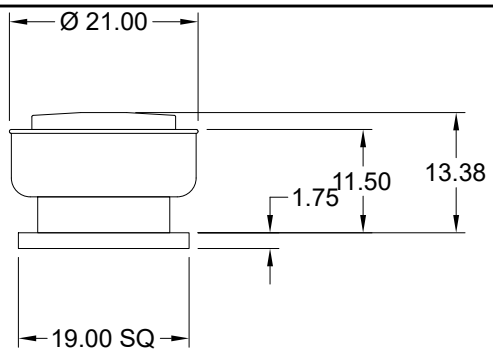
Mechanical Calculations

EF-1 Submittal



Model: CUE-080-VG

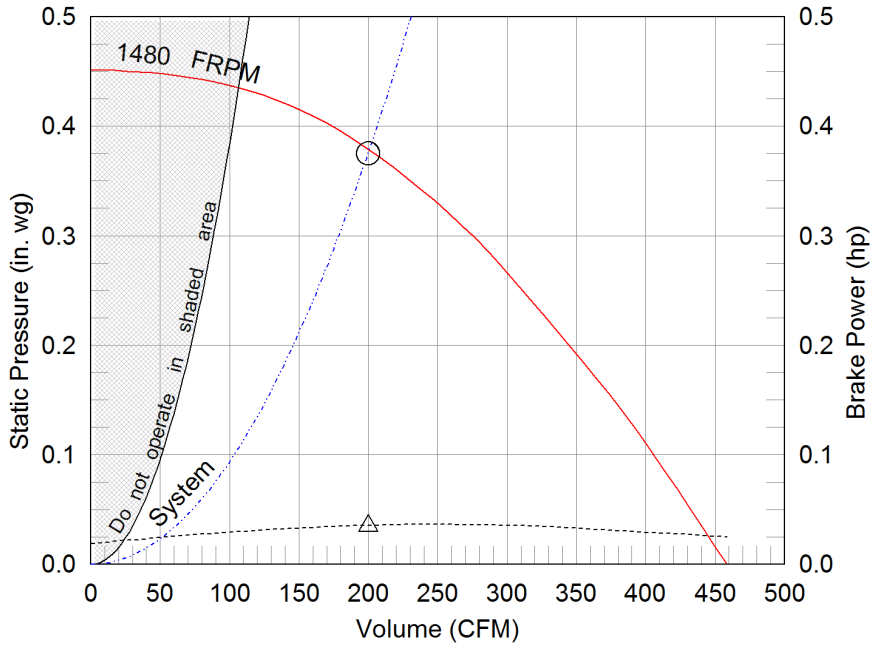
Direct Drive Upblast Centrifugal Roof Exhaust Fan



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	33
Weight w/ Acc's (lb)	35
Roof Opening (in.)	12.5 x 12.5

Performance	
Requested Volume (CFM)	200
Actual Volume (CFM)	200
Total External SP (in. wg)	0.375
Fan RPM	1480
Operating Power (hp)	0.04
Elevation (ft)	6,818
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.058
Tip Speed (ft/min)	4,213
Static Eff. (%)	34



Motor	
Motor Mounted	Yes
Size (hp)	1/10
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Windings	1

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	71	74	67	61	58	56	48	45	65	54	7.1

Notes:
All dimensions shown are in units of in.
*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary, for sizing thermal overload, consult factory.
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using AMCA 301 at 5 ft

Model: CUE-080-VG

Direct Drive Upblast Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward curved aluminum wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-200 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

Selected Options & Accessories:

Motor - Vari-Green EC motor with Dial or 0-10VDC Input
Control - Dial for balancing
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Unit Warranty: 1 Yr (Standard)

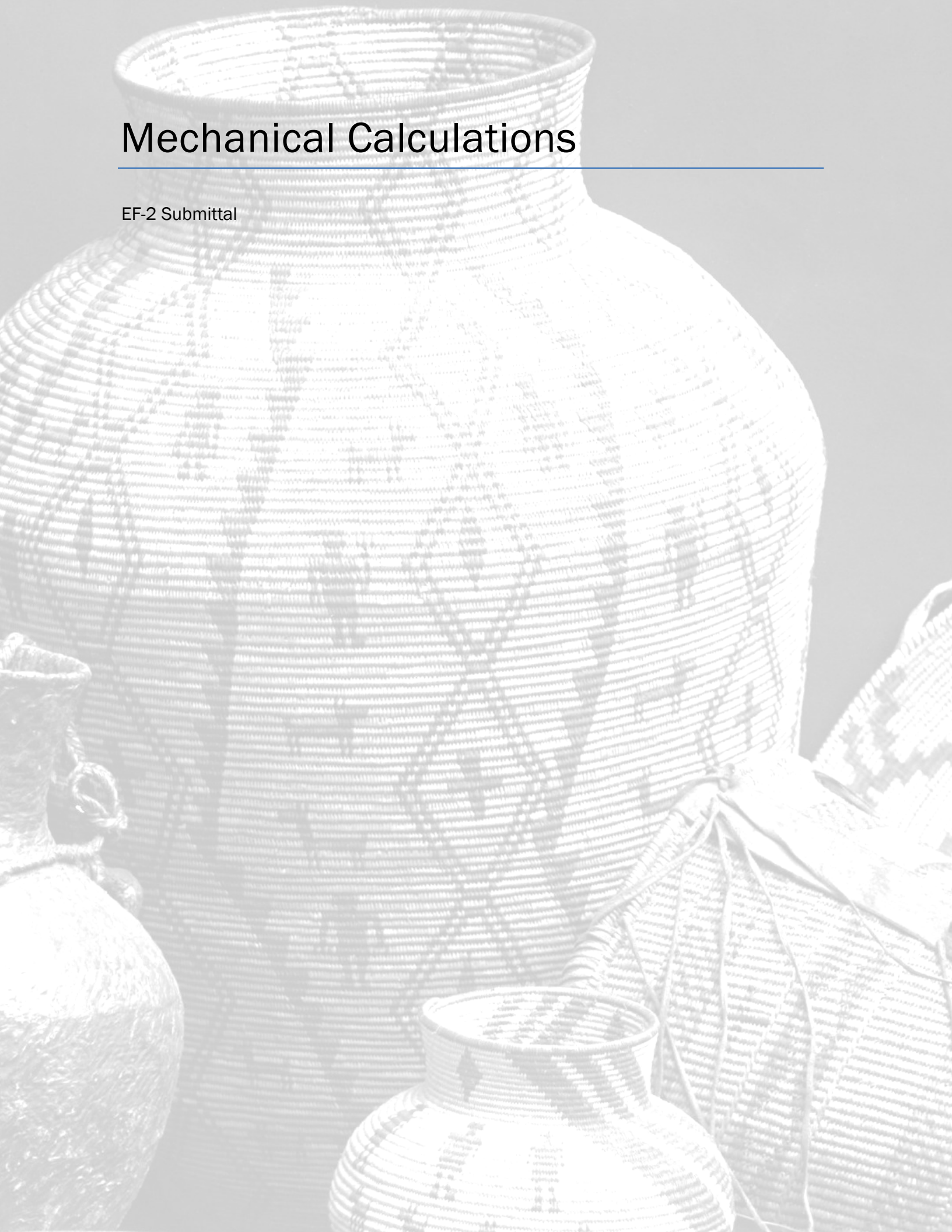
AMCA

AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to sone ratings only.

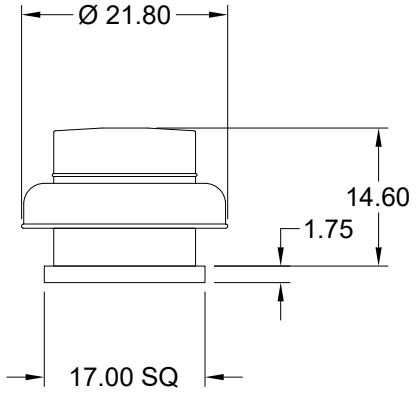
Mechanical Calculations

EF-2 Submittal



Model: G-080-VG

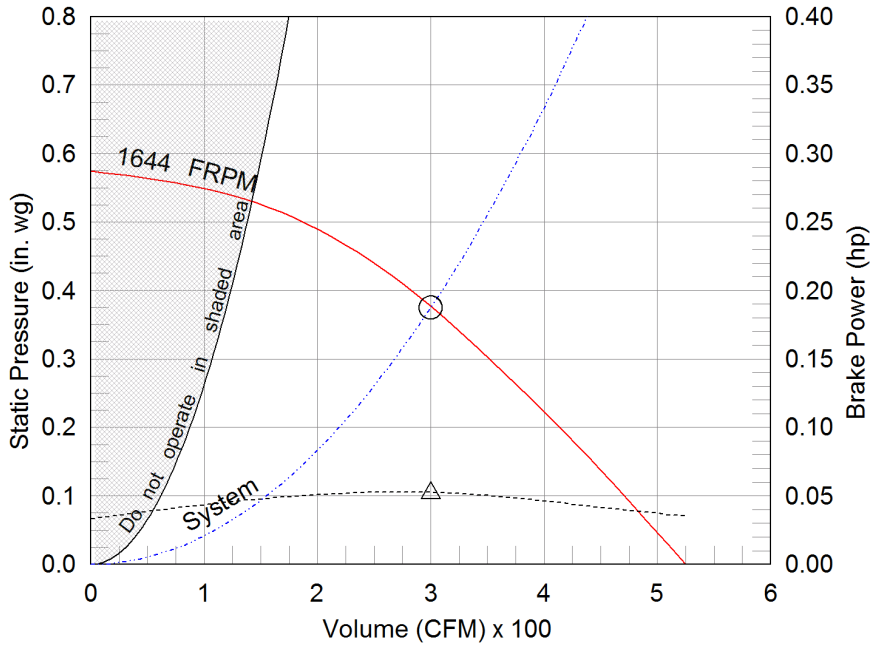
Direct Drive Centrifugal Roof Exhaust Fan



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	24
Weight w/ Acc's (lb)	26
Roof Opening (in.)	12.5 x 12.5

Performance	
Requested Volume (CFM)	300
Actual Volume (CFM)	300
Total External SP (in. wg)	0.375
Fan RPM	1644
Operating Power (hp)	0.05
Elevation (ft)	6,818
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.058
Tip Speed (ft/min)	4,681
Static Eff. (%)	34



△ Operating Bhp point
◯ Operating point at Total External SP
Fan curve
System curve
Brake horsepower curve

Motor	
Motor Mounted	Yes
Size (hp)	1/10
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Windings	1

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	69	74	70	63	61	59	53	48	68	56	8.1

Notes:

All dimensions shown are in units of in.
*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary, for sizing thermal overload, consult factory.
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using AMCA 301 at 5 ft

Model: G-080-VG

Direct Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined wheel - Aluminum curb cap with prepunched mounting holes - Birdscreen - Ball bearing motors (sizes 85-203 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

Selected Options & Accessories:

Motor - Vari-Green EC motor with Dial or 0-10VDC Input
Control - Dial for balancing
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Unit Warranty: 1 Yr (Standard)

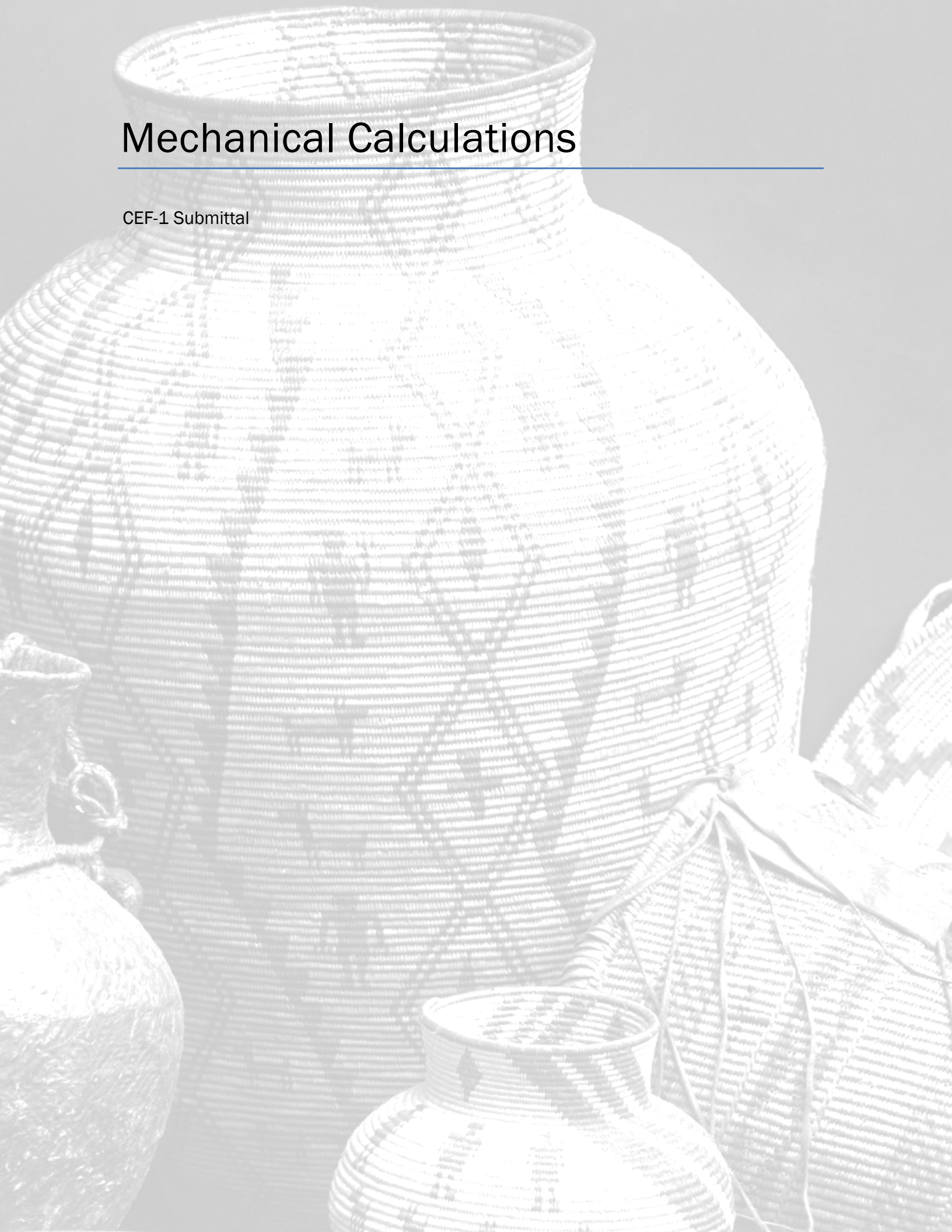
AMCA

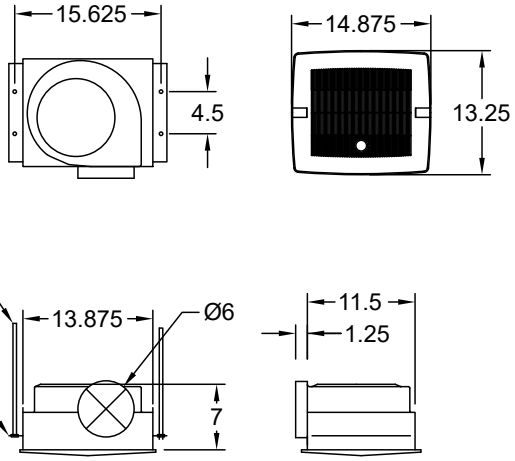
AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) does not include transmission losses. Performance ratings include the effects of birdscreen. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to sone ratings only.

Mechanical Calculations

CEF-1 Submittal





Model: SP-B150

Ceiling Exhaust Fan

Standard Construction Features:

- Corrosion resistant galvanized steel scroll and housing - White designer non-yellowing grille - Round outlet duct collar with integral backdraft damper - Single inlet forward curved wheel - Plug type disconnect - Adjustable mounting brackets

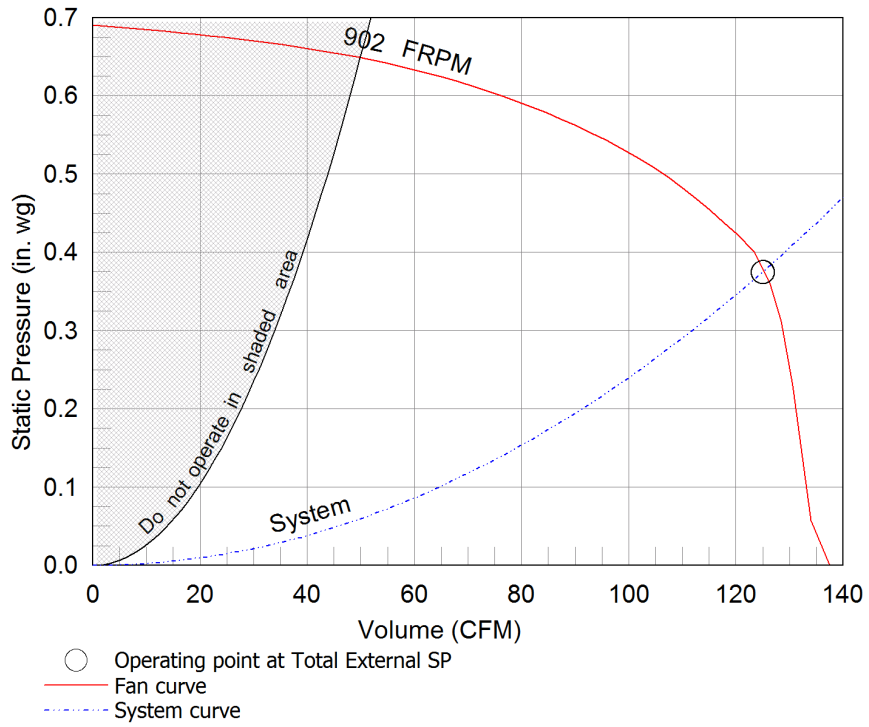
Selected Options & Accessories:

Motor with Thermal Overload
Motor with CSA Approval
Motor with 40 Degree C Ambient Temperature
Motor rated for continuous use
UL/cUL 507 Listed - Electric Fan
Solid State Speed Control, 6 Amp, Shipped Loose
Designer Grille
Motion Detector, Grille Mounted and Wired
Round Duct Connection
Isolation Kit, (PN: VI KIT-SP/CSP), Shipped Loose
Polypropylene Wheel Material

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	10
Weight w/ Acc's (lb)	12

Performance	
Requested Volume (CFM)	125
Actual Volume (CFM)	125
Total External SP (in. wg)	0.375
Fan RPM	902
* FLA (A)	1.7
Elevation (ft)	6,818
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.058
Sones	2.5

Motor	
Motor Mounted	Yes
** Input Watts (W)	128
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP



Notes:

All dimensions shown are in units of in.
*FLA is approximate and will vary slightly with the motor.
Sones - calculated using AMCA 301 at 5 ft
** Wattage is shown at free air.
** Wattage is approximate and may vary between motors.

AMCA

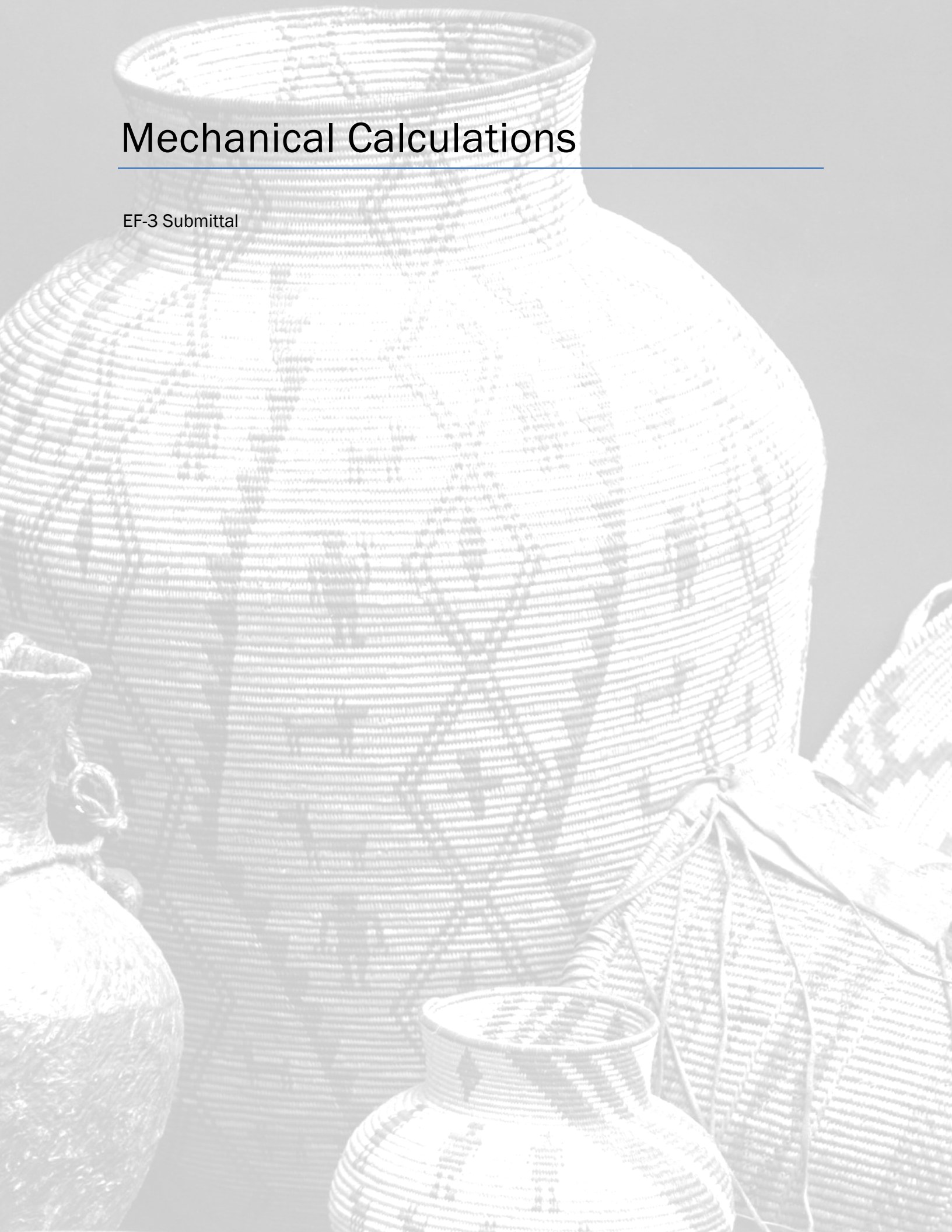
AMCA Licensed for Sound and Air Performance Without Appurtenances (Accessories). Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type B: Free inlet, Ducted outlet. Performance ratings include the effects of an inlet grille and backdraft damper. Speed (RPM) shown is nominal. Performance is based on actual speed of test. The watt ratings shown are at free air. The sound ratings shown are for loudness values in spherical sones at 5 ft. (1.5m) in a spherical free field calculated per Annex B of AMCA 311. Values shown are for installation type B: ducted outlet spherical sone levels. The AMCA Certified Ratings Seal applies to sone ratings only.

The AMCA licensed air and/or sound performance data has been modified for installation, appurtenances or accessories, etc. not included in the certified data. The modified performance is not AMCA licensed but is provided to aid in selection and applications of the product.

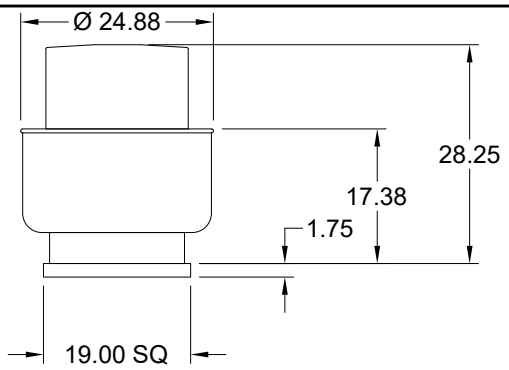
Mechanical Calculations

EF-3 Submittal



Model: CUE-131-VG

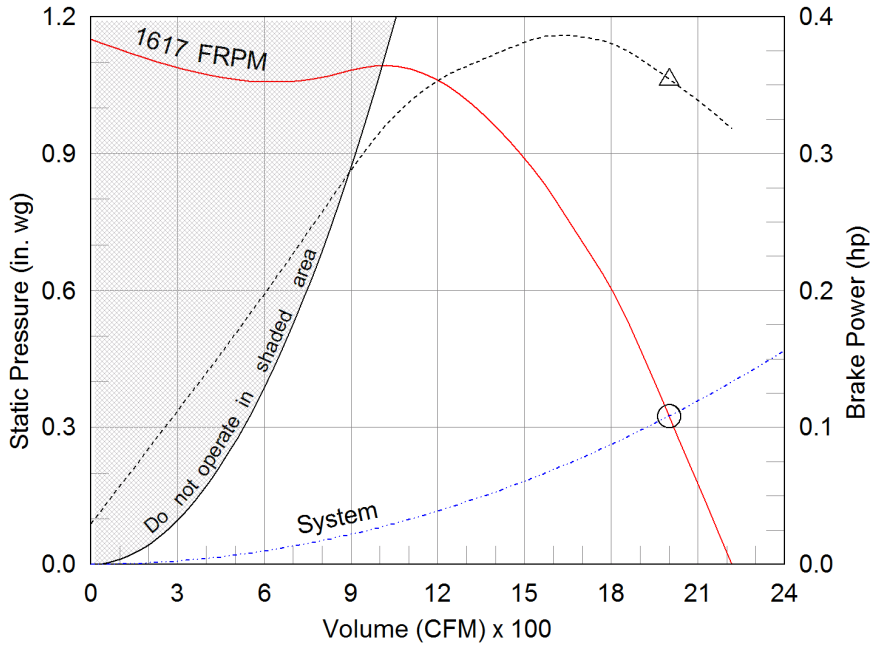
Direct Drive Upblast Centrifugal Roof Exhaust Fan



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR.

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	63
Weight w/ Acc's (lb)	65
Roof Opening (in.)	14.5 x 14.5

Performance	
Requested Volume (CFM)	2,000
Actual Volume (CFM)	2,000
Total External SP (in. wg)	0.325
Fan RPM	1617
Operating Power (hp)	0.35
Elevation (ft)	6,818
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.058
Tip Speed (ft/min)	5,529
Static Eff. (%)	29



Motor	
Motor Mounted	Yes
Size (hp)	3/4
Voltage/Cycle/Phase	208/60/1
Enclosure	ODP
Motor RPM	1725
Windings	1

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	80	78	85	77	69	68	64	62	80	68	16.8

Notes:
All dimensions shown are in units of in.
*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary, for sizing thermal overload, consult factory.
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using AMCA 301 at 5 ft

Model: CUE-131-VG

Direct Drive Upblast Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined aluminum wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-200 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

Selected Options & Accessories:

Motor - Vari-Green EC motor with Dial or 0-10VDC Input
Control - Dial for balancing
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Unit Warranty: 1 Yr (Standard)

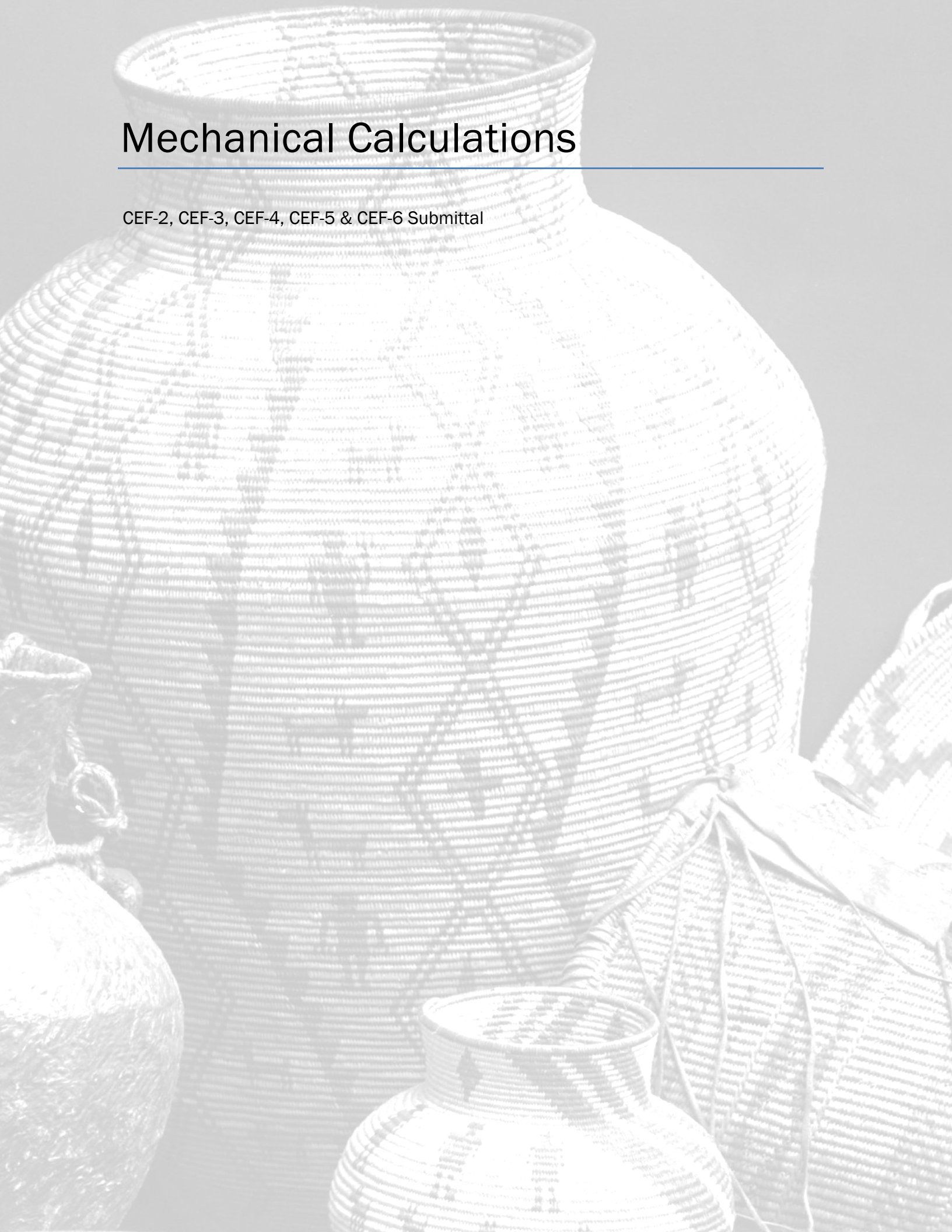
AMCA

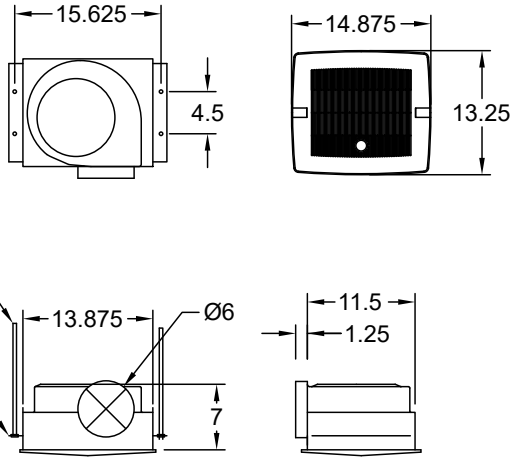
AMCA Licensed for Sound and Air Performance. Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type A: Free inlet, Free outlet. Power rating (BHP/kW) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per AMCA Standard 301. Values shown are for installation type A: free inlet hemispherical sone levels. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to sone ratings only.

Mechanical Calculations

CEF-2, CEF-3, CEF-4, CEF-5 & CEF-6 Submittal





Model: SP-B150

Ceiling Exhaust Fan

Standard Construction Features:

- Corrosion resistant galvanized steel scroll and housing - White designer non-yellowing grille - Round outlet duct collar with integral backdraft damper - Single inlet forward curved wheel - Plug type disconnect - Adjustable mounting brackets

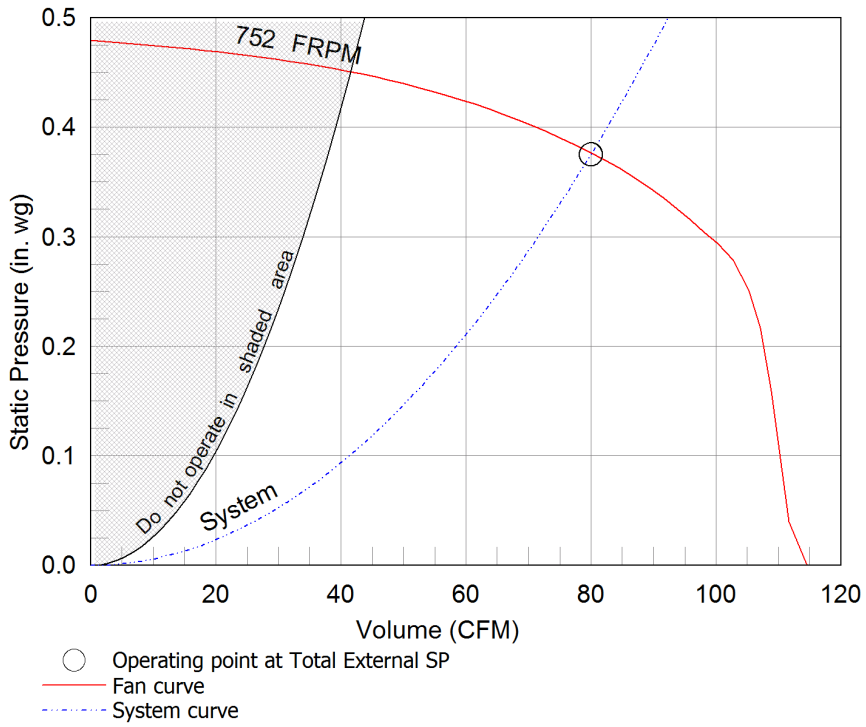
Selected Options & Accessories:

Motor with Thermal Overload
Motor with CSA Approval
Motor with 40 Degree C Ambient Temperature
Motor rated for continuous use
UL/cUL 507 Listed - Electric Fan
Solid State Speed Control, 6 Amp, Shipped Loose
Roof Jack, (PN: RJ-6X9) Shipped Loose
Designer Grille
Motion Detector, Grille Mounted and Wired
Round Duct Connection
Isolation Kit, (PN: VI KIT-SP/CSP), Shipped Loose
Polypropylene Wheel Material

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	10
Weight w/ Acc's (lb)	18

Performance	
Requested Volume (CFM)	80
Actual Volume (CFM)	80
Total External SP (in. wg)	0.375
Fan RPM	752
* FLA (A)	1.7
Elevation (ft)	6,818
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.058
Sones	2.0

Motor	
Motor Mounted	Yes
** Input Watts (W)	128
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP



Notes:

All dimensions shown are in units of in.
*FLA is approximate and will vary slightly with the motor.
Sones - calculated using AMCA 301 at 5 ft
** Wattage is shown at free air.
** Wattage is approximate and may vary between motors.

AMCA

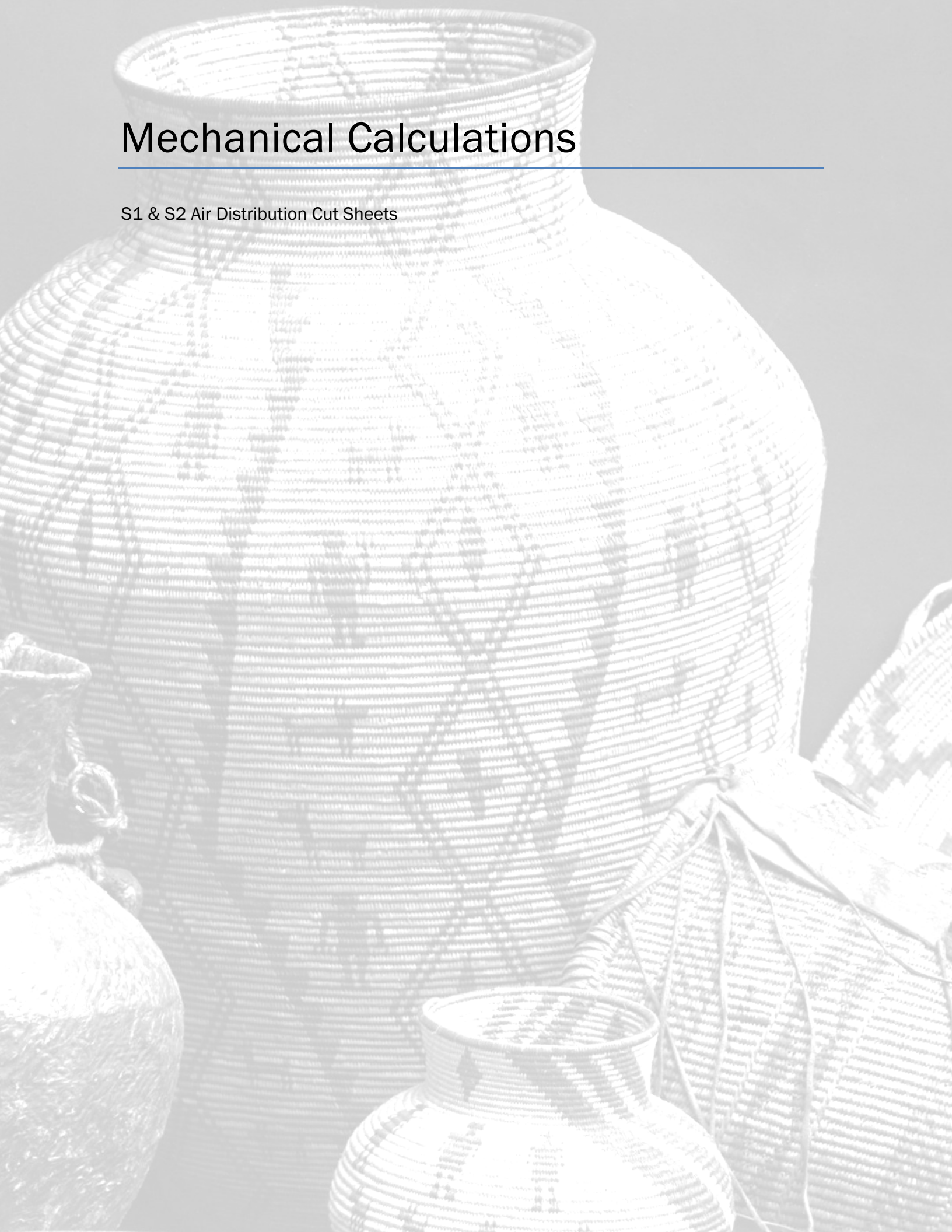
AMCA Licensed for Sound and Air Performance Without Appurtenances (Accessories). Power rating (BHP/kW) does not include transmission losses.

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. Performance certified is for installation type B: Free inlet, Ducted outlet. Performance ratings include the effects of an inlet grille and backdraft damper. Speed (RPM) shown is nominal. Performance is based on actual speed of test. The watt ratings shown are at free air. The sound ratings shown are for loudness values in spherical sones at 5 ft. (1.5m) in a spherical free field calculated per Annex B of AMCA 311. Values shown are for installation type B: ducted outlet spherical sone levels. The AMCA Certified Ratings Seal applies to sone ratings only.

The AMCA licensed air and/or sound performance data has been modified for installation, appurtenances or accessories, etc. not included in the certified data. The modified performance is not AMCA licensed but is provided to aid in selection and applications of the product.

Mechanical Calculations

S1 & S2 Air Distribution Cut Sheets



Fire Rated Square Cone Diffusers
SCD / SCD AS / ASCD Series

Fixed Air Pattern
Product Information

Models

Fixed Air Pattern

Steel Construction	**SCD**
Aluminized Steel Construction	**SCD AS**
Aluminum Construction	**ASCD**

PRICE SCD / ASCD Series square cone diffusers are the most efficient for any ceiling application. The diffuser delivers supply air in a true 360° radial horizontal air pattern making it ideal for VAV applications. The special contour design of the diffuser cones protect the ceiling and prevent smudging and streaking associated with many other types of ceiling diffusers.

Features

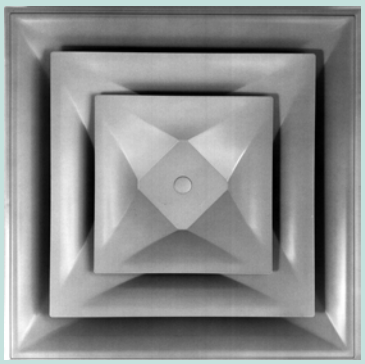
- Choice of steel (SCD), aluminized steel (SCD AS) or aluminum (ASCD) construction.
- Cones are one piece die-formed with smooth, aerodynamically designed surfaces and no corner joints.
- All sizes are available with 3 concentric cones. (**3C**)
- Optional 4 cone model available in 24" x 24" / 600 x 600 face size for aesthetic considerations. (**4C**)
- Inner cone sub-assembly features a special lock arrangement for fast, easy installation and removal without special tools.
- Excellent performance for VAV applications.
- Complete range of available accessory dampers, equalizing grids, etc.
- Insulated backpan (SCD style 31 T-bar 24 x 24 / 600 x 600 only). Made of 1/2" fiberglass with foil/scrim vapor barrier.

Finish

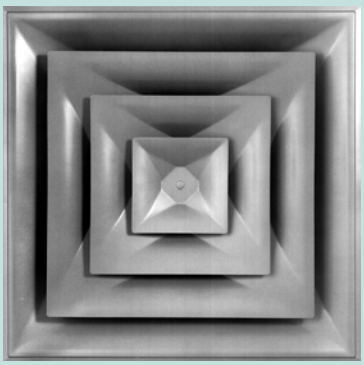
White Powder Coat **B12**
For optional and special finishes see color matrix

Available Module Sizes

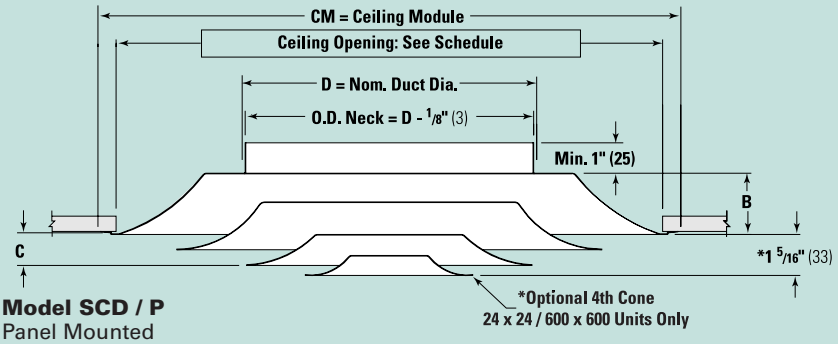
Imperial	Metric
24" x 24"	600 x 600
20" x 20"	500 x 500
12" x 12"	300 x 300



Model SCD / SCD AS / ASCD - 3 Cone

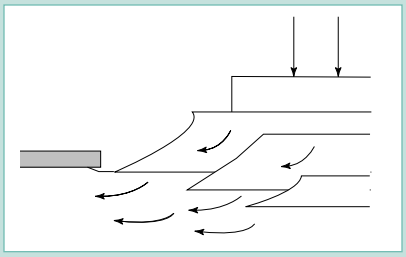


Model SCD / SCD AS / ASCD - 4 Cone
(24" x 24" / 600 x 600 Face size only)



Model SCD / P
Panel Mounted
(Steel Only)

Air Pattern



Fixed Horizontal Air Pattern

✓ Product Selection Checklist

1] Select Inlet diameter based on desired performance characteristics.
2] Select Face Size based on ceiling module.
3] Select Diffuser type by model number (Material).
4] Select Border/Panel style according to installation requirements (page C9).
5] Select Volume Control accessories, if desired (page C169-C172).
6] Select Number of Cones desired (3C is standard).
7) Select Finish.

Example: 8" / 24" x 24" / SCD / 31 / 3C / B12

Application Recommendations:
For Border and Panel recommendations, see page C27.

Product Information Index

Performance Data ..... C11 - C12
Accessories ..... C168 - C172
Suggested Specification C174

All Metric dimensions ( ) are soft conversion.
Imperial dimensions are converted to metric and rounded to the nearest millimetre.

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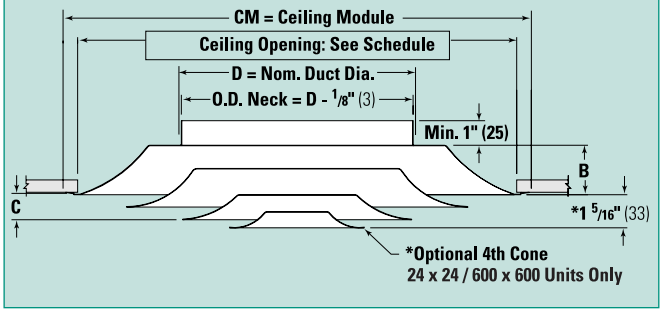
Frame Selection

Full Face

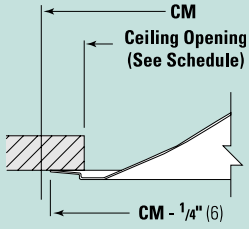


Dimensional Data — Imperial (inches) / Metric (mm)

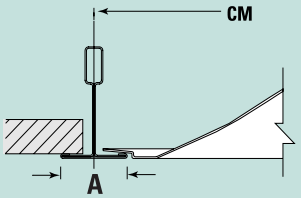
Ceiling Module Imperial	Ceiling Module Metric	Ceiling Opening	B	C	Duct Size
24 x 24	600 x 600	22 x 22 (559 x 559)	2 1/2 (64)	1 1/16 (27)	6, 8, 10, 12, 14, 15 (152, 203, 254, 305, 356, 381)
20 x 20	500 x 500	18 x 18 (457 x 457)	2 1/2 (64)	1/2 (13)	6, 8, 10 (152, 203, 254)
12 x 12	300 x 300	10 1/2 x 10 1/2 (267x267)	1 1/8 (29)	1 1/16 (27)	4, 5, 6, 7, 8 (102, 127, 152, 178, 203)

Frames for Ceiling Module Sizes 24 x 24 / 600 x 600, 20 x 20 / 500 x 500, 12 x 12 / 300 x 300
Sizes 20 x 20 / 500 x 500 only available in Type 31 Surface Mount and Type 31 T-bar.
ASCD available in Type 17 & 31 only.
4TS available only on 24x24 SCD

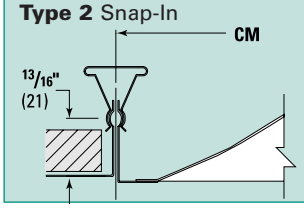
Type 31 Surface Mount



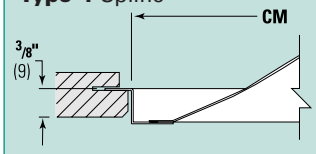
Type 31 T-bar A = 1" (25)



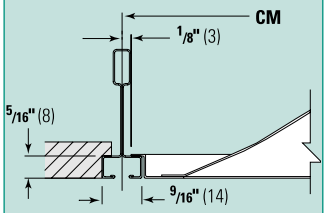
Type 2 Snap-In



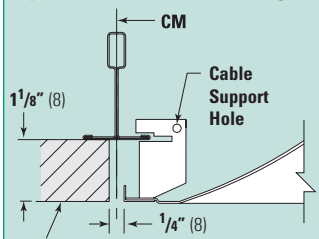
Type 4 Spline



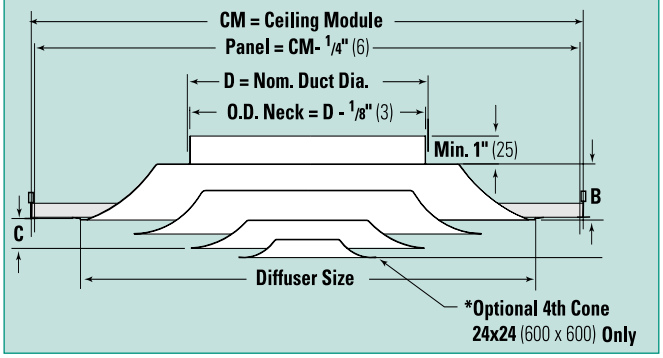
Type 17 Narrow Member



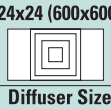
Type 4TS clip-on recessed spline (for Techstyle ceiling)



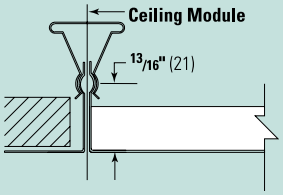
Panel Mount - SCD (Steel Only)



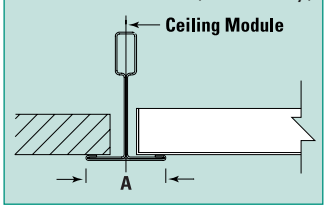
Face View

Modules	CM = Nom. Panel Size	
Diffuser Size 24x24 (600x600)	Imperial (inches)	Metric (mm)
	48 x 24	1200 x 600
Diffuser Size 12x12 (300x300)	Imperial (inches)	Metric (mm)
	24 x 12	600 x 300
	48 x 12	1200 x 300
	16 x 16 20 x 20 24 x 24	400 x 400 500 x 500 600 x 600

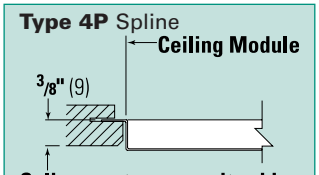
Type 2P Snap-In



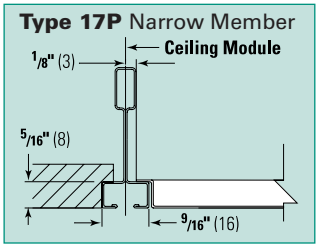
Type 3P T-bar A = 1" (25) (Steel Only)



Type 4P Spline



Type 17P Narrow Member



Dimensional Data — Imperial (inches) / Metric (mm)

Diffuser Size Imperial	Diffuser Size Metric	B	C	Duct Size
24 x 24	600 x 600	2 1/2 (64)	1 1/16 (27)	6, 8, 10, 12, 14, 15 (152, 203, 254, 305, 356, 381)
12 x 12	300 x 300	1 1/8 (29)	1 1/16 (27)	4, 5, 6, 7, 8 (102, 127, 152, 178, 203)

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All Metric dimensions ( ) are soft conversion.
Imperial dimensions are converted to metric and rounded to the nearest millimeter.

Performance Data - 12 x 12 / 300 x 300 Face Size

Listed Size	Neck Velocity, fpm / Velocity Pressure, In w.g.	400 .010	500 .016	600 .022	700 .031	800 .040	900 .050	1000 .062	1200 .090	1400 .122	1600 .160
	Total Pressure	.013	.021	.030	.041	.054	.068	.084	.121	.165	.215
	Flow Rate, cfm	35	44	52	61	70	78	87	104	122	139
4	**NC**	—	—	—	—	—	—	—	20	25	29
	Throw 150, 100, 50	1-2-4	1-2-4	2-3-5	2-3-6	2-4-6	3-4-7	3-4-7	4-5-8	4-6-9	5-6-9
	Total Pressure	.015	.024	.035	.047	.062	.078	.097	.139	.189	.247
	Flow Rate, cfm	54	68	82	95	109	122	136	163	190	218
5	**NC**	—	—	—	—	—	16	19	25	30	34
	Throw 150, 100, 50	2-2-5	2-3-6	2-4-7	3-4-8	3-5-8	4-5-9	4-6-9	5-7-10	5-8-11	6-8-11
	Total Pressure	.018	.028	.040	.055	.072	.091	.112	.162	.220	.287
	Flow Rate, cfm	78	98	118	137	157	176	196	235	274	314
6	**NC**	—	—	—	—	16	20	23	29	34	38
	Throw 150, 100, 50	2-3-6	2-4-7	3-4-8	3-5-9	4-6-10	4-7-10	5-7-11	6-8-12	7-9-13	8-10-14
	Total Pressure	.022	.035	.050	.069	.090	.114	.140	.202	.275	.359
	Flow Rate, cfm	107	134	160	187	214	240	267	320	374	427
7	**NC**	—	—	—	15	19	23	26	32	37	41
	Throw 150, 100, 50	2-4-7	3-4-9	4-5-10	4-6-11	5-7-11	5-8-12	6-9-13	7-10-14	8-11-15	9-11-16
	Total Pressure	.029	.045	.065	.089	.116	.146	.181	.260	.354	.463
	Flow Rate, cfm	140	175	209	244	279	314	349	419	489	558
8	**NC**	—	—	—	18	22	26	29	35	40	44
	Throw 150, 100, 50	3-4-8	3-5-10	4-6-11	5-7-12	6-8-13	6-9-14	7-10-15	8-11-16	10-12-17	11-13-18

Performance Data - 20 x 20 / 500 x 500 Face Size

Listed Size	Neck Velocity, fpm / Velocity Pressure, In w.g.	400 .010	500 .016	600 .022	700 .031	800 .040	900 .050	1000 .062	1200 .090	1400 .122	1600 .160
	Total Pressure	.013	.020	.029	.040	.052	.066	.081	.117	.159	.207
	Flow Rate, cfm	78	98	118	137	157	176	196	235	274	314
6	**NC**	—	—	—	16	19	23	26	31	35	39
	Throw 150, 100, 50	0-1-3	1-2-4	1-2-4	1-3-5	2-3-6	2-3-6	2-4-6	3-4-7	3-5-7	4-6-8
	Total Pressure	.017	.026	.038	.052	.068	.086	.106	.153	.208	.271
	Flow Rate, cfm	140	175	209	244	279	314	349	419	489	558
8	**NC**	—	—	—	18	22	25	28	33	37	41
	Throw 150, 100, 50	1-2-5	2-3-6	2-4-6	3-4-7	3-5-7	4-5-8	4-6-8	5-6-9	6-7-10	6-7-11
	Total Pressure	.022	.034	.049	.067	.088	.111	.137	.198	.269	.351
	Flow Rate, cfm	218	273	327	382	436	491	545	654	763	872
10	**NC**	—	—	15	20	23	27	30	35	39	43
	Throw 150, 100, 50	2-3-6	3-4-7	3-5-8	4-6-9	4-6-9	5-7-10	5-7-10	6-8-11	7-9-12	8-9-13

Performance Notes:

1. All pressures are in inches of water.
2. The NC values and sound pressure level are based on a room absorption of 10 dB re 10^{-12} watts and one diffuser.
3. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
4. Blanks (—) indicate an NC below 15.
5. Radii of diffusion are given in feet to terminal velocities of 150 fpm (minimum), 100 fpm (middle) and 50 fpm (maximum).
6. Throw data is based on supply air and room air being at isothermal conditions.
7. If the diffuser is mounted on an exposed duct, multiply the radii of diffusion in the table by 0.70.
8. Air flow is in cubic feet per minute, cfm.

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Imperial dimensions are converted to metric and rounded to the nearest millimetre.

Performance Data - 24 x 24 / 600 x 600 Face Size

Listed Size	Neck Velocity, fpm / Velocity Pressure, In w.g.	400 .010	500 .016	600 .022	700 .031	800 .040	900 .050	1000 .062	1200 .090	1400 .122	1600 .160
	Total Pressure	.015	.023	.034	.046	.060	.076	.094	.135	.183	.239
	Flow Rate, cfm	78	98	118	137	157	176	196	235	274	314
6	**NC**	—	—	—	—	15	19	22	28	33	37
	Throw 150, 100, 50	1-2-4	1-2-4	2-3-5	2-3-6	2-4-7	3-4-7	3-4-7	4-5-8	4-6-9	5-7-9
	Total Pressure, in w.g.	.016	.025	.037	.050	.065	.082	.102	.146	.199	.260
	Flow Rate, cfm	140	175	209	244	279	314	349	419	489	558
8	**NC**	—	—	—	—	19	22	26	31	36	40
	Throw 150, 100, 50	2-2-5	2-3-6	2-4-7	3-4-8	3-5-9	4-6-9	4-6-10	5-7-11	6-8-12	7-9-12
	Total Pressure, in w.g.	.019	.030	.044	.060	.078	.098	.122	.175	.238	.311
	Flow Rate, cfm	218	273	327	382	436	491	545	654	763	872
10	**NC**	—	—	—	17	21	25	28	34	39	43
	Throw 150, 100, 50	2-3-6	3-4-8	3-5-9	4-6-10	4-6-11	5-7-12	5-8-12	6-9-13	8-10-14	9-11-15
	Total Pressure, in w.g.	.023	.036	.051	.070	.091	.115	.142	.205	.279	.364
	Flow Rate, cfm	314	393	471	550	628	707	785	942	1099	1256
12	**NC**	—	—	—	19	24	27	30	36	41	45
	Throw 150, 100, 50	3-4-8	3-5-10	4-6-11	5-7-12	5-8-13	6-9-14	7-10-15	8-11-16	9-12-17	11-13-19
	Total Pressure, in w.g.	.026	.041	.058	.079	.104	.131	.162	.233	.318	.415
	Flow Rate, cfm	428	535	641	748	855	962	1069	1283	1497	1710
14	**NC**	—	—	16	21	25	29	32	38	43	47
	Throw 150, 100, 50	3-5-10	4-6-12	5-7-13	6-9-14	6-10-15	7-11-16	8-12-17	10-13-19	11-14-20	12-15-22
	Total Pressure, in w.g.	.028	.044	.064	.087	.114	.144	.178	.256	.348	.455
	Flow Rate, cfm	491	614	736	859	982	1104	1227	1472	1718	1963
15	**NC**	—	—	17	22	26	30	33	39	43	47
	Throw 150, 100, 50	4-5-11	4-7-13	5-8-14	6-9-15	7-11-16	8-12-17	9-13-18	11-14-20	12-15-22	13-16-23

Performance Notes:

1. All pressures are in inches of water.
2. The NC values and sound pressure level are based on a room absorption of 10 dB re 10^{-12} watts and one diffuser.
3. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
4. Blanks (—) indicate an NC below 15.
5. Radii of diffusion are given in feet to terminal velocities of 150 fpm (minimum), 100 fpm (middle) and 50 fpm (maximum).
6. Throw data is based on supply air and room air being at isothermal conditions.
7. If the diffuser is mounted on an exposed duct, multiply the radii of diffusion in the table by 0.70.
8. Air flow is in cubic feet per minute, cfm.

All Metric dimensions ( ) are soft conversion.
Imperial dimensions are converted to metric and rounded to the nearest millimetre.

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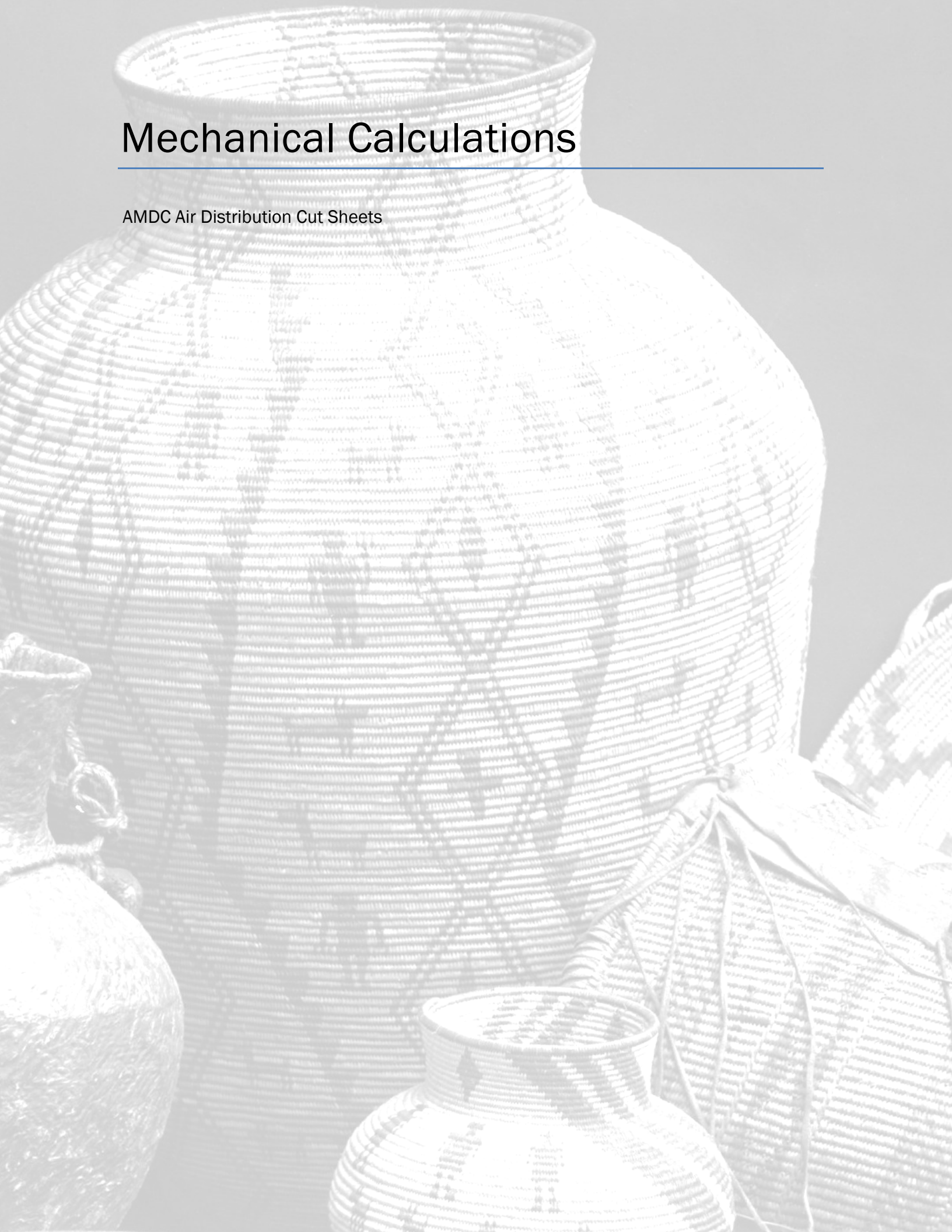
Mechanical Calculations

AMDC Air Distribution Cut Sheets



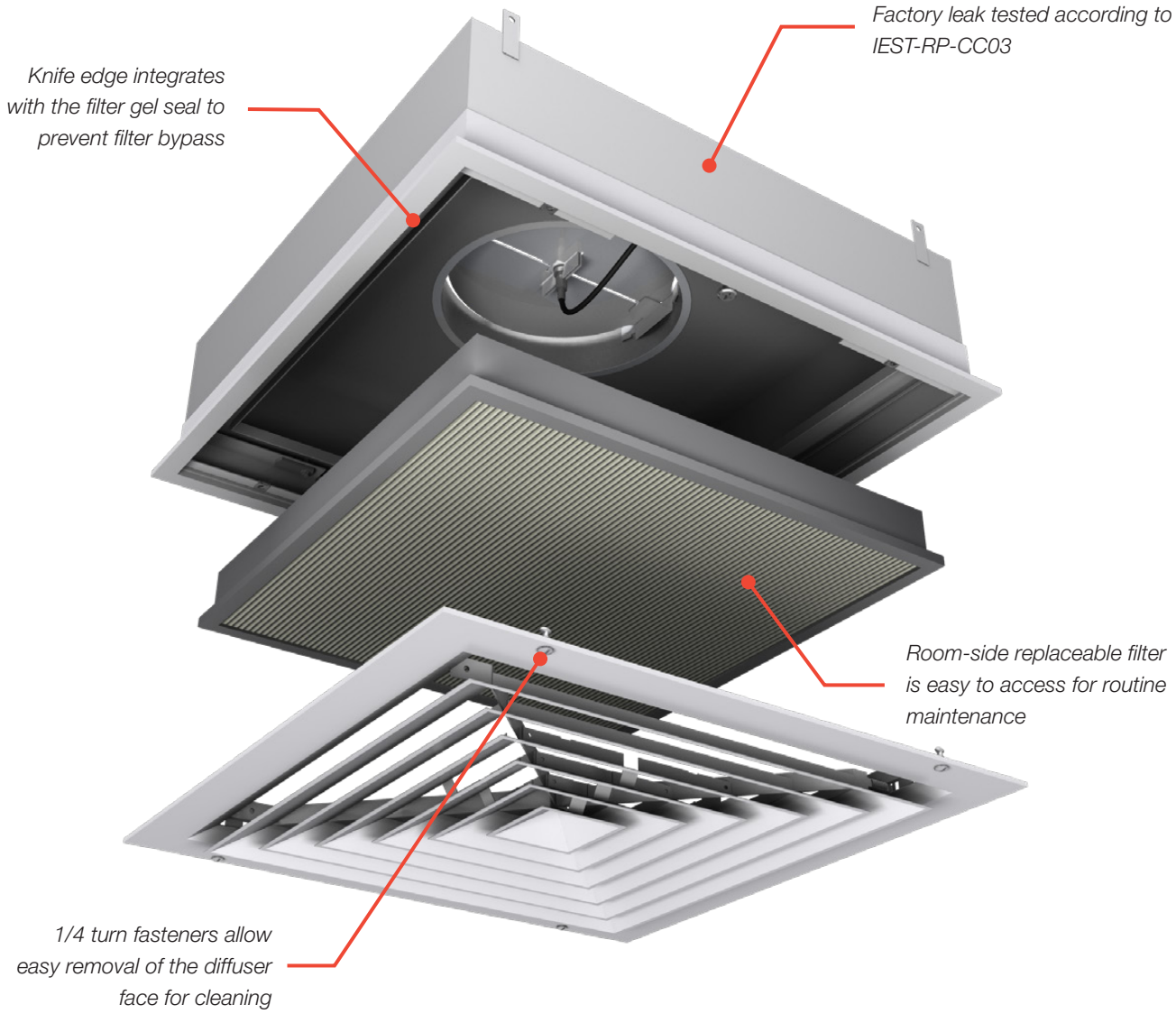
AMDC

LOUVERED FACE DIFFUSER WITH HEPA FILTER

price | CRITICAL ENVIRONMENTS

AMDC
Louvered Face Diffuser with HEPA Filter

The all-aluminum AMDC provides a high volume of filtered airflow with a very high induction rate and horizontal air pattern. The high induction rate works to dilute contaminants by quickly mixing room and supply air. The horizontal air pattern helps to direct the contaminated air toward low-level exhaust grilles where it is removed from the clean space.



ROOM-SIDE REPLACEABLE FILTER

+ Convenient access from the room-side for periodic filter replacement.
+ Gel seal filter frame and diffuser “knife edge” flange create a reliable seal to prevent filter bypass.
+ Optional factory supplied HEPA filter removes 99.99% of contaminants.

CLEANING AND MAINTENANCE

+ AMDC units satisfy all ASHRAE 170 requirements for diffuser cleaning and maintenance.
+ Powder coat paint finish is formulated for routine exposure to hospital grade cleaning solutions and disinfectants.
+ Stainless steel 1/4 turn fasteners and retainer cables provide straightforward and convenient access to the filter and knife-edge frame.

FACTORY LEAK TESTING AND CERTIFICATION

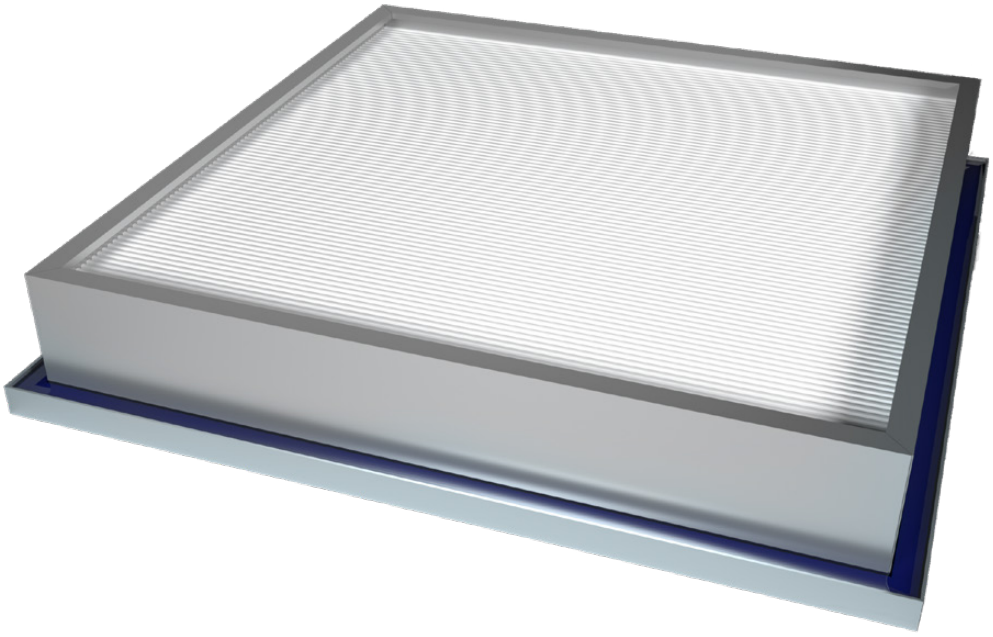
+ Every AMDC is factory tested and certified leak-free in accordance with IEST-RP-CC034.

TYPICAL APPLICATIONS

AMDC louvered face diffusers with replaceable HEPA filters are an effective air distribution solution in today’s modern cleanrooms. They are designed to provide large volumes of filtered air in a 4-way horizontal air pattern.

CONSTRUCTION

+ Options
  - Exterior insulation
  - Cable operated damper (VCR8EC)



Room-side replaceable filter with integral gel seal

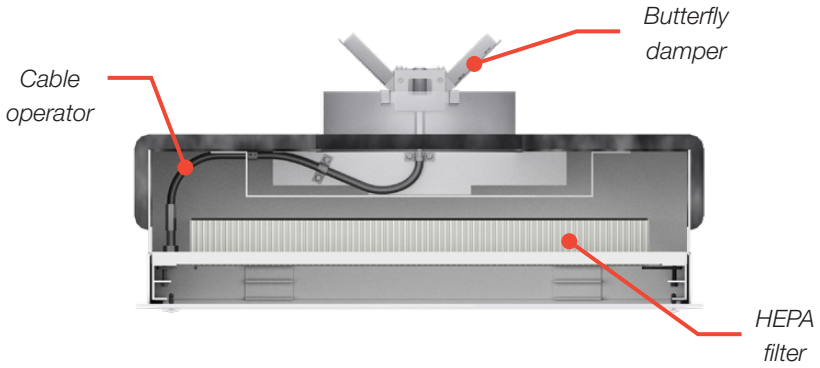
AMDC
Louvered Face Diffuser with HEPA Filter

ROOM-SIDE ADJUSTABLE INLET DAMPER

+ An optional remote cable operated damper allows adjustment of the damper with the filter in place using a standard screwdriver.
+ Locating the damper operator outside of the filter maximizes filter area, leading to a larger airflow capacity and less pressure drop.

AEROSOL SAMPLE AND STATIC PRESSURE PORT

+ Used for room-side field measurement of static pressure and challenge aerosol concentrations upstream of the filter during the commissioning process.

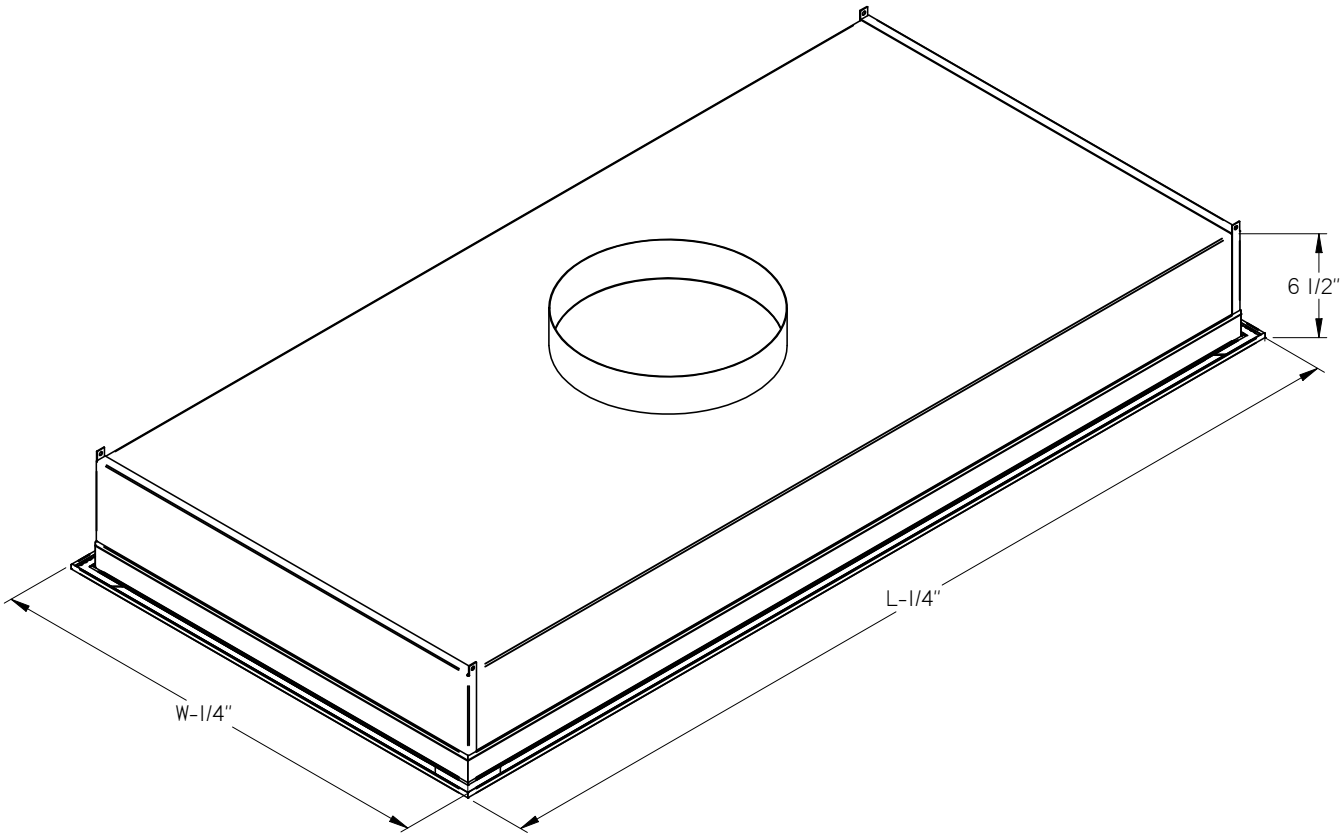


Room-side adjustable damper cross sectional view

FACTORY INSTALLED INSULATION

+ Ensures quality application and minimizes field labor with factory installed insulation
+ Eliminates condensation risk associated with unconditioned plenum air exposure to cold diffuser surfaces
+ Reduces thermal gain for improved energy savings
+ Meets ASTM E84 and UL723 requirements

DIMENSIONAL DATA



Nominal Sizes	
W x L	**Inlet Size**
24 in x 24 in.	10 in.
24 in x 48 in.	12 in.

PERFORMANCE DATA

Unit Size (in.)	Inlet Size (in.)	Air Flow (cfm)	Filter	Static Pressure (in. w.g.)	Sound (NC)	Side	Horizontal Throw (ft.) 150-100-50 fpm
24 x 24	10	100	HE	0.17	-	-	1-2-5
		150		0.28	-	-	1-3-6
		200		0.40	-	-	2-4-7
		250		0.52	16	-	3-6-8
		100	HEPA	0.26	-	-	1-2-5
		150		0.44	-	-	1-3-6
		200		0.60	15	-	2-4-7
		250		0.76	21	-	3-6-8
		100	ULPA	0.37	-	-	1-2-5
		150		0.61	-	-	1-3-6
		200		0.84	8	-	2-4-7
		250		1.08	26	-	3-6-8
24 x 48	12	300	HE	0.17	-	A	1-3-1
						B	----1
		400		0.25	-	A	3-6-19
						B	----3
		500		0.34	15	A	4-9-21
						B	--1-4
		600		0.43	21	A	6-12-23
						B	--1-6
		300	HEPA	0.37	-	A	1-3-12
						B	----1
		400		0.5	-	A	3-6-19
						B	----3
		500		0.64	15	A	4-9-21
						B	--1-4
		600		0.76	21	A	6-12-23
						B	--1-6
		300	ULPA	0.53	-	A	1-3-12
						B	----15
		400		0.7	-	A	3-6-19
						B	----3
		500		0.9	17	A	4-9-21
						B	--1-4
		600		1.08	22	A	6-12-23
						B	--1-6

Performance Notes:

1. sp = Static Pressure, in. w.g., required at inlet for the listed cfm.
2. cfm = Air flow in cubic feet per minute [cfm].
3. NC = Noise Criteria. NC values are based on room absorption of 10dB, re 10^{-12} watts.
4. Blanks "-" indicate an NC level below 15.
5. Throw values are given in feet to terminal velocities of 150 fpm (minimum), 100 fpm (middle) and 50 fpm (maximum).
6. Throw values are based on isothermal conditions. For cooling conditions, see correction factors.
7. sp and NC at full open damper position.
8. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."

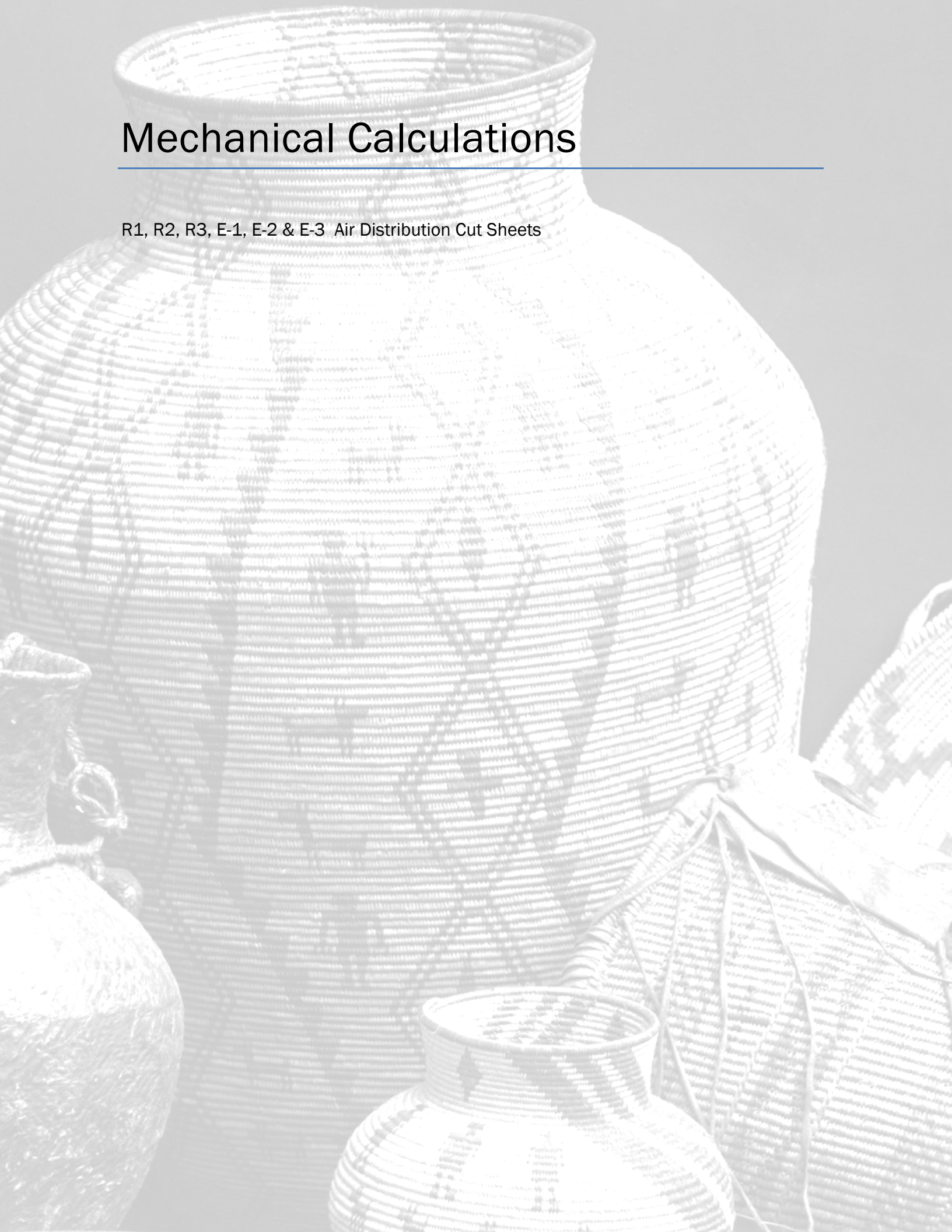
Throw Correction Factors

For throw at cooling conditions, multiply the listed throw values by the following correction factors:

10 °F cooling differential	0.70
20 °F cooling differential	0.50

Mechanical Calculations

R1, R2, R3, E-1, E-2 & E-3 Air Distribution Cut Sheets



Egg Crate Face Return
80 / 81 / 82 Series

Product Information

Models

Grille **80 / 81 / 82**
Register with steel damper **80D / 81D / 82D**
Register with aluminum damper **80DAL / 81DAL / 82DAL**

Application:

- High capacity return or exhaust outlet with high free area and low sound and pressure drops.
- Ideal for pressurized ceiling return or size restricted exhaust applications.
- For Fire-Rated applications, please see D37.

Construction:

80 • 1/2" x 1/2" x 1/2" (13 x 13 x 13) aluminum grid core.
81 • 1/2" x 1/2" x 1" (13 x 13 x 25) aluminum grid core.
82 • 1" x 1" x 1" (25 x 25x 25) aluminum grid core.
- Extruded aluminum borders and frames.
- Optional Steel frame.
- Optional opposed blade damper available in steel **(D)** or aluminum **(DAL)**.

Mounting / Finish Options

Border Style

Surface Mount	
1 1/4" (32) Flat (Standard)	**F**
1 1/4" (32) Curved	**C**
1" (25) Narrow	**N**
Lay-In	
1" (25) Inverted Tee	**TB**
5/16" (8) Channel	**CH**
Exposed Duct 15/16" (24)	**ED**†
Panel Mounted	**TBP**

Optional Mounting Frame

For **F** Border	**D**
For **C** Border	**K**
For **N** Border	**T**

Fastening

Countersunk screwholes c/w oval-head screws	**A**
No screwholes	**Ø**

Finish

White Powder Coat **B12**

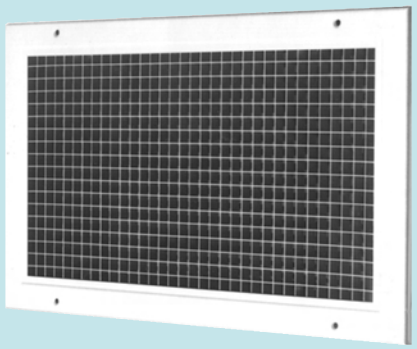
For optional and special finishes see color matrix.

† Note the reduced core area of ED Border per dimensioned details (D83). Corrections for performance data are included in the performance notes.

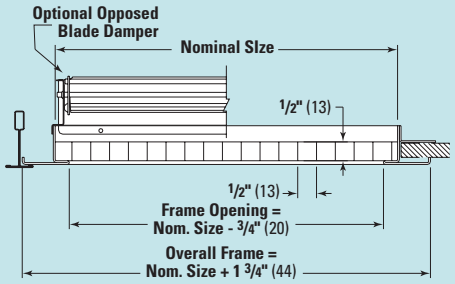
Product Information Index

Performance Data D38
Available Borders / Frames ..... D82 - D84
Available Fastenings ..... D82 - D84
Accessory Dampers D82
Suggested Specification D172

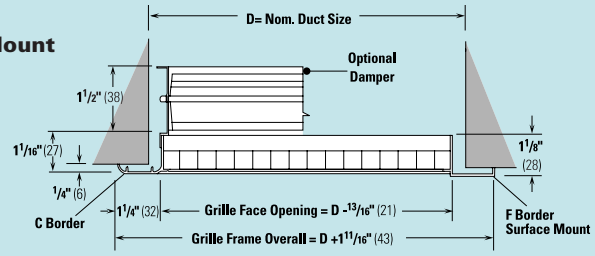
Egg Crate Face Return



T-Bar Lay-In



Surface Mount



A steel panel shall be provided when ceiling module is greater than 2" (51) over duct size.

Available Sizes

- Units sized greater than 48" x 24" (1219 x 609) provided with mullion(s).
- Units sized greater than 48" x 96" (1219 x 2438) supplied in sections complete with mounting channel(s).

Minimum	Maximum*
6" x 4" (152 x 102)	**96" x 48"** (2438 x 1219)

* One piece frame

✓ Product Selection Checklist

1] Select Unit Size based on desired performance characteristics.
2] Select Outlet type by model number (Core style, damper).
3] Select Border style according to installation requirements (F is standard).
4] Select Module Size if TB Border selected. (Note: Maximum duct size = module size-2" (50))
5] Select Mounting frame if desired.
6] Select Fastening type (A is standard, n/a with TB Border).
7] Select Finish.

Example: **24" x 24" / 80 / F / A / B12**
24" x 24" / 80 /TB / B12

Application Recommendations:
Surface Mount – **F** Border, **A** Fastening.
T-Bar Lay-In – **TB** Border, Fastening n/a

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Imperial dimensions are converted to metric and rounded to the nearest millimetre.

Performance Data

Core Area Sq. Ft.	Nominal Size				Core Velocity Velocity Pressure Negative SP	300 .006 .013	400 .010 .021	500 .016 .034	600 .022 .047	700 .031 .066	800 .040 .085	1000 .062 .132	1200 .090 .192	1400 .122 .260	1500 .140 .298
											NC 20		30		
0.15		7 x 4			CFM	45	60	75	90	105	120	150	180	210	225
		6 x 5			NC	-	-	-	-	-	-	22	28	34	37
0.18	8 x 4	6 x 6			CFM	54	72	90	108	126	144	180	216	252	270
	7 x 5				NC	-	-	-	-	-	-	22	29	35	38
0.22	10 x 4	7 x 6			CFM	66	88	110	132	154	176	220	264	308	330
	8 x 5				NC	-	-	-	-	-	-	23	30	36	38
0.26	12 x 4	8 x 6			CFM	78	104	130	156	182	208	260	312	364	390
	10 x 5				NC	-	-	-	-	-	15	24	31	36	39
0.30	14 x 4				CFM	90	120	150	180	210	240	300	360	420	450
					NC	-	-	-	-	-	16	24	31	37	40
0.34	16 x 4	10 x 6			CFM	102	136	170	204	238	272	340	408	476	510
	12 x 5				NC	-	-	-	-	-	16	25	32	37	40
0.39	18 x 4	12 x 6			CFM	117	156	195	234	273	312	390	468	546	585
	14 x 5	8 x 8			NC	-	-	-	-	-	17	25	32	38	41
0.46	20 x 4	14 x 6			CFM	138	184	230	276	322	368	460	552	644	690
	16 x 5	10 x 8			NC	-	-	-	-	-	18	26	33	39	41
0.52	24 x 4	16 x 6			CFM	156	208	260	312	364	416	520	624	728	780
	18 x 5				NC	-	-	-	-	-	18	26	33	39	42
0.60	28 x 4	18 x 6	10 x 10		CFM	180	240	300	360	420	480	600	720	840	900
	20 x 5	12 x 8			NC	-	-	-	-	-	19	27	34	40	42
0.69	30 x 4	20 x 6	12 x 10		CFM	207	276	345	414	483	552	690	828	966	1035
	24 x 5	14 x 8			NC	-	-	-	-	-	19	28	34	40	43
0.81	36 x 4	22 x 6	14 x 10		CFM	243	324	405	486	567	648	810	972	1134	1215
	28 x 5	16 x 8			NC	-	-	-	-	-	20	28	35	41	43
0.90	40 x 4	26 x 6	16 x 10		CFM	270	360	450	540	630	720	900	1080	1260	1350
	30 x 5	18 x 8	12 x 12		NC	-	-	-	-	15	20	29	35	41	44
1.07	48 x 4	30 x 6	14 x 12		CFM	321	428	535	642	749	856	1070	1284	1498	1605
	36 x 5	18 x 10			NC	-	-	-	-	16	21	29	36	42	45
1.18	34 x 6	20 x 10	14 x 14		CFM	354	472	590	708	826	944	1180	1416	1652	1770
	24 x 8	16 x 12			NC	-	-	-	-	16	21	30	37	42	45
1.34	60 x 4	36 x 6	16 x 14		CFM	402	536	670	804	938	1072	1340	1608	1876	2010
	48 x 5	18 x 12			NC	-	-	-	-	17	22	30	37	43	45
1.60	72 x 4	24 x 10	18 x 14		CFM	480	640	800	960	1120	1280	1600	1920	2240	2400
	30 x 8	22 x 12	16 x 16		NC	-	-	-	-	17	22	31	38	44	46
1.80	60 x 5	36 x 8	24 x 12	18 x 16	CFM	540	720	900	1080	1260	1440	1800	2160	2520	2700
	48 x 6	30 x 10	20 x 14		NC	-	-	-	-	18	23	31	38	44	47
2.08	72 x 5	40 x 8	30 x 12	20 x 16	CFM	624	832	1040	1248	1456	1664	2080	2496	2912	3120
	60 x 6	36 x 10	24 x 14	18 x 18	NC	-	-	-	-	18	23	32	39	45	47
2.45	72 x 6	32 x 12	24 x 16		CFM	735	980	1225	1470	1715	1960	2450	2940	3430	3675
	48 x 8	26 x 14	20 x 18		NC	-	-	-	-	19	24	33	39	45	48
2.78	36 x 12	26 x 16	22 x 20		CFM	834	1112	1390	1668	1946	2224	2780	3336	3892	4170
	30 x 14	24 x 18			NC	-	-	-	-	20	25	33	40	46	48
3.11	60 x 8	40 x 12	30 x 16	24 x 20	CFM	933	1244	1555	1866	2177	2488	3110	3732	4354	4665
	48 x 10	36 x 14	26 x 18		NC	-	-	-	-	20	25	33	40	46	49
3.61	72 x 8	48 x 12	30 x 18		CFM	1083	1444	1805	2166	2527	2888	3610	4332	5054	5415
	60 x 10	36 x 16	24 x 24		NC	-	-	-	-	21	26	34	41	47	49
4.29	48 x 14	32 x 20			CFM	1287	1716	2145	2574	3003	3432	4290	5148	6006	6435
	36 x 18	28 x 24			NC	-	-	-	15	21	26	35	42	47	50
4.65	72 x 10	36 x 20			CFM	1395	1860	2325	2790	3255	3720	4650	5580	6510	6975
	48 x 16	30 x 24			NC	-	-	-	16	22	27	35	42	48	50
5.58	72 x 12	48 x 18			CFM	1674	2232	2790	3348	3906	4464	5580	6696	7812	8370
	60 x 14	36 x 24			NC	-	-	-	16	22	27	36	43	48	51
6.25	72 x 14	48 x 20			CFM	1875	2500	3125	3750	4375	5000	6250	7500	8750	9375
	60 x 16	30 x 30			NC	-	-	-	17	23	28	36	43	49	51
									NC 20			30	40		50

40

50

Performance Notes:

1. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets".
2. All pressures are in inches of water.
3. NC values are based on room absorption of 10 dB re 10^{-12} watts.
4. Blanks (—) indicate an NC level below 15.
5. Grille tested without damper. Corrections for grille with damper:
   — Multiply negative static pressure by 1.3
   — Add 6 to listed NC.
7. The performance tables are based on grilles with F border. For ED border the following correction factors must be applied due to the reduced core area of this border.
8. Does not include pressure drop through filter on FF, FH models

Listed Core Area	Multiply Total Pressure	Add NC
.15 - .30	2.4	+15
.34 - .90	1.9	+10
1.07 - 1.80	1.4	+5
2.08 - 6.25	1.2	+2

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Imperial dimensions are converted to metric and rounded to the nearest millimetre.

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Optional Borders, Frames and Fastening

Availability Schedule

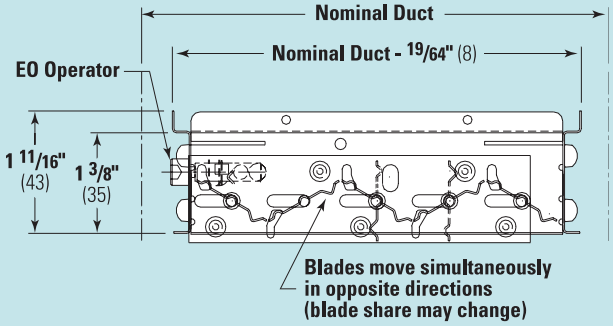
Grille / Register	Border F	C	TBP/TB*	N	ED	CH**	Border / Frame D	K	T	Fastening A	C*
510 / 610 / 710	STD.			▼			▼refer to D-74		▼	STD.	
520 / 620 / 720	STD.			▼			▼refer to D-74		▼	STD.	
530 / 630 / 730	STD.		▼	▼			▼refer to D-74		▼	STD.	
535 / 635 / 735	STD.		▼	▼			▼refer to D-74		▼	STD.	
80 / 81 / 82	STD.	▼	▼	▼	▼	▼	▼	▼	▼	STD.	▼
10	STD.		▼				▼			STD.	▼
21, 22	▼	STD.		▼	▼		▼	▼	▼	STD.	▼
31, 32	▼	STD.		▼	▼		▼	▼	▼	STD.	▼
60, 70	▼	STD.	▼	▼	▼		▼	▼	▼	STD.	▼

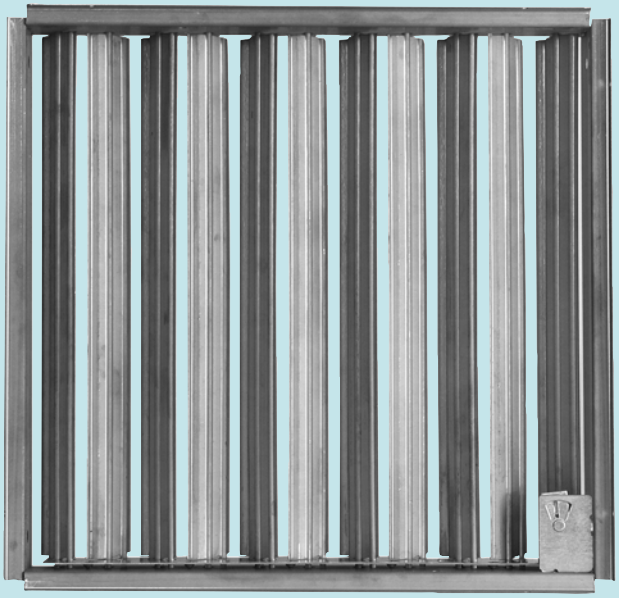
STD. = Standard Border / Fastening supplied with Grille / Register

* Concealed Fastening not available for TB and CH Borders.

** Damper not available for CH border.

Outlet Mounted Accessory
Opposed Blade Damper
D – Steel Construction
DAL – Aluminum Construction





GRILLES AND REGISTERS

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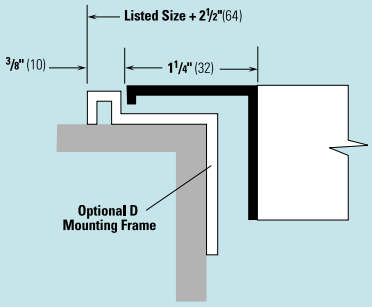
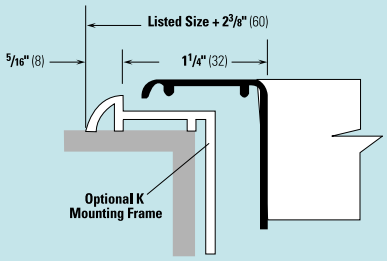
Dimensioned Details

F Border
FD Border / Frame (for 500/600)



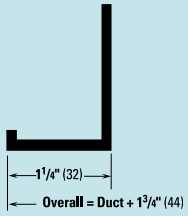
1 1/4" (32) flat border for surface mount.

C Border
CK Border / Frame



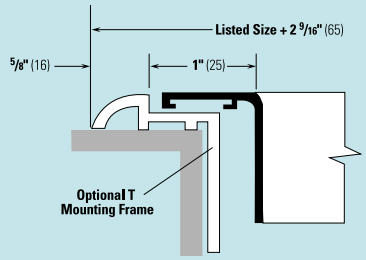
1 1/4" (32) curved border for surface mount. K mounting frame is curved to complement C border.

TB Border



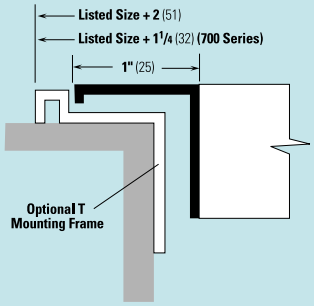
For T-bar lay-in application. Steel panel is provided when ceiling module is more than 2" (51) over duct size. Note that concealed fastening is not available. 60 / 70 Series uses .730" (18) face.

N Border
NT Border / Frame (except 500/600/700)



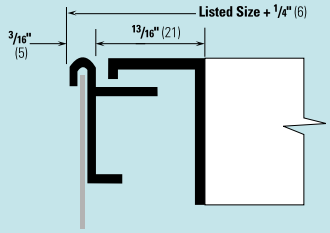
1" (25) narrow low profile border with matching curved mounting frame to satisfy architectural / space conditions.

N Border
NT Border / Frame (for 500/600)



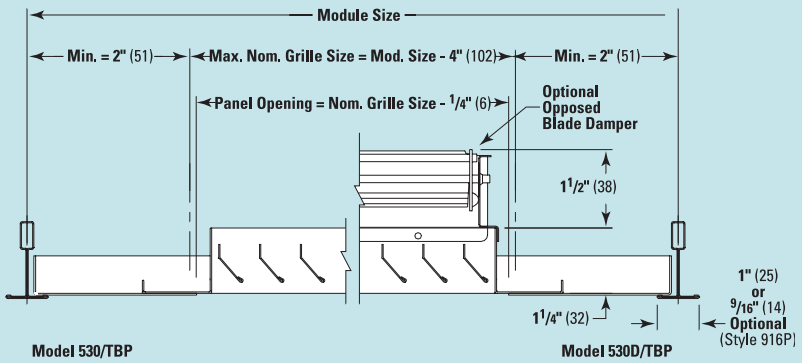
1" (25) flat border for surface mount.

ED Border / Frame



13/16" (21) border for exposed duct. Frame "hems" the raw edge of the duct providing a neat, clean grille mount. Note the reduced core area of this border. See Performance Notes for correction factors to catalog data.

TBP Panel



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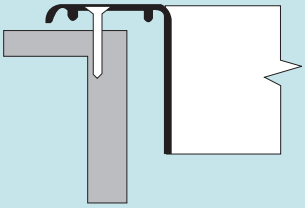
Dimensioned Details

CH Border

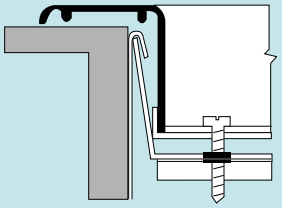
Channel border designed for non-ducted applications in T-bar ceilings. It provides structural strength to the grille and is hidden by the ceiling grid.

A Screw Fastening



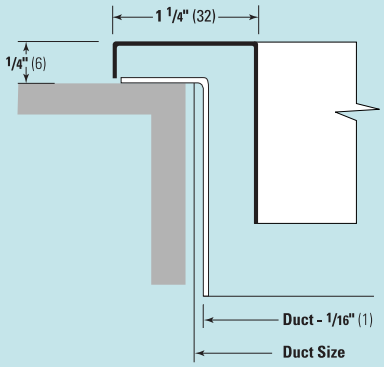
Counter-sunk screwholes in border type. Factory painted oval head screws supplied.

C Concealed Fastening

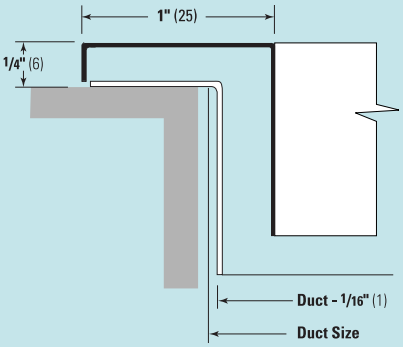


Permits surface mounting with concealed screw. The bracket attached to the back of the grille screws to a loose bracket which "hooks" into a hem in the duct.

700
F Border
FD Border / Frame



700
N Border
NT Border / Frame



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Egg Crate Face / Perforated Face / Filter Grilles

Egg Crate Face

80 — Return Grille
Furnish and install Price model 80 return grilles of the sizes and mounting types indicated on the plans and outlet schedule. Grilles shall be of aluminum construction, consisting of aluminum 1/2" x 1/2" x 1/2" (13 x 13 x 13) grid (egg crate core) and an extruded aluminum border. The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

80D — Exhaust Register
Furnish and install Price model 80D exhaust registers of the sizes and mounting types indicated on the plans and outlet schedule. Registers shall be of aluminum construction, consisting of aluminum 1/2" x 1/2" x 1/2" (13 x 13 x 13) grid (egg crate core) and an extruded aluminum border. The integral volume control damper shall be of the opposed blade type and shall be constructed of heavy gauge cold rolled steel (optional aluminum construction 80DAL). The damper shall be operable from the register face. The damper shall be coated steel (mill finish aluminum 80DAL). The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

81 — Return Grille
Furnish and install Price model 81 return grilles of the sizes and mounting types indicated on the plans and outlet schedule. Grilles shall be of aluminum construction, consisting of two aluminum ½" x ½" x ½" (13 x 13 x 13) grids (egg crate core) stacked to make a ½" x ½" x 1" (13 x 13 x 25) core and an extruded aluminum border. The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

Options
- optional core –1 piece ½" x ½" x 1" (13 x 13 x 25) aluminum grid (egg crate)

81D — Exhaust Register
Furnish and install Price model 81D exhaust registers of the sizes and mounting types indicated on the plans and outlet schedule. Registers shall be of aluminum construction, consisting of two aluminum ½" x ½" x ½" (13 x 13 x 13) grids (egg crate core) stacked to make a ½" x ½" x 1" (13 x 13 x 25) core and an extruded aluminum border. The integral volume control damper shall be of the opposed blade type and shall be constructed of cold rolled steel (optional aluminum construction 81DAL). The damper shall be operable from the register face. The damper shall be coated steel (mill finish aluminum 81DAL). The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

82 — Return Grille
Furnish and install Price model 82 return grilles of the sizes and mounting types indicated on the plans and outlet schedule. Grilles shall be of aluminum construction, consisting of aluminum 1" x 1" x 1" (25 x 25 x 25) grid (egg crate) core and an extruded aluminum border. The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

82D — Exhaust Register
Furnish and install Price model 82 exhaust registers of the sizes and mounting types indicated on the plans and outlet schedule. Registers shall be of aluminum construction, consisting of aluminum 1" x 1" x 1" (25 x 25 x 25) grid (egg crate) core and an extruded aluminum border. The integral volume control damper shall be of the opposed blade type and shall be constructed of cold rolled steel (optional aluminum construction 82DAL). The damper shall be operable from the register face. The damper shall be coated steel (mill finish aluminum 82DAL). The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

Perforated Face

10 — Return Grille
Furnish and install Price model (10 steel/ 10A aluminum) return grilles of the sizes and mounting types indicated on the plans and outlet schedule. Grilles shall consist of a perforated core with 3/16" (5) holes on 1/4" (6) centers staggered 60 degrees and an extruded aluminum border. The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

Filter Grilles - Louvered

530FF / 630FF / 730FF — Filter Return Grille
Furnish and install Price model (530FF steel / 630FF aluminum) filter return grilles of the sizes and mounting types indicated on the plans and outlet schedule. Grilles shall be 45 degree deflection fixed louver type with blades spaced 3/4" (19) on center. The blades shall run parallel to the (long / short) dimension of the grille. The border shall be mounted to the filter frame with 1/4 turn quick release fasteners (and a hinge-tab mechanism on type 530FF). The mounting frame shall accept a standard 1" (25) filter media. The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

535FF / 635FF / 735FF — Filter Return Grille
Furnish and install Price model (535FF steel / 635FF aluminum / 735FF stainless steel) filter return grilles of the sizes and mounting types indicated on the plans and outlet schedule. Grilles shall be 45 degree deflection fixed louver type with blades spaced 1/2" (13) on center. The blades shall run parallel to the (long / short) dimension of the grille. The border shall be mounted to the filter frame with 1/4 turn quick release fasteners (and a hinge-tab mechanism on type 530FF). The mounting frame shall accept a standard 1" (25) filter media. The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

Filter Grilles - Egg Crate

80FF — Filter Return Grilles
Furnish and install Price model 80FF filter return grilles of the sizes and mounting types indicated on the plans and outlet schedule. Grilles shall consist of aluminum 1/2" x 1/2" x 1/2" (13 x 13 x 13) grid (egg crate) core and a formed steel border and filter frame. A hinge-tab mechanism allows hinging or removal of the grille from the filter frame to ease cleaning of the grille. The mounting frame is designed to accept a standard 1" (25) or 2" (51) filter media. Unit is to be complete with 1/4 turn quick release fasteners. The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

Filter Grilles - Perforated

10FF — Filter Return Grille
Furnish and install Price model 10FF filter return grilles of the sizes and mounting types indicated on the plans and outlet schedule. Grilles shall consist of a perforated steel core with 3/16" (5) holes on 1/4" (6) centers staggered 60 degrees and a formed steel border and filter frame. A hinge-tab mechanism allows hinging or removal of the grille from the filter frame to ease cleaning of the grille. The mounting frame is designed to accept a standard 1" (25) or 2" (51) filter media. Unit is to be complete with 1/4 turn quick release fasteners. The grille shall be finished in (B12 White Powder Coat / B15 Aluminum Powder Coat).

All Metric dimensions ( ) are soft conversion.
Imperial dimensions are converted to metric and rounded to the nearest millimetre.

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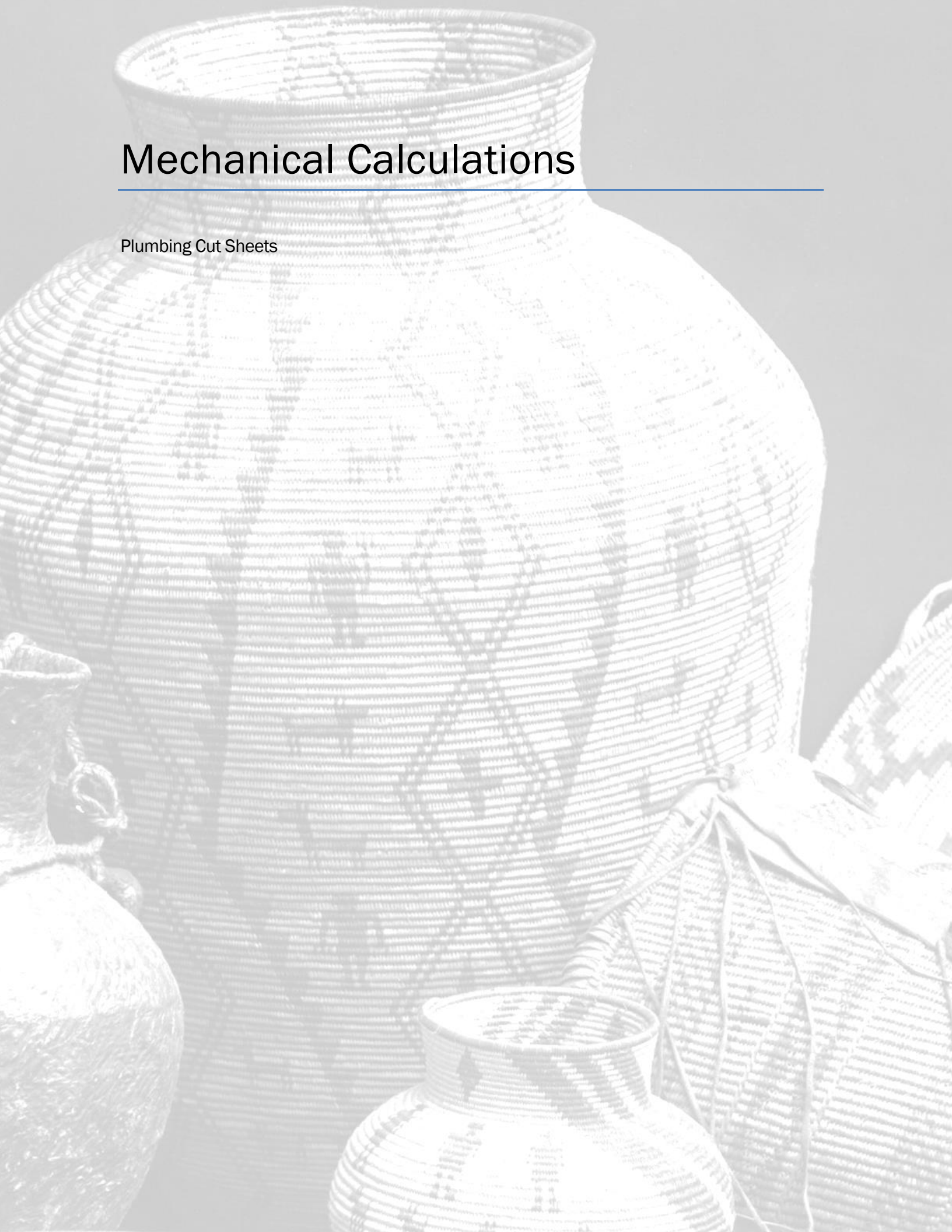
Mechanical Calculations

Plumbing Cut Sheets



KOHLER®

Highcliff™ Ultra

Top spud antimicrobial flushometer bowl w/ bedpan lugs

K-96057-SSL

Features

- Elongated bowl offers added room and comfort.
- Bedpan lugs included.
- Antimicrobial finish inhibits the growth of mold-, mildew-, stain-, and odor-causing bacteria on the fixture surface. This product does not protect users against bacteria, viruses, or other disease organisms. Always clean and wash this product thoroughly before and after each use.
- 1½" (38 mm) top spud.
- 10" x 7" (254 mm x 178 mm) water surface.
- 2-1/8" (54 mm) fully glazed trapway.
- 10" or 12" (254 or 305 mm) rough-in.
- 1.1 gpf (4.2 lpf), 1.28 (4.8 lpf) or 1.6 gpf (6.0 lpf) depending on flushometer specified.
- Supports static load of 2,500 lbs.

Material

- Vitreous china.

Technology

- Designed to outperform competitors in bowl cleanliness and plug resistance.
- Maximum waste removal.
- Enginnered for toilet seat cover removal.
- Excellent bowl rinse.
- Engineered to flush effectively in buildings with low supply pressure and flow.

Installation

- Replaces Highcrest K-4302-L, Highcliff K-4368-L and Highline K-4405-L. Height and footprint may vary.
- Seat sold separately.

Included Components

Additional Components:

Bolt cap accessory pack
Spud

ADA | CSA B651 | OBC

Codes/Standards

ASME A112.19.2/CSA B45.1
DOE - Energy Policy Act 1992
EPA WaterSense®
California Energy Commission (CEC)
ADA
ICC/ANSI A117.1
CSA B651
OBC

KOHLER® One-Year Limited Warranty

See website for detailed warranty information.

Available Colors/Finishes

Color tiles intended for reference only.

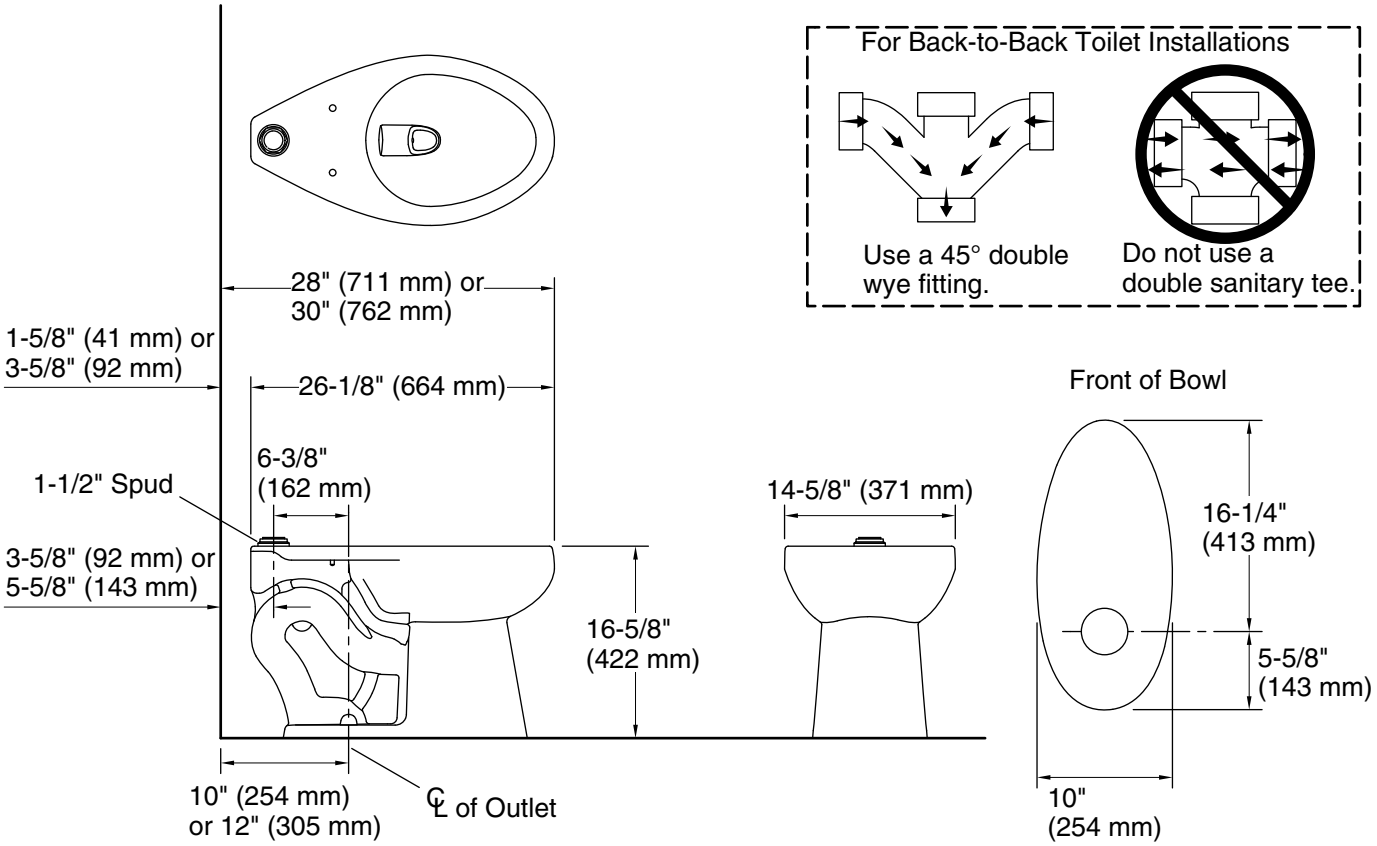
Color	Code	Description
	0	White

KOHLER®

Highcliff™ Ultra

Top spud antimicrobial flushometer bowl w/ bedpan lugs

K-96057-SSL



Technical Information

All product dimensions are nominal.

Toilet type:	Flushometer, Floor-mount
Waste Outlet:	Floor
Bowl shape:	Elongated
Flush type:	Flushometer valve siphon
Spud size:	Inlet, Top
Trap passageway:	2-1/8" (54 mm)
Water Consumption	
Full:	1.6 gpf (6 lpf)
Reduced:	1 gpf (3.8 lpf)
Water surface size:	10" x 7" (254 mm x 178 mm)
Rim to water surface:	6" (152 mm)
Rough-in:	12" (305 mm)
Seat-mounting holes:	5-1/2" (140 mm)

Fixture Supply Requirements

Min static pressure:	35 psi (241.3 kPa)
Max static pressure:	80 psi (551.6 kPa)
Min flowing	25 psi (172.4 kPa)

Notes

Install this product according to the installation instructions.

For back-to-back toilet installations: Use only a 45° double wye fitting.

ADA, OBC, CSA B651 compliant when installed to the specific requirements of these regulations.

Plumbing codes may require elongated toilets and elongated, open-front seats in public bathrooms.

Accessibility standards may require controls to be located on the open side of the toilet.

KOHLER. Faucets

Manual 1.28 GPF WC Flushometer
K-13517

Features
- Fixture-mount design.

Material
- Brass.

Technology
- Nonhold open piston technology for accurate activation.

Installation
- Intended for toilet installations with 1-1/2" spud coupling connection.

Recommended Products/Accessories
K-23723 Faucet cleaner

Optional Products/Accessories
GP1118986 Flushometer Extension Kit
K-10313 Flushometer 12" rough-in kit
K-13716 24" Tailpiece

ADA | CSA B651 | OBC

Codes/Standards
ASME A112.18.1/CSA B125.1
CSA B64
CSA B125.3
ASSE 1037/ASME A112.1037/CSA B125.37
All applicable US Federal and State material regulations
EPA WaterSense®
ADA
ICC/ANSI A117.1
CSA B651
OBC

KOHLER® One-Year Limited Warranty
See website for detailed warranty information.

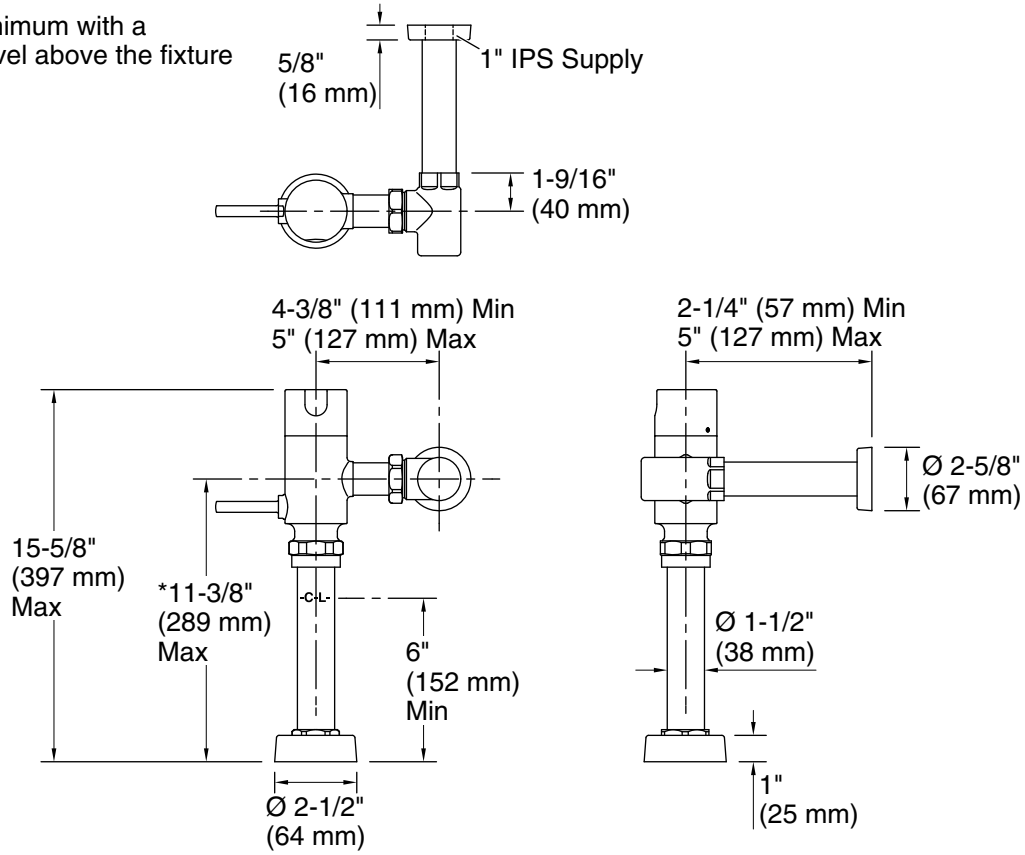
Available Colors/Finishes
Color tiles intended for reference only.

Color	Code	Description
	CP	Polished Chrome

KOHLER. Faucets

Manual 1.28 GPF WC Flushometer
K-13517

*10-3/4" (273 mm) minimum with a
6" (152 mm) critical level above the fixture



Technical Information
All product dimensions are nominal.

Drain included: No

Pressure/fixture Supply Requirements

Fixture pressure max (static):	80 psi (551.6 kPa)
Min flowing pressure:	25 psi (172.4 kPa)
Min flow rate:	25 gpm (94.6 lpm)

Notes
Install this product according to the installation guide.

ADA, OBC, CSA B651 compliant when installed to the specific requirements of these regulations.

KOHLER®

Lustra™

Commercial elongated toilet seat

K-4670-SA

Features

- Elongated, open-front toilet seat.
- Antimicrobial agent inhibits growth of odor-causing bacteria, mold, and mildew. This product does not protect users against bacteria, viruses, or other disease organisms. Always clean and wash this product thoroughly before and after each use.
- Self-sustaining check hinge prevents slamming with check hinge functionality.

Material

- Made of solid polypropylene and is resistant to staining, fading, chipping and peeling.

Codes/Standards

IAPMO/ANSI Z124.5

KOHLER® One-Year Limited Warranty

See website for detailed warranty information.

Available Colors/Finishes

Color tiles intended for reference only.

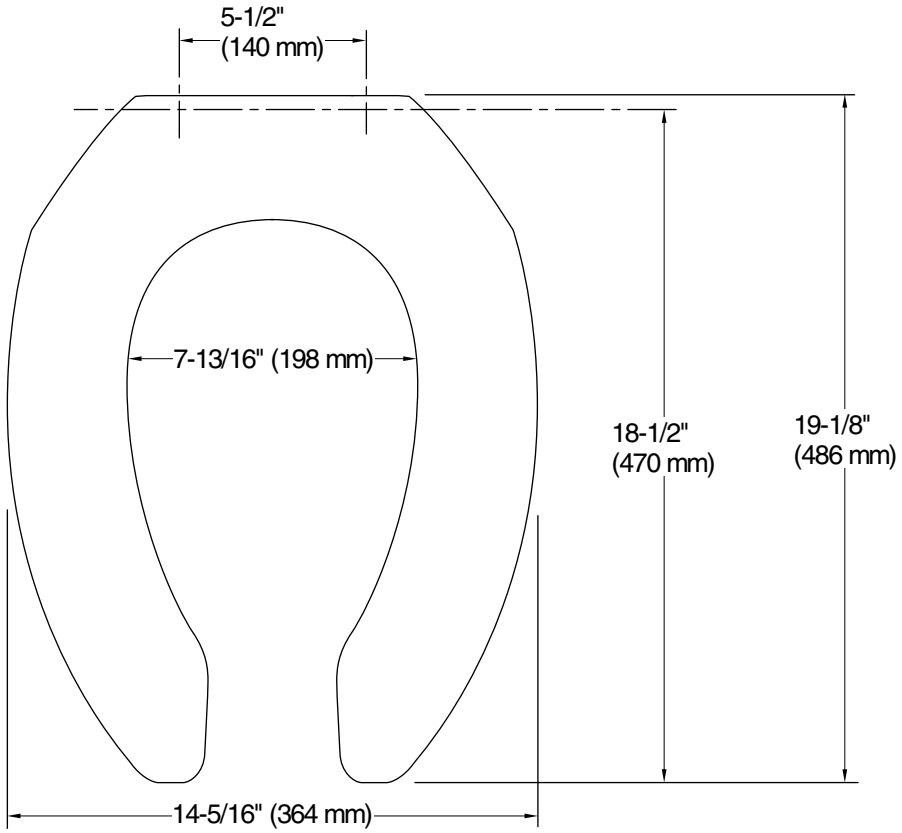
Color	Code	Description
	0	White

KOHLER®

Lustra™

Commercial elongated toilet seat

K-4670-SA



Technical Information

All product dimensions are nominal.

Seat shape type:	Elongated
Seat front type:	Open-front
Seat hinge type:	Check, Self-sustaining
Seat-mounting holes:	5-1/2" (140 mm)

Notes

Install this product according to the installation guide.

Touchless Faucets
116.427.AB.1

CHICAGO FAUCETS
Geberit Group

Product Type

Touch-free, programmable faucet with above-deck electronics

Features & Specifications

- 1.5 GPM (5.7 L/min) laminar flow control insert in spout inlet
- Single hole
- 5-1/4" rigid/swing gooseneck spout with flow control
- HyTronic® module kit
- ECAST® design provides durable cast brass construction with total lead content equal to or less than 0.25% by weighted average
- Complies with the requirements of the Buy American Act of 1933.

Performance Specification

- Rated Operating Pressure: 20-125 PSI
- Rated Operating Temperature: 40-140°F

Warranty

- 3-Year Limited Electronics and Solenoid Warranty
- Lifetime Limited Faucet Warranty
- 1-Year Limited Finish Warranty
- 5-Year Limited Mechanical Warranty

Codes & Standards

- ADA ANSI/ICC A117.1
- ASME A112.18.1/CSA B125.1
- Complies with CALGreen requirements
- NSF/ANSI 372 Low Lead Content
- NSF/ANSI 61, Section 9
- Certified to WaterSense by ICC-ES

Job Name MSU

Item Number LAV FAUCET

Section/Tag P2

Model Specified CHICAGO 116.427.AB.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

ECAST

ECAST products are intended for installation where state laws and local codes mandate lead content levels or in any location where lead content is a concern.

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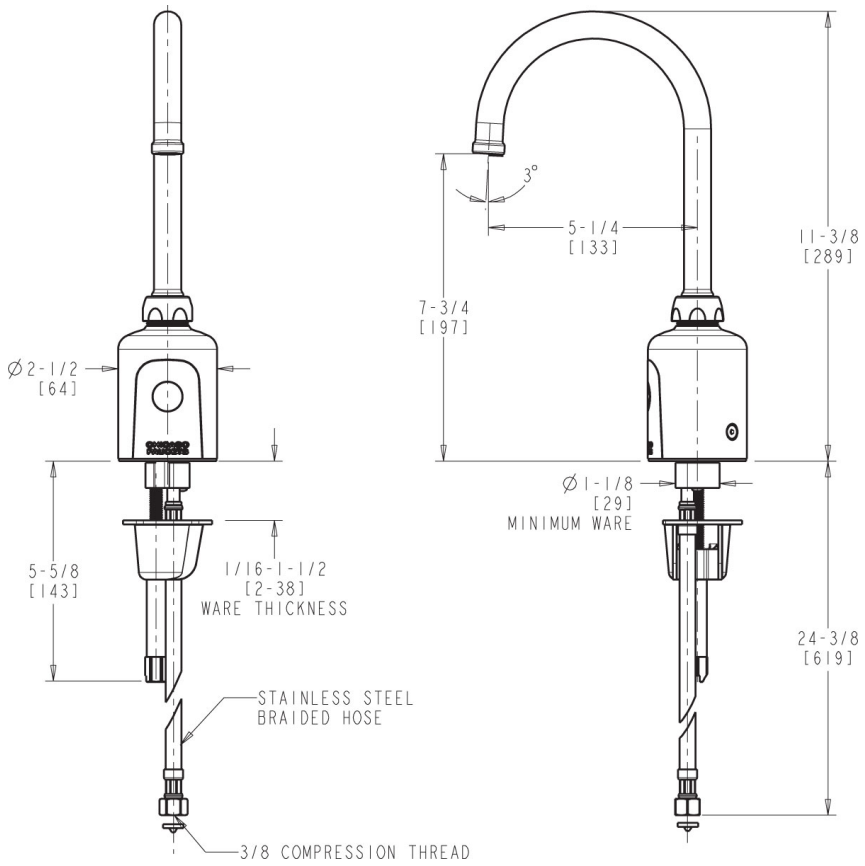
116.427.AB.1

P2

CHICAGO FAUCETS
Geberit Group

Architect/Engineer Specification

Chicago Faucets No. 116.427.AB.1, HyTronic electronic faucet with dual-beam infrared sensor, chrome plated. Rigid/swing gooseneck spout, 5-1/4" center-to-center, with 1.5 GPM (5.7 L/min) laminar flow control insert in spout inlet. Single supply for tempered water. 12-volt AC transformer required (order separately). Stainless steel hose included. Multiple field-adjustable modes and ranges. Compatible with Chicago Faucets Commander™ handheld programming unit. ECAST® construction with less than 0.25% lead content by weighted average. CALGreen compliant. This product meets ADA ANSI/ICC A117.1 requirements and is tested and certified to industry standards: ASME A112.18.1/CSA B125.1, Certified to NSF/ANSI 61, Section 9 by CSA, California Health and Safety Code 116875 (AB1953-2006), Vermont Bill S.152, NSF/ANSI 372 Low Lead Content, and California Green Building Standards Code (CALGreen).



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

Chicago Faucets, member of the Geberit Group, is the leading brand of commercial faucets and fittings in the United States, offering a complete range of products for schools, laboratories, hospitals, office buildings, food service, airports and sport facilities. Call 1.800.TECTRUE or 1.847.803.5000 Option 1 for installation or other technical assistance.

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KOHLER®

Greenwich™
Wall-Mount Lavatory
K-2030

Features
- Made from premium materials that withstand high-volume usage.
- 20-3/4"L x 18-1/4"W.
- Faucet not included.
- Includes wall hanger.

Material
- Vitreous china.

Installation
- Wall-mount.
- Drilled for concealed arm carrier installation.

Recommended Products/Accessories
K-8998 P-Trap
K-23726 Drain treatment
K-23725 Cast iron cleaner

Included Components
Additional Components:
Hanger(s)

ADA

Codes/Standards
ASME A112.19.2/CSA B45.1
ADA
ICC/ANSI A117.1

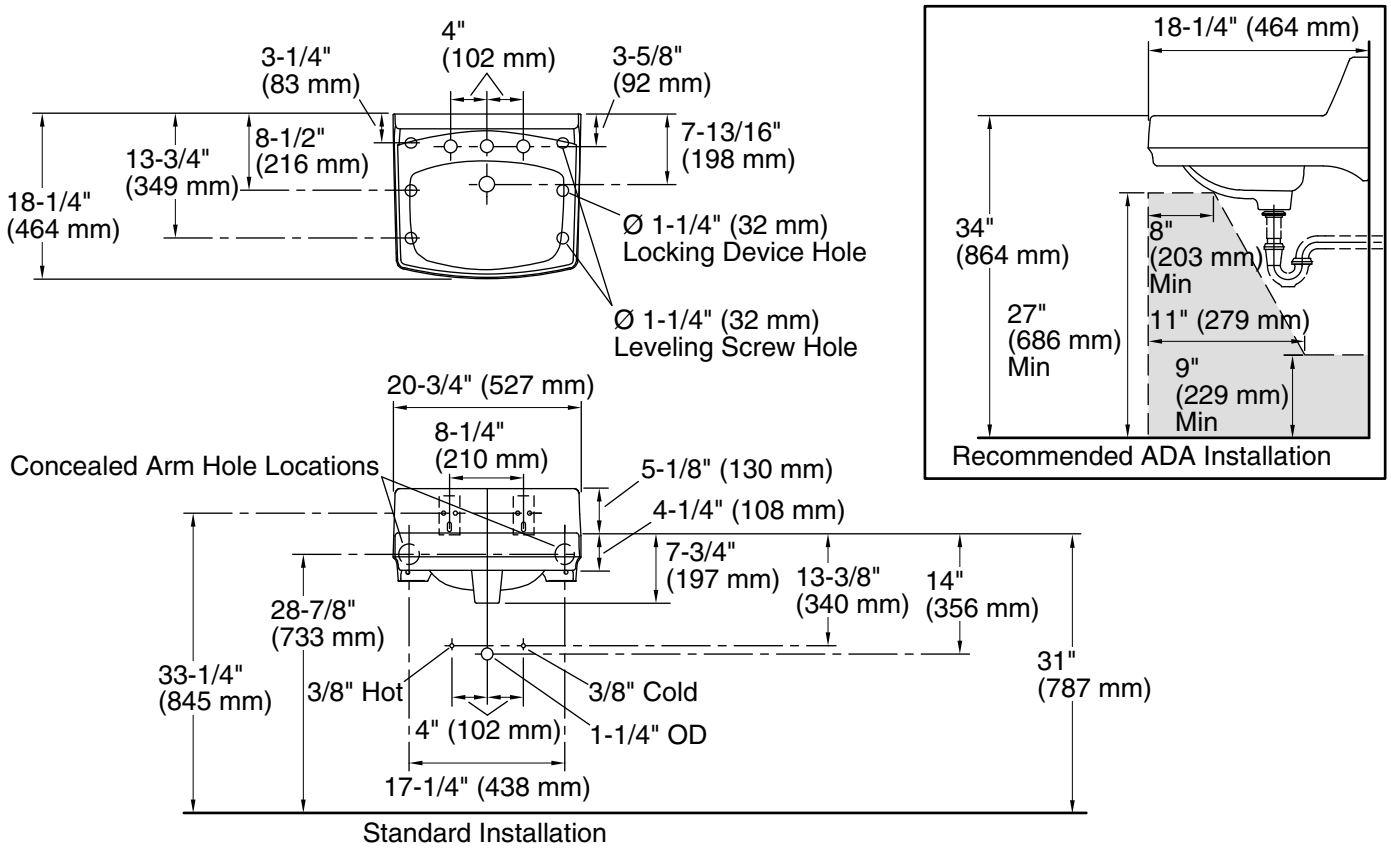
KOHLER® One-Year Limited Warranty
See website for detailed warranty information.

Available Colors/Finishes
Color tiles intended for reference only.

Color	Code	Description
	0	White
	96	Biscuit
	47	Almond
	7	Black Black™

KOHLER®

Greenwich™
Wall-Mount Lavatory
K-2030



Technical Information

All product dimensions are nominal.

Bowl configuration:	Single
Installation:	Wall-mount
Bowl area (Center):	Length: 10" (254 mm) Width: 15" (381 mm) With overflow: Yes Water depth: 3-1/4" (83 mm)
With overflow:	Yes
Number of deck holes:	3
Faucet hole spacing:	8" (203 mm)
Faucet hole(s):	1-3/8" (35 mm)
Drain hole:	1-3/4" (44 mm)

Notes

Install this product according to the installation instructions.

ADA compliant when installed to the specific requirements of these regulations.

ACCESSORIES AND PARTS

242.340.00.1

Product Type

Adapter Wire Bank Installation Adapter Wire

Features & Specifications

- For use with HyTronic® and E-Tronic® 40 electronic sensor faucets
- CFNow! Item Ships in 3 Days

Job Name MSU

Item Number LAV FAUCET

Section/Tag P2

Model Specified CHICAGO 242.340.00.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

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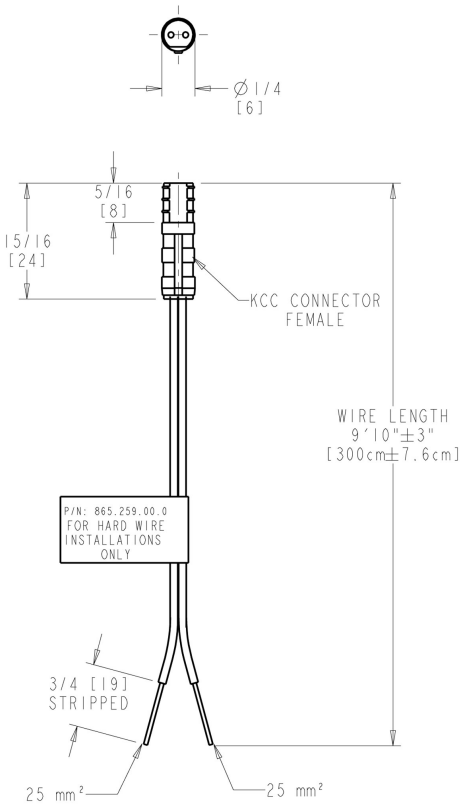
242.340.00.1

P2

Architect/Engineer Specification

Chicago Faucets No. 242.340.00.1, Bank Installation Adapter Wire. For use with HyTronic® and E-Tronic® 40 electronic sensor faucets.



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

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Accessories & Parts
131-ABNF

CHICAGO FAUCETS
Geberit Group

Product Type

Thermostatic mixing valve for single or multiple faucet installations

Features & Specifications

- Adjustment cap with locking feature
- Brass body construction with corrosion-resistant internal components, includes plastic wall bracket
- Standard 3/8" compression inlets and outlet
- Integral inlet check valves to protect against cross-flow
- ECAST® design provides durable cast brass construction with total lead content equal to or less than 0.25% by weighted average
- Complies with the requirements of the Buy American Act of 1933.

Warranty

- 1-Year Limited Cartridge Warranty
- Lifetime Limited Faucet Warranty
- 1-Year Limited Finish Warranty
- 1-Year Limited Material Warranty

Codes & Standards

- ASSE 1070/ASME A112.1070/CSA B125.70
- NSF/ANSI 372 Low Lead Content
- NSF/ANSI 61, Section 9

Job Name MSU

Item Number LAV FAUCET

Section/Tag P2

Model Specified CHICAGO 131-ABNF

Architect IDS+A

Engineer RGE

Contractor TBD

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ECAST

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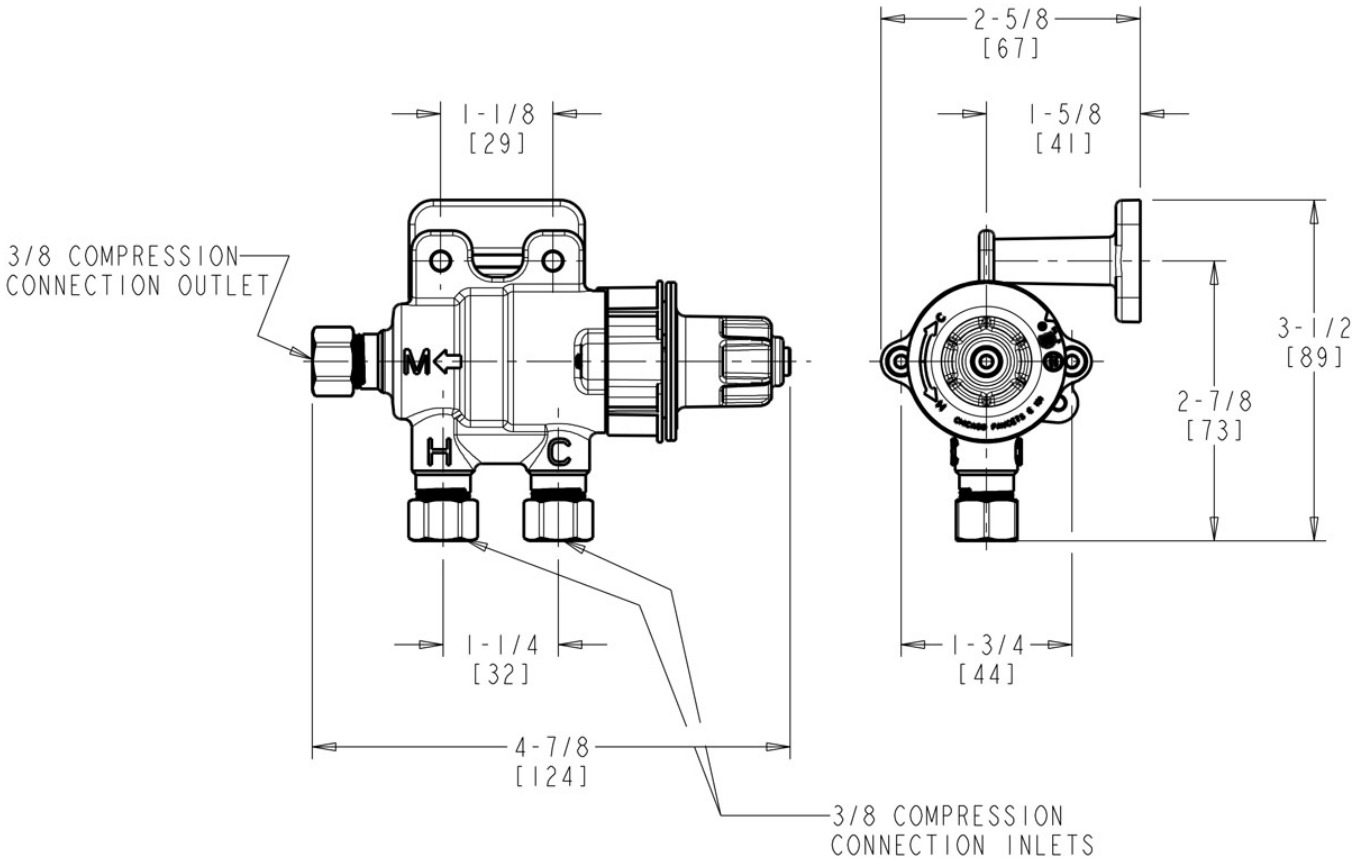
Architect/Engineer Specification

Chicago Faucets No. 131-ABNF, ECAST® Thermostatic Mixing Valve. Standard 3/8" compression inlets and outlet. Integral inlet check valves to protect against cross-flow. Adjustment cap with locking feature. Brass body construction. Corrosion resistant internal components. Thermostatic wax element design. Thermostat controls both hot and cold water. Installs between the stop valves and the faucet. Single use or multiple faucet installations. Minimum supply pressure: 30psi (207 kPa); Hot inlet temperature: 120°F to 180°F (49°C to 82°C). Outlet water temperature will be less than hot water inlet temperature. Includes wall bracket. Minimum flow rate: 0.35 gpm (@ min. 20 psi). Maximum flow rate: 4.6 gpm (@ min. 125 psi). Temperature out: 80°F to 120°F (27°C to 49°C). ECAST® construction with less than 0.25% lead content by weighted average.



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

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Accessories & Parts
243.259.00.1

Product Type

Hard-wire, multi-use Class 2 transformer with 4" mounting plate, for up to 8 faucets

Features & Specifications

- 242.340.00.1 connecting wire not included (order separately)
- Complies with the requirements of the Buy American Act of 1933.

Warranty

- 1-Year Limited Material Warranty

Codes & Standards

- UL Listed

Job Name MSU

Item Number LAV FAUCET

Section/Tag P2

Model Specified CHICAGO 243.259.00.1

Architect IDS+A

Engineer RGE

Contractor TBD

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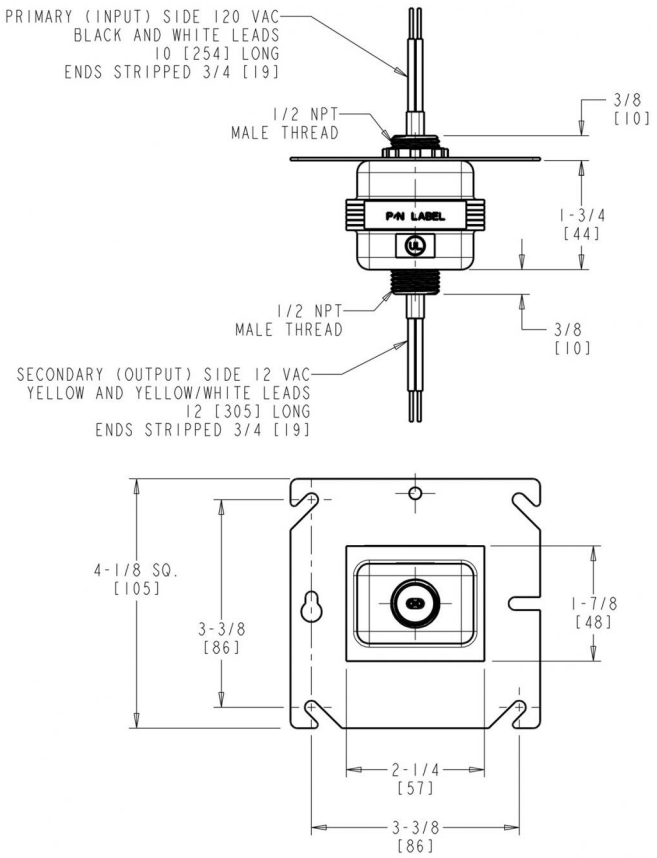
243.259.00.1

P2

CHICAGO FAUCETS
Geberit Group

Architect/Engineer Specification

Chicago Faucets No. 243.259.00.1, Hard-wire Transformer, multi-use.Transformer type - Class 2. Single-use or multi-use capability (up to 8 faucets). Connection: hard-wire primary and secondary. Primary and secondary ends stripped and tinned. Primary: black and white leads. Primary input voltage 120 VAC @ 60 Hz, 10 length. Secondary output voltage 12 VAC. Secondary: yellow and yellow/white leads, 12 length. Output current - 400 mA. UL listed. RoHS compliant. 242.340.00.1 connecting wire not included (order separately). Hard-wired with standard 4 mounting plate. Made in U.S.A.



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

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ELKAY®
SPECIFICATIONS

Elkay Lustertone Classic Stainless Steel 17" x 20" x 7-5/8" Single Bowl Drop-in Sink
Model(s) LR1720

PRODUCT SPECIFICATIONS

Elkay Lustertone™ Classic Stainless Steel 17" x 20" x 7-5/8", Single Bowl Drop-in Sink. Sink is manufactured from 18 gauge 304 Stainless Steel with a Lustrous Satin finish, Center drain placement, and Bottom only pads.

Installation Type:	Drop-in
Material:	304 Stainless Steel
Finish:	Lustrous Satin
Gauge:	18
Sound Deadening:	Bottom only pads
Number of Bowls:	1
Sink Dimensions:	17" x 20" x 7-5/8"
Bowl 1 Dimensions:	14" x 14" x 7-1/2"
Drain Size:	3-1/2" (89mm)
Drain Location:	Center
Minimum Cabinet Size:	21"
Mounting Hardware:	Part # 64090012 included for countertops up to 3/4" (19mm) thick
Template Included:	No
Cutout Template #:	1000001272

Template is available for download at elkay.com. CAD software will be required to open the template.

Cutout Dimensions for Drop-in Installation:
16-3/8" x 19-3/8" (416mm x 492mm) with 1-1/2" (38mm) corner radius

Custom Options	
✓ Type 316 Stainless Steel	
Drain Location	
□ Right Rear	□ Left Rear
□ Center	✓ Center Rear
Overflow Location	
✓ Front	□ Rear
Alternate Punching	
□ Faucet Model:	✓ Punch Required: SINGLE
Sink Size	
□ Bowl Depth:	□ Drainboard Width:

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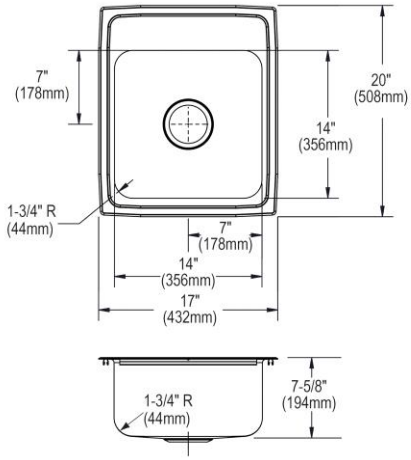
Like your family, the Elkay family has values and traditions that endure. For almost a century, Elkay has been a family-owned and operated company, providing thousands of jobs that support our families and communities.

Product Compliance: ASME A112.19.3/CSA B45.4
Buy American Act

Sinks are listed by IAPMO® as meeting the applicable requirements of the Uniform Plumbing Code®, International Plumbing Code®, and National Plumbing Code of Canada.

Clean and Care Manual (PDF)
Installation Instructions (PDF)
Warranty (PDF)

Similar models are available with: 4" 4-1/2" 5" 6" and 6-1/2" depths, Quick-Clip Mounting System



PART: P3 QTY: _____
PROJECT: IHS MSU
CONTACT: RGE
DATE: _____
NOTES: _____
APPROVAL: _____

In keeping with our policy of continuing product improvement, Elkay reserves the right to change product specifications without notice. Please visit elkay.com for the most current version of Elkay product specification sheets. This specification describes an Elkay product with design, quality, and functional benefits to the user. When making a comparison of other producers' offerings, be certain these features are not overlooked.

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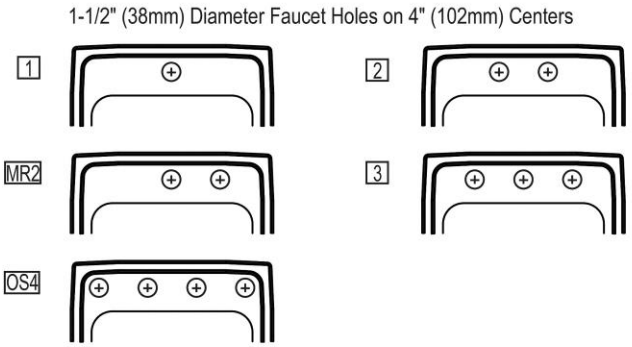
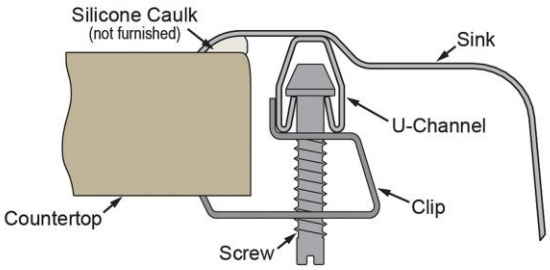
Hole Drilling Configurations:



Installation Profile:



Optional Accessories		
LKWBG1414SS	Elkay Stainless Steel 13" x 13" x 1" Bottom Grid Spec Sheet (PDF)	
CB1613	Elkay Hardwood 16-3/4" x 13-1/2" x 1" Cutting Board Spec Sheet (PDF)	
LK99	Elkay Deluxe 3-1/2" Drain Type 304 Stainless Steel Body Strainer Basket Rubber Seal and Tailpiece Spec Sheet (PDF)	
LKWRB1414SS	Elkay Stainless Steel 13" x 13" x 7" Rinsing Basket Spec Sheet (PDF)	

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Touchless Faucets
116.427.AB.1

CHICAGO FAUCETS
Geberit Group

Product Type

Touch-free, programmable faucet with above-deck electronics

Features & Specifications

- 1.5 GPM (5.7 L/min) laminar flow control insert in spout inlet
- Single hole
- 5-1/4" rigid/swing gooseneck spout with flow control
- HyTronic® module kit
- ECAST® design provides durable cast brass construction with total lead content equal to or less than 0.25% by weighted average
- Complies with the requirements of the Buy American Act of 1933.

Performance Specification

- Rated Operating Pressure: 20-125 PSI
- Rated Operating Temperature: 40-140°F

Warranty

- 3-Year Limited Electronics and Solenoid Warranty
- Lifetime Limited Faucet Warranty
- 1-Year Limited Finish Warranty
- 5-Year Limited Mechanical Warranty

Codes & Standards

- ADA ANSI/ICC A117.1
- ASME A112.18.1/CSA B125.1
- Complies with CALGreen requirements
- NSF/ANSI 372 Low Lead Content
- NSF/ANSI 61, Section 9
- Certified to WaterSense by ICC-ES

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P3

Model Specified CHICAGO 116.427.AB.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

ECAST

ECAST products are intended for installation where state laws and local codes mandate lead content levels or in any location where lead content is a concern.

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www.chicagofaucets.com

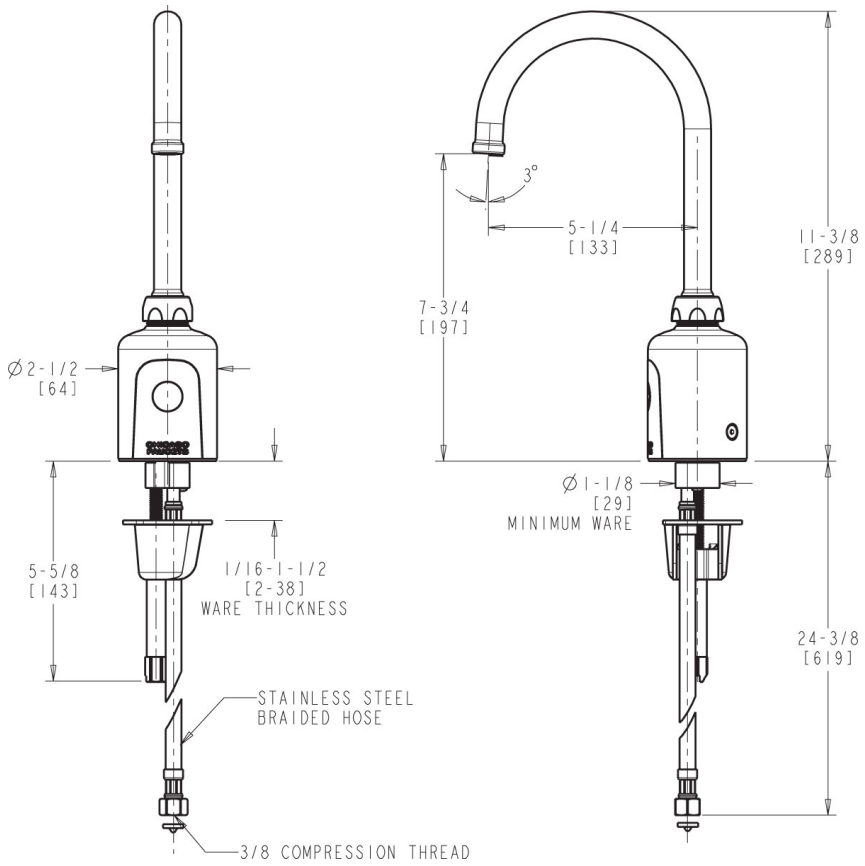
116.427.AB.1

P3

CHICAGO FAUCETS
Geberit Group

Architect/Engineer Specification

Chicago Faucets No. 116.427.AB.1, HyTronic electronic faucet with dual-beam infrared sensor, chrome plated. Rigid/swing gooseneck spout, 5-1/4" center-to-center, with 1.5 GPM (5.7 L/min) laminar flow control insert in spout inlet. Single supply for tempered water. 12-volt AC transformer required (order separately). Stainless steel hose included. Multiple field-adjustable modes and ranges. Compatible with Chicago Faucets Commander™ handheld programming unit. ECAST® construction with less than 0.25% lead content by weighted average. CALGreen compliant. This product meets ADA ANSI/ICC A117.1 requirements and is tested and certified to industry standards: ASME A112.18.1/CSA B125.1, Certified to NSF/ANSI 61, Section 9 by CSA, California Health and Safety Code 116875 (AB1953-2006), Vermont Bill S.152, NSF/ANSI 372 Low Lead Content, and California Green Building Standards Code (CALGreen).



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

Chicago Faucets, member of the Geberit Group, is the leading brand of commercial faucets and fittings in the United States, offering a complete range of products for schools, laboratories, hospitals, office buildings, food service, airports and sport facilities. Call 1.800.TECTRUE or 1.847.803.5000 Option 1 for installation or other technical assistance.

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Accessories & Parts
131-ABNF

CHICAGO FAUCETS
Geberit Group

Product Type

Thermostatic mixing valve for single or multiple faucet installations

Features & Specifications

- Adjustment cap with locking feature
- Brass body construction with corrosion-resistant internal components, includes plastic wall bracket
- Standard 3/8" compression inlets and outlet
- Integral inlet check valves to protect against cross-flow
- ECAST® design provides durable cast brass construction with total lead content equal to or less than 0.25% by weighted average
- Complies with the requirements of the Buy American Act of 1933.

Warranty

- 1-Year Limited Cartridge Warranty
- Lifetime Limited Faucet Warranty
- 1-Year Limited Finish Warranty
- 1-Year Limited Material Warranty

Codes & Standards

- ASSE 1070/ASME A112.1070/CSA B125.70
- NSF/ANSI 372 Low Lead Content
- NSF/ANSI 61, Section 9

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P3

Model Specified CHICAGO 131-ABNF

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

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ECAST

ECAST products are intended for installation where state laws and local codes mandate lead content levels or in any location where lead content is a concern.

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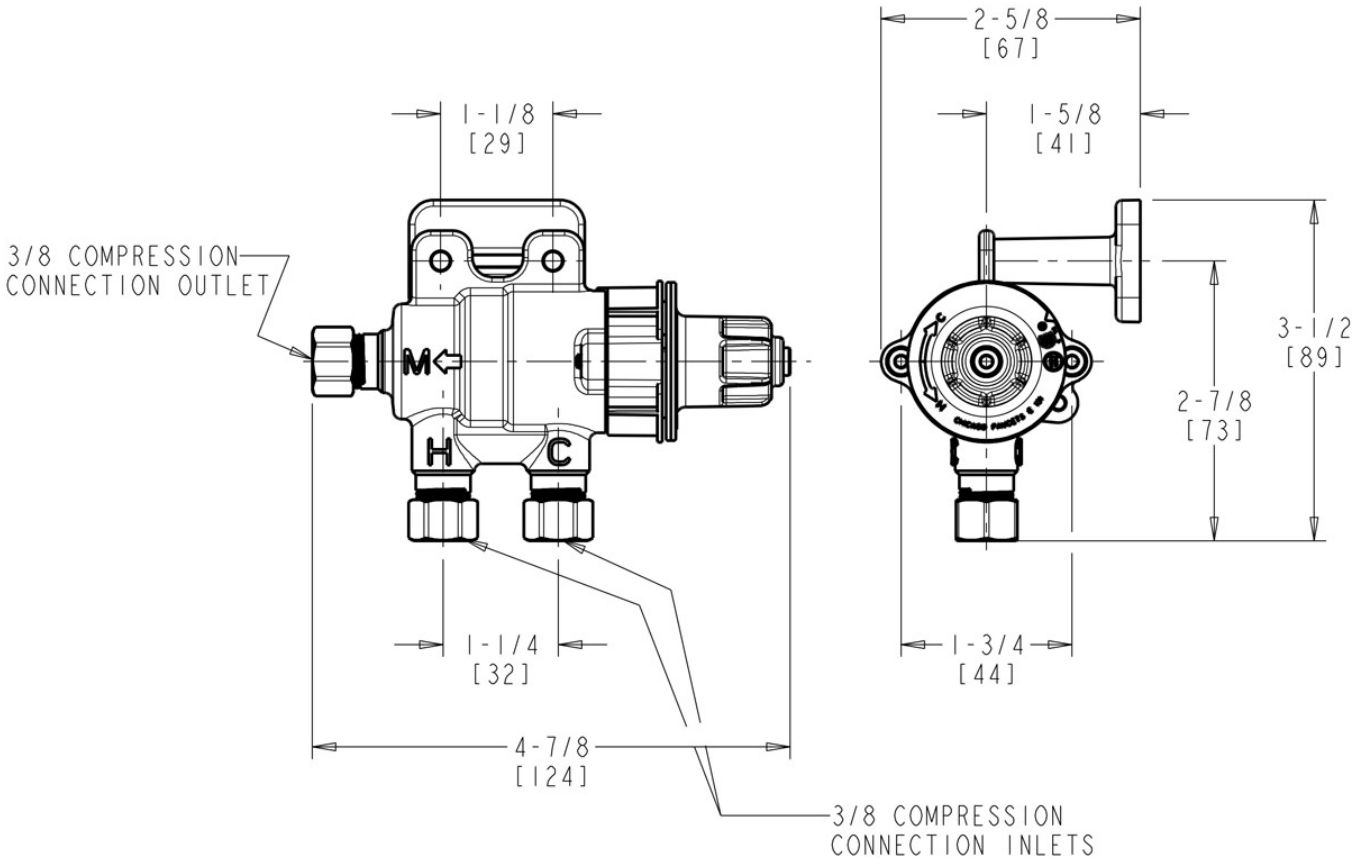
Architect/Engineer Specification

Chicago Faucets No. 131-ABNF, ECAST® Thermostatic Mixing Valve. Standard 3/8" compression inlets and outlet. Integral inlet check valves to protect against cross-flow. Adjustment cap with locking feature. Brass body construction. Corrosion resistant internal components. Thermostatic wax element design. Thermostat controls both hot and cold water. Installs between the stop valves and the faucet. Single use or multiple faucet installations. Minimum supply pressure: 30psi (207 kPa); Hot inlet temperature: 120°F to 180°F (49°C to 82°C). Outlet water temperature will be less than hot water inlet temperature. Includes wall bracket. Minimum flow rate: 0.35 gpm (@ min. 20 psi). Maximum flow rate: 4.6 gpm (@ min. 125 psi). Temperature out: 80°F to 120°F (27°C to 49°C). ECAST® construction with less than 0.25% lead content by weighted average.



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ACCESSORIES AND PARTS

242.340.00.1

Product Type

Adapter Wire Bank Installation Adapter Wire

Features & Specifications

- For use with HyTronic® and E-Tronic® 40 electronic sensor faucets
- CFNow! Item Ships in 3 Days

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P3

Model Specified CHICAGO 242.340.00.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

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ACCESSORIES AND PARTS

242.340.00.1

Product Type

Adapter Wire Bank Installation Adapter Wire

Features & Specifications

- For use with HyTronic® and E-Tronic® 40 electronic sensor faucets
- CFNow! Item Ships in 3 Days

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P3

Model Specified CHICAGO 242.340.00.1

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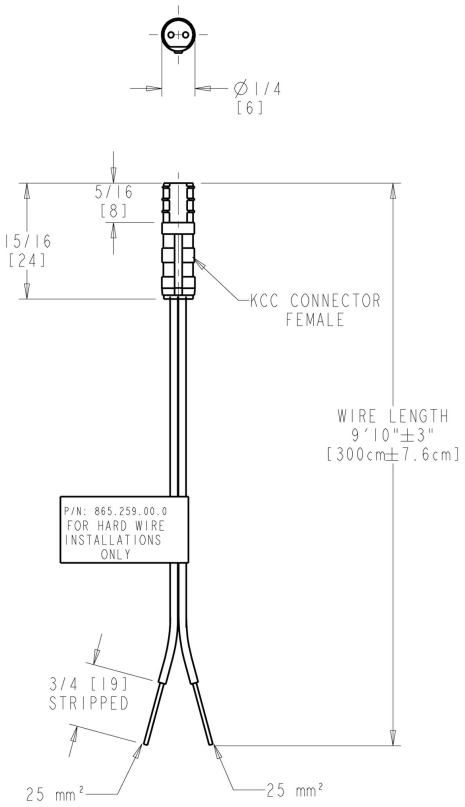
242.340.00.1

P3

Architect/Engineer Specification

Chicago Faucets No. 242.340.00.1, Bank Installation Adapter Wire. For use with HyTronic® and E-Tronic® 40 electronic sensor faucets.



Operation and Maintenance

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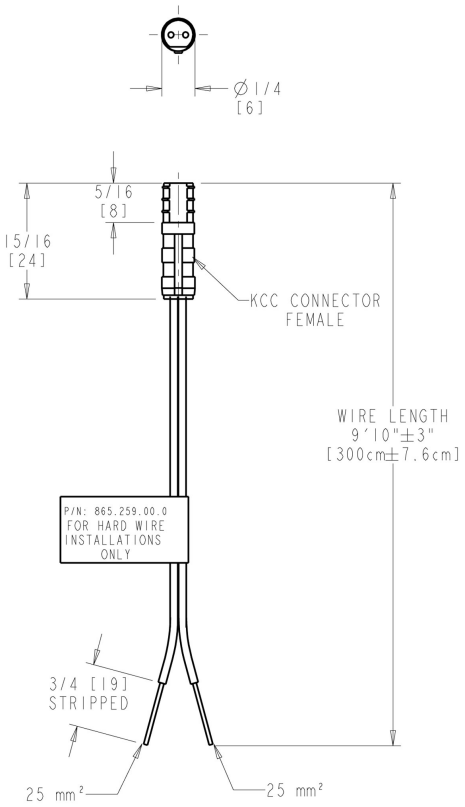
242.340.00.1

P3

Architect/Engineer Specification

Chicago Faucets No. 242.340.00.1, Bank Installation Adapter Wire. For use with HyTronic® and E-Tronic® 40 electronic sensor faucets.



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

Chicago Faucets, member of the Geberit Group, is the leading brand of commercial faucets and fittings in the United States, offering a complete range of products for schools, laboratories, hospitals, office buildings, food service, airports and sport facilities. Call 1.800.TECTRUE or 1.847.803.5000 Option 1 for installation or other technical assistance.

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Accessories & Parts
243.259.00.1

CHICAGO FAUCETS
Geberit Group

Product Type

Hard-wire, multi-use Class 2 transformer with 4" mounting plate, for up to 8 faucets

Features & Specifications

- 242.340.00.1 connecting wire not included (order separately)
- Complies with the requirements of the Buy American Act of 1933.

Warranty

- 1-Year Limited Material Warranty

Codes & Standards

- UL Listed

Job Name IHS MSU

Item Number LAV FAUCET

Section/Tag P3

Model Specified CHICAGO 243.259.00.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

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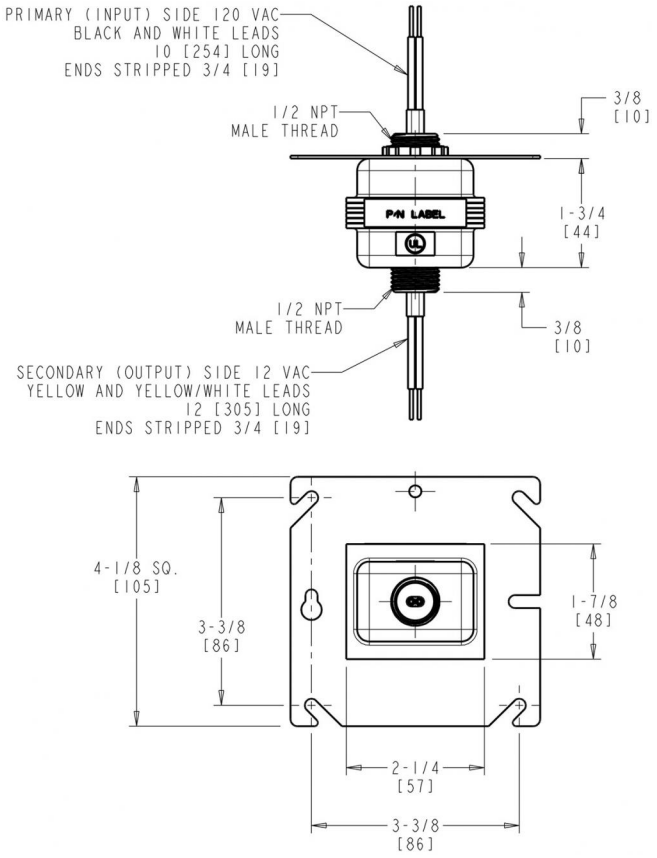
Technical: 800/TEC-TRUE
www.chicagofaucets.com

243.259.00.1

CHICAGO FAUCETS
Geberit Group

Architect/Engineer Specification

Chicago Faucets No. 243.259.00.1, Hard-wire Transformer, multi-use.Transformer type - Class 2. Single-use or multi-use capability (up to 8 faucets). Connection: hard-wire primary and secondary. Primary and secondary ends stripped and tinned. Primary: black and white leads. Primary input voltage 120 VAC @ 60 Hz, 10 length. Secondary output voltage 12 VAC. Secondary: yellow and yellow/white leads, 12 length. Output current - 400 mA. UL listed. RoHS compliant. 242.340.00.1 connecting wire not included (order separately). Hard-wired with standard 4 mounting plate. Made in U.S.A.



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

Chicago Faucets, member of the Geberit Group, is the leading brand of commercial faucets and fittings in the United States, offering a complete range of products for schools, laboratories, hospitals, office buildings, food service, airports and sport facilities. Call 1.800.TECTRUE or 1.847.803.5000 Option 1 for installation or other technical assistance.

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ELKAY®
SPECIFICATIONS

Elkay Lustertone Classic Stainless Steel 25" x 21-1/4" x 7-7/8" Single Bowl Drop-in Sink
Model(s) LR2521

PRODUCT SPECIFICATIONS

Elkay Lustertone™ Classic Stainless Steel 25" x 21-1/4" x 7-7/8", Single Bowl Drop-in Sink. Sink is manufactured from 18 gauge 304 Stainless Steel with a Lustrous Satin finish, Center drain placement, and Sides and Bottom pads.

Installation Type:	Drop-in
Material:	304 Stainless Steel
Finish:	Lustrous Satin
Gauge:	18
Sound Deadening:	Sides and Bottom pads
Number of Bowls:	1
Sink Dimensions:	25" x 21-1/4" x 7-7/8"
Bowl 1 Dimensions:	21" x 15-3/4" x 7-3/4"
Drain Size:	3-1/2" (89mm)
Drain Location:	Center
Minimum Cabinet Size:	30"
Mounting Hardware:	Part # 64090012 included for countertops up to 3/4" (19mm) thick
Template Included:	No
Cutout Template #:	1000001245

Template is available for download at elkay.com. CAD software will be required to open the template.

Cutout Dimensions for Drop-in Installation:
24-3/8" x 20-5/8" (619mm x 524mm) with 1-1/2" (38mm) corner radius

Custom Options	
☐ Type 316 Stainless Steel	
Drain Location	
☐ Right Rear	☐ Left Rear
☐ Center	☐ Center Rear
Overflow Location	
☐ Front	☐ Rear
Alternate Punching	
☐ Faucet Model:	☐ Punch Required: SINGLE
Sink Size	
☐ Bowl Depth:	☐ Drainboard Width:

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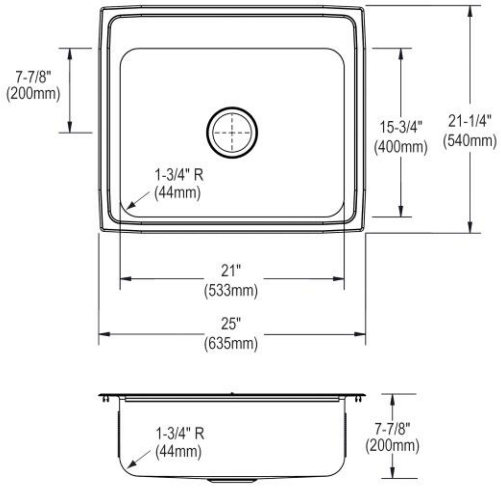
Like your family, the Elkay family has values and traditions that endure. For almost a century, Elkay has been a family-owned and operated company, providing thousands of jobs that support our families and communities.

Product Compliance: ASME A112.19.3/CSA B45.4
Buy American Act

Sinks are listed by IAPMO® as meeting the applicable requirements of the Uniform Plumbing Code®, International Plumbing Code®, and National Plumbing Code of Canada.

Clean and Care Manual (PDF)
Installation Instructions (PDF)
Warranty (PDF)

Similar models are available with: 4" 4-1/2" 5" 6" and 6-1/2" depths, Quick-Clip Mounting System



PART: P4 QTY: _____
PROJECT: IHS MSU
CONTACT: RGE
DATE: _____
NOTES: _____
APPROVAL: _____

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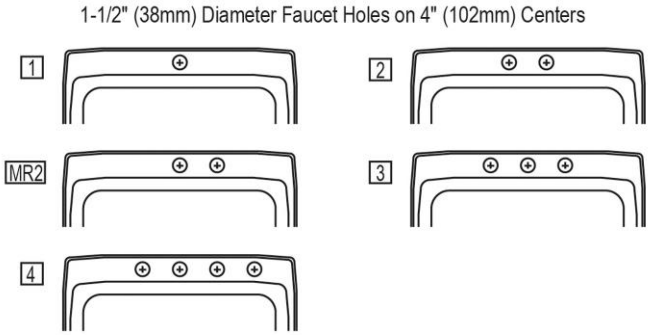
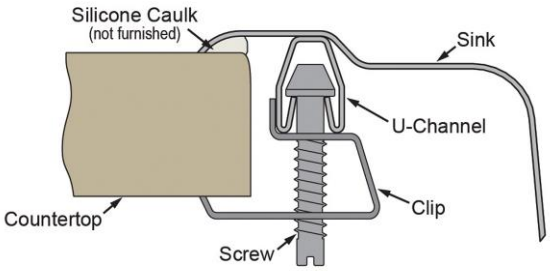
Hole Drilling Configurations:



Installation Profile:



Optional Accessories		
LKWBG2115SS	Elkay Stainless Steel 20" x 14-3/4" x 1" Bottom Grid Spec Sheet (PDF)	
CB1516	Elkay Hardwood 15" x 16-3/4" x 3/4" Cutting Board Spec Sheet (PDF)	
LK99	Elkay Deluxe 3-1/2" Drain Type 304 Stainless Steel Body, Strainer Basket Rubber Seal and Tailpiece Spec Sheet (PDF)	

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Touchless Faucets
116.427.AB.1

CHICAGO FAUCETS
Geberit Group

Product Type

Touch-free, programmable faucet with above-deck electronics

Features & Specifications

- 1.5 GPM (5.7 L/min) laminar flow control insert in spout inlet
- Single hole
- 5-1/4" rigid/swing gooseneck spout with flow control
- HyTronic® module kit
- ECAST® design provides durable cast brass construction with total lead content equal to or less than 0.25% by weighted average
- Complies with the requirements of the Buy American Act of 1933.

Performance Specification

- Rated Operating Pressure: 20-125 PSI
- Rated Operating Temperature: 40-140°F

Warranty

- 3-Year Limited Electronics and Solenoid Warranty
- Lifetime Limited Faucet Warranty
- 1-Year Limited Finish Warranty
- 5-Year Limited Mechanical Warranty

Codes & Standards

- ADA ANSI/ICC A117.1
- ASME A112.18.1/CSA B125.1
- Complies with CALGreen requirements
- NSF/ANSI 372 Low Lead Content
- NSF/ANSI 61, Section 9
- Certified to WaterSense by ICC-ES

Job Name IHS MSU

Item Number PHARMACY SINK FAUCET

Section/Tag P4

Model Specified CHICAGO 116.427.AB.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

ECAST

ECAST products are intended for installation where state laws and local codes mandate lead content levels or in any location where lead content is a concern.

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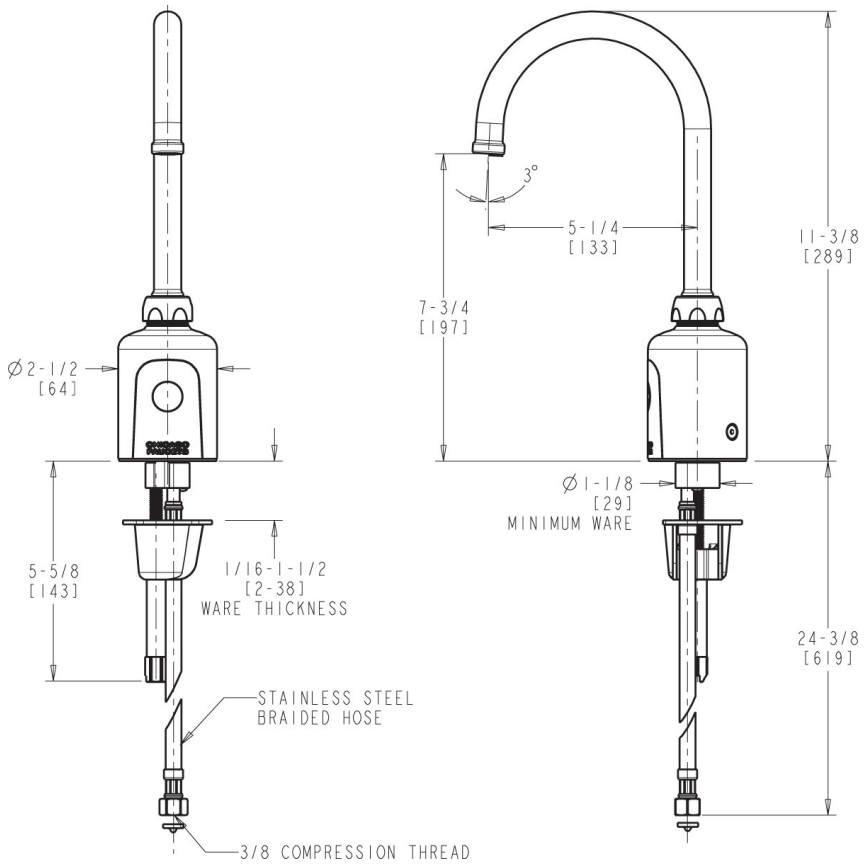
116.427.AB.1

P4

CHICAGO FAUCETS
Geberit Group

Architect/Engineer Specification

Chicago Faucets No. 116.427.AB.1, HyTronic electronic faucet with dual-beam infrared sensor, chrome plated. Rigid/swing gooseneck spout, 5-1/4" center-to-center, with 1.5 GPM (5.7 L/min) laminar flow control insert in spout inlet. Single supply for tempered water. 12-volt AC transformer required (order separately). Stainless steel hose included. Multiple field-adjustable modes and ranges. Compatible with Chicago Faucets Commander™ handheld programming unit. ECAST® construction with less than 0.25% lead content by weighted average. CALGreen compliant. This product meets ADA ANSI/ICC A117.1 requirements and is tested and certified to industry standards: ASME A112.18.1/CSA B125.1, Certified to NSF/ANSI 61, Section 9 by CSA, California Health and Safety Code 116875 (AB1953-2006), Vermont Bill S.152, NSF/ANSI 372 Low Lead Content, and California Green Building Standards Code (CALGreen).



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

Chicago Faucets, member of the Geberit Group, is the leading brand of commercial faucets and fittings in the United States, offering a complete range of products for schools, laboratories, hospitals, office buildings, food service, airports and sport facilities. Call 1.800.TECTRUE or 1.847.803.5000 Option 1 for installation or other technical assistance.

2100 South Clearwater Drive
Des Plaines, IL
P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

Accessories & Parts
131-ABNF

CHICAGO FAUCETS
Geberit Group

Product Type

Thermostatic mixing valve for single or multiple faucet installations

Features & Specifications

- Adjustment cap with locking feature
- Brass body construction with corrosion-resistant internal components, includes plastic wall bracket
- Standard 3/8" compression inlets and outlet
- Integral inlet check valves to protect against cross-flow
- ECAST® design provides durable cast brass construction with total lead content equal to or less than 0.25% by weighted average
- Complies with the requirements of the Buy American Act of 1933.

Warranty

- 1-Year Limited Cartridge Warranty
- Lifetime Limited Faucet Warranty
- 1-Year Limited Finish Warranty
- 1-Year Limited Material Warranty

Codes & Standards

- ASSE 1070/ASME A112.1070/CSA B125.70
- NSF/ANSI 372 Low Lead Content
- NSF/ANSI 61, Section 9

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P4

Model Specified CHICAGO 131-ABNF

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

ECAST

ECAST products are intended for installation where state laws and local codes mandate lead content levels or in any location where lead content is a concern.

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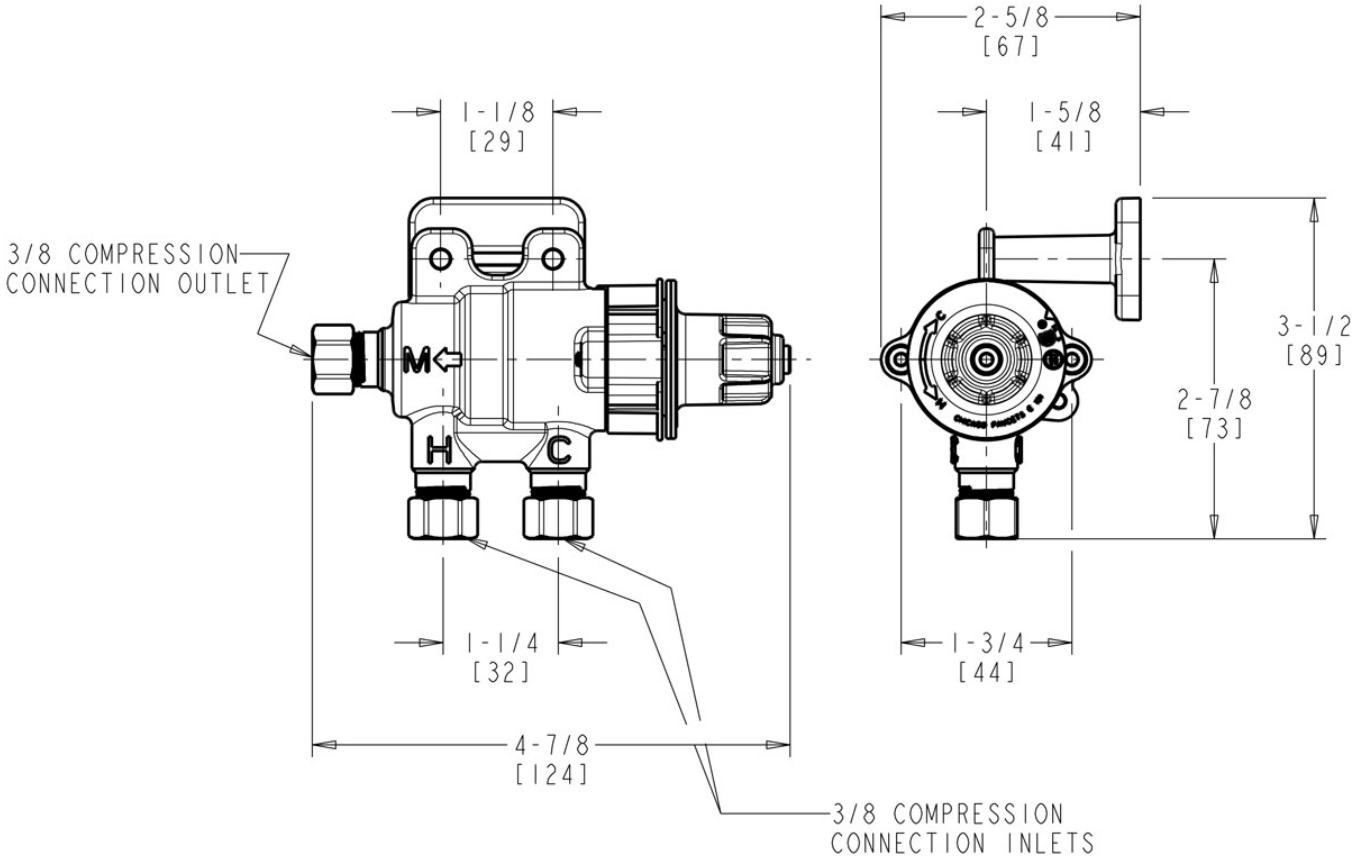
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

Architect/Engineer Specification

Chicago Faucets No. 131-ABNF, ECAST® Thermostatic Mixing Valve. Standard 3/8" compression inlets and outlet. Integral inlet check valves to protect against cross-flow. Adjustment cap with locking feature. Brass body construction. Corrosion resistant internal components. Thermostatic wax element design. Thermostat controls both hot and cold water. Installs between the stop valves and the faucet. Single use or multiple faucet installations. Minimum supply pressure: 30psi (207 kPa); Hot inlet temperature: 120°F to 180°F (49°C to 82°C). Outlet water temperature will be less than hot water inlet temperature. Includes wall bracket. Minimum flow rate: 0.35 gpm (@ min. 20 psi). Maximum flow rate: 4.6 gpm (@ min. 125 psi). Temperature out: 80°F to 120°F (27°C to 49°C). ECAST® construction with less than 0.25% lead content by weighted average.



Operation and Maintenance

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Technical: 800/TEC-TRUE
www.chicagofaucets.com

Accessories & Parts
243.259.00.1

CHICAGO FAUCETS
Geberit Group

Product Type

Hard-wire, multi-use Class 2 transformer with 4" mounting plate, for up to 8 faucets

Features & Specifications

- 242.340.00.1 connecting wire not included (order separately)
- Complies with the requirements of the Buy American Act of 1933.

Warranty

- 1-Year Limited Material Warranty

Codes & Standards

- UL Listed

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P4

Model Specified CHICAGO 243.259.00.1

Architect IDS+A

Engineer RGE

Contractor TBD

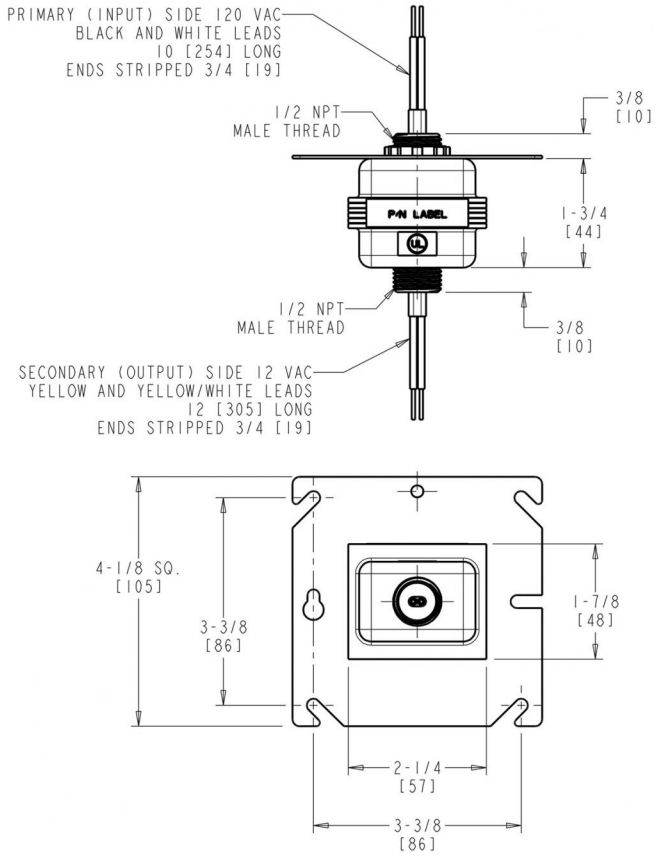
[X] Submitted as Shown [ ] Submitted with Variations

Date _____

2100 South Clearwater Drive
Des Plaines, IL
P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

Architect/Engineer Specification

Chicago Faucets No. 243.259.00.1, Hard-wire Transformer, multi-use.Transformer type - Class 2. Single-use or multi-use capability (up to 8 faucets). Connection: hard-wire primary and secondary. Primary and secondary ends stripped and tinned. Primary: black and white leads. Primary input voltage 120 VAC @ 60 Hz, 10 length. Secondary output voltage 12 VAC. Secondary: yellow and yellow/white leads, 12 length. Output current - 400 mA. UL listed. RoHS compliant. 242.340.00.1 connecting wire not included (order separately). Hard-wired with standard 4 mounting plate. Made in U.S.A.



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

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P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

Touchless Faucets
116.427.AB.1

CHICAGO FAUCETS
Geberit Group

Product Type

Touch-free, programmable faucet with above-deck electronics

Features & Specifications

- 1.5 GPM (5.7 L/min) laminar flow control insert in spout inlet
- Single hole
- 5-1/4" rigid/swing gooseneck spout with flow control
- HyTronic® module kit
- ECAST® design provides durable cast brass construction with total lead content equal to or less than 0.25% by weighted average
- Complies with the requirements of the Buy American Act of 1933.

Performance Specification

- Rated Operating Pressure: 20-125 PSI
- Rated Operating Temperature: 40-140°F

Warranty

- 3-Year Limited Electronics and Solenoid Warranty
- Lifetime Limited Faucet Warranty
- 1-Year Limited Finish Warranty
- 5-Year Limited Mechanical Warranty

Codes & Standards

- ADA ANSI/ICC A117.1
- ASME A112.18.1/CSA B125.1
- Complies with CALGreen requirements
- NSF/ANSI 372 Low Lead Content
- NSF/ANSI 61, Section 9
- Certified to WaterSense by ICC-ES

Job Name IHS MSU

Item Number PHARMACY SINK FAUCET

Section/Tag P5

Model Specified CHICAGO 116.427.AB.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

ECAST

ECAST products are intended for installation where state laws and local codes mandate lead content levels or in any location where lead content is a concern.

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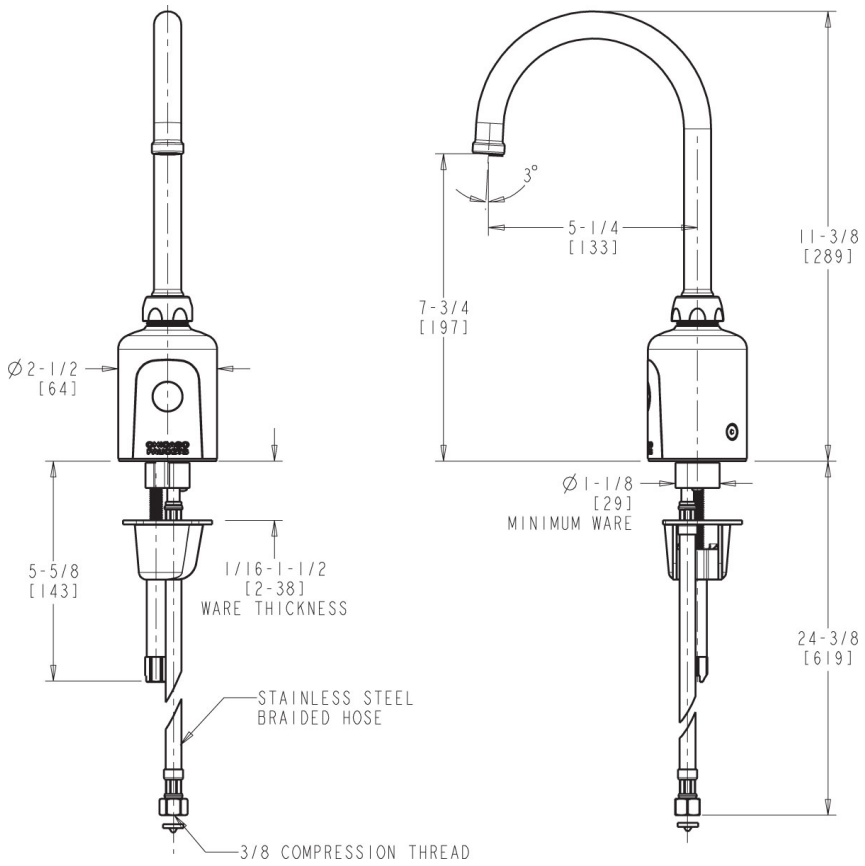
116.427.AB.1

Architect/Engineer Specification

Chicago Faucets No. 116.427.AB.1, HyTronic electronic faucet with dual-beam infrared sensor, chrome plated. Rigid/swing gooseneck spout, 5-1/4" center-to-center, with 1.5 GPM (5.7 L/min) laminar flow control insert in spout inlet. Single supply for tempered water. 12-volt AC transformer required (order separately). Stainless steel hose included. Multiple field-adjustable modes and ranges. Compatible with Chicago Faucets Commander™ handheld programming unit. ECAST® construction with less than 0.25% lead content by weighted average. CALGreen compliant. This product meets ADA ANSI/ICC A117.1 requirements and is tested and certified to industry standards: ASME A112.18.1/CSA B125.1, Certified to NSF/ANSI 61, Section 9 by CSA, California Health and Safety Code 116875 (AB1953-2006), Vermont Bill S.152, NSF/ANSI 372 Low Lead Content, and California Green Building Standards Code (CALGreen).



Operation and Maintenance

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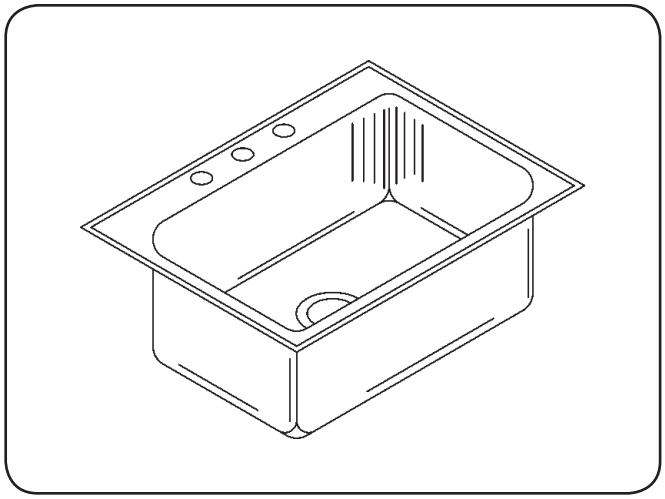
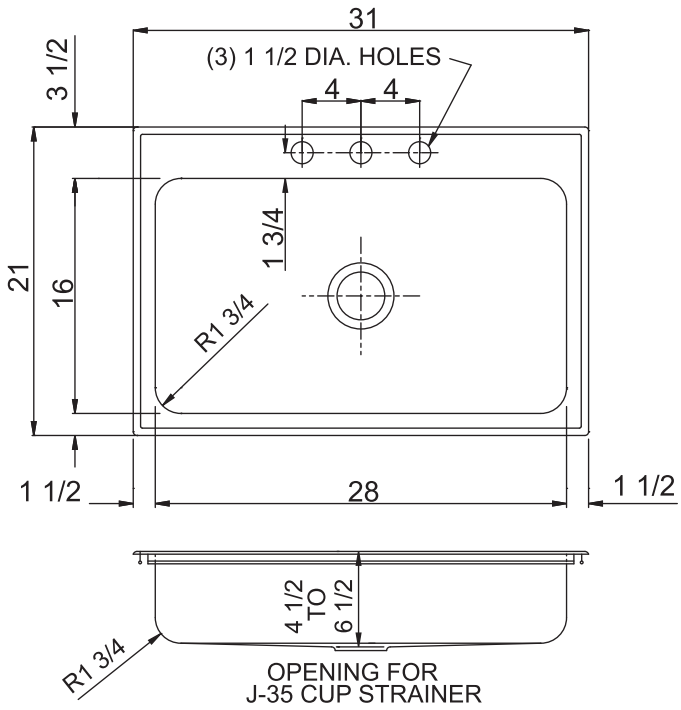
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

SL-ADA-2131-A-GR

SUBMITTAL DATA

STYLIST GROUP
LEDGE TYPE - SINGLE BOWL
18 GAUGE





SPECIFICATION

Seamless die-drawn construction of Type 304, 18-8 stainless steel. Interior and top surfaces polished to a non-porous Hand-Blended Just Finish with highlighted bowl rim. Fully coated underside insulated for sound and reduces condensation. Straight-sided compartment with radius corners provides greater capacity. Self-rimming top mount Grip-Rim Plus with stainless steel mounting channels. Conforms to ASME/ANSI A112.19.3M. Certified conformance with ASME A112.19.3/CSA B45.4, Canadian Standards (CSA), Uniform Plumbing Code (UPC) and Inter national Plumbing Code (IPC) and Americans with Disabilities Act(ADA).Drain punch 3-1/2" centered for Just J-35 drain.

☐ **TYPE 316 STAINLESS STEEL** (Check if applicable)

CUTOUT DIMENSIONS		
Model Number	Front-to-Back	Left-to-Right
SL-ADA-2131-A-GR	20-1/4	30-1/4

12.29 Gallon Capacity*

Capacity Matters
Max ID sizing with straight sided bowl configuration (non tapered sides). Tight corner radius design.

**Capacity is based on 6-1/2" Depths*

FAUCET PUNCHING - MUST BE SPECIFIED	
☑ (1) Hole Centered	
☐ (2) Holes on 4" centers	
☐ (3) Holes on 4 "centers(illustrated)	
☐ Alternate Punching: Faucet Model:	Punching Required:

DEPTH - MUST BE SPECIFIED:					
☐ 4 1/2" DEEP	☐ 5" DEEP	☐ 5-1/2" DEEP	☐ 6" DEEP	☑ 6-1/2" DEEP	

DRAIN LOCATION - MUST BE SPECIFIED:				
☐ CENTER	☑ CENTER REAR	☐ LEFT REAR	☐ RIGHT REAR	

APPROVED FOR MANUFACTURING

MODEL NO.: SL-ADA-2131-A-GR QTY: _____

JOB NAME: IHS MSU

TAG/ITEM: P5

CUSTOMER: IHS

SIGNATURE: _____

MADE IN U.S.A.

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Accessories & Parts
131-ABNF

CHICAGO FAUCETS
Geberit Group

Product Type

Thermostatic mixing valve for single or multiple faucet installations

Features & Specifications

- Adjustment cap with locking feature
- Brass body construction with corrosion-resistant internal components, includes plastic wall bracket
- Standard 3/8" compression inlets and outlet
- Integral inlet check valves to protect against cross-flow
- ECAST® design provides durable cast brass construction with total lead content equal to or less than 0.25% by weighted average
- Complies with the requirements of the Buy American Act of 1933.

Warranty

- 1-Year Limited Cartridge Warranty
- Lifetime Limited Faucet Warranty
- 1-Year Limited Finish Warranty
- 1-Year Limited Material Warranty

Codes & Standards

- ASSE 1070/ASME A112.1070/CSA B125.70
- NSF/ANSI 372 Low Lead Content
- NSF/ANSI 61, Section 9

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P5

Model Specified CHICAGO 131-ABNF

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

ECAST

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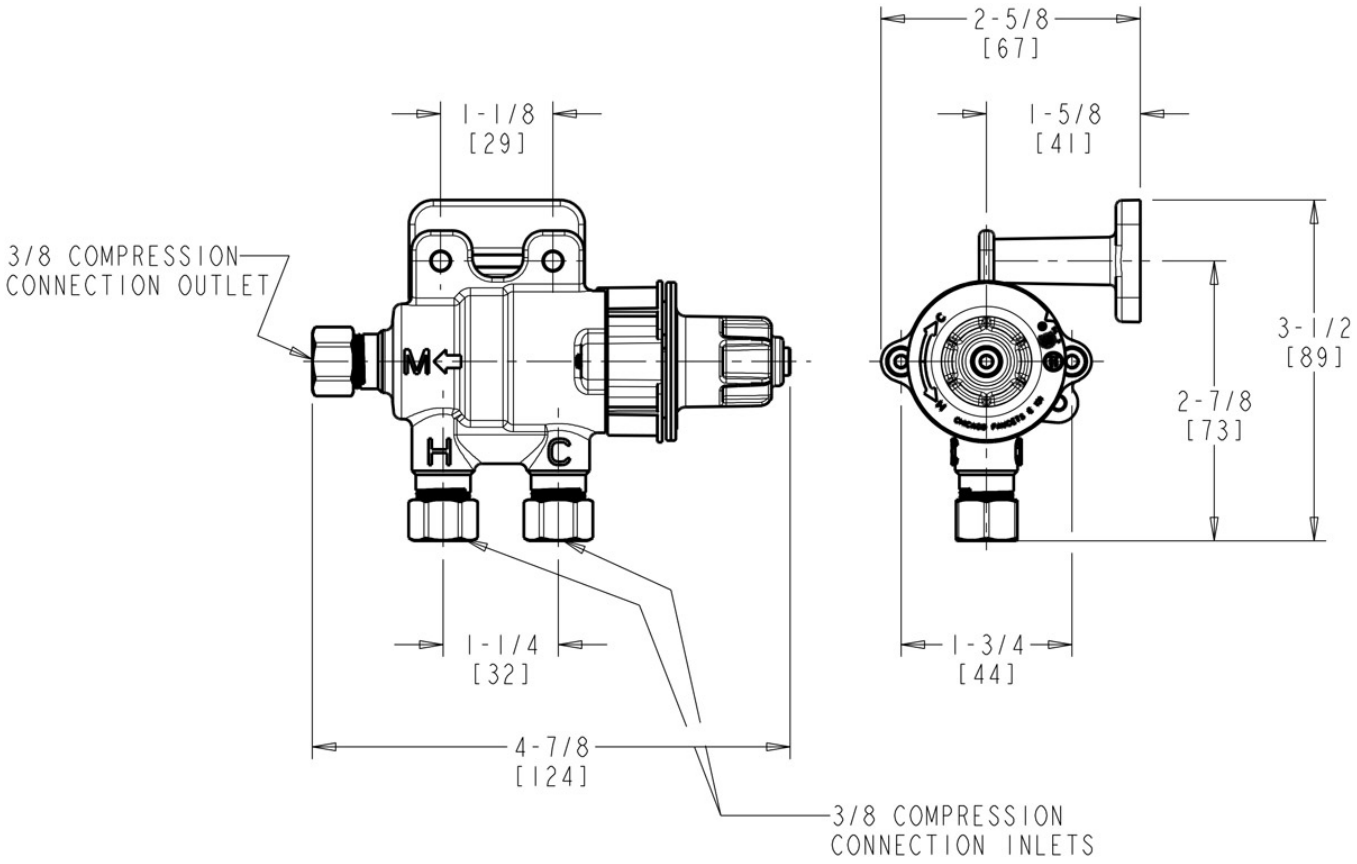
Des Plaines, IL
P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

131-ABNF

Architect/Engineer Specification

Chicago Faucets No. 131-ABNF, ECAST® Thermostatic Mixing Valve. Standard 3/8" compression inlets and outlet. Integral inlet check valves to protect against cross-flow. Adjustment cap with locking feature. Brass body construction. Corrosion resistant internal components. Thermostatic wax element design. Thermostat controls both hot and cold water. Installs between the stop valves and the faucet. Single use or multiple faucet installations. Minimum supply pressure: 30psi (207 kPa); Hot inlet temperature: 120°F to 180°F (49°C to 82°C). Outlet water temperature will be less than hot water inlet temperature. Includes wall bracket. Minimum flow rate: 0.35 gpm (@ min. 20 psi). Maximum flow rate: 4.6 gpm (@ min. 125 psi). Temperature out: 80°F to 120°F (27°C to 49°C). ECAST® construction with less than 0.25% lead content by weighted average.



Operation and Maintenance

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www.chicagofaucets.com

ACCESSORIES AND PARTS

242.340.00.1

Product Type

Adapter Wire Bank Installation Adapter Wire

Features & Specifications

- For use with HyTronic® and E-Tronic® 40 electronic sensor faucets
- CFNow! Item Ships in 3 Days

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P5

Model Specified CHICAGO 242.340.00.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

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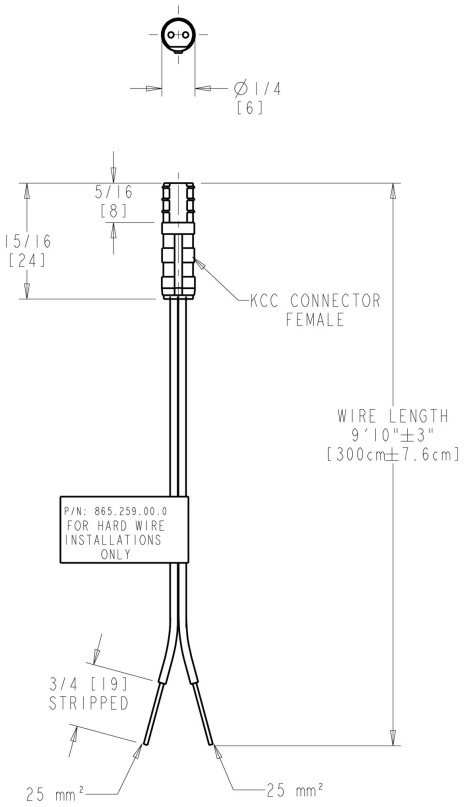
P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

242.340.00.1

P5

Architect/Engineer Specification

Chicago Faucets No. 242.340.00.1, Bank Installation Adapter Wire. For use with HyTronic® and E-Tronic® 40 electronic sensor faucets.



Operation and Maintenance

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Accessories & Parts
243.259.00.1

CHICAGO FAUCETS
Geberit Group

Product Type

Hard-wire, multi-use Class 2 transformer with 4" mounting plate, for up to 8 faucets

Features & Specifications

- 242.340.00.1 connecting wire not included (order separately)
- Complies with the requirements of the Buy American Act of 1933.

Warranty

- 1-Year Limited Material Warranty

Codes & Standards

- UL Listed

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P5

Model Specified CHICAGO 243.259.00.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

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www.chicagofaucets.com

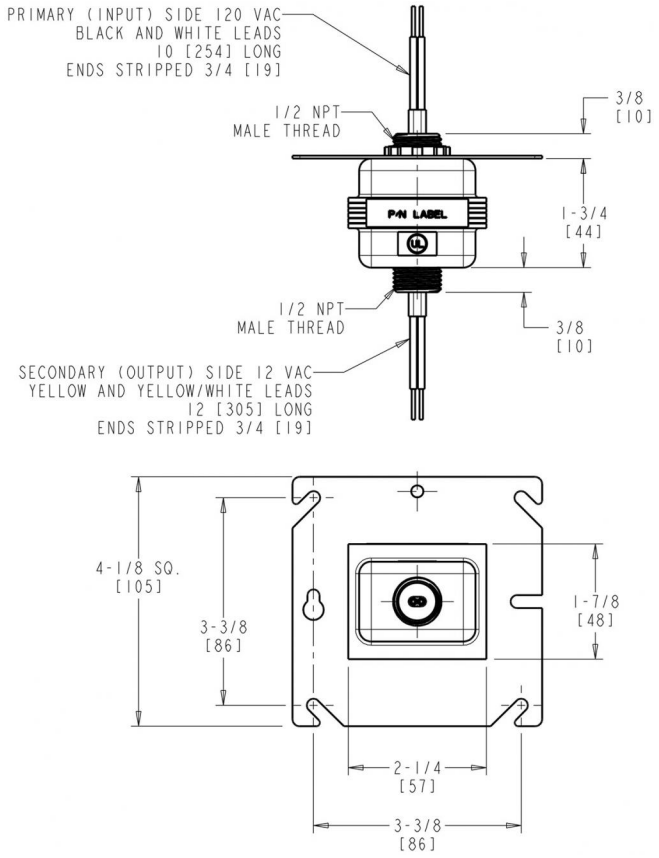
243.259.00.1

P5

CHICAGO FAUCETS
Geberit Group

Architect/Engineer Specification

Chicago Faucets No. 243.259.00.1, Hard-wire Transformer, multi-use.Transformer type - Class 2. Single-use or multi-use capability (up to 8 faucets). Connection: hard-wire primary and secondary. Primary and secondary ends stripped and tinned. Primary: black and white leads. Primary input voltage 120 VAC @ 60 Hz, 10 length. Secondary output voltage 12 VAC. Secondary: yellow and yellow/white leads, 12 length. Output current - 400 mA. UL listed. RoHS compliant. 242.340.00.1 connecting wire not included (order separately). Hard-wired with standard 4 mounting plate. Made in U.S.A.



Operation and Maintenance

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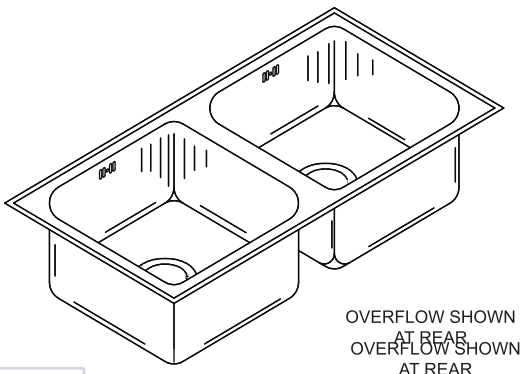
DF-ADA-1933-A-GR

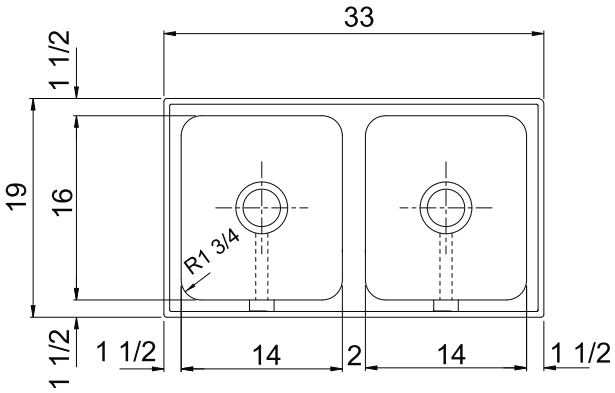
SUBMITTAL DATA

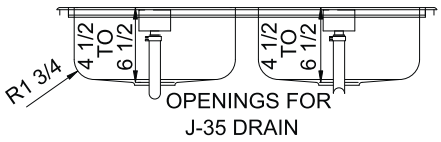
ADA Complaint

STYLIST GROUP
ADA COMPLIANT - SPACE SAVER
DOUBLE COMPARTMENT - LEDGEBACK
with INTEGRA-FLOW
18 GAUGE



OVERFLOW





9.14 Gallon Capacity*

***CAPACITY MATTERS**
Max. I.D. sizing with straight-sided, non -tapered bowl configuration. Capacity based on 6-1/2" depth.

SPECIFICATION
Seamless die-drawn construction of 18 ga. type 304 stainless steel. Interior and top surfaces polished to a non-porous Hand Blended Just Finish. Fully coated underside insulates for sound and reduces condensation. Straight-sided compartment with 1-3/4" radius corners provides greater capacity. Self-rimming top mount with Grip-Rim Plus with stainless steel mounting channels. Integra-flow overflow system. Drain punched for Just J-35-SSF drain.

CUTOUT DIMENSIONS		
Model Number	Front-to-Back	Left-to-Right
DF-ADA-1933-A-GR	18-1/4	32-1/4

DEPTH - MUST BE SPECIFIED:
☐ 4 1/2" DEEP ☐ 5" DEEP ☐ 5-1/2" DEEP ☐ 6" DEEP ☒ 6-1/2" DEEP

DRAIN LOCATION - MUST BE SPECIFIED:
☐ CENTER ☒ CENTER REAR ☐ LEFT REAR ☐ RIGHT REAR

OVERFLOW LOCATION - MUST BE SPECIFIED:
☒ FRONT (SHOWN) ☐ REAR ☐ LEFT ☐ RIGHT

APPROVED FOR MANUFACTURING

MODEL NO.: DF-ADA-1933-A-GR QTY: _____

JOB NAME: IHS MSU

TAG/ITEM: P6

CUSTOMER: IHS

SIGNATURE: _____

MADE IN U.S.A.

RECYCLED STAINLESS THE VALUE OPTION

JUST MFG. COMPANY CONTINUES TO MAKE QUALITY AND FUNCTIONALITY A MARK OF THE JUST PRODUCT LINE. WE RESERVE THE RIGHT TO CHANGE PRODUCT INFORMATION WITHOUT NOTICE. DIMENSIONS MAY CHANGE AND MAY BE SUBJECT TO CHANGE WITHOUT NOTICE. NO RESPONSIBILITY IS ASSUMED FOR USE OF SUPERCEDED OR VOIDED DATA. JUST MFG. CO. SINKS ARE MADE IN THE U.S.A. WHEN COMPARING OTHER BRAND PRODUCTS, BE SURE TO COMPARE USA QUALITY ALONG WITH FEATURES AND DIMENSIONS.

JUST MANUFACTURING COMPANY
9233 KING STREET . FRANKLIN PARK . ILLINOIS . 60131-2111
PH: 847-678-5150 . FAX: 847-678-6817 . E-MAIL: custserv@justmfg.com . www.justmfg.com

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Touchless Faucets
116.427.AB.1

CHICAGO FAUCETS
Geberit Group

Product Type

Touch-free, programmable faucet with above-deck electronics

Features & Specifications

- 1.5 GPM (5.7 L/min) laminar flow control insert in spout inlet
- Single hole
- 5-1/4" rigid/swing gooseneck spout with flow control
- HyTronic® module kit
- ECAST® design provides durable cast brass construction with total lead content equal to or less than 0.25% by weighted average
- Complies with the requirements of the Buy American Act of 1933.

Performance Specification

- Rated Operating Pressure: 20-125 PSI
- Rated Operating Temperature: 40-140°F

Warranty

- 3-Year Limited Electronics and Solenoid Warranty
- Lifetime Limited Faucet Warranty
- 1-Year Limited Finish Warranty
- 5-Year Limited Mechanical Warranty

Codes & Standards

- ADA ANSI/ICC A117.1
- ASME A112.18.1/CSA B125.1
- Complies with CALGreen requirements
- NSF/ANSI 372 Low Lead Content
- NSF/ANSI 61, Section 9
- Certified to WaterSense by ICC-ES

Job Name IHS MSU

Item Number PHARMACY SINK FAUCET

Section/Tag P6

Model Specified CHICAGO 116.427.AB.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

ECAST

ECAST products are intended for installation where state laws and local codes mandate lead content levels or in any location where lead content is a concern.

2100 South Clearwater Drive
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P: 847/803-5000
F: 847/803-5454
Technical: 800/TEC-TRUE
www.chicagofaucets.com

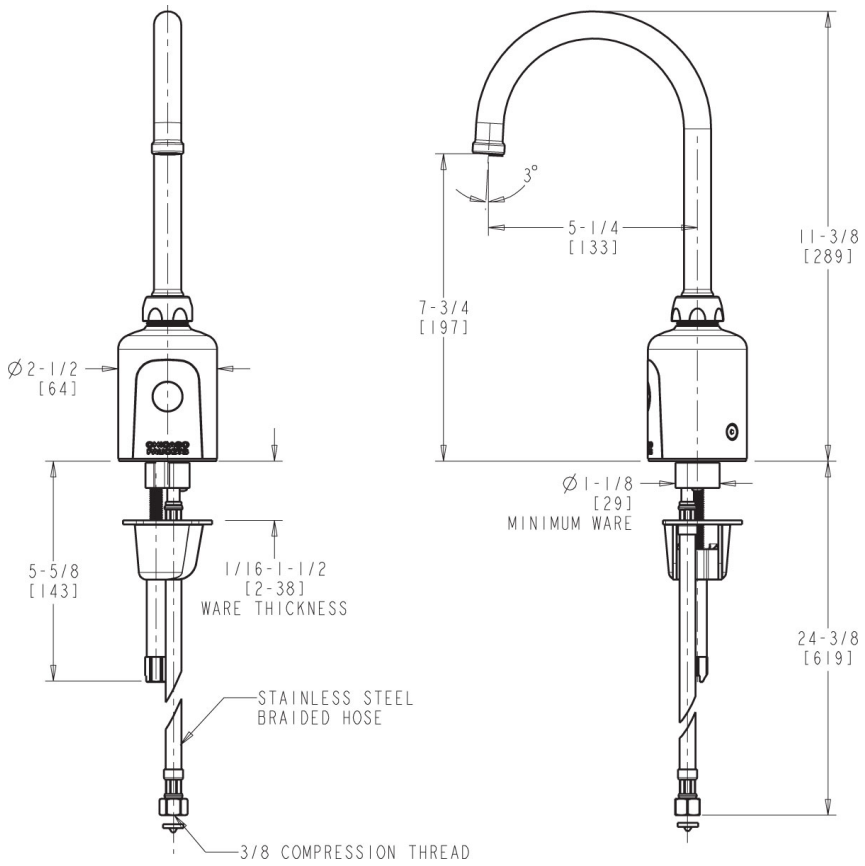
116.427.AB.1

P6

CHICAGO FAUCETS
Geberit Group

Architect/Engineer Specification

Chicago Faucets No. 116.427.AB.1, HyTronic electronic faucet with dual-beam infrared sensor, chrome plated. Rigid/swing gooseneck spout, 5-1/4" center-to-center, with 1.5 GPM (5.7 L/min) laminar flow control insert in spout inlet. Single supply for tempered water. 12-volt AC transformer required (order separately). Stainless steel hose included. Multiple field-adjustable modes and ranges. Compatible with Chicago Faucets Commander™ handheld programming unit. ECAST® construction with less than 0.25% lead content by weighted average. CALGreen compliant. This product meets ADA ANSI/ICC A117.1 requirements and is tested and certified to industry standards: ASME A112.18.1/CSA B125.1, Certified to NSF/ANSI 61, Section 9 by CSA, California Health and Safety Code 116875 (AB1953-2006), Vermont Bill S.152, NSF/ANSI 372 Low Lead Content, and California Green Building Standards Code (CALGreen).



Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at www.chicagofaucets.com.

Chicago Faucets, member of the Geberit Group, is the leading brand of commercial faucets and fittings in the United States, offering a complete range of products for schools, laboratories, hospitals, office buildings, food service, airports and sport facilities. Call 1.800.TECTRUE or 1.847.803.5000 Option 1 for installation or other technical assistance.

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Accessories & Parts
131-ABNF

CHICAGO FAUCETS
Geberit Group

Product Type

Thermostatic mixing valve for single or multiple faucet installations

Features & Specifications

- Adjustment cap with locking feature
- Brass body construction with corrosion-resistant internal components, includes plastic wall bracket
- Standard 3/8" compression inlets and outlet
- Integral inlet check valves to protect against cross-flow
- ECAST® design provides durable cast brass construction with total lead content equal to or less than 0.25% by weighted average
- Complies with the requirements of the Buy American Act of 1933.

Warranty

- 1-Year Limited Cartridge Warranty
- Lifetime Limited Faucet Warranty
- 1-Year Limited Finish Warranty
- 1-Year Limited Material Warranty

Codes & Standards

- ASSE 1070/ASME A112.1070/CSA B125.70
- NSF/ANSI 372 Low Lead Content
- NSF/ANSI 61, Section 9

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P6

Model Specified CHICAGO 131-ABNF

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

ECAST

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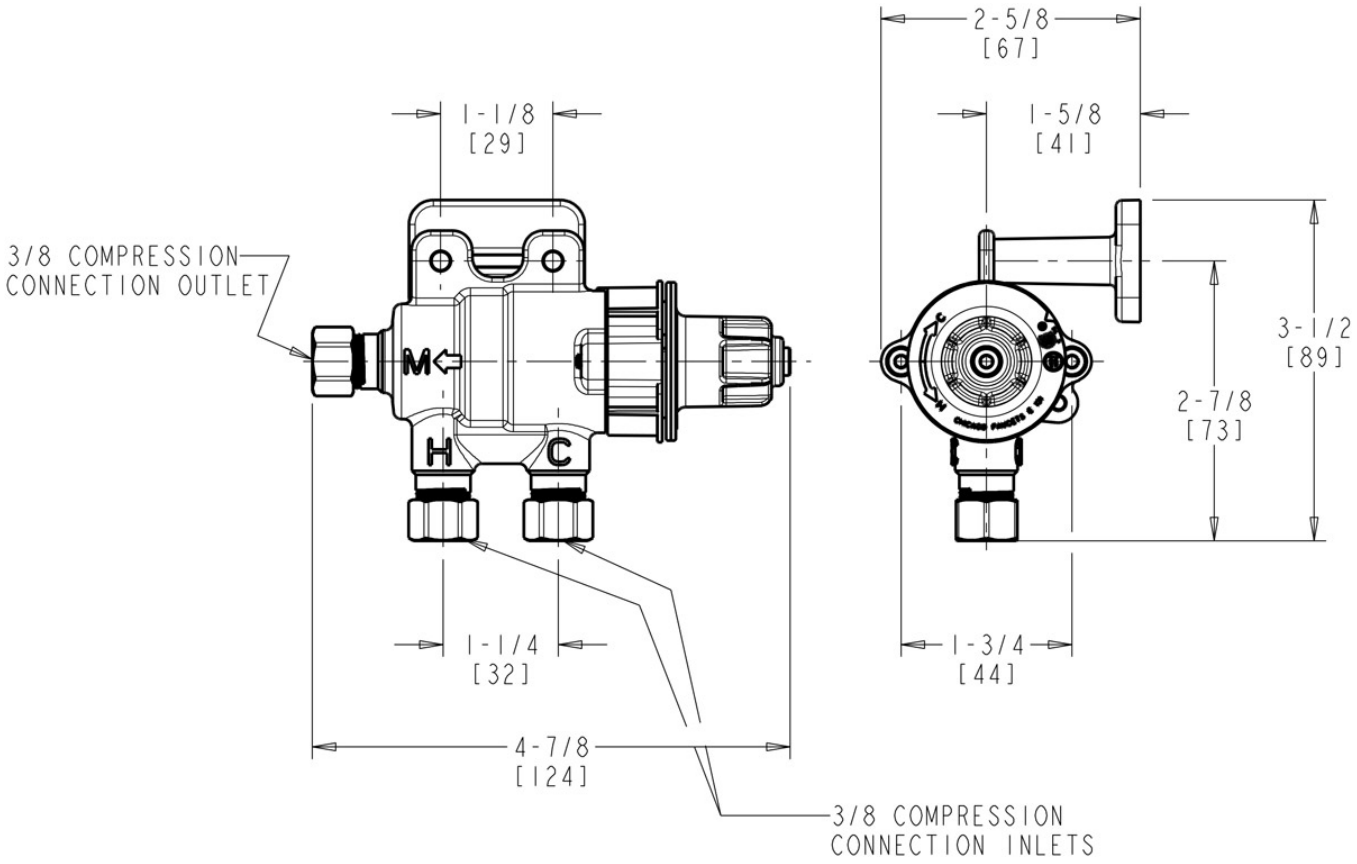
Architect/Engineer Specification

Chicago Faucets No. 131-ABNF, ECAST® Thermostatic Mixing Valve. Standard 3/8" compression inlets and outlet. Integral inlet check valves to protect against cross-flow. Adjustment cap with locking feature. Brass body construction. Corrosion resistant internal components. Thermostatic wax element design. Thermostat controls both hot and cold water. Installs between the stop valves and the faucet. Single use or multiple faucet installations. Minimum supply pressure: 30psi (207 kPa); Hot inlet temperature: 120°F to 180°F (49°C to 82°C). Outlet water temperature will be less than hot water inlet temperature. Includes wall bracket. Minimum flow rate: 0.35 gpm (@ min. 20 psi). Maximum flow rate: 4.6 gpm (@ min. 125 psi). Temperature out: 80°F to 120°F (27°C to 49°C). ECAST® construction with less than 0.25% lead content by weighted average.



Operation and Maintenance

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www.chicagofaucets.com

ACCESSORIES AND PARTS

242.340.00.1

Product Type

Adapter Wire Bank Installation Adapter Wire

Features & Specifications

- For use with HyTronic® and E-Tronic® 40 electronic sensor faucets
- CFNow! Item Ships in 3 Days

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P6

Model Specified CHICAGO 242.340.00.1

Architect IDS+A

Engineer RGE

Contractor TBD

[X] Submitted as Shown [ ] Submitted with Variations

Date _____

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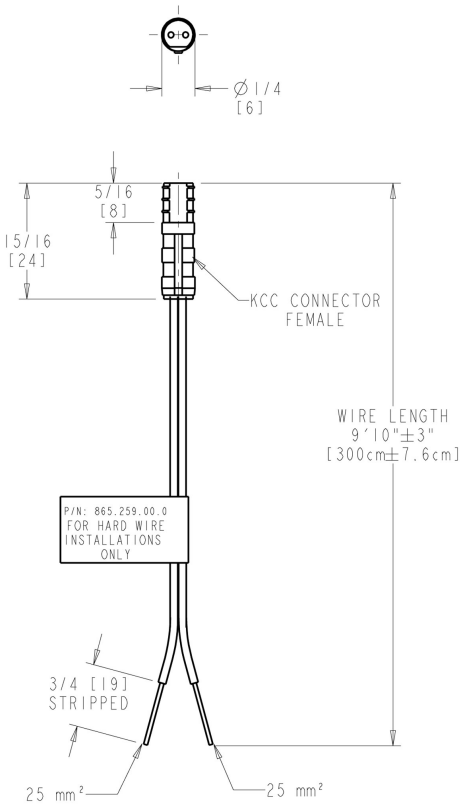
242.340.00.1

P6

Architect/Engineer Specification

Chicago Faucets No. 242.340.00.1, Bank Installation Adapter Wire. For use with HyTronic® and E-Tronic® 40 electronic sensor faucets.



Operation and Maintenance

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Accessories & Parts
243.259.00.1

CHICAGO FAUCETS
Geberit Group

Product Type

Hard-wire, multi-use Class 2 transformer with 4" mounting plate, for up to 8 faucets

Features & Specifications

- 242.340.00.1 connecting wire not included (order separately)
- Complies with the requirements of the Buy American Act of 1933.

Warranty

- 1-Year Limited Material Warranty

Codes & Standards

- UL Listed

Job Name IHS MSU

Item Number SINK FAUCET

Section/Tag P6

Model Specified CHICAGO 243.259.00.1

Architect IDS+A

Engineer RGE

Contractor TBD

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Date _____

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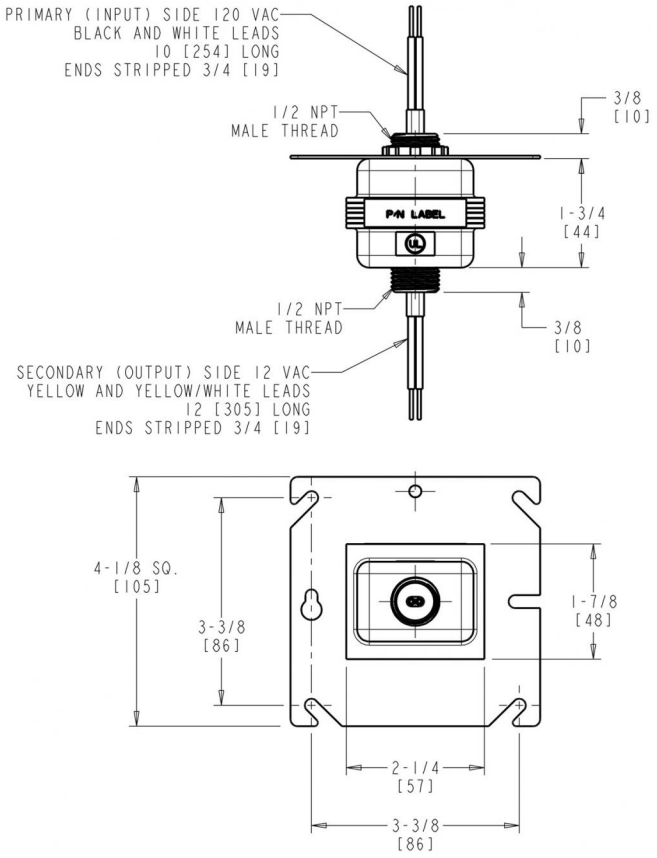
243.259.00.1

CHICAGO FAUCETS
Geberit Group

Architect/Engineer Specification

Chicago Faucets No. 243.259.00.1, Hard-wire Transformer, multi-use.Transformer type - Class 2. Single-use or multi-use capability (up to 8 faucets). Connection: hard-wire primary and secondary. Primary and secondary ends stripped and tinned. Primary: black and white leads. Primary input voltage 120 VAC @ 60 Hz, 10 length. Secondary output voltage 12 VAC. Secondary: yellow and yellow/white leads, 12 length. Output current - 400 mA. UL listed. RoHS compliant. 242.340.00.1 connecting wire not included (order separately). Hard-wired with standard 4 mounting plate. Made in U.S.A.



Operation and Maintenance

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www.chicagofaucets.com

ELKAY®
SPECIFICATIONS

Elkay Dependabilt Stainless Steel 74" x 29-13/16" x 43-3/4" 16 Gauge Two Compartment Sink w/ 18" Left and Right Drainboards and Stainless Steel Legs

Model(s) 14-2C18X24-2-18X

PRODUCT SPECIFICATIONS

Elkay Dependabilt Stainless Steel 74" x 29-13/16" x 43-3/4" 16 Gauge Two Compartment Sink w/ 18" Left and Right Drainboards and Stainless Steel Legs. Sink is manufactured from 16 gauge 300 series Stainless Steel with a #4 Finish , Center drain placement.

Material:	300 series Stainless Steel
Finish:	#4 Finish
Gauge:	16
Weight Without Packaging:	167
Number of Bowls:	2
Sink Dimensions:	74" x 29-13/16" x 43-3/4"
Bowl 1 Dimensions:	18" x 24" x 14"
Bowl 2 Dimensions:	18" x 24" x 14"
Drainboard Location:	Left and Right
Drainboard Size:	18
Backsplash Height:	9
Leg Type:	Stainless Steel
Drain Size:	3-1/2" (89mm)
Drain Location:	Center

Special Note: Requires single splash mount faucet (not included).

Custom Options	
Alternate Punching	
□ Faucet Model:	□ Punch Required:

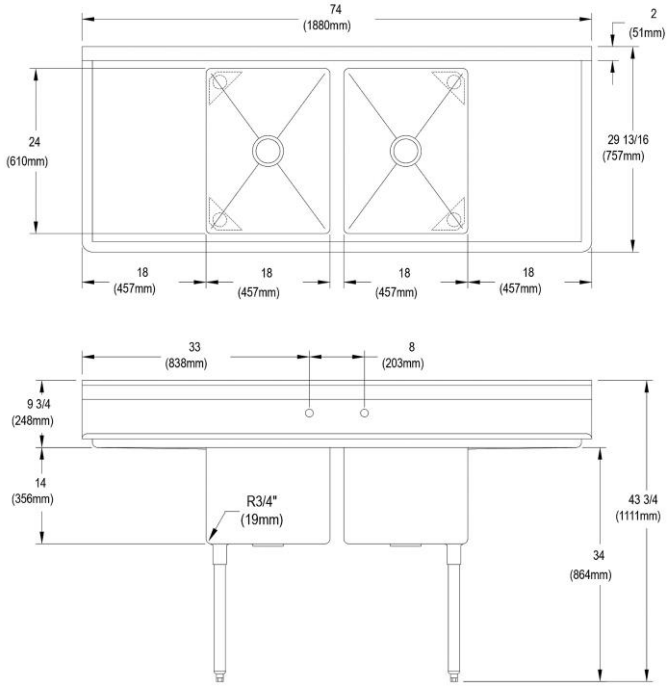
*Options available if applicable

Included with Product: **Stainless steel legs and adjustable bullet feet.**

AMERICAN PRIDE. A LIFETIME TRADITION.
Like your family, the Elkay family has values and traditions that endure. For almost a century, Elkay has been a family-owned and operated company, providing thousands of jobs that support our families and communities.

Product Compliance: ASME A112.19.3/CSA B45.4
NSF 2

Accessory: ASME A112.18.2/CSA B125.2



PART: P7 QTY: _____

PROJECT: IHS MSU

CONTACT: RGE

DATE: _____

NOTES: _____

APPROVAL: _____

In keeping with our policy of continuing product improvement, Elkay reserves the right to change product specifications without notice. Please visit elkay.com for the most current version of Elkay product specification sheets. This specification describes an Elkay product with design, quality, and functional benefits to the user. When making a comparison of other producers' offerings, be certain these features are not overlooked.

ELKAY®
SPECIFICATIONS

Elkay Sturdibilt Stainless Steel 19" x 23" x 4" Wall Hung Single Bowl Lavatory Sink Kit
Model(s) WCL1923OSDC

PRODUCT SPECIFICATIONS

Elkay Sturdibilt Stainless Steel 19" x 23" x 4", Wall Hung Single Bowl Lavatory Sink Kit. Sink is manufactured from 304 Stainless Steel with a Lustrous Satin finish, Rear Center drain placement, and Bottom only pads.

Material:	304 Stainless Steel
Finish:	Lustrous Satin
Sound Deadening:	Bottom only pads
Number of Bowls:	1
Sink Dimensions:	19" x 23" x 9"
Bowl 1 Dimensions:	16" x 13-1/2" x 4"
Drain Size:	1-1/2" (38mm)
Drain Location:	Rear Center
Template Included:	No

Included with Product: **WLC1923 sink, one LKD232SBH5C faucet, one LKAD174LO drain**

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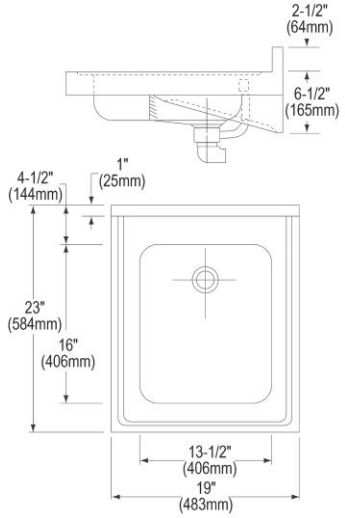
Like your family, the Elkay family has values and traditions that endure. For almost a century, Elkay has been a family-owned and operated company, providing thousands of jobs that support our families and communities.

Product Compliance: ADA & ICC A117.1
Buy American Act
NSF 2
Faucet: ASME A112.18.1/CSA B125.1
CEC
NSF 61
NSF 372 (lead free)
Accessory: ASME A112.18.2/CSA B125.2

Complies with ADA & ICC A117.1 accessibility requirements when installed according to the requirements outlined in these standards.

Clean and Care Manual (PDF)
Installation Instructions (PDF)
Warranty (PDF)



PART: P8 QTY: _____
PROJECT: IHS MSU
CONTACT: RGE
DATE: _____
NOTES: _____
APPROVAL: _____

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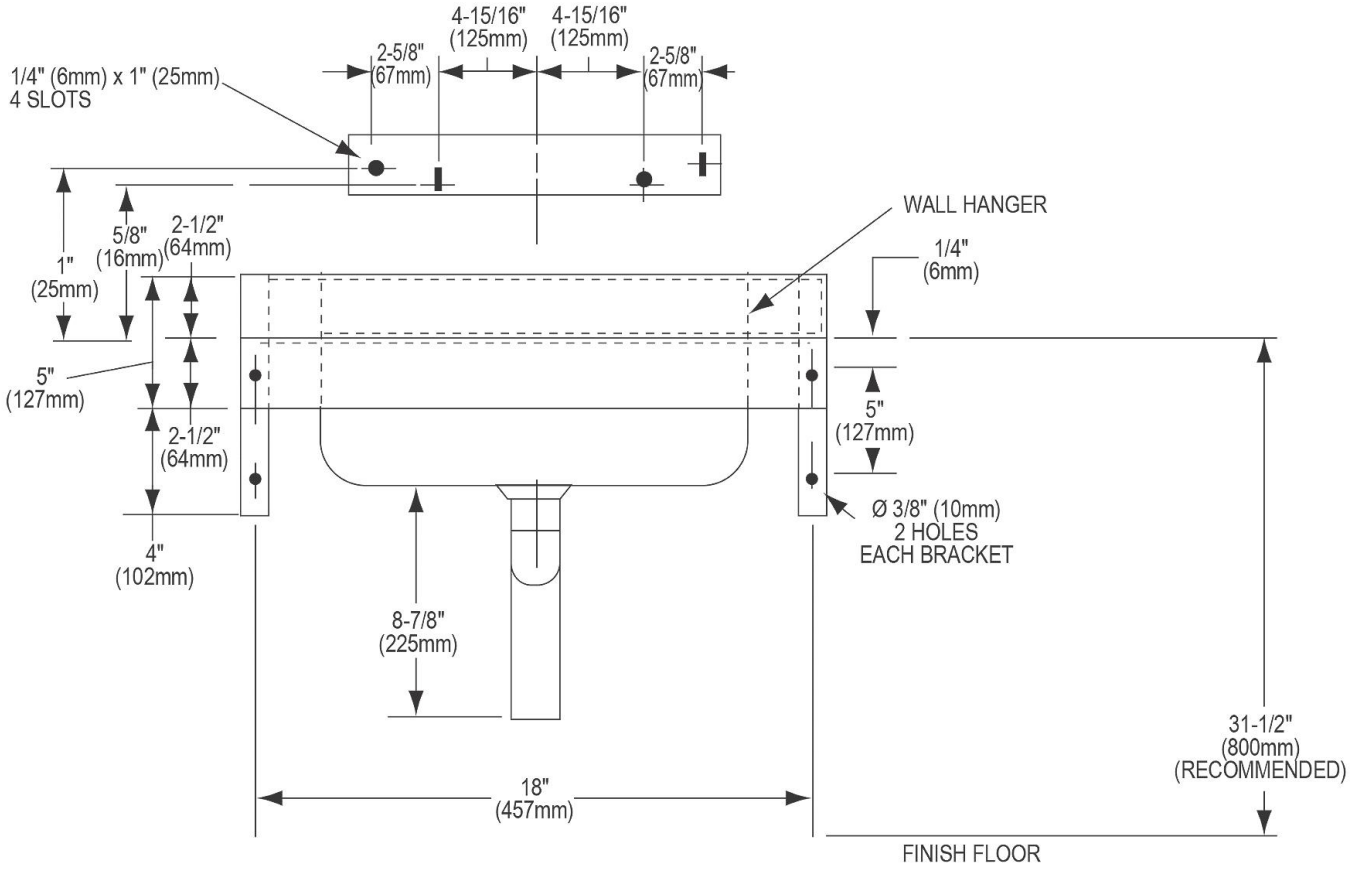

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☐ G3600LF Tempering Valve, 6 Gallon Capacity

Application: Tempering valve to blend hot and cold water to deliver tepid water. Valve has flow capacity of 2 to 6 gallons per minute (GPM). Valve can be used with an eyewash, eye/face wash, dual purpose eyewash/drench hose or drench hose unit.

Temperature Control: Valve has bimetallic thermostat that senses incoming water temperature and automatically blends water to 85°F (29°C). High temperature limit stop is set to 90°F (32°C). Valve has dial thermometer on outlet to monitor temperature of delivered water. *Note: Valve may need to be adjusted when installed based on incoming water temperature. Refer to "Installation Instructions" on the following page for further information.*

Fail Safe: In event of restriction or failure of hot water supply, internal bypass allows valve to deliver cold water to emergency unit. In bypass mode, valve will deliver 4 GPM of cold water at 30 PSI flow pressure. In event of loss of cold water supply, valve will close to prevent scalding and not deliver water.

Flow Capacity: Refer to chart below for flow capacity of valve at specified pressure drops:

System Pressure Drop (PSI)	5	10	15	20	25	30	35	40
Flow Rate (GPM)	2.0	2.7	3.5	4.5	5.5	6.5	7.5	8.5

System Pressure Drop (Bar)	0.3	0.7	1.0	1.4	1.7	2.1	2.4	2.8
Flow Rate (Liters per Minute)	7.6	10	13	17	21	25	28	32

Supply Temperature: Minimum recommended hot water supply temperature is 120°F (49°C). *Note: Extremely cold climates may require a hot water supply temperature greater than 120°F (49°C).*

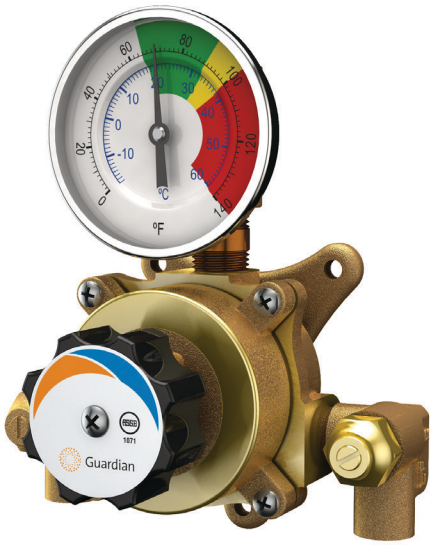
Supply Pressure: 30 PSI minimum supply pressure is required for proper valve operation. Maximum supply pressure is 125 PSI. Maximum hot to cold water pressure differential is 5%.

Mounting: Furnished with heavy duty mounting bracket for securing valve to panel or wall.

Inlets: 1/2" nominal sweat female hot and cold water inlets. Each inlet has check valve and supply stop.

Outlet: 1/2" NPT female outlet.

Quality Assurance: Valve is completely assembled and water tested prior to shipment. Valve is certified to ASSE 1071. Valve is certified to meet low lead requirements of wetted surface area less than 0.25% lead by weight.



IMPORTANT: *Pursuant to ANSI Z358.1-2014, the water delivered by emergency equipment should be "tepid". Tepid is defined as moderately warm or lukewarm, and is generally considered to be between 60°F (15°C) and 90°F (32°C). However, in certain circumstances, a chemical reaction may be accelerated or otherwise affected by the water temperature. Please consult with a medical advisor to determine the optimum delivered water temperature prior to specifying, installing or using a tempering valve.*

Tempering valves will not deliver the appropriate water temperature if the system has not been sized correctly. Please refer to the flow capacities and supply pressure requirements listed above when designing the tempered water system and selecting tempering valves.

Tempering valves, like all emergency eyewash and shower equipment, must be installed in accordance with the manufacturer's instructions and maintained on a regular basis. Under ANSI Z358.1-2014, all emergency equipment should be activated weekly and inspected at least annually. Tempering valves should be treated the same and, in addition, must be regularly cleaned and cycled.

Additional Models

☐ **G3602LF** Same as above except valve is installed in surface mounted stainless steel cabinet.

☐ **G3607LF** Same as above except valve is installed in recess mounted stainless steel cabinet.

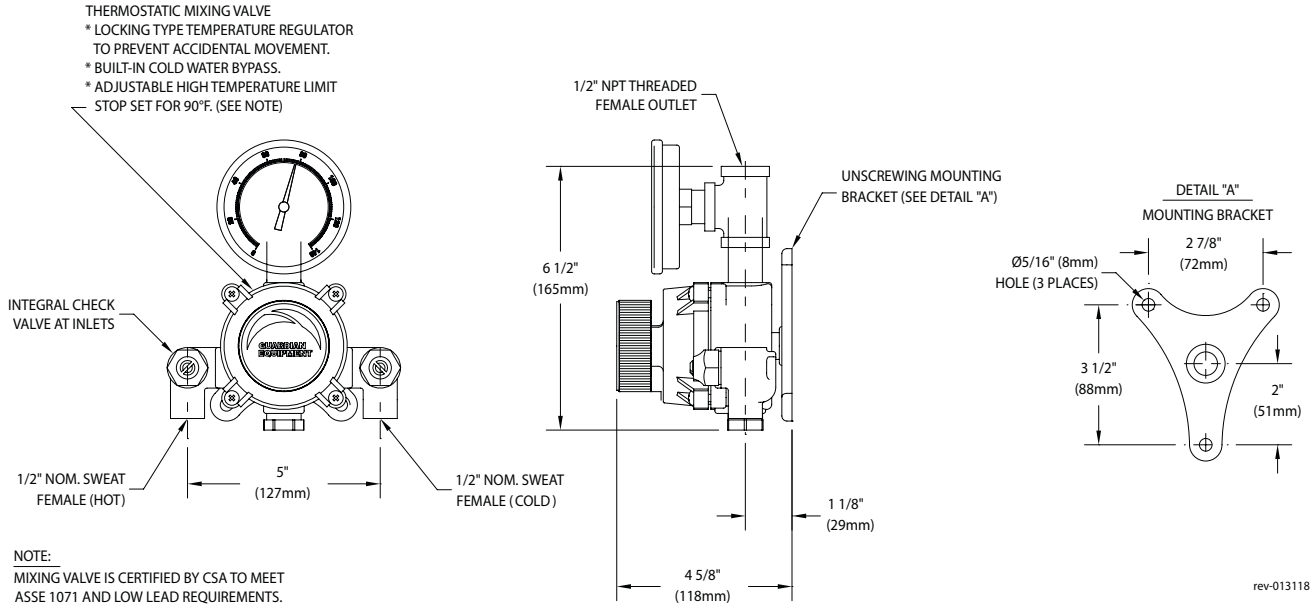
Guardian Equipment
1140 N North Branch St
Chicago, IL 60642

312 447 8100 TELEPHONE
312 447 8101 FACSIMILE
gesafety.com

ASSE 1071 Certified

Meets low lead requirements

☐ G3600LF Tempering Valve, 6 Gallon Capacity



Installation Instructions:

1. As with all plumbing devices and emergency equipment, thoroughly flush supply lines prior to and after installation.
2. Install mounting bracket on panel or wall. Thread tempering valve securely onto mounting bracket. Valve must be installed in a location where it is readily accessible for inspection, cleaning and maintenance.
3. Connect hot and cold water supply lines to valve. Connect outlet line to valve and then to inlet of emergency equipment.
4. Activate the water flow and check the temperature of the water delivered from the tempering valve and emergency equipment. Note that the temperature control knob on the tempering valve has been factory preset to deliver 85°F (29°C) tepid water and the high temperature limit stop has been factory preset at 90°F (32°C). These temperatures are based upon an incoming hot water supply at 135°F (57°C). *Note: If the incoming hot water temperature is higher than 135°F (57°C), the valve (when turned to full hot) will deliver water that is warmer than 90°F (32°C). In this case, the high temperature limit stop must be reset by the installer.*
5. To reset the high temperature limit stop:
   - Remove knob, retaining ring, loosen set screw, and remove the limit stop.
   - Activate the emergency fixture.
   - Replace knob on valve stem and rotate the valve stem counterclockwise to reach the desired maximum temperature. *Note: Temperatures above 90°F are not recommended. Consult a medical advisor for correct temperature settings.*
   - Replace the limit stop such that it rests against the web on the left side of the valve cover (i.e. the valve stem cannot be rotated counterclockwise any further).
   - Tighten set screw and replace the retaining ring and knob.

THIS SPACE FOR ARCHITECT/ENGINEER APPROVAL

Due to continuing product improvement, the information contained in this document is subject to change without notice. All dimensions are ± 1/4" (6mm). rev. 0118

Guardian Equipment
1140 N North Branch St
Chicago, IL 60642

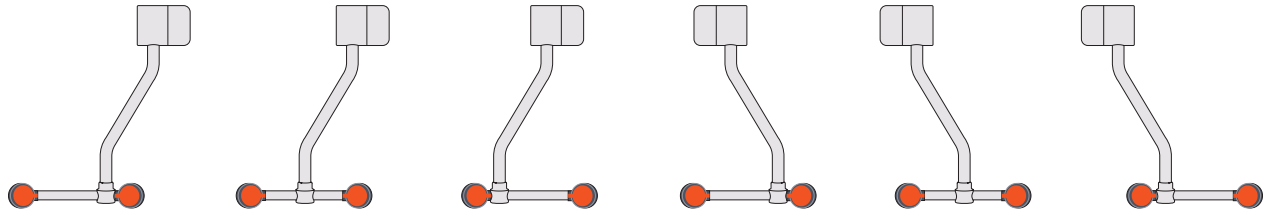
312 447 8100 TELEPHONE
312 447 8101 FACSIMILE
gesafety.com

ASSE 1071 Certified

Meets low lead requirements

Guardian

☐ GBF1849 Barrier-Free Eyewash, Deck Mounted, AutoFlow™ 90° Swing-Down



☐ GBF1849LH-L ☐ GBF1849LH ☐ GBF1849LH-R ☐ GBF1849L ☐ GBF1849 ☐ GBF1849R

GBF1849LH-R Shown

Application: Barrier-Free, AutoFlow™ eyewash for mounting on counter. Eyewash outlet assembly is lowered and extended to permit access by wheelchair user. ADA compliance is dependent on 27" knee clearance under counter and 34" maximum counter height. Spray heads swing down from storage to operational position, activating water flow. Available in a variety of spray head configurations to minimize obstructions at a sink.

Spray Head Assembly: Two GS-Plus™ spray heads. Each head has a "flip top" dust cover, internal flow control and filter to remove impurities from the water flow.

Valve: 1/2" IPS plug-type valve with PTFE coated O-ring seals. Swinging head assembly down from storage to operational position opens orifice and activates water flow. Unit remains in operation until spray head assembly is returned to storage position.

Strainer: Unit is furnished with in-line strainer to protect valve and spray heads from debris in water line.

Mounting: Unit mounts on countertop behind sink. Furnished with mounting hardware for securing unit to counter.

Construction: Polished chrome plated brass.

Supply: 1/2" NPT female inlet.

Sign: ANSI-compliant identification sign.

Quality Assurance: Unit is completely assembled and water tested prior to shipment.

Available Options

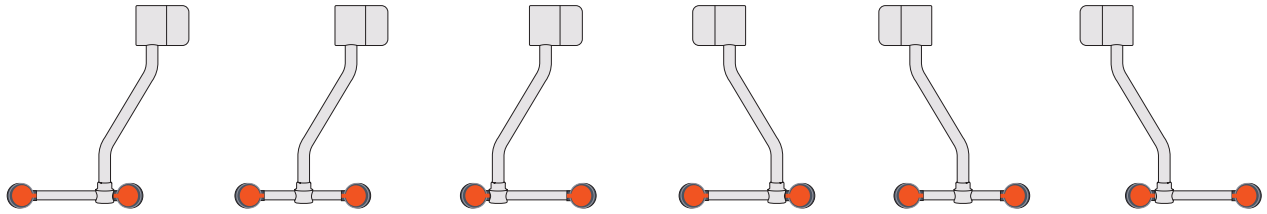
☐ **G6020** Thermostatic mixing valve precisely blends hot and cold water to deliver tepid water as required by ANSI Z358.1-2014. Refer to "Thermostatic Mixing Valves" section for complete technical and product selection information.

Guardian Equipment
1140 N North Branch St
Chicago, IL 60642

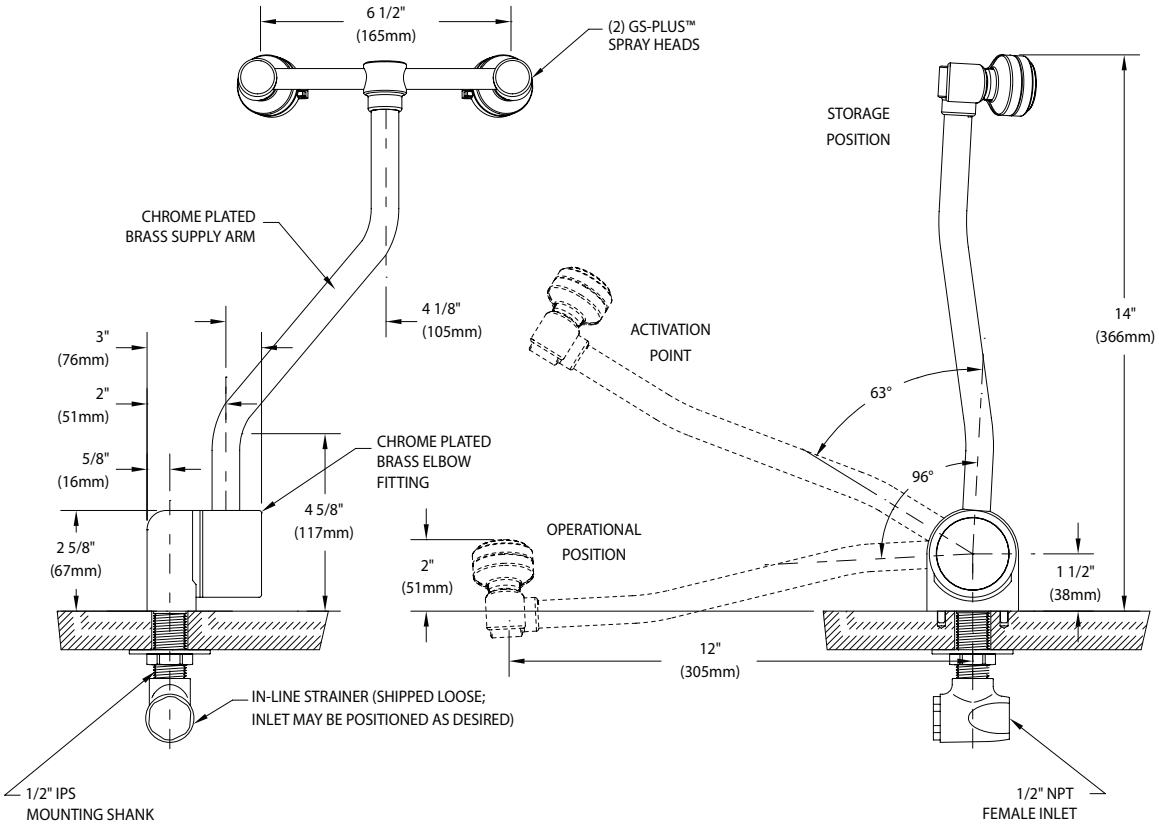
312 447 8100 TELEPHONE
312 447 8101 FACSIMILE
gesafety.com

Listed 8116. Units have been tested to and comply with ANSI Z358.1-2014 and the Uniform Plumbing Code.

☐ GBF1849 Barrier-Free Eyewash, Deck Mounted, AutoFlow™ 90° Swing-Down



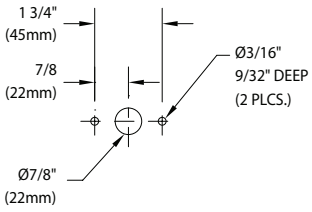
☐ GBF1849LH-L ☐ GBF1849LH ☐ GBF1849LH-R ☐ GBF1849L ☐ GBF1849 ☐ GBF1849R



NOTES:

1. SWINGING OUTLET HEAD ASSEMBLY DOWN 96 DEGREES FROM VERTICAL TO HORIZONTAL POSITION ACTIVATES WATER FLOW.
2. EACH GS-PLUS™ SPRAY HEAD HAS A "FLIP-TOP" DUST COVER, INTERNAL FLOW CONTROL AND FILTER TO REMOVE IMPURITIES FROM THE WATER FLOW.
3. UNIT MOUNTS INTO COUNTERTOPS UP TO 1 1/2" THICK. BASE OF UNIT HAS PINS TO PREVENT UNIT FROM TURNING ON COUNTER.
4. UNIT IS FURNISHED WITH IN-LINE STRAINER TO PROTECT VALVE AND SPRAY HEADS FROM DEBRIS IN WATER LINE.
5. VALVE BEGINS TO OPEN AT "ACTIVATION POINT" SHOWN ABOVE.
6. ADA COMPLIANCE IS DEPENDENT ON 27" KNEE CLEARANCE UNDER COUNTER AND 34" MAX. COUNTER HEIGHT.

DETAIL OF MOUNTING PINS



THIS SPACE FOR ARCHITECT/ENGINEER APPROVAL

Sign Included

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Guardian Equipment
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Chicago, IL 60642

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gesafety.com

Listed 8116. Units have been tested to and comply with ANSI Z358.1-2014 and the Uniform Plumbing Code.

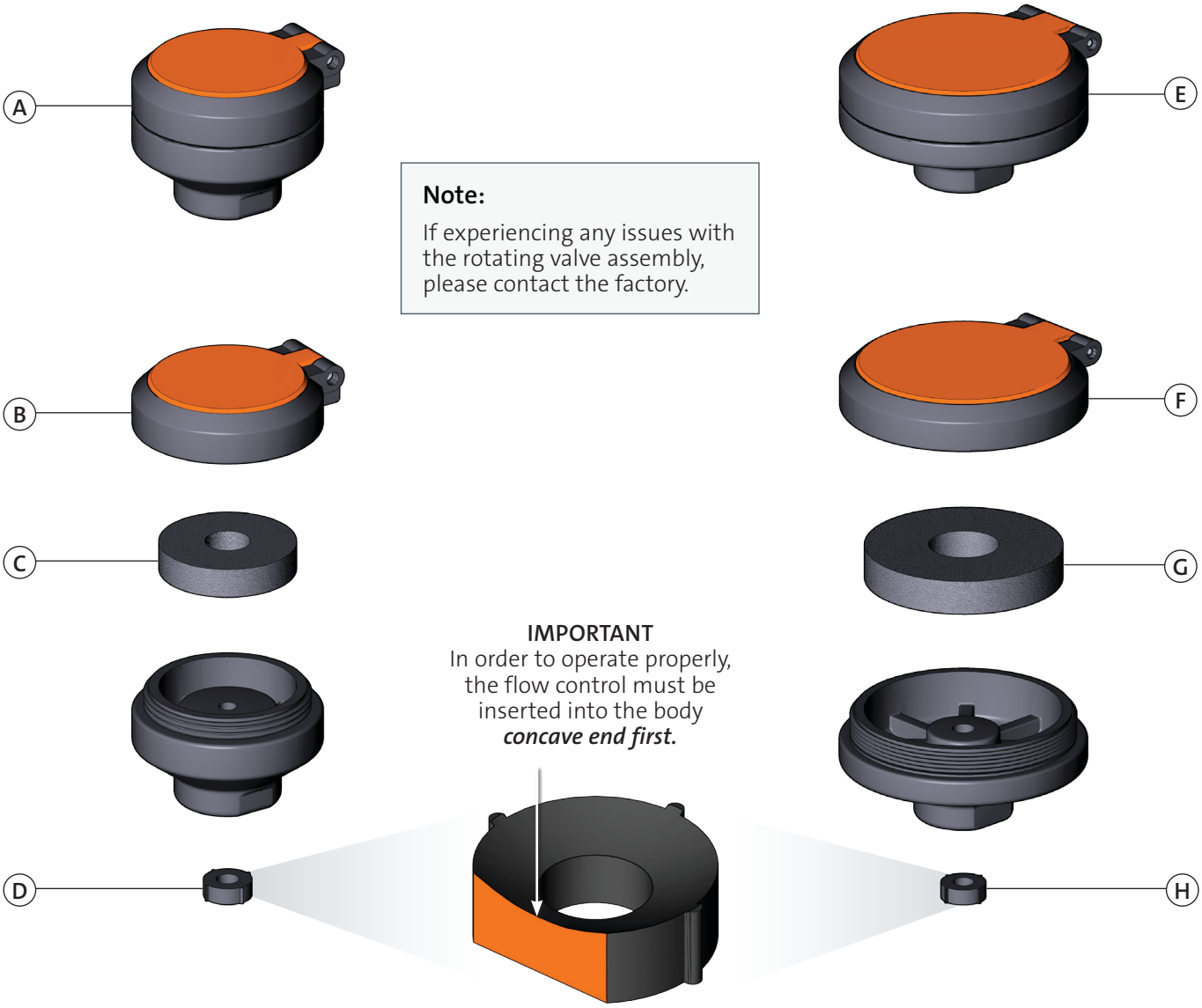
Guardian

Parts List
Swing-Type Eyewashes and Eye/Face Washes

Each spray head features:

- Tough polypropylene plastic construction
- Highly visible integrated nylon dust cover
- Easily accessible 1.6 GPM (GS-Plus™) or 3.2 GPM (FS-Plus™) flow controls
- Dense (60 pore per inch) polyurethane filter
- Unique design provides a consistently soft, full spray of water across a range of working pressures from 30 to 100 PSI

Item	Part Number	Description
A	**AP470-001**	GS-Plus™ Spray Head (assembled)
B	**AP470-002ORG-R**	Dust Cover and Cap Assembly
C	**470-004R**	60 PPI Polyurethane Filter
D	**470-005R**	1.6 GPM Flow Control
E	**AP470-021**	FS-Plus™ Spray Head (assembled)
F	**AP470-022ORG-R**	Dust Cover and Cap Assembly
G	**470-024R**	60 PPI Polyurethane Filter
H	**470-025R**	3.2 GPM Flow Control



Note:
If experiencing any issues with the rotating valve assembly, please contact the factory.

IMPORTANT
In order to operate properly, the flow control must be inserted into the body ***concave end first.***

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Guardian

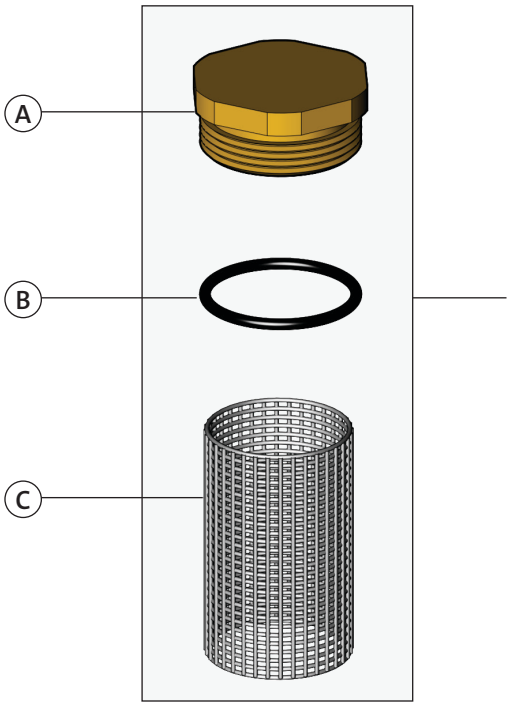
Parts List
Swing-Type Eyewashes and Eye/Face Washes
In-Line Strainer

To perform weekly cleaning of the strainer:

1. Unscrew the strainer bonnet (a).
2. Inspect the o-ring (b) for damage. Replace if needed.
3. Remove cylindrical screen (c) and rinse under clean water. Gently rub the screen until all debris has been removed.
4. Carefully reinsert screen into the counterbore within the strainer body (should fit snugly).
5. Replace strainer bonnet and test for proper operation of strainer and eyewash.

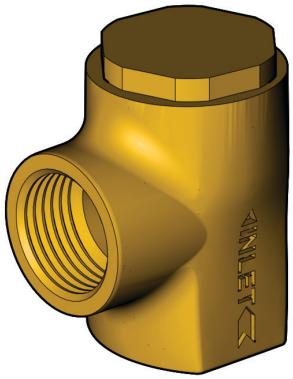
Important:

All emergency equipment must be inspected and tested at least weekly to ensure proper operation. On units equipped with an in-line strainer, weekly inspection should also include checking the strainer for accumulation of debris or foreign matter. Such debris can impair the flow of water through the strainer and prevent the eyewash from functioning properly.



RK400-013
Repair Kit for Inline Strainer consisting of Bonnet, O-Ring and 50 Mesh Cylindrical Screen

AP400-013
In-Line Strainer Assembly



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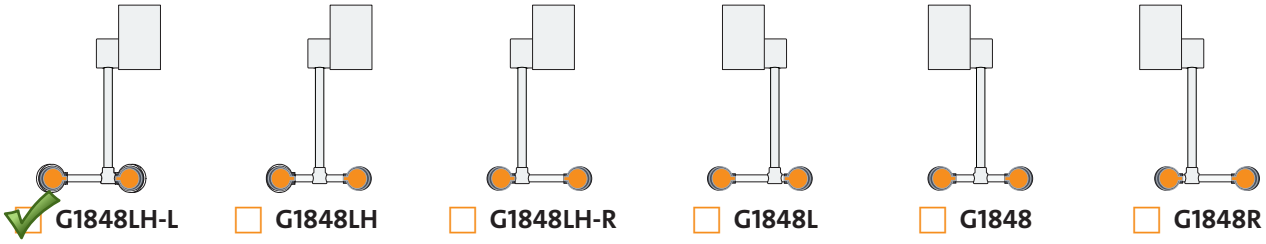
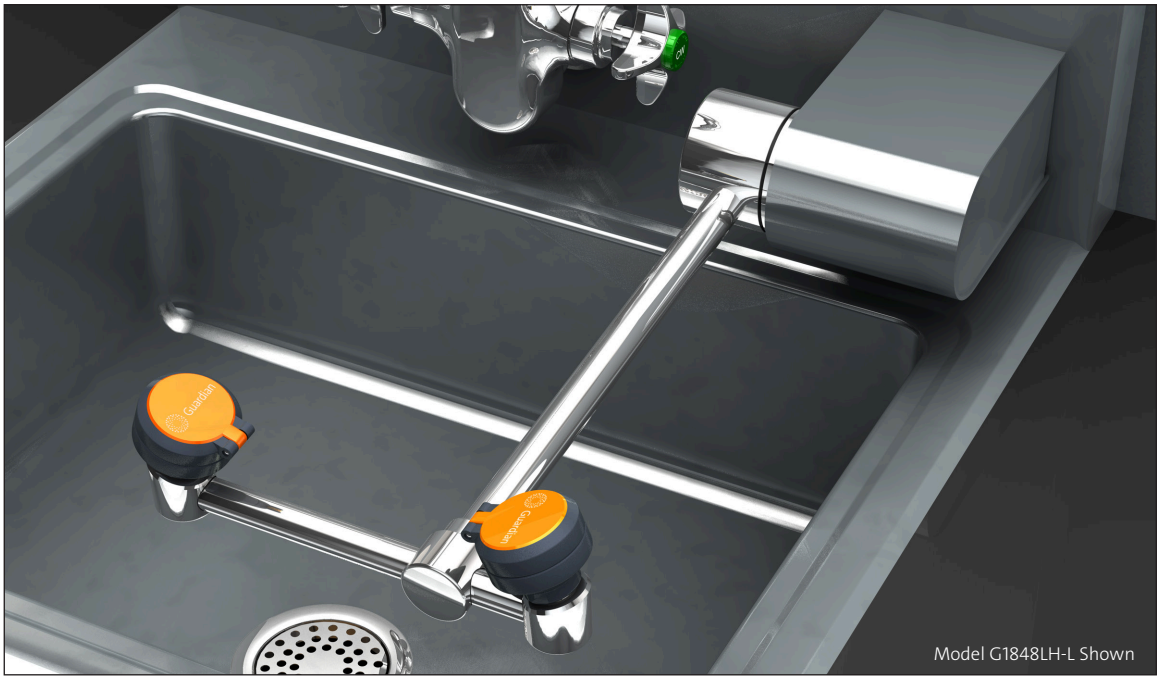
☐ G1848 Eyewash, Wall Mounted, AutoFlow™ 90° Swing-Down



☑ G1848LH-L ☐ G1848LH ☐ G1848LH-R ☐ G1848L ☐ G1848 ☐ G1848R

Units shown in plan view



Model G1848LH-L Shown

Application: AutoFlow™ eyewash for mounting on wall. Spray heads swing down from storage to operational position, activating water flow. Available in a variety of spray head configurations to minimize obstructions at a sink. *Note: If unit is not installed at a sink, floor drain should be provided underneath unit to prevent accumulation of water on floor.*

Spray Head Assembly: Two GS-Plus™ spray heads. Each head has a "flip top" dust cover, internal flow control and filter to remove impurities from the water flow.

Valve: 1/2" IPS plug-type valve with PTFE coated O-ring seals. Swinging head assembly from storage to operational position opens orifice and activates water flow. Unit remains in operation until head assembly is returned to storage position.

Strainer: Unit is furnished with in-line strainer to protect valve and spray heads from debris in water line.

Mounting: Valve is installed in Type 316 stainless steel housing. Mount housing on wall using anchors or other mounting hardware.

Construction: Polished chrome plated brass.

Supply: 1/2" NPT female inlet.

Sign: ANSI-compliant identification sign.

Quality Assurance: Unit is completely assembled and water tested prior to shipment.

Available Options

☐ **G6020** Thermostatic mixing valve precisely blends hot and cold water to deliver tepid water as required by ANSI Z358.1-2014. Refer to "Thermostatic Mixing Valves" section for complete technical and product selection information.

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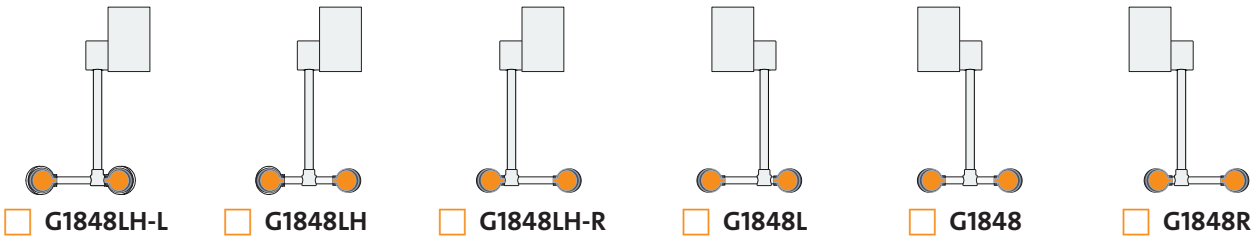
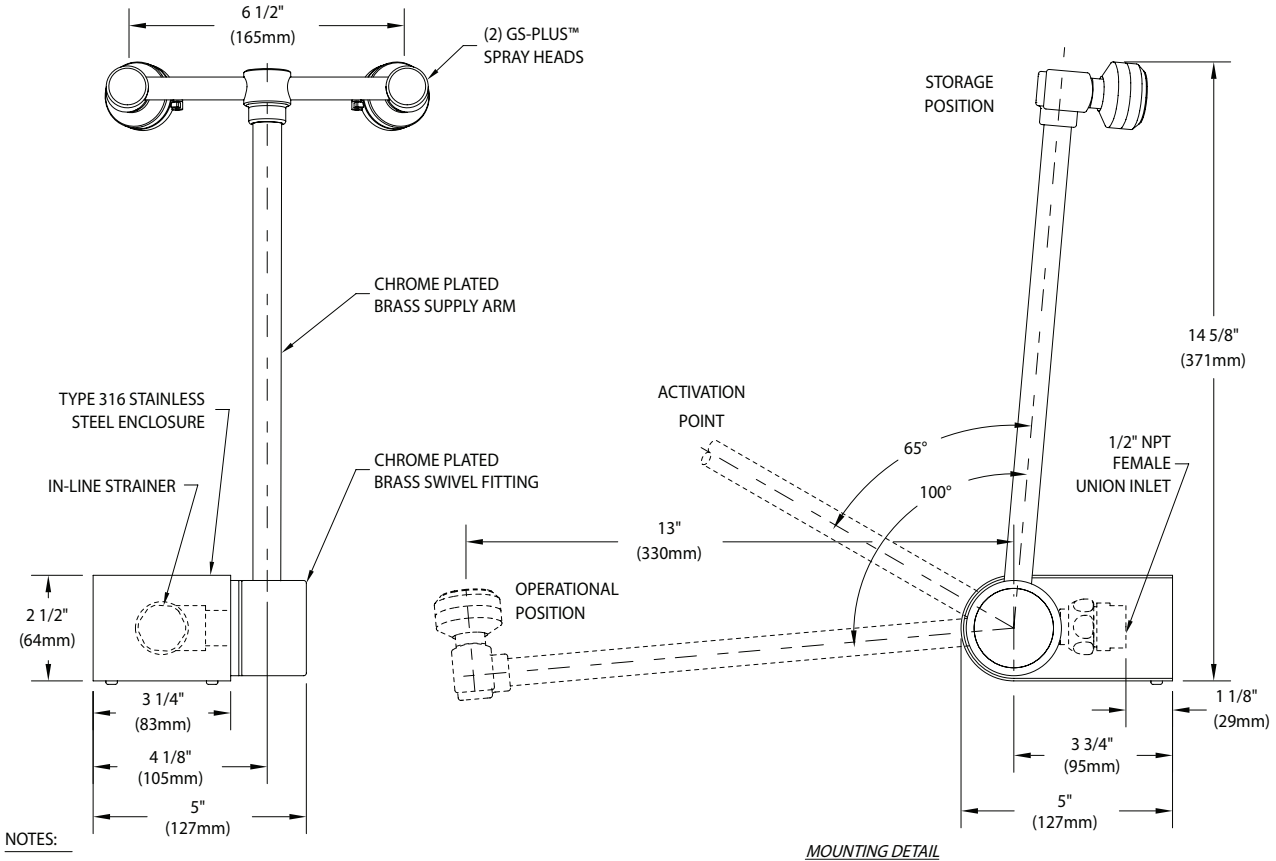
☐ G1848 Eyewash, Wall Mounted, AutoFlow™ 90° Swing-Down



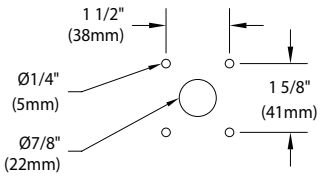
☐ G1848LH-L ☐ G1848LH ☐ G1848LH-R ☐ G1848L ☐ G1848 ☐ G1848R



NOTES:

1. SWINGING OUTLET HEAD ASSEMBLY DOWN 100 DEGREES FROM VERTICAL TO HORIZONTAL POSITION ACTIVATES WATER FLOW.
2. EACH GS-PLUS™ SPRAY HEAD HAS A "FLIP-TOP" DUST COVER, INTERNAL FLOW CONTROL AND FILTER TO REMOVE IMPURITIES FROM THE WATER FLOW.
3. MOUNT HOUSING ON WALL USING ANCHORS OR OTHER HARDWARE.
4. UNIT IS FURNISHED WITH IN-LINE STRAINER TO PROTECT SPRAY HEADS AND VALVE COMPONENTS FROM DEBRIS IN WATER LINE.
5. UNIT SHOULD BE INSTALLED SO THAT WATER FLOW PATTERN IS POSITIONED BETWEEN 33" AND 53" ABOVE FLOOR.
6. VALVE BEGINS TO OPEN AT "ACTIVATION POINT" SHOWN ABOVE.

MOUNTING DETAIL



Rev. 090221

Sign Included

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ELKAY®
SPECIFICATIONS

Elkay Versatile Cooler Wall Mount Bi-Level GreenSpec ADA Filtered Refrigerated Stainless
Model LZSTLG8SC

PRODUCT SPECIFICATIONS

Elkay Versatile Cooler Wall Mount Bi-Level GreenSpec ADA, Filtered Refrigerated Stainless. Chilling Capacity of 8.0 GPH (gallons per hour) of 50° F drinking water, based on 80° F inlet water and 90° F ambient, per ASHRAE 18 testing. Features shall include Energy Savings, Filtered. Furnished with Flexi-Guard ® StreamSaver ™ bubbler. Electronic Front and Side Bubbler Pushbar activation. Product shall be Wall Mount (On Wall), for Indoor applications, serving 2 station(s). Unit shall be certified to UL 399 and CAN/CSA C22.2 No. 120. Unit shall be lead-free design which is certified to NSF/ANSI 61 & 372 (lead free) and meets Federal and State low-lead requirements.

Special Features:	Energy Savings, Filtered
Finish:	Stainless Steel
Power:	115V/60Hz
Bubbler Style:	Flexi-Guard ® StreamSaver ™
Activation by:	Electronic Front and Side Bubbler Pushbar
Mounting Type:	Wall Mount (On Wall)
Chilling Capacity*:	8.0 GPH
Full Load Amps	5
Rated Watts:	370
Dimensions (L x W x H):	36-3/4" x 19" x 25-5/16"
Approx. Shipping Weight:	74 lbs.
Installation Location:	Indoor
No. of Stations Served:	2
*Based on 80° F inlet water & 90° F ambient air temp for 50° F chilled drinking water.	

- Filter is certified to NSF 42 and 53 for lead, particulate, chlorine, taste and odor reduction. 1,500 gal. capacity.
- Energy-Savings Feature - allowing for the refrigeration to be powered off when not in use.

COOLING SYSTEM

- Compressor: Hermetically-sealed, reciprocating type, single phase. Sealed-in lifetime lubrication.
- Condenser: Fan cooled, copper tube with aluminum fins. Fan motor is permanently lubricated.
- Cooling Unit: Combination tube-tank type. Continuous copper tubing with is fully insulated with EPS foam that meets UL requirements for self-extinguishing material.
- Refrigerant Control: Refrigerant R-134a is controlled by accurately calibrated capillary tube.
- Temperature Control: Easily accessible enclosed adjustable thermostat is factory preset. Requires no adjustment other than for altitude requirements.

Included with Product: **Water Cooler, Filter**

Ships in one box.

AMERICAN PRIDE. A LIFETIME TRADITION.
Like your family, the Elkay family has values and traditions that endure. For almost a century, Elkay has been a family-owned and operated company, providing thousands of jobs that support our families and communities.

PRODUCT COMPLIANCE

ADA & ICC A117.1
ASME A112.19.3/CSA B45.4
Buy American Act
CAN/CSA C22.2 No. 120
GreenSpec®
NSF/ANSI 42, 53, 61, & 372 (lead free)
UL 399

Complies with ADA & ICC A117.1 accessibility requirements when installed according to the requirements outlined in these standards. Installation may require additional components and/or construction features to be fully compliant. Consult the local Authority Having Jurisdiction if necessary.

Installation Instructions (PDF)

5 Year Limited Warranty on the refrigeration system of the unit. Electrical components and water system are warranted for 12 months from date of installation. **Warranty pertains to drinking water applications only. Non-drinking water applications are not covered under warranty.**

Warranty (PDF)

PART: P11 QTY: _____
PROJECT: IHS MSU
CONTACT: RGE
DATE: _____
NOTES: _____
APPROVAL: _____

In keeping with our policy of continuing product improvement, Elkay reserves the right to change product specifications without notice. Please visit elkay.com for the most current version of Elkay product specification sheets. This specification describes an Elkay product with design, quality, and functional benefits to the user. When making a comparison of other producers' offerings, be certain these features are not overlooked.

Optional Accessories		
51299C	Elkay WaterSentry VII Replacement Filter (Coolers + Fountains) Spec Sheet (PDF)	
MLP200	In-wall Carrier for Bi-level On-wall Bottle Fillers, Coolers & Fountains Spec Sheet (PDF)	
LKAPREZL	Elkay Cane Apron for EZ Gray Spec Sheet (PDF)	
98481C	Accessory - Bubbler Kit Water-Efficient Vandal-Resistant Spec Sheet (PDF)	

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Elkay Versatile Cooler Wall Mount Bi-Level GreenSpec ADA Filtered Refrigerated Stainless
Model LZSTLG8SC

IMPORTANT! INSTALLER PLEASE NOTE:
This water cooler has been designed and built to provide water to the user which has not been altered by materials in the cooler waterways.

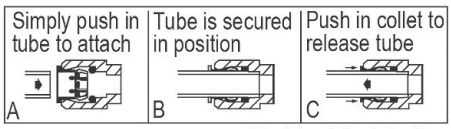
The grounding of electrical equipment such as telephone, computers, etc to water lines is a common procedure. This grounding may be in the building or occur away from the building. This grounding can cause electrical feedback into a water cooler creating an electrolysis which creates a metallic taste or causes an increase in the metal content of the water. This condition is avoidable by installing the cooler using the proper materials as shown below.

NOTICE

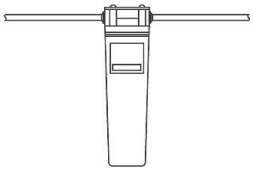
The water cooler must be connected to the water supply using a dielectric coupling. The cooler is furnished with a non-metallic strainer which meets this requirement. The drain trap which is provided by the installer should also be plastic to completely isolate the cooler from the building plumbing system.

Simultaneous operation of both bubblers on a bi-level unit may not be possible depending on water supply pressure. If simultaneous operation is desired, please ensure a minimum of 65 psi supply. Lower pressure may be possible for non-filtered and/or non-refrigerated installations.

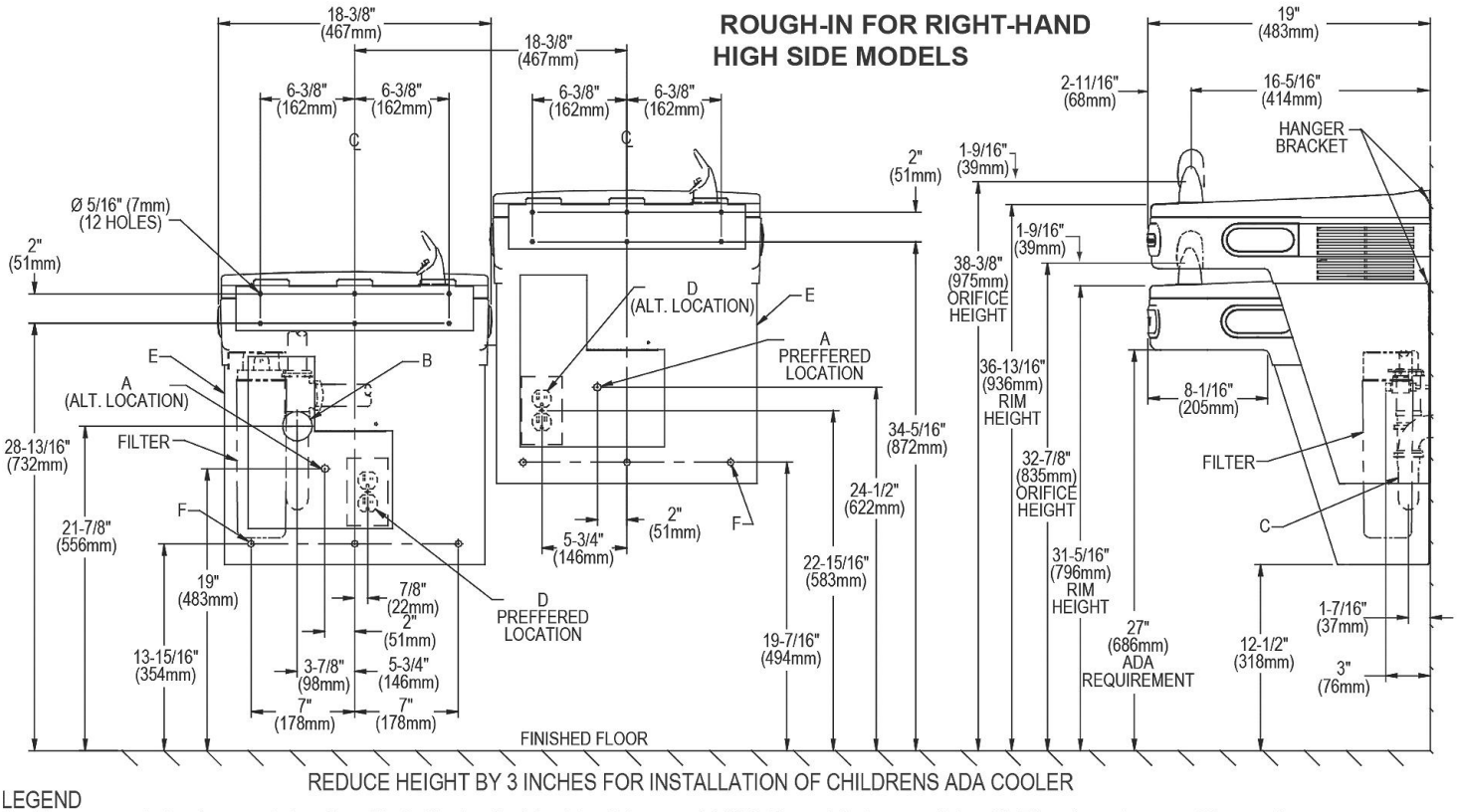
OPERATION OF QUICK CONNECT FITTINGS



Pushing tube in before pulling it out helps to release tube



WaterSentry® VII Filter System



REDUCE HEIGHT BY 3 INCHES FOR INSTALLATION OF CHILDRENS ADA COOLER

LEGEND
A = Recommended water supply location. Shut off valve (not furnished) to accept 3/8" O.D. unplated copper tube. 3" (76mm) maximum out from wall.
B = Recommended location for waste outlet 1-1/2" O.D. drain. Drain stub 2" (51mm) out from wall.
C = 1-1/2" Trap not furnished.
D = Electrical supply (3) wire recessed box.
E = Insure proper ventilation by maintaining 6" (152mm) (MIN.) clearance from cabinet louvers to wall.
F = 7/16" Bolt holes for fastening unit to wall.
NOTE: Installation instructions must use Ground Fault Circuit Interrupter (GFCI). It is highly recommended that the circuit be dedicated and the load protection be sized for 20 amps.

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BFP-1

ES-SD2

For Non-Health Hazard Applications

Job Name IHS MSU

Job Location MESCALARO, NM

Engineer RGE

Approval _____

Contractor _____

Approval _____

Contractor's P.O. No. _____

Representative _____

LEAD FREE*

Model SD-2

Backflow Preventer for Carbonated Beverage Machines

Sizes: ¼", ⅜" (8, 10mm)

The Watts SD2 is a dual check designed for the protection of the water supply from carbon dioxide gas and carbonated water. These substances can flow from post-mix beverage systems and are very acidic. If the acidic water comes in contact with copper tubing or copper pipe, it will cause the leaching of copper salts into the water supply. The dissolved copper if ingested can cause nausea, abdominal pain, and in some cases vomiting. The SD-2 prevents the reverse flow of potentially contaminated water into the potable water supply due to back pressure backflow and is used for continuous or intermittent pressure conditions. The Watts SD-2 is recommended for use on Post-Mix Carbonated Beverage Equipment and dispensing equipment for tea and coffee.

B64.3

Features

- Certified to ANSI/NSF Standard 18, Manual Food and Beverage Dispensing Equipment
- ASSE 1032 Approved Dual Check Valve
- 316 stainless steel body for corrosion resistance
- All rubber compounds comply with FDA food additive regulations
- Streamlined body design minimizes pressure loss and cavitation
- A wide variety of custom end connections are available
- Endurance tested for more than 500,000 pumping cycle
- Shock tested for more than 100,000 pumping cycle

Available Models

¼" (8mm) SD2-MN: Male NPT
⅜" (10mm) SD2-MN: Male NPT
¼" (8mm) SD2-FN: Female NPT
⅜" (10mm) SD2-FN: Female NPT
¼" (8mm) SD2-MF: SAE Male Flare
⅜" (10mm) SD2-MF: SAE Male Flare
¼" (8mm) SD2-FF: SAE Female Flare
⅜" (10mm) SD2-FF: SAE Female Flare

Specifications

Body and adapters are of 316 stainless steel construction and all rubber components comply with FDA food additive regulations. All materials in contact with the potable water are in compliance with the requirements of the Safe Drinking Water Act, Public Law 93-523, National Interim Primary Drinking Water Regulations.

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

WATTS®

Standards

ASSE 1032

Installation: The valve can be installed horizontally or vertically (flow up or flow down). The valve should be installed such that the valve is accessible for service and maintenance.

NOTICE

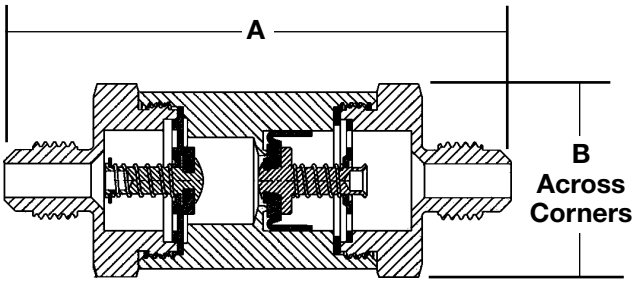
The device should not be installed inside a wall or in a concealed location. Copper tubing shall not be used on the downstream side of the backflow preventer used in carbonated systems. Copper tubing can be used downstream for non carbonated systems such as coffee makers.

Pressure — Temperature

Max. Pressure: 200psi (13.8 bar)

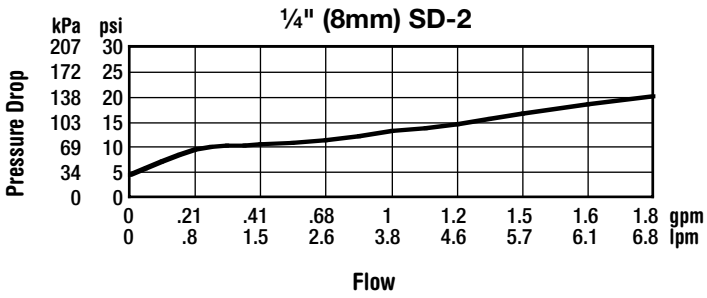
Max. Temperature: 110°F (43°C)

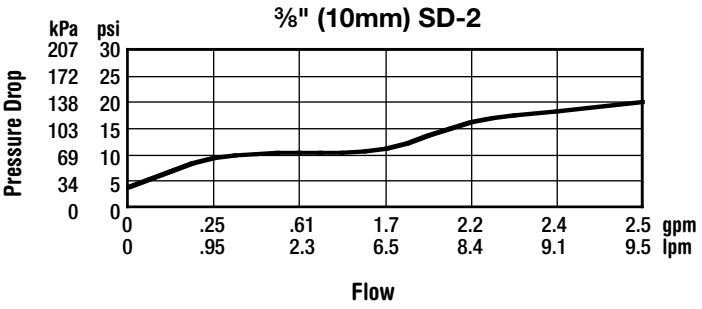
Dimensions (Approx.)



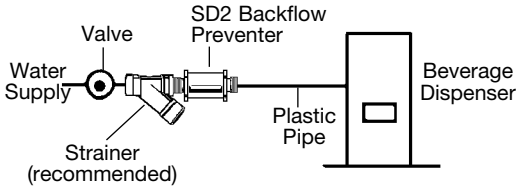
Valve Size		Assembly		Dimensions			
				A		B	
in	*mm*	*Part #*	*Order#*	*in.*	*mm*	*in*	*mm*
¼"	8	SD2-MN	0061650	3	76	11/16	27
¼"	8	SD2-MF	0061651	2 13/16	71	11/16	27
⅜"	10	SD2-MN	0061654	3	76	11/16	27
⅜"	10	SD2-MF	0061655	3	76	11/16	27
¼"	8	SD2-FN	0061662	3	76	11/16	27
¼"	8	SD2-FF	0061660	2 13/16	71	11/16	27
⅜"	10	SD2-FN	0061663	3	76	11/16	27
⅜"	10	SD2-FF	0061661	3	76	11/16	27

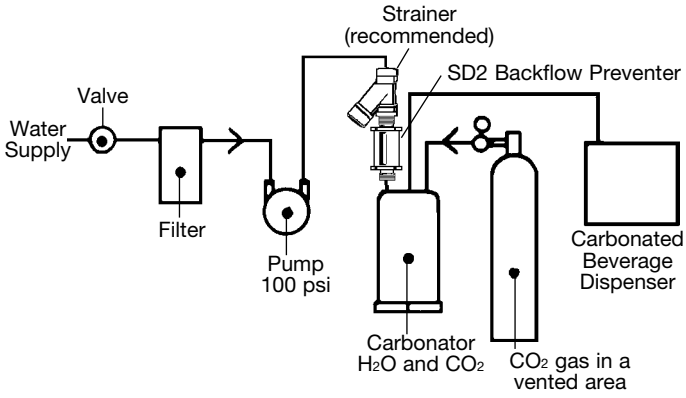
Capacity





Typical Installations





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Latin America: Tel: (52) 81-1001-8600 • Watts.com

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BV

- Available in **Lead-Free** brass (1/2″ – 3″) or cast/ductile iron (2-1/2″ – 12″)
- Proportional and pre-balance design capabilities.
- Externally adjustable manual balance valve for easy adjustment
- Memory stop indicator
- Positive shut off capability
- Available in compliance with Buy American Act COTS provision

Circuit Setter Plus®

Calibrated Balance Valves

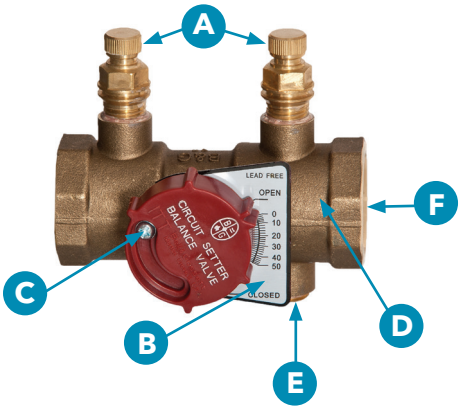
A-508N

Bell & Gossett
a xylem brand

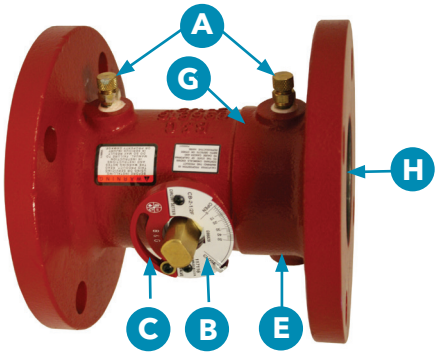
BV

Circuit Setter Plus Calibrated Manual Balance Valve

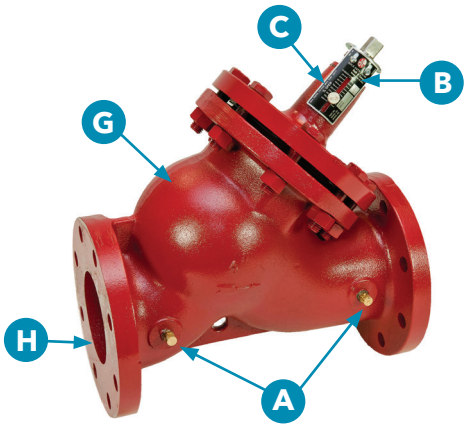
The Circuit Setter Plus calibrated balance valve is designed specifically for pre-set proportional system balance. This system balance method, developed and perfected by Bell & Gossett, assures optimum system flow balance at minimum operating horsepower. Lead-Free Circuit Setter Plus valves are perfect for balancing HVAC and potable water systems to minimize pump energy requirements.



Circuit Setter Plus
Lead-Free* Brass
1/2" – 3"



Flanged Ball Style
2 1/2" – 4"



Flanged / Grooved
4" – 12"

Features	Benefits
A. Integral Valved Read-Out Ports	Facilitates differential pressure readings for proper balance, flow measurement, and easy system commissioning.
B. Calibrated Name Plate	Enables easy and accurate balancing with precise flow setting control.
C. Memory Stop Screw/Button	Allows complete shut-off and return to set position without readjustment or measuring pressure differential again.
D. **Lead-Free*** Brass Body	**Lead-Free*** Brass body material in ½" – 3" units. Utilizing a carefully calibrated stainless steel ball valve, the Circuit Setter Plus is perfect for balancing potable water applications and small hydronic systems.
E. Drain/Purge Connection	Allows for easy draining of a portion of the system without draining the entire system.
F. Sweat or NPT Connections	With NPT connections available in ½" – 3" and Sweat fit connections in ½" – 2", the Circuit Setter Plus is a perfect solution for every application. Union fittings available on configured valves.
G. Cast/Ductile Iron Body	Cast Iron body material in all flanged models and ductile iron for all grooved models. Utilizing a carefully calibrated brass ball valve in 2-1/2" – 4" units and a brass seat and disk with EDPM seal insert for a soft seat and thorough seal in 4"-12" units, the Circuit Setter Plus cast/ductile iron units are perfect for hydronic balancing in large pipe diameter applications.
H. Flanged or Grooved Connections	With Flanged connections available in 2-1/2" – 12" and grooved connections in 4"-12", the Circuit Setter Plus is a perfect solution for every large flow application.

* B&G Brass Circuit Setter Plus products are certified by the CSA Group to NSF/ANSI 372 standards to conform to the requirements for "lead free" plumbing products as defined by California, Vermont, Maryland and Louisiana state laws and by Section 1417 of the US Safe Drinking Water Act.

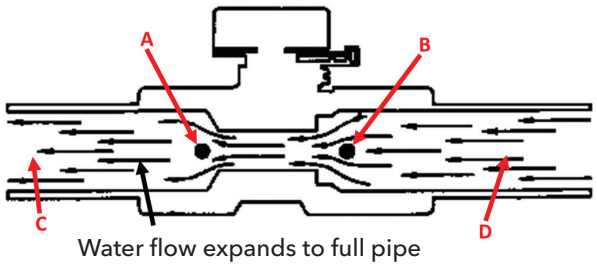
BV

Cost Saving Advantages

The Bell & Gossett Circuit Setter Plus calibrated balance valve has been designed, manufactured and tested to provide the cost saving advantages of pre-set proportional balance. Each valve is a three function precision instrument providing flow balance, flow metering and shut-off.

Velocity Head Recovery

Changes in fluid velocity through the valve orifice are as illustrated. Actual pressure drop imposed against the pump (ΔP from C to D) is on the order .7 to .9 of the value as read across the read-out ports A-B. These differences are significant enough to require two different sets of ΔP data to be shown on the Circuit Setter Balance Valve Calculator.



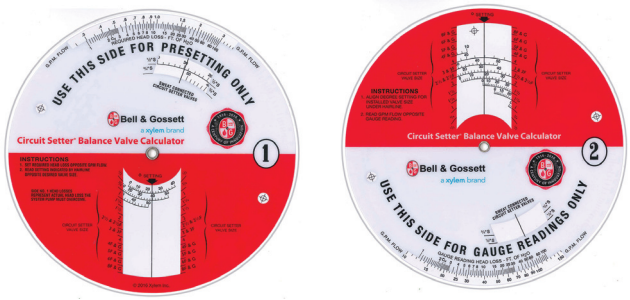
Water flow expands to full pipe size, water velocity is decreased and static pressure is "recovered".

System Syzer Desktop Application

The Circuit Setter System Syzer desktop application is a convenient and easy way to utilize the information on a Circuit Setter Balance Valve Calculator. The application can determine either flow rate based on head loss and valve setting, or the valve setting necessary based on head loss and flow rate across the valve. The unit of measurement can be changed between SI and English units, and fluid makeups of water, Ethylene Glycol, Propylene Glycol, or a custom fluid composition are available.

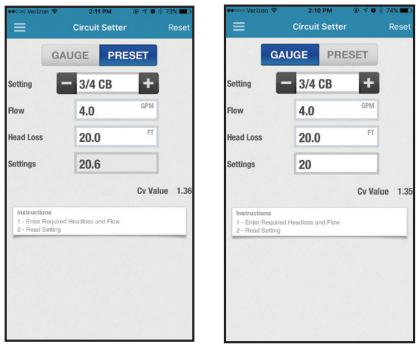
Circuit Setter Balance Valve Calculator

The Circuit Setter Calculator is the result of rigorous laboratory tests. Side 1 plots actual system imposed head loss versus flow for various valve settings. This scale is used for pre-set balance determination. Side 2 is used when taking gauge readings across the Circuit Setter balance valve using the valve as a flow meter.



System Syzer Phone App

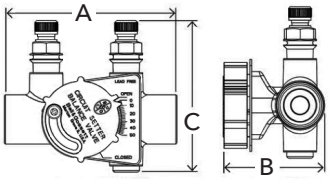
Available for iPad, iPhone, or Android operating systems, the Circuit Setter System Syzer phone application is a convenient and easy way to utilize the System Syzer app while out in the field. This application can perform all the same duties as the desktop application, but is perfect for setting a valve out in the field, or determining flow rates based on pressure drop and valve setting.



Variable Orifice Flow Meter

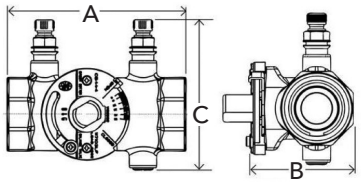
Circuit Setter balance valves can be used as a variable orifice flow meter. A differential pressure meter is applied directly across the valved read-out ports. Determine flow rate by using Side 2 of the Circuit Setter Calculator.

BV



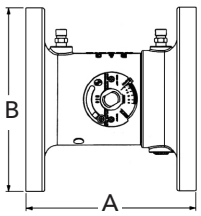
Top View
1/2" - 1"

End View
1/2" - 1"

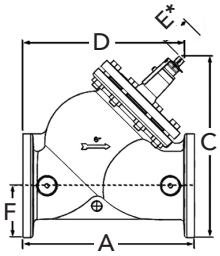


Top View
1-1/4" - 3"

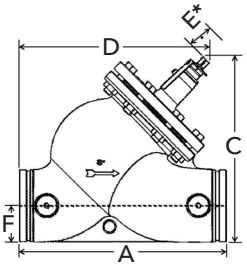
End View
1-1/4" - 3"



Flanged
2-1/2" - 4"



Flanged
4" - 12"



Grooved
4" - 12"

*Distance required to disassemble (valve closed)

Technical Data

Dimensions in Inches** (mm)

Model Number	Size	Conns.	A	B	C			D		E	F	Max Width Of Valve	Weight in LBS. (KG)
					Normal	Open	Closed	Open	Closed				
RF-1/2S LF	1/2	Sweat	2.91 (73.9)	1.82 (46.2)	2.85 (72.4)	–	–	–	–	–	–	–	0.6 (0.27)
RF-3/4S LF	3/4		3.51 (89.2)	2.05 (52.1)	3.10 (78.7)	–	–	–	–	–	–	–	0.75 (0.34)
CB-1/2S LF	1/2		2.91 (73.9	1.82 (46.2)	2.85 (72.4)	–	–	–	–	–	–	–	1 (0.45)
CB-3/4S LF	3/4		3.51 (89.1)	2.05 (52.1)	3.10 (78.7)	–	–	–	–	–	–	–	1.25 (0.6)
CB-1S LF	1		4.29 (109)	2.33 (59.2)	3.33 (84.6)	–	–	–	–	–	–	–	2 (0.9)
CB-1-1/4S LF	1-1/4		4.91 (124.7)	3.08 (78.2)	3.69 (93.7)	–	–	–	–	–	–	–	3.5 (1.6)
CB-1-1/2S LF	1-1/2		5.21 (132.3)	3.27 (83)	3.95 (100.2)	–	–	–	–	–	–	–	3.8 (1.7)
CB-2S LF	2		6.31 (160.3)	3.83 (97.4)	4.44 (112.8)	–	–	–	–	–	–	–	6.2 (2.8)
CB-1/2 LF	1/2	NPT	2.94 (74.7)	1.98 (50.3)	3.02 (76.7)	–	–	–	–	–	–	–	1.25 (0.6)
CB-3/4 LF	3/4		3.06 (77.7)	2.17 (55.1)	3.12 (79.2)	–	–	–	–	–	––	–	1.5 (0.7)
CB-1 LF	1		3.81 (96.8)	2.47 (62.7)	3.42 (86.9)	–	–	–	–	–	–	–	2 (0.9)
CB-1-1/4 LF	1-1/4		4.41 (112)	3.19 (81)	3.69 (93.7)	–	–	–	–	–	–	–	3.5 (1.6)
CB-1-1/2 LF	1-1/2		4.42 (112.3)	3.37 (85.6)	3.95 (100.2)	–	–	–	–	–	–	–	3.8 (1.7)
CB-2 LF	2		5.13 (130.3)	3.98 (101.1)	4.44 (112.8)	–	–	–	–	–	–	–	6.2 (2.8)
CB-2-1/2 LF	2-1/2		6.00 (152.4)	4.51 (114.6)	4.83 (122.6)	–	–	–	–	–	–	–	9 (4.1)
CB-2-1/2F		Flgd.	6.56 (166.7)	7 (177.8)	–	–	–	–	–	–	–	–	23 (10.4)
CB-3 LF	3	NPT	6.50 (165.1)	5.12 (130)	5.44 (138.2)	–	–	–	–	–	–	–	12 (5.4)
CB-3F		Flgd.	6.81 (173)	7.5 (190.5)	–	–	–	–	–	–	–	–	29 (13.2)
CB-4	4		8 (203.2)	9 (228.6)	–	–	–	–	–	–	–	–	41 (18.5)
CB-4F			14.50 (368.3)	–	–	16.88 (428.6)	15.88 (403.2)	15.69 (398.5)	13.94 (354)	6.25 (158.8)	4.50 (114.3)	9 (228.6)	94 (43)
CB-4G		Grvd.	15.13 (384.2)	–	–	14.63 (371.5)	13.63 (346.1)	15.69 (398.5)	13.94 (354)		2.25 (57.2)		70 (32)
CB-5F	5	Flgd.	16 (406.4)	–	–	18.50 (470)	17.25 (438.2)	16.84 (427.8)	15.06 (382.6)	6.88 (174.6)	5 (127)	10 (254)	114 (52)
CB-5G		Grvd.	17.13 (435)	–	–	16.28 (413.5)	15.03 (407.2)	17.34 (440.5)	15.56 (395.3)		2.78 (70.6)		86 (39)
CB-6F	6	Flgd.	18 (457.2)	–	–	20.75 (527.1)	19.25 (489)	19.13 (485.8)	17 (431.8)	8.25 (209.6)	5.50 (139.7)	11 (279.4)	186 (85)
CB-6G		Grvd.	19 (482.6)	–	–	18.56 (471.5)	17.06 (433.4)	19.50 (495.3)	17.41 (442.1)		3.31 (84.1)		160 (73)
CB-8F	8	Flgd.	21.50 (546.1)	–	–	24.75 (628.7)	23.25 (590.6)	22.38 (568.3)	20.31 (516)	10.38 (263.5)	6.75 (171.5)	14.25 (362)	316 (144)
CB-8G		Grvd.	22.50 (571.5)	–	–	22.31 (566.7)	20.81 (528.6)	22.38 (568.3)	20.31 (516)		4.31 (109.5)		270 (123)
CB-10F	10	Flgd.	25.50 (647.7)	–	–	28.88 (733.4)	26.50 (673.1)	26 (660.4)	23.19 (589)	12.25 (311.2)	8 (203.2)	17 (431.8)	458 (208)
CB-10G		Grvd.	26.50 (673.1)	–	–	26.25 (666.8	23.88 (606.4)	26.03 (661.2)	23.19 (589)		5.38 (136.5)		384 (174)
CB-12F	12	Flgd.	30 (762)	–	–	33.50 (851.0)	31.13 (790.6)	29.69 (754.1	26.94 (684.2)	14.50 (368.3)	9.50 (241.3)	20 (508)	662 (301)
CB-12G		Grvd.	31 (787.4)	–	–	30.38 (771.5)	28 (711.2)	30.44 (773.1)	26.94 (684.2)		6.38 (161.9)		546 (248)

**All dimensions are +/- 0.125" (3.2 mm) tolerance. Dimensions are subject to change without notice. Not to be used for construction purposes unless certified.

xylem
Let's Solve Water

Xylem Inc.
8200 N. Austin Avenue
Morton Grove, Illinois 60053
Phone: (847) 966-3700
Fax: (847) 965-8379
www.bellgossett.com

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CO

P | DRAWING NUMBER S4250, 4261 | SIZE A | SCALE: NONE | DATE: 7-10-85 | APPROVED BY: JM | CHECKED BY: BH | DRAWN BY: RK | 4250, 4261 | FIGURE NUMBER

DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCE AND CHANGE WITHOUT NOTICE
WE CAN ASSUME NO RESPONSIBILITY FOR USE OF SUPERSEDED OR VOID DATA

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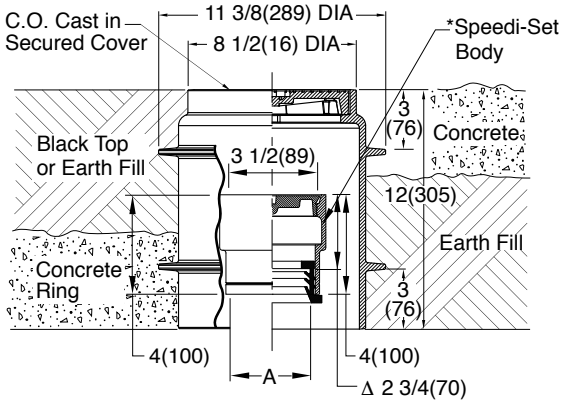
MEMBER OF MORRIS GROUP INTERNATIONAL
POST OFFICE BOX 3237
MONTGOMERY, ALABAMA 36109-0237 (USA)
TEL: 334-277-8520 FAX: 334-272-7396 www.jrsmith.com
MEMBER OF:

LOCATION

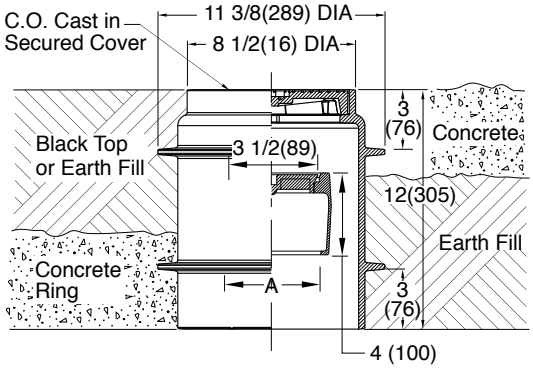
FLOOR CLEANOUTS FOR UNFINISHED AREAS

ROUND FLANGED HOUSING WITH HEAVY DUTY CAST IRON COVER

FUNCTION: Used in outside and inside areas. High flange permits use in areas surfaced with concrete or other poured materials. Low flange is used with a ring of concrete poured below the surface for non-surfaced areas and areas surfaced with asphalt paving. Housing is completely free of piping so that no loading is transmitted to the pipe.



"A" (Pipe Size) = 02(50), 03(75), 04(100) or 05(125)



"A" (Pipe Size) = 02(50), 03(75) or 04(100)

NO-HUB OUTLET	SPEEDI-SET* ΔΔ		INSIDE CAULK OUTLET
☐ Fig. 4250S	☐ 4261L	Gasket Seal - ABS Plug***	☐ Fig. 4255C
☐ Fig. 4251S	☐ 4262L	Gasket Seal - Bronze Plug	☐ Fig. 4256C
☐ Fig. 4253S	☐ 4263L	Taper Thread - Bronze Plug	☐ Fig. 4258C
☐ Fig. 4254S	☐ 4264L	Taper Thread - ABS Plug	☐ Fig. 4259C

*Speedi-Set available in 02(50), 03(75) and 04(100) inch sizes only
***ABS plug regularly furnished all outlets in 02(50), 03(75) and 04(100) inch sizes and 05(125) inch spigot.
Δ This Dimension to Internal Stop of Speedi-Set Gasket.
ΔΔ Available in Extra Heavy, Service Weight or NO-HUB.

REGULARLY FURNISHED:
Duco Cast Iron Cleanout and Double Flanged Housing with Heavy Duty Secured Scoriated Cast Iron Cover with Lifting Device. Closure Plug and Type of Outlet as Indicated By Figure Number Selected.

VARIATIONS:
- ☐ Cover Cast with Words "Gas Shut-Off" -GSO or "Water Shut-Off" -WSO
- ☐ Less Ferrule and Plug (See Fig. 4880)
- ☐ Vandal Proof Top -U

OPTIONAL MATERIALS:
- ☐ Galvanized Cast Iron -G
- ☐ Ductile Iron Cover -M
- ☐ Nickel Bronze Top -NB
- ☐ Polished Bronze Top -PB

NOTE: Dimensions shown in parentheses are in millimeters.

REV.	DATE	DESCRIPTION	BY	CKD. BY
P	11-15-17	Revised Optional Materials	TBW	CL
N	11-14-16	Revised Drawing, New Body Style	TBW	CL
M	12-7-15	Revised Optional Materials	TBW	CL
L	05/07/01	Edited Outlet Text	JJ	BS

WEIGHT POUNDS | VOLUME CUBIC FEET | FIGURE NUMBER 4250, 4261

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

CO

D | DRAWING NUMBER S4250, 4261BS | SIZE A | SCALE: NONE | DATE: 5-5-06 | APPROVED BY: CEL | CHECKED BY: CL | DRAWN BY: RN | 4253, 4263 | FIGURE NUMBER

DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCE AND CHANGE WITHOUT NOTICE

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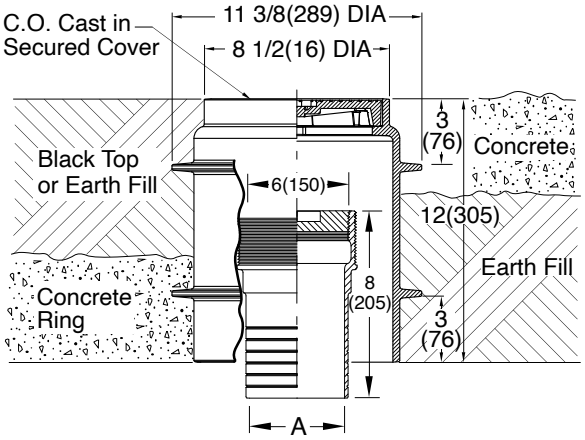
MEMBER OF:

LOCATION

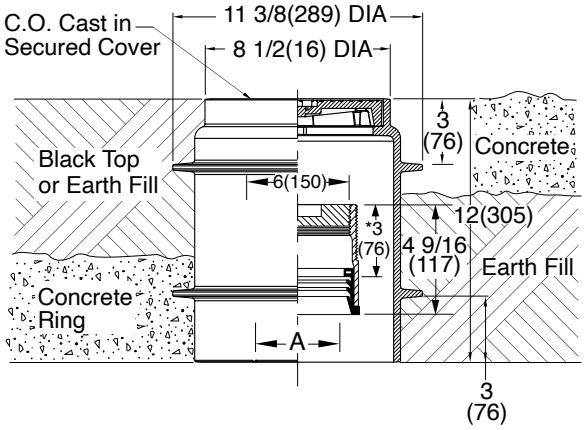
FLOOR CLEANOUTS FOR UNFINISHED AREAS

ROUND FLANGED HOUSING WITH HEAVY DUTY CAST IRON COVER

FUNCTION: Used in outside and inside areas. High flange permits use in areas surfaced with concrete or other poured materials. Low flange is used with a ring of concrete poured below the surface for non-surfaced areas and areas surfaced with asphalt paving. Housing is completely free of piping so that no loading is transmitted to the pipe.



"A" (Pipe Size) = 06(150) or 08(200)



"A" (Pipe Size) = 06(150)

SPIGOT OUTLET**

☐ Fig. 4253S ..... Taper Thread - Bronze Plug ..... ☐ Fig. 4263L

SPEEDI-SET ▲

******Sized for Service Weight and/or NO-HUB.

▲ SPEEDI-SET OUTLET

-L Service Weight - For Service Weight and No Hub Cast Iron Pipe (Available for all pipe sizes)
-LXH Extra Heavy - For Extra Heavy Cast Iron Pipe (Available for all pipe sizes)
-LXH Extra Heavy - For PVC Pipe (Available for 2", 3", 4", and 8" pipe sizes only)
-LPVC Plastic Pipe - For PVC or ABS pipe (Available for 6" pipe size only)

***** This Dimension to Internal Stop of Speedi-Set Gasket.

REGULARLY FURNISHED:
Duco Cast Iron Cleanout with Taper Thread Bronze Plug and Double Flanged Housing with Heavy Duty Secured Scoriated Cast Iron Cover with Lifting Device.

VARIATIONS:
- ☐ Cover Cast with Words "Gas Shut-Off" -GSO or "Water Shut-Off" -WSO
- ☐ Less Ferrule and Plug (See Fig. 4880)
- ☐ Vandal Proof Top -U

OPTIONAL MATERIALS:
- ☐ Galvanized Cast Iron -G
- ☐ Ductile Iron Cover -M
- ☐ Nickel Bronze Top -NB
- ☐ Polished Bronze Top -PB

NOTE: Dimensions shown in parentheses are in millimeters.

REV.	DATE	DESCRIPTION	BY	CKD. BY
D	10-9-2020	Rev./Added New ▲Note	MW	CR
C	11-15-17	Revised Optional Materials	TBW	CL
B	11-15-16	Revised Drawing	TBW	CL
A	12-7-15	Revised Optional Materials	TBW	CL

WEIGHT POUNDS | VOLUME CUBIC FEET | FIGURE NUMBER 4253, 4263

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

CP-1

Visit your local site for the relevant product catalog, pricing, service and events.

Nederland (Netherlands)

PROCEED

CIRCULATOR PUMPS

UPS 25-100 180

Product number 95906480

Suitable for

- HVAC: Heating
- Residential hot water recirculation

Circulator pumps

Price

Contact distributor

WHERE TO BUY

The product may not be for sale in your country

VARIANTS SPECIFICATIONS CURVES DRAWINGS DOCUMENTATION

Specifications

CP-1

Product name	UPS 25-100 180
Product No.	95906480
EAN	5700311099766
Price	

Technical

Speed Number	3
Head max	32.81 ft
TF class	110
Approvals on nameplate	CE

Materials

Pump housing	Cast iron EN-JL1030 ASTM 30 B
Impeller	Composite, PES/PP

Installation

Ambient max at 176°F liquid	104 °F
Maximum operating pressure	145.04 psi
Pipe connection	G 1 1/2
Pressure stage	PN 10
Port-to-port length	7 1/8 in

Liquid

Pumped liquid	Water
Liquid temperature range	-13 .. 230 °F
Selected liquid temperature	140 °F
Density	61.35 lb/ft³

Electrical data

Power input in speed 1	0.3755 HP
Power input in speed 2	340 W
Max. power input	345 W

0

GPU
60Hz

CP-1

Main frequency	50 Hz
Rated voltage	1 x 230 V
Current in speed 1	1.3 A
Current in speed 2	1.5 A
Current in speed 3	1.52 A
Capacitor size - run	9.5 µF
Enclosure class (IEC 34-5)	X4D
Insulation class (IEC 85)	H
Built-in motor protection	CONTACT
Thermal protec	internal

Controls

Pos term box	9H

Others

Net weight	13.9 lb
Gross weight	15 lb
Shipping volume	0.42 ft³

Quotation

UPS 25-100 180
The pump is of the canned rotor type, i.e. pump and motor form an integral unit without shaft seal and with only two gaskets for sealing. The bearings are lubricatd by the pumped liquid. The pump has 3-step speed selector. The pump is characterized by:

- Stainless steel shaft.
- Ceramic radial bearing system.
- Carbon axial bearing.
- Stainless steel rotor can and bearing plate.
- Corrosion-resistant impeller, Composite, PES/PP.
- Cast iron pump housing.

The motor is a 1-phase motor. No additional motor protection is required.

LIQUID:

Pumped liquid:	Water
Liquid temperature range:	-13 .. 230 °F
Selected liquid temperature:	140 °F

CP-1

Selected liquid temperature:	140 °F
Density:	61.35 lb/ft³

TECHNICAL:

TF class:	110
Approvals on nameplate:	CE

MATERIALS:

Pump housing:	Cast iron
	EN-JL1030
	ASTM 30 B
Impeller:	Composite, PES/PP

INSTALLATION:

Ambient max at 176°F liquid:	104 °F
Maximum operating pressure:	145.04 psi
Pipe connection:	G 1 1/2
Pressure stage:	PN 10
Port-to-port length:	7 1/8 in

ELECTRICAL DATA:

Power input in speed 1:	0.3755 HP
Power input in speed 2:	340 W
Max. power input:	345 W
Main frequency:	50 Hz
Rated voltage:	1 x 230 V
Current in speed 1:	1.3 A
Current in speed 2:	1.5 A
Current in speed 3:	1.52 A
Capacitor size - run:	9.5 µF
Enclosure class (IEC 34-5):	X4D
Insulation class (IEC 85):	H

OTHERS:

Net weight:	13.9 lb
Gross weight:	15 lb

0

GPU
60Hz

Gross weight:	CP-1	15 lb
Shipping volume:		0.42 ft³

Grundfos Pumps Corporation,
902 Koomey Road,
Brookshire,
TX 77423

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DCO

P | DRAWING NUMBER S4250, 4261 | SIZE A | SCALE: NONE | DATE: 7-10-85 | APPROVED BY: JM | CHECKED BY: BH | DRAWN BY: RK | 4250, 4261 | FIGURE NUMBER

DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCE AND CHANGE WITHOUT NOTICE
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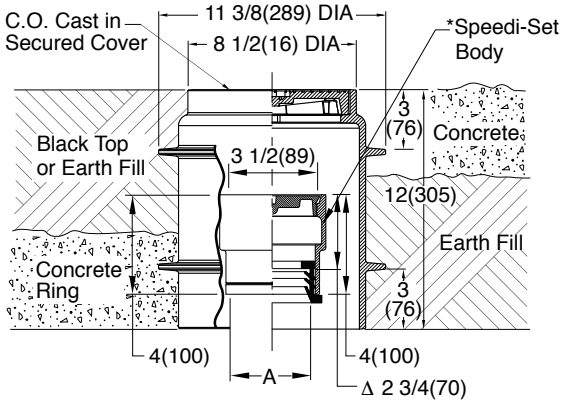
POST OFFICE BOX 3237
MONTGOMERY, ALABAMA 36109-0237 (USA)
TEL: 334-277-8520 FAX: 334-272-7396 www.jrsmith.com
MEMBER OF:

LOCATION

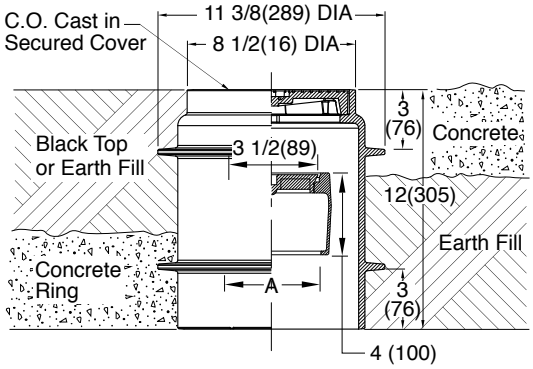
FLOOR CLEANOUTS FOR UNFINISHED AREAS

ROUND FLANGED HOUSING WITH HEAVY DUTY CAST IRON COVER

FUNCTION: Used in outside and inside areas. High flange permits use in areas surfaced with concrete or other poured materials. Low flange is used with a ring of concrete poured below the surface for non-surfaced areas and areas surfaced with asphalt paving. Housing is completely free of piping so that no loading is transmitted to the pipe.



"A" (Pipe Size) = 02(50), 03(75), 04(100) or 05(125)



"A" (Pipe Size) = 02(50), 03(75) or 04(100)

NO-HUB OUTLET	SPEEDI-SET* ΔΔ		INSIDE CAULK OUTLET
☐ Fig. 4250S	☐ 4261L	Gasket Seal - ABS Plug***	☐ Fig. 4255C
☐ Fig. 4251S	☐ 4262L	Gasket Seal - Bronze Plug	☐ Fig. 4256C
☐ Fig. 4253S	☐ 4263L	Taper Thread - Bronze Plug	☐ Fig. 4258C
☐ Fig. 4254S	☐ 4264L	Taper Thread - ABS Plug	☐ Fig. 4259C

*Speedi-Set available in 02(50), 03(75) and 04(100) inch sizes only
***ABS plug regularly furnished all outlets in 02(50), 03(75) and 04(100) inch sizes and 05(125) inch spigot.
Δ This Dimension to Internal Stop of Speedi-Set Gasket.
ΔΔ Available in Extra Heavy, Service Weight or NO-HUB.

REGULARLY FURNISHED:
Duco Cast Iron Cleanout and Double Flanged Housing with Heavy Duty Secured Scoriated Cast Iron Cover with Lifting Device. Closure Plug and Type of Outlet as Indicated By Figure Number Selected.

VARIATIONS:
- ☐ Cover Cast with Words "Gas Shut-Off" -GSO or "Water Shut-Off" -WSO
- ☐ Less Ferrule and Plug (See Fig. 4880)
- ☐ Vandal Proof Top -U

OPTIONAL MATERIALS:
- ☐ Galvanized Cast Iron -G
- ☐ Ductile Iron Cover -M
- ☐ Nickel Bronze Top -NB
- ☐ Polished Bronze Top -PB

NOTE: Dimensions shown in parentheses are in millimeters.

REV.	DATE	DESCRIPTION	BY	CKD. BY
P	11-15-17	Revised Optional Materials	TBW	CL
N	11-14-16	Revised Drawing, New Body Style	TBW	CL
M	12-7-15	Revised Optional Materials	TBW	CL
L	05/07/01	Edited Outlet Text	JJ	BS

WEIGHT POUNDS | VOLUME CUBIC FEET | FIGURE NUMBER 4250, 4261

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

DCO

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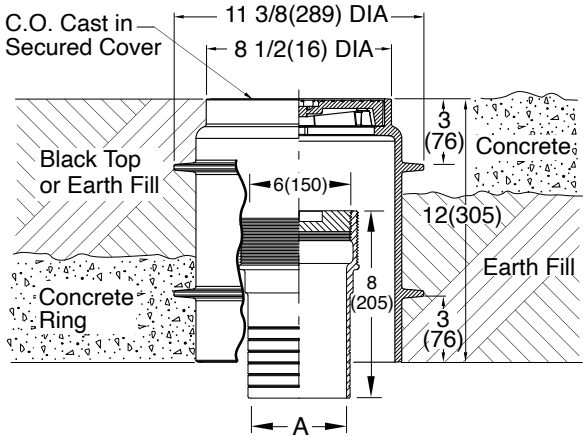
CUSTOMER DRIVEN SINCE 1926
MEMBER OF:

LOCATION

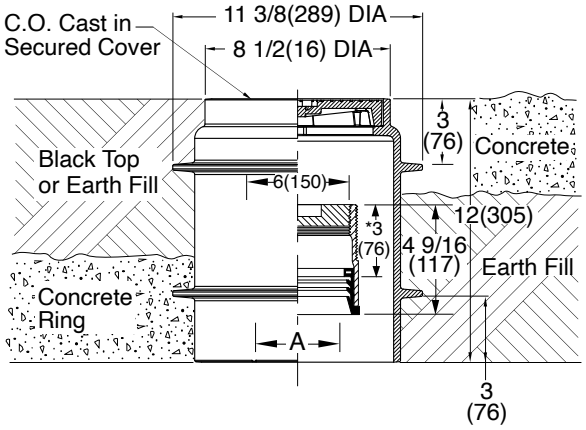
FLOOR CLEANOUTS FOR UNFINISHED AREAS

ROUND FLANGED HOUSING WITH HEAVY DUTY CAST IRON COVER

FUNCTION: Used in outside and inside areas. High flange permits use in areas surfaced with concrete or other poured materials. Low flange is used with a ring of concrete poured below the surface for non-surfaced areas and areas surfaced with asphalt paving. Housing is completely free of piping so that no loading is transmitted to the pipe.



"A" (Pipe Size) = 06(150) or 08(200)



"A" (Pipe Size) = 06(150)

SPIGOT OUTLET**

☐ Fig. 4253S ..... Taper Thread - Bronze Plug ..... ☐ Fig. 4263L

SPEEDI-SET ▲

**Sized for Service Weight and/or NO-HUB.

▲ SPEEDI-SET OUTLET

-L Service Weight - For Service Weight and No Hub Cast Iron Pipe (Available for all pipe sizes)
-LXH Extra Heavy - For Extra Heavy Cast Iron Pipe (Available for all pipe sizes)
-LXH Extra Heavy - For PVC Pipe (Available for 2", 3", 4", and 8" pipe sizes only)
-LPVC Plastic Pipe - For PVC or ABS pipe (Available for 6" pipe size only)

* This Dimension to Internal Stop of Speedi-Set Gasket.

REGULARLY FURNISHED:
Duco Cast Iron Cleanout with Taper Thread Bronze Plug and Double Flanged Housing with Heavy Duty Secured Scoriated Cast Iron Cover with Lifting Device.

VARIATIONS:
☐ Cover Cast with Words "Gas Shut-Off" -GSO or "Water Shut-Off" -WSO
☐ Less Ferrule and Plug (See Fig. 4880)
☐ Vandal Proof Top -U

OPTIONAL MATERIALS:
☐ Galvanized Cast Iron -G
☐ Ductile Iron Cover -M
☐ Nickel Bronze Top -NB
☐ Polished Bronze Top -PB

NOTE: Dimensions shown in parentheses are in millimeters.

REV.	DATE	DESCRIPTION	BY	CKD. BY
D	10-9-2020	Rev./Added New ▲Note	MW	CR
C	11-15-17	Revised Optional Materials	TBW	CL
B	11-15-16	Revised Drawing	TBW	CL
A	12-7-15	Revised Optional Materials	TBW	CL

WEIGHT POUNDS | VOLUME CUBIC FEET | FIGURE NUMBER **4253, 4263**

FIGURE NUMBER **4253, 4263** | DRAWING NUMBER **S4250, 4261BS** | SIZE **A** | SCALE: **NONE** | DATE: **5-5-06** | APPROVED BY: **CEL** | CHECKED BY: **CL** | DRAWN BY: **RN** | **D**

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WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

ET

THERM-X-TROL®

Thermal Expansion Tanks: Diaphragm ST-C Series ASME

150 PSIG Working Pressure

Construction

Shell	ST-5C through ST-42VC: Deep Drawn Steel ST-60VC through ST-210VC: Steel Head & Shell
Diaphragm	Heavy Duty Butyl NSF/ANSI 61
Liner	Antimicrobial Polypropylene w/Anti-Legionella Protection
System Connection	Stainless Steel
Finish	Red Oxide Primer
Water Circulator	Turbulator™ (Deep Drawn Models)
Air Valve	Schrader Valve w/ EPDM Seat
Factory Precharge	55 PSIG (3.8 bar)

Performance

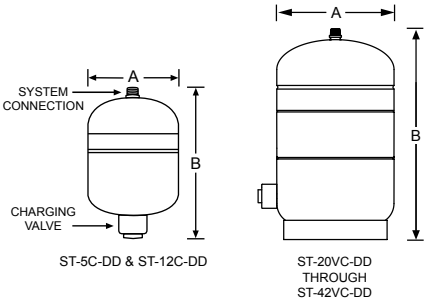
Maximum Operating Temperature	200°F (93°C)
Maximum Working Pressure	150 PSIG (10.3 bar)
Warranty	1-Year

Application

- For use in closed, domestic hot water systems to control pressure buildup.
- Fixed diaphragm construction.
- Designed and constructed per ASME Code Section VIII, Division 1.
- Tested to JIS Z 2801 for reduction of Legionella, Staphylococcus and E. coli.
- Follows ASHRAE 188 Anti-Legionella guidelines.
- All models available with optional sight glass.
- Seismic restraints available on stand models only.
- Deep drawn models are lighter, stronger and more compact than traditional head and shell construction.

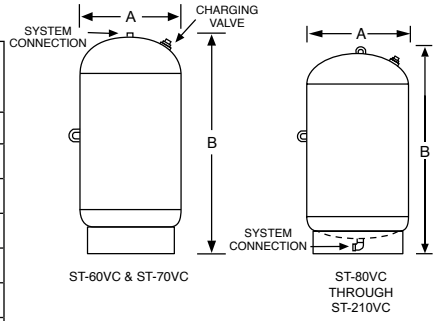
Deep Drawn In-Line & Stand Models

Model Number	Tank Volume		Max. Accept. Factor	A Tank Diameter		B Tank Height		System Conn. (NPTM)	Shipping Weight	
	Gal	Lit		In	mm	In	mm	In	Lbs	Kg
ST-5C-DD	2.0	8	.45	8	203	14	356	¾	10	5
ST-12C-DD	6.4	24	.50	12	305	18	457	¾	26	12
ST-20VC-DD	8.6	33	.37	12	305	22	559	¾	36	16
ST-30VC-DD	16.5	63	.68	15	381	25	636	¾	48	22
ST-42VC-DD	23.0	88	.49	15	381	33	838	¾	68	31



Head & Shell Stand Models

Model Number	Tank Volume		Max. Accept. Factor	A Tank Diameter		B Tank Height		System Conn. (NPTF)	Shipping Weight	
	Gal	Lit		In	mm	In	mm	In	Lbs	Kg
ST-60VC	25.0	95	.44	16	406	32	813	¾	85	39
ST-70VC	34.0	129	.32	16	406	45	1143	¾	99	45
ST-80VC	53.0	201	.66	24	610	37	940	1¼	224	102
ST-120VC	68.0	257	.51	24	610	44	1118	1¼	266	121
ST-180VC	77.0	291	.45	24	610	49	1245	1¼	285	129
ST-210VC	90.0	341	.39	24	610	57	1448	1¼	319	145



All dimensions and weights are approximate.

Job Name IHS MSU

Engineer RGE

Contractor _____

P.O. No. _____

Sales Rep. _____

Model No. ST-5-C

Notes _____

188 AntiLegionella. Antimicrobial.

NSF Certified to NSF/ANSI/CAN 61

Turbulator DEEP DRAWN MODELS

ISO 9001:2015 CERTIFIED

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MC4400 (01/21)

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MEMBER OF:

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IHS MSU
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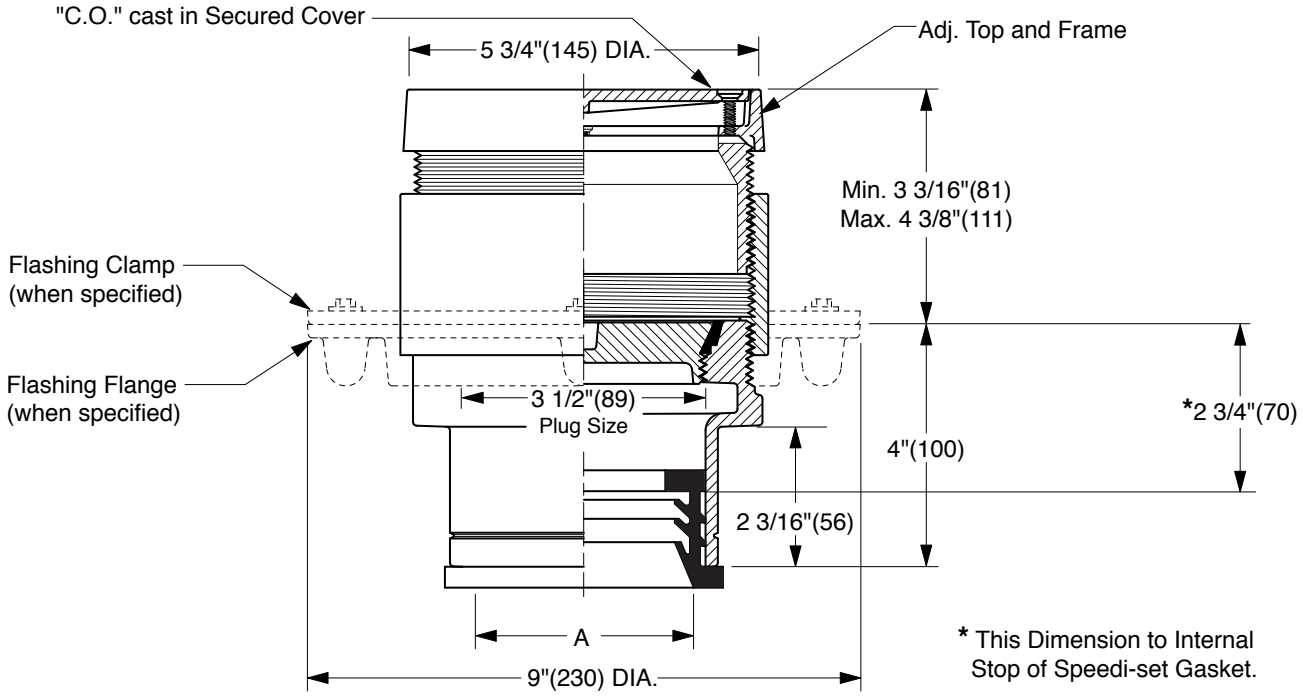
FINISHED FLOOR CLEANOUTS WITH "TWIS-TO-FLOOR®" ADJUSTABLE TOPS

ROUND NICKEL BRONZE TOP

FUNCTION: For use in finished floors bearing foot and medium load wheeled traffic. Allows for easy floor level adjustment.



TWIS-TO-FLOOR® ADJUSTMENT

SPEEDI-SET OUTLET ▲

"A" (Pipe Size) = 02(50), 03(75) or 04(100)

* This Dimension to Internal Stop of Speedi-set Gasket.

NOTE: For applications using core drilling, the largest diameter of the cleanout assembly is 6 5/16"(160).

- ☐ Fig. 4031L.....Gasket Seal - ABS Plug
- ☐ Fig. 4032L.....Gasket Seal - Bronze Plug
- ☐ Fig. 4033L.....Taper Thread - Bronze Plug
- ☐ Fig. 4034L.....Taper Thread - ABS Plug

(Twis-to-Floor® design shown with gasketed plug.)

NOTE: Dimensions shown in parentheses are in millimeters.

REGULARLY FURNISHED:
Duco Cast Iron Cleanout with Round Adjustable Scoriated Secured Nickel Bronze Top. Closure Plug Type as Indicated By Figure Number Selected.

▲ Available in Extra Heavy, Service Weight or NO-HUB.

VARIATIONS:
- ☐ Flashing Flange -F
- ☐ Flange with Flashing Clamp -F-C
- ☐ Carpet Clamping Type -X
- ☐ Carpet Marker Type -Y
- ☒ Vandal Proof Top -U
- ☐ Wide Flange (DX)

OPTIONAL MATERIALS:
- ☐ Galvanized Cast Iron -G
- ☐ Polished Bronze Top -PB
- ☐ Stainless Steel Top -NBSS

REV.	DATE	DESCRIPTION	BY	CKD. BY
P	7-21-21	Added SS Top Option	KK	CL
N	11-15-19	Revised Variations	TBW	CL
M	12-18-08	Revised Variations	RN	BW

WEIGHT POUNDS | VOLUME CUBIC FEET | **FIGURE NUMBER 4031 SERIES**

FIGURE NUMBER **4031 SERIES** | DRAWN BY: **RK** | CHECKED BY: **BH** | APPROVED BY: **JM** | DATE: **2-16-70** | SCALE: **NONE** | SIZE **A** | DRAWING NUMBER **S4031** | **P**

DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCE AND CHANGE WITHOUT NOTICE
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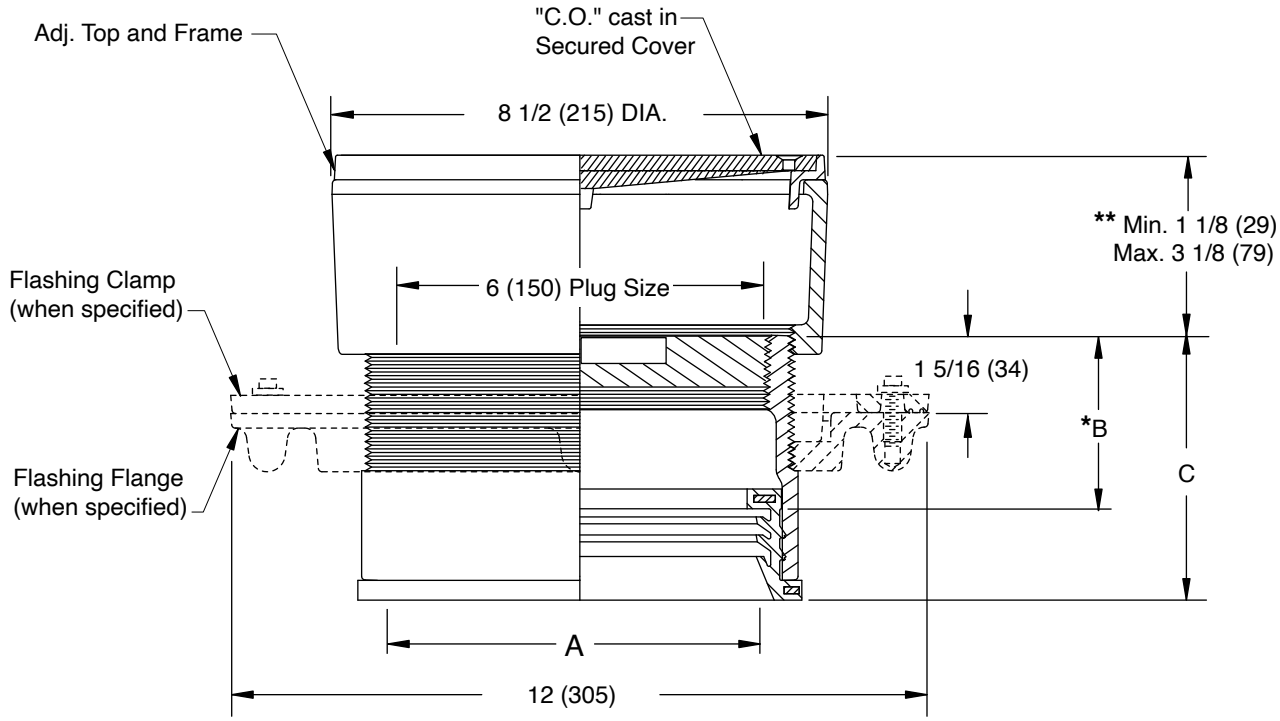
FINISHED FLOOR CLEANOUTS WITH "TWIS-TO-FLOOR®" ADJUSTABLE TOPS

ROUND NICKEL BRONZE TOP

FUNCTION: For use in finished floors bearing foot and medium load wheeled traffic. Allows for easy floor level adjustment.



SPEEDI-SET OUTLET▲

"A" (Pipe Size) = 06(150) & 08(200)

A SIZE	B	C
06(150)	*3(76)	4 9/16(117)
08(200)	*3 1/4(83)	4 13/16(121)

▲ SPEEDI-SET OUTLET

-L Service Weight - For Service Weight and No Hub Cast Iron Pipe (Available for all pipe sizes)
-LXH Extra Heavy - For Extra Heavy Cast Iron Pipe (Available for all pipe sizes)
-LXH Extra Heavy - For PVC Pipe (Available for 2", 3", 4", and 8" pipe sizes only)
-LPVC Plastic Pipe - For PVC or ABS pipe (Available for 6" pipe size only)

* This Dimension to Internal Stop of Speedi-Set Gasket.
** When Flange-F is specified Min. 1 1/8 (29) becomes 1 5/8 (41)

"TWIS-TO-FLOOR®" ADJUSTMENT
SPEEDI-SET OUTLET▲
☐ Fig. 4033L.....Taper Thread - Bronze Plug

REGULARLY FURNISHED:
Duco Cast Iron Cleanout with Taper Thread Bronze Plug and Round Adjustable Scoriated Secured Nickel Bronze Top.

VARIATIONS:
☐ Flashing Flange -F
☐ Flange with Flashing Clamp -F-C
☐ Carpet Clamping Type -X
☐ Carpet Marker Type -Y
☐ Vandal Proof Top -U
☐ Wide Flange (DX)

OPTIONAL MATERIALS:
☐ Galvanized Cast Iron -G
☐ Polished Bronze Top -PB

NOTE: Dimensions shown in parentheses are in millimeters.

REV.	DATE	DESCRIPTION	BY	CKD. BY
A	10-9-2020	Rev./Added New ▲Note	MW	CR

WEIGHT POUNDS | VOLUME CUBIC FEET | FIGURE NUMBER 4033

FIGURE NUMBER 4033 | DRAWN BY: RN | CHECKED BY: CL | APPROVED BY: CEL | DATE: 5-5-06 | SCALE: NONE | SIZE A | DRAWING NUMBER S4031BS | A

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WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

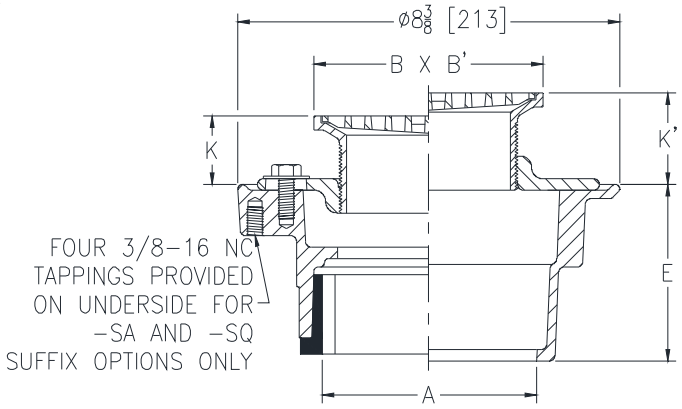
Z415S

BODY ASSEMBLY W/ "TYPE S" STRAINER

SPECIFICATION SHEET

TAG FD_____

Dimensional Data (inches and [mm]) are Subject to Manufacturing Tolerances and Change Without Notice



Dimensions In Inches [mm]						Approx. Wt. Lbs. [kg]	Strainer Open Area Sq. In. [cm²]
A Pipe Size	B x B' Strainer Top Size	K		K'			
		Min.	Max.	Min.	Max.		
2, 3, [51, 76]	5 x 5 [127 x 127]	1 [25]	1-19/32 [40]	1-1/4 [32]	2-3/8 [60]	12 [5]	9 [58]
2, 3, 4 [51, 76, 102]	6 x 6 [152 x 152]	1 [25]	1-27/32 [47]	1-13/32 [36]	2-19/32 [66]	13 [6]	13 [84]
2, 3, 4 [51, 76, 102]	7 x 7 [178 x 178]	1 [25]	1-7/8 [48]	1-3/8 [35]	2-5/8 [67]	14 [6]	21 [135]
3, 4 [76, 102]	8 x 8 [203 x 203]	1-3/32 [28]	1-7/8 [48]	1-3/4 [44]	2-5/8 [67]	15 [7]	28 [181]
6 [152]	10 x 10 [254 x 254]	1-3/32 [28]	1-7/8 [48]	1-3/4 [44]	2-5/8 [67]	21 [10]	28 [181]

ENGINEERING SPECIFICATION: ZURN ZN415S

Floor and shower drain, Dura-Coated cast iron body with bottom outlet, combination invertible membrane clamp and adjustable collar with seepage slots and "TYPE S" polished nickel bronze, square heel-proof, light-duty strainer.

OPTIONS (Check/specify appropriate options)

PIPE SIZE	(Specify size/type) **OUTLET**		**'E' BODY HT. DIM.**
2, 3, 4 [51, 76, 102]	_____ IC	Inside Caulk	4-3/16 [106]
2, 3, 4 [51, 76, 102]	_____ IG	Inside Gasket	4-3/16 [106]
2 [51]	_____ IP	Threaded	2-7/16 [62]
3 [76]	_____ IP	Threaded	2-3/4 [70]
4 [102]	_____ IP	Threaded	2-13/16 [71]
6 [152]	_____ IP	Threaded	2-7/8 [73]
2, 3, 4 [51, 76, 102]	_____ NH	No-Hub	3-13/16 [97]
2, 3, 4 [51, 76, 102]	_____ NL	Neo-Loc	3-7/8 [98]

PREFIXES

_____ ZB D.C.C.I. Body Assembly w/ Polished Bronze Top
_____ ZN D.C.C.I. Body Assembly w/ Polished Nickel Bronze Top*

SUFFIXES

_____ -AR Acid Resisting Epoxy Coated Cast Iron
_____ -CP Chrome-Plated Top
_____ -G Galvanized Cast Iron
_____ -HD Heavy-Duty Grate (ZN 6 x 6 [152 x 152] Only)
_____ -OF Oval Funnel (See Z329-7) (6,7,8,10 [152,178,203,254]) Strainers only)
_____ -P Trap Primer Connection (Specify 1/2 [13] or 3/4 [19])
_____ -PC Protective Cover
_____ -SA Stabilizer Assembly (See Z1035)
_____ -SQ Stabilizer Q-Deck (See Z1035-Q)
_____ -TC Neo-Loc Test Cap Gasket (2,3,4 [51,76,102] NL Outlet Only)
_____ -U 1-3 [25-76] High Extension Adapter
_____ -V Backwater Valve
_____ -VP Vandal-Proof Secured Top
_____ -Y Sediment Bucket
_____ -4 4 [102] Diameter Funnel (Z328)
_____ -90 90° Threaded Side Outlet Body Assembly (2,3 [51,76] Only)

* Regularly furnished unless otherwise specified.

Zurn Industries, LLC | **Specification Drainage Operation**
1801 Pittsburgh Avenue, Erie, PA U.S.A. 16502 · Ph. 855-663-9876, Fax 814-454-7929
In Canada | **Zurn Industries Limited**
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 · Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

Rev. T
Date: 09/26/2017
C.N. No. 137871
Prod. | Dwg. No. Z415S

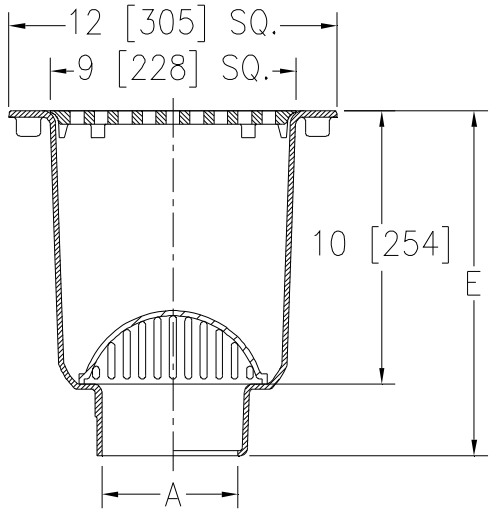
Z1902

12 X 12 [305 X 305] A.R.E. SANI-FLOR RECEPTOR w/ 10 [254] SUMP DEPTH

SPECIFICATION SHEET

TAG FS _____

Dimensional Data (inches and [mm]) are Subject to Manufacturing Tolerances and Change Without Notice



A -Pipe Size in [mm]	Approx Wt. lbs.[kg]	Grate Open Area in^2 [cm^2]
2, 3, 4 [51, 76, 102]	36 [13]	31 [200]

ENGINEERING SPECIFICATION: ZURN Z1902
Sani-Flor Receptor 12" x 12" x 10" [305mm x 305mm x 254mm] Deep cast iron body and square, light-duty grate with 1/2" [13mm] slotted openings, white acid resisting porcelain enamel interior and top, complete with white ABS anti-splash interior bottom dome strainer.

OPTIONS (Check/specify appropriate options)

PIPE SIZE
3, 4 [76, 102]
2, 3, 4 [51, 76, 102]
2, 3, 4 [51, 76, 102]

OUTLET (Specify size/type)

			'E' BODY HT. DIMENSION Z	ZN / ZS
_____	IC	Inside Caulk	12-5/8 [321]	13-1/8 [333]
_____	NH	No-Hub	12-5/8 [321]	13-1/8 [333]
_____	NL	Neo-Loc	12 [305]	12-1/2 [318]

PREFIXES

_____ Z Cast Iron Body w/ White A.R.E. Interior*
_____ ZN Cast Iron Body w/ White A.R.E. Interior, 12-1/2 [318] Square N.B. Frame and Full Grate w/ 1/2 [13] Square Openings (Add 1/2 [13] to 12 [305] Dim.)
_____ ZS Cast Iron Body w/ White A.R.E. Interior, 12-1/2 [318] Square Stainless Steel Frame and Full Grate w/ 1/2 [13] Square Openings (Add 1/2 [13] to 12 [305] Dim.)

SUFFIXES

_____ -DX Dex-O-Tex Flange (ZN Only)
_____ -HD Stainless Steel Frame w/ Extra-Heavy Duty Stainless Steel Grate (ZS Only)
_____ -HP Heel-Proof Grate (ZN Only)
_____ -K Anchor Flange
_____ -KC Anchor Flange w/ Seepage Holes and Clamp Collar
_____ -LD (Less) Bottom Dome Strainer
_____ -P 1/2 [13] Trap Primer Connection (See Z1023)
_____ -SA Stabilizer Assembly (See Z1903)
_____ -TC Neo-Loc Test Cap Gasket (2, 3, 4 [51, 76, 102] NL Bottom Outlet Only)
_____ -VPS Vandal-Proof Strainer
_____ -1 (Less) Grate
_____ -2 1/2 Grate
_____ -3 3/4 Grate
_____ -4 Full Grate w/ Center Opening (2 [51] Dia. for Z) and (3-1/32 [77] Square for ZN & ZS
_____ -6 Grate w/ 6 [152] Dia. x 6 [152] High Funnel
_____ -8 Grate w/ 8-7/8 x 3-5/8 x 3-3/4 [225 x 92 x 95] High Oval Funnel
_____ -11 Vandal-Proof Secured Grate (ZN & ZS Only)
_____ -15 Solid Loose Set Cover (Z & ZN Only)
_____ -19 Full Hinged Grate (ZN Only)
_____ -23 Aluminum Bucket
_____ -25 White A.R.C. Bucket
_____ -31 Stainless Steel Mesh Liner for Bucket
_____ -32 Aluminum Dome Strainer
_____ -33 White A.R.C. Anti-Splash Bottom Dome Strainer

* Regularly furnished unless otherwise specified.

Zurn Industries, LLC | **Specification Drainage Operation**
1801 Pittsburgh Avenue, Erie, PA U.S.A. 16502 · Ph. 855-663-9876, Fax 814-454-7929
In Canada | **Zurn Industries Limited**
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 · Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

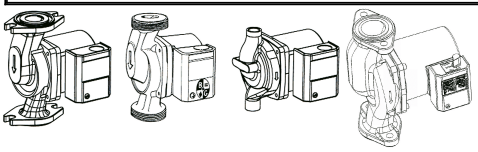
Rev. M
Date: 09/28/2017
C.N. No. 138076
Prod. | Dwg. No. Z1902

Bell & Gossett
a xylem brand

SUBMITTAL

A-127L

JOB: IHS MSU	**REPRESENTATIVE:**	
UNIT TAG: HWCP	**ORDER NO.**	**DATE:**
ENGINEER: RGE	**SUBMITTED BY:**	**DATE:**
CONTRACTOR:	**APPROVED BY:**	**DATE:**



Lead-Free† Bronze and Stainless Steel Bodied

System Lubricated Circulators

c UL us LISTED

DESCRIPTION

A series of in-line wet rotor circulation pumps designed specifically for quiet operation in open (potable) water systems. These pumps have lead-free† bronze or stainless steel bodies.

Automatic Timer and Aquastat accessories are available. (See Submittal A-128A for details).

CONSTRUCTION MATERIALS

Pump Body:
- NBF: Lead-Free† Bronze
- SSF: Stainless Steel

Bearings: Carbon

Impeller: Noryl

Shaft: Ceramic

†Contains less than 0.25% Lead content by weight on wetted surfaces.

OPERATING DATA

Maximum Working Pressure: 150 psi (10.3 Bar)

Minimum Operating Temperature: 40°F (5°C)

Maximum Operating Temperature

NBF-25, NBF-33, NBF-36, NBF-45: 225°F (107°C)

All Others: 230°F (110°C)

MODEL NUMBER	PART NUMBER	CONNECTION	APPROX. SHPG. WT. Lbs. (Kg)	STANDART 60 CYCLE 115 VOLT SINGLE PHASE			TAGGING INFORMATION	QUANTITY
				WATTS	F.L. AMPS	RPM		
NBF-8S/LW	103257LF	1/2" Sweat	9.0 (4.1)	39	0.38	2800		
NBF-9U/LW	103258LF	Union (See Following Page)	9.3 (4.2)	41	0.40	2800		
SSF-9U/LW	103360LF	Union (See Following Page)	9.3 (4.2)	41	0.40	2800		
NBF-10S/LW	103259LF	1/2" Sweat	9.0 (4.1)	52	0.46	2800		
NBF-12U/LW	103261LF	Union (See Following Page)	9.3 (4.2)	55	0.48	2800		
SSF-12U/LW	103361LF	Union (See Following Page)	9.3 (4.2)	55	0.48	2800		
NBF-12F/LW	103260LF	Flange 3/4, 1, 1-1/4, 1-1/2	9.5 (4.3)	55	0.48	2800		
SSF-12F/LW	103358LF	Flange 3/4, 1, 1-1/4, 1-1/2	9.5 (4.3)	55	0.48	2800		
NBF-18S	103316LF	1/2" Sweat	9.0 (4.1)	90	0.74	3000		
NBF-22U	103255LF	Union (See Following Page)	9.3 (4.2)	92	0.80	2940		
SSF-22U	103362LF	Union (See Following Page)	9.3 (4.2)	92	0.80	2940		
NBF-22	103252LF	Flange 3/4, 1, 1-1/4, 1-1/2	9.5 (4.3)	92	0.80	2940		
SSF-22	103357LF	Flange 3/4, 1, 1-1/4, 1-1/2	9.5 (4.3)	92	0.80	2940		
NBF-25*	103418LF	Flange 3/4, 1, 1-1/4, 1-1/2	10.4 (4.7)	125	1.10	2950		
NBF-33	103351LF	Flange 3/4, 1, 1-1/4, 1-1/2	10.4 (4.7)	125	1.10	2950		
NBF-36*	103401LF	Flange 3/4, 1, 1-1/4, 1-1/2	13.1 (6.0)	270	2.30	3300		
NBF-45*	103405LF	Flange 1, 1-1/4, 1-1/2	14.5 (6.6)	270	2.30	3300		

*3-speed circulators

TYPICAL SPECIFICATIONS

The contractor shall furnish and install in-line circulating pumps as illustrated on the plans and in accordance with the following specifications:

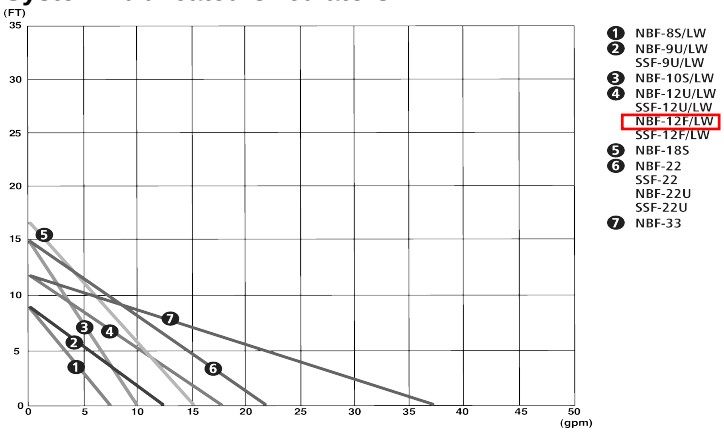
1. The pumps shall be of the horizontal system lubricated type specifically designed and guaranteed for quiet operation.
2. Pump to be suitable for _____°F (_____°C) [choose one: 225°F (107°C) for NBF-25, NBF-33, NBF-36, NBF-45 or 230°F (110°C) for all other circulators] operation at 150 psig (10.3 Bar) working pressure.
3. The pumps shall have a ceramic shaft supported by carbon bearings. Bearings are to be lubricated by the circulating fluid.
4. Pump body shall be lead-free bronze for NBF circulators or stainless steel for SSF circulators.
5. Motor stator to be isolated from circulating fluid through use of stainless steel can. Rotor to be sheathed in stainless steel.
6. Motors shall be non-overloading at any point on the pump curve. NBF-36 & NBF-45 to have built-in thermal protection. All other motors to have built-in impedance protection.
7. NBF-25 has an optional check valve.

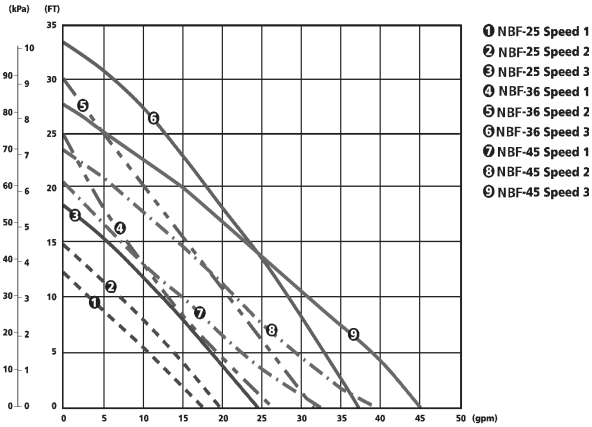
Pumps to have a capacity of _____GPM at _____ foot head when powered by 115 volt, 60 cycle single phase electrical supply.

All pumps are to be Xylem - Bell & Gossett Model _____.

xylem
Let's Solve Water

System Lubricated Circulators

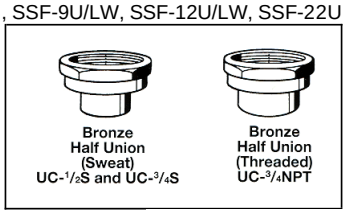


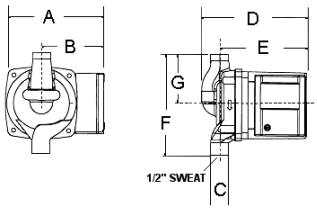


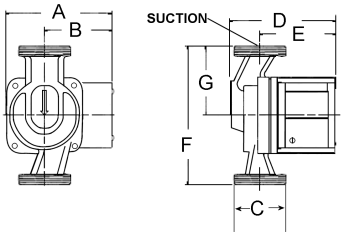
HALF UNION CONNECTIONS

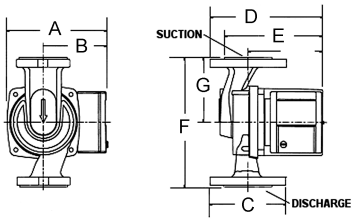
For NBF-9U/LW, NBF-12U/LW, NBF-22U, SSF-9U/LW, SSF-12U/LW, SSF-22U

MODEL NUMBER	PART NUMBER	DESCRIPTION (SETS OF 2)
UC-1/2S	113203LF	1/2" Bronze Union Sweat
UC-3/4S	113201LF	3/4" Bronze Union Sweat
UC-3/4NPT	113202LF	3/4" Bronze Union NPT Female









MODEL	PART NUMBER	A in (mm)	B in (mm)	C in (mm)	D in (mm)	E in (mm)	F in (mm)	G in (mm)
NBF-8S/LW	103257LF	4-7/8 (124)	3-3/16 (81)	1/2 (13)	5-7/32 (132)	4-9/32 (109)	5 (127)	2-1/2 (63)
NBF-9U/LW	103258LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (78)
SSF-9U/LW	103360LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (78)
NBF-10S/LW	103259LF	4-7/8 (124)	3-3/16 (81)	1/2 (13)	5-7/32 (132)	4-9/32 (109)	5 (127)	2-1/2 (63)
NBF-12U/LW	103261LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (81)
SSF-12U/LW	103361LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (78)
NBF-12F/LW	103260LF	4-7/8 (124)	3-3/16 (81)	3-3/16 (81)	5-9/16 (141)	3-11/16 (93)	6-3/8 (162)	3-3/16 (82)
SSF-12F/LW	103358LF	4-7/8 (124)	3-3/16 (81)	3-3/16 (81)	5-9/16 (141)	3-11/16 (93)	6-3/8 (162)	3-3/16 (82)
NBF-18S	103316LF	4-7/8 (124)	3-3/16 (81)	1/2 (13)	5-7/32 (132)	4-9/32 (109)	5 (127)	2-1/2 (63)
NBF-22U	103255LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (78)
SSF-22U	103362LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (78)
NBF-22	103252LF	4-7/8 (124)	3-3/16 (81)	3-3/16 (81)	5-9/16 (141)	3-11/16 (93)	6-3/8 (162)	3-3/16 (82)
SSF-22	103357LF	4-7/8 (124)	3-3/16 (81)	3-3/16 (81)	5-9/16 (141)	3-11/16 (93)	6-3/8 (162)	3-3/16 (82)
NBF-25*	103418LF	5-1/8 (130)	3-3/16 (81)	3-3/16 (81)	6-3/16 (157)	4-7/8 (124)	6-3/8 (162)	2-1/2 (63)
NBF-33	103351LF	4-7/8 (124)	3-3/16 (81)	3-3/16 (81)	6-3/16 (157)	3-11/16 (94)	6-3/8 (162)	3-3/16 (82)
NBF-36*	103401LF	5-3/4 (146)	3-9/16 (91)	3-3/16 (81)	6-3/16 (157)	5-3/8 (137)	6-3/8 (162)	3-3/16 (82)
NBF-45*	103405LF	5-3/4 (146)	3-9/16 (91)	3-7/16 (87)	7-3/8 (187)	5-1/2 (140)	8-1/2 (216)	4-1/4 (108)

Dimensions are subject to change. Not to be used for construction purposes unless certified.
Companion Flanges Available in Sizes: 3/4", 1", 1-1/4", and 1-1/2"

* 3-speed circulators

Xylem Inc.
8200 N. Austin Avenue
Morton Grove, IL 60053
Phone: (847)966-3700
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www.bellgossett.com

xylem
Let's Solve Water

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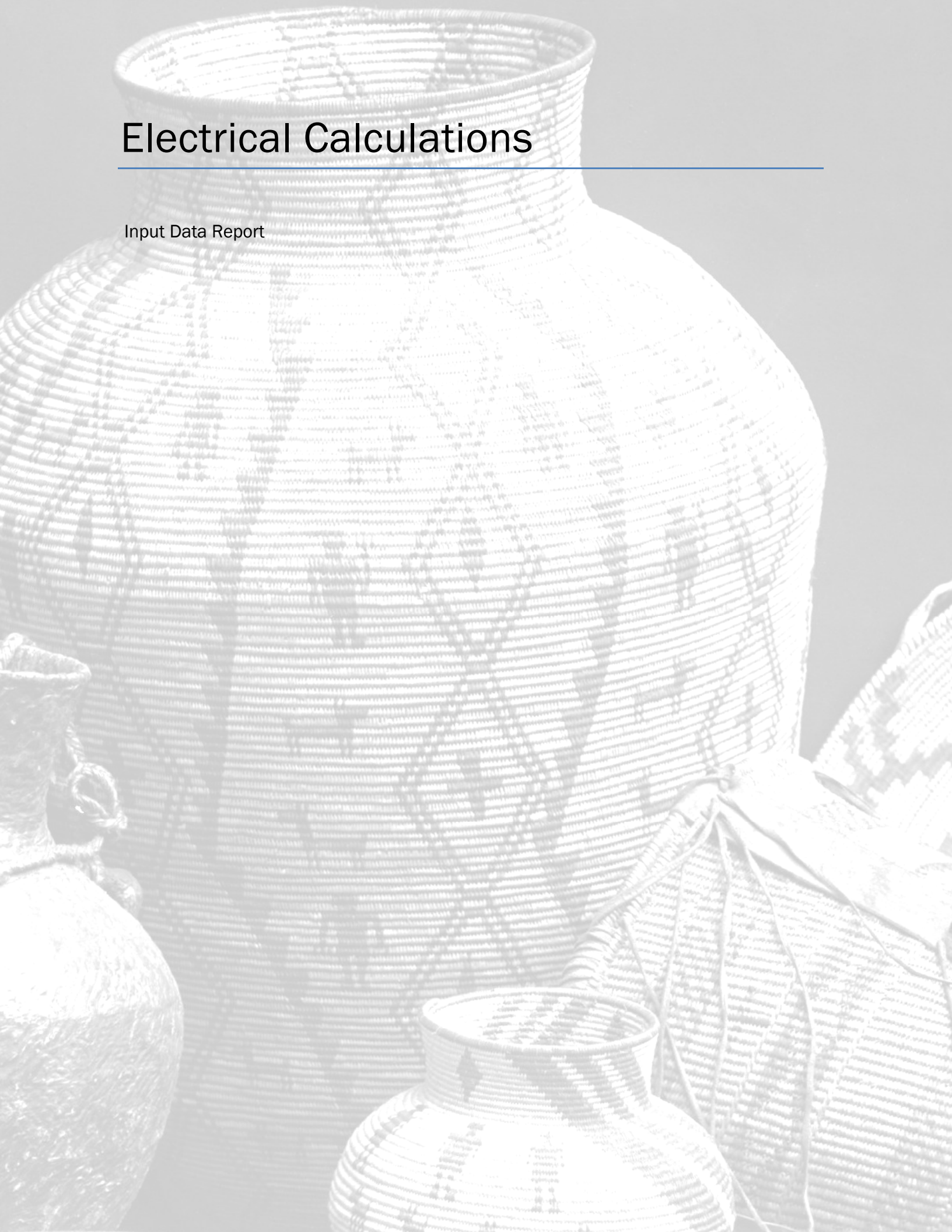
Electrical Calculations

- Input Data Report
- Short Circuit Analysis
- Load Flow and Voltage Drop Analysis
- ARC Flash Calculations
- Coordination Studies
- Lighting Calculations



Electrical Calculations

Input Data Report

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SKM POWER*TOOLS FOR WINDOWS
INPUT DATA REPORT
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FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	TYPE
CBL-1EB	BUS-EM	BUS-1EB	1	208	137.0 FEET	4/0	Copper
	Duct Material: Magnetic	Insulation Type: PVC	Insulation Class: THWN				
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				20.27 + J 15.74 PU		
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				63.87 + J 38.76 PU		
CBL-1EC	BUS-EM	BUS-1EC	1	208	174.0 FEET	4/0	Copper
	Duct Material: Magnetic	Insulation Type: PVC	Insulation Class: THWN				
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				25.74 + J 19.99 PU		
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				81.12 + J 49.23 PU		
CBL-1LA	BUS-MDP_208	BUS-1LA	1	208	61.0 FEET	4/0	Copper
	Duct Material: Magnetic	Insulation Type: PVC	Insulation Class: THWN				
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				9.02 + J 7.01 PU		
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				28.44 + J 17.26 PU		
CBL-1LB	BUS-MDP_208	BUS-1LB	1	208	120.0 FEET	4/0	Copper
	Duct Material: Magnetic	Insulation Type: PVC	Insulation Class: THWN				
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				17.75 + J 13.79 PU		
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				55.94 + J 33.95 PU		
CBL-1LC	BUS-DS-1LC	BUS-1LC	1	208	46.0 FEET	250	Copper
	Duct Material: Magnetic	Insulation Type: PVC	Insulation Class: THWN				
	+/- Impedance: 0.0552 + J 0.0495 Ohms/1000 ft				5.87 + J 5.26 PU		
	Z0 Impedance: 0.1739 + J 0.1219 Ohms/1000 ft				18.49 + J 12.96 PU		
CBL-1LD	BUS-T-1LD_SEC	BUS-1LD	1	208	10.0 FEET	2	Copper
	Duct Material: Magnetic	Insulation Type: PVC	Insulation Class: THWN				
	+/- Impedance: 0.2020 + J 0.0585 Ohms/1000 ft				4.67 + J 1.35 PU		
	Z0 Impedance: 0.6366 + J 0.1440 Ohms/1000 ft				14.71 + J 3.33 PU		
CBL-2EA	BUS-EM	BUS-2EA	1	208	100.0 FEET	4/0	Copper
	Duct Material: Magnetic	Insulation Type: PVC	Insulation Class: THWN				
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				14.79 + J 11.49 PU		
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				46.62 + J 28.29 PU		
CBL-2EB	BUS-EM	BUS-2EB	1	208	143.0 FEET	4/0	Copper
	Duct Material: Magnetic	Insulation Type: PVC	Insulation Class: THWN				
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				21.15 + J 16.43 PU		
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				66.67 + J 40.46 PU		
CBL-2LA	BUS-MDP_208	BUS-2LA	1	208	92.0 FEET	4/0	Copper
	Duct Material: Magnetic	Insulation Type: PVC	Insulation Class: THWN				
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				13.61 + J 10.57 PU		
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				42.89 + J 26.03 PU		

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH		FEEDER SIZE	TYPE		
CBL-2LB	BUS-MDP_208	BUS-2LB	1	208	129.0	FEET	4/0	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0640 + J 0.0497	Ohms/1000 ft				19.08 + J 14.82	PU		
	Z0 Impedance:	0.2017 + J 0.1224	Ohms/1000 ft				60.14 + J 36.50	PU		
CBL-AA	BUS-MDP_480	BUS-AA	1	480	36.0	FEET	600	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0257 + J 0.0463	Ohms/1000 ft				0.4016 + J 0.7234	PU		
	Z0 Impedance:	0.0809 + J 0.1140	Ohms/1000 ft				1.26 + J 1.78	PU		
CBL-AB	BUS-AA	BUS-AB	1	480	186.0	FEET	1	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.1600 + J 0.0570	Ohms/1000 ft				12.92 + J 4.60	PU		
	Z0 Impedance:	0.5042 + J 0.1403	Ohms/1000 ft				40.70 + J 11.33	PU		
CBL-AC	BUS-AA	BUS-AC	1	480	204.0	FEET	250	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0552 + J 0.0495	Ohms/1000 ft				4.89 + J 4.38	PU		
	Z0 Impedance:	0.1739 + J 0.1219	Ohms/1000 ft				15.40 + J 10.79	PU		
CBL-A/C-1	BUS-MDP_208	BUS-A/C-1	1	208	81.0	FEET	4/0	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0640 + J 0.0497	Ohms/1000 ft				11.98 + J 9.30	PU		
	Z0 Impedance:	0.2017 + J 0.1224	Ohms/1000 ft				37.76 + J 22.92	PU		
CBL-ADMIN BLDG	BUS-PD-ADMIN B	BUS-ADMIN BLDG	1	480	20.0	FEET	4	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.3210 + J 0.0632	Ohms/1000 ft				2.79 + J 0.5486	PU		
	Z0 Impedance:	1.01 + J 0.1556	Ohms/1000 ft				8.78 + J 1.35	PU		
CBL-ATS-N	BUS-ATS-N	BUS-METER	2	480	23.0	FEET	350	Copper		
	Duct Material:	Non-Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0368 + J 0.0393	Ohms/1000 ft				0.1837 + J 0.1962	PU		
	Z0 Impedance:	0.0585 + J 0.0999	Ohms/1000 ft				0.2920 + J 0.4986	PU		
CBL-CRAC-1	BUS-AA	BUS-CRAC-1	1	480	74.0	FEET	8	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.8110 + J 0.0754	Ohms/1000 ft				26.05 + J 2.42	PU		
	Z0 Impedance:	2.56 + J 0.1856	Ohms/1000 ft				82.09 + J 5.96	PU		
CBL-CRAC-2	BUS-AA	BUS-CRAC-2	1	480	66.0	FEET	8	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.8110 + J 0.0754	Ohms/1000 ft				23.23 + J 2.16	PU		
	Z0 Impedance:	2.56 + J 0.1856	Ohms/1000 ft				73.22 + J 5.32	PU		

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH		FEEDER SIZE	TYPE		
CBL-DS-1LC	BUS-T-1LC_SEC	BUS-DS-1LC	1	208	19.0	FEET	250	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0552 + J 0.0495	Ohms/1000 ft				2.42 + J 2.17	PU		
	Z0 Impedance:	0.1739 + J 0.1219	Ohms/1000 ft				7.64 + J 5.35	PU		
CBL-DS-L1	BUS-T-L1_SEC	BUS-DS-L1	1	208	21.0	FEET	4/0	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0640 + J 0.0497	Ohms/1000 ft				3.11 + J 2.41	PU		
	Z0 Impedance:	0.2017 + J 0.1224	Ohms/1000 ft				9.79 + J 5.94	PU		
CBL-DS-MDP_208	BUS-T-MDP_208_	BUS-DS-MDP_208	2	208	45.0	FEET	3/0	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0805 + J 0.0519	Ohms/1000 ft				4.19 + J 2.70	PU		
	Z0 Impedance:	0.2537 + J 0.1278	Ohms/1000 ft				13.19 + J 6.65	PU		
CBL-DS-T-1LC	BUS-AA	BUS-DS-T-1LC	1	480	179.0	FEET	1/0	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.1280 + J 0.0540	Ohms/1000 ft				9.94 + J 4.20	PU		
	Z0 Impedance:	0.4034 + J 0.1329	Ohms/1000 ft				31.34 + J 10.33	PU		
CBL-DS-T-L1	BUS-AA	BUS-DS-T-L1	1	480	30.0	FEET	2	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.2020 + J 0.0585	Ohms/1000 ft				2.63 + J 0.7617	PU		
	Z0 Impedance:	0.6366 + J 0.1440	Ohms/1000 ft				8.29 + J 1.88	PU		
CBL-EM	BUS-MDP_208	BUS-EM	1	208	40.0	FEET	500	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0294 + J 0.0466	Ohms/1000 ft				2.72 + J 4.31	PU		
	Z0 Impedance:	0.0926 + J 0.1147	Ohms/1000 ft				8.56 + J 10.60	PU		
CBL-FIRE PUMP	BUS-MDP_208	BUS-FIRE PUMP	1	208	1.000	FEET	4/0	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0640 + J 0.0497	Ohms/1000 ft				0.1479 + J 0.1149	PU		
	Z0 Impedance:	0.2017 + J 0.1224	Ohms/1000 ft				0.4662 + J 0.2829	PU		
CBL-K	BUS-MDP_208	BUS-K	1	208	57.0	FEET	4/0	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0640 + J 0.0497	Ohms/1000 ft				8.43 + J 6.55	PU		
	Z0 Impedance:	0.2017 + J 0.1224	Ohms/1000 ft				26.57 + J 16.13	PU		
CBL-L1	BUS-DS-L1	BUS-L1	1	208	97.0	FEET	4/0	Copper		
	Duct Material:	Magnetic	Insulation Type:				PVC	Insulation Class:		THWN
	+/- Impedance:	0.0640 + J 0.0497	Ohms/1000 ft				14.35 + J 11.14	PU		
	Z0 Impedance:	0.2017 + J 0.1224	Ohms/1000 ft				45.22 + J 27.44	PU		

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH		FEEDER SIZE	TYPE
CBL-MAINTENANC	BUS-EM	BUS-MAINTENANC	1	208	155.0	FEET	4	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.3210 + J 0.0632 Ohms/1000 ft				115.00 + J 22.64 PU			
	Z0 Impedance: 1.01 + J 0.1556 Ohms/1000 ft				362.42 + J 55.75 PU			
CBL-MCP-3	BUS-MDP_208	BUS-MCP-3	1	208	126.0	FEET	4/0	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				18.64 + J 14.47 PU			
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				58.74 + J 35.65 PU			
CBL-MCP-4	BUS-MDP_208	BUS-MCP-4	1	208	126.0	FEET	4/0	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				18.64 + J 14.47 PU			
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				58.74 + J 35.65 PU			
CBL-MDP_208	BUS-DS-MDP_208	BUS-MDP_208	2	208	29.0	FEET	3/0	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.0805 + J 0.0519 Ohms/1000 ft				2.70 + J 1.74 PU			
	Z0 Impedance: 0.2537 + J 0.1278 Ohms/1000 ft				8.50 + J 4.28 PU			
CBL-MDP_480	BUS-ATS-C	BUS-MDP_480	2	480	10.0	FEET	350	Copper
	Duct Material: Non-Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.0368 + J 0.0393 Ohms/1000 ft				0.0799 + J 0.0853 PU			
	Z0 Impedance: 0.0585 + J 0.0999 Ohms/1000 ft				0.1270 + J 0.2168 PU			
CBL-METER	BUS-T-OTERO-CO	BUS-METER	2	480	89.0	FEET	350	Copper
	Duct Material: Non-Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.0368 + J 0.0393 Ohms/1000 ft				0.7108 + J 0.7590 PU			
	Z0 Impedance: 0.0585 + J 0.0999 Ohms/1000 ft				1.13 + J 1.93 PU			
CBL-MP-1	BUS-MDP_208	BUS-MP-1	1	208	25.0	FEET	4/0	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				3.70 + J 2.87 PU			
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				11.66 + J 7.07 PU			
CBL-MP-2	BUS-MDP_208	BUS-MP-2	1	208	23.0	FEET	4/0	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				3.40 + J 2.64 PU			
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				10.72 + J 6.51 PU			
CBL-PANEL P AD	BUSXFMR ADMIN	BUS-PANEL P AD	1	208	20.0	FEET	1/0	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.1280 + J 0.0540 Ohms/1000 ft				5.92 + J 2.50 PU			
	Z0 Impedance: 0.4034 + J 0.1329 Ohms/1000 ft				18.65 + J 6.14 PU			

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH		FEEDER SIZE	TYPE
CBL-PD ADMIN B	BUS-MDP_480	BUS-PD-ADMIN B	1	480	155.0	FEET	4	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.3210 + J 0.0632 Ohms/1000 ft				21.60 + J 4.25 PU			
	Z0 Impedance: 1.01 + J 0.1556 Ohms/1000 ft				68.05 + J 10.47 PU			
CBL-T-1LC	BUS-DS-T-1LC	BUS-T-1LC_PRI	1	480	26.0	FEET	1/0	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.1280 + J 0.0540 Ohms/1000 ft				1.44 + J 0.6094 PU			
	Z0 Impedance: 0.4034 + J 0.1329 Ohms/1000 ft				4.55 + J 1.50 PU			
CBL-T-1LD	BUS-AC	BUS-T-1LD_PRI	1	480	20.0	FEET	8	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.8110 + J 0.0754 Ohms/1000 ft				7.04 + J 0.6545 PU			
	Z0 Impedance: 2.56 + J 0.1856 Ohms/1000 ft				22.19 + J 1.61 PU			
CBL-T-L1	BUS-DS-T-L1	BUS-T-L1_PRI	1	480	26.0	FEET	2	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.2020 + J 0.0585 Ohms/1000 ft				2.28 + J 0.6602 PU			
	Z0 Impedance: 0.6366 + J 0.1440 Ohms/1000 ft				7.18 + J 1.63 PU			
CBL-T-MDP_208	BUS-MDP_480	BUS-T-MDP_208_	1	480	25.0	FEET	3/0	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.0805 + J 0.0519 Ohms/1000 ft				0.8735 + J 0.5632 PU			
	Z0 Impedance: 0.2537 + J 0.1278 Ohms/1000 ft				2.75 + J 1.39 PU			
CBL-XFMR ADMIN	BUS-ADMIN BLDG	BUS-XFMR ADMIN	1	480	30.0	FEET	4	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.3210 + J 0.0632 Ohms/1000 ft				4.18 + J 0.8229 PU			
	Z0 Impedance: 1.01 + J 0.1556 Ohms/1000 ft				13.17 + J 2.03 PU			
CBL-X-RAY	BUS-MDP_208	BUS-X-RAY	1	208	42.0	FEET	4/0	Copper
	Duct Material: Magnetic		Insulation Type: PVC			Insulation Class: THWN		
	+/- Impedance: 0.0640 + J 0.0497 Ohms/1000 ft				6.21 + J 4.82 PU			
	Z0 Impedance: 0.2017 + J 0.1224 Ohms/1000 ft				19.58 + J 11.88 PU			

TRANSFORMER INPUT DATA

TRANSFORMER NAME	PRIMARY RECORD NO	NAME	VOLTS L-L	* SECONDARY RECORD NO	NAME	VOLTS L-L	FULL-LOAD KVA	NOMINAL KVA
T-1LC	BUS-T-1LC_PRI	D	480.00	BUS-T-1LC_SEC	YG	208.00	75.00	75.00
	Pos. Seq. Z%:		2.42 + J 2.10	(Zpu		32.27 + j 28.00)	Shell Type	
	Zero Seq. Z%:		2.42 + J 2.10	(Sec		32.27 + j 28.00 Pri	Open)	
	Taps Pri. 0.000 %		Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):			30.00 Deg.	
T-1LD	BUS-T-1LD_PRI	D	480.00	BUS-T-1LD_SEC	YG	208.00	30.00	30.00
	Pos. Seq. Z%:		3.75 + J 2.04	(Zpu		125.0 + j 68.00)	Shell Type	
	Zero Seq. Z%:		3.75 + J 2.04	(Sec		125.0 + j 68.00 Pri	Open)	
	Taps Pri. 0.000 %		Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):			30.00 Deg.	
T-L1	BUS-T-L1_PRI	D	480.00	BUS-T-L1_SEC	YG	208.00	75.00	75.00
	Pos. Seq. Z%:		2.42 + J 2.10	(Zpu		32.27 + j 28.00)	Shell Type	
	Zero Seq. Z%:		2.42 + J 2.10	(Sec		32.27 + j 28.00 Pri	Open)	
	Taps Pri. 0.000 %		Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):			30.00 Deg.	
T-MDP_208	BUS-T-MDP_208_	D	480.00	BUS-T-MDP_208_	YG	208.00	150.00	150.00
	Pos. Seq. Z%:		1.94 + J 4.07	(Zpu		12.93 + j 27.13)	Shell Type	
	Zero Seq. Z%:		1.94 + J 4.07	(Sec		12.93 + j 27.13 Pri	Open)	
	Taps Pri. 0.000 %		Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):			30.00 Deg.	
T-OTERO_CO-OP	BUS-UTILITY_OT	D	12470.0	BUS-T-OTERO-CO	YG	480.00	300.00	300.00
	Pos. Seq. Z%:		1.37 + J 3.76	(Zpu		4.57 + j 12.53)	Shell Type	
	Zero Seq. Z%:		1.37 + J 3.76	(Sec		4.57 + j 12.53 Pri	Open)	
	Taps Pri. 0.000 %		Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):			30.00 Deg.	
XFMR-ADMIN BLD	BUS-XFMR ADMIN	D	480.00	BUSXFMR ADMIN	YG	208.00	45.00	45.00
	Pos. Seq. Z%:		2.73 + J 1.97	(Zpu		60.67 + j 43.78)	Shell Type	
	Zero Seq. Z%:		2.73 + J 1.97	(Sec		60.67 + j 43.78 Pri	Open)	
	Taps Pri. 0.000 %		Sec. 0.000 %	Phase Shift (Pri. Leading Sec.):			30.00 Deg.	

GENERATION DATA

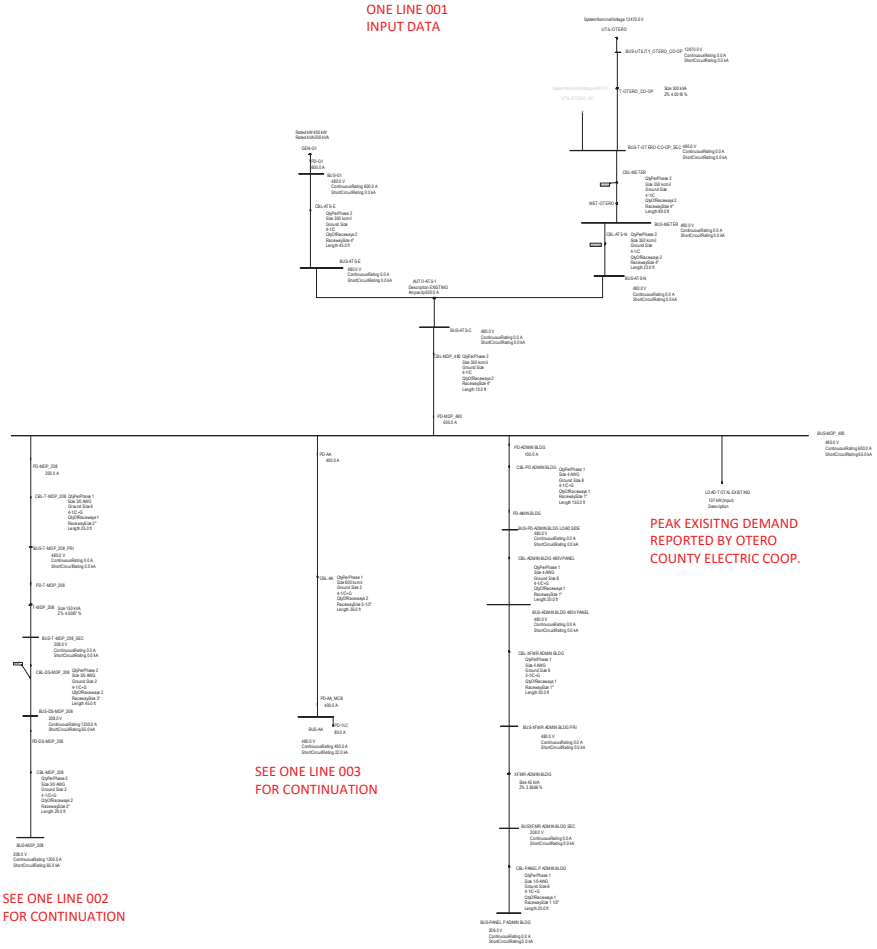
BUS NAME	GENERATION	VOLT	SIZE	InitKW	MaxKVAR	TYPE
BUS-UTILITY_OT	UTIL-OTERO	1 pu				SB

Three Phase Contribution: 999999. MVA X/R : 9999.00
Line to Earth Contribution: 333333. MVA X/R : 9999.00
Pos sequence impedance (100 MVA base)0.00000 + J 0.00010 PU
Zero sequence impedance (100 MVA base) Infinite

ENERGY AUDIT LOADS

BUS NAME	LOAD NAME	VOLTS	SIZE	LOADTYPE	PF	LAG/LEAD
BUS-1EB	LOAD-1EB	208.00	12.40*0.70 kVA	KVA	0.80	LAG
BUS-1EC	LOAD-1EC	208.00	25.30*0.70 kVA	KVA	0.80	LAG
BUS-1LC	LOAD-1LC	208.00	35.00*0.70 kVA	KVA	0.80	LAG
BUS-1LD	LOAD-1LD	208.00	14.77*0.70 kVA	KVA	0.80	LAG
BUS-CRAC-1	LOAD-CRAC-1	480.00	15.00*0.70 kVA	KVA	0.80	LAG
BUS-CRAC-2	LOAD-CRAC-2	480.00	15.00*0.70 kVA	KVA	0.80	LAG
BUS-L1	LOAD-L1	208.00	12.27*0.70 kVA	KVA	0.80	LAG
BUS-MDP_480	LOAD-TOTAL EXI	480.00	107.00*1.00 KW	KVA	0.80	LAG

ONE LINE 001
INPUT DATA



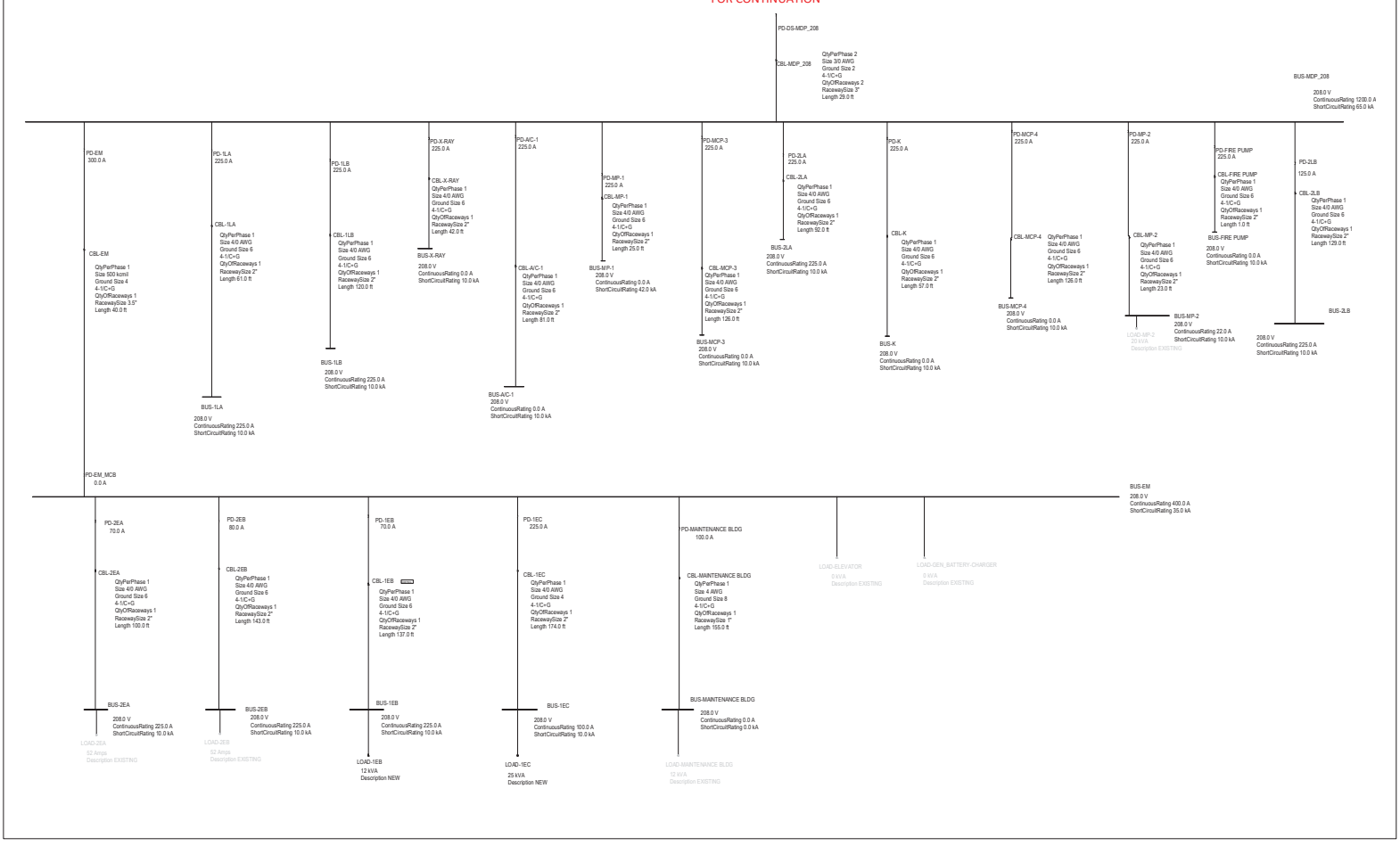
PEAK EXISITNG DEMAND
REPORTED BY OTERO
COUNTY ELECTRIC COOP.

SEE ONE LINE 003
FOR CONTINUATION

SEE ONE LINE 002
FOR CONTINUATION

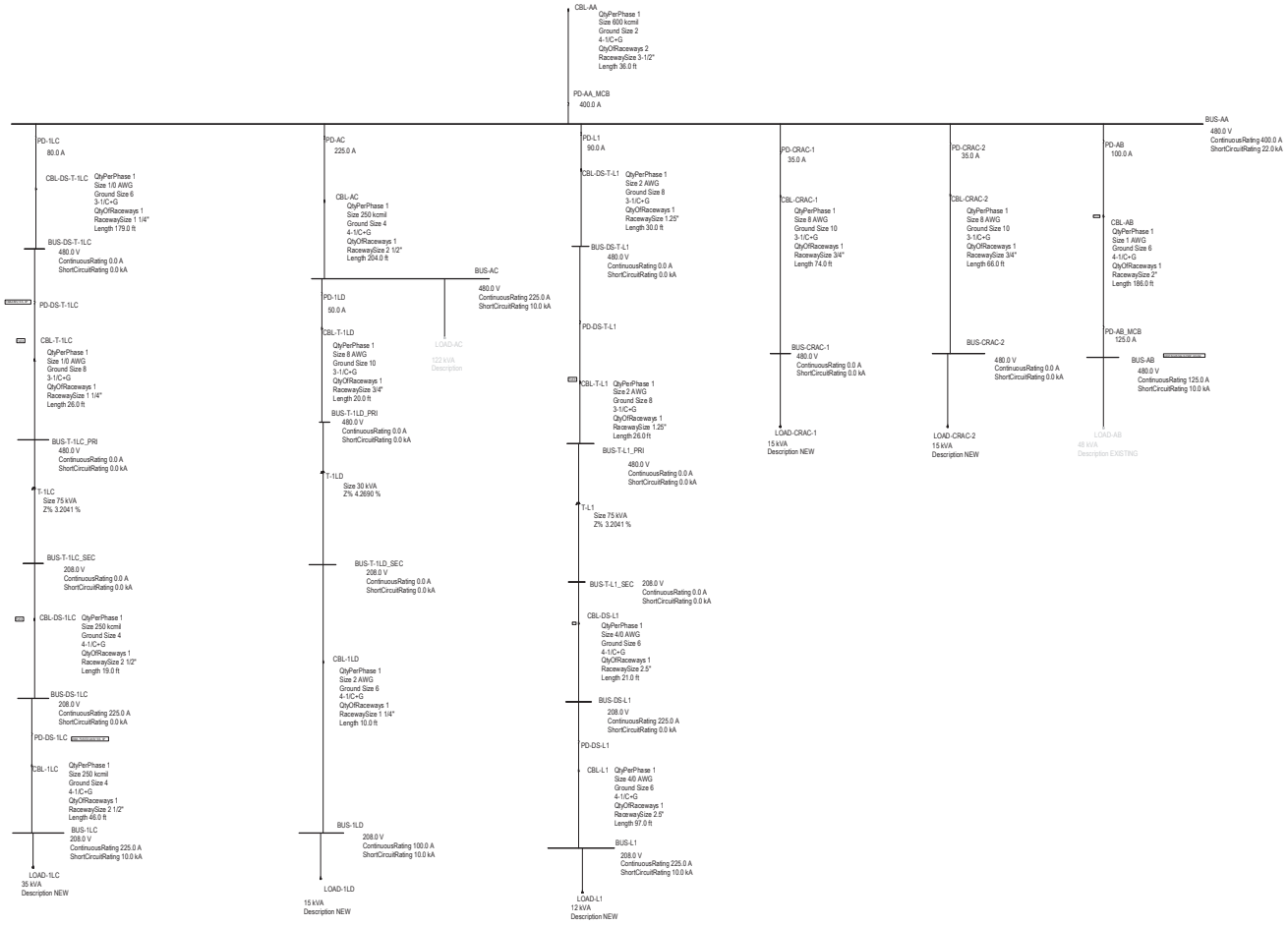
ONE LINE 002

SEE ONE LINE 001
FOR CONTINUATION



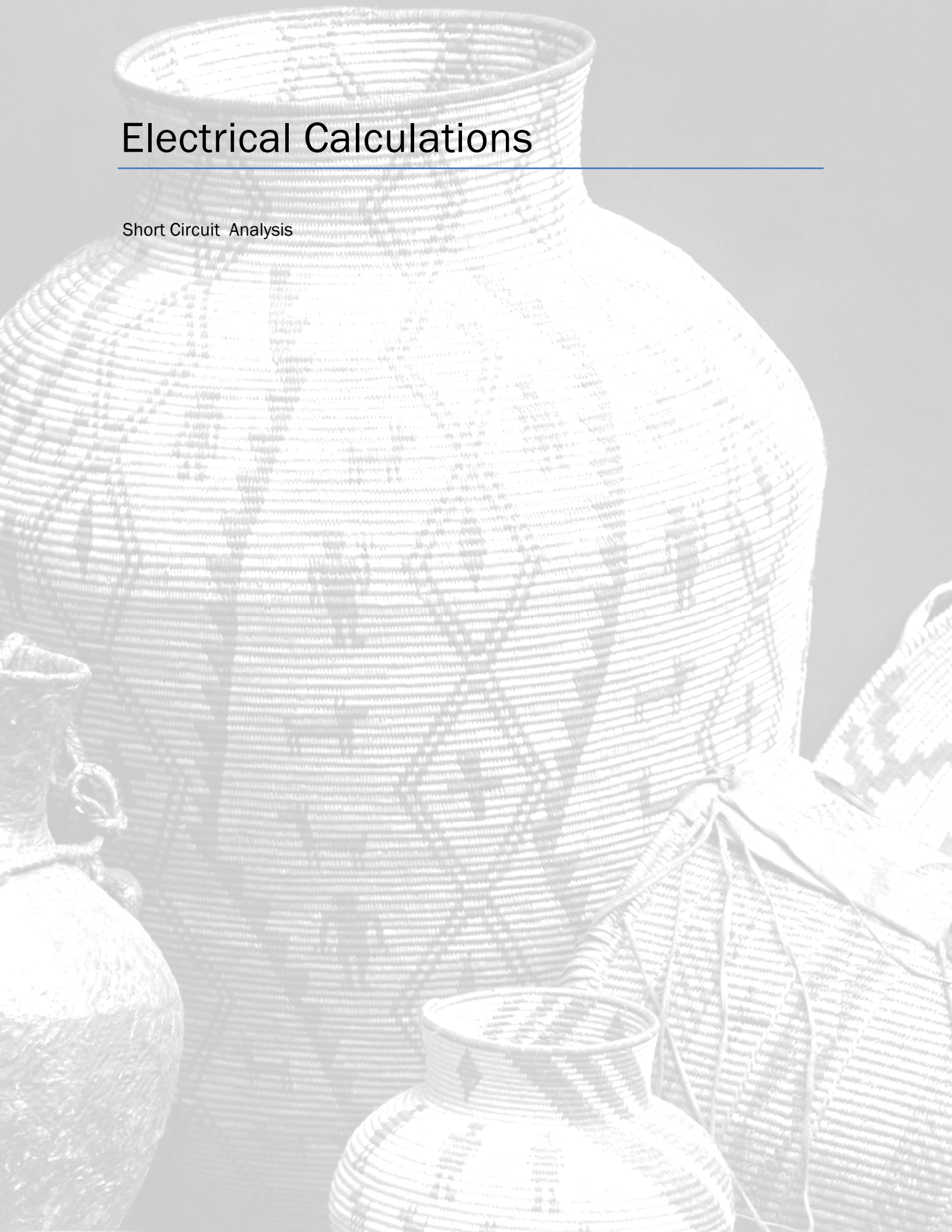
ONE LINE 003

SEE ONE LINE 001
FOR CONTINUATION



Electrical Calculations

Short Circuit Analysis



Apr 20, 2021 09:56:09

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SKM POWER*TOOLS FOR WINDOWS
SHORT CIRCUIT ANALYSIS REPORT
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ALL PU VALUES ARE EXPRESSED ON A 100 MVA BASE

BUS NAME	SWING GENERATORS SOURCE NAME	VOLTAGE	ANGLE
BUS-UTILITY_OT	UTIL-OTERO	1.00	0.00

********** P R E - F A U L T V O L T A G E P R O F I L E **********

BUS# NAME	BASE VOLTS	PU VOLTS	ANGLE (D)
BUS-1EB	208.00	1.0000	-60.
BUS-1EC	208.00	1.0000	-60.
BUS-1LA	208.00	1.0000	-60.
BUS-1LB	208.00	1.0000	-60.
BUS-1LC	208.00	1.0000	-60.
BUS-1LD	208.00	1.0000	-60.
BUS-2EA	208.00	1.0000	-60.
BUS-2EB	208.00	1.0000	-60.
BUS-2LA	208.00	1.0000	-60.
BUS-2LB	208.00	1.0000	-60.
BUS-A/C-1	208.00	1.0000	-60.
BUS-AA	480.00	1.0000	-30.
BUS-AB	480.00	1.0000	-30.
BUS-AC	480.00	1.0000	-30.
BUS-ADMIN BLDG	480.00	1.0000	-30.
BUS-ATS-C	480.00	1.0000	-30.
BUS-ATS-N	480.00	1.0000	-30.
BUS-CRAC-1	480.00	1.0000	-30.
BUS-CRAC-2	480.00	1.0000	-30.
BUS-DS-1LC	208.00	1.0000	-60.
BUS-DS-L1	208.00	1.0000	-60.
BUS-DS-MDP_208	208.00	1.0000	-60.
BUS-DS-T-1LC	480.00	1.0000	-30.
BUS-DS-T-L1	480.00	1.0000	-30.
BUS-EM	208.00	1.0000	-60.
BUS-FIRE PUMP	208.00	1.0000	-60.
BUS-K	208.00	1.0000	-60.
BUS-L1	208.00	1.0000	-60.
BUS-MAINTENANC	208.00	1.0000	-60.
BUS-MCP-3	208.00	1.0000	-60.
BUS-MCP-4	208.00	1.0000	-60.
BUS-MDP_208	208.00	1.0000	-60.
BUS-MDP_480	480.00	1.0000	-30.
BUS-METER	480.00	1.0000	-30.
BUS-MP-1	208.00	1.0000	-60.
BUS-MP-2	208.00	1.0000	-60.
BUS-PANEL P AD	208.00	1.0000	-60.
BUS-PD-ADMIN B	480.00	1.0000	-30.
BUS-T-1LC_PRI	480.00	1.0000	-30.
BUS-T-1LC_SEC	208.00	1.0000	-60.
BUS-T-1LD_PRI	480.00	1.0000	-30.
BUS-T-1LD_SEC	208.00	1.0000	-60.
BUS-T-L1_PRI	480.00	1.0000	-30.
BUS-T-L1_SEC	208.00	1.0000	-60.

********** P R E - F A U L T V O L T A G E P R O F I L E **********

BUS# NAME	BASE VOLTS	PU VOLTS	ANGLE (D)
BUS-T-MDP_208_	480.00	1.0000	-30.
BUS-T-MDP_208_	208.00	1.0000	-60.
BUS-T-OTERO-CO	480.00	1.0000	-30.
BUS-UTILITY_OT	12470.00	1.0000	0.
BUS-X-RAY	208.00	1.0000	-60.
BUS-XFMR ADMIN	480.00	1.0000	-30.
BUSXFMR ADMIN	208.00	1.0000	-60.

********** F A U L T A N A L Y S I S R E P O R T **********

FAULT TYPE: 3PH
MODEL INDUCTION MOTOR CONTRIBUTION: YES
MODEL TRANSFORMER TAPS: YES
MODEL TRANSFORMER PHASE SHIFT: YES

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BUS-1EB VOLTAGE BASE LL: 208.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 3379.5 / -113. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 49.217 +j 65.755 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.336

ASYM RMS INTERRUPTING AMPS
1/2 CYCLES 2 CYCLES 3 CYCLES 5 CYCLES 8 CYCLES
3410.0 3379.5 3379.5 3379.5 3379.5

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES
---PHASE A--- ---PHASE B--- ---PHASE C---
0.0000 / 0.0 0.0000 / 0.0 0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES
---PHASE A--- ---PHASE B--- ---PHASE C---
3379.5 /-113.2 3379.5 / 126.8 3379.5 / 6.8

BUS-1EB ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES
---PHASE A--- ---PHASE B--- ---PHASE C---
BUS-EM 208.0 0.3124 / -75. 0.3124 / 165. 0.3124 / 45.
BUS-1EB ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES
BRANCH NAME VBASE LL -PHASE A- -PHASE B- -PHASE C-
BUS-EM BUS-1EB CBL-1EB 208. 3379.5/-113. 3379.5/ 127. 3379.5/ 7.

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 BUS-1EC        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3124.5 / -112. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   54.690 +j  70.006 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.280

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3147.5      3124.5      3124.5      3124.5      3124.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3124.5 /-112.0     3124.5 / 128.0      3124.5 /   8.0

 BUS-1EC        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-EM            208.0  0.3668 / -74.  0.3668 / 166.  0.3668 /  46.
   BUS-1EC        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-EM         BUS-1EC        CBL-1EC          208.   3124.5/-112.   3124.5/ 128.   3124.5/   8.

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 BUS-1LA        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4376.8 / -116. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   35.256 +j  52.716 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.495

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4441.8      4376.8      4376.8      4376.8      4376.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4376.8 /-116.2     4376.8 / 123.8      4376.8 /   3.8

 BUS-1LA        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.1802 / -78.  0.1802 / 162.  0.1802 /  42.
   BUS-1LA        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-1LA        CBL-1LA          208.   4376.8/-116.   4376.8/ 124.   4376.8/   4.

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```
 BUS-1LB        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3751.6 / -114. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   43.984 +j  59.494 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.353

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3787.5      3751.6      3751.6      3751.6      3751.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3751.6 /-113.5     3751.6 / 126.5      3751.6 /   6.5

 BUS-1LB        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.3038 / -76.  0.3038 / 164.  0.3038 /  44.
   BUS-1LB        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-1LB        CBL-1LB          208.   3751.6/-114.   3751.6/ 126.   3751.6/   6.

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```
 BUS-1LC        VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3489.9 / -103. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   57.891 +j  54.539 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.942

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3494.3      3489.9      3489.9      3489.9      3489.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3489.9 /-103.3     3489.9 / 136.7      3489.9 /  16.7

 BUS-1LC        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-DS-1LC        208.0  0.0991 / -61.  0.0991 / 179.  0.0991 /  59.
   BUS-1LC        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-DS-1LC     BUS-1LC        CBL-1LC          208.   3489.9/-103.   3489.9/ 137.   3489.9/  17.

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```
 BUS-1LD        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1612.5 /  -91. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  147.539 +j  88.687 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.601

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1612.5      1612.5      1612.5      1612.5      1612.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1612.5 / -91.0     1612.5 / 149.0      1612.5 /  29.0

 BUS-1LD        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-T-1LD_SEC     208.0  0.0282 / -75.  0.0282 / 165.  0.0282 /  45.
   BUS-1LD        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-1LD_SEC  BUS-1LD        CBL-1LD          208.   1612.5/ -91.   1612.5/ 149.   1612.5/  29.

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```
 BUS-2EA        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3677.7 / -115. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   43.743 +j  61.505 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.406

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3719.6      3677.7      3677.7      3677.7      3677.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3677.7 /-114.6     3677.7 / 125.4      3677.7 /   5.4

 BUS-2EA        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-EM            208.0  0.2482 / -77.  0.2482 / 163.  0.2482 /  43.
   BUS-2EA        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-EM         BUS-2EA         CBL-2EA          208.   3677.7/-115.   3677.7/ 125.   3677.7/   5.

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```
 BUS-2EB        VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3335.5 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   50.104 +j  66.445 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.326

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3364.5      3335.5      3335.5      3335.5      3335.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3335.5 /-113.0     3335.5 / 127.0      3335.5 /   7.0

 BUS-2EB        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-EM            208.0  0.3218 / -75.  0.3218 / 165.  0.3218 /  45.
   BUS-2EB        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                           BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-EM         BUS-2EB        CBL-2EB          208.   3335.5/-113.   3335.5/ 127.   3335.5/   7.

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 BUS-2LA        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4025.5 / -115. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   39.842 +j  56.278 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.413

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4072.3      4025.5      4025.5      4025.5      4025.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4025.5 /-114.7     4025.5 / 125.3      4025.5 /   5.3

 BUS-2LA        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.2499 / -77.  0.2499 / 163.  0.2499 /  43.
   BUS-2LA        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-2LA        CBL-2LA          208.   4025.5/-115.   4025.5/ 125.   4025.5/   5.

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```
 BUS-2LB        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3671.0 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   45.315 +j  60.528 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.336

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3704.1      3671.0      3671.0      3671.0      3671.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3671.0 /-113.2     3671.0 / 126.8      3671.0 /   6.8

 BUS-2LB        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.3195 / -75.  0.3195 / 165.  0.3195 /  45.
   BUS-2LB        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-2LB        CBL-2LB          208.   3671.0/-113.   3671.0/ 127.   3671.0/   7.

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 BUS-A/C-1      VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4143.8 / -115. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   38.215 +j  55.014 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.440

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4196.2      4143.8      4143.8      4143.8      4143.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4143.8 /-115.2     4143.8 / 124.8      4143.8 /   4.8

 BUS-A/C-1      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-MDP_208       208.0  0.2265 / -77.  0.2265 / 163.  0.2265 /  43.
   BUS-A/C-1      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-A/C-1      CBL-A/C-1        208.   4143.8/-115.   4143.8/ 125.   4143.8/   5.

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 BUS-AA          VOLTAGE BASE LL:                  480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   7768.5 /  -97. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:    5.943 +j  14.297 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     2.406

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     8319.4      7768.7      7768.5      7768.5      7768.5

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  7768.5 / -97.4     7768.5 / 142.6      7768.5 /  22.6

 BUS-AA          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_480       480.0  0.0534 / -36.  0.0534 /-156.  0.0534 /  84.
   BUS-AC            480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-DS-T-1LC      480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-AB            480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-CRAC-1        480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-CRAC-2        480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-DS-T-L1       480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-AA         ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_480    BUS-AA         CBL-AA           480.   7768.5/ -97.   7768.5/ 143.   7768.5/  23.
BUS-AA         BUS-AC         CBL-AC           480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-AA         BUS-DS-T-1LC   CBL-DS-T-1LC     480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-AA         BUS-AB         CBL-AB           480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-AA         BUS-CRAC-1     CBL-CRAC-1       480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-AA         BUS-CRAC-2     CBL-CRAC-2       480.      0.0/   0.      0.0/   0.      0.0/   0.
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BUS-AA ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

BUS-AA	BUS-DS-T-L1	CBL-DS-T-L1	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 BUS-AB          VOLTAGE BASE LL:                  480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   4505.1 /  -75. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:   18.859 +j  18.899 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     1.002

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     4513.6      4505.1      4505.1      4505.1      4505.1

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  4505.1 / -75.1     4505.1 / 164.9      4505.1 /  44.9

 BUS-AB          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-AA             480.0  0.5136 / -55.  0.5136 /-175.  0.5136 /  65.
   BUS-AB           ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA          BUS-AB          CBL-AB           480.   4505.1/ -75.   4505.1/ 165.   4505.1/  45.

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 BUS-AC          VOLTAGE BASE LL:                  480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   5570.5 /  -90. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:   10.830 +j  18.680 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     1.725

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     5714.5      5570.5      5570.5      5570.5      5570.5

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  5570.5 / -89.9     5570.5 / 150.1      5570.5 /  30.1

 BUS-AC          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA            480.0  0.3040 / -48.  0.3040 /-168.  0.3040 /  72.
   BUS-T-1LD_PRI     480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-AC         ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA         BUS-AC         CBL-AC           480.   5570.5/ -90.   5570.5/ 150.   5570.5/  30.
BUS-AC         BUS-T-1LD_PRI  CBL-T-1LD        480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-ADMIN BLDG VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3425.5 /  -62. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   29.922 +j  18.374 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.614

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3425.6      3425.5      3425.5      3425.5      3425.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3425.5 / -61.6     3425.5 / 178.4      3425.5 /  58.4

 BUS-ADMIN BLDG ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-PD-ADMIN B    480.0  0.0809 / -50.  0.0809 /-170.  0.0809 /  70.
   BUS-XFMR ADMIN    480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-ADMIN BLDG ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-PD-ADMIN B BUS-ADMIN BLDG CBL-ADMIN BLDG   480.   3425.5/ -62.   3425.5/ 178.   3425.5/  58.
BUS-ADMIN BLDG BUS-XFMR ADMIN CBL-XFMR ADMIN   480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-ATS-C      VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   8265.5 /  -98. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    5.461 +j  13.489 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.470

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    8891.2      8265.8      8265.5      8265.5      8265.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 8265.5 / -98.0     8265.5 / 142.0      8265.5 /  22.0

 BUS-ATS-C      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_480       480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-ATS-N         480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-ATS-C      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-ATS-C      BUS-MDP_480    CBL-MDP_480      480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-ATS-N      BUS-ATS-C      AUTO-ATS-1       480.   8265.5/ -98.   8265.5/ 142.   8265.5/  22.

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```

```
 BUS-ATS-N      VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   8265.5 /  -98. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    5.461 +j  13.489 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.470

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    8891.2      8265.8      8265.5      8265.5      8265.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 8265.5 / -98.0     8265.5 / 142.0      8265.5 /  22.0

 BUS-ATS-N      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-METER         480.0  0.0185 / -51.  0.0185 /-171.  0.0185 /  69.
   BUS-ATS-C         480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-ATS-N      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-ATS-N      BUS-METER      CBL-ATS-N        480.   8265.5/  82.   8265.5/ -38.   8265.5/-158.
BUS-ATS-N      BUS-ATS-C      AUTO-ATS-1       480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-CRAC-1     VOLTAGE BASE LL:                  480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3332.3 /  -58. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   31.990 +j  16.719 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.523

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3332.3      3332.3      3332.3      3332.3      3332.3

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3332.3 / -57.6     3332.3 /-177.6      3332.3 /  62.4

 BUS-CRAC-1     ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA            480.0  0.7247 / -52.  0.7247 /-172.  0.7247 /  68.
   BUS-CRAC-1     ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA         BUS-CRAC-1     CBL-CRAC-1       480.   3332.3/ -58.   3332.3/-178.   3332.3/  62.

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 BUS-CRAC-2     VOLTAGE BASE LL:                  480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3590.9 /  -59. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   29.174 +j  16.457 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.564

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3591.0      3590.9      3590.9      3590.9      3590.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3590.9 / -59.4     3590.9 /-179.4      3590.9 /  60.6

 BUS-CRAC-2     ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA            480.0  0.6966 / -54.  0.6966 /-174.  0.6966 /  66.
   BUS-CRAC-2     ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA         BUS-CRAC-2     CBL-CRAC-2       480.   3590.9/ -59.   3590.9/-179.   3590.9/  61.

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 BUS-DS-1LC     VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3873.7 / -103. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   52.022 +j  49.276 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.947

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3878.8      3873.7      3873.7      3873.7      3873.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3873.7 /-103.4     3873.7 / 136.6      3873.7 /  16.6

 BUS-DS-1LC     ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-T-1LC_SEC     208.0  0.0454 / -62.  0.0454 / 178.  0.0454 /  58.
   BUS-1LC           208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-DS-1LC     ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-1LC_SEC  BUS-DS-1LC     CBL-DS-1LC       208.   3873.7/-103.   3873.7/ 137.   3873.7/  17.
BUS-DS-1LC     BUS-1LC        CBL-1LC          208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-DS-L1      VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4250.3 / -105. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   46.225 +j  46.132 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.998

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4258.1      4250.3      4250.3      4250.3      4250.3

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4250.3 /-104.9     4250.3 / 135.1      4250.3 /  15.1

 BUS-DS-L1      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-L1_SEC      208.0  0.0602 / -67.  0.0602 / 173.  0.0602 /  53.
   BUS-L1            208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-DS-L1      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-L1_SEC   BUS-DS-L1      CBL-DS-L1        208.   4250.3/-105.   4250.3/ 135.   4250.3/  15.
BUS-DS-L1      BUS-L1         CBL-L1           208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-DS-MDP_208 VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5565.7 / -122. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   23.534 +j  43.970 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.868

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5755.2      5565.7      5565.7      5565.7      5565.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5565.7 /-121.8     5565.7 / 118.2      5565.7 /  -1.8

 BUS-DS-MDP_208 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-MDP_208_    208.0  0.0999 / -89.  0.0999 / 151.  0.0999 /  31.
   BUS-MDP_208       208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-DS-MDP_208 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-MDP_208_ BUS-DS-MDP_208 CBL-DS-MDP_208   208.   5565.7/-122.   5565.7/ 118.   5565.7/  -2.
BUS-DS-MDP_208 BUS-MDP_208    CBL-MDP_208      208.      0.0/   0.      0.0/   0.      0.0/   0.

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```
 BUS-DS-T-1LC   VOLTAGE BASE LL:                  480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4933.6 /  -79. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   15.887 +j  18.493 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.164

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4955.9      4933.6      4933.6      4933.6      4933.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4933.6 / -79.3     4933.6 / 160.7      4933.6 /  40.7

 BUS-DS-T-1LC   ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA            480.0  0.4427 / -56.  0.4427 /-176.  0.4427 /  64.
   BUS-T-1LC_PRI     480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-DS-T-1LC   ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA         BUS-DS-T-1LC   CBL-DS-T-1LC     480.   4933.6/ -79.   4933.6/ 161.   4933.6/  41.
BUS-DS-T-1LC   BUS-T-1LC_PRI  CBL-T-1LC        480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-DS-T-L1    VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   6941.3 /  -90. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    8.573 +j  15.059 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.757

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    7132.8      6941.3      6941.3      6941.3      6941.3

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 6941.3 / -90.3     6941.3 / 149.7      6941.3 /  29.7

 BUS-DS-T-L1    ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA            480.0  0.1580 / -74.  0.1580 / 166.  0.1580 /  46.
   BUS-T-L1_PRI      480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-DS-T-L1    ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA         BUS-DS-T-L1    CBL-DS-T-L1      480.   6941.3/ -90.   6941.3/ 150.   6941.3/  30.
BUS-DS-T-L1    BUS-T-L1_PRI   CBL-T-L1         480.      0.0/   0.      0.0/   0.      0.0/   0.

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```

```
 BUS-EM          VOLTAGE BASE LL:                  208.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   4803.0 / -120. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:   28.950 +j  50.017 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     1.728

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     4927.9      4803.0      4803.0      4803.0      4803.0

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  4803.0 /-119.9     4803.0 / 120.1      4803.0 /   0.1

 BUS-EM          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.0881 / -62.  0.0881 / 178.  0.0881 /  58.
   BUS-1EC           208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-1EB           208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-2EB           208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-2EA           208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-MAINTENANC    208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-EM         ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-EM          CBL-EM           208.   4803.0/-120.   4803.0/ 120.   4803.0/   0.
BUS-EM         BUS-1EC         CBL-1EC          208.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-EM         BUS-1EB         CBL-1EB          208.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-EM         BUS-2EB         CBL-2EB          208.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-EM         BUS-2EA         CBL-2EA          208.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-EM         BUS-MAINTENANC  CBL-MAINTENANC   208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-FIRE PUMP  VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5249.6 / -120. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   26.380 +j  45.824 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.737

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5388.8      5249.6      5249.6      5249.6      5249.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5249.6 /-120.1     5249.6 / 119.9      5249.6 /  -0.1

 BUS-FIRE PUMP  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.0035 / -82.  0.0035 / 158.  0.0035 /  38.
   BUS-FIRE PUMP  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-FIRE PUMP  CBL-FIRE PUMP    208.   5249.6/-120.   5249.6/ 120.   5249.6/   0.

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 BUS-K          VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4426.4 / -116. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   34.664 +j  52.257 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.508

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4494.4      4426.4      4426.4      4426.4      4426.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4426.4 /-116.4     4426.4 / 123.6      4426.4 /   3.6

 BUS-K          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.1702 / -79.  0.1702 / 161.  0.1702 /  41.
   BUS-K          ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-K           CBL-K            208.   4426.4/-116.   4426.4/ 124.   4426.4/   4.

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```
 BUS-L1          VOLTAGE BASE LL:                  208.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   3329.6 / -103. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:   60.575 +j  57.275 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     0.946

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     3333.9      3329.6      3329.6      3329.6      3329.6

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  3329.6 /-103.4     3329.6 / 136.6      3329.6 /  16.6

 BUS-L1          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-DS-L1         208.0  0.2179 / -66.  0.2179 / 174.  0.2179 /  54.
   BUS-L1          ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-DS-L1      BUS-L1         CBL-L1           208.   3329.6/-103.   3329.6/ 137.   3329.6/  17.

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```
 BUS-MAINTENANC VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1721.4 /  -87. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  143.954 +j  72.660 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.505

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1721.4      1721.4      1721.4      1721.4      1721.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1721.4 / -86.8     1721.4 / 153.2      1721.4 /  33.2

 BUS-MAINTENANC ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-EM            208.0  0.7269 / -76.  0.7269 / 164.  0.7269 /  44.
   BUS-MAINTENANC ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-EM         BUS-MAINTENANC CBL-MAINTENANC   208.   1721.4/ -87.   1721.4/ 153.   1721.4/  33.

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```
 BUS-MCP-3      VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3697.5 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   44.871 +j  60.183 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.341

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3731.5      3697.5      3697.5      3697.5      3697.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3697.5 /-113.3     3697.5 / 126.7      3697.5 /   6.7

 BUS-MCP-3      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-MDP_208       208.0  0.3144 / -75.  0.3144 / 165.  0.3144 /  45.
   BUS-MCP-3      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-MCP-3      CBL-MCP-3        208.   3697.5/-113.   3697.5/ 127.   3697.5/   7.

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```
 BUS-MCP-4      VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3697.5 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   44.871 +j  60.183 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.341

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3731.5      3697.5      3697.5      3697.5      3697.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3697.5 /-113.3     3697.5 / 126.7      3697.5 /   6.7

 BUS-MCP-4      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.3144 / -75.  0.3144 / 165.  0.3144 /  45.
   BUS-MCP-4      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-MCP-4      CBL-MCP-4        208.   3697.5/-113.   3697.5/ 127.   3697.5/   7.

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BUS-MDP_208    VOLTAGE BASE LL:                 208.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:   5266.9 / -120. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:   26.232 +j  45.709 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     1.742

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   5408.1      5266.9      5266.9      5266.9      5266.9

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
                5266.9 /-120.1     5266.9 / 119.9      5266.9 /  -0.1

BUS-MDP_208    ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
  BUS-DS-MDP_208    208.0  0.0609 / -87.  0.0609 / 153.  0.0609 /  33.
  BUS-1LB           208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-EM            208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-1LA           208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-X-RAY         208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-A/C-1         208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-MP-1          208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-MCP-3         208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-2LA           208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-K             208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-MCP-4         208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-MP-2          208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-FIRE PUMP     208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
  BUS-2LB           208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
```

BUS-MDP_208 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-		-PHASE B-		-PHASE C-	
BUS-DS-MDP_208	BUS-MDP_208	CBL-MDP_208	208.	5266.9/	-120.	5266.9/	120.	5266.9/	0.
BUS-MDP_208	BUS-1LB	CBL-1LB	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-EM	CBL-EM	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-1LA	CBL-1LA	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-X-RAY	CBL-X-RAY	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-A/C-1	CBL-A/C-1	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-MP-1	CBL-MP-1	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-MCP-3	CBL-MCP-3	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-2LA	CBL-2LA	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-K	CBL-K	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-MCP-4	CBL-MCP-4	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-MP-2	CBL-MP-2	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-FIRE PUMP	CBL-FIRE PUMP	208.	0.0/	0.	0.0/	0.	0.0/	0.
BUS-MDP_208	BUS-2LB	CBL-2LB	208.	0.0/	0.	0.0/	0.	0.0/	0.

```
 BUS-MDP_480    VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   8204.0 /  -98. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    5.541 +j  13.574 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.450

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    8812.6      8204.3      8204.0      8204.0      8204.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 8204.0 / -97.8     8204.0 / 142.2      8204.0 /  22.2

 BUS-MDP_480    ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-MDP_208_    480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-ATS-C         480.0  0.0080 / -51.  0.0080 /-171.  0.0080 /  69.
   BUS-AA            480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-PD-ADMIN B    480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-MDP_480    ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_480    BUS-T-MDP_208_ CBL-T-MDP_208    480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-ATS-C      BUS-MDP_480    CBL-MDP_480      480.   8204.0/ -98.   8204.0/ 142.   8204.0/  22.
BUS-MDP_480    BUS-AA         CBL-AA           480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-MDP_480    BUS-PD-ADMIN B CBL-PD ADMIN B   480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-METER      VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   8410.2 /  -98. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    5.277 +j  13.292 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.519

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    9077.8      8410.6      8410.2      8410.2      8410.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 8410.2 / -98.3     8410.2 / 141.7      8410.2 /  21.7

 BUS-METER      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-OTERO-CO    480.0  0.0727 / -51.  0.0727 /-171.  0.0727 /  69.
   BUS-ATS-N         480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-METER      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-OTERO-CO BUS-METER      CBL-METER        480.   8410.2/ -98.   8410.2/ 142.   8410.2/  22.
BUS-ATS-N      BUS-METER      CBL-ATS-N        480.      0.0/   0.      0.0/   0.      0.0/   0.

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```
 BUS-MP-1       VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4864.5 / -118. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   29.930 +j  48.581 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.623

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4964.8      4864.5      4864.5      4864.5      4864.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4864.5 /-118.4     4864.5 / 121.6      4864.5 /   1.6

 BUS-MP-1       ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-MDP_208       208.0  0.0821 / -81.  0.0821 / 159.  0.0821 /  39.
   BUS-MP-1       ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-MP-1       CBL-MP-1         208.   4864.5/-118.   4864.5/ 122.   4864.5/   2.

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```
 BUS-MP-2       VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4894.6 / -118. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   29.635 +j  48.351 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.632

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4997.5      4894.6      4894.6      4894.6      4894.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4894.6 /-118.5     4894.6 / 121.5      4894.6 /   1.5

 BUS-MP-2       ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.0760 / -81.  0.0760 / 159.  0.0760 /  39.
   BUS-MP-2       ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-MP-2       CBL-MP-2         208.   4894.6/-118.   4894.6/ 122.   4894.6/   2.

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 BUS-PANEL P AD VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2311.2 /  -93. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  100.686 +j  65.471 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.650

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2311.3      2311.2      2311.2      2311.2      2311.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2311.2 / -93.0     2311.2 / 147.0      2311.2 /  27.0

 BUS-PANEL P AD ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUSXFMR ADMIN     208.0  0.0535 / -70.  0.0535 / 170.  0.0535 /  50.
   BUS-PANEL P AD ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUSXFMR ADMIN  BUS-PANEL P AD CBL-PANEL P AD   208.   2311.2/ -93.   2311.2/ 147.   2311.2/  27.

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 BUS-PD-ADMIN B VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3704.7 /  -63. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   27.136 +j  17.826 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.657

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3705.0      3704.7      3704.7      3704.7      3704.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3704.7 / -63.3     3704.7 / 176.7      3704.7 /  56.7

 BUS-PD-ADMIN B ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_480       480.0  0.6779 / -52.  0.6779 /-172.  0.6779 /  68.
   BUS-ADMIN BLDG    480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-PD-ADMIN B ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_480    BUS-PD-ADMIN B CBL-PD ADMIN B   480.   3704.7/ -63.   3704.7/ 177.   3704.7/  57.
BUS-PD-ADMIN B BUS-ADMIN BLDG CBL-ADMIN BLDG   480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-T-1LC_PRI  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4663.4 /  -78. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   17.331 +j  19.102 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.102

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4678.9      4663.4      4663.4      4663.4      4663.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4663.4 / -77.8     4663.4 / 162.2      4663.4 /  42.2

 BUS-T-1LC_PRI  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-1LC_SEC     208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-DS-T-1LC      480.0  0.0608 / -55.  0.0608 /-175.  0.0608 /  65.
   BUS-T-1LC_PRI  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-1LC_PRI  BUS-T-1LC_SEC  T-1LC            480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-DS-T-1LC   BUS-T-1LC_PRI  CBL-T-1LC        480.   4663.4/ -78.   4663.4/ 162.   4663.4/  42.

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```
 BUS-T-1LC_SEC  VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4058.1 / -104. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   49.598 +j  47.102 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.950

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4063.5      4058.1      4058.1      4058.1      4058.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4058.1 /-103.5     4058.1 / 136.5      4058.1 /  16.5

 BUS-T-1LC_SEC  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-T-1LC_PRI     480.0  0.6246 / -33.  0.6246 /-153.  0.6246 /  87.
   BUS-DS-1LC        208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-T-1LC_SEC  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-1LC_PRI  BUS-T-1LC_SEC  T-1LC            480.   1758.5/ -74.   1758.5/ 166.   1758.5/  46.
BUS-T-1LC_SEC  BUS-DS-1LC     CBL-DS-1LC       208.      0.0/   0.      0.0/   0.      0.0/   0.

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```

```
 BUS-T-1LD_PRI  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4568.6 /  -77. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   17.870 +j  19.335 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.082

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4582.3      4568.6      4568.6      4568.6      4568.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4568.6 / -77.3     4568.6 / 162.7      4568.6 /  42.7

 BUS-T-1LD_PRI  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AC            480.0  0.2685 / -72.  0.2685 / 168.  0.2685 /  48.
   BUS-T-1LD_SEC     208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-T-1LD_PRI  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AC         BUS-T-1LD_PRI  CBL-T-1LD        480.   4568.6/ -77.   4568.6/ 163.   4568.6/  43.
BUS-T-1LD_PRI  BUS-T-1LD_SEC  T-1LD            480.      0.0/   0.      0.0/   0.      0.0/   0.

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```

```
 BUS-T-1LD_SEC  VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1657.7 /  -91. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  142.870 +j  87.335 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.611

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1657.7      1657.7      1657.7      1657.7      1657.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1657.7 / -91.4     1657.7 / 148.6      1657.7 /  28.6

 BUS-T-1LD_SEC  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-1LD_PRI     480.0  0.8498 / -33.  0.8498 /-153.  0.8498 /  87.
   BUS-1LD           208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-T-1LD_SEC  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-1LD_PRI  BUS-T-1LD_SEC  T-1LD            480.    718.3/ -61.    718.3/ 179.    718.3/  59.
BUS-T-1LD_SEC  BUS-1LD        CBL-1LD          208.      0.0/   0.      0.0/   0.      0.0/   0.

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```
 BUS-T-L1_PRI   VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   6297.0 /  -85. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   10.852 +j  15.719 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.448

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    6378.7      6297.0      6297.0      6297.0      6297.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 6297.0 / -85.4     6297.0 / 154.6      6297.0 /  34.6

 BUS-T-L1_PRI   ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-L1_SEC      208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-DS-T-L1       480.0  0.1242 / -69.  0.1242 / 171.  0.1242 /  51.
   BUS-T-L1_PRI   ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-L1_PRI   BUS-T-L1_SEC   T-L1             480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-DS-T-L1    BUS-T-L1_PRI   CBL-T-L1         480.   6297.0/ -85.   6297.0/ 155.   6297.0/  35.

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 BUS-T-L1_SEC   VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4520.3 / -105. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   43.119 +j  43.719 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.014

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4529.5      4520.3      4520.3      4520.3      4520.3

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4520.3 /-105.4     4520.3 / 134.6      4520.3 /  14.6

 BUS-T-L1_SEC   ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-L1_PRI      480.0  0.6957 / -34.  0.6957 /-154.  0.6957 /  86.
   BUS-DS-L1         208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-T-L1_SEC   ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-L1_PRI   BUS-T-L1_SEC   T-L1             480.   1958.8/ -75.   1958.8/ 165.   1958.8/  45.
BUS-T-L1_SEC   BUS-DS-L1      CBL-DS-L1        208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-T-MDP_208_ VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7748.0 /  -96. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    6.414 +j  14.137 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.204

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    8183.5      7748.0      7748.0      7748.0      7748.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7748.0 / -95.6     7748.0 / 144.4      7748.0 /  24.4

 BUS-T-MDP_208_ ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_480       480.0  0.0669 / -63.  0.0669 / 177.  0.0669 /  57.
   BUS-T-MDP_208_    208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-T-MDP_208_ ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_480    BUS-T-MDP_208_ CBL-T-MDP_208    480.   7748.0/ -96.   7748.0/ 144.   7748.0/  24.
BUS-T-MDP_208_ BUS-T-MDP_208_ T-MDP_208        480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-T-MDP_208_ VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   6089.7 / -125. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   19.348 +j  41.270 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.133

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    6401.9      6089.8      6089.7      6089.7      6089.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 6089.7 /-124.9     6089.7 / 115.1      6089.7 /  -4.9

 BUS-T-MDP_208_ ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-T-MDP_208_    480.0  0.6595 / -30.  0.6594 /-150.  0.6594 /  90.
   BUS-DS-MDP_208    208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-T-MDP_208_ ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-MDP_208_ BUS-T-MDP_208_ T-MDP_208        480.   2638.9/ -95.   2638.9/ 145.   2638.9/  25.
BUS-T-MDP_208_ BUS-DS-MDP_208 CBL-DS-MDP_208   208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-T-OTERO-CO VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   9017.0 / -100. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    4.567 +j  12.533 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.745

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    9888.5      9017.9      9017.0      9017.0      9017.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 9017.0 /-100.0     9016.9 / 140.0      9016.9 /  20.0

 BUS-T-OTERO-CO ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-UTILITY_OT  12470.0  1.0000 /   0.  1.0000 /-120.  1.0000 / 120.
   BUS-METER         480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-T-OTERO-CO ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-UTILITY_OT BUS-T-OTERO-CO T-OTERO_CO-OP  12470.    347.1/ -70.    347.1/ 170.    347.1/  50.
BUS-T-OTERO-CO BUS-METER      CBL-METER        480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-UTILITY_OT VOLTAGE BASE LL:               12470.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:********* /  -90. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    0.000 +j   0.000 (PU)
                THEVENIN IMPEDANCE X/R RATIO:   INFINITE

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                  ********    ********    ********    ********    ********

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
               ******** / -90.0   ******** / 150.0    ******** /  30.0

 BUS-UTILITY_OT ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   BUS-T-OTERO-CO    480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-UTILITY_OT ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
UTIL-OTERO     BUS-UTILITY_OT                12470. ********/ -90. ********/ 150. ********/  30.
BUS-UTILITY_OT BUS-T-OTERO-CO T-OTERO_CO-OP  12470.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-X-RAY      VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4622.1 / -117. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   32.445 +j  50.534 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.558

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4703.2      4622.1      4622.1      4622.1      4622.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4622.1 /-117.3     4622.1 / 122.7      4622.1 /   2.7

 BUS-X-RAY      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.1310 / -79.  0.1310 / 161.  0.1310 /  41.
   BUS-X-RAY      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-X-RAY      CBL-X-RAY        208.   4622.1/-117.   4622.1/ 123.   4622.1/   3.

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 BUS-XFMR ADMIN VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3073.6 /  -59. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   34.102 +j  19.197 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.563

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3073.6      3073.6      3073.6      3073.6      3073.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3073.6 / -59.4     3073.6 /-179.4      3073.6 /  60.6

 BUS-XFMR ADMIN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-ADMIN BLDG    480.0  0.1089 / -48.  0.1089 /-168.  0.1089 /  72.
   BUSXFMR ADMIN     208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-XFMR ADMIN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-ADMIN BLDG BUS-XFMR ADMIN CBL-XFMR ADMIN   480.   3073.6/ -59.   3073.6/-179.   3073.6/  61.
BUS-XFMR ADMIN BUSXFMR ADMIN  XFMR-ADMIN BLD   480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUSXFMR ADMIN  VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2439.4 /  -94. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   94.769 +j  62.975 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.665

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2439.6      2439.4      2439.4      2439.4      2439.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2439.4 / -93.6     2439.4 / 146.4      2439.4 /  26.4

 BUSXFMR ADMIN  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-XFMR ADMIN    480.0  0.6575 / -28.  0.6575 /-148.  0.6575 /  92.
   BUS-PANEL P AD    208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUSXFMR ADMIN  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-XFMR ADMIN BUSXFMR ADMIN  XFMR-ADMIN BLD   480.   1057.1/ -64.   1057.1/ 176.   1057.1/  56.
BUSXFMR ADMIN  BUS-PANEL P AD CBL-PANEL P AD   208.      0.0/   0.      0.0/   0.      0.0/   0.

*********************************************************************************************
```

********** F A U L T A N A L Y S I S R E P O R T **********

FAULT TYPE: SLG
MODEL INDUCTION MOTOR CONTRIBUTION: YES
MODEL TRANSFORMER TAPS: YES
MODEL TRANSFORMER PHASE SHIFT: YES

==========

BUS-1EB VOLTAGE BASE LL: 208.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 2773.2 / -107. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 205.495 +j 218.938 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.065
SEQUENCE EQUIVALENT IMPEDANCE Z1: 49.217 +j 65.755 (PU)
Z2: 49.217 +j 65.755 (PU)
Z0: 107.062 +j 87.427 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
2780.8	2773.2	2773.2	2773.2	2773.2

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0339 / 168.5	1.1767 / 65.6

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
2773.2 /-106.8	0.0 / 0.0	0.0 / 0.0

BUS-1EB ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

	---PHASE A---	---PHASE B---	---PHASE C---
BUS-EM	208.0 0.4191 / -73.	0.9830 / 177.	1.0472 / 60.

BUS-1EB ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
BUS-EM	BUS-1EB	CBL-1EB	208.	2773.2/-107.	0.0/ 0.	0.0/ 0.

```
 BUS-1EC        VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2497.0 / -106. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  233.692 +j 237.906 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.018
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  54.690 +j  70.006 (PU)
                                              Z2:  54.690 +j  70.006 (PU)
                                              Z0: 124.312 +j  97.895 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2502.2      2497.0      2497.0      2497.0      2497.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0488 /  167.7     1.1887 /   66.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2497.0 /-105.5        0.0 /   0.0         0.0 /   0.0

 BUS-1EC        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-EM            208.0  0.4792 / -72.  0.9855 / 178.  1.0424 /  60.
   BUS-1EC        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-EM         BUS-1EC        CBL-1EC          208.   2497.0/-106.      0.0/   0.      0.0/   0.

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```
 BUS-1LA        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3984.1 / -110. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  133.581 +j 160.754 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.203
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  35.256 +j  52.716 (PU)
                                              Z2:  35.256 +j  52.716 (PU)
                                              Z0:  63.069 +j  55.321 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4005.5      3984.1      3984.1      3984.1      3984.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9742 /  172.4     1.1296 /   61.8

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3984.1 /-110.3        0.0 /   0.0         0.0 /   0.0

 BUS-1LA        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.2681 / -76.  0.9521 / 178.  1.0462 /  58.
   BUS-1LA        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-1LA        CBL-1LA          208.   3984.1/-110.      0.0/-110.      0.0/-110.

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```

```
 BUS-1LB        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3184.9 / -107. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  178.543 +j 191.001 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.070
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  43.984 +j  59.494 (PU)
                                              Z2:  43.984 +j  59.494 (PU)
                                              Z0:  90.575 +j  72.013 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3193.9      3184.9      3184.9      3184.9      3184.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0109 /  169.5     1.1660 /   64.3

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3184.9 /-106.9        0.0 /   0.0         0.0 /   0.0

 BUS-1LB        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.4215 / -73.  0.9629 / 179.  1.0381 /  59.
   BUS-1LB        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-1LB        CBL-1LB          208.   3184.9/-107.      0.0/   0.      0.0/   0.

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```

```
 BUS-1LC        VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3567.5 / -102. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  174.176 +j 155.392 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.892
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  57.891 +j  54.539 (PU)
                                              Z2:  57.891 +j  54.539 (PU)
                                              Z0:  58.393 +j  46.314 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3570.6      3567.5      3567.5      3567.5      3567.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9651 / -179.7     1.0136 /   58.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3567.5 /-101.7        0.0 /   0.0         0.0 /   0.0

 BUS-1LC        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-DS-1LC        208.0  0.1640 / -64.  0.9460 /-176.  0.9754 /  55.
   BUS-1LC        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-DS-1LC     BUS-1LC        CBL-1LC          208.   3567.5/-102.      0.0/   0.      0.0/   0.

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```

```
 BUS-1LD        VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1662.5 /  -90. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  434.792 +j 248.702 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.572
                SEQUENCE EQUIVALENT IMPEDANCE Z1: 147.539 +j  88.687 (PU)
                                              Z2: 147.539 +j  88.687 (PU)
                                              Z0: 139.714 +j  71.328 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1662.5      1662.5      1662.5      1662.5      1662.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9654 / -179.1     1.0047 /   57.8

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1662.5 / -89.8        0.0 /   0.0         0.0 /   0.0

 BUS-1LD        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-1LD_SEC     208.0  0.0495 / -76.  0.9619 /-178.  0.9899 /  57.
   BUS-1LD        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-1LD_SEC  BUS-1LD        CBL-1LD          208.   1662.5/ -90.      0.0/   0.      0.0/   0.

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```

```
 BUS-2EA        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3115.9 / -108. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  177.299 +j 199.969 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.128
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  43.743 +j  61.505 (PU)
                                              Z2:  43.743 +j  61.505 (PU)
                                              Z0:  89.812 +j  76.959 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3127.7      3115.9      3115.9      3115.9      3115.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0167 /  169.7     1.1609 /   64.5

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3115.9 /-108.4        0.0 /   0.0         0.0 /   0.0

 BUS-2EA        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-EM            208.0  0.3437 / -75.  0.9796 / 177.  1.0532 /  60.
   BUS-2EA        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-EM         BUS-2EA        CBL-2EA          208.   3115.9/-108.      0.0/   0.      0.0/   0.

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```

```
 BUS-2EB        VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2724.5 / -107. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  210.068 +j 222.014 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.057
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  50.104 +j  66.445 (PU)
                                              Z2:  50.104 +j  66.445 (PU)
                                              Z0: 109.859 +j  89.124 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2731.6      2724.5      2724.5      2724.5      2724.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0365 /  168.4     1.1788 /   65.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2724.5 /-106.6        0.0 /   0.0         0.0 /   0.0

 BUS-2EB        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-EM            208.0  0.4297 / -73.  0.9834 / 177.  1.0464 /  60.
   BUS-2EB        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-EM         BUS-2EB        CBL-2EB          208.   2724.5/-107.      0.0/   0.      0.0/   0.

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```

```
 BUS-2LA        VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3521.5 / -108. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  157.205 +j 176.646 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.124
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  39.842 +j  56.278 (PU)
                                              Z2:  39.842 +j  56.278 (PU)
                                              Z0:  77.521 +j  64.091 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3534.6      3521.5      3521.5      3521.5      3521.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9945 /  170.6     1.1512 /   63.2

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3521.5 /-108.3        0.0 /   0.0         0.0 /   0.0

 BUS-2LA        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.3573 / -74.  0.9584 / 179.  1.0416 /  59.
   BUS-2LA        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-2LA        CBL-2LA          208.   3521.5/-108.      0.0/   0.      0.0/   0.

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```

```
 BUS-2LB        VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3089.7 / -107. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  185.401 +j 195.615 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.055
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  45.315 +j  60.528 (PU)
                                              Z2:  45.315 +j  60.528 (PU)
                                              Z0:  94.771 +j  74.559 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3097.7      3089.7      3089.7      3089.7      3089.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0157 /  169.2     1.1701 /   64.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3089.7 /-106.5        0.0 /   0.0         0.0 /   0.0

 BUS-2LB        ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.4396 / -73.  0.9642 / 179.  1.0371 /  59.
   BUS-2LB        ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-2LB        CBL-2LB          208.   3089.7/-107.      0.0/   0.      0.0/   0.

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```

```
 BUS-A/C-1      VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3673.3 / -109. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  148.822 +j 171.007 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.149
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  38.215 +j  55.014 (PU)
                                              Z2:  38.215 +j  55.014 (PU)
                                              Z0:  72.393 +j  60.979 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3688.7      3673.3      3673.3      3673.3      3673.3

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9875 /  171.2     1.1443 /   62.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3673.3 /-109.0        0.0 /   0.0         0.0 /   0.0

 BUS-A/C-1      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.3282 / -75.  0.9564 / 179.  1.0431 /  59.
   BUS-A/C-1      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-A/C-1    CBL-A/C-1        208.   3673.3/-109.      0.0/   0.      0.0/   0.

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```
 BUS-AA          VOLTAGE BASE LL:                  480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   7295.6 /  -97. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:   19.265 +j  45.554 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     2.365
                 SEQUENCE EQUIVALENT IMPEDANCE Z1:   5.943 +j  14.297 (PU)
                                               Z2:   5.943 +j  14.297 (PU)
                                               Z0:   7.380 +j  16.960 (PU)

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     7790.6      7295.8      7295.6      7295.6      7295.6

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     1.0269 / -153.1     1.0367 /   92.8

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  7295.6 / -97.1        0.0 /   0.0         0.0 /   0.0

 BUS-AA          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_480       480.0  0.0775 / -40.  1.0193 /-152.  1.0160 /  92.
   BUS-AC            480.0  0.0000 /   0.  1.0269 /-153.  1.0367 /  93.
   BUS-DS-T-1LC      480.0  0.0000 /   0.  1.0269 /-153.  1.0367 /  93.
   BUS-AB            480.0  0.0000 /   0.  1.0269 /-153.  1.0367 /  93.
   BUS-CRAC-1        480.0  0.0000 /   0.  1.0269 /-153.  1.0367 /  93.
   BUS-CRAC-2        480.0  0.0000 /   0.  1.0269 /-153.  1.0367 /  93.
   BUS-DS-T-L1       480.0  0.0000 /   0.  1.0269 /-153.  1.0367 /  93.
   BUS-AA         ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_480    BUS-AA          CBL-AA           480.   7295.6/ -97.      0.0/ -97.      0.0/ -97.
BUS-AA         BUS-AC          CBL-AC           480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-AA         BUS-DS-T-1LC    CBL-DS-T-1LC     480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-AA         BUS-AB          CBL-AB           480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-AA         BUS-CRAC-1      CBL-CRAC-1       480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-AA         BUS-CRAC-2      CBL-CRAC-2       480.      0.0/   0.      0.0/   0.      0.0/   0.
```

BUS-AA ================ FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ================

BUS-AA	BUS-DS-T-L1	CBL-DS-T-L1	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.	0.0/ 0.

```
 BUS-AB          VOLTAGE BASE LL:                  480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   3331.9 /  -68. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:   85.802 +j  66.084 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     0.770
                 SEQUENCE EQUIVALENT IMPEDANCE Z1:  18.859 +j  18.899 (PU)
                                               Z2:  18.859 +j  18.899 (PU)
                                               Z0:  48.083 +j  28.286 (PU)

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     3332.8      3331.9      3331.9      3331.9      3331.9

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     1.0866 / -164.9     1.2301 /   98.6

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  3331.9 / -67.6        0.0 /   0.0         0.0 /   0.0

 BUS-AB          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA             480.0  0.6430 / -50.  1.0227 /-151.  1.0033 /  92.
   BUS-AB           ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA          BUS-AB          CBL-AB          480.   3331.9/ -68.      0.0/   0.      0.0/   0.

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```
 BUS-AC          VOLTAGE BASE LL:                  480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   4577.4 /  -86. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:   44.437 +j  65.113 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     1.465
                 SEQUENCE EQUIVALENT IMPEDANCE Z1:  10.830 +j  18.680 (PU)
                                               Z2:  10.830 +j  18.680 (PU)
                                               Z0:  22.777 +j  27.753 (PU)

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     4639.9      4577.4      4577.4      4577.4      4577.4

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     1.0546 / -160.2     1.1494 /   96.3

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  4577.4 / -85.7        0.0 /   0.0         0.0 /   0.0

 BUS-AC          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA            480.0  0.4044 / -48.  1.0230 /-152.  1.0162 /  92.
   BUS-T-1LD_PRI     480.0  0.0000 /   0.  1.0546 /-160.  1.1494 /  96.
   BUS-AC         ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA         BUS-AC         CBL-AC           480.   4577.4/ -86.      0.0/ -86.      0.0/ -86.
BUS-AC         BUS-T-1LD_PRI  CBL-T-1LD        480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-ADMIN BLDG VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2307.5 /  -54. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  142.796 +j  63.745 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.446
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  29.922 +j  18.374 (PU)
                                              Z2:  29.922 +j  18.374 (PU)
                                              Z0:  82.951 +j  26.997 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2307.5      2307.5      2307.5      2307.5      2307.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1393 / -166.9     1.2659 /  101.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2307.5 / -54.1       0.0 /   0.0         0.0 /   0.0

 BUS-ADMIN BLDG ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-PD-ADMIN B    480.0  0.0931 / -44.  1.1201 /-165.  1.2334 / 100.
   BUS-XFMR ADMIN    480.0  0.0000 /   0.  1.1393 /-167.  1.2659 / 101.
   BUS-ADMIN BLDG ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-PD-ADMIN B BUS-ADMIN BLDG CBL-ADMIN BLDG   480.   2307.5/ -54.      0.0/   0.      0.0/   0.
BUS-ADMIN BLDG BUS-XFMR ADMIN CBL-XFMR ADMIN   480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-ATS-C      VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7979.8 /  -98. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   16.911 +j  41.939 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.480
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   5.461 +j  13.489 (PU)
                                              Z2:   5.461 +j  13.489 (PU)
                                              Z0:   5.989 +j  14.961 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    8589.9      7980.1      7979.8      7979.8      7979.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0189 / -151.6     1.0166 /   91.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7979.8 / -98.0       0.0 /   0.0         0.0 /   0.0

 BUS-ATS-C      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_480       480.0  0.0000 /   0.  1.0189 /-152.  1.0166 /  92.
   BUS-ATS-N         480.0  0.0000 /   0.  1.0189 /-152.  1.0166 /  92.
   BUS-ATS-C      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-ATS-C      BUS-MDP_480    CBL-MDP_480      480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-ATS-N      BUS-ATS-C      AUTO-ATS-1       480.   7979.8/ -98.      0.0/ -98.      0.0/ -98.

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 BUS-ATS-N      VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7979.8 /  -98. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   16.911 +j  41.939 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.480
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   5.461 +j  13.489 (PU)
                                              Z2:   5.461 +j  13.489 (PU)
                                              Z0:   5.989 +j  14.961 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    8589.9      7980.1      7979.8      7979.8      7979.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0189 / -151.6     1.0166 /   91.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7979.8 / -98.0        0.0 /   0.0         0.0 /   0.0

 BUS-ATS-N      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-METER         480.0  0.0245 / -45.  1.0149 /-151.  1.0131 /  91.
   BUS-ATS-C         480.0  0.0000 /   0.  1.0189 /-152.  1.0166 /  92.
   BUS-ATS-N      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-ATS-N      BUS-METER      CBL-ATS-N        480.   7979.8/  82.      0.0/  82.      0.0/  82.
BUS-ATS-N      BUS-ATS-C      AUTO-ATS-1       480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-CRAC-1     VOLTAGE BASE LL:                  480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2207.4 /  -50. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  153.451 +j  56.359 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.367
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  31.990 +j  16.719 (PU)
                                              Z2:  31.990 +j  16.719 (PU)
                                              Z0:  89.470 +j  22.921 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2207.4      2207.4      2207.4      2207.4      2207.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1489 / -167.2     1.2714 /  101.5

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2207.4 / -50.2        0.0 /   0.0         0.0 /   0.0

 BUS-CRAC-1     ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA            480.0  0.8235 / -46.  1.0176 /-150.  0.9965 /  91.
   BUS-CRAC-1     ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA         BUS-CRAC-1     CBL-CRAC-1       480.   2207.4/ -50.      0.0/   0.      0.0/   0.

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 BUS-CRAC-2     VOLTAGE BASE LL:                  480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2413.6 /  -52. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  138.944 +j  55.191 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.397
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  29.174 +j  16.457 (PU)
                                              Z2:  29.174 +j  16.457 (PU)
                                              Z0:  80.595 +j  22.276 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2413.6      2413.6      2413.6      2413.6      2413.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1387 / -167.1     1.2693 /  101.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2413.6 / -51.7       0.0 /   0.0         0.0 /   0.0

 BUS-CRAC-2     ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA            480.0  0.8031 / -47.  1.0190 /-150.  0.9967 /  91.
   BUS-CRAC-2     ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA         BUS-CRAC-2     CBL-CRAC-2       480.   2413.6/ -52.      0.0/   0.      0.0/   0.

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 BUS-DS-1LC     VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4265.0 / -103. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  143.948 +j 131.905 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.916
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  52.022 +j  49.276 (PU)
                                              Z2:  52.022 +j  49.276 (PU)
                                              Z0:  39.904 +j  33.353 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4269.5      4265.0      4265.0      4265.0      4265.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9371 / -175.2     0.9701 /   54.3

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4265.0 /-102.5        0.0 /   0.0         0.0 /   0.0

 BUS-DS-1LC     ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-1LC_SEC     208.0  0.0810 / -65.  0.9300 /-173.  0.9524 /  53.
   BUS-1LC           208.0  0.0000 /   0.  0.9371 /-175.  0.9701 /  54.
   BUS-DS-1LC     ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-1LC_SEC  BUS-DS-1LC     CBL-DS-1LC       208.   4265.0/-103.      0.0/-103.      0.0/-103.
BUS-DS-1LC     BUS-1LC        CBL-1LC          208.      0.0/   0.      0.0/   0.      0.0/   0.

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```
 BUS-DS-L1      VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4514.7 / -103. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  134.508 +j 126.204 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.938
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  46.225 +j  46.132 (PU)
                                              Z2:  46.225 +j  46.132 (PU)
                                              Z0:  42.057 +j  33.941 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4520.3      4514.7      4514.7      4514.7      4514.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9415 / -177.7     0.9999 /   56.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4514.7 /-103.2        0.0 /   0.0         0.0 /   0.0

 BUS-DS-L1      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-L1_SEC      208.0  0.1046 / -69.  0.9336 /-175.  0.9734 /  54.
   BUS-L1            208.0  0.0000 /   0.  0.9415 /-178.  0.9999 /  56.
   BUS-DS-L1      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-L1_SEC   BUS-DS-L1      CBL-DS-L1        208.   4514.7/-103.      0.0/-103.      0.0/-103.
BUS-DS-L1      BUS-L1         CBL-L1           208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-DS-MDP_208 VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5862.9 / -119. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   73.196 +j 121.719 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.663
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  23.534 +j  43.970 (PU)
                                              Z2:  23.534 +j  43.970 (PU)
                                              Z0:  26.127 +j  33.780 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5995.4      5862.9      5862.9      5862.9      5862.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9286 / -178.8     1.0220 /   56.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5862.9 /-119.0        0.0 /   0.0         0.0 /   0.0

 BUS-DS-MDP_208 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-MDP_208_    208.0  0.1739 / -90.  0.9389 /-175.  0.9619 /  54.
   BUS-MDP_208       208.0  0.0000 /   0.  0.9286 /-179.  1.0220 /  56.
   BUS-DS-MDP_208 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-MDP_208_ BUS-DS-MDP_208 CBL-DS-MDP_208   208.   5862.9/-119.      0.0/-119.      0.0/-119.
BUS-DS-MDP_208 BUS-MDP_208    CBL-MDP_208      208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-DS-T-1LC   VOLTAGE BASE LL:                  480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3782.7 /  -72. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   70.494 +j  64.270 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.912
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  15.887 +j  18.493 (PU)
                                              Z2:  15.887 +j  18.493 (PU)
                                              Z0:  38.720 +j  27.285 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3786.5      3782.7      3782.7      3782.7      3782.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0693 / -163.7     1.2108 /   97.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3782.7 / -72.4        0.0 /   0.0         0.0 /   0.0

 BUS-DS-T-1LC   ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA            480.0  0.5717 / -52.  1.0242 /-151.  1.0064 /  92.
   BUS-T-1LC_PRI     480.0  0.0000 /   0.  1.0693 /-164.  1.2108 /  98.
   BUS-DS-T-1LC   ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA         BUS-DS-T-1LC   CBL-DS-T-1LC     480.   3782.7/ -72.      0.0/   0.      0.0/   0.
BUS-DS-T-1LC   BUS-T-1LC_PRI  CBL-T-1LC        480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-DS-T-L1    VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   6122.9 /  -86. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   32.814 +j  48.953 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.492
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   8.573 +j  15.059 (PU)
                                              Z2:   8.573 +j  15.059 (PU)
                                              Z0:  15.669 +j  18.835 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    6213.0      6122.9      6122.9      6122.9      6122.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0136 / -157.7     1.1182 /   93.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 6122.9 / -86.2        0.0 /   0.0         0.0 /   0.0

 BUS-DS-T-L1    ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AA            480.0  0.2370 / -72.  1.0306 /-152.  1.0224 /  93.
   BUS-T-L1_PRI      480.0  0.0000 /   0.  1.0136 /-158.  1.1182 /  94.
   BUS-DS-T-L1    ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AA         BUS-DS-T-L1    CBL-DS-T-L1      480.   6122.9/ -86.      0.0/ -86.      0.0/ -86.
BUS-DS-T-L1    BUS-T-L1_PRI   CBL-T-L1         480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-EM          VOLTAGE BASE LL:                  208.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   4631.1 / -116. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:  101.092 +j 148.702 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     1.471
                 SEQUENCE EQUIVALENT IMPEDANCE Z1:  28.950 +j  50.017 (PU)
                                               Z2:  28.950 +j  50.017 (PU)
                                               Z0:  43.192 +j  48.668 (PU)

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     4695.3      4631.1      4631.1      4631.1      4631.1

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     0.9612 /  175.9     1.0795 /   59.9

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  4631.1 /-115.8        0.0 /   0.0         0.0 /   0.0

 BUS-EM          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.1322 / -62.  0.9417 / 179.  1.0504 /  58.
   BUS-1EC           208.0  0.0000 /   0.  0.9612 / 176.  1.0795 /  60.
   BUS-1EB           208.0  0.0000 /   0.  0.9612 / 176.  1.0795 /  60.
   BUS-2EB           208.0  0.0000 /   0.  0.9612 / 176.  1.0795 /  60.
   BUS-2EA           208.0  0.0000 /   0.  0.9612 / 176.  1.0795 /  60.
   BUS-MAINTENANC    208.0  0.0000 /   0.  0.9612 / 176.  1.0795 /  60.
   BUS-EM         ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-EM         CBL-EM           208.   4631.1/-116.      0.0/-116.      0.0/-116.
BUS-EM         BUS-1EC        CBL-1EC          208.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-EM         BUS-1EB        CBL-1EB          208.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-EM         BUS-2EB        CBL-2EB          208.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-EM         BUS-2EA        CBL-2EA          208.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-EM         BUS-MAINTENANC CBL-MAINTENANC   208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-FIRE PUMP  VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5307.4 / -116. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   87.857 +j 129.994 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.480
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  26.380 +j  45.824 (PU)
                                              Z2:  26.380 +j  45.824 (PU)
                                              Z0:  35.096 +j  38.346 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5382.8      5307.4      5307.4      5307.4      5307.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9333 /  178.2     1.0597 /   57.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5307.4 /-115.9        0.0 /   0.0         0.0 /   0.0

 BUS-FIRE PUMP  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.0059 / -82.  0.9331 / 178.  1.0578 /  58.
   BUS-FIRE PUMP  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-FIRE PUMP  CBL-FIRE PUMP    208.   5307.4/-116.      0.0/-116.      0.0/-116.

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```
 BUS-K          VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4052.4 / -111. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  130.532 +j 158.703 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.216
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  34.664 +j  52.257 (PU)
                                              Z2:  34.664 +j  52.257 (PU)
                                              Z0:  61.204 +j  54.189 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4075.4      4052.4      4052.4      4052.4      4052.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9714 /  172.7     1.1263 /   61.5

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4052.4 /-110.6        0.0 /   0.0         0.0 /   0.0

 BUS-K          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.2548 / -77.  0.9511 / 178.  1.0468 /  58.
   BUS-K          ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-K          CBL-K           208.   4052.4/-111.      0.0/-111.      0.0/-111.

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```
 BUS-L1          VOLTAGE BASE LL:                  208.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   3053.0 / -100. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:  208.428 +j 175.933 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     0.844
                 SEQUENCE EQUIVALENT IMPEDANCE Z1:  60.575 +j  57.275 (PU)
                                               Z2:  60.575 +j  57.275 (PU)
                                               Z0:  87.279 +j  61.384 (PU)

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     3054.8      3053.0      3053.0      3053.0      3053.0

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     1.0024 /  174.3     1.0880 /   62.5

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  3053.0 /-100.2        0.0 /   0.0         0.0 /   0.0

 BUS-L1          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-DS-L1         208.0  0.3266 / -66.  0.9590 /-179.  1.0019 /  57.
   BUS-L1          ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-DS-L1      BUS-L1         CBL-L1           208.   3053.0/-100.      0.0/   0.      0.0/   0.
```

```
 BUS-MAINTENANC VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1129.7 /  -80. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  693.520 +j 249.733 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.360
                SEQUENCE EQUIVALENT IMPEDANCE Z1: 143.954 +j  72.660 (PU)
                                              Z2: 143.954 +j  72.660 (PU)
                                              Z0: 405.613 +j 104.414 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1129.7      1129.7      1129.7      1129.7      1129.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1569 /  162.8     1.2706 /   71.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1129.7 / -79.8        0.0 /   0.0         0.0 /   0.0

 BUS-MAINTENANC ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-EM            208.0  0.8153 / -70.  1.0018 / 179.  1.0160 /  61.
   BUS-MAINTENANC ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-EM         BUS-MAINTENANC CBL-MAINTENANC   208.   1129.7/ -80.      0.0/   0.      0.0/   0.

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```
 BUS-MCP-3      VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3120.8 / -107. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  183.115 +j 194.077 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.060
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  44.871 +j  60.183 (PU)
                                              Z2:  44.871 +j  60.183 (PU)
                                              Z0:  93.372 +j  73.710 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3129.1      3120.8      3120.8      3120.8      3120.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0141 /  169.3     1.1687 /   64.5

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3120.8 /-106.7        0.0 /   0.0         0.0 /   0.0

 BUS-MCP-3      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.4337 / -73.  0.9638 / 179.  1.0374 /  59.
   BUS-MCP-3      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-MCP-3      CBL-MCP-3        208.   3120.8/-107.      0.0/   0.      0.0/   0.

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 BUS-MCP-4      VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3120.8 / -107. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  183.115 +j 194.077 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.060
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  44.871 +j  60.183 (PU)
                                              Z2:  44.871 +j  60.183 (PU)
                                              Z0:  93.372 +j  73.710 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3129.1      3120.8      3120.8      3120.8      3120.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0141 /  169.3     1.1687 /   64.5

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3120.8 /-106.7        0.0 /   0.0         0.0 /   0.0

 BUS-MCP-4      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.4337 / -73.  0.9638 / 179.  1.0374 /  59.
   BUS-MCP-4      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-MCP-4      CBL-MCP-4        208.   3120.8/-107.      0.0/   0.      0.0/   0.

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BUS-MDP_208 VOLTAGE BASE LL: 208.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 5336.3 / -116. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 87.095 +j 129.481 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.487
SEQUENCE EQUIVALENT IMPEDANCE Z1: 26.232 +j 45.709 (PU)
Z2: 26.232 +j 45.709 (PU)
Z0: 34.630 +j 38.063 (PU)

ASYM RMS INTERRUPTING AMPS

1/2 CYCLES	2 CYCLES	3 CYCLES	5 CYCLES	8 CYCLES
5413.7	5336.3	5336.3	5336.3	5336.3

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.9327 / 178.4	1.0580 / 57.6

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
5336.3 /-116.1	0.0 / 0.0	0.0 / 0.0

BUS-MDP_208 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-DS-MDP_208	208.0	0.1020 / -87.	0.9341 /-179.	1.0231 / 56.
BUS-1LB	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-EM	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-1LA	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-X-RAY	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-A/C-1	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-MP-1	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-MCP-3	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-2LA	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-K	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-MCP-4	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-MP-2	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-FIRE PUMP	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.
BUS-2LB	208.0	0.0000 / 0.	0.9327 / 178.	1.0580 / 58.

BUS-MDP_208 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================

FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
BUS-DS-MDP_208 BUS-MDP_208	CBL-MDP_208	208.	5336.3/-116.	0.0/-116.	0.0/-116.
BUS-MDP_208 BUS-1LB	CBL-1LB	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-EM	CBL-EM	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-1LA	CBL-1LA	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-X-RAY	CBL-X-RAY	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-A/C-1	CBL-A/C-1	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-MP-1	CBL-MP-1	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-MCP-3	CBL-MCP-3	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-2LA	CBL-2LA	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-K	CBL-K	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-MCP-4	CBL-MCP-4	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-MP-2	CBL-MP-2	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-FIRE PUMP	CBL-FIRE PUMP	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-MDP_208 BUS-2LB	CBL-2LB	208.	0.0/ 0.	0.0/ 0.	0.0/ 0.

```
 BUS-MDP_480    VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7898.3 /  -98. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   17.197 +j  42.326 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.461
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   5.541 +j  13.574 (PU)
                                              Z2:   5.541 +j  13.574 (PU)
                                              Z0:   6.116 +j  15.178 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    8490.9      7898.6      7898.3      7898.3      7898.3

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0205 / -151.8     1.0178 /   91.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7898.3 / -97.9        0.0 /   0.0         0.0 /   0.0

 BUS-MDP_480    ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-MDP_208_    480.0  0.0000 /   0.  1.0205 /-152.  1.0178 /  92.
   BUS-ATS-C         480.0  0.0105 / -44.  1.0188 /-152.  1.0163 /  92.
   BUS-AA            480.0  0.0000 /   0.  1.0205 /-152.  1.0178 /  92.
   BUS-PD-ADMIN B    480.0  0.0000 /   0.  1.0205 /-152.  1.0178 /  92.
   BUS-MDP_480    ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_480    BUS-T-MDP_208_ CBL-T-MDP_208    480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-ATS-C      BUS-MDP_480    CBL-MDP_480      480.   7898.3/ -98.      0.0/ -98.      0.0/ -98.
BUS-MDP_480    BUS-AA         CBL-AA           480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-MDP_480    BUS-PD-ADMIN B CBL-PD ADMIN B   480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-METER      VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   8173.5 /  -98. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   16.251 +j  41.048 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.526
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   5.277 +j  13.292 (PU)
                                              Z2:   5.277 +j  13.292 (PU)
                                              Z0:   5.697 +j  14.463 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    8826.7      8173.9      8173.5      8173.5      8173.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0152 / -151.3     1.0136 /   91.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 8173.5 / -98.4        0.0 /   0.0         0.0 /   0.0

 BUS-METER      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-OTERO-CO    480.0  0.0972 / -45.  1.0000 /-150.  1.0000 /  90.
   BUS-ATS-N         480.0  0.0000 /   0.  1.0152 /-151.  1.0136 /  91.
   BUS-METER      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-OTERO-CO BUS-METER      CBL-METER        480.   8173.5/ -98.      0.0/ -98.      0.0/ -98.
BUS-ATS-N      BUS-METER      CBL-ATS-N        480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-MP-1       VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4690.7 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  106.146 +j 142.298 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.341
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  29.930 +j  48.581 (PU)
                                              Z2:  29.930 +j  48.581 (PU)
                                              Z0:  46.285 +j  45.136 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4733.7      4690.7      4690.7      4690.7      4690.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9489 /  175.3     1.0938 /   59.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4690.7 /-113.3        0.0 /   0.0         0.0 /   0.0

 BUS-MP-1       ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.1293 / -79.  0.9421 / 178.  1.0527 /  58.
   BUS-MP-1       ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-MP-1       CBL-MP-1         208.   4690.7/-113.      0.0/-113.      0.0/-113.

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 BUS-MP-2       VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4736.9 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  104.622 +j 141.272 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.350
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  29.635 +j  48.351 (PU)
                                              Z2:  29.635 +j  48.351 (PU)
                                              Z0:  45.353 +j  44.570 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4781.8      4736.9      4736.9      4736.9      4736.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9475 /  175.6     1.0913 /   59.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4736.9 /-113.5        0.0 /   0.0         0.0 /   0.0

 BUS-MP-2       ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.1202 / -80.  0.9414 / 178.  1.0531 /  58.
   BUS-MP-2       ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-MP-2       CBL-MP-2         208.   4736.9/-113.      0.0/-113.      0.0/-113.

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 BUS-PANEL P AD VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2493.8 /  -93. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  280.687 +j 180.864 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.644
                SEQUENCE EQUIVALENT IMPEDANCE Z1: 100.686 +j  65.471 (PU)
                                              Z2: 100.686 +j  65.471 (PU)
                                              Z0:  79.315 +j  49.921 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2494.0      2493.8      2493.8      2493.8      2493.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9589 / -176.0     0.9670 /   55.8

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2493.8 / -92.8        0.0 /   0.0         0.0 /   0.0

 BUS-PANEL P AD ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUSXFMR ADMIN     208.0  0.0972 / -73.  0.9533 /-174.  0.9406 /  54.
   BUS-PANEL P AD ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUSXFMR ADMIN  BUS-PANEL P AD CBL-PANEL P AD   208.   2493.8/ -93.      0.0/   0.      0.0/   0.

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 BUS-PD-ADMIN B VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2535.5 /  -56. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  128.442 +j  61.297 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.477
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  27.136 +j  17.826 (PU)
                                              Z2:  27.136 +j  17.826 (PU)
                                              Z0:  74.170 +j  25.646 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2535.5      2535.5      2535.5      2535.5      2535.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1285 / -166.7     1.2629 /  100.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2535.5 / -55.5       0.0 /   0.0         0.0 /   0.0

 BUS-PD-ADMIN B ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_480       480.0  0.7929 / -46.  1.0116 /-150.  0.9970 /  91.
   BUS-ADMIN BLDG    480.0  0.0000 /   0.  1.1285 /-167.  1.2629 / 101.
   BUS-PD-ADMIN B ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_480    BUS-PD-ADMIN B CBL-PD ADMIN B   480.   2535.5/ -56.      0.0/   0.      0.0/   0.
BUS-PD-ADMIN B BUS-ADMIN BLDG CBL-ADMIN BLDG   480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-T-1LC_PRI  VOLTAGE BASE LL:                  480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3511.2 /  -71. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   77.935 +j  66.989 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.860
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  17.331 +j  19.102 (PU)
                                              Z2:  17.331 +j  19.102 (PU)
                                              Z0:  43.272 +j  28.784 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3513.6      3511.2      3511.2      3511.2      3511.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0790 / -164.2     1.2193 /   98.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3511.2 / -70.7        0.0 /   0.0         0.0 /   0.0

 BUS-T-1LC_PRI  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-1LC_SEC     208.0  0.7040 / -82.  0.6229 /-164.  1.0000 /  60.
   BUS-DS-T-1LC      480.0  0.0771 / -51.  1.0689 /-163.  1.1914 /  97.
   BUS-T-1LC_PRI  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-1LC_PRI  BUS-T-1LC_SEC  T-1LC           480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-DS-T-1LC   BUS-T-1LC_PRI  CBL-T-1LC       480.   3511.2/ -71.      0.0/   0.      0.0/   0.

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 BUS-T-1LC_SEC  VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4639.4 / -103. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  131.463 +j 122.204 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.930
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  49.598 +j  47.102 (PU)
                                              Z2:  49.598 +j  47.102 (PU)
                                              Z0:  32.267 +j  28.000 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4644.8      4639.4      4639.4      4639.4      4639.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9254 / -172.7     0.9480 /   52.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4639.4 /-102.9        0.0 /   0.0         0.0 /   0.0

 BUS-T-1LC_SEC  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-1LC_PRI     480.0  0.7818 / -22.  1.0000 /-150.  0.8084 /  80.
   BUS-DS-1LC        208.0  0.0000 /   0.  0.9254 /-173.  0.9480 /  52.
   BUS-T-1LC_SEC  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-1LC_PRI  BUS-T-1LC_SEC  T-1LC           480.   1160.7/-103.      0.0/   0.   1160.7/  77.
BUS-T-1LC_SEC  BUS-DS-1LC     CBL-DS-1LC      208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-T-1LD_PRI  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3418.6 /  -70. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   80.704 +j  68.033 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.843
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  17.870 +j  19.335 (PU)
                                              Z2:  17.870 +j  19.335 (PU)
                                              Z0:  44.964 +j  29.364 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3420.6      3418.6      3418.6      3418.6      3418.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0824 / -164.4     1.2219 /   98.3

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3418.6 / -70.1       0.0 /   0.0         0.0 /   0.0

 BUS-T-1LD_PRI  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-AC            480.0  0.3447 / -66.  1.0722 /-157.  1.0838 /  96.
   BUS-T-1LD_SEC     208.0  0.7055 / -82.  0.6249 /-164.  1.0000 /  60.
   BUS-T-1LD_PRI  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-AC         BUS-T-1LD_PRI  CBL-T-1LD        480.   3418.6/ -70.      0.0/   0.      0.0/   0.
BUS-T-1LD_PRI  BUS-T-1LD_SEC  T-1LD            480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-T-1LD_SEC  VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1745.5 /  -91. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  410.740 +j 242.669 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.591
                SEQUENCE EQUIVALENT IMPEDANCE Z1: 142.870 +j  87.335 (PU)
                                              Z2: 142.870 +j  87.335 (PU)
                                              Z0: 125.000 +j  68.000 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1745.5      1745.5      1745.5      1745.5      1745.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9606 / -177.7     0.9887 /   56.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1745.5 / -90.6        0.0 /   0.0         0.0 /   0.0

 BUS-T-1LD_SEC  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-1LD_PRI     480.0  0.9073 / -29.  1.0000 /-150.  0.9370 /  86.
   BUS-1LD           208.0  0.0000 /   0.  0.9606 /-178.  0.9887 /  57.
   BUS-T-1LD_SEC  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-1LD_PRI  BUS-T-1LD_SEC  T-1LD           480.    436.7/ -91.      0.0/   0.    436.7/  89.
BUS-T-1LD_SEC  BUS-1LD        CBL-1LD         208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-T-L1_PRI   VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5275.4 /  -79. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   44.557 +j  51.898 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.165
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  10.852 +j  15.719 (PU)
                                              Z2:  10.852 +j  15.719 (PU)
                                              Z0:  22.852 +j  20.460 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5299.3      5275.4      5275.4      5275.4      5275.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0247 / -160.6     1.1640 /   95.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5275.4 / -79.4       0.0 /   0.0         0.0 /   0.0

 BUS-T-L1_PRI   ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-L1_SEC      208.0  0.6720 / -85.  0.5916 /-161.  1.0000 /  60.
   BUS-DS-T-L1       480.0  0.1770 / -65.  1.0243 /-157.  1.0942 /  94.
   BUS-T-L1_PRI   ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-L1_PRI   BUS-T-L1_SEC   T-L1             480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-DS-T-L1    BUS-T-L1_PRI   CBL-T-L1         480.   5275.4/ -79.      0.0/ -79.      0.0/ -79.

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 BUS-T-L1_SEC   VOLTAGE BASE LL:                  208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5033.4 / -104. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  118.505 +j 115.438 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.974
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  43.119 +j  43.719 (PU)
                                              Z2:  43.119 +j  43.719 (PU)
                                              Z0:  32.267 +j  28.000 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5041.4      5033.4      5033.4      5033.4      5033.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9281 / -174.6     0.9688 /   53.5

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5033.4 /-104.2        0.0 /   0.0         0.0 /   0.0

 BUS-T-L1_SEC   ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-L1_PRI      480.0  0.8133 / -25.  1.0000 /-150.  0.8595 /  81.
   BUS-DS-L1         208.0  0.0000 /   0.  0.9281 /-175.  0.9688 /  54.
   BUS-T-L1_SEC   ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-L1_PRI   BUS-T-L1_SEC   T-L1             480.   1259.3/-104.      0.0/   0.   1259.3/  76.
BUS-T-L1_SEC   BUS-DS-L1      CBL-DS-L1        208.      0.0/   0.      0.0/   0.      0.0/   0.

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```
 BUS-T-MDP_208_ VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7244.0 /  -94. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   21.697 +j  44.839 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.067
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   6.414 +j  14.137 (PU)
                                              Z2:   6.414 +j  14.137 (PU)
                                              Z0:   8.868 +j  16.565 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    7582.5      7244.0      7244.0      7244.0      7244.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0149 / -153.8     1.0536 /   92.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7244.0 / -94.2        0.0 /   0.0         0.0 /   0.0

 BUS-T-MDP_208_ ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_480       480.0  0.1035 / -65.  1.0205 /-152.  1.0143 /  92.
   BUS-T-MDP_208_    208.0  0.6083 / -88.  0.5860 /-154.  1.0000 /  60.
   BUS-T-MDP_208_ ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_480    BUS-T-MDP_208_ CBL-T-MDP_208    480.   7244.0/ -94.      0.0/ -94.      0.0/ -94.
BUS-T-MDP_208_ BUS-T-MDP_208_ T-MDP_208        480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-T-MDP_208_ VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   6869.5 / -125. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   51.629 +j 109.674 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.124
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  19.348 +j  41.270 (PU)
                                              Z2:  19.348 +j  41.270 (PU)
                                              Z0:  12.933 +j  27.133 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    7217.5      6869.6      6869.5      6869.5      6869.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9409 / -173.3     0.9442 /   53.2

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 6869.5 /-124.8        0.0 /   0.0         0.0 /   0.0

 BUS-T-MDP_208_ ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-MDP_208_    480.0  0.8136 / -22.  1.0000 /-150.  0.8174 /  82.
   BUS-DS-MDP_208    208.0  0.0000 /   0.  0.9409 /-173.  0.9442 /  53.
   BUS-T-MDP_208_ ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-T-MDP_208_ BUS-T-MDP_208_ T-MDP_208        480.   1718.7/-125.      0.0/   0.   1718.7/  55.
BUS-T-MDP_208_ BUS-DS-MDP_208 CBL-DS-MDP_208   208.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUS-T-OTERO-CO VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   9017.0 / -100. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   13.700 +j  37.600 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.745
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   4.567 +j  12.533 (PU)
                                              Z2:   4.567 +j  12.533 (PU)
                                              Z0:   4.567 +j  12.533 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    9888.6      9017.9      9017.0      9017.0      9017.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0000 / -150.0     1.0000 /   90.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 9017.0 /-100.0        0.0 /   0.0         0.0 /   0.0

 BUS-T-OTERO-CO ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-UTILITY_OT  12470.0  1.0000 /   0.  1.0000 /-120.  1.0000 / 120.
   BUS-METER         480.0  0.0000 /   0.  1.0000 /-150.  1.0000 /  90.
   BUS-T-OTERO-CO ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-UTILITY_OT BUS-T-OTERO-CO T-OTERO_CO-OP  12470.    200.4/-100.      0.0/   0.    200.4/  80.
BUS-T-OTERO-CO BUS-METER      CBL-METER        480.      0.0/   0.      0.0/   0.      0.0/   0.

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```
 BUS-UTILITY_OT VOLTAGE BASE LL:               12470.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:********* /  -90. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    0.000 +j   0.000 (PU)
                THEVENIN IMPEDANCE X/R RATIO:   INFINITE
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   0.000 +j   0.000 (PU)
                                              Z2:   0.000 +j   0.000 (PU)
                                              Z0:   0.000 +j   0.000 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                  ********    ********    ********    ********    ********

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0000 / -120.0     1.0000 /  120.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
               ******** / -90.0       11.6 / -90.0        11.6 / -90.0

 BUS-UTILITY_OT ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-T-OTERO-CO    480.0  0.5774 / -60.  0.5773 /-120.  1.0000 /  90.
   BUS-UTILITY_OT ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
UTIL-OTERO     BUS-UTILITY_OT               12470. ********/ -90.     11.6/ -90.     11.6/ -90.
BUS-UTILITY_OT BUS-T-OTERO-CO T-OTERO_CO-OP  12470.      0.0/   0.      0.0/   0.      0.0/   0.

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```
 BUS-X-RAY      VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4329.7 / -112. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  119.101 +j 151.013 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.268
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  32.445 +j  50.534 (PU)
                                              Z2:  32.445 +j  50.534 (PU)
                                              Z0:  54.211 +j  49.945 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4360.1      4329.7      4329.7      4329.7      4329.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9609 /  173.8     1.1125 /   60.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4329.7 /-111.7        0.0 /   0.0         0.0 /   0.0

 BUS-X-RAY      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-MDP_208       208.0  0.2006 / -78.  0.9473 / 178.  1.0494 /  58.
   BUS-X-RAY      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-MDP_208    BUS-X-RAY      CBL-X-RAY        208.   4329.7/-112.      0.0/-112.      0.0/-112.

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 BUS-XFMR ADMIN VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2031.6 /  -52. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  164.328 +j  67.417 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.410
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  34.102 +j  19.197 (PU)
                                              Z2:  34.102 +j  19.197 (PU)
                                              Z0:  96.123 +j  29.023 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2031.6      2031.6      2031.6      2031.6      2031.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1524 / -167.1     1.2688 /  101.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2031.6 / -52.3       0.0 /   0.0         0.0 /   0.0

 BUS-XFMR ADMIN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-ADMIN BLDG    480.0  0.1230 / -43.  1.1259 /-165.  1.2266 / 100.
   BUSXFMR ADMIN     208.0  0.7326 / -78.  0.6654 /-167.  1.0000 /  60.
   BUS-XFMR ADMIN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-ADMIN BLDG BUS-XFMR ADMIN CBL-XFMR ADMIN   480.   2031.6/ -52.      0.0/   0.      0.0/   0.
BUS-XFMR ADMIN BUSXFMR ADMIN  XFMR-ADMIN BLD   480.      0.0/   0.      0.0/   0.      0.0/   0.

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 BUSXFMR ADMIN  VOLTAGE BASE LL:                 208.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2754.2 /  -94. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  250.204 +j 169.728 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.678
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  94.769 +j  62.975 (PU)
                                              Z2:  94.769 +j  62.975 (PU)
                                              Z0:  60.667 +j  43.778 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2754.5      2754.2      2754.2      2754.2      2754.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9521 / -172.9     0.9323 /   53.5

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2754.2 / -94.2       0.0 /   0.0         0.0 /   0.0

 BUSXFMR ADMIN  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-XFMR ADMIN    480.0  0.8258 / -21.  1.0000 /-150.  0.8029 /  83.
   BUS-PANEL P AD    208.0  0.0000 /   0.  0.9521 /-173.  0.9323 /  53.
   BUSXFMR ADMIN  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-XFMR ADMIN BUSXFMR ADMIN  XFMR-ADMIN BLD   480.    689.1/ -94.      0.0/   0.    689.1/  86.
BUSXFMR ADMIN  BUS-PANEL P AD CBL-PANEL P AD   208.      0.0/   0.      0.0/   0.      0.0/   0.

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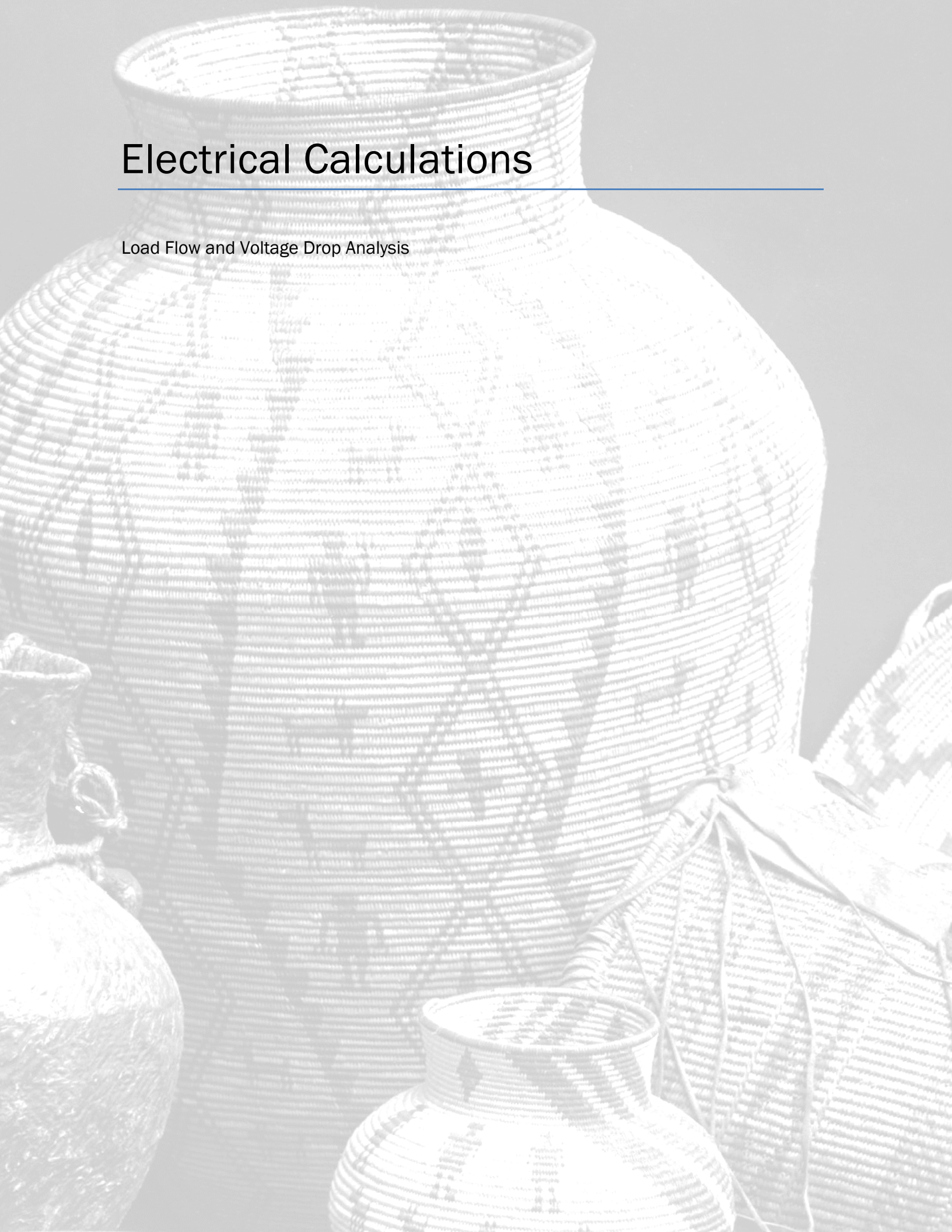
********** F A U L T A N A L Y S I S S U M M A R Y **********

BUS NAME	VOLTAGE L-L	AVAILABLE FAULT CURRENT 3 PHASE	X/R	LINE/GRND	X/R
BUS-1EB	208.	3379.5	1.3	2773.23	1.1
BUS-1EC	208.	3124.5	1.3	2497.02	1.0
BUS-1LA	208.	4376.8	1.5	3984.08	1.2
BUS-1LB	208.	3751.6	1.4	3184.93	1.1
BUS-1LC	208.	3489.9	0.9	3567.49	0.9
BUS-1LD	208.	1612.5	0.6	1662.45	0.6
BUS-2EA	208.	3677.7	1.4	3115.87	1.1
BUS-2EB	208.	3335.5	1.3	2724.46	1.1
BUS-2LA	208.	4025.5	1.4	3521.47	1.1
BUS-2LB	208.	3671.0	1.3	3089.68	1.1
BUS-A/C-1	208.	4143.8	1.4	3673.26	1.1
BUS-AA	480.	7768.5	2.4	7295.63	2.4
BUS-AB	480.	4505.1	1.0	3331.88	0.8
BUS-AC	480.	5570.5	1.7	4577.42	1.5
BUS-ADMIN BLDG	480.	3425.5	0.6	2307.50	0.4
BUS-ATS-C	480.	8265.5	2.5	7979.77	2.5
BUS-ATS-N	480.	8265.5	2.5	7979.77	2.5
BUS-CRAC-1	480.	3332.3	0.5	2207.36	0.4
BUS-CRAC-2	480.	3590.9	0.6	2413.61	0.4
BUS-DS-1LC	208.	3873.7	0.9	4265.01	0.9
BUS-DS-L1	208.	4250.3	1.0	4514.72	0.9
BUS-DS-MDP_208	208.	5565.7	1.9	5862.88	1.7
BUS-DS-T-1LC	480.	4933.6	1.2	3782.66	0.9
BUS-DS-T-L1	480.	6941.3	1.8	6122.92	1.5
BUS-EM	208.	4803.0	1.7	4631.06	1.5
BUS-FIRE PUMP	208.	5249.6	1.7	5307.36	1.5
BUS-K	208.	4426.4	1.5	4052.39	1.2
BUS-L1	208.	3329.6	0.9	3052.99	0.8
BUS-MAINTENANC	208.	1721.4	0.5	1129.70	0.4
BUS-MCP-3	208.	3697.5	1.3	3120.81	1.1
BUS-MCP-4	208.	3697.5	1.3	3120.81	1.1
BUS-MDP_208	208.	5266.9	1.7	5336.31	1.5
BUS-MDP_480	480.	8204.0	2.4	7898.26	2.5
BUS-METER	480.	8410.2	2.5	8173.54	2.5
BUS-MP-1	208.	4864.5	1.6	4690.66	1.3
BUS-MP-2	208.	4894.6	1.6	4736.88	1.4

********** F A U L T A N A L Y S I S S U M M A R Y **********

BUS NAME	VOLTAGE L-L	AVAILABLE FAULT CURRENT 3 PHASE	X/R	LINE/GRND	X/R
BUS-PANEL P AD	208.	2311.2	0.7	2493.82	0.6
BUS-PD-ADMIN B	480.	3704.7	0.7	2535.45	0.5
BUS-T-1LC_PRI	480.	4663.4	1.1	3511.23	0.9
BUS-T-1LC_SEC	208.	4058.1	0.9	4639.37	0.9
BUS-T-1LD_PRI	480.	4568.6	1.1	3418.58	0.8
BUS-T-1LD_SEC	208.	1657.7	0.6	1745.48	0.6
BUS-T-L1_PRI	480.	6297.0	1.4	5275.40	1.2
BUS-T-L1_SEC	208.	4520.3	1.0	5033.44	1.0
BUS-T-MDP_208_	480.	7748.0	2.2	7243.99	2.1
BUS-T-MDP_208_	208.	6089.7	2.1	6869.54	2.1
BUS-T-OTERO-CO	480.	9017.0	2.7	9016.97	2.7
BUS-UTILITY_OT	12470.	********	2.7	*********	2.7
BUS-X-RAY	208.	4622.1	1.6	4329.67	1.3
BUS-XFMR ADMIN	480.	3073.6	0.6	2031.56	0.4
BUSXFMR ADMIN	208.	2439.4	0.7	2754.24	0.7

********** FAULT ANALYSIS REPORT COMPLETED **********



Electrical Calculations

Load Flow and Voltage Drop Analysis

Apr 20, 2021 09:56:08

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LOAD FLOW AND VOLTAGE DROP ANALYSIS REPORT
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*** SOLUTION COMMENTS ***
==========

SOLUTION PARAMETERS

BRANCH VOLTAGE CRITERIA : 3.00 %
BUS VOLTAGE CRITERIA : 5.00 %

UTILITY IMPEDANCE : YES
TRANSFORMER PHASE SHIFT : NO
LTC TRANSFORMER : NO
CALCULATION NETHOD : Newton Method
SOLUTION METHOD : EXACT
ALL PU VALUES ARE EXPRESSED ON A 100 MVA BASE
LOAD FLOW IS BASED ON CALCULATED DEMAND LOAD RESULTS
FROM THE DEMAND LOAD ANALYSIS STUDY.
LOAD ANALYSIS INCLUDES ALL LOADS.
<<PERCENT VOLTAGE DROPS ARE BASED ON NOMINAL DESIGN VOLTAGES>>

SWING GENERATORS

SOURCE NAME	VOLTAGE	ANGLE
UTIL-OTERO	1.000	0.00

PV GENERATORS

SOURCE NAME	VOLTAGE	kW	kVARMIN	kVARMAX	PARTICIPATION

PQ GENERATORS

SOURCE NAME	kW	kVAR

BUS VOLTAGE CONVERGENCY CRITERIA: 0.00001000 PU

LARGEST BUS VOLTAGE MISMATCH BUS-1LD -0.04707870 PU
LARGEST BUS VOLTAGE MISMATCH BUS-1LD -0.00009226 PU
LARGEST BUS VOLTAGE MISMATCH BUS-2EB -0.00000006 PU

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS (SWING GENERATORS)

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SOURCE	VOLTAGE	ANGLE	KW	KVAR	VD%	(UTILITY IMPEDANCE)		
UTIL-OTERO	1.000	0.00	183.57	142.88	0.00	0.00000	+j	0.00010

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS (PV GENERATOR SCHEDULE REPORT)
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PV SOURCE NAME	---VOLTAGE--- SCHED.	ACTUAL	-KVAR LIMITS- MIN	MAX	---ACTUAL---- KW	KVAR

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS (PQ GENERATOR REPORT)
****

SOURCE	VOLTAGE	ANGLE	KW	KVAR	VD%

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

==== BUS: BUS-1EB DESIGN VOLTS: 208 BUS VOLTS: 199 %VD: 4.30 Freq.: 60.000
========== PU BUS VOLTAGE: 0.957 ANGLE: -1.3 DEGREES

LOAD FROM: BUS-EM CBL-1EB FEEDER AMPS: 25.2 VOLTAGE DROP: 0. %VD: 0.23
PROJECTED POWER FLOW: 6.9 KW 5.2 KVAR 8.7 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

BRANCH DIVERSITY LOAD: 6.9 KW 5.2 KVAR

==== BUS: BUS-1EC DESIGN VOLTS: 208 BUS VOLTS: 198 %VD: 4.67 Freq.: 60.000
========== PU BUS VOLTAGE: 0.953 ANGLE: -1.3 DEGREES

LOAD FROM: BUS-EM CBL-1EC FEEDER AMPS: 51.6 VOLTAGE DROP: 1. %VD: 0.61
PROJECTED POWER FLOW: 14.2 KW 10.6 KVAR 17.7 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.1 KW 0.1 KVAR 0.1 KVA

BRANCH DIVERSITY LOAD: 14.2 KW 10.6 KVAR

==== BUS: BUS-1LA DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
========== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-1LB DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
========== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-1LC DESIGN VOLTS: 208 BUS VOLTS: 198 %VD: 4.68 Freq.: 60.000
========== PU BUS VOLTAGE: 0.953 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-DS-1LC CBL-1LC FEEDER AMPS: 71.3 VOLTAGE DROP: 0. %VD: 0.20
PROJECTED POWER FLOW: 19.6 KW 14.7 KVAR 24.5 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.1 KVA

BRANCH DIVERSITY LOAD: 19.6 KW 14.7 KVAR

==== BUS: BUS-1LD DESIGN VOLTS: 208 BUS VOLTS: 198 %VD: 4.71 Freq.: 60.000
========== PU BUS VOLTAGE: 0.953 ANGLE: -0.9 DEGREES

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

LOAD FROM: BUS-T-1LD_SEC CBL-1LD FEEDER AMPS: 30.1 VOLTAGE DROP: 0. %VD: 0.05
PROJECTED POWER FLOW: 8.3 KW 6.2 KVAR 10.3 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

BRANCH DIVERSITY LOAD: 8.3 KW 6.2 KVAR

==== BUS: BUS-2EA DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 4.06 Freq.: 60.000
========== PU BUS VOLTAGE: 0.959 ANGLE: -1.3 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-2EB DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 4.06 Freq.: 60.000
========== PU BUS VOLTAGE: 0.959 ANGLE: -1.3 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-2LA DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
========== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-2LB DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
========== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-AA DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 2.99 Freq.: 60.000
========== PU BUS VOLTAGE: 0.970 ANGLE: -1.0 DEGREES

LOAD TO: BUS-DS-T-1LC CBL-DS-T-1LC FEEDER AMPS: 30.9 VOLTAGE DROP: 1. %VD: 0.27
PROJECTED POWER FLOW: 19.9 KW 15.0 KVAR 24.9 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.1 KW 0.0 KVAR 0.1 KVA

LOAD TO: BUS-DS-T-L1 CBL-DS-T-L1 FEEDER AMPS: 10.7 VOLTAGE DROP: 0. %VD: 0.02
PROJECTED POWER FLOW: 6.9 KW 5.2 KVAR 8.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

LOAD TO: BUS-CRAC-1 CBL-CRAC-1 FEEDER AMPS: 13.1 VOLTAGE DROP: 1. %VD: 0.24
PROJECTED POWER FLOW: 8.4 KW 6.3 KVAR 10.5 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-CRAC-2 CBL-CRAC-2 FEEDER AMPS: 13.0 VOLTAGE DROP: 1. %VD: 0.22
PROJECTED POWER FLOW: 8.4 KW 6.3 KVAR 10.5 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-AC CBL-AC FEEDER AMPS: 13.1 VOLTAGE DROP: 0. %VD: 0.07
PROJECTED POWER FLOW: 8.4 KW 6.3 KVAR 10.5 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD FROM: BUS-MDP_480 CBL-AA FEEDER AMPS: 80.8 VOLTAGE DROP: 0. %VD: 0.05
PROJECTED POWER FLOW: 52.2 KW 39.1 KVAR 65.2 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

==== BUS: BUS-AB DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 2.99 Freq.: 60.000
========== PU BUS VOLTAGE: 0.970 ANGLE: -1.0 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-AC DESIGN VOLTS: 480 BUS VOLTS: 465 %VD: 3.06 Freq.: 60.000
========== PU BUS VOLTAGE: 0.969 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-AA CBL-AC FEEDER AMPS: 13.1 VOLTAGE DROP: 0. %VD: 0.07
PROJECTED POWER FLOW: 8.4 KW 6.3 KVAR 10.5 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-T-1LD_PRI CBL-T-1LD FEEDER AMPS: 13.1 VOLTAGE DROP: 0. %VD: 0.07
PROJECTED POWER FLOW: 8.4 KW 6.3 KVAR 10.5 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

==== BUS: BUS-A/C-1 DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
========== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

==== BUS: BUS-ADMIN BLDG DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 2.94 Freq.: 60.000
========== PU BUS VOLTAGE: 0.971 ANGLE: -1.0 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-ATS-C DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 2.91 Freq.: 60.000
========== PU BUS VOLTAGE: 0.971 ANGLE: -1.0 DEGREES

LOAD TO: BUS-MDP_480 CBL-MDP_480 FEEDER AMPS: 279.8 VOLTAGE DROP: 0. %VD: 0.03
PROJECTED POWER FLOW: 180.6 KW 135.6 KVAR 225.8 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.1 KVA

BRANCH DIVERSITY LOAD: -180.6 KW -135.6 KVAR

==== BUS: BUS-ATS-E DESIGN VOLTS: 480 BUS VOLTS: 0 %VD: 0.00 Freq.: 60.000
========== PU BUS VOLTAGE: 0.000 ANGLE: 0.0 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-ATS-N DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 2.91 Freq.: 60.000
========== PU BUS VOLTAGE: 0.971 ANGLE: -1.0 DEGREES

LOAD TO: BUS-METER CBL-ATS-N FEEDER AMPS: 279.8 VOLTAGE DROP: 0. %VD: 0.06
PROJECTED POWER FLOW: -180.6 KW -135.6 KVAR 225.8 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.1 KW 0.1 KVAR 0.1 KVA

BRANCH DIVERSITY LOAD: 180.6 KW 135.6 KVAR

==== BUS: BUS-CRAC-1 DESIGN VOLTS: 480 BUS VOLTS: 464 %VD: 3.23 Freq.: 60.000
========== PU BUS VOLTAGE: 0.968 ANGLE: -0.9 DEGREES

LOAD FROM: BUS-AA CBL-CRAC-1 FEEDER AMPS: 13.1 VOLTAGE DROP: 1. %VD: 0.24
PROJECTED POWER FLOW: 8.4 KW 6.3 KVAR 10.5 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

BRANCH DIVERSITY LOAD: 8.4 KW 6.3 KVAR

==== BUS: BUS-CRAC-2 DESIGN VOLTS: 480 BUS VOLTS: 465 %VD: 3.21 Freq.: 60.000
========== PU BUS VOLTAGE: 0.968 ANGLE: -0.9 DEGREES

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

LOAD FROM: BUS-AA CBL-CRAC-2 FEEDER AMPS: 13.0 VOLTAGE DROP: 1. %VD: 0.22
PROJECTED POWER FLOW: 8.4 KW 6.3 KVAR 10.5 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

BRANCH DIVERSITY LOAD: 8.4 KW 6.3 KVAR

==== BUS: BUS-DS-1LC DESIGN VOLTS: 208 BUS VOLTS: 199 %VD: 4.48 Freq.: 60.000
========== PU BUS VOLTAGE: 0.955 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-T-1LC_SEC CBL-DS-1LC FEEDER AMPS: 71.3 VOLTAGE DROP: 0. %VD: 0.08
PROJECTED POWER FLOW: 19.6 KW 14.7 KVAR 24.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-1LC CBL-1LC FEEDER AMPS: 71.3 VOLTAGE DROP: 0. %VD: 0.20
PROJECTED POWER FLOW: 19.6 KW 14.7 KVAR 24.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.1 KVA

==== BUS: BUS-DS-L1 DESIGN VOLTS: 208 BUS VOLTS: 201 %VD: 3.45 Freq.: 60.000
========== PU BUS VOLTAGE: 0.966 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-T-L1_SEC CBL-DS-L1 FEEDER AMPS: 24.7 VOLTAGE DROP: 0. %VD: 0.04
PROJECTED POWER FLOW: 6.9 KW 5.2 KVAR 8.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-L1 CBL-L1 FEEDER AMPS: 24.7 VOLTAGE DROP: 0. %VD: 0.16
PROJECTED POWER FLOW: 6.9 KW 5.2 KVAR 8.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

==== BUS: BUS-DS-MDP_208 DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.84 Freq.: 60.000
========== PU BUS VOLTAGE: 0.962 ANGLE: -1.2 DEGREES

LOAD FROM: BUS-T-MDP_208_ CBL-DS-MDP_208 FEEDER AMPS: 76.7 VOLTAGE DROP: 0. %VD: 0.14
PROJECTED POWER FLOW: 21.3 KW 16.0 KVAR 26.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

LOAD TO: BUS-MDP_208 CBL-MDP_208 FEEDER AMPS: 76.7 VOLTAGE DROP: 0. %VD: 0.09
PROJECTED POWER FLOW: 21.3 KW 16.0 KVAR 26.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

==== BUS: BUS-DS-T-1LC DESIGN VOLTS: 480 BUS VOLTS: 464 %VD: 3.26 Freq.: 60.000
========== PU BUS VOLTAGE: 0.967 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-AA CBL-DS-T-1LC FEEDER AMPS: 30.9 VOLTAGE DROP: 1. %VD: 0.27
PROJECTED POWER FLOW: 19.9 KW 14.9 KVAR 24.9 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.1 KW 0.0 KVAR 0.1 KVA

LOAD TO: BUS-T-1LC_PRI CBL-T-1LC FEEDER AMPS: 30.9 VOLTAGE DROP: 0. %VD: 0.04
PROJECTED POWER FLOW: 19.9 KW 14.9 KVAR 24.9 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

==== BUS: BUS-DS-T-L1 DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 3.02 Freq.: 60.000
========== PU BUS VOLTAGE: 0.970 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-AA CBL-DS-T-L1 FEEDER AMPS: 10.7 VOLTAGE DROP: 0. %VD: 0.02
PROJECTED POWER FLOW: 6.9 KW 5.2 KVAR 8.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-T-L1_PRI CBL-T-L1 FEEDER AMPS: 10.7 VOLTAGE DROP: 0. %VD: 0.02
PROJECTED POWER FLOW: 6.9 KW 5.2 KVAR 8.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

==== BUS: BUS-EM DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 4.06 Freq.: 60.000
========== PU BUS VOLTAGE: 0.959 ANGLE: -1.3 DEGREES

LOAD FROM: BUS-MDP_208 CBL-EM FEEDER AMPS: 76.7 VOLTAGE DROP: 0. %VD: 0.13
PROJECTED POWER FLOW: 21.2 KW 15.9 KVAR 26.5 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

LOAD TO: BUS-MAINTENANC CBL-MAINTENANC FEEDER AMPS: 0.0 VOLTAGE DROP: 0. %VD: 0.00
PROJECTED POWER FLOW: 0.0 KW 0.0 KVAR 0.0 KVA 0.00 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-1EC CBL-1EC FEEDER AMPS: 51.6 VOLTAGE DROP: 1. %VD: 0.61
PROJECTED POWER FLOW: 14.3 KW 10.7 KVAR 17.8 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.1 KW 0.1 KVAR 0.1 KVA

LOAD TO: BUS-1EB CBL-1EB FEEDER AMPS: 25.2 VOLTAGE DROP: 0. %VD: 0.23
PROJECTED POWER FLOW: 7.0 KW 5.2 KVAR 8.7 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

==== BUS: BUS-FIRE PUMP DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-G1 DESIGN VOLTS: 480 BUS VOLTS: 0 %VD: 0.00 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.000 ANGLE: 0.0 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-K DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-L1 DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.61 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.964 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-DS-L1 CBL-L1 FEEDER AMPS: 24.7 VOLTAGE DROP: 0. %VD: 0.16
PROJECTED POWER FLOW: 6.9 KW 5.2 KVAR 8.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

BRANCH DIVERSITY LOAD: 6.9 KW 5.2 KVAR

==== BUS: BUS-MAINTENANC DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 4.06 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.959 ANGLE: -1.3 DEGREES

**** NO LOAD SPECIFIED ****

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

==== BUS: BUS-MCP-3 DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
========== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-MCP-4 DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
========== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-MDP_208 DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
========== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

LOAD FROM: BUS-DS-MDP_208 CBL-MDP_208 FEEDER AMPS: 76.7 VOLTAGE DROP: 0. %VD: 0.09
PROJECTED POWER FLOW: 21.2 KW 15.9 KVAR 26.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-1LB CBL-1LB FEEDER AMPS: 0.0 VOLTAGE DROP: 0. %VD: 0.00
PROJECTED POWER FLOW: 0.0 KW 0.0 KVAR 0.0 KVA 0.00 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-EM CBL-EM FEEDER AMPS: 76.7 VOLTAGE DROP: 0. %VD: 0.13
PROJECTED POWER FLOW: 21.2 KW 15.9 KVAR 26.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-1LA CBL-1LA FEEDER AMPS: 0.0 VOLTAGE DROP: 0. %VD: 0.00
PROJECTED POWER FLOW: 0.0 KW 0.0 KVAR 0.0 KVA 0.00 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-X-RAY CBL-X-RAY FEEDER AMPS: 0.0 VOLTAGE DROP: 0. %VD: 0.00
PROJECTED POWER FLOW: 0.0 KW 0.0 KVAR 0.0 KVA 0.00 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-A/C-1 CBL-A/C-1 FEEDER AMPS: 0.0 VOLTAGE DROP: 0. %VD: 0.00
PROJECTED POWER FLOW: 0.0 KW 0.0 KVAR 0.0 KVA 0.00 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

LOAD TO: BUS-MP-1	CBL-MP-1	FEEDER AMPS:	0.0	VOLTAGE DROP:	0.	%VD:	0.00		
PROJECTED POWER FLOW:	0.0 KW	0.0 KVAR	0.0 KVA	0.00 LAGGING					
LOSSES THRU FEEDER:	0.0 KW	0.0 KVAR	0.0 KVA						
LOAD TO: BUS-MCP-3	CBL-MCP-3	FEEDER AMPS:	0.0	VOLTAGE DROP:	0.	%VD:	0.00		
PROJECTED POWER FLOW:	0.0 KW	0.0 KVAR	0.0 KVA	0.00 LAGGING					
LOSSES THRU FEEDER:	0.0 KW	0.0 KVAR	0.0 KVA						
LOAD TO: BUS-2LA	CBL-2LA	FEEDER AMPS:	0.0	VOLTAGE DROP:	0.	%VD:	0.00		
PROJECTED POWER FLOW:	0.0 KW	0.0 KVAR	0.0 KVA	0.00 LAGGING					
LOSSES THRU FEEDER:	0.0 KW	0.0 KVAR	0.0 KVA						
LOAD TO: BUS-K	CBL-K	FEEDER AMPS:	0.0	VOLTAGE DROP:	0.	%VD:	0.00		
PROJECTED POWER FLOW:	0.0 KW	0.0 KVAR	0.0 KVA	0.00 LAGGING					
LOSSES THRU FEEDER:	0.0 KW	0.0 KVAR	0.0 KVA						
LOAD TO: BUS-MCP-4	CBL-MCP-4	FEEDER AMPS:	0.0	VOLTAGE DROP:	0.	%VD:	0.00		
PROJECTED POWER FLOW:	0.0 KW	0.0 KVAR	0.0 KVA	0.00 LAGGING					
LOSSES THRU FEEDER:	0.0 KW	0.0 KVAR	0.0 KVA						
LOAD TO: BUS-MP-2	CBL-MP-2	FEEDER AMPS:	0.0	VOLTAGE DROP:	0.	%VD:	0.00		
PROJECTED POWER FLOW:	0.0 KW	0.0 KVAR	0.0 KVA	0.00 LAGGING					
LOSSES THRU FEEDER:	0.0 KW	0.0 KVAR	0.0 KVA						
LOAD TO: BUS-FIRE PUMP	CBL-FIRE PUMP	FEEDER AMPS:	0.0	VOLTAGE DROP:	0.	%VD:	0.00		
PROJECTED POWER FLOW:	0.0 KW	0.0 KVAR	0.0 KVA	0.00 LAGGING					
LOSSES THRU FEEDER:	0.0 KW	0.0 KVAR	0.0 KVA						
LOAD TO: BUS-2LB	CBL-2LB	FEEDER AMPS:	0.0	VOLTAGE DROP:	0.	%VD:	0.00		
PROJECTED POWER FLOW:	0.0 KW	0.0 KVAR	0.0 KVA	0.00 LAGGING					
LOSSES THRU FEEDER:	0.0 KW	0.0 KVAR	0.0 KVA						

==== BUS: BUS-MDP_480 DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 2.94 Freq.: 60.000
========== PU BUS VOLTAGE: 0.971 ANGLE: -1.0 DEGREES

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

LOAD TO: BUS-T-MDP_208_ CBL-T-MDP_208 FEEDER AMPS: 33.3 VOLTAGE DROP: 0. %VD: 0.03
PROJECTED POWER FLOW: 21.4 KW 16.2 KVAR 26.8 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD FROM: BUS-ATS-C CBL-MDP_480 FEEDER AMPS: 279.8 VOLTAGE DROP: 0. %VD: 0.03
PROJECTED POWER FLOW: 180.6 KW 135.5 KVAR 225.8 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.1 KVA

LOAD TO: BUS-AA CBL-AA FEEDER AMPS: 80.8 VOLTAGE DROP: 0. %VD: 0.05
PROJECTED POWER FLOW: 52.2 KW 39.1 KVAR 65.2 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-PD-ADMIN B CBL-PD ADMIN B FEEDER AMPS: 0.0 VOLTAGE DROP: 0. %VD: 0.00
PROJECTED POWER FLOW: 0.0 KW 0.0 KVAR 0.0 KVA 0.00 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

BRANCH DIVERSITY LOAD: 107.0 KW 80.2 KVAR

==== BUS: BUS-METER DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 2.85 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.971 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-ATS-N CBL-ATS-N FEEDER AMPS: 279.8 VOLTAGE DROP: 0. %VD: 0.06
PROJECTED POWER FLOW: -180.7 KW -135.7 KVAR 226.0 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.1 KW 0.1 KVAR 0.1 KVA

LOAD FROM: BUS-T-OTERO-CO CBL-METER FEEDER AMPS: 279.8 VOLTAGE DROP: 1. %VD: 0.24
PROJECTED POWER FLOW: 180.7 KW 135.7 KVAR 226.0 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.4 KW 0.4 KVAR 0.6 KVA

==== BUS: BUS-MP-1 DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-MP-2 DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

==== BUS: BUS-PANEL P AD DESIGN VOLTS: 208 BUS VOLTS: 202 %VD: 2.94 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.971 ANGLE: -1.0 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-PD-ADMIN B DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 2.94 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.971 ANGLE: -1.0 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-T-1LC_PRI DESIGN VOLTS: 480 BUS VOLTS: 464 %VD: 3.30 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.967 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-DS-T-1LC CBL-T-1LC FEEDER AMPS: 30.9 VOLTAGE DROP: 0. %VD: 0.04
PROJECTED POWER FLOW: 19.9 KW 14.9 KVAR 24.9 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-T-1LC_SEC T-1LC TRANSF AMPS: 30.9 VOLTAGE DROP: 5. %VD: 1.10
PROJECTED POWER FLOW: 19.9 KW 14.9 KVAR 24.9 KVA 0.80 LAGGING
LOSSES THRU TRANSF: 0.2 KW 0.2 KVAR 0.3 KVA

==== BUS: BUS-T-1LC_SEC DESIGN VOLTS: 208 BUS VOLTS: 199 %VD: 4.40 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.956 ANGLE: -1.0 DEGREES

LOAD TO: BUS-DS-1LC CBL-DS-1LC FEEDER AMPS: 71.3 VOLTAGE DROP: 0. %VD: 0.08
PROJECTED POWER FLOW: 19.7 KW 14.7 KVAR 24.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD FROM: BUS-T-1LC_PRI T-1LC TRANSF AMPS: 71.3 VOLTAGE DROP: 2. %VD: 1.10
PROJECTED POWER FLOW: 19.7 KW 14.7 KVAR 24.6 KVA 0.80 LAGGING
LOSSES THRU TRANSF: 0.2 KW 0.2 KVAR 0.3 KVA

==== BUS: BUS-T-1LD_PRI DESIGN VOLTS: 480 BUS VOLTS: 465 %VD: 3.13 Freq.: 60.000
======================== PU BUS VOLTAGE: 0.969 ANGLE: -1.0 DEGREES

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

LOAD FROM: BUS-AC	CBL-T-1LD	FEEDER AMPS:	13.1	VOLTAGE DROP:	0.	%VD:	0.07		
PROJECTED POWER FLOW:	8.4	KW	6.3	KVAR	10.5	KVA	0.80	LAGGING	
LOSSES THRU FEEDER:	0.0	KW	0.0	KVAR	0.0	KVA			
LOAD TO: BUS-T-1LD_SEC	T-1LD	TRANSF AMPS:	13.1	VOLTAGE DROP:	7.	%VD:	1.53		
PROJECTED POWER FLOW:	8.4	KW	6.3	KVAR	10.5	KVA	0.80	LAGGING	
LOSSES THRU TRANSF:	0.1	KW	0.1	KVAR	0.2	KVA			

==== BUS: BUS-T-1LD_SEC DESIGN VOLTS: 208 BUS VOLTS: 198 %VD: 4.66 Freq.: 60.000
========== PU BUS VOLTAGE: 0.953 ANGLE: -0.9 DEGREES

LOAD TO: BUS-1LD	CBL-1LD	FEEDER AMPS:	30.1	VOLTAGE DROP:	0.	%VD:	0.05		
PROJECTED POWER FLOW:	8.3	KW	6.2	KVAR	10.3	KVA	0.80	LAGGING	
LOSSES THRU FEEDER:	0.0	KW	0.0	KVAR	0.0	KVA			
LOAD FROM: BUS-T-1LD_PRI	T-1LD	TRANSF AMPS:	30.1	VOLTAGE DROP:	3.	%VD:	1.53		
PROJECTED POWER FLOW:	8.3	KW	6.2	KVAR	10.3	KVA	0.80	LAGGING	
LOSSES THRU TRANSF:	0.1	KW	0.1	KVAR	0.2	KVA			

==== BUS: BUS-T-L1_PRI DESIGN VOLTS: 480 BUS VOLTS: 465 %VD: 3.03 Freq.: 60.000
========== PU BUS VOLTAGE: 0.970 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-DS-T-L1	CBL-T-L1	FEEDER AMPS:	10.7	VOLTAGE DROP:	0.	%VD:	0.02		
PROJECTED POWER FLOW:	6.9	KW	5.2	KVAR	8.6	KVA	0.80	LAGGING	
LOSSES THRU FEEDER:	0.0	KW	0.0	KVAR	0.0	KVA			
LOAD TO: BUS-T-L1_SEC	T-L1	TRANSF AMPS:	10.7	VOLTAGE DROP:	2.	%VD:	0.38		
PROJECTED POWER FLOW:	6.9	KW	5.2	KVAR	8.6	KVA	0.80	LAGGING	
LOSSES THRU TRANSF:	0.0	KW	0.0	KVAR	0.0	KVA			

==== BUS: BUS-T-L1_SEC DESIGN VOLTS: 208 BUS VOLTS: 201 %VD: 3.41 Freq.: 60.000
========== PU BUS VOLTAGE: 0.966 ANGLE: -1.0 DEGREES

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

LOAD TO: BUS-DS-L1 CBL-DS-L1 FEEDER AMPS: 24.7 VOLTAGE DROP: 0. %VD: 0.04
PROJECTED POWER FLOW: 6.9 KW 5.2 KVAR 8.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD FROM: BUS-T-L1_PRI T-L1 TRANSF AMPS: 24.7 VOLTAGE DROP: 1. %VD: 0.38
PROJECTED POWER FLOW: 6.9 KW 5.2 KVAR 8.6 KVA 0.80 LAGGING
LOSSES THRU TRANSF: 0.0 KW 0.0 KVAR 0.0 KVA

==== BUS: BUS-T-MDP_208_ DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 2.97 Freq.: 60.000
========== PU BUS VOLTAGE: 0.970 ANGLE: -1.0 DEGREES

LOAD FROM: BUS-MDP_480 CBL-T-MDP_208 FEEDER AMPS: 33.3 VOLTAGE DROP: 0. %VD: 0.03
PROJECTED POWER FLOW: 21.4 KW 16.2 KVAR 26.8 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD TO: BUS-T-MDP_208_ T-MDP_208 TRANSF AMPS: 33.3 VOLTAGE DROP: 4. %VD: 0.74
PROJECTED POWER FLOW: 21.4 KW 16.2 KVAR 26.8 KVA 0.80 LAGGING
LOSSES THRU TRANSF: 0.1 KW 0.2 KVAR 0.2 KVA

==== BUS: BUS-T-MDP_208_ DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.71 Freq.: 60.000
========== PU BUS VOLTAGE: 0.963 ANGLE: -1.2 DEGREES

LOAD TO: BUS-DS-MDP_208 CBL-DS-MDP_208 FEEDER AMPS: 76.7 VOLTAGE DROP: 0. %VD: 0.14
PROJECTED POWER FLOW: 21.3 KW 16.0 KVAR 26.6 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.0 KW 0.0 KVAR 0.0 KVA

LOAD FROM: BUS-T-MDP_208_ T-MDP_208 TRANSF AMPS: 76.7 VOLTAGE DROP: 2. %VD: 0.74
PROJECTED POWER FLOW: 21.3 KW 16.0 KVAR 26.6 KVA 0.80 LAGGING
LOSSES THRU TRANSF: 0.1 KW 0.2 KVAR 0.2 KVA

==== BUS: BUS-T-OTERO-CO DESIGN VOLTS: 480 BUS VOLTS: 467 %VD: 2.62 Freq.: 60.000
========== PU BUS VOLTAGE: 0.974 ANGLE: -1.0 DEGREES

BALANCED VOLTAGE DROP AND LOAD FLOW ANALYSIS

****

VOLTAGE EFFECT ON LOADS MODELED
VOLTAGE DROP CRITERIA: BRANCH = 3.00% BUS = 5.00%

LOAD TO: BUS-METER CBL-METER FEEDER AMPS: 279.8 VOLTAGE DROP: 1. %VD: 0.24
PROJECTED POWER FLOW: 181.1 KW 136.1 KVAR 226.5 KVA 0.80 LAGGING
LOSSES THRU FEEDER: 0.4 KW 0.4 KVAR 0.6 KVA

LOAD FROM: BUS-UTILITY_OT T-OTERO_CO-OP TRANSF AMPS: 279.8 VOLTAGE DROP: 13. %VD: 2.62
PROJECTED POWER FLOW: 181.1 KW 136.1 KVAR 226.5 KVA 0.80 LAGGING
LOSSES THRU TRANSF: 2.5 KW 6.8 KVAR 7.2 KVA

==== BUS: BUS-UTILITY_OT DESIGN VOLTS: 12470 BUS VOLTS: 12470 %VD: 0.00 Freq.: 60.000
========== PU BUS VOLTAGE: 1.000 ANGLE: -0.0 DEGREES
*** SWING GENERATOR:UTIL-OTERO 183.57 KW 142.88 KVAR

LOAD TO: BUS-T-OTERO-CO T-OTERO_CO-OP TRANSF AMPS: 10.8 VOLTAGE DROP: 326. %VD: 2.62
PROJECTED POWER FLOW: 183.6 KW 142.9 KVAR 232.6 KVA 0.79 LAGGING
LOSSES THRU TRANSF: 2.5 KW 6.8 KVAR 7.2 KVA

==== BUS: BUS-XFMR ADMIN DESIGN VOLTS: 480 BUS VOLTS: 466 %VD: 2.94 Freq.: 60.000
========== PU BUS VOLTAGE: 0.971 ANGLE: -1.0 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUSXFMR ADMIN DESIGN VOLTS: 208 BUS VOLTS: 202 %VD: 2.94 Freq.: 60.000
========== PU BUS VOLTAGE: 0.971 ANGLE: -1.0 DEGREES

**** NO LOAD SPECIFIED ****

==== BUS: BUS-X-RAY DESIGN VOLTS: 208 BUS VOLTS: 200 %VD: 3.93 Freq.: 60.000
========== PU BUS VOLTAGE: 0.961 ANGLE: -1.2 DEGREES

**** NO LOAD SPECIFIED ****

BALANCED VOLTAGE DROP AND LOAD FLOW BUS DATA SUMMARY

****

BUS NAME	BASE VOLT	PU VOLT	BUS NAME	BASE VOLT	PU VOLT
BUS-1EB	208.	0.9570	BUS-1EC	208.	0.9533
BUS-1LA	208.	0.9607	BUS-1LB	208.	0.9607
BUS-1LC	208.	0.9532	BUS-1LD	208.	0.9529
BUS-2EA	208.	0.9594	BUS-2EB	208.	0.9594
BUS-2LA	208.	0.9607	BUS-2LB	208.	0.9607
BUS-AA	480.	0.9701	BUS-AB	480.	0.9701
BUS-AC	480.	0.9694	BUS-A/C-1	208.	0.9607
BUS-ADMIN BLDG	480.	0.9706	BUS-ATS-C	480.	0.9709
BUS-ATS-E	480.	0.0000	BUS-ATS-N	480.	0.9709
BUS-CRAC-1	480.	0.9677	BUS-CRAC-2	480.	0.9679
BUS-DS-1LC	208.	0.9552	BUS-DS-L1	208.	0.9655
BUS-DS-MDP_208	208.	0.9616	BUS-DS-T-1LC	480.	0.9674
BUS-DS-T-L1	480.	0.9698	BUS-EM	208.	0.9594
BUS-FIRE PUMP	208.	0.9607	BUS-G1	480.	0.0000
BUS-K	208.	0.9607	BUS-L1	208.	0.9639
BUS-MAINTENANC	208.	0.9594	BUS-MCP-3	208.	0.9607
BUS-MCP-4	208.	0.9607	BUS-MDP_208	208.	0.9607
BUS-MDP_480	480.	0.9706	BUS-METER	480.	0.9715
BUS-MP-1	208.	0.9607	BUS-MP-2	208.	0.9607
BUS-PANEL P AD	208.	0.9706	BUS-PD-ADMIN B	480.	0.9706
BUS-T-1LC_PRI	480.	0.9670	BUS-T-1LC_SEC	208.	0.9560
BUS-T-1LD_PRI	480.	0.9687	BUS-T-1LD_SEC	208.	0.9534
BUS-T-L1_PRI	480.	0.9697	BUS-T-L1_SEC	208.	0.9659
BUS-T-MDP_208_	480.	0.9703	BUS-T-MDP_208_	208.	0.9629
BUS-T-OTERO-CO	480.	0.9738	BUS-UTILITY_OT	12470.	1.0000
BUS-XFMR ADMIN	480.	0.9706	BUSXFMR ADMIN	208.	0.9706
BUS-X-RAY	208.	0.9607			

BALANCED VOLTAGE DROP AND LOAD FLOW BRANCH DATA SUMMARY

BRANCH NAME	FROM NAME	TO NAME	TYPE	VD%	AMPS	KVA	RATING%
AUTO-ATS-1	BUS-ATS-E	BUS-ATS-N	FDR	0.00	279.80	225.84	46.63
CBL-1EB	BUS-EM	BUS-1EB	FDR	0.23	25.18	8.70	10.95
CBL-1EC	BUS-EM	BUS-1EC	FDR	0.61	51.57	17.82	22.42
CBL-1LA	BUS-MDP_208	BUS-1LA	FDR	0.00	0.00	0.00	0.00
CBL-1LB	BUS-MDP_208	BUS-1LB	FDR	0.00	0.00	0.00	0.00
CBL-1LC	BUS-DS-1LC	BUS-1LC	FDR	0.20	71.34	24.55	27.98
CBL-1LD	BUS-T-1LD_SEC	BUS-1LD	FDR	0.05	30.12	10.35	26.19
CBL-2EA	BUS-EM	BUS-2EA	FDR	0.00	0.00	0.00	0.00
CBL-2EB	BUS-EM	BUS-2EB	FDR	0.00	0.00	0.00	0.00
CBL-2LA	BUS-MDP_208	BUS-2LA	FDR	0.00	0.00	0.00	0.00
CBL-2LB	BUS-MDP_208	BUS-2LB	FDR	0.00	0.00	0.00	0.00
CBL-AA	BUS-MDP_480	BUS-AA	FDR	0.05	80.79	65.19	19.24
CBL-AB	BUS-AA	BUS-AB	FDR	0.00	0.00	0.00	0.00
CBL-AC	BUS-AA	BUS-AC	FDR	0.07	13.05	10.53	5.12
CBL-A/C-1	BUS-MDP_208	BUS-A/C-1	FDR	0.00	0.00	0.00	0.00
CBL-ADMIN BLDG	BUS-PD-ADMIN B	BUS-ADMIN BLDG	FDR	0.00	0.00	0.00	0.00
CBL-ATS-N	BUS-ATS-N	BUS-METER	FDR	0.06	279.80	225.84	45.13
CBL-CRAC-1	BUS-AA	BUS-CRAC-1	FDR	0.24	13.05	10.53	26.10
CBL-CRAC-2	BUS-AA	BUS-CRAC-2	FDR	0.22	13.05	10.52	26.10
CBL-DS-1LC	BUS-T-1LC_SEC	BUS-DS-1LC	FDR	0.08	71.34	24.57	27.98
CBL-DS-L1	BUS-T-L1_SEC	BUS-DS-L1	FDR	0.04	24.74	8.61	10.76
CBL-DS-MDP_208	BUS-T-MDP_208_	BUS-DS-MDP_208	FDR	0.14	76.74	26.62	19.19
CBL-DS-T-1LC	BUS-AA	BUS-DS-T-1LC	FDR	0.27	30.92	24.93	20.61
CBL-DS-T-L1	BUS-AA	BUS-DS-T-L1	FDR	0.02	10.72	8.65	9.32
CBL-EM	BUS-MDP_208	BUS-EM	FDR	0.13	76.74	26.56	20.20
CBL-FIRE PUMP	BUS-MDP_208	BUS-FIRE PUMP	FDR	0.00	0.00	0.00	0.00
CBL-K	BUS-MDP_208	BUS-K	FDR	0.00	0.00	0.00	0.00
CBL-L1	BUS-DS-L1	BUS-L1	FDR	0.16	24.74	8.61	10.76
CBL-MAINTENANC	BUS-EM	BUS-MAINTENANC	FDR	0.00	0.00	0.00	0.00
CBL-MCP-3	BUS-MDP_208	BUS-MCP-3	FDR	0.00	0.00	0.00	0.00
CBL-MCP-4	BUS-MDP_208	BUS-MCP-4	FDR	0.00	0.00	0.00	0.00
CBL-MDP_208	BUS-DS-MDP_208	BUS-MDP_208	FDR	0.09	76.74	26.58	19.19
CBL-MDP_480	BUS-ATS-C	BUS-MDP_480	FDR	0.03	279.80	225.84	45.13
CBL-METER	BUS-T-OTERO-CO	BUS-METER	FDR	0.24	279.80	226.54	45.13
CBL-MP-1	BUS-MDP_208	BUS-MP-1	FDR	0.00	0.00	0.00	0.00
CBL-MP-2	BUS-MDP_208	BUS-MP-2	FDR	0.00	0.00	0.00	0.00
CBL-PANEL P AD	BUSXFMR ADMIN	BUS-PANEL P AD	FDR	0.00	0.00	0.00	0.00
CBL-PD ADMIN B	BUS-MDP_480	BUS-PD-ADMIN B	FDR	0.00	0.00	0.00	0.00
CBL-T-1LC	BUS-DS-T-1LC	BUS-T-1LC_PRI	FDR	0.04	30.92	24.86	20.61
CBL-T-1LD	BUS-AC	BUS-T-1LD_PRI	FDR	0.07	13.05	10.52	26.11
CBL-T-L1	BUS-DS-T-L1	BUS-T-L1_PRI	FDR	0.02	10.72	8.65	9.32

BALANCED VOLTAGE DROP AND LOAD FLOW BRANCH DATA SUMMARY

BRANCH NAME	FROM NAME	TO NAME	TYPE	VD%	AMPS	KVA	RATING%
CBL-T-MDP_208	BUS-MDP_480	BUS-T-MDP_208_	FDR	0.03	33.25	26.83	16.63
CBL-XFMR ADMIN	BUS-ADMIN BLDG	BUS-XFMR ADMIN	FDR	0.00	0.00	0.00	0.00
CBL-X-RAY	BUS-MDP_208	BUS-X-RAY	FDR	0.00	0.00	0.00	0.00
T-1LC	BUS-T-1LC_PRI	BUS-T-1LC_SEC	TX2	1.10	30.92	24.85	34.27
T-1LD	BUS-T-1LD_PRI	BUS-T-1LD_SEC	TX2	1.53	13.05	10.51	36.18
T-L1	BUS-T-L1_PRI	BUS-T-L1_SEC	TX2	0.38	10.72	8.64	11.89
T-MDP_208	BUS-T-MDP_208_	BUS-T-MDP_208_	TX2	0.74	33.25	26.83	18.43
T-OTERO_CO-OP	BUS-UTILITY_OT	BUS-T-OTERO-CO	TX2	2.62	10.77	232.62	77.54
XFMR-ADMIN BLD	BUS-XFMR ADMIN	BUSXFMR ADMIN	TX2	0.00	0.00	0.00	0.00

NOTE: FDR RATING% = % AMPS RATING BASED ON LIBRARY FLA OR BRANCH INPUT FLA

*** T O T A L S Y S T E M L O S S E S ***

4. KW 8. KVAR

Apr 20, 2021 09:56:07

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*** SOLUTION COMMENTS ***
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LOAD ANALYSIS INCLUDES ALL LOADS.

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-1EB 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-EM

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
ENERGY AUDIT KVA	12.4	34.4	8.7	24.1	8.7	24.1	80.00 LAG
BRANCH LOADS							
TOTALS	12.4	34.4	8.7	24.1	8.7	24.1	80.00 LAG

LOAD SCHEDULE FOR BUS-1EC 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-EM

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
ENERGY AUDIT KVA	25.3	70.2	17.7	49.2	17.7	49.2	80.00 LAG
BRANCH LOADS							
TOTALS	25.3	70.2	17.7	49.2	17.7	49.2	80.00 LAG

LOAD SCHEDULE FOR BUS-1LA 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-1LB 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-1LC 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-DS-1LC

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
ENERGY AUDIT KVA	35.0	97.2	24.5	68.0	24.5	68.0	80.00 LAG
BRANCH LOADS							
TOTALS	35.0	97.2	24.5	68.0	24.5	68.0	80.00 LAG

LOAD SCHEDULE FOR BUS-1LD 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-T-1LD_SEC

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
ENERGY AUDIT KVA	14.8	41.0	10.3	28.7	10.3	28.7	80.00 LAG
BRANCH LOADS							
TOTALS	14.8	41.0	10.3	28.7	10.3	28.7	80.00 LAG

LOAD SCHEDULE FOR BUS-2EA 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-EM

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-2EB 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-EM

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-2LA 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-2LB 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-AA 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_480

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-AC	14.8	17.8	10.3	12.4	10.3	12.4	80.00 LAG
BUS-DS-T-1LC	35.0	42.1	24.5	29.5	24.5	29.5	80.00 LAG
BUS-AB	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-DS-T-L1	12.3	14.8	8.6	10.3	8.6	10.3	80.00 LAG
BUS-CRAC-1	15.0	18.0	10.5	12.6	10.5	12.6	80.00 LAG
BUS-CRAC-2	15.0	18.0	10.5	12.6	10.5	12.6	80.00 LAG
TOTALS	92.0	110.7	64.4	77.5	64.4	77.5	80.00 LAG

LOAD SCHEDULE FOR BUS-AB 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-AA

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-AC 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-AA

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-T-1LD_PRI	14.8	17.8	10.3	12.4	10.3	12.4	80.00 LAG
TOTALS	14.8	17.8	10.3	12.4	10.3	12.4	80.00 LAG

LOAD SCHEDULE FOR BUS-A/C-1 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-ADMIN BLDG 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-PD-ADMIN B

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-XFMR ADMIN	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-ATS-C 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-ATS-N

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-MDP_480	263.5	316.9	224.6	270.1	224.6	270.1	80.00 LAG
TOTALS	263.5	316.9	224.6	270.1	224.6	270.1	80.00 LAG

LOAD SUMMARY

LOAD SCHEDULE FOR BUS-ATS-E 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-ATS-E

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-ATS-N 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-METER

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-ATS-C	263.5	316.9	224.6	270.1	224.6	270.1	80.00 LAG
TOTALS	263.5	316.9	224.6	270.1	224.6	270.1	80.00 LAG

LOAD SCHEDULE FOR BUS-CRAC-1 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-AA

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
ENERGY AUDIT KVA	15.0	18.0	10.5	12.6	10.5	12.6	80.00 LAG
BRANCH LOADS							
TOTALS	15.0	18.0	10.5	12.6	10.5	12.6	80.00 LAG

LOAD SCHEDULE FOR BUS-CRAC-2 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-AA

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
ENERGY AUDIT KVA	15.0	18.0	10.5	12.6	10.5	12.6	80.00 LAG
BRANCH LOADS							
TOTALS	15.0	18.0	10.5	12.6	10.5	12.6	80.00 LAG

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-DS-1LC 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-T-1LC_SEC

ITEM DESCRIPTION	CONNECTED KVA	MAX PH * AMPS	DEMAND KVA	MAX PH * AMPS	DESIGN KVA	MAX PH * AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-1LC	35.0	97.2	24.5	68.0	24.5	68.0	80.00 LAG
TOTALS	35.0	97.2	24.5	68.0	24.5	68.0	80.00 LAG

LOAD SCHEDULE FOR BUS-DS-L1 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-T-L1_SEC

ITEM DESCRIPTION	CONNECTED KVA	MAX PH * AMPS	DEMAND KVA	MAX PH * AMPS	DESIGN KVA	MAX PH * AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-L1	12.3	34.1	8.6	23.9	8.6	23.9	80.00 LAG
TOTALS	12.3	34.1	8.6	23.9	8.6	23.9	80.00 LAG

LOAD SCHEDULE FOR BUS-DS-MDP_208 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-T-MDP_208_

ITEM DESCRIPTION	CONNECTED KVA	MAX PH * AMPS	DEMAND KVA	MAX PH * AMPS	DESIGN KVA	MAX PH * AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-MDP_208	37.7	104.6	26.4	73.3	26.4	73.3	80.00 LAG
TOTALS	37.7	104.6	26.4	73.3	26.4	73.3	80.00 LAG

LOAD SCHEDULE FOR BUS-DS-T-1LC 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-AA

ITEM DESCRIPTION	CONNECTED KVA	MAX PH * AMPS	DEMAND KVA	MAX PH * AMPS	DESIGN KVA	MAX PH * AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-T-1LC_PRI	35.0	42.1	24.5	29.5	24.5	29.5	80.00 LAG
TOTALS	35.0	42.1	24.5	29.5	24.5	29.5	80.00 LAG

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-DS-T-L1 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-AA

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-T-L1_PRI	12.3	14.8	8.6	10.3	8.6	10.3	80.00 LAG
TOTALS	12.3	14.8	8.6	10.3	8.6	10.3	80.00 LAG

LOAD SCHEDULE FOR BUS-EM 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-1EC	25.3	70.2	17.7	49.2	17.7	49.2	80.00 LAG
BUS-1EB	12.4	34.4	8.7	24.1	8.7	24.1	80.00 LAG
BUS-2EB	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-2EA	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-MAINTENANC	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
TOTALS	37.7	104.6	26.4	73.3	26.4	73.3	80.00 LAG

LOAD SCHEDULE FOR BUS-FIRE PUMP 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-G1 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-G1

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-K 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-L1 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-DS-L1

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
ENERGY AUDIT KVA	12.3	34.1	8.6	23.9	8.6	23.9	80.00 LAG
BRANCH LOADS							
TOTALS	12.3	34.1	8.6	23.9	8.6	23.9	80.00 LAG

LOAD SCHEDULE FOR BUS-MAINTENANC 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-EM

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-MCP-3 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SUMMARY

LOAD SCHEDULE FOR BUS-MCP-4 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
*** WARNING *** DESIGN LOAD IS ZERO KVA							

LOAD SCHEDULE FOR BUS-MDP_208 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-DS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-1LB	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-EM	37.7	104.6	26.4	73.3	26.4	73.3	80.00 LAG
BUS-1LA	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-X-RAY	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-A/C-1	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-MP-1	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-MCP-3	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-2LA	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-K	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-MCP-4	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-MP-2	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-FIRE PUMP	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
BUS-2LB	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
TOTALS	37.7	104.6	26.4	73.3	26.4	73.3	80.00 LAG

LOAD SCHEDULE FOR BUS-MDP_480 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-ATS-C

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
ENERGY AUDIT KVA	133.8	160.9	133.8	160.9	133.8	160.9	80.00 LAG
BRANCH LOADS							
BUS-T-MDP_208_	37.7	45.3	26.4	31.7	26.4	31.7	80.00 LAG
BUS-AA	92.0	110.7	64.4	77.5	64.4	77.5	80.00 LAG
BUS-PD-ADMIN B	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		
TOTALS	263.5	316.9	224.6	270.1	224.6	270.1	80.00 LAG

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-METER 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-T-OTERO-CO

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-ATS-N	263.5	316.9	224.6	270.1	224.6	270.1	80.00 LAG
TOTALS	263.5	316.9	224.6	270.1	224.6	270.1	80.00 LAG

LOAD SCHEDULE FOR BUS-MP-1 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-MP-2 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-PANEL P AD 208. VOLTS LINE TO LINE
SOURCE OF PWR BUSXFMR ADMIN

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-PD-ADMIN B 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_480

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F	
END USE LOADS								
BRANCH LOADS								
BUS-ADMIN BLDG	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO			

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-T-1LC_PRI 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-DS-T-1LC

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F	
END USE LOADS								
BRANCH LOADS								
BUS-T-1LC_SEC	35.0	42.1	24.5	29.5	24.5	29.5	80.00	LAG
TOTALS	35.0	42.1	24.5	29.5	24.5	29.5	80.00	LAG

LOAD SCHEDULE FOR BUS-T-1LC_SEC 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-T-1LC_PRI

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F	
END USE LOADS								
BRANCH LOADS								
BUS-DS-1LC	35.0	97.2	24.5	68.0	24.5	68.0	80.00	LAG
TOTALS	35.0	97.2	24.5	68.0	24.5	68.0	80.00	LAG

LOAD SCHEDULE FOR BUS-T-1LD_PRI 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-AC

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F	
END USE LOADS								
BRANCH LOADS								
BUS-T-1LD_SEC	14.8	17.8	10.3	12.4	10.3	12.4	80.00	LAG
TOTALS	14.8	17.8	10.3	12.4	10.3	12.4	80.00	LAG

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-T-1LD_SEC 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-T-1LD_PRI

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-1LD	14.8	41.0	10.3	28.7	10.3	28.7	80.00 LAG
TOTALS	14.8	41.0	10.3	28.7	10.3	28.7	80.00 LAG

LOAD SCHEDULE FOR BUS-T-L1_PRI 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-DS-T-L1

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-T-L1_SEC	12.3	14.8	8.6	10.3	8.6	10.3	80.00 LAG
TOTALS	12.3	14.8	8.6	10.3	8.6	10.3	80.00 LAG

LOAD SCHEDULE FOR BUS-T-L1_SEC 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-T-L1_PRI

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-DS-L1	12.3	34.1	8.6	23.9	8.6	23.9	80.00 LAG
TOTALS	12.3	34.1	8.6	23.9	8.6	23.9	80.00 LAG

LOAD SCHEDULE FOR BUS-T-MDP_208_ 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_480

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-T-MDP_208_	37.7	45.3	26.4	31.7	26.4	31.7	80.00 LAG
TOTALS	37.7	45.3	26.4	31.7	26.4	31.7	80.00 LAG

LOAD SUMMARY

****

LOAD SCHEDULE FOR BUS-T-MDP_208_ 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-T-MDP_208_

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-DS-MDP_208	37.7	104.6	26.4	73.3	26.4	73.3	80.00 LAG
TOTALS	37.7	104.6	26.4	73.3	26.4	73.3	80.00 LAG

LOAD SCHEDULE FOR BUS-T-OTERO-CO 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-UTILITY_OT

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-METER	263.5	316.9	224.6	270.1	224.6	270.1	80.00 LAG
TOTALS	263.5	316.9	224.6	270.1	224.6	270.1	80.00 LAG

LOAD SCHEDULE FOR BUS-UTILITY_OT 12470. VOLTS LINE TO LINE
SOURCE OF PWR SOURCE BUS

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUS-T-OTERO-CO	263.5	12.2	224.6	10.4	224.6	10.4	80.00 LAG
TOTALS	263.5	12.2	224.6	10.4	224.6	10.4	80.00 LAG

LOAD SCHEDULE FOR BUS-XFMR ADMIN 480. VOLTS LINE TO LINE
SOURCE OF PWR BUS-ADMIN BLDG

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							
BUSXFMR ADMIN	0.0	0.0	0.0	0.0	WARNING: LOAD IS ZERO		

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SUMMARY

LOAD SCHEDULE FOR BUSXFMR ADMIN 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-XFMR ADMIN

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F	
END USE LOADS								
BRANCH LOADS								
BUS-PANEL P AD	0.0	0.0	0.0	0.0				WARNING: LOAD IS ZERO

*** WARNING *** DESIGN LOAD IS ZERO KVA

LOAD SCHEDULE FOR BUS-X-RAY 208. VOLTS LINE TO LINE
SOURCE OF PWR BUS-MDP_208

ITEM DESCRIPTION	CONNECTED KVA	MAX PH AMPS	DEMAND KVA	MAX PH AMPS	DESIGN KVA	MAX PH AMPS	% P F
END USE LOADS							
BRANCH LOADS							

*** WARNING *** DESIGN LOAD IS ZERO KVA

TOTAL SOURCE LOAD SUMMARY

LOAD DESCRIPTION TYPE	UNITS	CONNECTED LOAD	DEMAND LOAD	DESIGN LOAD	POWER FACTOR %
ENERGY AUDIT KVA	KW	210.8	179.7	179.7	
	KVAR	158.1	134.7	134.7	
	KVA	263.5	224.6	224.6	80.00 LAGGING
TOTAL LOADS	KW	210.8	179.7	179.7	
	KVAR	158.1	134.7	134.7	
	KVA	263.5	224.6	224.6	
	% PF	80.0 LAGGING	80.0 LAGGING	80.0 LAGGING	

LOAD DEMAND TABLE

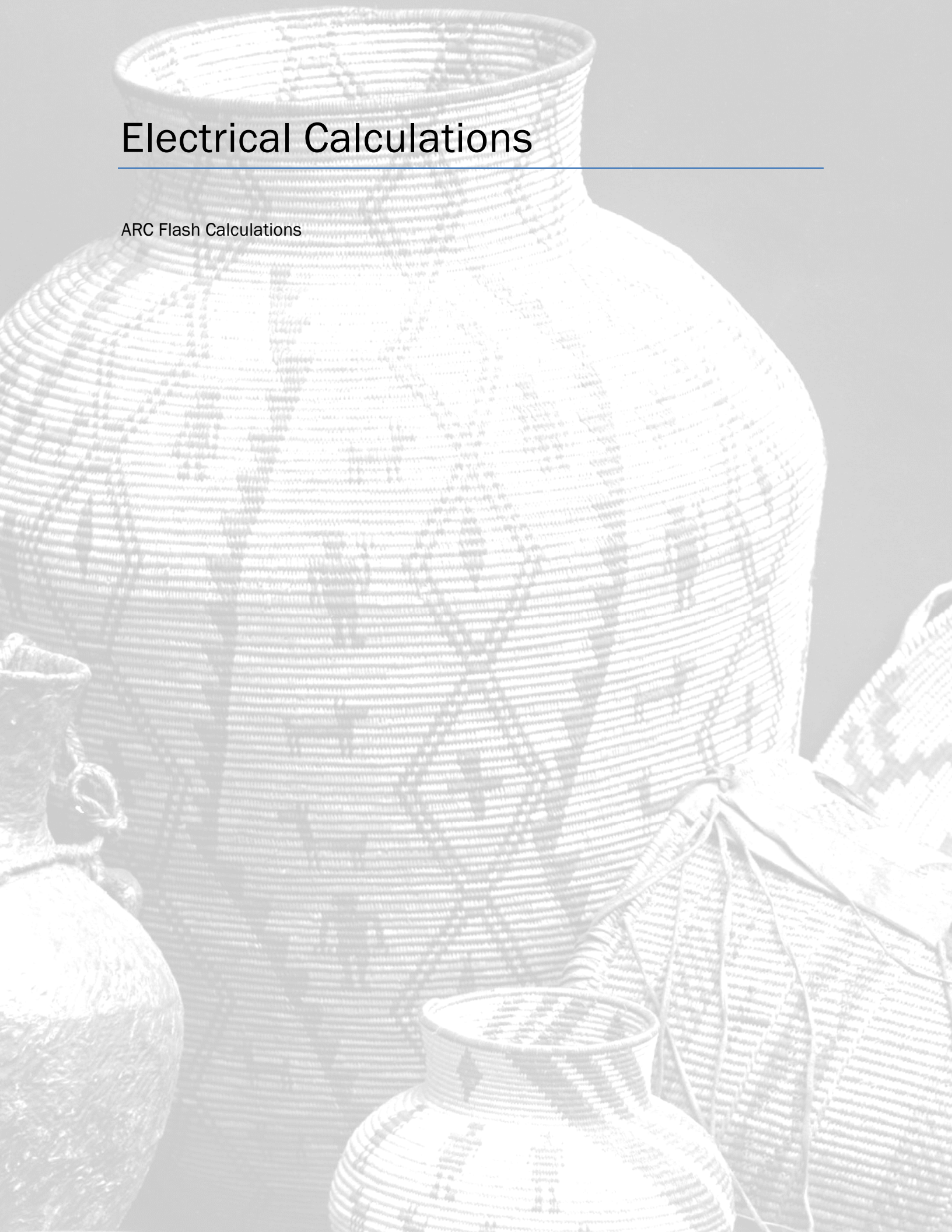
LOAD DESCRIPTION	LOAD TYPE	FIRST DEMAND KVA	%	SECOND DEMAND KVA	%	THIRD DEMAND KVA	%	DESIGN FACT
GEN	K	100	100	ALL	50	ALL	100	1.00
LTS	K	ALL	100	ALL	100	ALL	100	1.25
REC	Z	10	100	ALL	50	ALL	100	1.00
OFF EQ	K	ALL	100	ALL	100	ALL	100	1.00
HEAT	Z	ALL	100	ALL	100	ALL	100	1.25
CAP	Z	ALL	100	ALL	100	ALL	100	1.35
SPARE	K	ALL	100	ALL	100	ALL	100	1.00
GENERAL LOADS	K	100	100	ALL	50	ALL	100	1.00
LIGHTING	K	ALL	100	ALL	100	ALL	100	1.25
RECEPTACLES	Z	10	100	ALL	50	ALL	100	1.00
OFFICE EQUIPMENT	K	ALL	100	ALL	100	ALL	100	1.00
HEATING	Z	ALL	100	ALL	100	ALL	100	1.25
CAPACITORS	Z	ALL	100	ALL	100	ALL	100	1.35
SPACE	K	ALL	100	ALL	100	ALL	100	1.00
SPARE	K	ALL	100	ALL	100	ALL	100	1.00
SPARE	K	ALL	100	ALL	100	ALL	100	1.00
SPARE	K	ALL	100	ALL	100	ALL	100	1.00
SPARE	K	ALL	100	ALL	100	ALL	100	1.00
SPARE	K	ALL	100	ALL	100	ALL	100	1.00
SPARE	K	ALL	100	ALL	100	ALL	100	1.00

NOTES:

1) LARGEST MOTOR CIRCUIT IDENTIFIED AND USED TO CALCULATE DESIGN LOAD BASED ON NEC ART 430.
2) MULTI-LEVEL DEMAND AND DESIGN FACTORS APPLIED AT EACH LOAD BUS.
3) LOAD TOTALS CALCULATED USING COMPLEX ADDITION BASED ON POWER FACTOR.

Electrical Calculations

ARC Flash Calculations



ARC FLASH

	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T
1	Bus Name	Protective	Bus	Bus	Bus	Prot Dev	Prot Dev	Trip/	Breaker	Equip	Equip	Electrode	Gap	Arc	Working	Incident	PPE Level / Notes (*N)	Label #	Cable Length
2		Device	kV	Bolted	Arcing	Bolted	Arcing	Delay	Opening	Type	Category	Config	(mm)	Flash	Distance	Energy			From Trip Device
3		Name		Fault	Fault	Fault	Fault	Time	Time/Tol					Boundary	(in)	(cal/cm2)			(ft)
4				(kA)	(kA)	(kA)	(kA)	(sec.)	(sec.)					(in)					
5	BUS-1EB	PD-1EB	0.208	3.38	1.21	3.38	1.21	0.7781	0.0000	PNL		VCB	25	25	18	2.04	Level 3 (*N3)	# 0001	137.00
6	BUS-1EC	PD-1EC	0.208	3.12	1.29	3.12	1.29	0.0267	0.0000	PNL		VCB	25	3	18	0.07	Level 0	# 0002	174.00
7	BUS-1LA	PD-1LA	0.208	4.38	1.60	4.38	1.60	0.0116	0.0000	PNL		VCB	25	2	18	0.04	Level 0 (*N3)	# 0003	61.00
8	BUS-1LB	PD-1LB	0.208	3.75	1.35	3.75	1.35	2	0.0000	PNL		VCB	25	49	18	5.92	Level 3 (*N3) (*N9)	# 0003	120.00
9	BUS-1LC	PD-1LC	0.208	3.49	1.45	3.49	1.45	2	0.0000	PNL		VCB	25	51	18	6.28	Level 3 (*N9)	# 0004	270.00
10	BUS-1LD	PD-1LD	0.208	1.61	0.63	1.61	0.63	2	0.0000	PNL		VCB	25	29	18	2.60	Level 3 (*N9)	# 0005	30.00
11	BUS-2EA	PD-2EA	0.208	3.68	1.33	3.68	1.33	0.3576	0.0000	PNL		VCB	25	16	18	1.03	Level 0 (*N3)	# 0007	100.00
12	BUS-2EB	PD-2EB	0.208	3.34	1.19	3.34	1.19	0.7704	0.0000	PNL		VCB	25	25	18	1.99	Level 3 (*N3)	# 0008	143.00
13	BUS-2LA	PD-2LA	0.208	4.03	1.46	4.03	1.46	0.0136	0.0000	PNL		VCB	25	2	18	0.04	Level 0 (*N3)	# 0009	92.00
14	BUS-2LB	PD-2LB	0.208	3.67	1.32	3.67	1.32	2	0.0000	PNL		VCB	25	48	18	5.77	Level 3 (*N3) (*N9)	# 0010	129.00
15	BUS-A/C-1	PD-A/C-1	0.208	4.14	1.51	4.14	1.51	0.0128	0.0000	PNL		VCB	25	2	18	0.04	Level 0 (*N3)	# 0011	81.00
16	BUS-AA	PD-AA_MCB	0.48	7.77	5.88	7.77	5.88	0.01	0.0000	PNL		VCB	25	4	18	0.13	Level 0	# 0006	
17	BUS-AB	PD-AB	0.48	4.51	3.32	4.51	3.32	0.017	0.0000	PNL		VCB	25	4	18	0.12	Level 0	# 0013	186.00
18	BUS-AC	PD-AC	0.48	5.57	4.15	5.57	4.15	0.01	0.0000	PNL		VCB	25	4	18	0.09	Level 0	# 0009	204.00
19	BUS-ADMIN BLDG 480V PANEL	PD-ADMIN BLDG	0.48	3.43	2.49	3.43	2.49	0.017	0.0000	PNL		VCB	25	4	18	0.09	Level 0	# 0015	175.00
20	BUS-ATS-C	MaxTripTime @2.0s	0.48	8.27	6.27	8.27	6.27	2	0.0000	PNL		VCB	25	129	18	27.8	Level 4 (*N2) (*N9)	# 0010	
21	BUS-ATS-E	PD-G1	0.48	3.94	2.88	3.94	2.88	2	0.0000	PNL		VCB	25	77	18	12.2	Level 4 (*N9)	# 0017	45.00
22	BUS-ATS-N	MaxTripTime @2.0s	0.48	8.27	6.27	8.27	6.27	2	0.0000	PNL		VCB	25	129	18	27.8	Level 4 (*N2) (*N9)	# 0011	
23	BUS-CRAC-1	PD-CRAC-1	0.48	3.33	2.41	3.33	2.41	0.0167	0.0000	PNL		VCB	25	3	18	0.08	Level 0	# 0012	74.00
24	BUS-CRAC-2	PD-CRAC-2	0.48	3.59	2.61	3.59	2.61	0.0167	0.0000	PNL		VCB	25	4	18	0.09	Level 0	# 0013	66.00
25	BUS-DS-1LC	PD-1LC	0.208	3.87	1.63	3.87	1.63	2	0.0000	PNL		VCB	25	55	18	7.08	Level 3 (*N9)	# 0014	224.00
26	BUS-DS-L1	PD-L1	0.208	4.25	1.80	4.25	1.80	2	0.0000	PNL		VCB	25	59	18	7.88	Level 3 (*N9)	# 0015	77.00
27	BUS-DS-MDP_208	PD-MDP_208	0.208	5.57	2.42	5.57	2.42	2	0.0000	PNL		VCB	25	71	18	10.7	Level 3 (*N9)	# 0016	70.00
28	BUS-DS-T-1LC	PD-1LC	0.48	4.93	3.65	4.93	3.65	0.017	0.0000	PNL		VCB	25	5	18	0.13	Level 0	# 0018	179.00
29	BUS-DS-T-L1	PD-L1	0.48	6.94	5.22	6.94	5.22	0.0173	0.0000	PNL		VCB	25	6	18	0.20	Level 0	# 0017	30.00
30	BUS-EM (EXISTING)	PD-EM	0.208	4.80	1.77	4.80	1.77	0.0168	0.0000	PNL		VCB	25	3	18	0.07	Level 0 (*N3)	# 0019	40.00
31	BUS-FIRE PUMP	PD-FIRE PUMP	0.208	5.25	2.27	5.25	2.27	0.01	0.0000	PNL		VCB	25	2	18	0.05	Level 0	# 0027	1.00
32	BUS-G1	PD-G1	0.48	4.00	2.93	4.00	2.93	2	0.0000	PNL		VCB	25	78	18	12.5	Level 4 (*N9)	# 0028	
33	BUS-K	PD-K	0.208	4.43	1.88	4.43	1.88	0.01	0.0000	PNL		VCB	25	2	18	0.04	Level 0	# 0029	57.00
34	BUS-L1	PD-L1	0.208	3.33	1.38	3.33	1.38	2	0.0000	PNL		VCB	25	49	18	5.95	Level 3 (*N9)	# 0020	174.00
35	BUS-MAINTENANCE BLDG	PD-MAINTENANC	0.208	1.72	0.67	1.72	0.67	2	0.0000	PNL		VCB	25	31	18	2.80	Level 3 (*N9)	# 0031	155.00
36	BUS-MCP-3	PD-MCP-3	0.208	3.70	1.33	3.70	1.33	2	0.0000	PNL		VCB	25	48	18	5.82	Level 3 (*N3) (*N9)	# 0032	126.00
37	BUS-MCP-4	PD-MCP-4	0.208	3.70	1.33	3.70	1.33	2	0.0000	PNL		VCB	25	48	18	5.82	Level 3 (*N3) (*N9)	# 0033	126.00
38	BUS-MDP_208	PD-MDP_208	0.208	5.27	2.28	5.27	2.28	2	0.0000	PNL		VCB	25	68	18	10.1	Level 3 (*N9)	# 0021	99.00
39	BUS-MDP_480 (EXISTING MDP OUTDOORS)	PD-MDP_480	0.48	8.20	6.22	8.20	6.22	2	0.0000	PNL		VCB	25	128	18	27.6	Level 4 (*N9)	# 0022	
40	BUS-METER	MaxTripTime @2.0s	0.48	8.41	6.38	8.41	6.38	2	0.0000	PNL		VCB	25	131	18	28.4	Level 4 (*N2) (*N9)	# 0023	
41	BUS-MP-1	PD-MP-1	0.208	4.86	2.09	4.86	2.09	0.01	0.0000	PNL		VCB	25	2	18	0.05	Level 0	# 0037	25.00
42	BUS-MP-2	PD-MP-2	0.208	4.89	2.10	4.89	2.10	0.01	0.0000	PNL		VCB	25	2	18	0.05	Level 0	# 0038	23.00
43	BUS-PANEL P ADMIN BLDG	PD-ADMIN BLDG	0.208	2.31	0.93	2.31	0.93	2	0.0000	PNL		VCB	25	38	18	3.92	Level 3 (*N9)	# 0039	225.00
44	BUS-PD-ADMIN BLDG LOAD SIDE	PD-ADMIN BLDG	0.48	3.70	2.70	3.70	2.70	0.017	0.0000	PNL		VCB	25	4	18	0.10	Level 0	# 0040	155.00
45	BUS-T-1LC_PRI	PD-1LC	0.48	4.66	3.44	4.66	3.44	0.017	0.0000	PNL		VCB	25	4	18	0.13	Level 0	# 0024	205.00
46	BUS-T-1LC_SEC	PD-1LC	0.208	4.06	1.71	4.06	1.71	2	0.0000	PNL		VCB	25	57	18	7.47	Level 3 (*N9)	# 0025	205.00

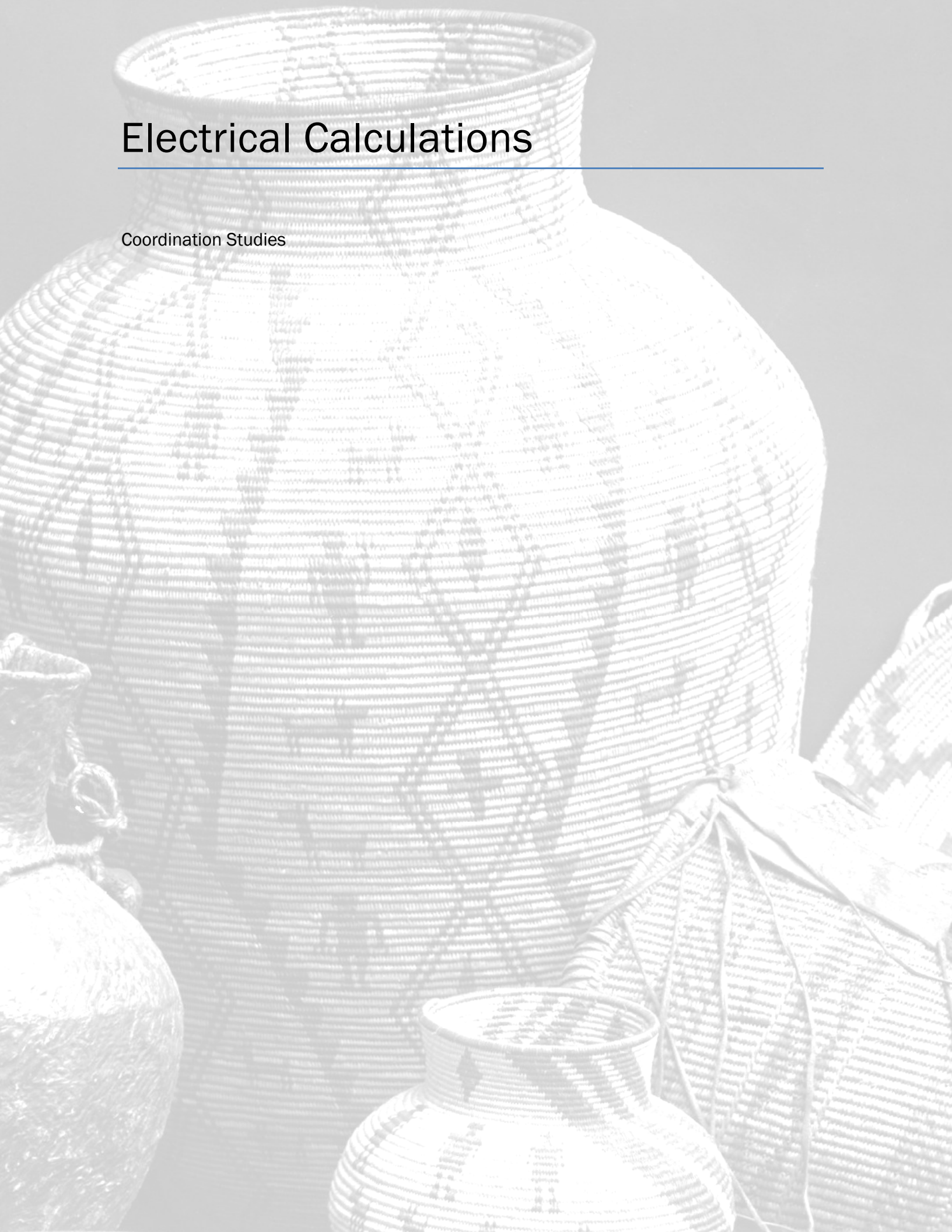
	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T
1	Bus Name	Protective	Bus	Bus	Bus	Prot Dev	Prot Dev	Trip/	Breaker	Equip	Equip	Electrode	Gap	Arc	Working	Incident	PPE Level / Notes (*N)	Label #	Cable Length
2		Device	kV	Bolted	Arcing	Bolted	Arcing	Delay	Opening	Type	Category	Config	(mm)	Flash	Distance	Energy			From Trip Device
3		Name		Fault	Fault	Fault	Fault	Time	Time/Tol					Boundary	(in)	(cal/cm2)			(ft)
4				(kA)	(kA)	(kA)	(kA)	(sec.)	(sec.)					(in)					
47	BUS-T-1LD_PRI	PD-1LD	0.48	4.57	3.36	4.57	3.36	0.0167	0.0000	PNL		VCB	25	4	18	0.12	Level 0	# 0026	20.00
48	BUS-T-1LD_SEC	PD-1LD	0.208	1.66	0.65	1.66	0.65	2	0.0000	PNL		VCB	25	30	18	2.69	Level 3 (*N9)	# 0027	20.00
49	BUS-T-L1_PRI	PD-L1	0.48	6.30	4.71	6.30	4.71	0.0173	0.0000	PNL		VCB	25	5	18	0.18	Level 0	# 0028	56.00
50	BUS-T-L1_SEC	PD-L1	0.208	4.52	1.93	4.52	1.93	2	0.0000	PNL		VCB	25	61	18	8.46	Level 3 (*N9)	# 0029	56.00
51	BUS-T-MDP_208_PRI	PD-MDP_208	0.48	7.75	5.86	7.75	5.86	0.01	0.0000	PNL		VCB	25	4	18	0.13	Level 0	# 0030	25.00
52	BUS-T-MDP_208_SEC	PD-MDP_208	0.208	6.09	2.67	6.09	2.67	2	0.0000	PNL		VCB	25	76	18	11.9	Level 3 (*N9)	# 0031	25.00
53	BUS-T-OTERO-CO-OP_SEC	MaxTripTime @2.0s	0.48	9.02	6.86	9.02	6.86	2	0.0000	PNL		VCB	25	137	18	30.6	Level 4 (*N2) (*N9)	# 0032	
54	BUS-UTILITY_OTERO_CO-OP	MaxTripTime @2.0s	12.47	46299.13	46299.13	46299.13	46299.13	2	0.0000	SWG		VCB	152	27681	36	706541.2	Dangerous! (*N2) (*N9) (*N_ka)	# 0033	
55	BUS-XFMR ADMIN BLDG PRI	PD-ADMIN BLDG	0.48	3.07	2.22	3.07	2.22	0.017	0.0000	PNL		VCB	25	3	18	0.08	Level 0	# 0052	205.00
56	BUSXFMR ADMIN BLDG SEC	PD-ADMIN BLDG	0.208	2.44	0.98	2.44	0.98	2	0.0000	PNL		VCB	25	39	18	4.17	Level 3 (*N9)	# 0053	205.00
57	BUS-X-RAY	PD-X-RAY	0.208	4.62	1.97	4.62	1.97	0.01	0.0000	PNL		VCB	25	2	18	0.04	Level 0	# 0051	42.00
58	Level 0: No Arc-rated PPE Required	0.0 - 1.2 cal/cm^2														#Level 0 = 25	(*N_ka) - Out of IEEE 1584 KA Range, Lee Equation Used. Consider NESC method to compare.		
59	Level 3: Arc-rated shirt & pants or arc-rated coverall or arc-rated arc flash suit	1.2 - 12.0 cal/cm^2														#Level 3 = 20	(*N2) < 80% Cleared Fault Threshold		
60	Level 4: Arc-rated shirt & pants or arc-rated coverall or arc-rated arc flash suit	12.0 - 999.0 cal/cm^2														#Level 4 = 7	(*N3) - Arcing Current Low Tolerances Used		
61	Level Dangerous!: DO NOT WORK ON LIVE!	999.0 - 9999.0 cal/cm^2														#Danger = 1	(*N9) - Max Arcing Duration Reached		
62																	IEEE 1584 2018 Bus Report - Comprehensive Fault (80% Cleared Fault Threshold, include Ind. Motors for 5.0 Cycles, mis-coordination not checked		
63	For additional information refer to NFPA 70 E, Standard for Electrical Safety in the Workplace.																		
64	Level 0: No Arc-rated PPE Required, Safety Glasses or Goggles + Ear Canal Inserts, Leather Gloves, Safety glasses, > 50V voltage rated tools + Class 0 (minimum) gloves, Dielectric shoes or insulating mat (step and touch potential).																		

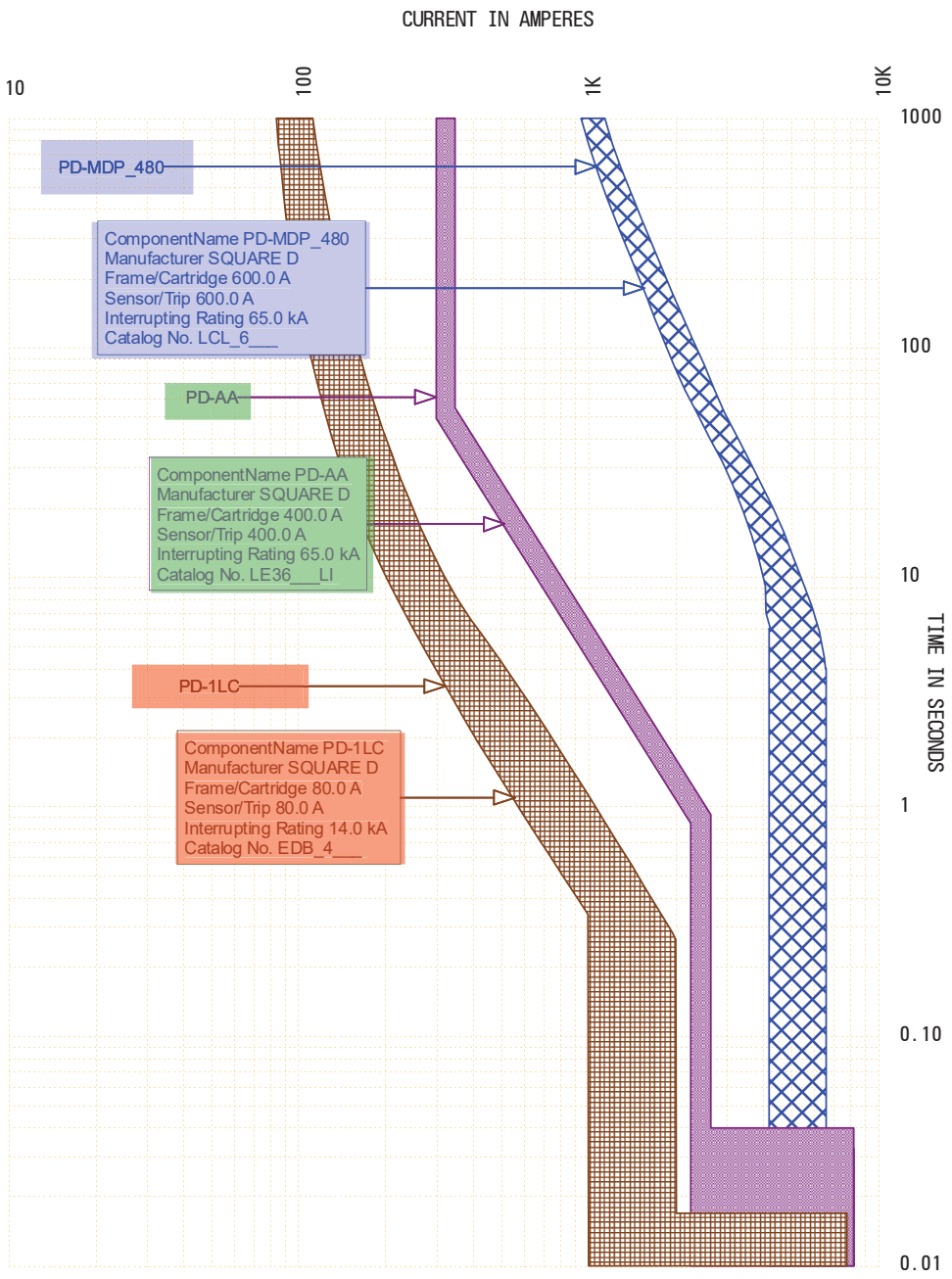
	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T
1	Bus Name	Protective	Bus	Bus	Bus	Prot Dev	Prot Dev	Trip/	Breaker	Equip	Equip	Electrode	Gap	Arc	Working	Incident	PPE Level / Notes (*N)	Label #	Cable Length
2		Device	kV	Bolted	Arcing	Bolted	Arcing	Delay	Opening	Type	Category	Config	(mm)	Flash	Distance	Energy			From Trip Device
3		Name		Fault	Fault	Fault	Fault	Time	Time/Tol					Boundary	(in)	(cal/cm2)			(ft)
4				(kA)	(kA)	(kA)	(kA)	(sec.)	(sec.)					(in)					
65	Level 3: Arc-rated shirt & pants or arc-rated coverall or arc-rated arc flash suit , Hardhat + Arc-rated hard hat liner + Safety Glasses or Goggles + Ear Canal Inserts, Leather Gloves, Leather footwear, Safety glasses, electrically rated hard hat with hood and face shield. Hearing protection., Arc-rated shirt (long-sleeve) plus Arc-rated pants (long) or Arc-rated coverall, or arc rated arc flash suit jacket, pants, & hood, Arc-rated rainwear as needed., > 50V voltage rated tools + Class 0 (minimum) gloves and leather protectors (flash)., Leather shoes (flash) as needed. Dielectric shoes or insulating mat (step and touch potential).																		
66	Level 4: Arc-rated shirt & pants or arc-rated coverall or arc-rated arc flash suit , Hardhat + Arc-rated hard hat liner + Safety Glasses or Goggles + Ear Canal Inserts, Arc-rated Gloves, Leather footwear, Safety glasses, electrically rated hard hat with hood and face shield. Hearing protection., Arc-rated shirt (long-sleeve) plus Arc-rated pants (long) or Arc-rated coverall, or arc rated arc flash suit jacket, pants, & hood, Arc-rated rainwear as needed., > 50V voltage rated tools + Class 0 (minimum) gloves and leather protectors (flash)., Leather shoes (flash) as needed. Dielectric shoes or insulating mat (step and touch potential).																		

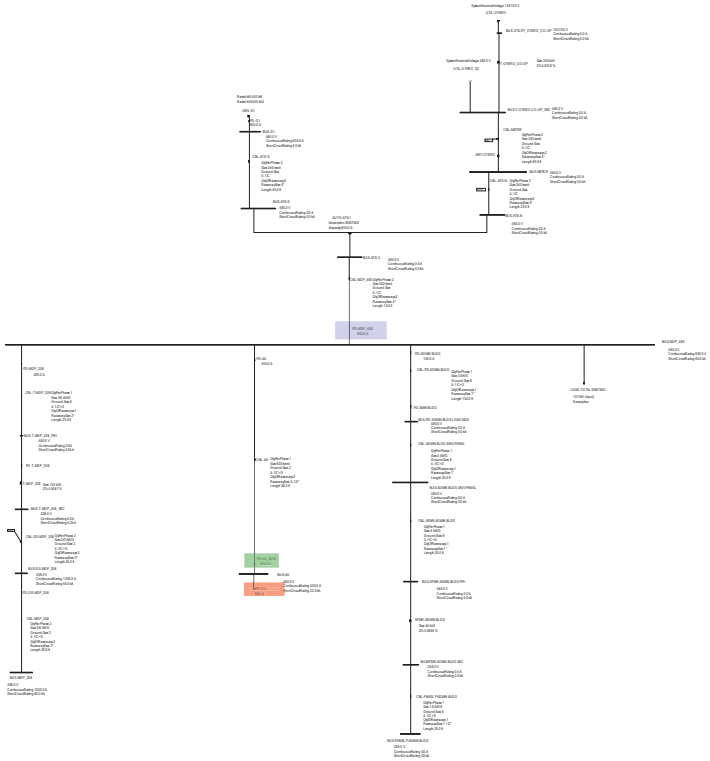
	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T
1	Bus Name	Protective	Bus	Bus	Bus	Prot Dev	Prot Dev	Trip/	Breaker	Equip	Equip	Electrode	Gap	Arc	Working	Incident	PPE Level / Notes (*N)	Label #	Cable Length
2		Device	kV	Bolted	Arcing	Bolted	Arcing	Delay	Opening	Type	Category	Config	(mm)	Flash	Distance	Energy			From Trip Device
3		Name		Fault	Fault	Fault	Fault	Time	Time/Tol					Boundary	(in)	(cal/cm2)			(ft)
4				(kA)	(kA)	(kA)	(kA)	(sec.)	(sec.)					(in)					
67	Level Dangerous!: DO NOT WORK ON LIVE!, DO NOT WORK ON LIVE!, DO NOT WORK ON LIVE!, DO NOT WORK ON LIVE!, DO NOT WORK ON LIVE!																		
68																			
69																			

Electrical Calculations

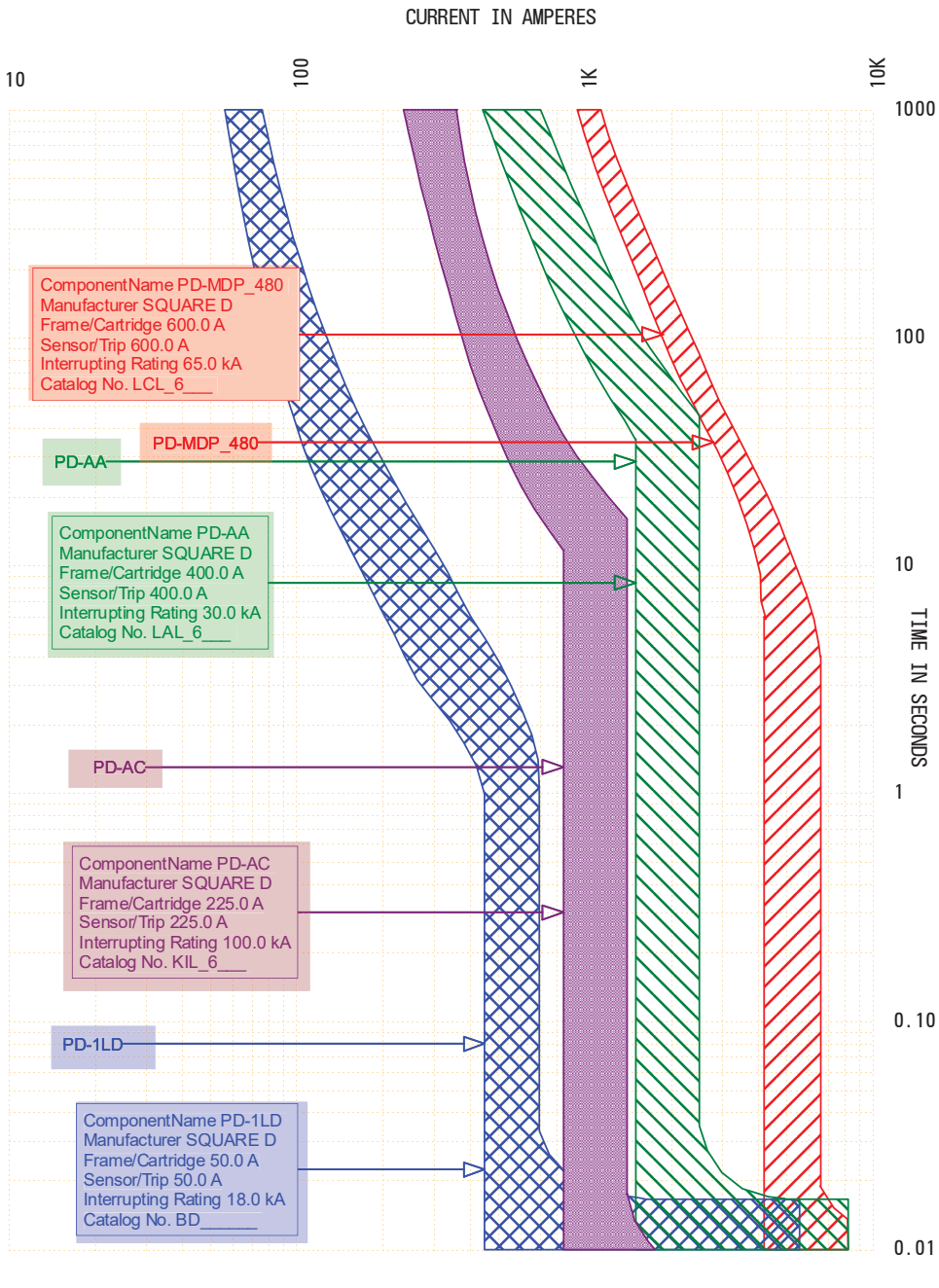
Coordination Studies

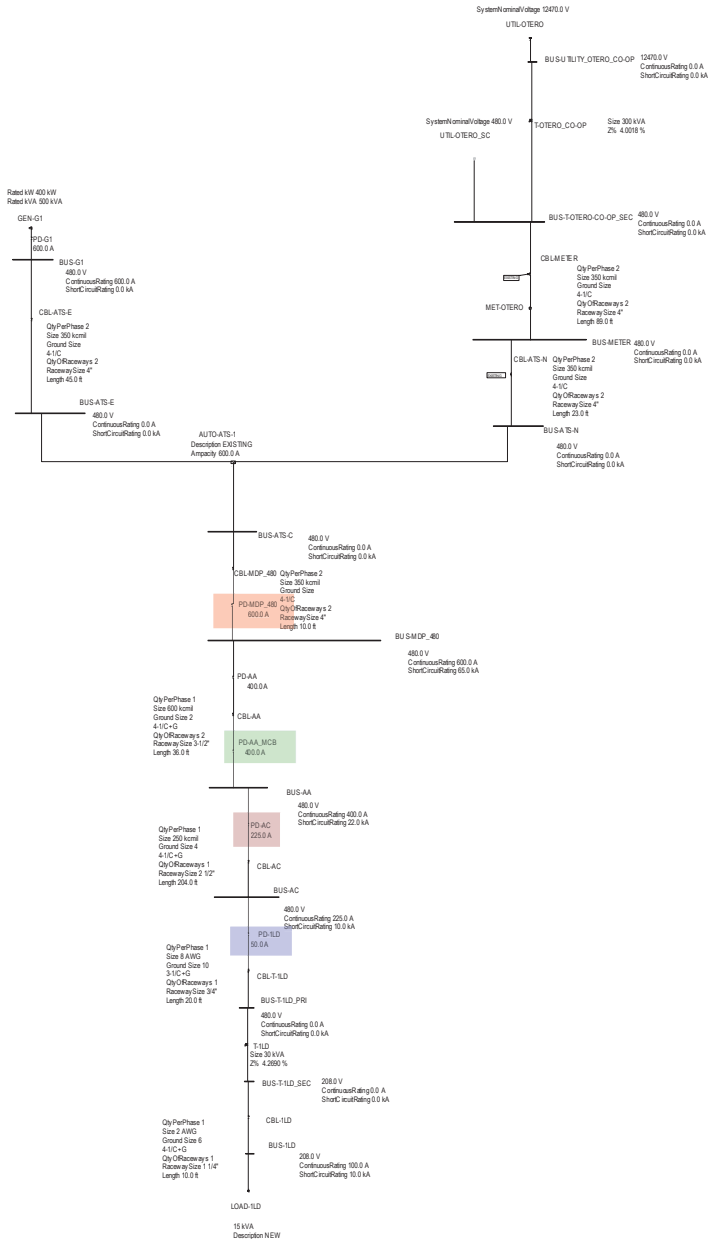






TCC: tcc1 Current Scale x 1 Reference Voltage: 480 April 21, 2021

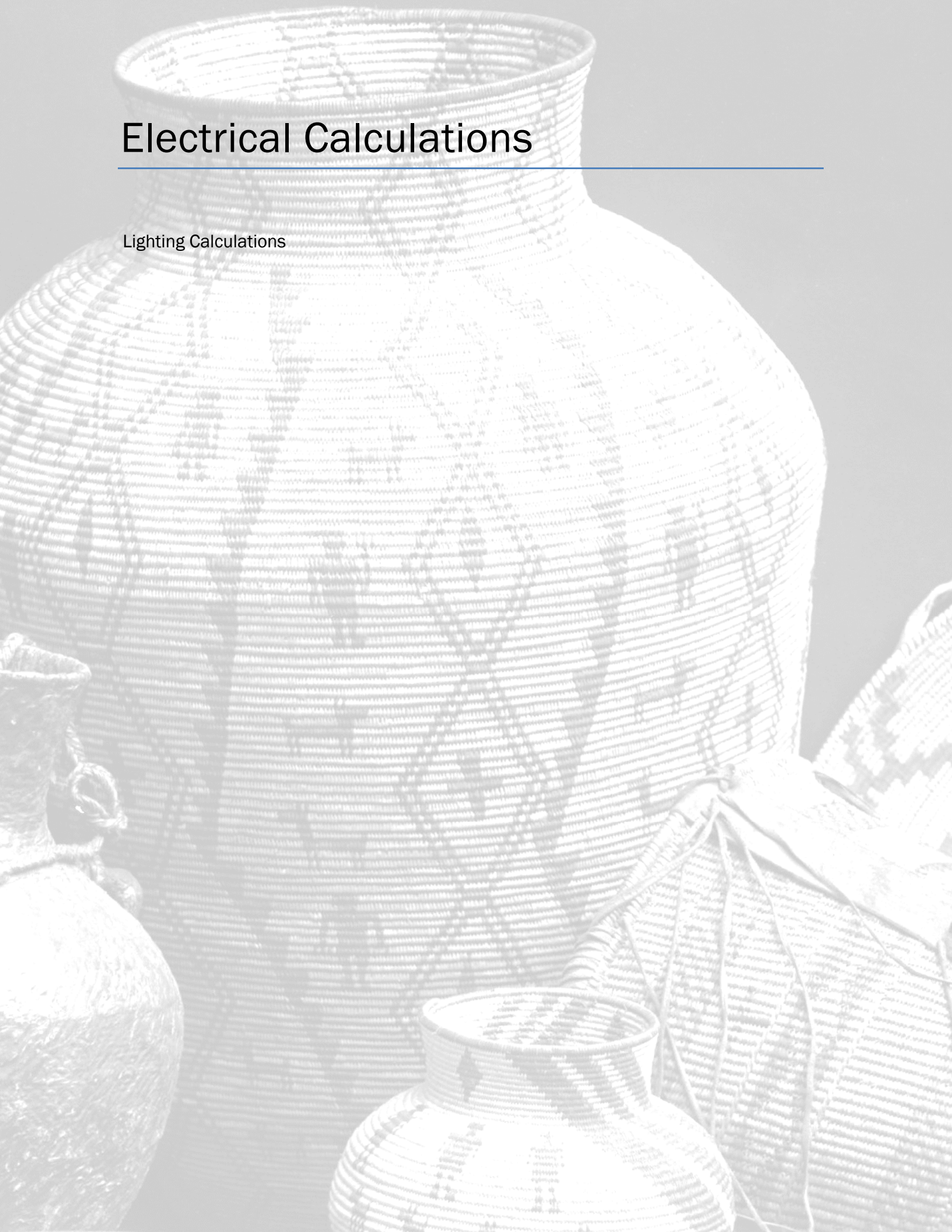




TCC: tcc2 Current Scale x 1 Reference Voltage: 480 April 21, 2021

Electrical Calculations

Lighting Calculations



Summary

MESCALERO APACHE IHS

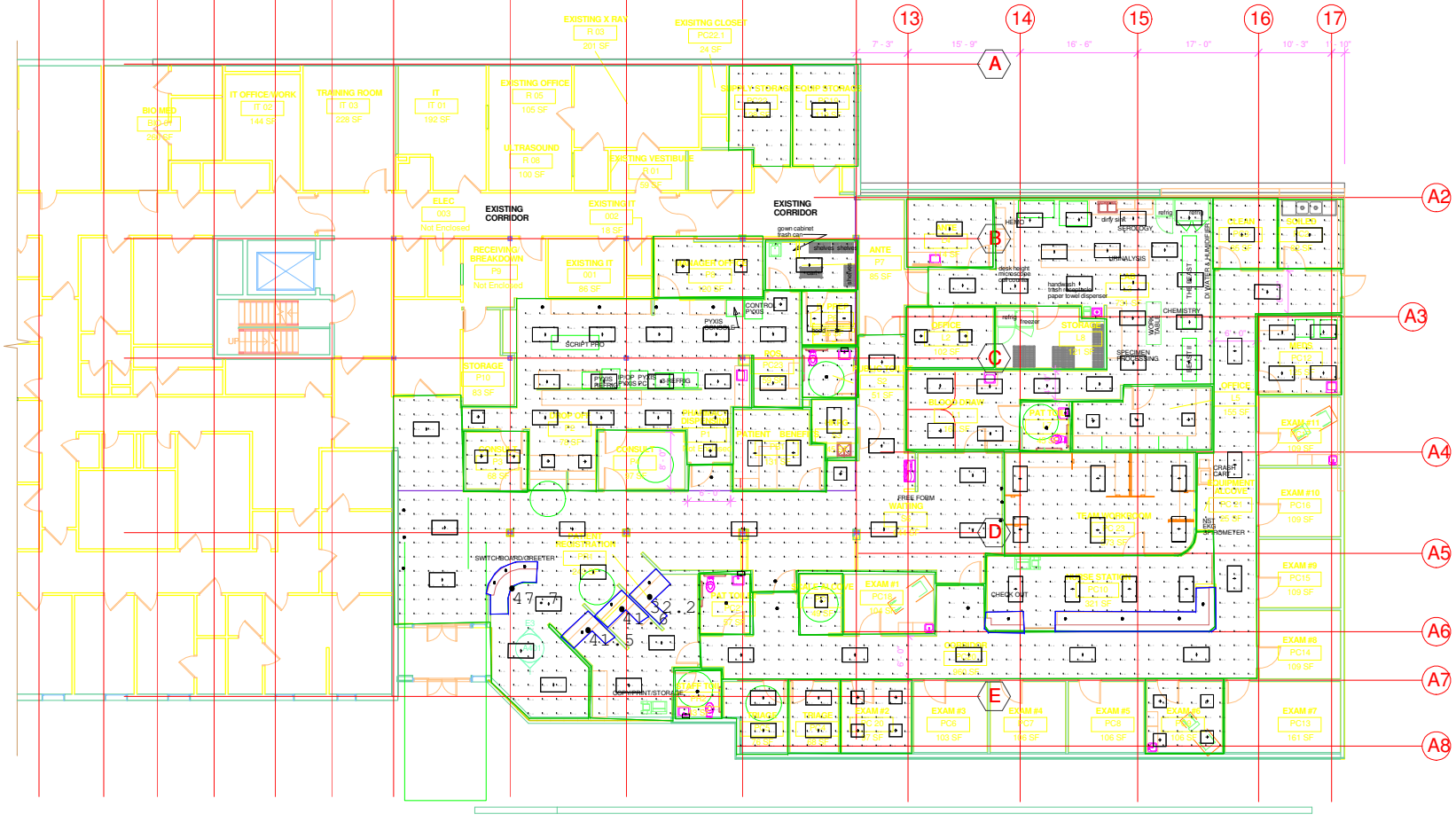
PREPARED BY : IW INCORPORATED

Luminaire Summary

Luminaire Schedule						
Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description
	24	TYPE A	SINGLE	N.A.	0.930	2FGG45L840-2-D-UNV
	90	TYPE B	SINGLE	N.A.	0.930	2FGG74L840-4-D-UNV
	12	TYPE C	SINGLE	N.A.	0.930	P4RD20NZ10UVB-P4RD835VB-P4RDCL
	6	TYPE CW	SINGLE	N.A.	0.930	P4RD20NZ10UVB-P4RD835VB-P4RLWCL
	6	TYPE D2	SINGLE	335	0.930	401214BN-LED
	5	TYPE D3	SINGLE	400	0.930	401431CH-LED
	4	TYPE E	SINGLE	1464	0.930	WS10324-ES

Calculation Summary

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
ANTE L4_Workplane	Illuminance	Fc	34.57	60.0	17.1	2.02	3.51
CLEAN_Workplane	Illuminance	Fc	35.42	60.6	17.7	2.00	3.42
CONSULT_Workplane	Illuminance	Fc	47.55	65.8	26.5	1.79	2.48
CORRIDOR PC 20_Workplane	Illuminance	Fc	37.78	71.8	7.7	4.91	9.32
EQUIP STORAGE_Workplane	Illuminance	Fc	31.16	61.0	12.4	2.51	4.92
EXAM #2_Workplane	Illuminance	Fc	85.37	103.5	63.1	1.35	1.64
EXAM #6_Workplane	Illuminance	Fc	74.97	86.9	55.2	1.36	1.57
GREETER DESK_Top	Illuminance	Fc	47.70	47.7	47.7	1.00	1.00
HKPG_Workplane	Illuminance	Fc	49.65	67.3	25.9	1.92	2.60
IV PREP_Workplane	Illuminance	Fc	89.93	109.5	72.0	1.25	1.52
MANAGER OFFICE_Workplane	Illuminance	Fc	37.63	49.3	23.3	1.62	2.12
MEDS_Workplane	Illuminance	Fc	107.16	133.4	68.1	1.57	1.96
NURSE STATION_Workplane	Illuminance	Fc	59.61	79.2	14.8	4.03	5.35
OFFICE L2_Workplane	Illuminance	Fc	44.71	57.0	27.4	1.63	2.08
OFFICE L5_Workplane	Illuminance	Fc	43.86	62.5	23.5	1.87	2.66
PATIENT BENEFITS_Workplane	Illuminance	Fc	52.95	85.5	26.5	2.00	3.23
PATIENT REGISTRATION_Workplane	Illuminance	Fc	45.93	95.1	10.3	4.46	9.23
PATIENT RR_Workplane	Illuminance	Fc	25.24	41.0	13.0	1.94	3.15
PATIENT TOILET_Workplane	Illuminance	Fc	25.33	39.3	14.6	1.73	2.69
PHARMACY STORAGE_Workplane	Illuminance	Fc	39.05	62.1	20.9	1.87	2.97
PHARMACY_Workplane	Illuminance	Fc	106.04	141.1	42.8	2.48	3.30
PUBLIC RESTROOM_Workplane	Illuminance	Fc	24.45	34.9	14.7	1.66	2.37
RECEPTION DESK 1_1_Top	Illuminance	Fc	41.60	41.6	41.6	1.00	1.00
RECEPTION DESK 1_Top	Illuminance	Fc	41.50	41.5	41.5	1.00	1.00
RECEPTION DESK 2_Top	Illuminance	Fc	32.20	32.2	32.2	1.00	1.00
SCALE ALCOVE_Workplane	Illuminance	Fc	31.88	44.3	20.8	1.53	2.13
SOILED_Workplane	Illuminance	Fc	36.97	62.6	20.5	1.80	3.05
STAFF TOILET_Workplane	Illuminance	Fc	31.94	46.1	23.6	1.35	1.95
SUPPLY STORAGE_Workplane	Illuminance	Fc	35.53	60.8	13.4	2.65	4.54
TEAM WORKROOM_Workplane	Illuminance	Fc	66.86	86.1	41.6	1.61	2.07
TRIAGE PC4_Workplane	Illuminance	Fc	79.00	104.7	47.4	1.67	2.21
TRIAGE PC5_Workplane	Illuminance	Fc	67.57	96.0	22.7	2.98	4.23
URINALYSIS_Workplane	Illuminance	Fc	109.42	166.4	45.3	2.42	3.67


13
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15' - 9"
16' - 6"
17' - 0"
10' - 3"
1' - 10"
EXISTING X RAY
R 03
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EXISTING CLOSET
PC22.1
24 SF
SUPPLY STORAGE
COMP STORAGE
IT OFFICE/WORK
IT 02
144 SF
TRAINING ROOM
IT 03
228 SF
IT
IT 01
192 SF
EXISTING OFFICE
R 05
105 SF
ULTRASOUND
R 06
100 SF
EXISTING VESTIBULE
R 01
59 SF
BIO MED
BIO M
265 SF
ELEC
003
Not Enclosed
EXISTING CORRIDOR
EXISTING IT
002
18 SF
RECEIVING/ BREAKDOWN
P9
Not Enclosed
EXISTING IT
001
86 SF
EXISTING CORRIDOR
gown cabinet
trash can
shelves
shelves
LABSET OUT
P6
100 SF
CONTROL
P1003
PYXIS MEDSTATION
SCRIPT PRO
STORAGE
P10
83 SF
PYXIS
PYXIS
PYXIS PC
P1002
ROS
PC23
81 SF
CHARGE DISP
P1
PATIENT BENEFITS
P2
CONSULT
P3
100 SF
SWITCHBOARD/GREETER
CLIENT REGISTRATION
P4
P5
P7
P8
EXAM #1
PC12
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EXAM #2
PC5
103 SF
EXAM #3
PC6
103 SF
EXAM #4
PC7
106 SF
EXAM #5
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106 SF
EXAM #6
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109 SF
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PC13
161 SF
EXAM #8
PC15
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EXAM #9
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EXAM #10
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EXAM #11
109 SF
ANTE
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DIRECT
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102 SF
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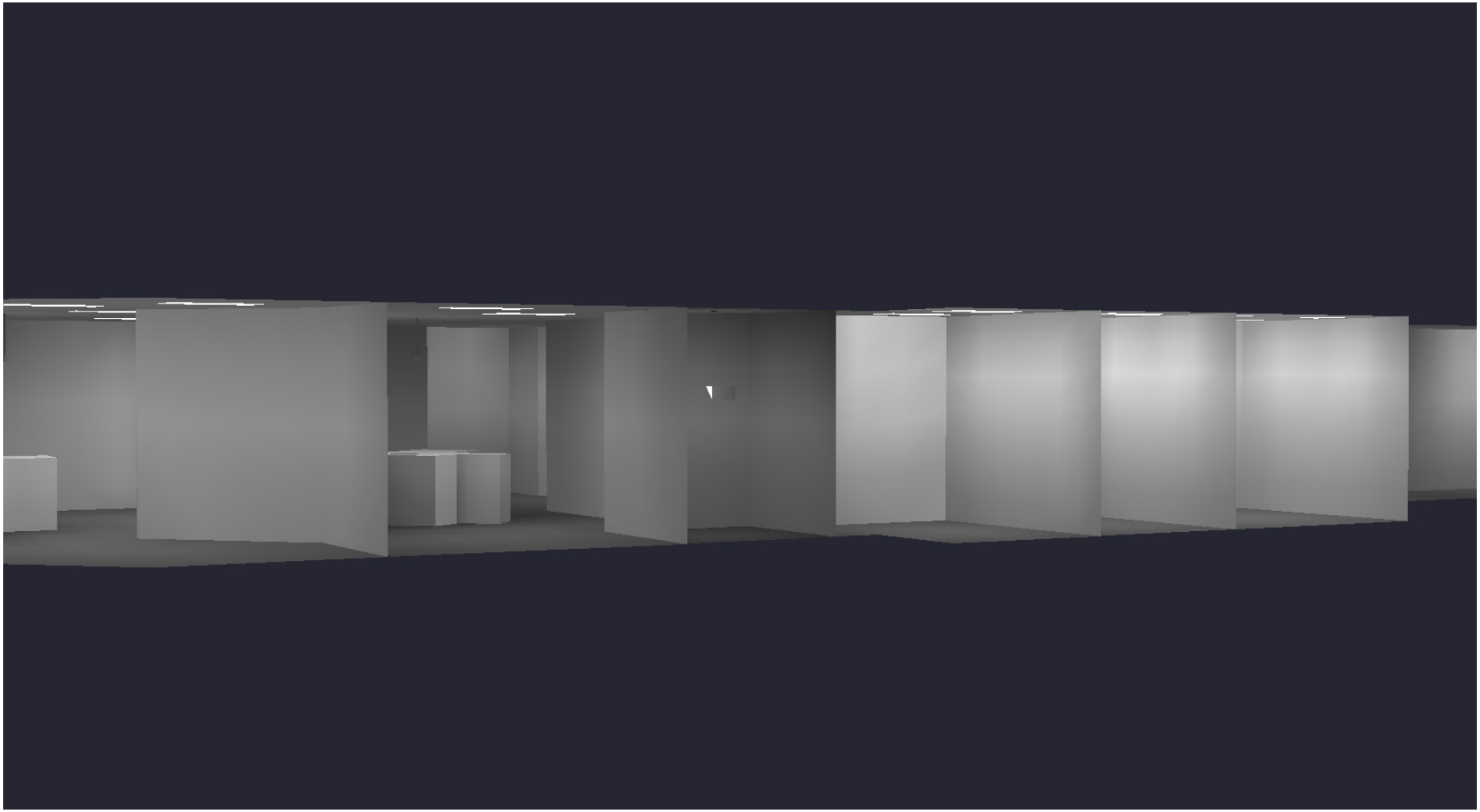
Render View



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