



PLANT SYSTEMS GROUP - SALT LAKE CITY, UTAH

CALCULATION COVER SHEET

JOB NUMBER	CLIENT	PROJECT	CALC. NUMBER
11021	CC&V	High Grade Mill	C015

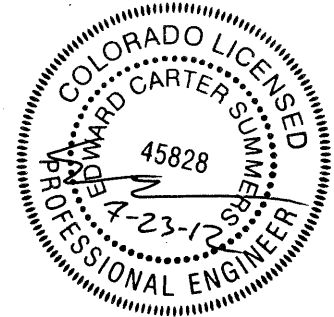
TITLE/SUBJECT:

CC&V High Grade Mill Combine Mill Building Foundations

STATEMENT OF PROBLEM:

Design Foundations for the High Grade Mill Building (Building Shell) including Grinding, Gravity Circuit, Flotation and Filter areas. A combination of spread footings, combine footings and mat footings are considered.

P.E. SEAL



SOURCES OF DATA, FORMULA & REFERENCES:

Foundation loadings from AutoDesk Robot Structural Analysis Professional 2012 in S-015/Combined Mill Building (Ver 6)
Initial height and size of pedestals by FLSmidth designer
Foundation 3D
Enercal Structural Library
Soils Report by render
IBC 2003
ASCE 7-02
ACI 318-02

CONCLUSIONS & RECOMMENDATIONS:

See details in report

A	Apr-12	Ready for Check	Wchan	ECS		
0	Jul-12	Issued for Permit	Wchan	ECS		
0						
REV	DATE	DESCRIPTION/STATUS	CALC BY	CHKD BY	DWG./SPECS REVISED	QA REVIEW



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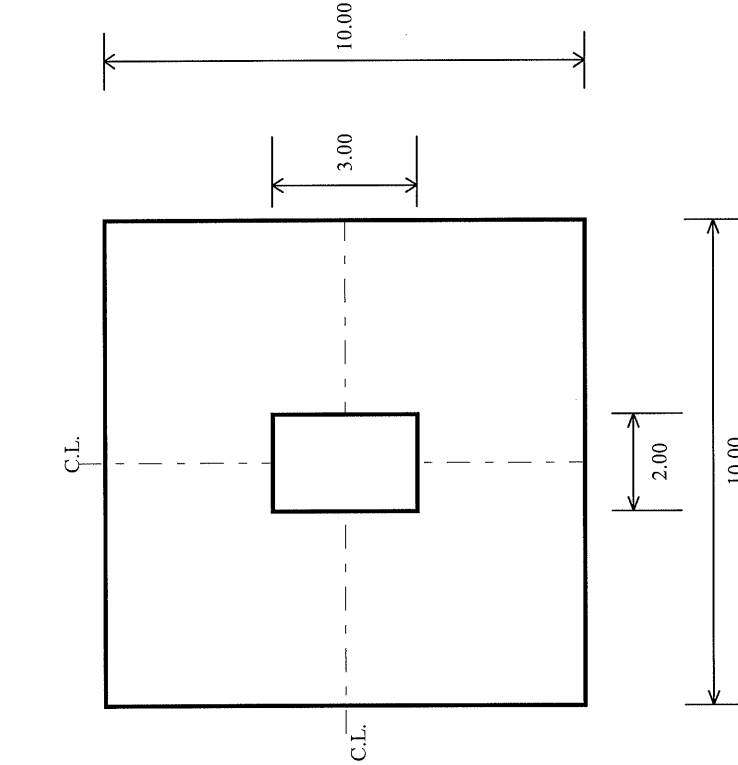
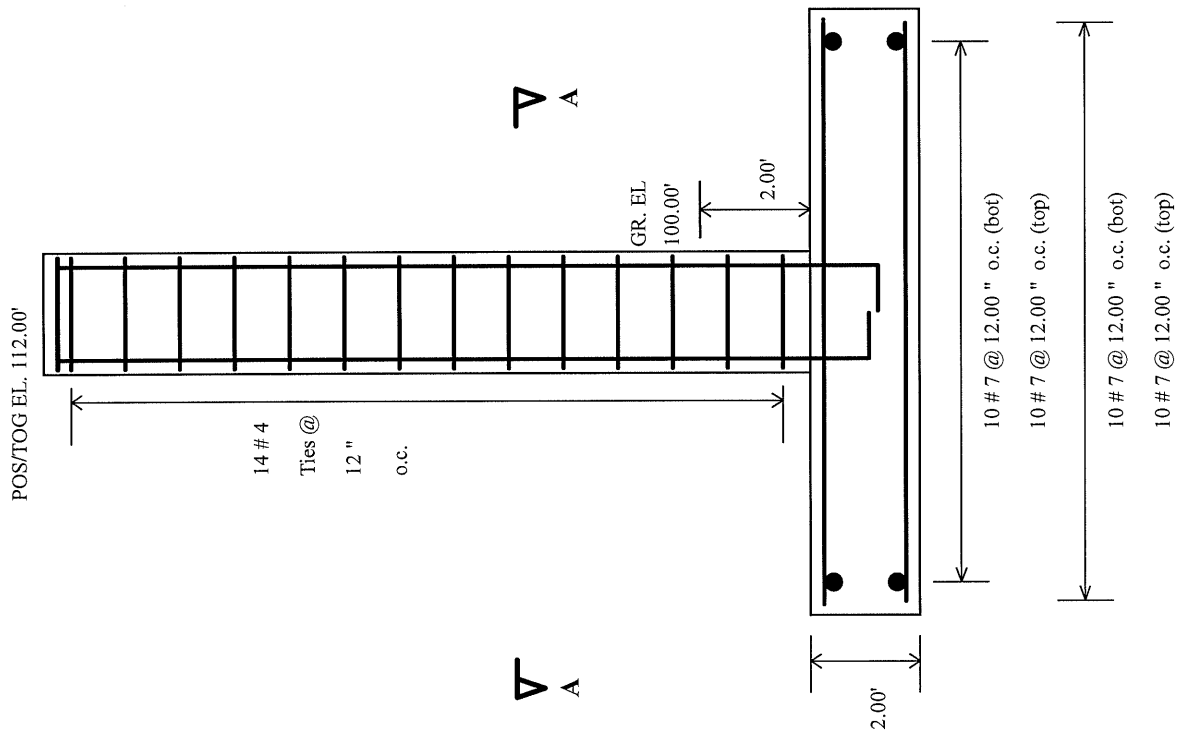
FOUNDATION SUMMARY THROUGH COL. LINE D

		Engineering		Pedestal					Footing					Baseplate				Anchor Bolts			
Location	Foundation Number	Calc No.	Calc. Callout	Width	Length	Height	TOC	Rebar	Width	Length	Thick.	BOC	Rebar	Column Size	Width	Length	Thick.	No.	Diameter	Embedment	Shear Lug
A-3	14-1	C-003	F-2	2' 4	2' 4	5' 0	9931' 0	(8) #8 Bars	6' 0	6' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
E-4	14-10	C-003	F-4	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
E-5	14-11	C-003	F-4	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
A-4	14-2	C-003	F-1	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
A-5	14-3	C-003	F-1	2' 4	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
B-3	14-4	C-003	F-2	2' 4	2' 0	5' 0	9931' 0	(8) #8 Bars	6' 0	6' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
B-4	14-5	C-003	F-6	2' 4	2' 0	5' 0	9931' 0	(8) #8 Bars	6' 0	6' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
B-5	14-6	C-003	F-6	2' 4	2' 0	5' 0	9931' 0	(8) #8 Bars	6' 0	6' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
C-3	14-7	C-003	F-3	2' 4	2' 0	5' 0	9931' 0	(8) #8 Bars	10' 0	30' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	1 "	2' 6	--
D-3	14-7	C-003	F-3	2' 4	2' 0	5' 0	9931' 0	(8) #8 Bars	10' 0	30' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	1 "	2' 6	--
C-5	14-8	C-003	F-5	2' 4	2' 0	5' 0	9931' 0	(8) #8 Bars	10' 0	30' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	1 "	2' 6	--
D-5	14-8	C-003	F-5	2' 4	2' 0	5' 0	9931' 0	(8) #8 Bars	10' 0	30' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	1 "	2' 6	--
E-3	14-9	C-003	F-2	2' 4	2' 4	5' 0	9931' 0	(8) #8 Bars	6' 0	6' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
A-6	15-1	C-003	F-1	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
A-9	15-1	C-003	F-1	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
A-7	15-2	C-003	F-1	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
A-8	15-3	C-003	F-1	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
E-6	15-4	C-004		2' 0	2' 0	1' 4	9927' 10	(8) #8 Bars	8' 0	8' 0	1' 6	9925' 0	#6 @ 12" T/B Each Way	W10X49	1' 4	1' 4	1 "	4	7/8"	2' 2	--
E-7	15-5	C-015	F-4	3' 0	2' 0	2' 10	9927' 10	(14) #9 Bars	16' 0	36' 0	2' 6	9922' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
E-8	15-6	C-015	F-4	2' 0	3' 0	2' 10	9927' 10	(14) #9 Bars	16' 0	36' 0	2' 6	9922' 6	#10 @ 12" T/B Each Way	W24x117	1' 2	2' 2	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
E-9	15-6	C-015	F-1	2' 0	3' 0	0' 10	9927' 10	(12) #9 Bars	10' 0	10' 0	2' 0	9925' 0	#7 @ 12" T/B Each Way	W24X117	1' 2	2' 2	1 1/2"	8	1 1/4"	2' 6	--
A-10	16-2	C-003	F-1	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
A-11	16-3	C-003	F-2	2' 4	2' 4	5' 0	9931' 0	(8) #8 Bars	6' 0	6' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
B-11	16-4	C-003	F-2	2' 4	2' 0	5' 0	9931' 0	(8) #8 Bars	6' 0	6' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
C-11	16-5	C-003	F-3	2' 4	2' 0	5' 0	9931' 0	(8) #8 Bars	10' 0	30' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	1 "	2' 6	--
D-11	16-5	C-003	F-3	2' 4	2' 0	5' 0	9931' 0	(8) #8 Bars	10' 0	30' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	1 "	2' 6	--
E-11	16-6	C-015	F-5	3' 9	2' 0	7' 6	9931' 0	(14) #9 Bars	14' 0	32' 0	2' 0	9921' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
F-11	16-6	C-015	F-5	3' 9	2' 0	7' 6	9931' 0	(14) #9 Bars	14' 0	32' 0	2' 0	9921' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
F-1	17-1	C-003	F-4	2' 7	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
F-2	17-2	C-003	F-4	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
G-1	17-3	C-015	F-1	3' 9	2' 4	5' 0	9931' 0	(12) #9 Bars	10' 0	10' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
G-2	17-4	C-015	F-4	2' 0	3' 8	3' 6	9929' 6	(14) #9 Bars	16' 0	36' 0	2' 6	9923' 6	#10 @ 12" T/B Each Way	W24X117	1' 2	2' 2	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
G-3	17-4	C-015	F-4	2' 0	3' 8	3' 6	9929' 6	(14) #9 Bars	16' 0	36' 0	2' 6	9923' 6	#10 @ 12" T/B Each Way	W24X117	1' 2	2' 2	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
H-1	17-5	C-007	Regrind, F-4	3' 9	2' 0	12' 4	9925' 4	(12) #9 Bars	10' 0	10' 0	2' 0	9911' 0	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
H-10.1	17-5	C-005	F-2	2' 0	2' 0	2' 6	9915' 6	(8) #8 Bars	8' 0	8' 0	1' 6	9911' 6	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
H-2	17-6	C-007	Regrind, F-6	2' 0	3' 0	14' 4	9925' 4	(10) #9 Bars	30' 0	26' 0	2' 0	9909' 0	#7 @ 12" T/B Each Way	--	--	--	--	--	--	--	
H-2.9	17-6	C-007	Regrind, F-6	2' 0	3' 0	14' 4	9925' 4	(10) #9 Bars	30' 0	26' 0	2' 0	9909' 0	#7 @ 12" T/B Each Way	W8X24	1' 2	1' 2	3/4"	4	7/8"	2' 2	--
H-3.3	17-6	C-007	Ret. Wall	2' 4	3' 0	12' 4	9925' 4	(10) #9 Bars	12' 0	20' 0	2' 0	9911' 0	#9 @ 12" T/B Each Way	W12X40	1' 6	1' 6	1 1/2"	4	7/8"	2' 2	--
J-1	17-7	C-007	Regrind, F-3	3' 9	2' 0	13' 10	9925' 4	(12) #9 Bars	10' 0	10' 0	2' 0	9909' 6	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
K-1	17-8	C-007	Regrind, F-2	3' 9	2' 0	12' 6	9919' 0	(12) #9 Bars	10' 0	18' 0	2' 0	9904' 6	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
M.1-1.8	17-9	C-007	Regrind, F-5	2' 0	2' 0	2' 0	9910' 0	(8) #8 Bars	5' 4*	18' 0	2' 6	9905' 6	#8 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
M.1-2.5	17-9	C-007	Regrind, F-5	2' 0	2' 0	2' 0	9910' 0	(8) #8 Bars	5' 4*	18' 0	2' 6	9905' 6	#8 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
F-3	18-1	C-003	F-4	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
F-5.4	18-10	C-004		2' 0	2' 0	1' 4	9927' 10	(8) #8 Bars	4' 0	4' 0	1' 6	9925' 0	#6 @ 12" T/B Each Way	W8X24	1' 2	1' 2	3/4"	4	7/8"	2' 2	--

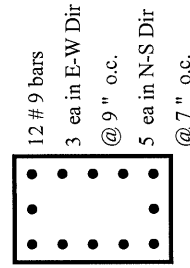
Location	Foundation Number	Engineering		Pedestal					Footing					Baseplate				Anchor Bolts			
		Calc No.	Calc. Callout	Width	Length	Height	TOC	Rebar	Width	Length	Thick.	BOC	Rebar	Column Size	Width	Length	Thick.	No.	Diameter	Embedment	Shear Lug
K-5	18-10	C-015	F-1	3' 0	2' 0	7' 0	9913' 6	(12) #9 Bars	10' 0	10' 0	2' 0	9904' 6	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
F-4	18-2	C-003	F-4	2' 0	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
F-5	18-3	C-003	F-4	2' 4	2' 4	5' 0	9931' 0	(8) #8 Bars	9' 0	9' 0	2' 0	9924' 0	#7 @ 12" T/B Each Way	W10X45	1' 4	1' 4	1 "	4	7/8"	2' 2	--
G-4	18-4	C-015	F-4	2' 0	3' 8	3' 6	9929' 6	(14) #9 Bars	16' 0	36' 0	2' 6	9923' 6	#10 @ 12" T/B Each Way	W24X117	1' 2	2' 2	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
G-5	18-4	C-015	F-4	3' 0	2' 4	3' 6	9929' 6	(14) #9 Bars	16' 0	36' 0	2' 6	9923' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
H-4	18-5	C-007	Ret. Wall	2' 4	3' 0	12' 4	9925' 4	(10) #9 Bars	12' 0	20' 0	2' 0	9911' 0	#9 @ 12" T/B Each Way	W12X40	1' 6	1' 6	1 1/2"	4	7/8"	2' 2	--
H-5	18-6	C-015	F-1	3' 0	2' 10	14' 10	9925' 4	(12) #9 Bars	10' 0	10' 0	2' 0	9908' 6	#7 @ 12" T/B Each Way	W30X117	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
J.8-3.3	18-7	C-007	Float. Mat	2' 4	2' 4	3' 0	9914' 0	(8) #9 Bars	20' 0	26' 0	1' 6	9909' 6	#9 @ 12" T/B Each Way	W12X40	1' 6	1' 6	1 1/2"	4	1 1/4"	2' 6	--
J.8-4	18-7	C-007	Float. Mat	2' 4	2' 4	3' 0	9914' 0	(8) #9 Bars	20' 0	26' 0	1' 6	9909' 6	#9 @ 12" T/B Each Way	W12X40	1' 6	1' 6	1 1/2"	4	1 1/4"	2' 6	--
J-3.3	18-7	C-007	Float. Mat	2' 4	2' 4	3' 6	9914' 6	(8) #9 Bars	20' 0	26' 0	1' 6	9909' 6	#9 @ 12" T/B Each Way	W12X53	1' 6	1' 6	1 1/2"	4	1 1/4"	2' 6	--
J-4	18-7	C-007	Float. Mat	2' 4	2' 4	3' 6	9914' 6	(8) #9 Bars	20' 0	26' 0	1' 6	9909' 6	#9 @ 12" T/B Each Way	W12X53	1' 6	1' 6	1 1/2"	4	1 1/4"	2' 6	--
J-5	18-8	C-015	F-1	3' 0	2' 0	2' 6	9914' 6	(12) #9 Bars	10' 0	10' 0	2' 0	9910' 0	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
J.8-4.5	18-9	C-007	Sieve Bend	2' 0	2' 0	3' 0	9914' 0	(8) #8 Bars	6' 0	8' 0	1' 6	9909' 6	#6 @ 12" T/B Each Way	W8X24	1' 2	1' 2	3/4"	4	7/8"	2' 2	--
F-6	19-1	C-004		2' 0	2' 0	1' 4	9927' 10	(8) #8 Bars	8' 0	8' 0	1' 6	9925' 0	#6 @ 12" T/B Each Way	W10X49	1' 4	1' 4	1 "	4	7/8"	2' 2	--
H-8.5	19-10	C-005	F-2	2' 0	2' 0	2' 6	9915' 6	(8) #8 Bars	8' 0	8' 0	1' 6	9911' 6	#6 @ 12" T/B Each Way	W10X49	1' 4	1' 4	1 "	4	7/8"	2' 2	--
J-6	19-11	C-006		2' 0	2' 0	3' 0	9914' 6	(8) #8 Bars	8' 0	8' 0	1' 6	9910' 0	#6 @ 12" T/B Each Way	W10X49	1' 4	1' 4	1 1/4"	4	7/8"	2' 2	--
J-7	19-12	C-015	F-1	3' 0	2' 0	2' 6	9914' 6	(12) #9 Bars	10' 0	10' 0	2' 0	9910' 0	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
K-6	19-13	C-006		2' 0	2' 0	3' 0	9913' 6	(8) #8 Bars	8' 0	8' 0	1' 6	9909' 0	#6 @ 12" T/B Each Way	W10X49	1' 4	1' 4	1 1/4"	4	7/8"	2' 2	--
K-7	19-14	C-015	F-1	3' 0	2' 0	3' 0	9913' 6	(12) #9 Bars	10' 0	10' 0	2' 0	9908' 6	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
F-7	19-2	C-015	F-1	3' 0	2' 0	0' 10	9927' 10	(12) #9 Bars	10' 0	10' 0	2' 0	9925' 0	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
F-8	19-3	C-004		2' 0	2' 0	1' 4	9927' 10	(8) #8 Bars	8' 0	8' 0	1' 6	9925' 0	#6 @ 12" T/B Each Way	W10X49	1' 4	1' 4	1 "	4	7/8"	2' 2	--
G-6	19-4	C-015	F-1	2' 0	3' 6	2' 6	9929' 6	(12) #9 Bars	10' 0	10' 0	2' 0	9925' 0	#7 @ 12" T/B Each Way	W24X117	1' 2	2' 2	1 1/2"	8	1 1/4"	2' 6	--
G-7	19-5	C-015	F-1	3' 9	2' 10	12' 4	9925' 4	(12) #9 Bars	10' 0	10' 0	2' 0	9911' 0	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
G-8	19-5	C-004	F-1	2' 0	2' 10	12' 4	9925' 4	(10) #8 Bars	8' 0	8' 0	1' 6	9911' 6	#7 @ 12" T/B Each Way	W10X49	1' 4	1' 4	1 "	4	7/8"	2' 2	--
H-6	19-7	C-006		2' 0	3' 0	12' 4	9925' 4	(10) #9 Bars	10' 0	10' 0	2' 0	9911' 0	#7 @ 12" T/B Each Way	W10X49	1' 4	1' 4	1 1/4"	4	7/8"	2' 2	--
H-7	19-8	C-015	F-1	3' 9	3' 3	12' 4	9925' 4	(12) #9 Bars	10' 0	10' 0	2' 0	9911' 0	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
H-7.9	19-9	C-005	F-2	2' 0	2' 0	2' 6	9915' 6	(8) #8 Bars	8' 0	8' 0	1' 6	9911' 6	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
F-9	20-1	C-004		2' 0	2' 0	1' 4	9927' 10	(8) #8 Bars	8' 0	8' 0	1' 6	9925' 0	#6 @ 12" T/B Each Way	W10X49	1' 4	1' 4	1 "	4	7/8"	2' 2	--
K-11	20-10	C-015	F-1	3' 9	2' 0	12' 6	9919' 0	(12) #9 Bars	10' 0	10' 0	2' 0	9904' 6	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
G-9	20-2	C-004	F-1	2' 0	2' 10	12' 4	9925' 4	(10) #8 Bars	8' 0	8' 0	1' 6	9911' 6	#7 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
G-10	20-3	C-004	F-1	2' 0	2' 10	12' 4	9925' 4	(10) #8 Bars	8' 0	8' 0	1' 6	9911' 6	#7 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
G-11	20-4	C-015	F-1	3' 9	2' 10	12' 4	9925' 4	(12) #9 Bars	10' 0	10' 0	2' 0	9911' 0	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
H-9.5	20-5	C-005	F-2	2' 0	2' 0	2' 6	9915' 6	(8) #8 Bars	8' 0	8' 0	1' 6	9911' 6	#6 @ 12" T/B Each Way	W10X49	1' 4	1' 4	1 "	4	7/8"	2' 2	--
H-11	20-7	C-015	F-1	3' 9	2' 0	12' 4	9925' 4	(12) #9 Bars	10' 0	10' 0	2' 0	9911' 0	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
J-11	20-9	C-015	F-1	3' 9	2' 0	13' 4	9925' 4	(12) #9 Bars	10' 0	10' 0	2' 0	9910' 0	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
L-1	21-1	C-007	Regrind, F-1	3' 9	2' 0	9' 0	9915' 6	(14) #9 Bars	18' 0	26' 0	2' 0	9904' 6	#6 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
M-1	21-1	C-007	Regrind, F-1	3' 9	2' 0	9' 0	9915' 6	(14) #9 Bars	18' 0	26' 0	2' 0	9904' 6	#6 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
N-1	21-2	C-015	F-1	3' 9	2' 0	6' 6	9913' 0	(12) #9 Bars	10' 0	10' 0	2' 0	9904' 6	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
N-1.8	21-3	C-007	F-1	2' 0	2' 0	3' 6	9910' 0	(8) #8 Bars	6' 0	6' 0	1' 6	9905' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
P-1	21-4	C-008	CIP - F-4	3' 9	2' 6	8' 6	9913' 0	(12) #9 Bars	8' 0*	50' 0	2' 0	9902' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
P-2	21-5	C-008	CIP - F-4	2' 0	3' 0	8' 6	9913' 0	(14) #9 Bars	16' 0*	50' 0	2' 0	9902' 6	#10 @ 12" T/B Each Way	W24X146	1' 2	2' 2	1 1/2"	8	1 1/2"	4' 6	PL 1'-0x4"X1 1/2"
P-3	21-5	C-008	CIP - F-4	2' 0	3' 0	8' 6	9913' 0	(14) #9 Bars	16' 0*	50' 0	2' 0	9902' 6	#10 @ 12" T/B Each Way	W24X146	1' 2	2' 2	1 1/2"	8	1 1/2"	4' 6	PL 1'-0x4"X1 1/2"
M.2-4.5	22-10	C-007	Float. Pump	2' 0	2' 0	3' 0	9910' 6	(8) #8 Bars	6' 0	8' 0	1' 6	9906' 0	#6 @ 12" T/B Each Way	W8X24	1' 2	1' 2	3/4"	4	7/8"	2' 2	--
N-2.5	22-11	C-007	F-3	2' 2	2' 0	8' 10	9910' 0	(8) #8 Bars	6' 0	13' 0	1' 6	9899' 8	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
N-3.3	22-12	C-007	Float. Sump	2' 0	2' 0	3' 6	9910' 0	(8) #8 Bars	8' 0	8' 0	1' 6	9905' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--

Location	Foundation Number	Engineering		Pedestal					Footing					Baseplate				Anchor Bolts			
		Calc No.	Calc. Callout	Width	Length	Height	TOC	Rebar	Width	Length	Thick.	BOC	Rebar	Column Size	Width	Length	Thick.	No.	Diameter	Embedment	Shear Lug
N-4	22-13	C-007	Float. Sump	2' 0	2' 0	3' 6	9910' 0	(8) #8 Bars	8' 0	8' 0	1' 6	9905' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
N-5	22-15	C-015	F-1	3' 0	2' 0	7' 0	9911' 6	(12) #9 Bars	10' 0	10' 0	2' 0	9902' 6	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
P-4	22-16	C-008	CIP - F-7	2' 0	3' 0	8' 6	9913' 0	(14) #9 Bars	26' 0	48' 0	2' 0	9902' 6	#8 @ 12" T/B Each Way	W24X146	1' 2	2' 2	1 1/2"	8	1 1/2"	4' 6	PL 1'-0x4"X1 1/2"
P-5	22-16	C-008	CIP - F-7	3' 0	2' 0	8' 6	9913' 0	(14) #9 Bars	26' 0	48' 0	2' 0	9902' 6	#8 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/2"	4' 6	PL 1'-0x4"X1 1/2"
K.5-3.3	22-2	C-007	Float. Mat	2' 4	2' 4	4' 0	9913' 0	(8) #9 Bars	20' 0	23' 0	1' 6	9907' 6	#9 @ 12" T/B Each Way	W12X40	1' 6	1' 6	1 1/2"	4	1 1/4"	2' 6	--
K.5-4	22-2	C-007	Float. Mat	2' 4	2' 4	4' 0	9913' 0	(8) #9 Bars	20' 0	23' 0	1' 6	9907' 6	#9 @ 12" T/B Each Way	W12X40	1' 6	1' 6	1 1/2"	4	1 1/4"	2' 6	--
L.2-3.3	22-2	C-007	Float. Mat	2' 4	2' 4	3' 0	9912' 0	(8) #9 Bars	20' 0	23' 0	1' 6	9907' 6	#9 @ 12" T/B Each Way	W12X45	1' 6	1' 6	1 1/2"	4	1 1/4"	2' 6	--
L.2-4	22-2	C-007	Float. Mat	2' 4	2' 4	3' 0	9912' 0	(8) #9 Bars	20' 0	23' 0	1' 6	9907' 6	#9 @ 12" T/B Each Way	W12X45	1' 6	1' 6	1 1/2"	4	1 1/4"	2' 6	--
K.5-4.5	22-3	C-007	Sieve Bend	2' 0	2' 0	4' 0	9913' 0	(8) #8 Bars	6' 0	6' 0	1' 6	9907' 6	#6 @ 12" T/B Each Way	W8X24	1' 2	1' 2	3/4"	4	7/8"	2' 2	--
L-5	22-5	C-015	F-5	3' 0	2' 0	7' 0	9913' 6	(14) #9 Bars	14' 0	32' 0	2' 0	9904' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
M-5	22-56	C-015	F-5	3' 0	2' 0	7' 0	9913' 6	(14) #9 Bars	14' 0	32' 0	2' 0	9904' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
L.2-4.5	22-6	C-007		2' 0	2' 0	3' 0	9912' 0	(8) #8 Bars	6' 0	6' 0	1' 6	9907' 6	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
M.2-3.3	22-8	C-007	Float. Sump	2' 0	2' 0	3' 0	9910' 6	(8) #8 Bars	8' 0	8' 0	1' 6	9906' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
M.2-4	22-9	C-007	Float. Sump	2' 0	2' 0	3' 0	9910' 6	(8) #8 Bars	8' 0	8' 0	1' 6	9906' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
L-6	23-1	C-006		2' 0	2' 0	3' 6	9913' 0	(8) #8 Bars	6' 0	6' 0	1' 6	9908' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
L-7	23-2	C-015	F-5	3' 0	2' 0	5' 0	9911' 6	(14) #9 Bars	14' 0	32' 0	2' 0	9904' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
M-7	23-2	C-015	F-5	3' 0	2' 0	5' 0	9911' 6	(14) #9 Bars	14' 0	32' 0	2' 0	9904' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
L-7.9	23-3	C-005	F-2	2' 0	2' 0	3' 6	9913' 0	(8) #8 Bars	8' 0	8' 0	1' 6	9908' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
M-7.9	23-4	C-005	F-3	2' 0	2' 0	3' 6	9911' 6	(8) #8 Bars	6' 0	12' 0	2' 0	9906' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
M-8.3	23-4	C-005	F-3	2' 0	2' 0	3' 6	9911' 6	(8) #8 Bars	6' 0	12' 0	2' 0	9906' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
N-7	23-5	C-015	F-1	3' 0	2' 0	7' 0	9911' 6	(12) #9 Bars	10' 0	10' 0	2' 0	9902' 6	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
P-6	23-6	C-008	CIP - F-7	2' 0	3' 6	8' 6	9913' 0	(12) #9 Bars	26' 0	48' 0	2' 0	9902' 6	#8 @ 12" T/B Each Way	W24X146	1' 2	2' 2	1 1/2"	8	1 1/4"	2' 6	--
P-7	23-6	C-015	F-4	3' 0	3' 0	8' 0	9913' 0	(14) #9 Bars	16' 0	36' 0	2' 6	9902' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/2"	4' 6	PL 1'-0x4"X1 1/2"
M.3-2.9	23-7	C-007	F-4	2' 0	2' 0	2' 6	9910' 0	(8) #8 Bars	4' 0	4' 0	1' 6	9906' 0	#6 @ 12" T/B Each Way	W8X24	1' 2	1' 2	3/4"	4	7/8"	2' 2	--
P-8	23-7	C-015	F-4	2' 0	3' 6	8' 0	9913' 0	(14) #9 Bars	16' 0	36' 0	2' 6	9902' 6	#10 @ 12" T/B Each Way	W24X146	1' 2	2' 2	1 1/2"	8	1 1/2"	4' 6	PL 1'-0x4"X1 1/2"
P-9	23-7	C-015	F-4	2' 0	3' 6	8' 0	9913' 0	(14) #9 Bars	16' 0	36' 0	2' 6	9902' 6	#10 @ 12" T/B Each Way	W24X146	1' 2	2' 2	1 1/2"	8	1 1/2"	4' 6	PL 1'-0x4"X1 1/2"
L.2-10	24-1	C-005	F-2	2' 0	2' 0	3' 6	9913' 0	(8) #8 Bars	8' 0	8' 0	1' 6	9908' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
L-11	24-2	C-015	F-5	3' 9	2' 0	6' 6	9913' 0	(14) #9 Bars	14' 0	32' 0	2' 0	9904' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
M-11	24-2	C-015	F-5	3' 9	2' 0	6' 6	9913' 0	(14) #9 Bars	14' 0	32' 0	2' 0	9904' 6	#10 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	4'-0	PL 1'-0x4"X1 1/2"
M.3-9.2	24-4	C-005	F-1	2' 0	2' 0	4' 0	9911' 6	(8) #8 Bars	6' 0	6' 0	1' 6	9906' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
M.3-10	24-5	C-005	F-1	2' 0	2' 0	4' 0	9911' 6	(8) #8 Bars	6' 0	6' 0	1' 6	9906' 0	#6 @ 12" T/B Each Way	W10X33	1' 4	1' 4	1 "	4	7/8"	2' 2	--
N-11	24-6	C-015	F-1	3' 0	2' 0	6' 6	9913' 0	(12) #9 Bars	10' 0	10' 0	2' 0	9904' 6	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
P-11	24-7	C-015	F-1	3' 9	3' 0	8' 6	9913' 0	(12) #9 Bars	10' 0	10' 0	2' 0	9902' 6	#7 @ 12" T/B Each Way	W30X116	1' 2	2' 8	1 1/2"	8	1 1/4"	2' 6	--
P-10	24-8	C-015	F-4	2' 0	3' 0	8' 0	9913' 0	(14) #9 Bars	16' 0	36' 0	2' 6	9902' 6	#10 @ 12" T/B Each Way	W24X146	1' 2	2' 2	1 1/2"	8	1 1/2"	4' 6	PL 1'-0x4"X1 1/2"

Proj. No.: 11021 Engr: ECS Date: 7/17/2012 Checker: Date:



PLAN (1 REQD.) (All dimensions in ft)



SECTION A-A

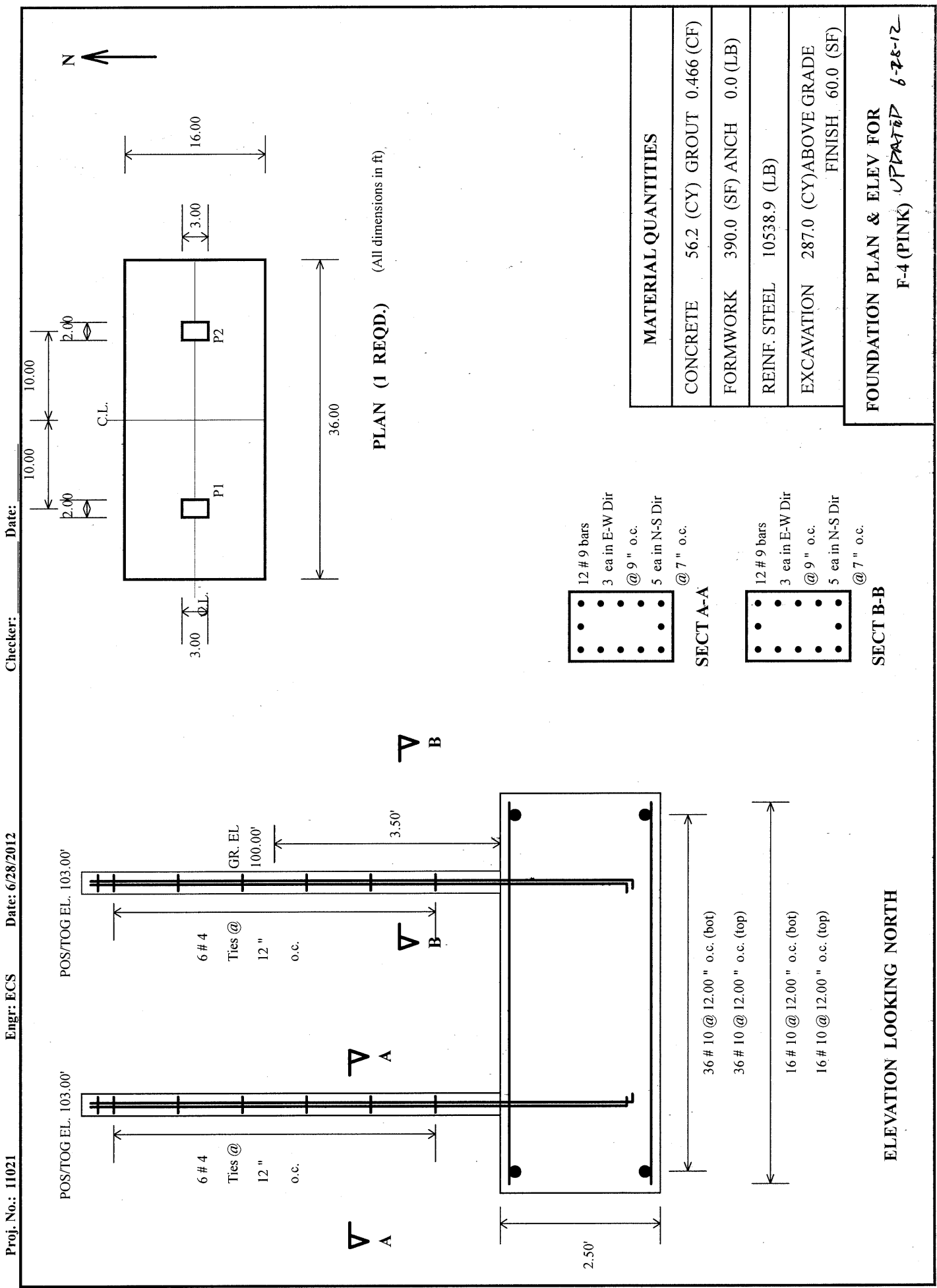
MATERIAL QUANTITIES

CONCRETE	10.5 (CY)	GROUT	0.466 (CF)
FORMWORK	220.0 (SF)	ANCH	0.0 (LB)
REINF. STEEL	1536.4 (LB)		
EXCAVATION	49.8 (CY)	ABOVE GRADE	
FINISH	120.0 (SF)		

FOUNDATION PLAN & ELEV FOR

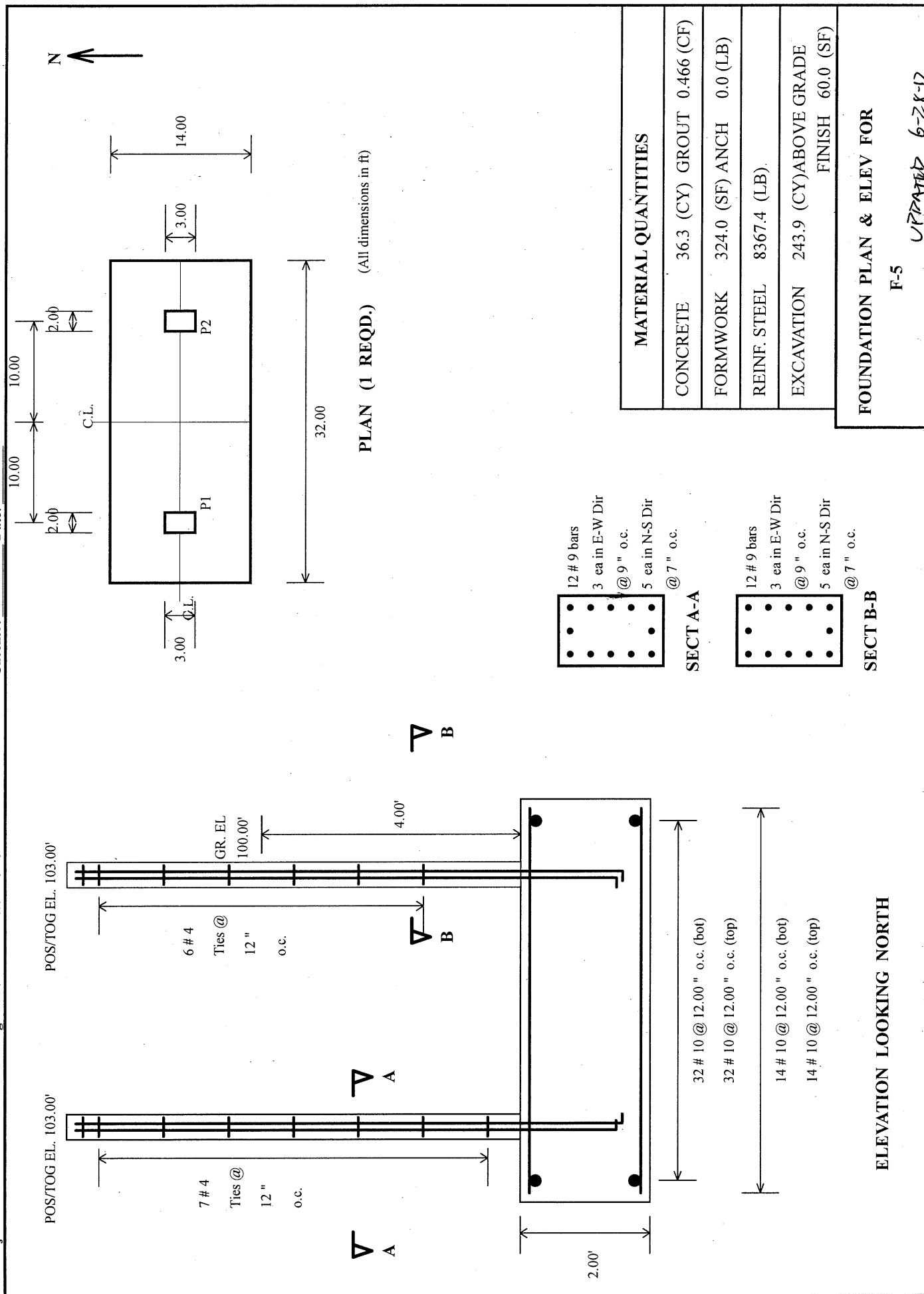
F-1 (Long Pedestal)

Updated 6-28-12.



FOUNDATIONS

FOUNDATION PLAN AND ELEVATION P:\11021\116 - CALCULATIONS\116.D - ARCH CIVIL STRUC\C-015 PROCESS BUILDING FOUNDATIONS\CHECK\F-5.MCS





PROJECT

CCV HIGH GRADE ORE

SUBJECT

FOUNDATIONS

COL. LINE P

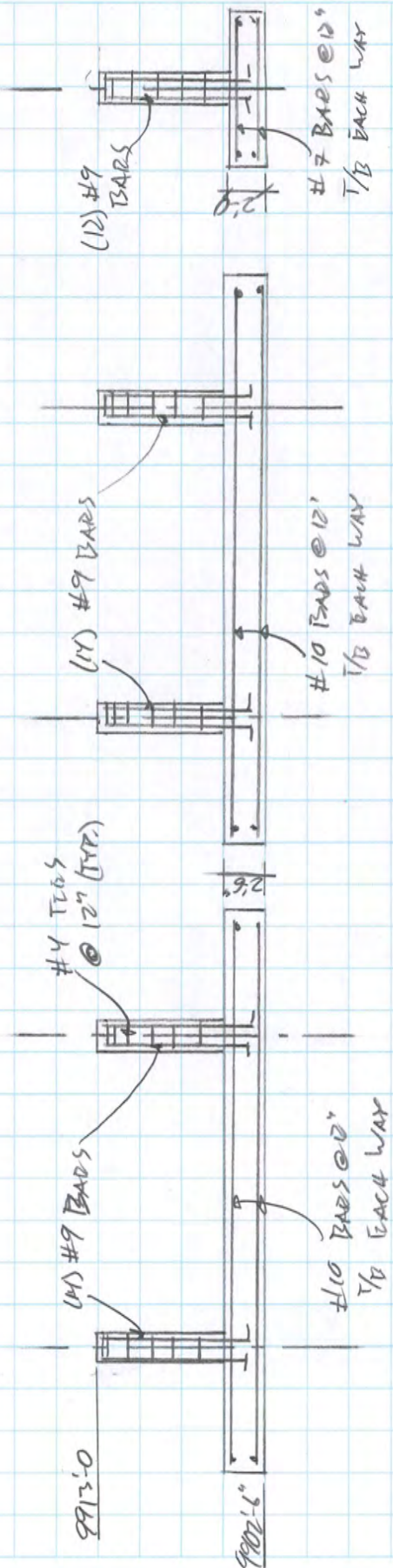
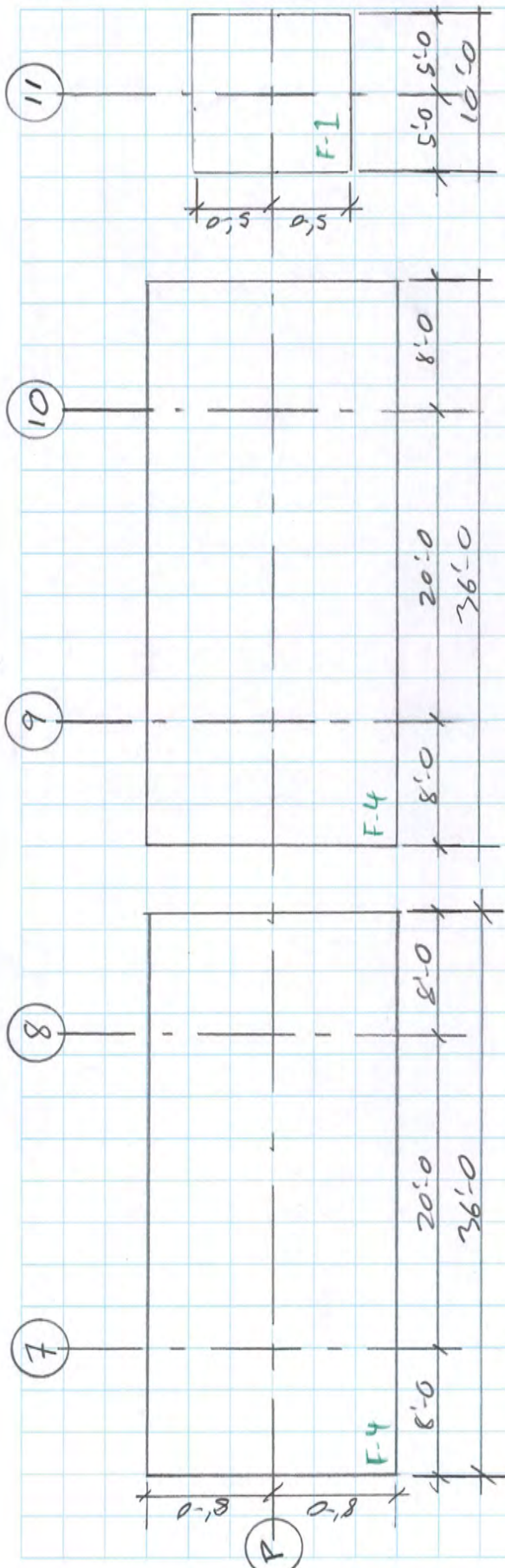
PROJ NO. 11021

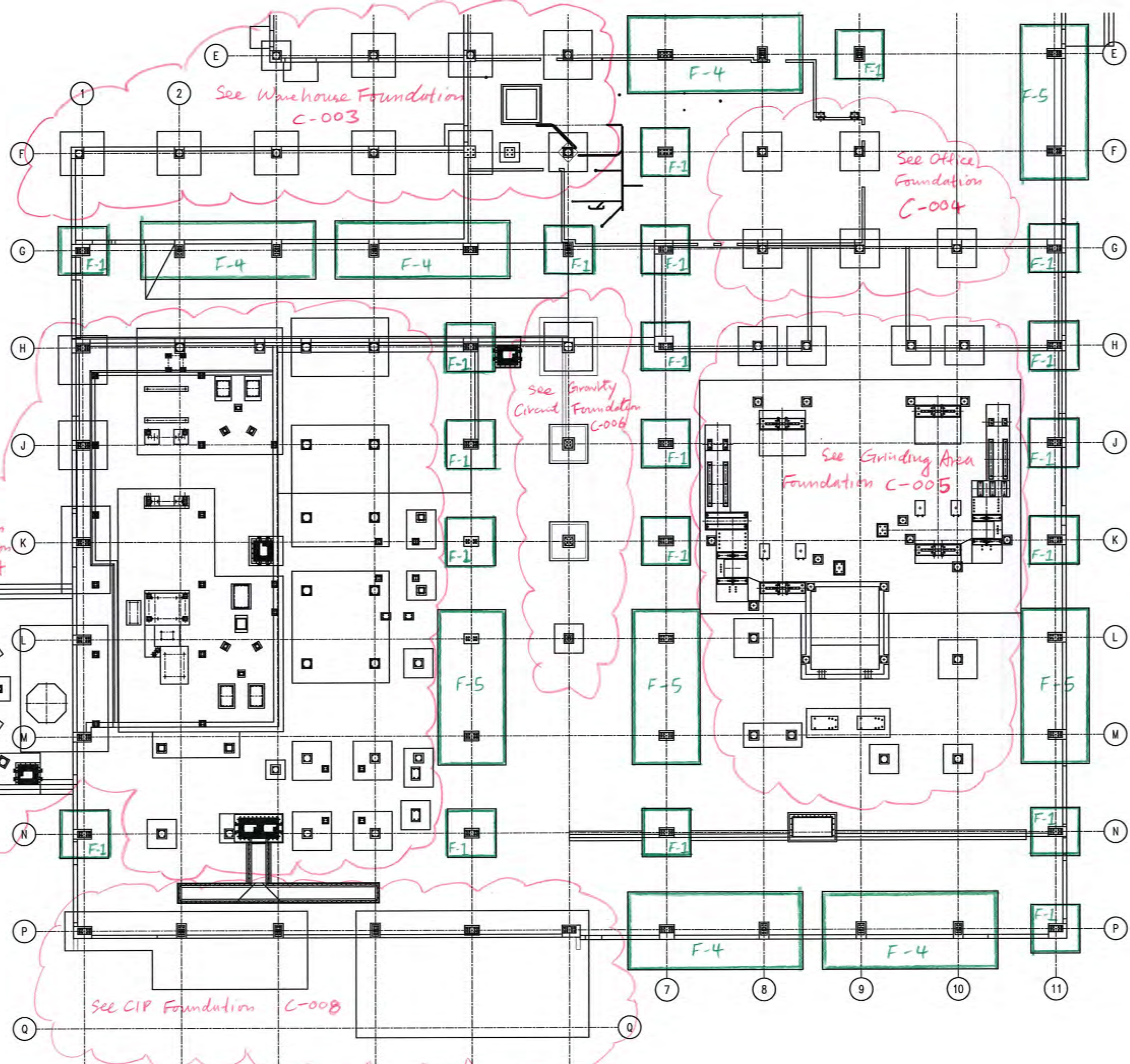
CALC NO. C-015

BY ECS DATE 7-13-12

CHK DATE

SHEET OF REV



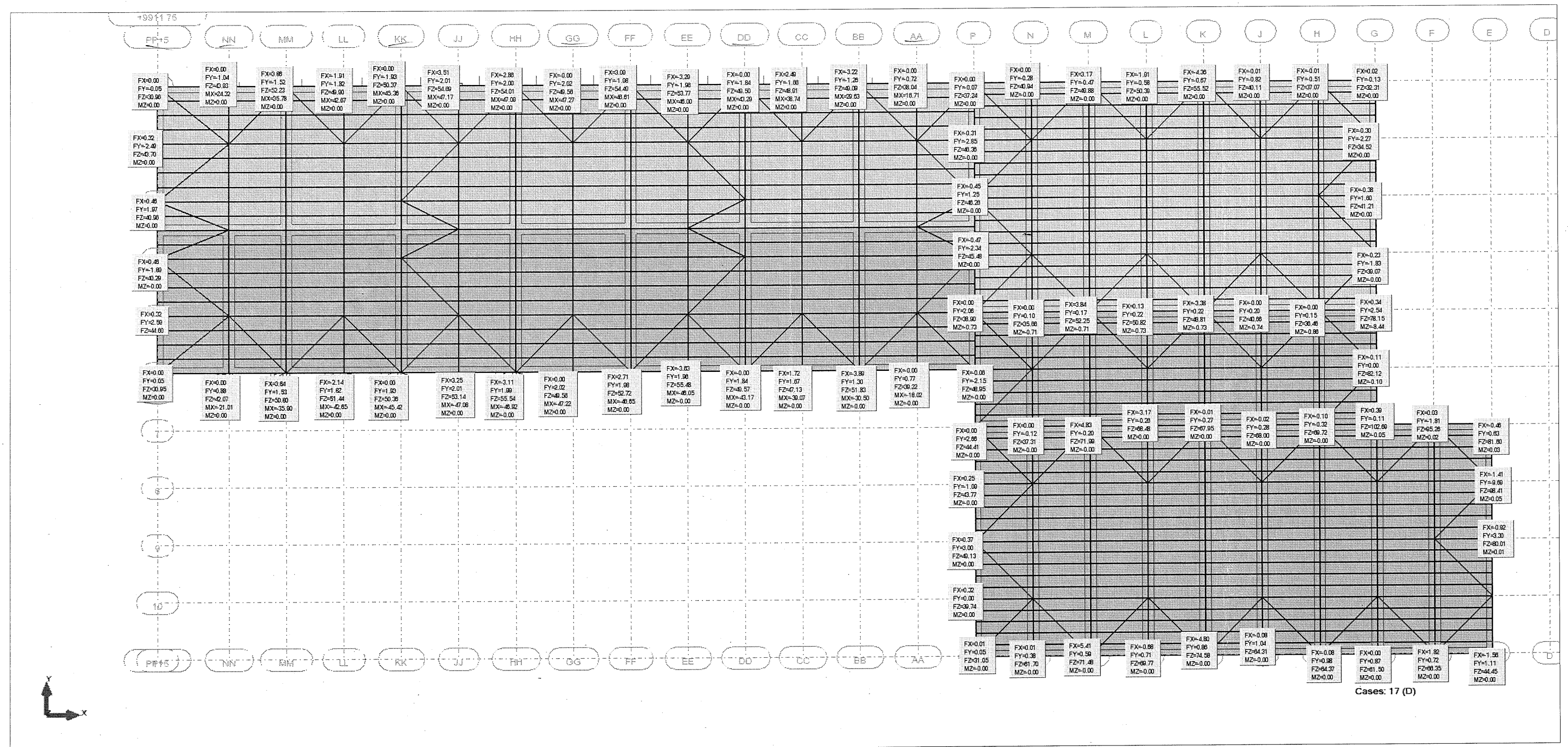


The diagram illustrates a complex structural frame for a building, featuring a grid system (A-J, 1-10) and various internal bracing elements. Key data points include:

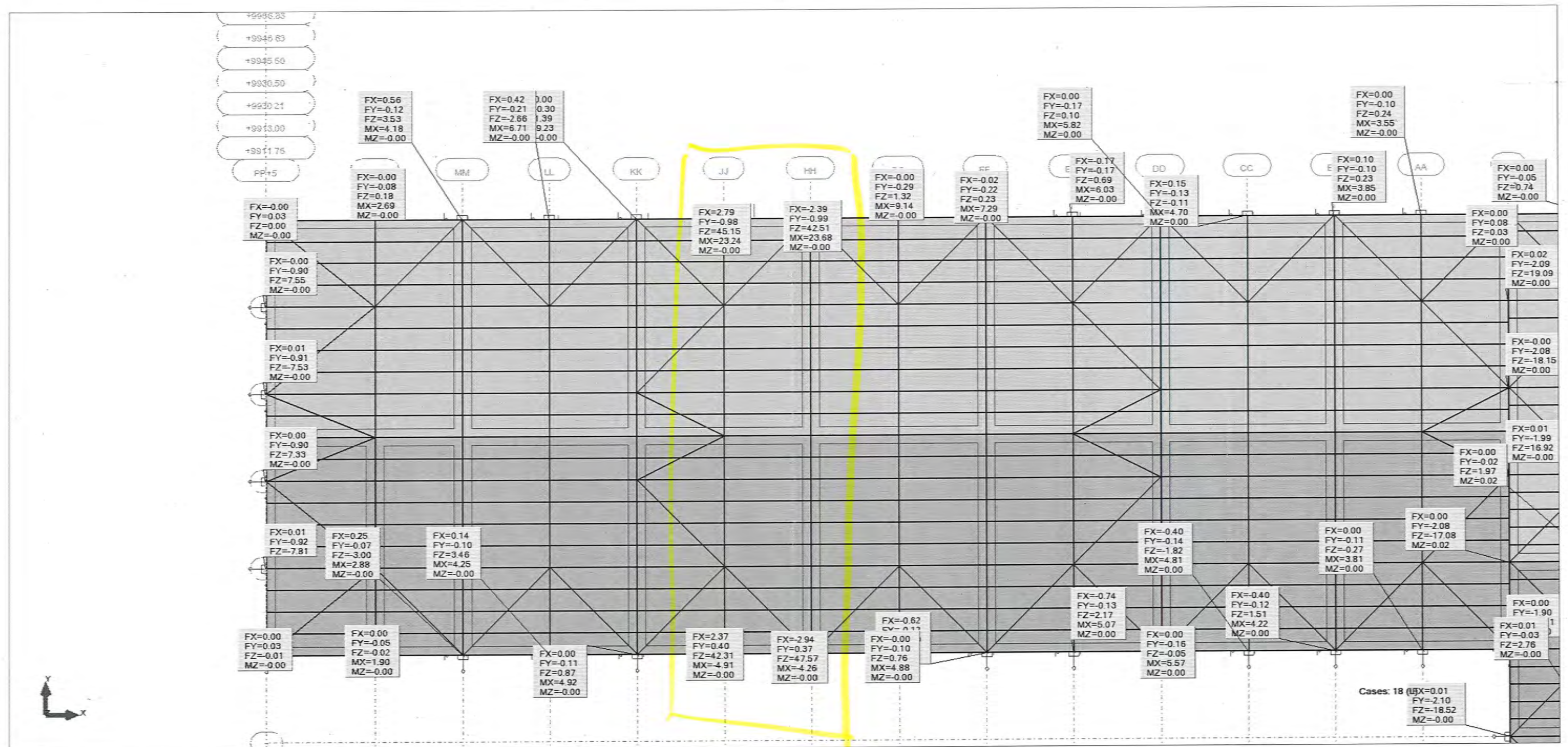
- Node Data (Examples):**
 - Node A-1: $FX=3.08, FY=1.99, FZ=55.33, MX=-0.00, MY=0.00, MZ=0.00$
 - Node A-2: $FX=0.00, FY=2.02, FZ=49.56, MX=47.34, MY=0.00, MZ=0.00$
 - Node A-3: $FX=2.21, FY=1.66, FZ=48.22, MX=38.78, MY=0.00, MZ=0.00$
- Member Data (Examples):**
 - Member A-1/2: $FX=0.00, FY=1.96, FZ=54.20, MX=46.05, MY=0.00, MZ=0.00$
 - Member A-2/3: $FX=2.21, FY=1.66, FZ=48.22, MX=38.78, MY=0.00, MZ=0.00$
- Bracing Data (Examples):**
 - Bracing A-1/2: $FX=0.00, FY=0.00, FZ=0.00, MX=0.00, MY=0.00, MZ=0.00$
 - Bracing A-2/3: $FX=0.00, FY=0.00, FZ=0.00, MX=0.00, MY=0.00, MZ=0.00$

The diagram also includes a coordinate system at the bottom right, indicating the X and Y directions.

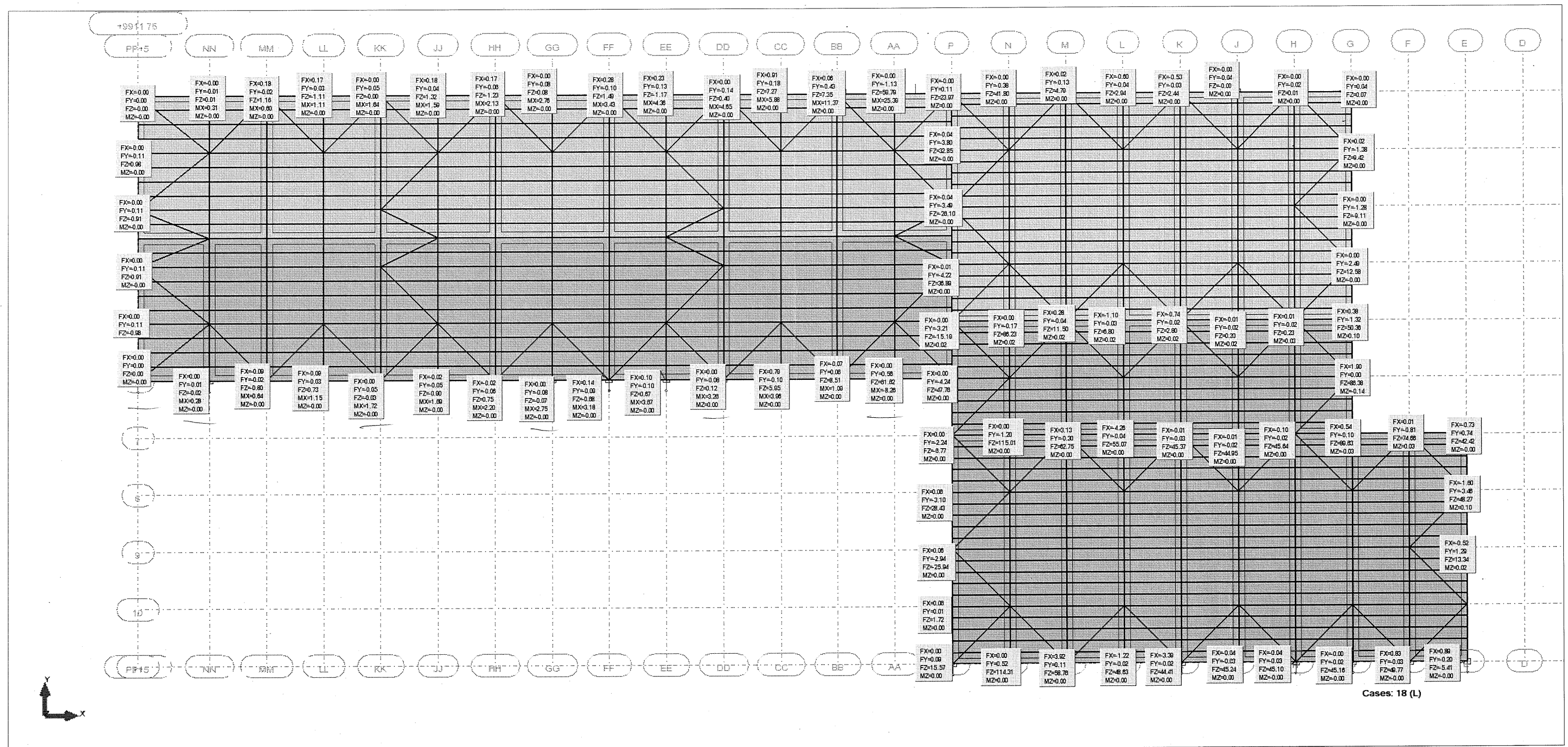
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 17 (D)



View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 18 (L)



View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 18 (L)

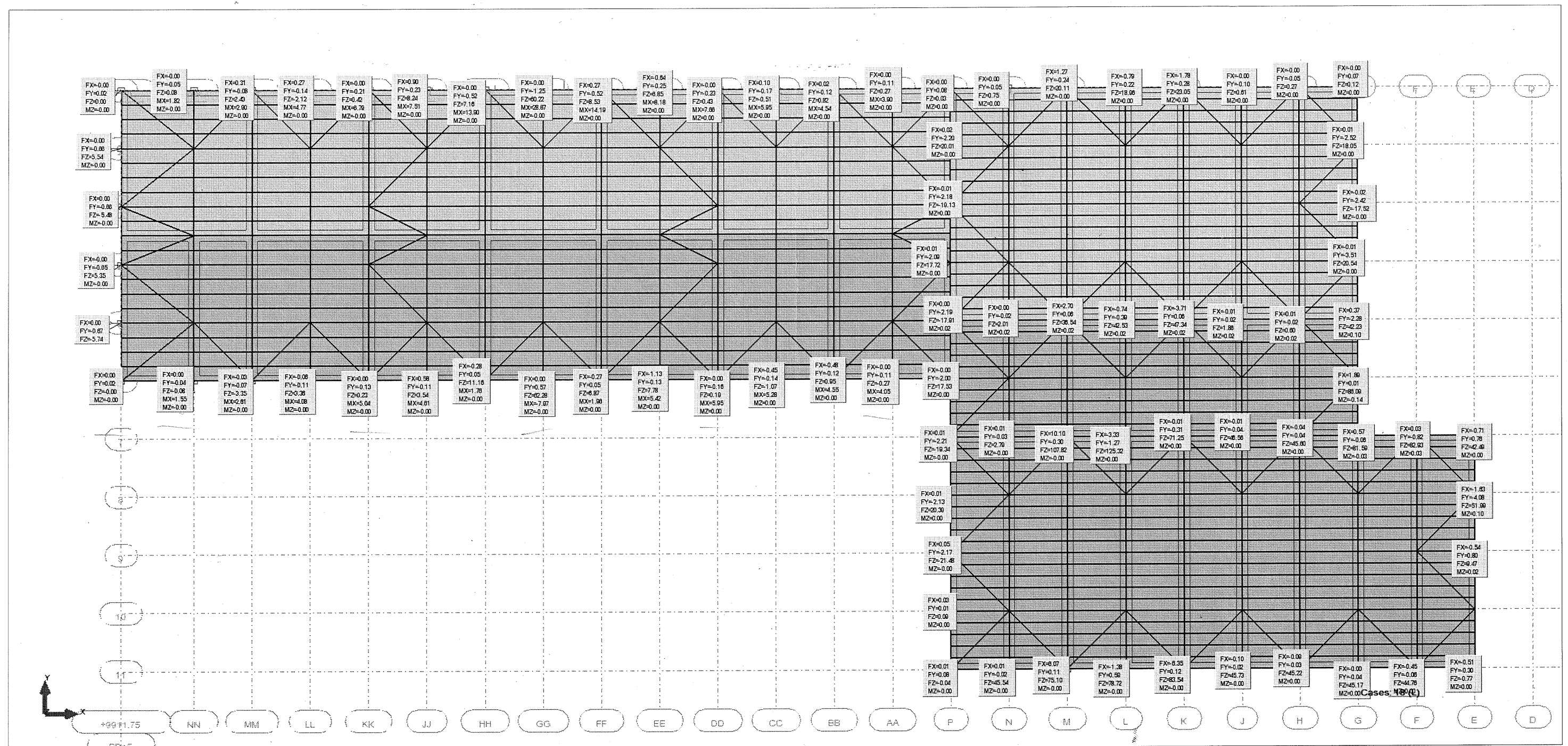


Engineer: Wallace Chan
Calc No.: S-006 Job.: 11021
Project: Combined Mill Building (v7 Cranes at middle)
Client: CC&V

View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 18 (L)



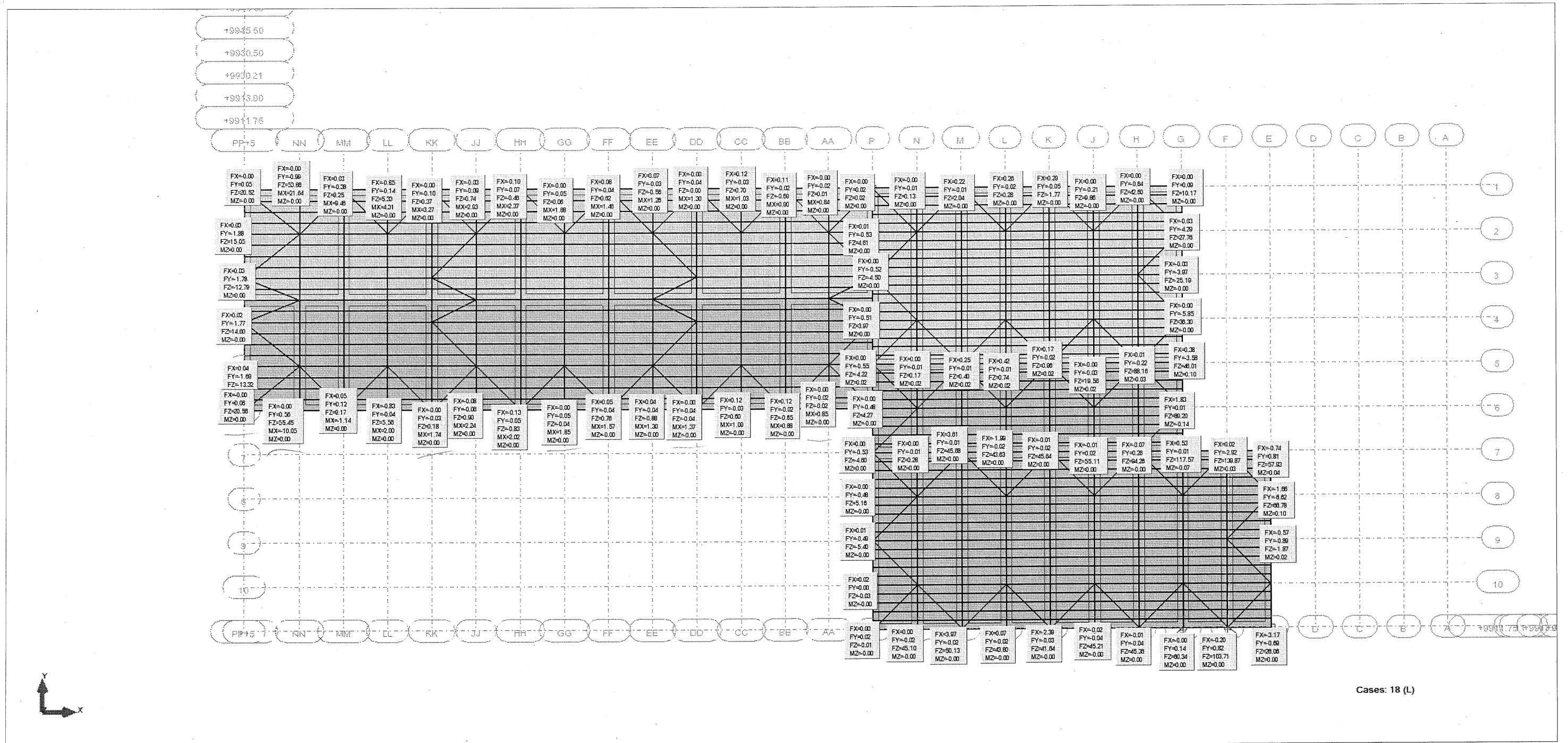
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 18 (L)



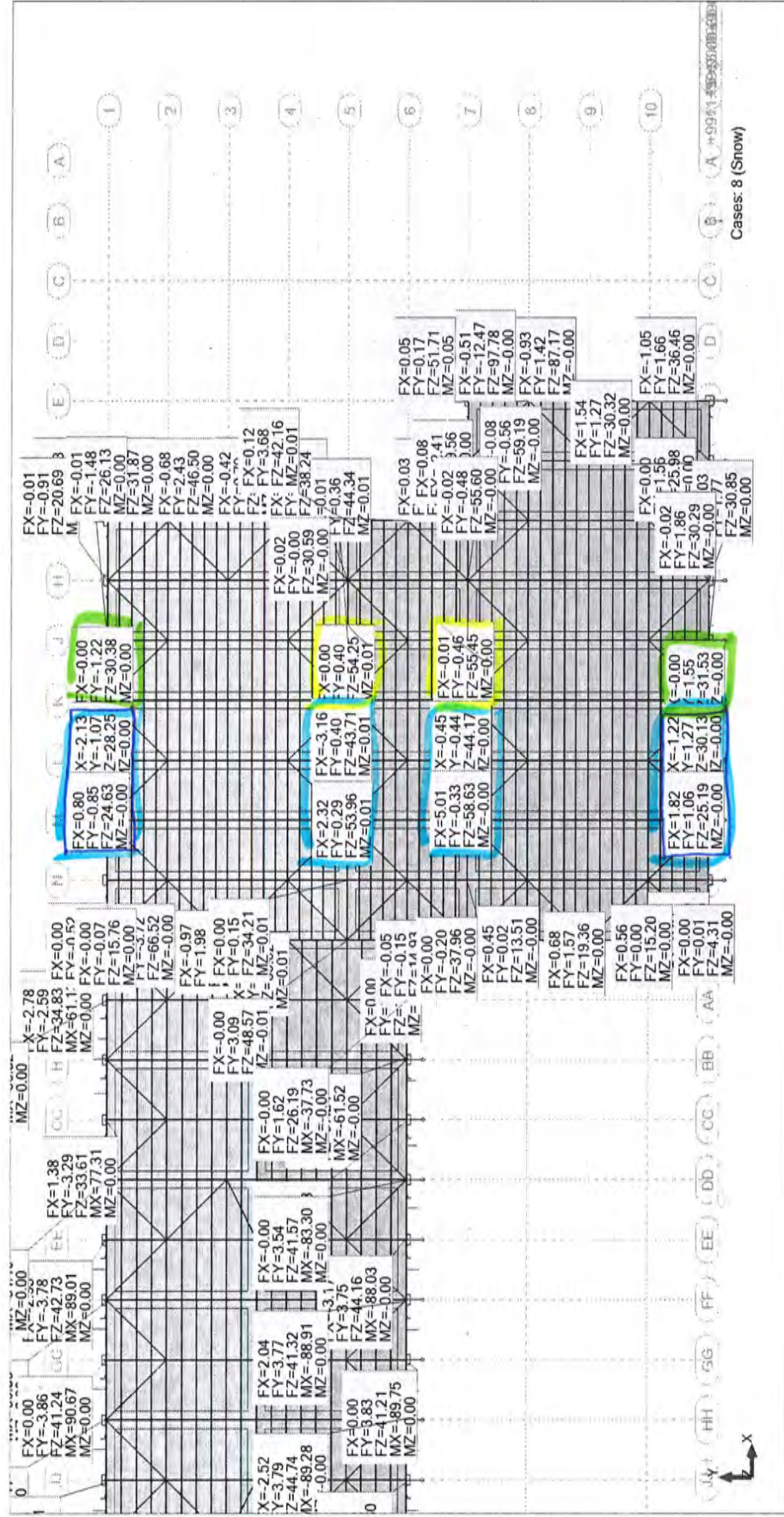
View - Reaction forces(kip), Reaction moments(kip*ft), Cases: 18 (L)



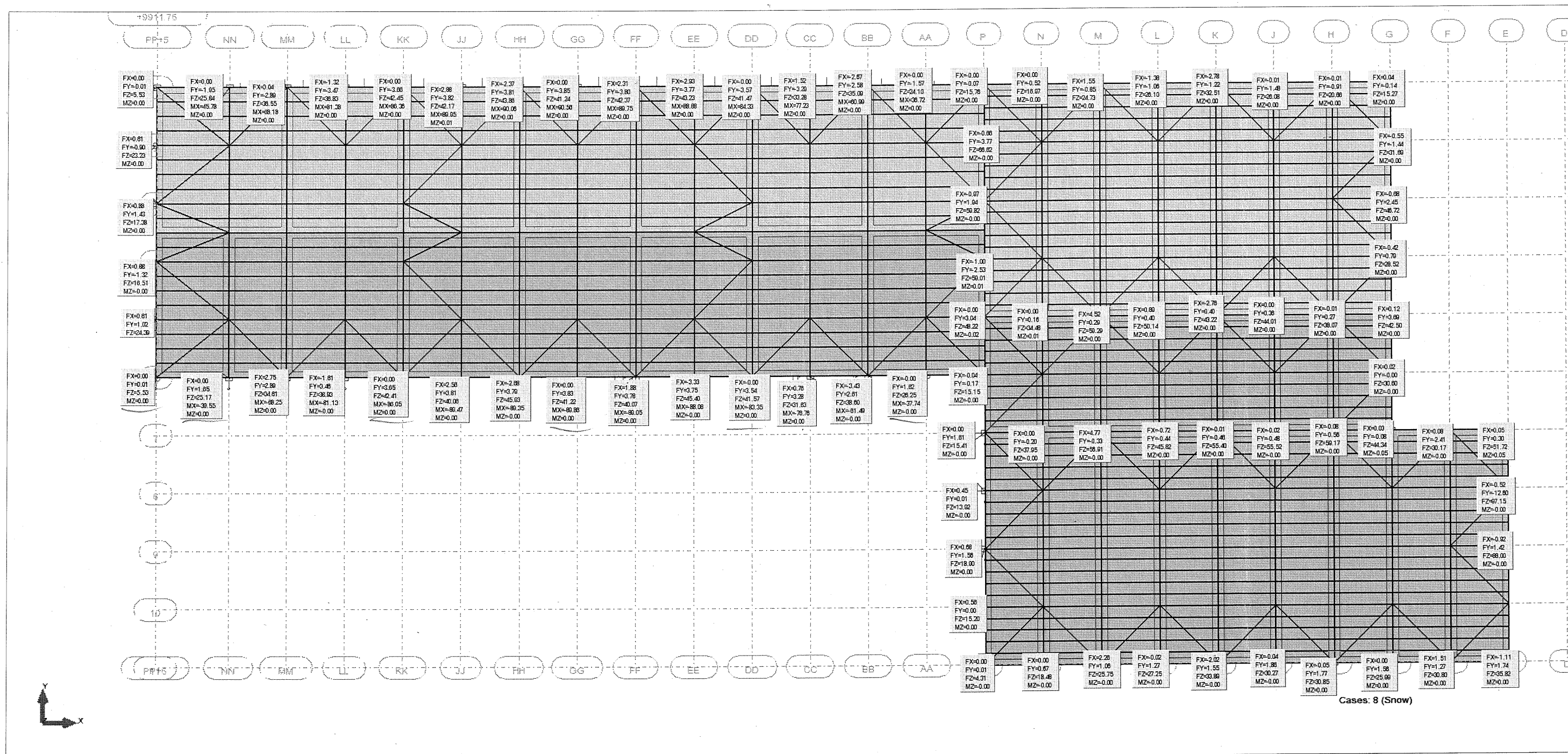
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 18 (L)



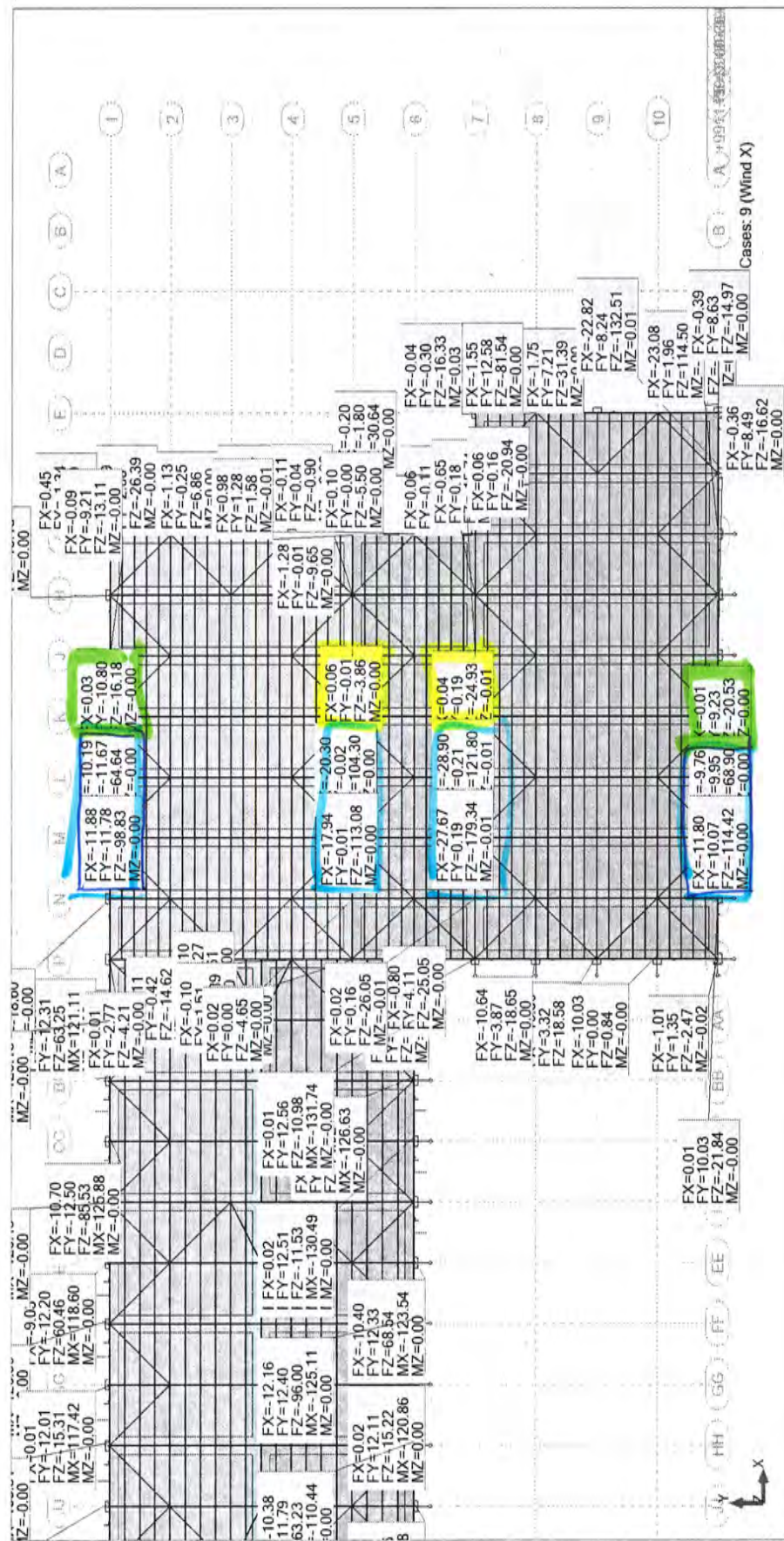
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 8 (Snow)



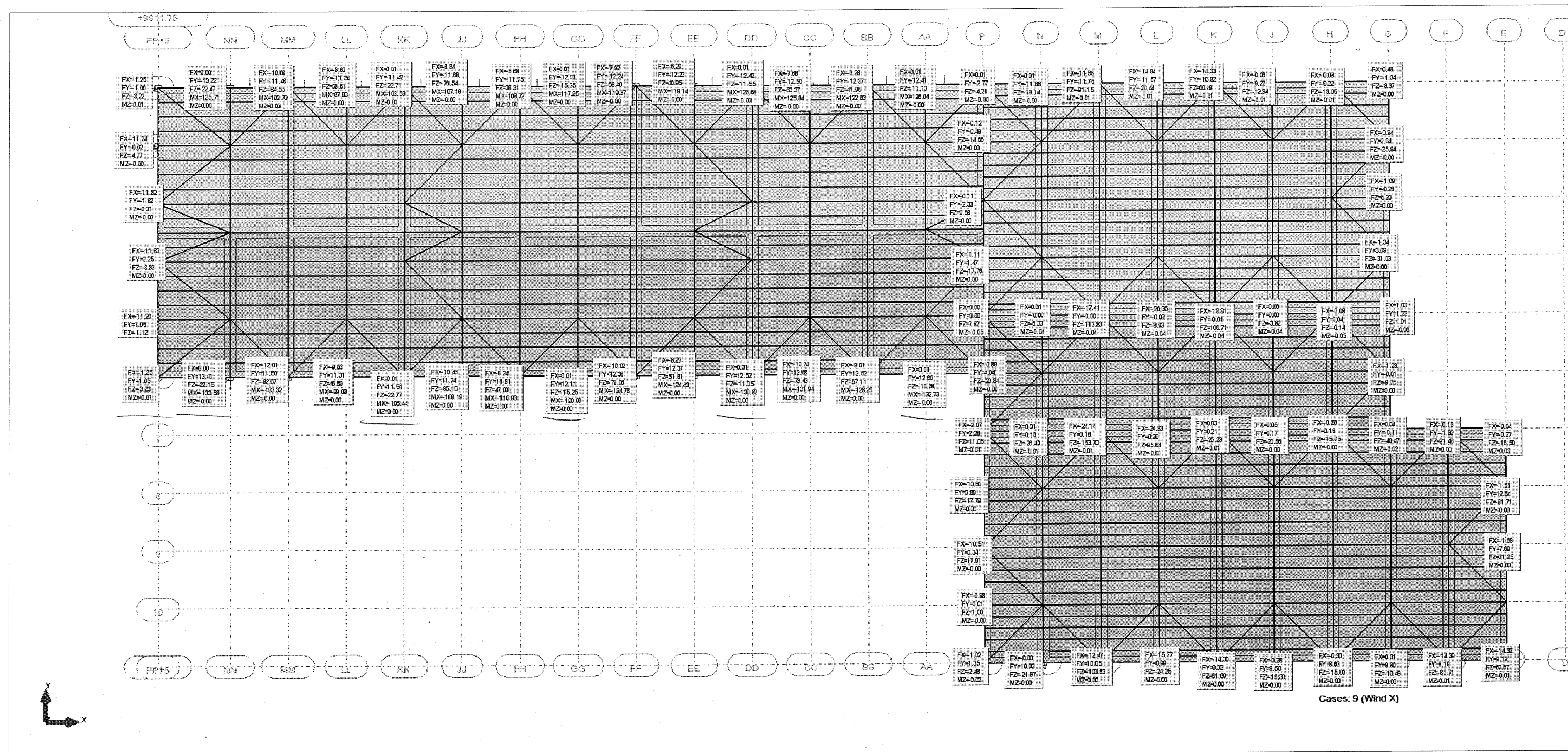
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 8 (Snow)



View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 9 (Wind X)



View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 9 (Wind X)



View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 10 (Wind -X)

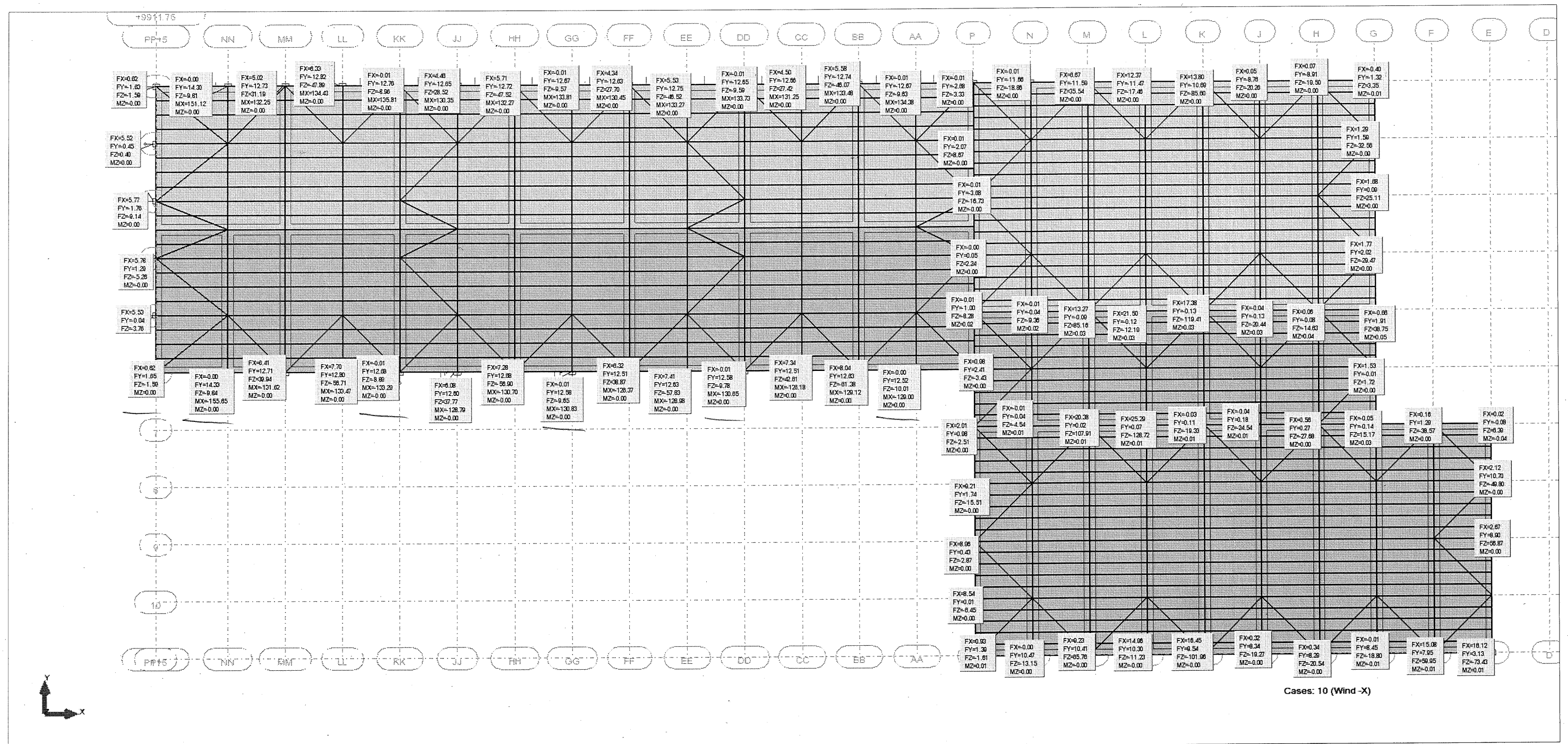


Cases: 10 (Wind -X)

7158 S. FLSmidth Drive
Midvale, UT 84047-5559

Engineer: **Wallace Chan**
Calc No.: **S-006** Job.: **11021**
Project: **Combined Mill Building (Ver 6)**
Client: **CC&V**

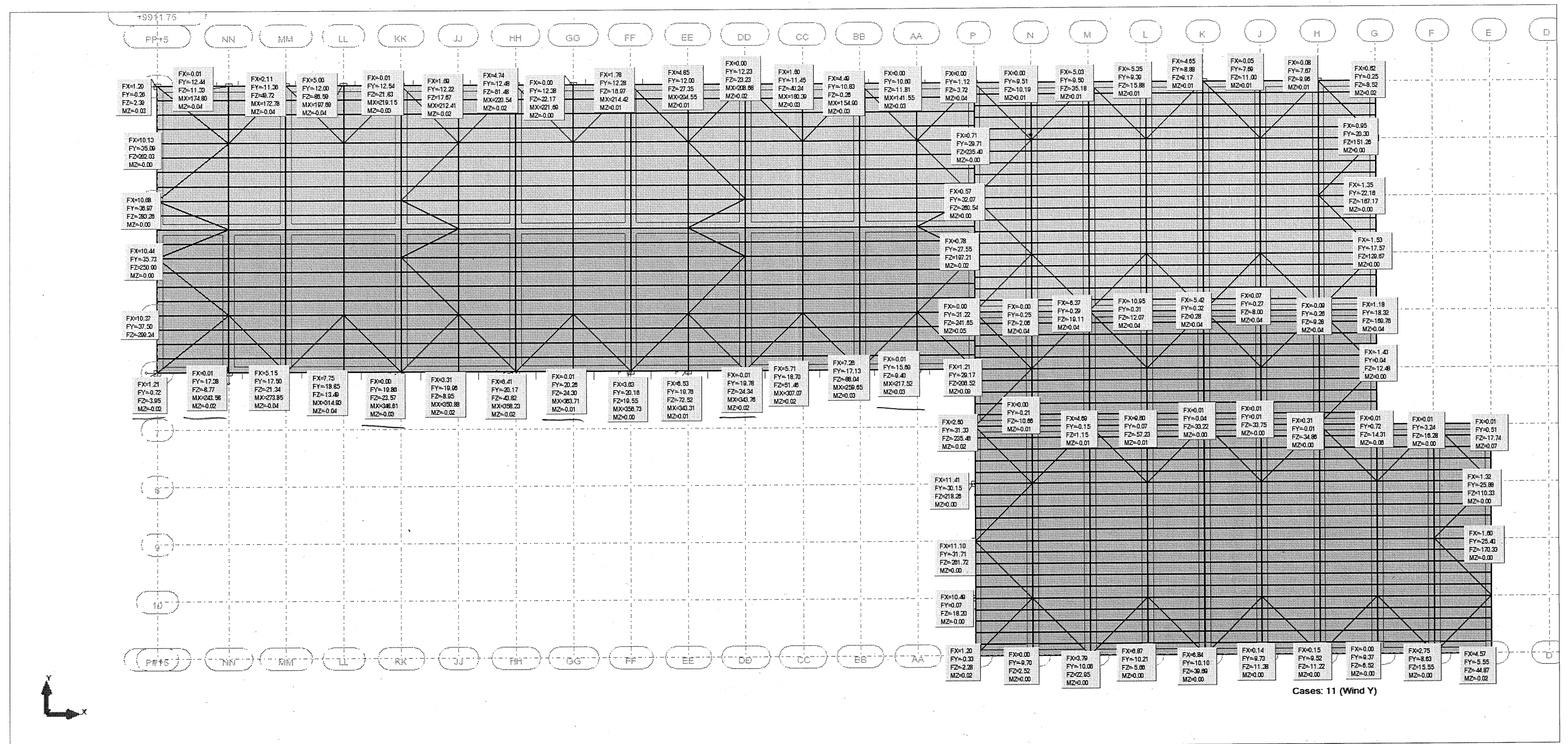
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 10 (Wind -X)



View - Reaction forces(kip), Reaction moments(kip*ft), Cases: 11 (Wind Y)

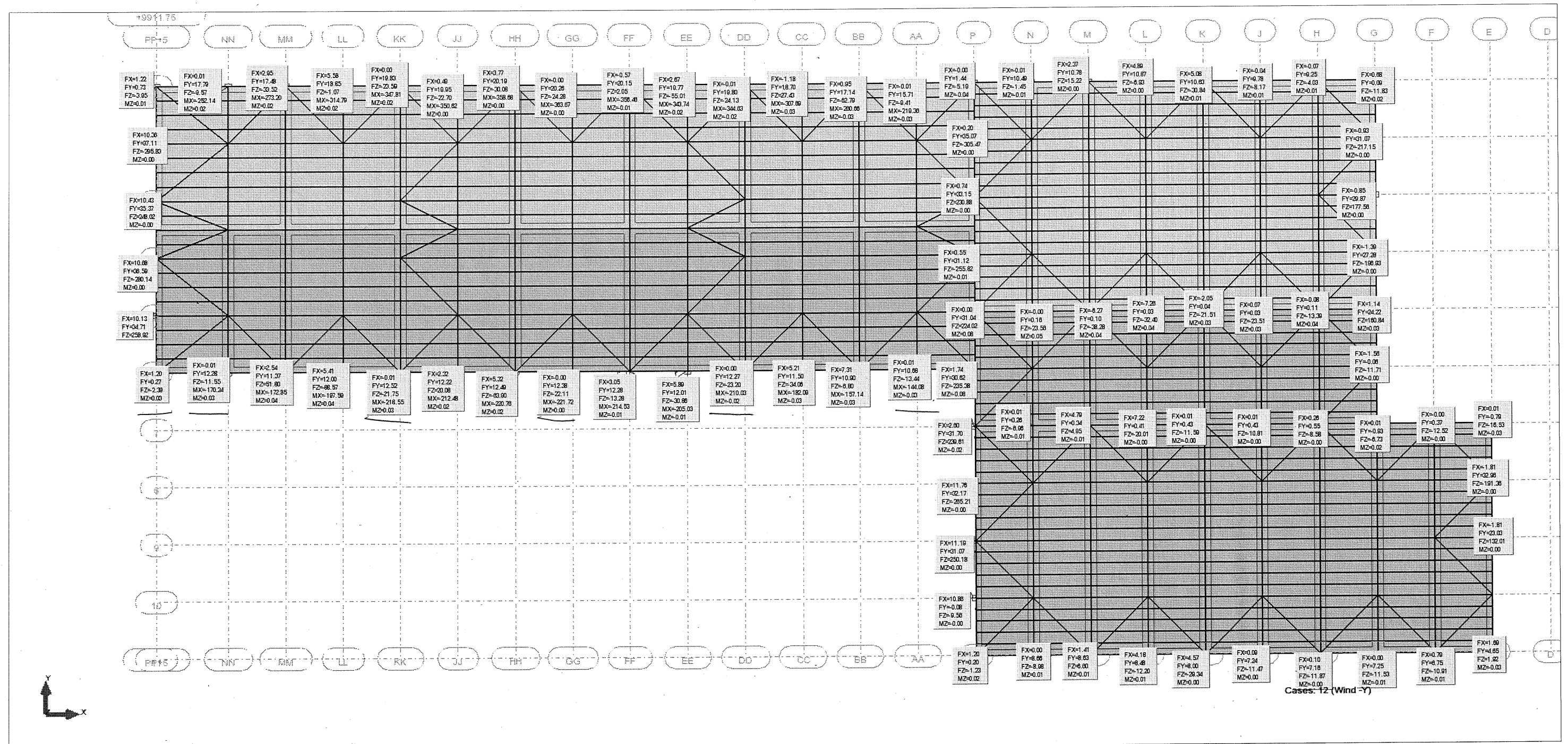


View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 11 (Wind Y)





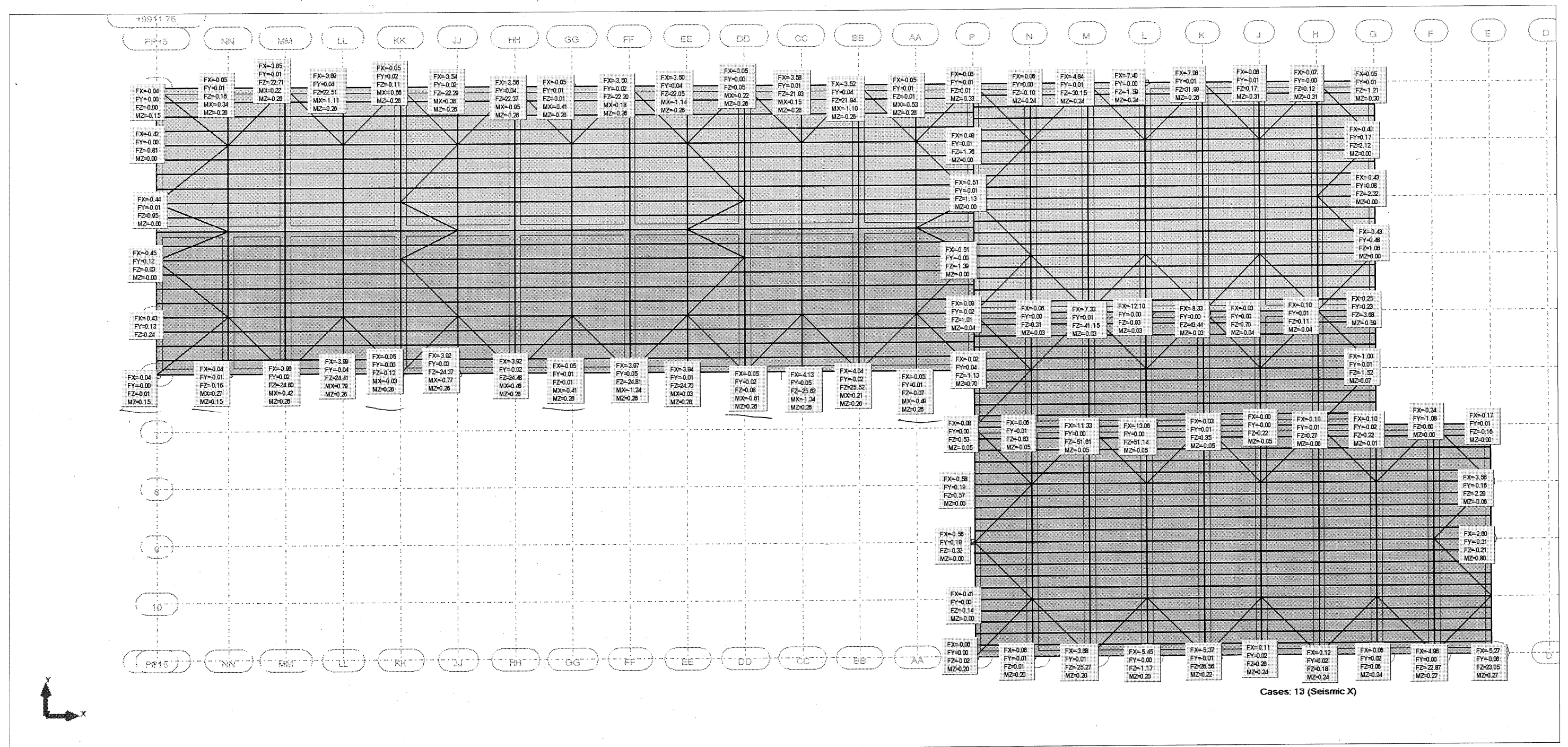
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 12 (Wind -Y)



View - Reaction forces(kip),Reaction moments(kip ft), Cases: 13 (Seismic X)



View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 13 (Seismic X)

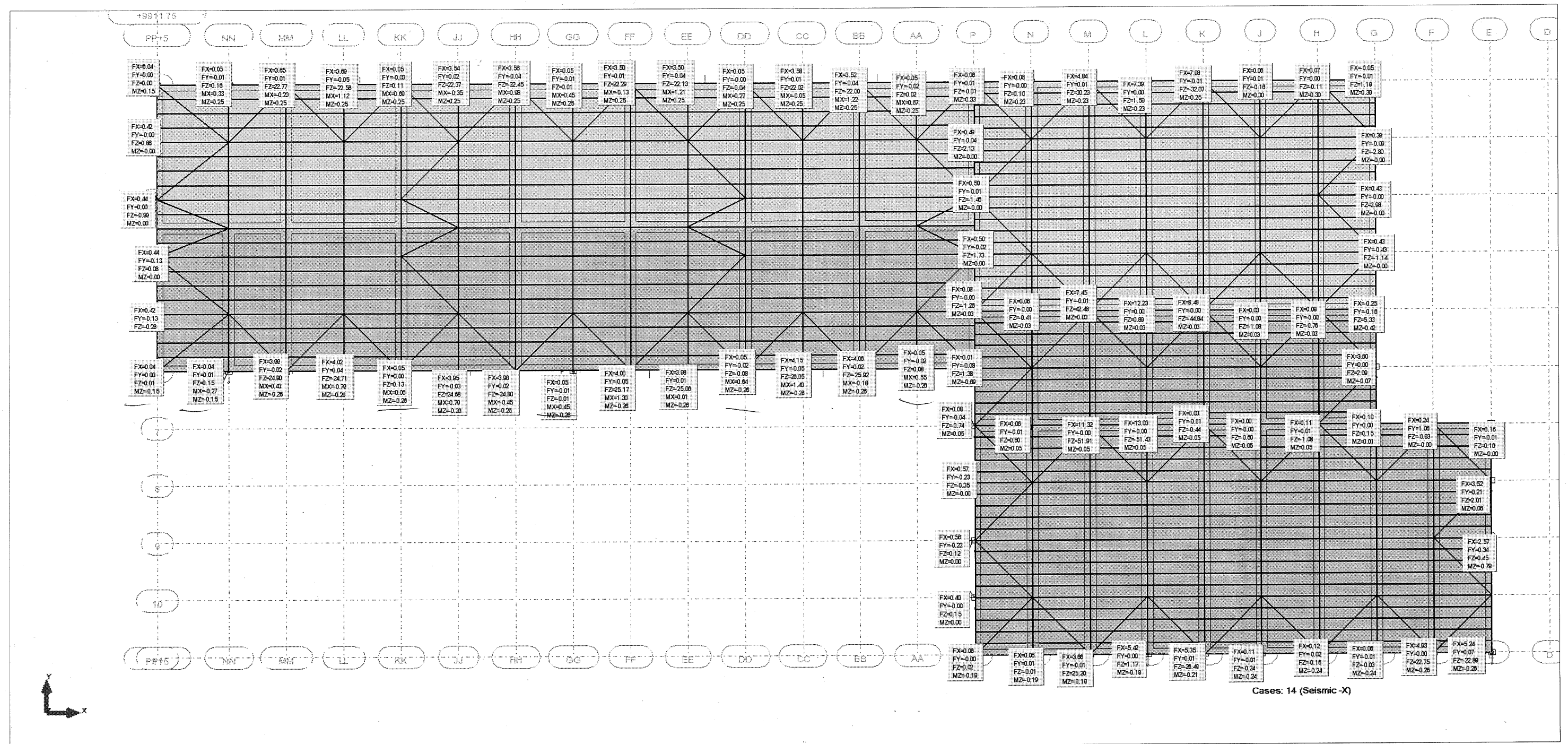


View - Reaction forces(kip), Reaction moments(kip*ft), Cases: 14 (Seismic -X)



Cases: 14 (Seismic -X)

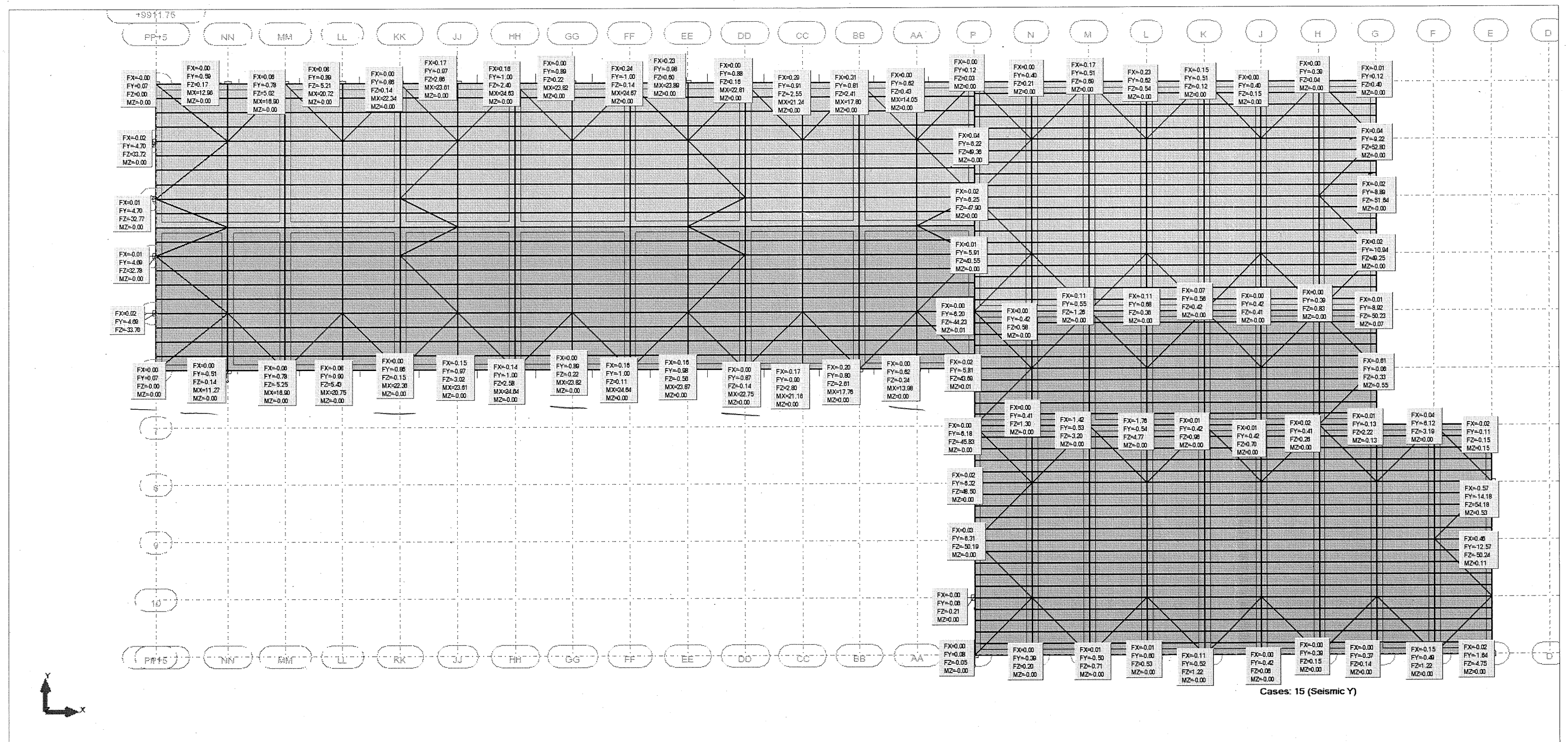
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 14 (Seismic -X)



View - Reaction forces(kip), Reaction moments(kip*ft), Cases: 15 (Seismic Y)



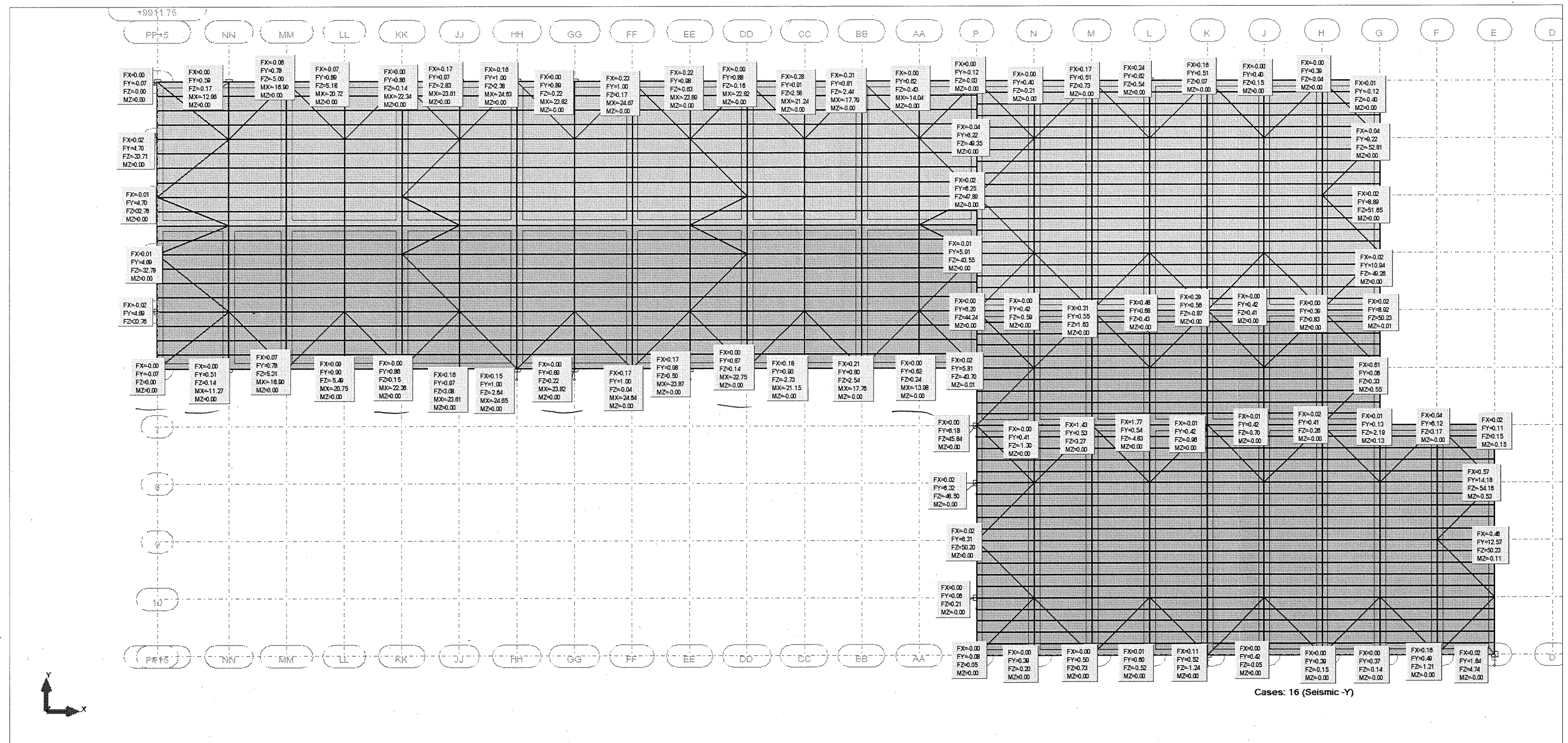
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 15 (Seismic Y)



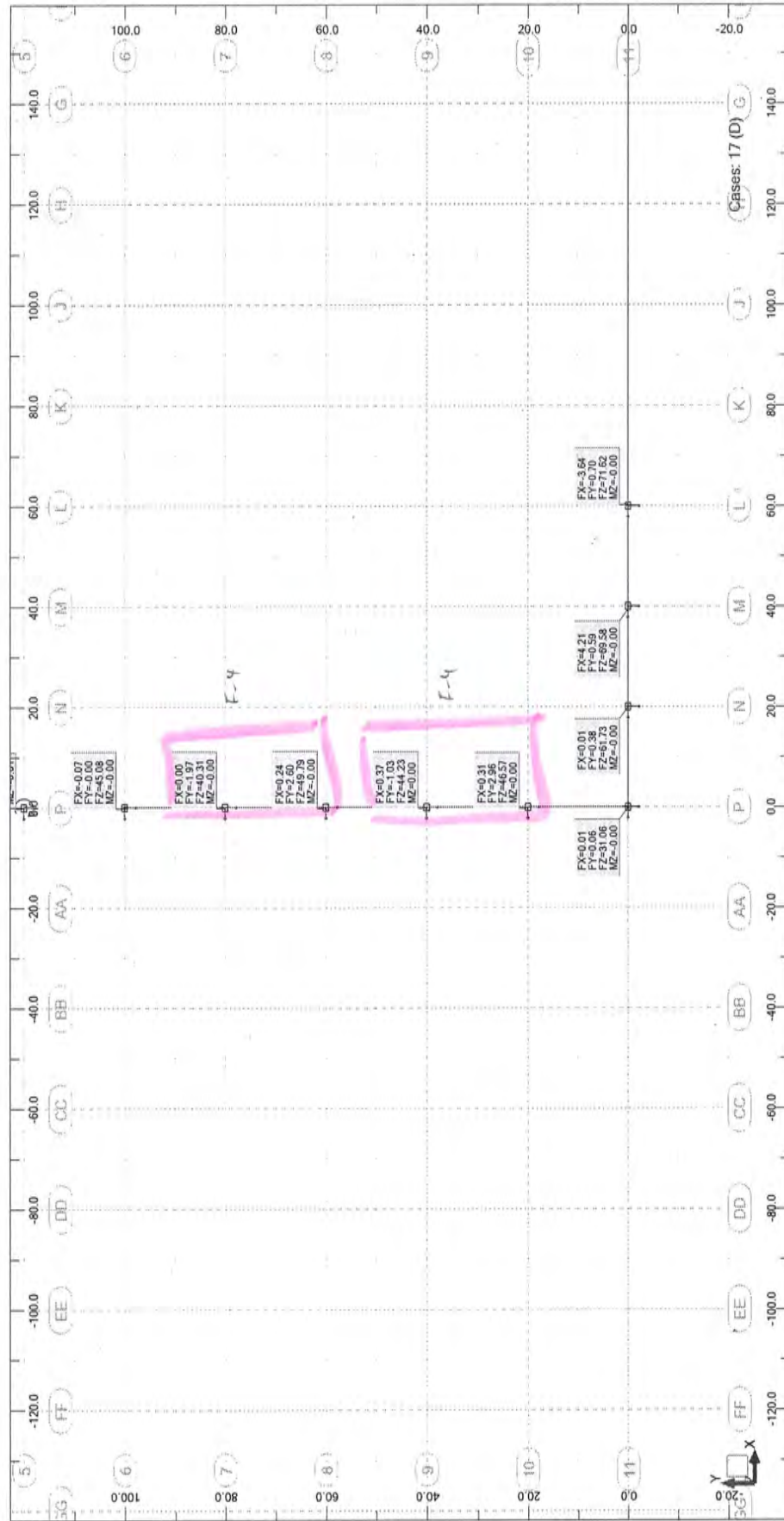
View - Reaction forces(kip), Reaction moments(kip*ft), Cases: 16 (Seismic-Y)



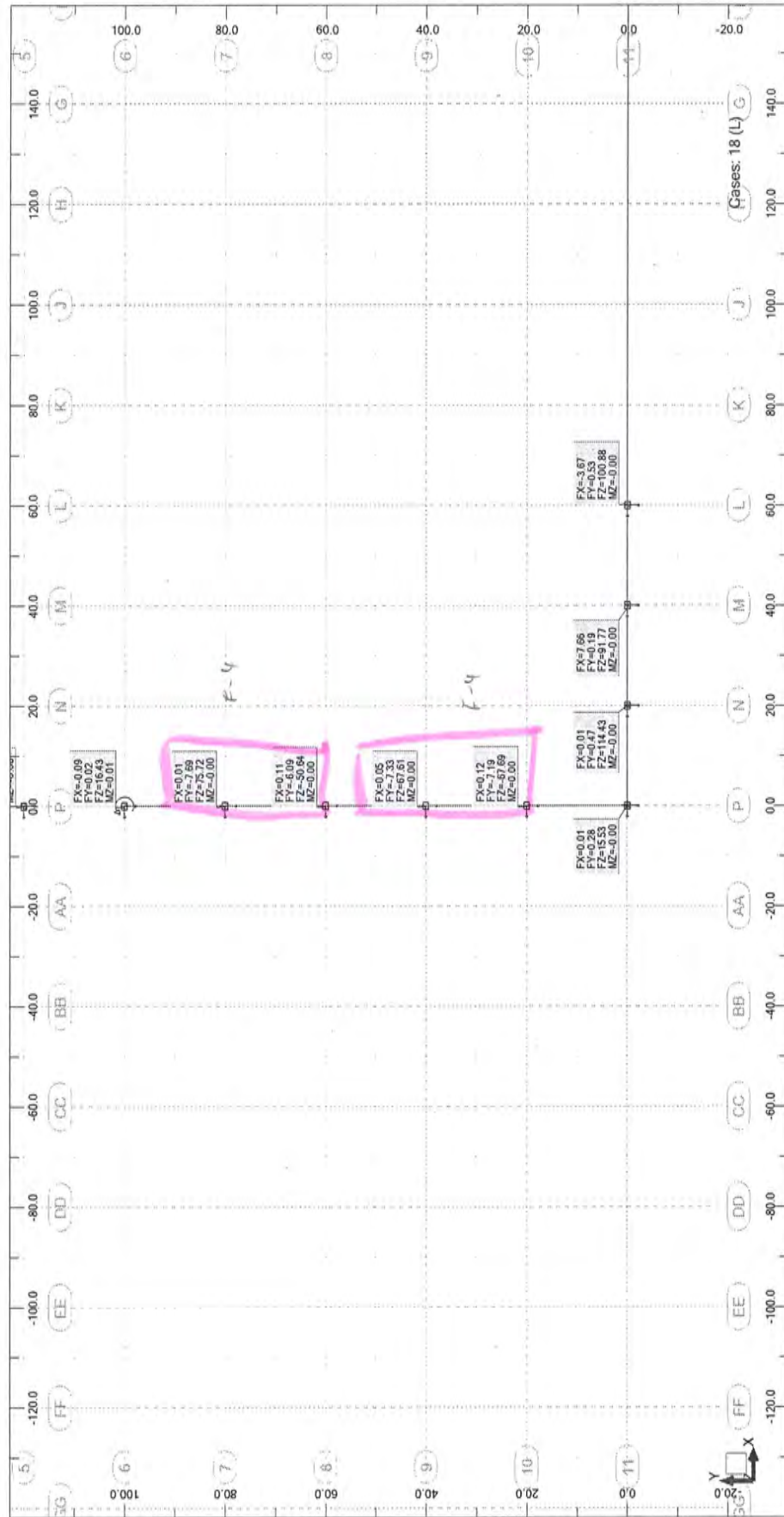
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 16 (Seismic -Y)



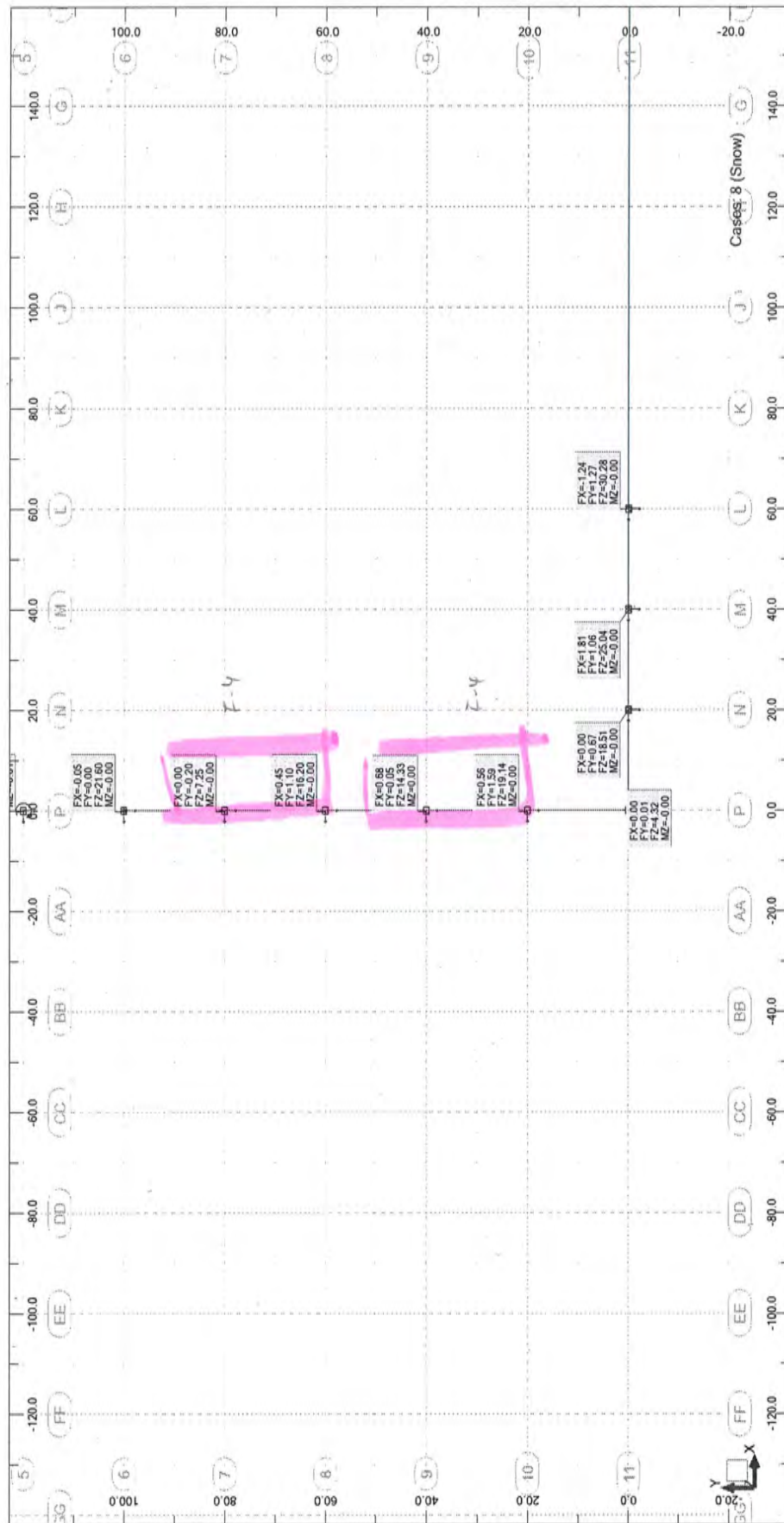
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 17 (D)



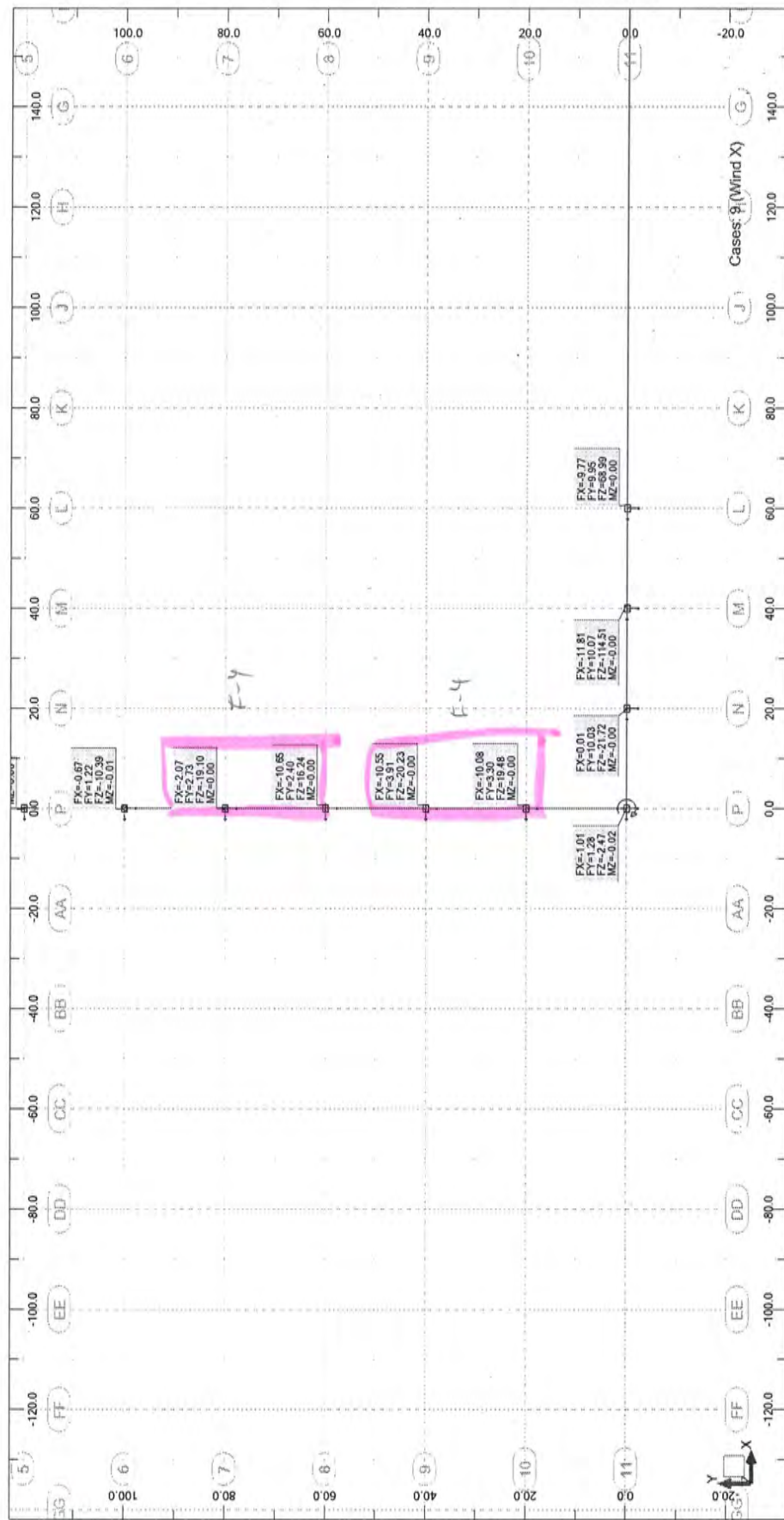
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 18 (L)



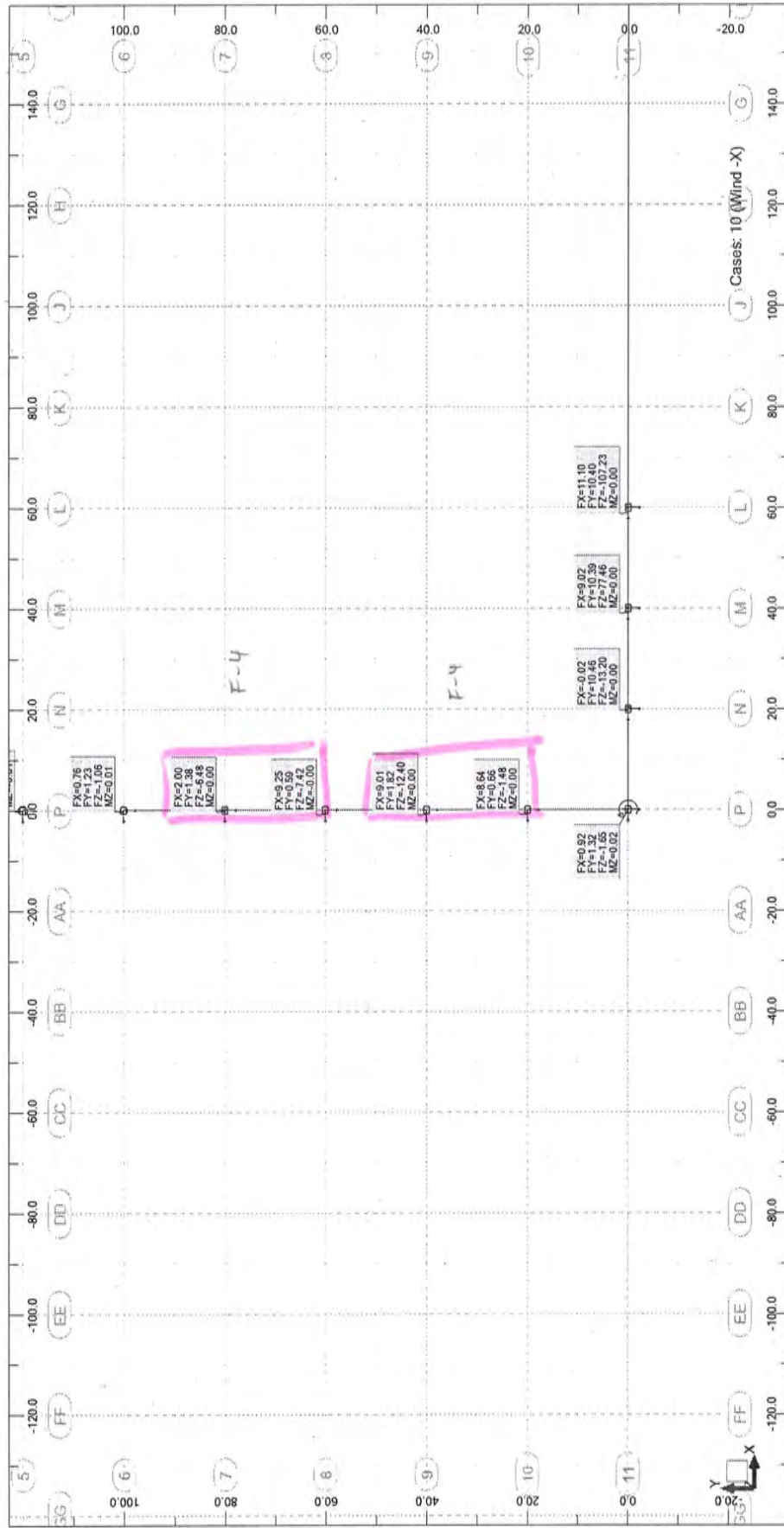
View - Reaction forces(kip), Reaction moments(kip*ft), Cases: 8 (Snow)



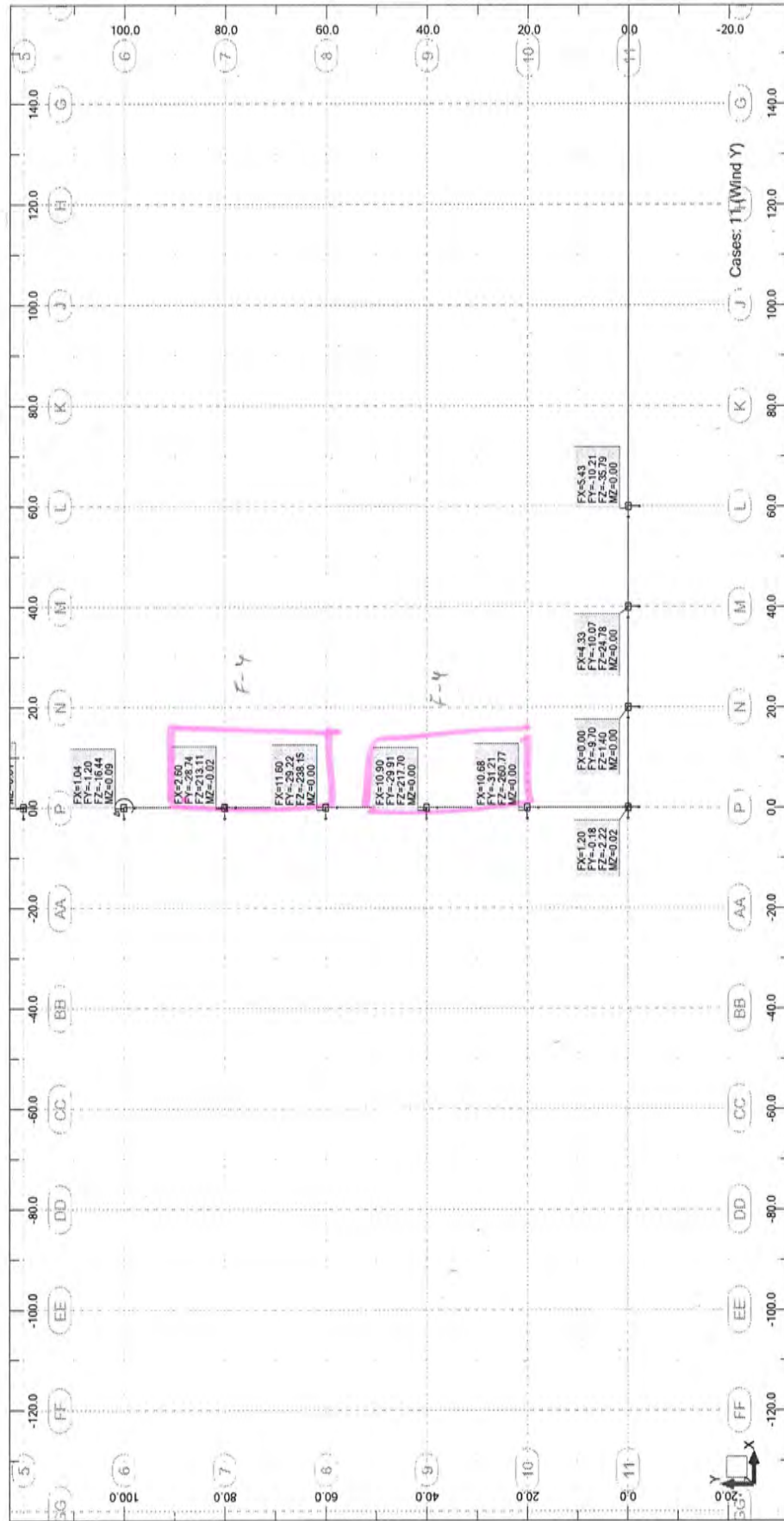
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 9 (Wind X)



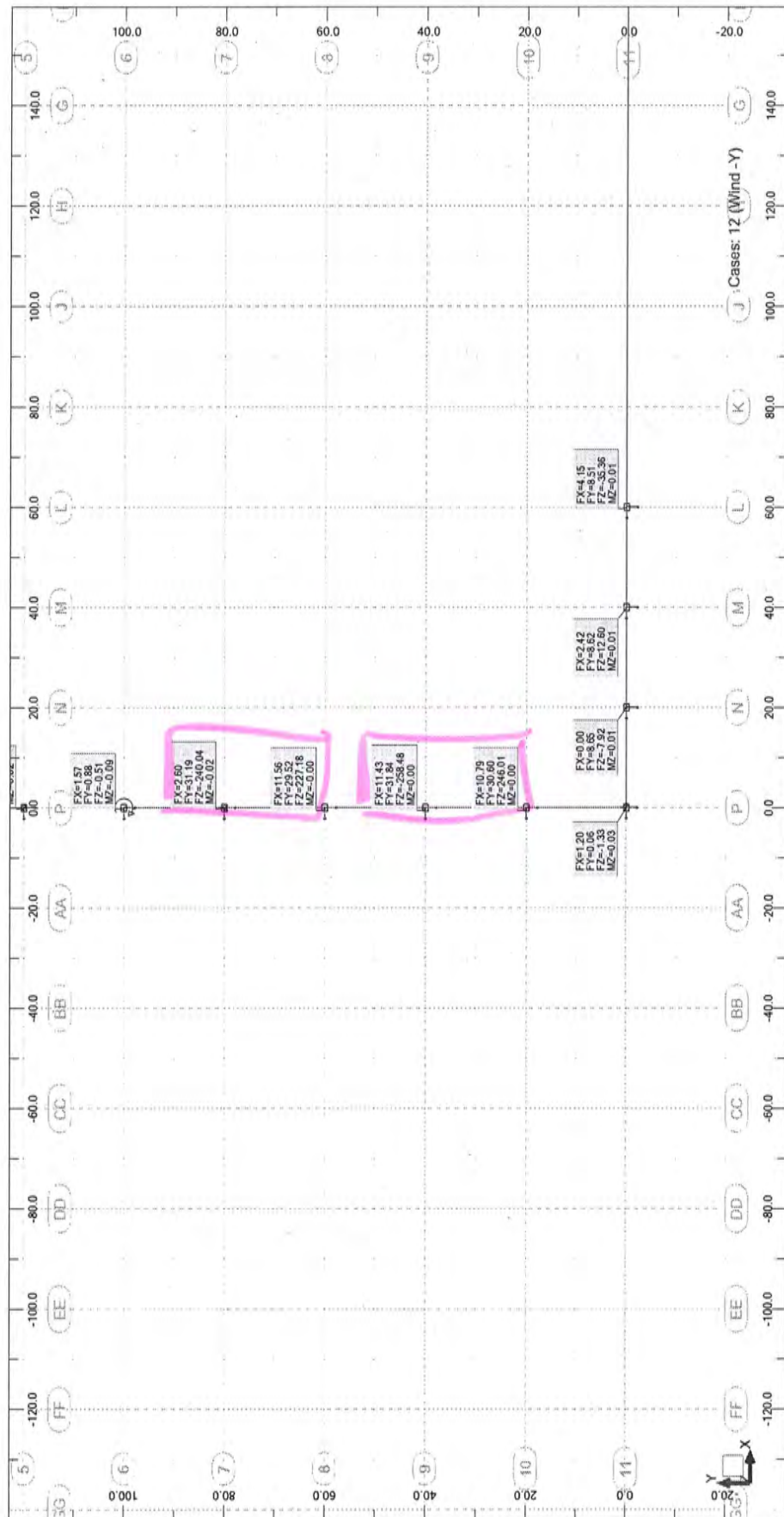
View - Reaction forces(kip), Reaction moments(kip*ft), Cases: 10 (Wind -X)



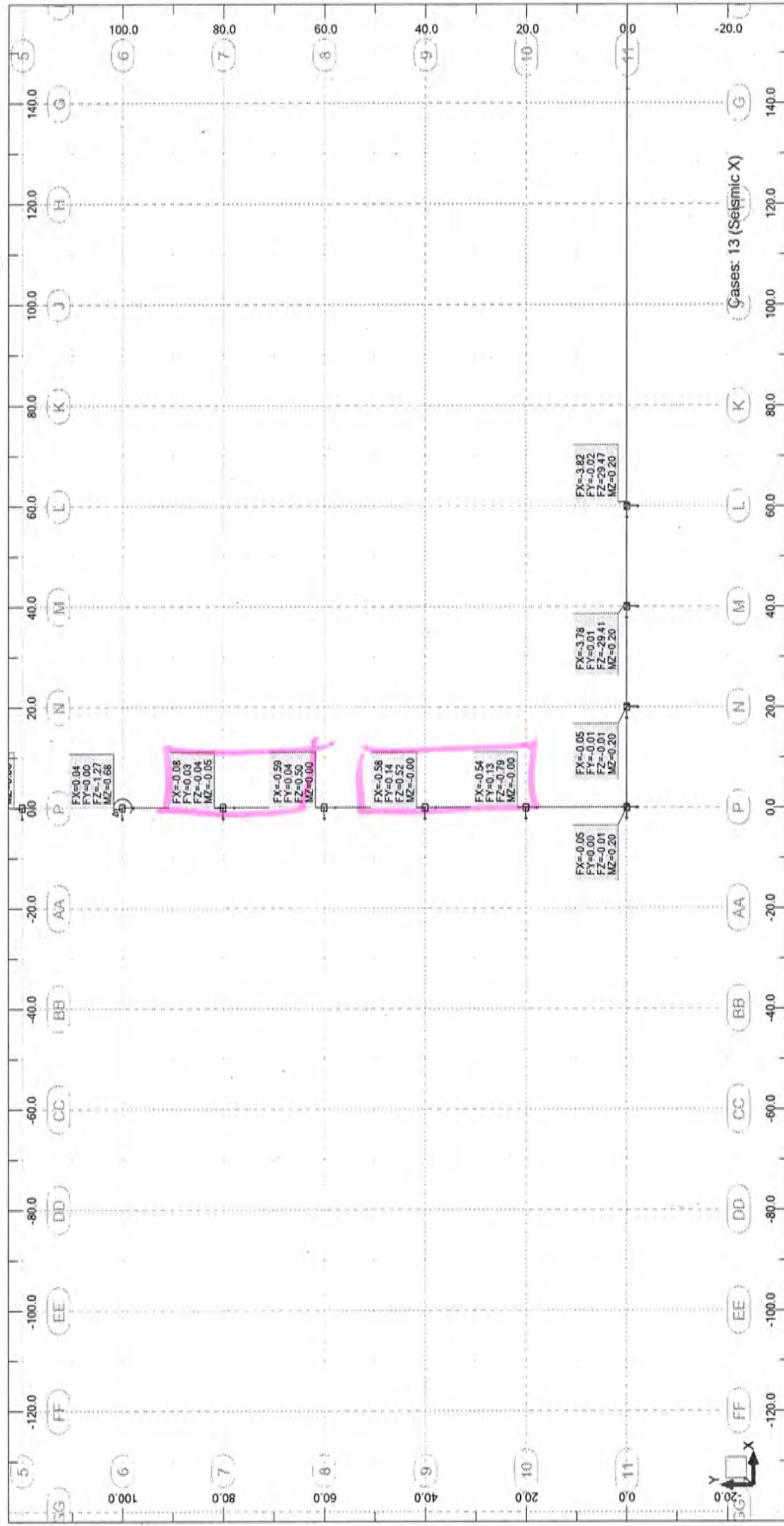
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 11 (Wind Y)



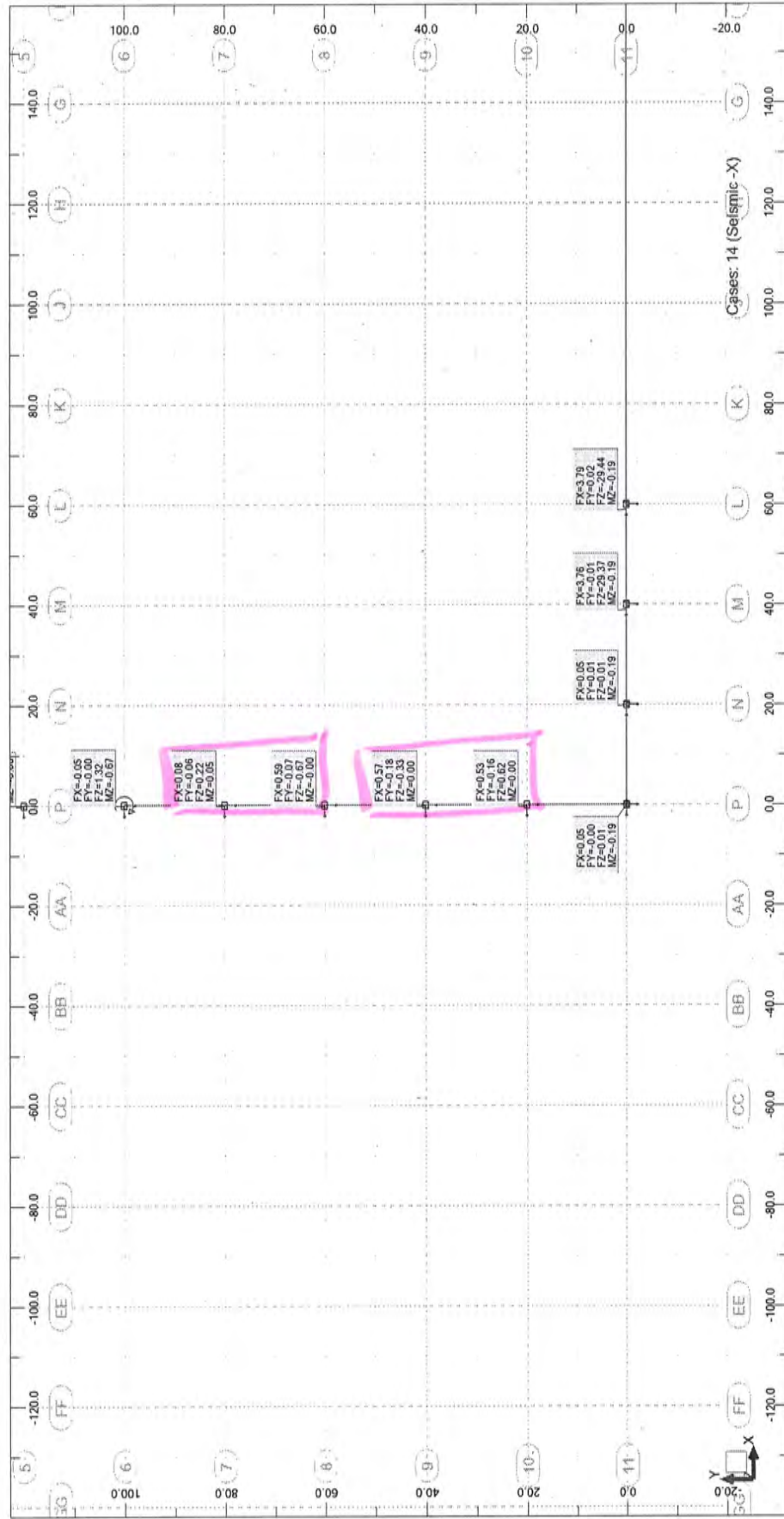
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 12 (Wind -Y)



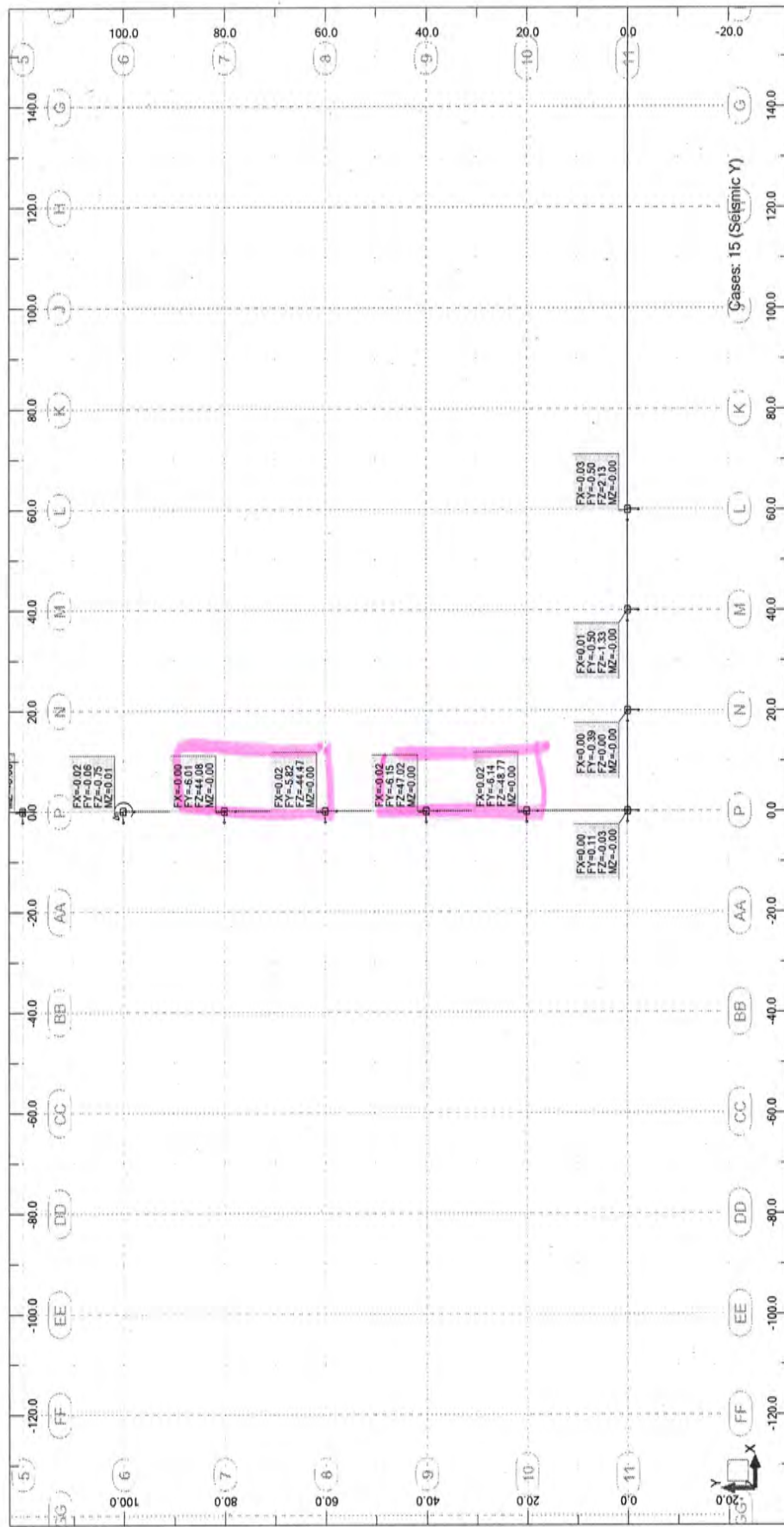
View - Reaction forces(kip), Reaction moments(kip*ft), Cases: 13 (Seismic X)



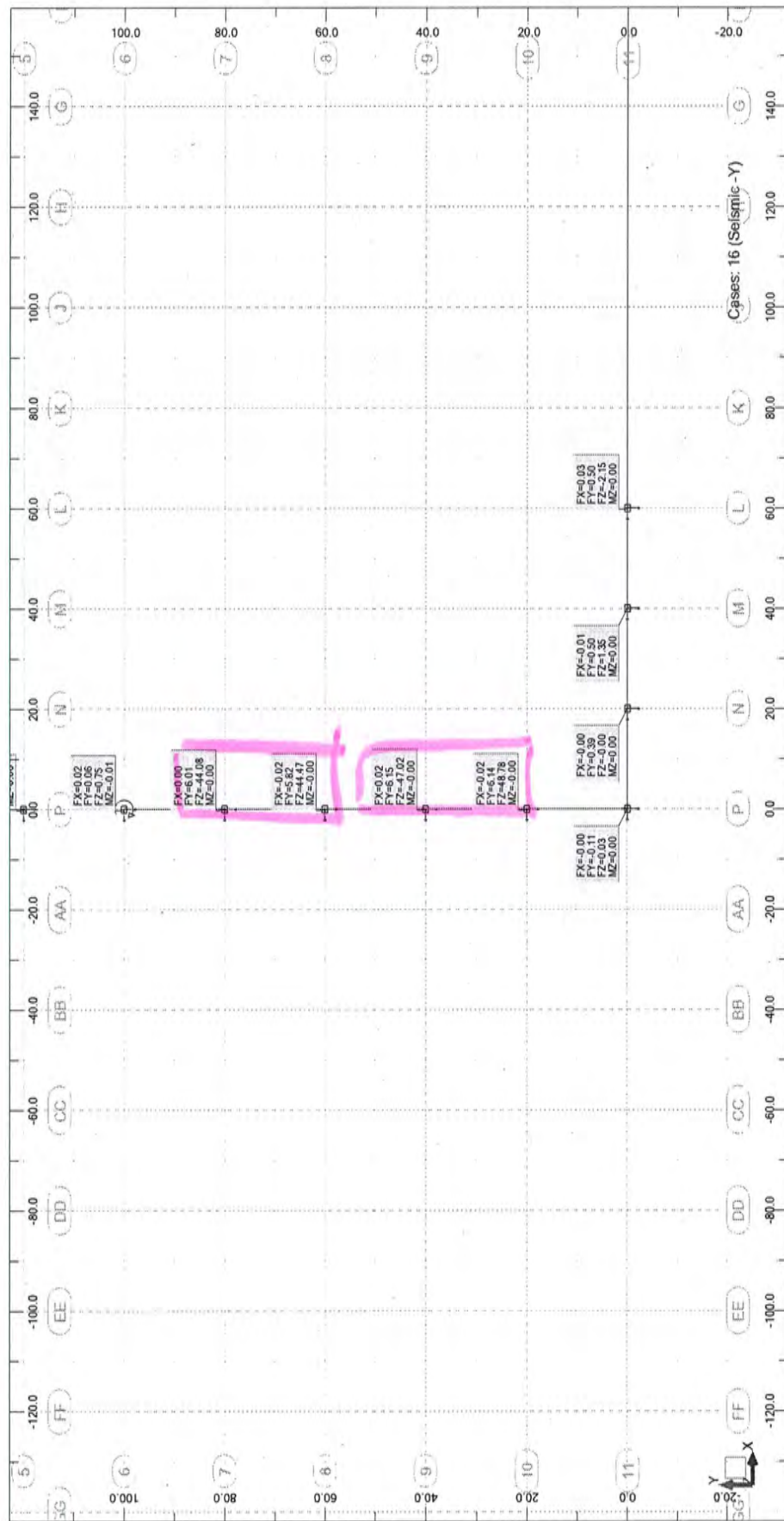
View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 14 (Seismic-X)



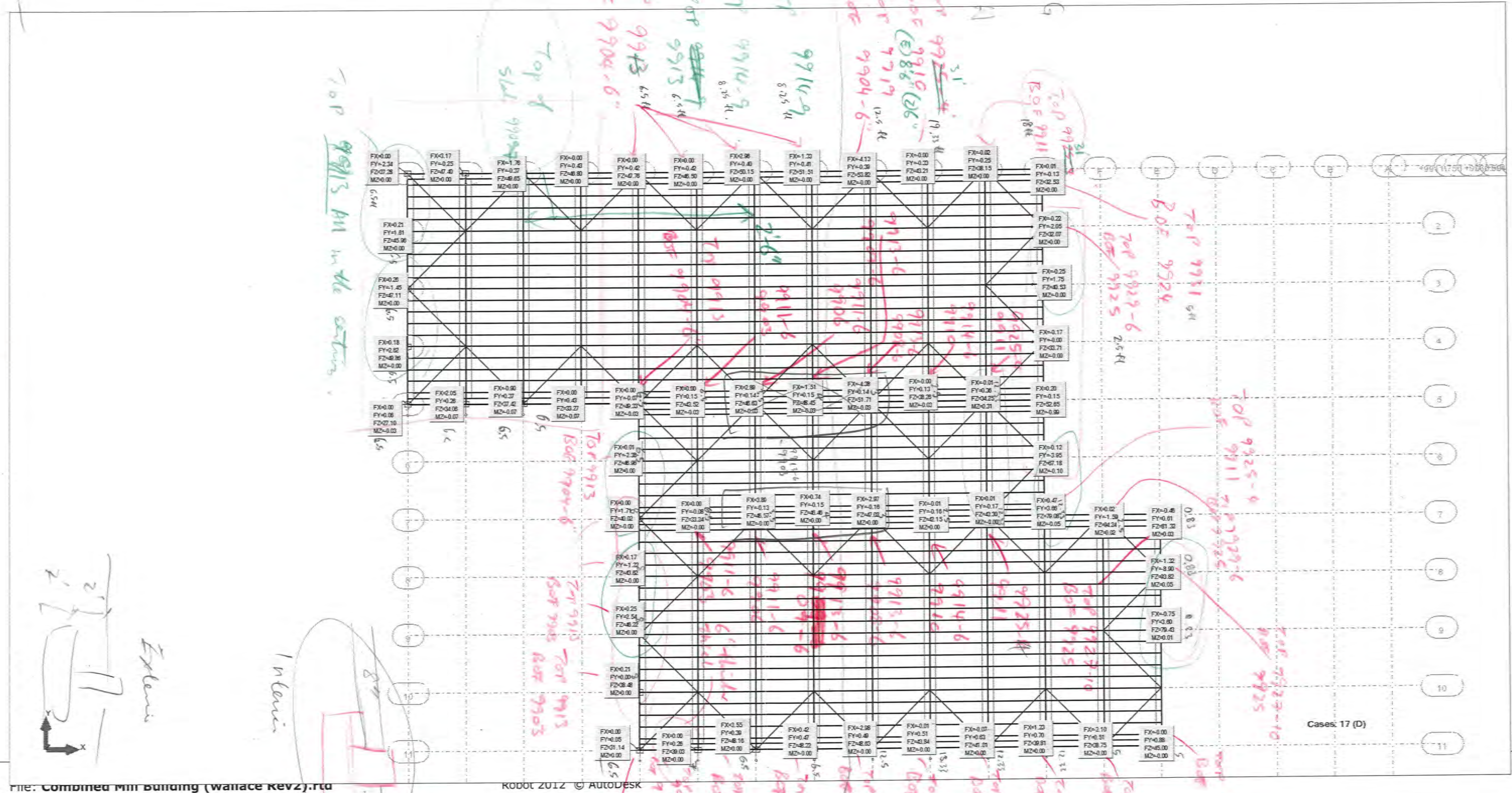
View - Reaction forces(kip), Reaction moments(kip*ft), Cases: 15 (Seismic Y)



View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 16 (Seismic-Y)



View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 17 (D)



File: Combined Mill Building (wallace Rev2).rtd

ROBOT 2012 © AUTODESK

[illegible]

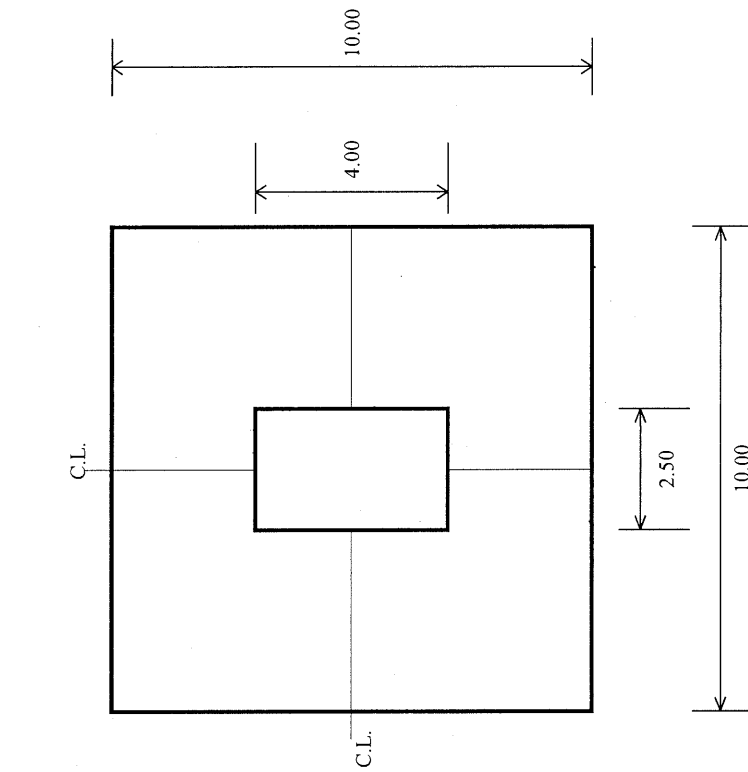
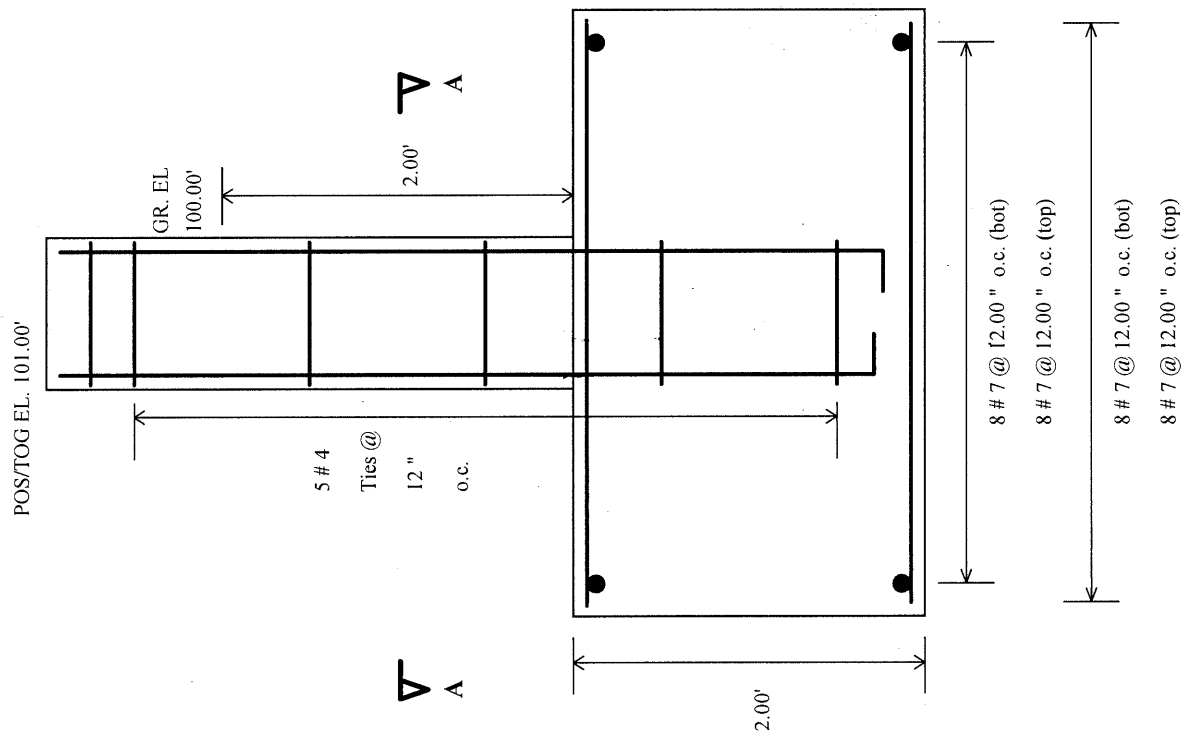
Proj. No.: 11021

Engr: ECS

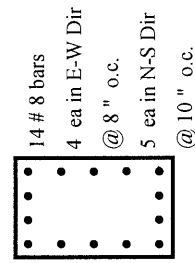
Date: 4/25/2012

Checker:

Date:



PLAN (1 REQD.)
(All dimensions in ft)

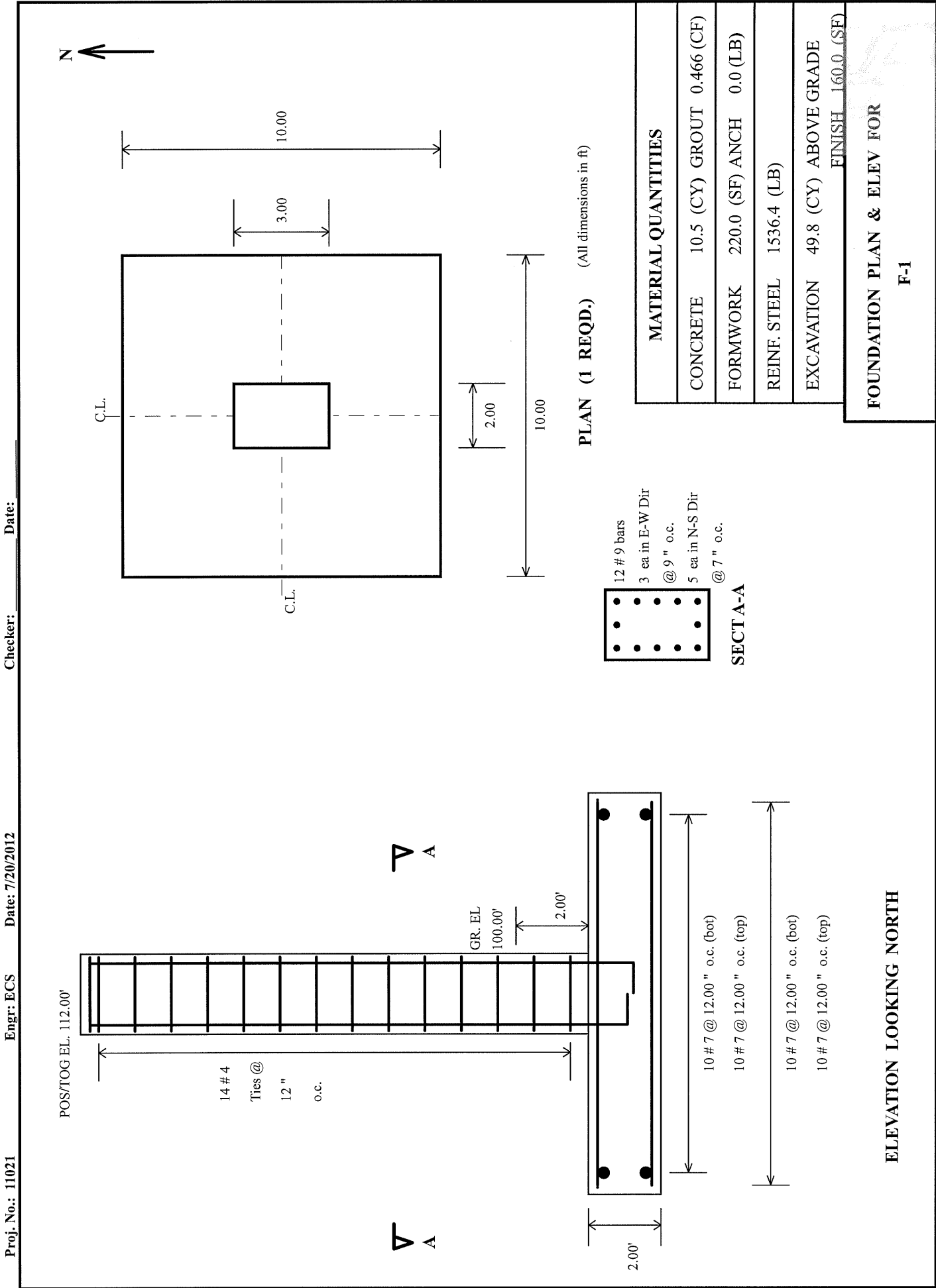


SECT A-A

MATERIAL QUANTITIES			
CONCRETE	8.5 (CY)	GROUT	0.789 (CF)
FORMWORK	119.0 (SF)	ANCH	0.0 (LB)
REINF. STEEL	869.1 (LB)		
EXCAVATION	49.8 (CY)	ABOVE GRADE	
		FINISH 13.0 (SF)	

**FOUNDATION PLAN & ELEV FOR
F-1 (GREEN)**

ELEVATION LOOKING NORTH



Process Building Foundation Check - F-1 (Green)

Node 1

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	32.31	0.02	0	-0.13	0
Live	10.39	-0.01	0	0.25	0
Snow	15.27	0.04	0	-0.13	0
Wind X	3.36	0.45	0	-1.32	0
Wind Y	-11.82	0.6	0	-0.27	0
Ex	1.2	0.04	0	0.01	0
Ey	-0.4	-0.01	0	-0.11	0

Node 5

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	40.93	0	0	-0.28	0
Live	42.65	0	0	-0.46	0
Snow	16.96	0	0	-0.52	0
Wind X	-18.6	0.01	0	-11.64	0
Wind Y	-10.06	-0.01	0	-9.51	0
Ex	0.1	0.05	0	0.01	0
Ey	-0.2	0	0	-0.39	0

Node 2

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	37.08	-0.01	0	-0.51	0
Live	43.23	-0.01	0	-0.75	0
Snow	20.69	-0.01	0	-0.91	0
Wind X	-13.18	0.09	0	-8.92	0
Wind Y	-9.97	-0.11	0	-7.67	0
Ex	0.07	0.08	0	0	0
Ey	-0.04	0	0	-0.39	0

Node 6

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	61.49	0	0	0.87	0
Live	76.29	0	0	0.28	0
Snow	25.98	0	0	1.56	0
Wind X	-13.67	0.02	0	8.8	0
Wind Y	-11.53	-0.01	0	-9.36	0
Ex	0.02	0.06	0	0.02	0
Ey	-0.13	0	0	-0.37	0

Node 3

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	40.1	-0.01	0	-0.82	0
Live	19.99	-0.01	0	-0.52	0
Snow	26.13	-0.01	0	-1.48	0
Wind X	-13.11	0.07	0	-8.77	0
Wind Y	-11.03	-0.08	0	-7.69	0
Ex	0.07	0.07	0	0.01	0
Ey	-0.17	0	0	-0.4	0

Node 7

MAX DOWNWARD

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	64.37	-0.06	0	0.98	0
Live	116.02	-0.02	0	0.69	0
Snow	30.85	-0.03	0	1.77	0
Wind X	-14.97	0.4	0	8.63	0
Wind Y	-11.86	0.14	0	-9.52	0
Ex	0.2	0.16	0	0.02	0
Ey	-0.16	0	0	-0.39	0

Node 4

MAX UPLIFT

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	46.39	-0.01	0	-0.67	0
Live	43.37	0	0	-0.58	0
Snow	30.38	0	0	-1.22	0
Wind X	-16.18	0.03	0	-10.5	0
Wind Y	-14.27	0.04	0	-8.77	0
Ex	0.17	0.03	0	0.01	0
Ey	-0.31	0	0	-0.39	0

Node 8

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	64.3	-0.05	0	1.03	0
Live	61.38	-0.02	0	0.1	0
Snow	30.29	-0.02	0	1.86	0
Wind X	-16.62	0.37	0	8.49	0
Wind Y	-11.43	0.12	0	-9.73	0
Ex	0.17	0.15	0	0.01	0
Ey	-0.08	0	0	-0.42	0

Process Building Foundation Check - F-1 (Green)

Node 9

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	66.98	-0.01	0	0.86	0
Live	61.7	-0.01	0	0.09	0
Snow	31.53	0	0	1.55	0
Wind X	-18.2	0.01	0	9.34	0
Wind Y	-12.91	0.01	0	-10	0
Ex	0.13	0.04	0	0	0
Ey	-0.2	0	0	-0.41	0

Node 11

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	31.05	0.01	0	0.04	0
Live	15.5	0.01	0	0.23	0
Snow	4.31	0	0	0.01	0
Wind X	-1.62	0.92	0	1.4	0
Wind Y	-2.28	1.2	0	-0.32	0
Ex	0.01	0.05	0	0	0
Ey	-0.04	0	0	-0.08	0

Node 10

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	61.71	0.01	0	0.38	0
Live	114.76	0.01	0	0.47	0
Snow	18.49	0	0	0.67	0
Wind X	-13.17	0.01	0	10.47	0
Wind Y	-8.98	0	0	-9.7	0
Ex	0.02	0.05	0	0.01	0
Ey	-0.21	0	0	-0.39	0

Node 12

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	39.74	0.31	0	0	0
Live	1.36	0.08	0	0.02	0
Snow	15.2	0.56	0	0	0
Wind X	0.84	8.6	0	0.01	0
Wind Y	-18.2	10.5	0	-0.08	0
Ex	0.2	0.42	0	0	0
Ey	-0.22	0	0	-0.06	0

Process Building Foundation Check - F-1 (Yellow)

Node 13

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	36.51	0	0	0.16	0
Live	86.95	0.01	0	-0.26	0
Snow	38.24	-0.02	0	0.26	0
Wind X	-0.9	0.07	0	0.04	0
Wind Y	-13.51	-0.12	0	-0.24	0
Ex	-0.15	0.11	0	0.01	0
Ey	-0.83	0	0	-0.39	0

Node 17 *Max Down*

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	69.7	-0.1	0	-0.32	0
Live	162.82	-0.08	0	-1.71	0
Snow	59.19	-0.08	0	-0.56	0
Wind X	-15.74	0.65	0	0.27	0
Wind Y	-34.8	0.27	0	-0.01	0
Ex	0.29	0.14	0	0.01	0
Ey	-0.28	-0.02	0	-0.41	0

Node 14

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	40.69	0	0	0.2	0
Live	30.17	-0.01	0	0	0
Snow	44.34	0.01	0	0.36	0
Wind X	-5.5	0.1	0	0	0
Wind Y	-23.68	0.1	0	-0.27	0
Ex	0.11	0.01	0	0	0
Ey	-0.42	0	0	-0.42	0

Node 18

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	68	-0.02	0	-0.28	0
Live	73.07	-0.01	0	-0.39	0
Snow	55.6	-0.02	0	-0.48	0
Wind X	-20.94	0.06	0	0.18	0
Wind Y	-33.76	0.01	0	0.01	0
Ex	0.12	0	0	0	0
Ey	-0.7	-0.01	0	-0.42	0

Node 15 *Max UPLIFT*

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	46.42	0	0	0.22	0
Live	53.35	-0.01	0	0.2	0
Snow	54.25	0	0	0.4	0
Wind X	-3.86	0.06	0	-0.01	0
Wind Y	-31.56	0.05	0	-0.32	0
Ex	0.78	0.03	0	0	0
Ey	-0.49	0	0	-0.43	0

Node 19

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	67.96	-0.01	0	-0.27	0
Live	73.55	-0.01	0	-0.39	0
Snow	55.45	-0.01	0	-0.46	0
Wind X	-19.6	0.04	0	0.19	0
Wind Y	-33.38	0	0	-0.03	0
Ex	0.44	0.03	0	0	0
Ey	-0.91	-0.01	0	-0.42	0

Node 16

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	35.54	0	0	0.08	0
Live	88.48	0	0	-0.21	0
Snow	34.21	0	0	0.15	0
Wind X	-4.65	0.02	0	0	0
Wind Y	-23.53	-0.01	0	-0.24	0
Ex	0.92	0.06	0	0.01	0
Ey	-0.59	0	0	-0.42	0

Node 20

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	37.34	0	0	-0.12	0
Live	117.82	0.01	0	-1.25	0
Snow	37.96	0	0	-0.2	0
Wind X	-4.84	0.02	0	0.16	0
Wind Y	-10.78	0	0	-0.21	0
Ex	0.48	0.06	0	0.01	0
Ey	-1.3	0	0	-0.41	0

Process Building Foundation Check - F-1 (Orange)

Node 21

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	60.02	-0.11	0	0	0
Live	44.15	1.83	0	0.02	0
Snow	30.59	0.02	0	0	0
Wind X	1.6	1.58	0	-0.01	0
Wind Y	-12.54	-1.56	0	-0.06	0
Ex	2.06	3.61	0	0	0
Ey	-0.33	-0.61	0	-0.06	0

Node 23

Max Down

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	95.19	0.03	0	-1.81	0
Live	148.25	0.02	0	-2.95	0
Snow	29.56	0.08	0	-2.41	0
Wind X	30.64	0.18	0	1.27	0
Wind Y	-17.52	0	0	-3.24	0
Ex	3.71	0.25	0	1.05	0
Ey	-3.16	-0.04	0	-6.12	0

Node 22

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	102.76	0.39	0	-0.11	0
Live	126.23	0.55	0	0.18	0
Snow	44.99	0.03	0	-0.08	0
Wind X	24.37	0.06	0	-0.11	0
Wind Y	-13.07	0.01	0	-0.93	0
Ex	3.45	0.1	0	0	0
Ey	-2.15	-0.01	0	-0.13	0

Node 24

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	81.63	-0.46	0	0.53	0
Live	58	-0.72	0	0.89	0
Snow	51.71	0.05	0	0.17	0
Wind X	6.24	0.02	0	-0.13	0
Wind Y	-17.77	0.01	0	-0.83	0
Ex	0.11	0.16	0	0	0
Ey	-0.15	-0.02	0	-0.13	0

No UPLIFT

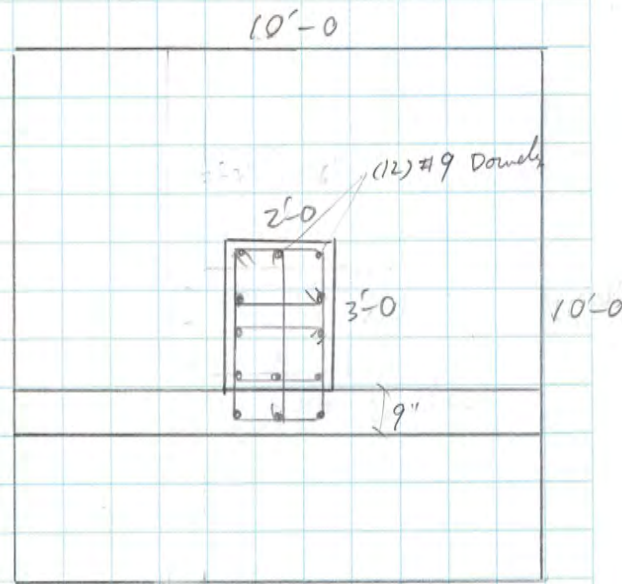
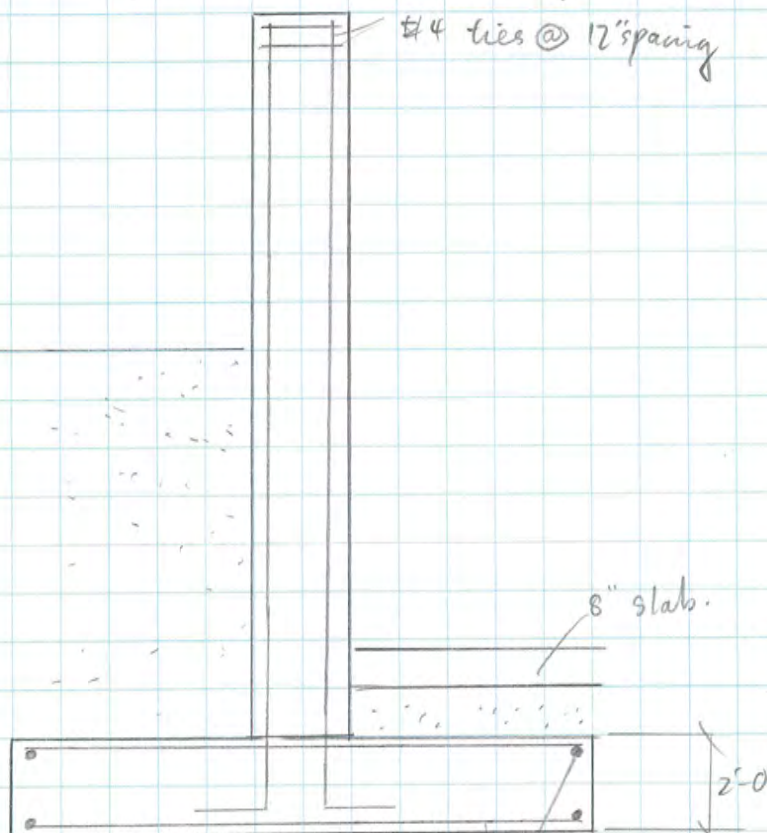
FLSMIDTH	PROJECT	PROJ NO. 11021
	SUBJECT	CALC NO.
	Updated	BY DATE 3/19/2018
		CHK DATE
		SHEET OF REV

Exterior Spread Footing (above 8'-3" pier height)

	Z	X	Y	
DL	64.37 (66.96)	0.02 (-0.01)	1.04 (0.86)	Green C = Modified load to consider in case of eliminating double bay bracing
(Uplift)	32.31 (46.39)	-0.08 (-0.01)	-0.82 (-0.67)	
LL	103.71 (61.14)	0 (-0.01)	0.14 (0.14)	After updating the Max DL & Snow L, No modifications requires for the Foundation.
(Uplift)	0 (0.4)	-0.10 (-0)	-0.64 (-0.04)	
Snow L	30.85 (31.53)	0.04 (0.00)	1.86 (1.55)	
(Uplift)	15.27 (30.38)	-0.05 (0.00)	-1.48 (-1.22)	
WL	3.35 (9.40)	0.68 (0.05)	9.78 (9.40)	
(Uplift)	-20.54 (-20.55)	-0.40 (0.01)	-9.73 (9.23)	
Seis L	1.19 (0.31)	0.12 (0.00)	0.42 (0.39)	
(Uplift)	-1.21 (-0.31)	-0.12 (-0)	-0.42 (-0.39)	

Footing size = 10'-0" X 10'-0" X 2'-0"

Pier = 2' X 3' X 17'-10" (may vary according to design)



#7 @ 12" Top & Bottom
each way.

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-1		Time	10:40:03 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
Filename:	F-1 (long pedestal).mcs			

DETAIL REPORT FOR F-1**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location: Victor CO
Foundation Description: FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi) 4000
 Unit Weight (pcf) 150
 Pier Concrete Cover - E-W Dir (in) 2
 Pier Concrete Cover - N-S Dir (in) 2
 Footing Side Concrete Cover - E-W Dir (in) 3
 Footing Side Concrete Cover - N-S Dir (in) 3
 Footing Top Concrete Cover (in) 2
 Footing Bottom Concrete Cover - X Dir (in) 3

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi) 60
 Unit Weight (pcf) 490
 Modulus of Elasticity (ksi) 29000
 Pier Min Rebar Spacing (in) 3
 Footing Min Rebar Spacing (in) 6
 Footing Max Rebar Spacing (in) 18

SOIL PARAMETERS:

Unit Weight (pcf) 120
 Allowable Net Bearing Capacity (psf) 4000
 Bearing Capacity Method Linear Soil Pressure
 Soil Type Granular
 Passive Pressure Coefficient Kp 3.69
 Soil To Concrete Friction f 0.5
 Allowable Increase in Soil Pressure due to Short Term Loads (%)
 Wind 33.33 Earthquake 33.33 Test 20
 Erection Stability Ratio 1.5
 Operation Stability Ratio 1.5
 Test Stability Ratio 1.5
 Safety Factor against Lateral Forces 1.5

REBAR PARAMETERS:

Max Long Bar Size 10
 Min Long Bar Size 7
 Max Tie Bar Size 4
 Min Tie Bar Size 3
 Max Ftg Bar Size 18
 Temp & Shrinkage Steel Ratio 0.0018

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft) 4
 Minimum Soil Cover (ft) 0
 Grade Elevation (ft) 100

BUOYANCY CRITERIA:

Consider Buoyancy: No
 Consider soil for buoyancy: No
 Water table below grade (ft) 0

APPLIED LOADS

P1

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	64.37	-0.06	0.00	0.98	0.00
2 - Live	116.02	-0.02	0.00	0.69	0.00
3 - Snow	30.85	-0.03	0.00	1.77	0.00
4 - Wind X	-14.97	0.40	0.00	8.63	0.00
5 - Wind Y	-11.86	0.14	0.00	-9.52	0.00
6 - Earthquake X	0.20	0.16	0.00	0.02	0.00
7 - Earthquake Y	-0.16	0.00	0.00	-0.39	0.00

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-1		Time	10:40:03 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\F-1 (long pedestal).mcs			

DETAIL REPORT FOR F-1**UNFACTORED (ALLOWABLE) LOAD COMBINATIONS****P1**

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	64.37	-0.06	0.00	0.98	0.00
2 - Dead + Live	180.39	-0.08	0.00	1.67	0.00
3 - Dead + Snow	95.22	-0.09	0.00	2.75	0.00
4 - Dead + 0.75Live + 0.75Snow	174.52	-0.10	0.00	2.83	0.00
5 - Dead + Wind X	49.40	0.34	0.00	9.61	0.00
6 - Dead + Wind Y	52.51	0.08	0.00	-8.54	0.00
7 - Dead + 0.7Earthquake X	64.51	0.05	0.00	0.99	0.00
8 - Dead + 0.7Earthquake Y	64.26	-0.06	0.00	0.71	0.00
9 - 0.6Dead + Wind X	23.65	0.36	0.00	9.22	0.00
10 - 0.6Dead + Wind Y	26.76	0.10	0.00	-8.93	0.00
11 - 0.6Dead + 0.7Earthquake X	38.76	0.08	0.00	0.60	0.00
12 - 0.6Dead + 0.7Earthquake Y	38.51	-0.04	0.00	0.32	0.00

FACTORED (ULTIMATE) LOAD COMBINATIONS**P1**

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	90.12	-0.08	0.00	1.37	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow	278.30	-0.12	0.00	3.17	0.00
3 - 1.2Dead + Live + 1.6Snow	242.62	-0.14	0.00	4.70	0.00
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	184.74	0.53	0.00	16.56	0.00
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	189.71	0.12	0.00	-12.48	0.00
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	199.63	0.06	0.00	2.24	0.00
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	199.27	-0.10	0.00	1.83	0.00
8 - 0.9Dead + 1.6Wind X	33.98	0.59	0.00	14.69	0.00
9 - 0.9Dead + 1.6Wind Y	38.96	0.17	0.00	-14.35	0.00
10 - 0.9Dead + Earthquake X	58.13	0.11	0.00	0.90	0.00
11 - 0.9Dead + Earthquake Y	57.77	-0.05	0.00	0.49	0.00

BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead	1.39	4.48	0.12	0.01	0.96	15.68	
2 - Dead + Live	2.62	4.48	0.11	0.01	1.28	26.72	
3 - Dead + Snow	1.87	4.48	0.27	0.01	1.44	44.00	
4 - Dead + 0.75Live + 0.75Snow	2.67	4.48	0.19	0.01	1.56	45.20	
5 - Dead + Wind X	2.10	5.81	1.34	0.05	5.44	153.76	
6 - Dead + Wind Y	2.00	5.81	1.16	0.01	1.28	136.64	
7 - Dead + 0.7Earthquake X	1.39	5.81	0.12	0.01	0.83	15.90	
8 - Dead + 0.7Earthquake Y	1.36	5.81	0.09	0.01	0.96	11.31	
9 - 0.6Dead + Wind X	1.62	5.81	2.35	0.09	5.82	147.49	
10 - 0.6Dead + Wind Y	1.56	5.81	2.17	0.03	1.66	142.91	
11 - 0.6Dead + 0.7Earthquake X	0.84	5.81	0.12	0.02	1.22	9.63	
12 - 0.6Dead + 0.7Earthquake Y	0.81	5.81	0.06	0.01	0.58	5.04	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-1		Time	10:40:03 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-1 (long pedestal).mcs			

DETAIL REPORT FOR F-1**STABILITY RATIO / SLIDING SAFETY FACTOR**

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead	41.30	100.00	1.50	93.20	100.00	1.50	
2 - Dead + Live	45.95	100.00	1.50	89.43	100.00	1.50	
3 - Dead + Snow	18.23	100.00	1.50	38.82	100.00	1.50	
4 - Dead + 0.75Live + 0.75Snow	26.51	100.00	1.50	51.83	100.00	1.50	
5 - Dead + Wind X	3.73	100.00	1.50	8.73	100.00	1.50	
6 - Dead + Wind Y	4.31	100.00	1.50	10.00	100.00	1.50	
7 - Dead + 0.7Earthquake X	40.77	100.00	1.50	91.95	100.00	1.50	
8 - Dead + 0.7Earthquake Y	57.20	100.00	1.50	100.00	100.00	1.50	
9 - 0.6Dead + Wind X	2.13	53.87	1.50	6.29	100.00	1.50	
10 - 0.6Dead + Wind Y	2.30	100.00	1.50	6.66	100.00	1.50	
11 - 0.6Dead + 0.7Earthquake X	40.42	100.00	1.50	100.00	100.00	1.50	
12 - 0.6Dead + 0.7Earthquake Y	76.99	100.00	1.50	100.00	100.00	1.50	

FOOTING DESIGN INFORMATION

E-W Dim (ft)	10.00
N-S Dim (ft)	10.00
Thickness (ft)	2.00

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
11. 0.9Dead + Earthquake Y	10	7	12	0.6	0	0	E-W
8. 0.9Dead + 1.6Wind X	10	7	12	0.6	0.04	-2.86	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
2. 1.2Dead + 1.6Live + 0.5Snow	10	7	12	0.6	0.52	23.54	E-W
4. 1.2Dead + Live + 0.5Snow + 1.6Wind X	10	7	12	0.6	0.52	19.71	N-S

PUNCHING SHEAR**P1**

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
2. 1.2Dead + 1.6Live + 0.5Snow	241.78	60.45	189.74	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-1		Time	10:40:03 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\F-1 (long pedestal).mcs			

DETAIL REPORT FOR F-1**MAXIMUM SHEAR - E-W DIRECTION**

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	2.33	25.29	10.54	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	2.33	68.67	28.61	94.87	
3 - 1.2Dead + Live + 1.6Snow	2.33	60.38	25.16	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	7.67	-47.55	19.81	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	7.67	-48.00	20.00	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	7.67	-50.22	20.92	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	2.33	50.19	20.91	94.87	
8 - 0.9Dead + 1.6Wind X	7.67	-11.58	4.83	94.87	
9 - 0.9Dead + 1.6Wind Y	7.67	-12.03	5.01	94.87	
10 - 0.9Dead + Earthquake X	7.67	-16.39	6.83	94.87	
11 - 0.9Dead + Earthquake Y	2.33	16.22	6.76	94.87	

MAXIMUM SHEAR - N-S DIRECTION

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	8.17	-21.73	9.05	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	8.17	-58.34	24.31	94.87	
3 - 1.2Dead + Live + 1.6Snow	8.17	-54.01	22.50	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	8.17	-60.44	25.18	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	1.83	55.49	23.12	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	8.17	-42.59	17.75	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	8.17	-41.94	17.47	94.87	
8 - 0.9Dead + 1.6Wind X	8.17	-31.60	13.17	94.87	
9 - 0.9Dead + 1.6Wind Y	1.83	31.18	12.99	94.87	
10 - 0.9Dead + Earthquake X	8.17	-14.03	5.85	94.87	
11 - 0.9Dead + Earthquake Y	8.17	-13.38	5.57	94.87	

PIER/BASE PLATE DESIGN INFORMATION

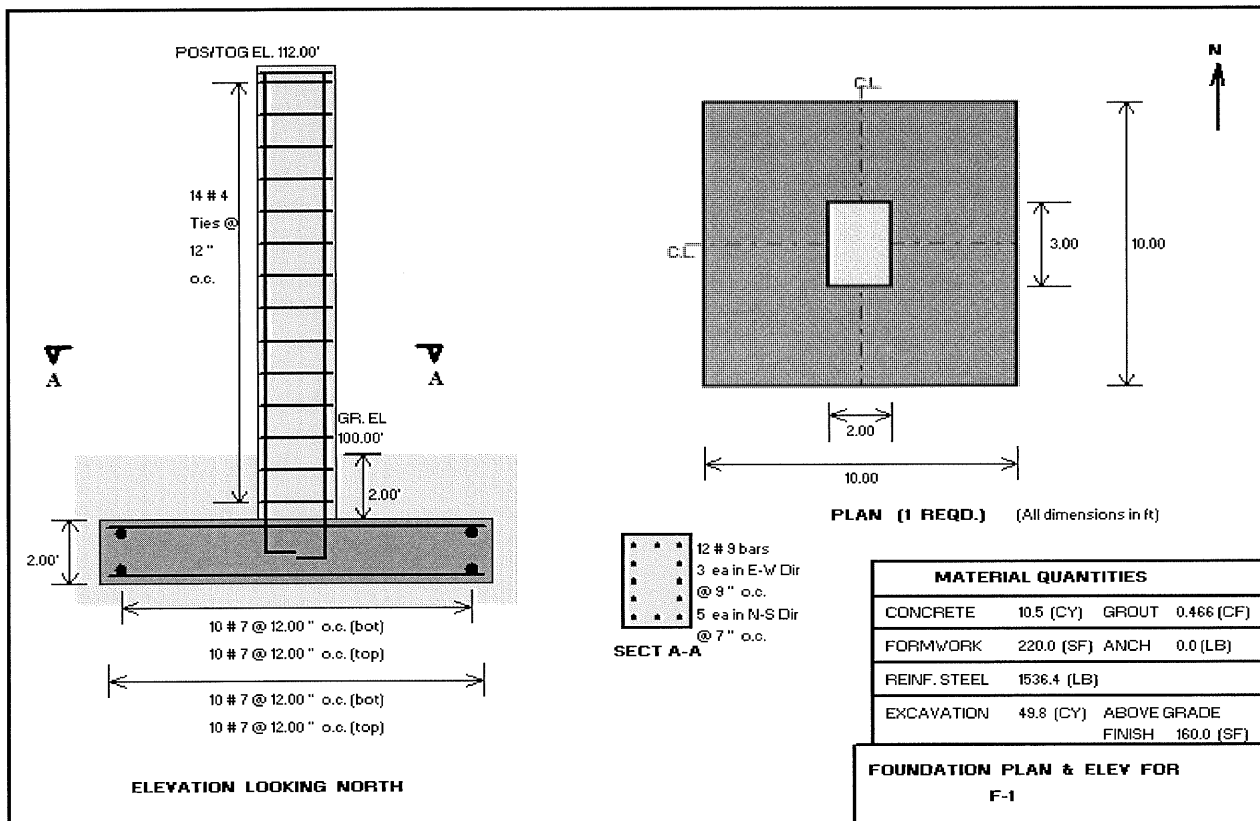
	P1
E-W Dim (ft)	2.00
N-S Dim (ft)	3.00
Height above grade (ft)	12.00
E-W Offset (ft)	0.00
N-S Offset (ft)	0.00
Requested Reinf. Ratio	0.0050
Provided Reinf. Ratio	0.0139
Long Bar Size	9
Bars in E-W Dir	3
Bars in N-S Dir	5
Total Long Bars	12
Tie Bar Size	4
Total No. of Ties	15
Major Tie Spacing (in)	12

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-1		Time	10:40:03 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\015 Process Building Foundations\Check\			
	F-1 (long pedestal).mcs			

DETAIL REPORT FOR F-1**PIER ULTIMATE LOAD CAPACITIES**

P1

Load Comb	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	Rem
1 - 1.4Dead	107.76	1880.75	12.44	224.07	19.62	339.99	
2 - 1.2Dead + 1.6Live + 0.5Snow	293.42	1880.75	37.40	239.54	47.18	312.45	
3 - 1.2Dead + Live + 1.6Snow	257.74	1783.19	32.22	215.37	69.48	481.44	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	199.86	820.49	24.22	99.42	241.73	992.44	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	204.83	1056.55	24.89	128.48	182.40	936.94	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	214.75	1880.75	26.23	233.88	32.81	290.53	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	214.39	1880.75	26.18	232.94	31.40	289.14	
8 - 0.9Dead + 1.6Wind X	45.32	191.66	8.36	35.38	207.41	877.29	
9 - 0.9Dead + 1.6Wind Y	50.30	225.66	5.65	25.44	202.83	908.76	
10 - 0.9Dead + Earthquake X	69.47	1880.75	7.88	221.23	12.80	344.93	
11 - 0.9Dead + Earthquake Y	69.11	1880.75	7.84	213.40	9.81	266.95	

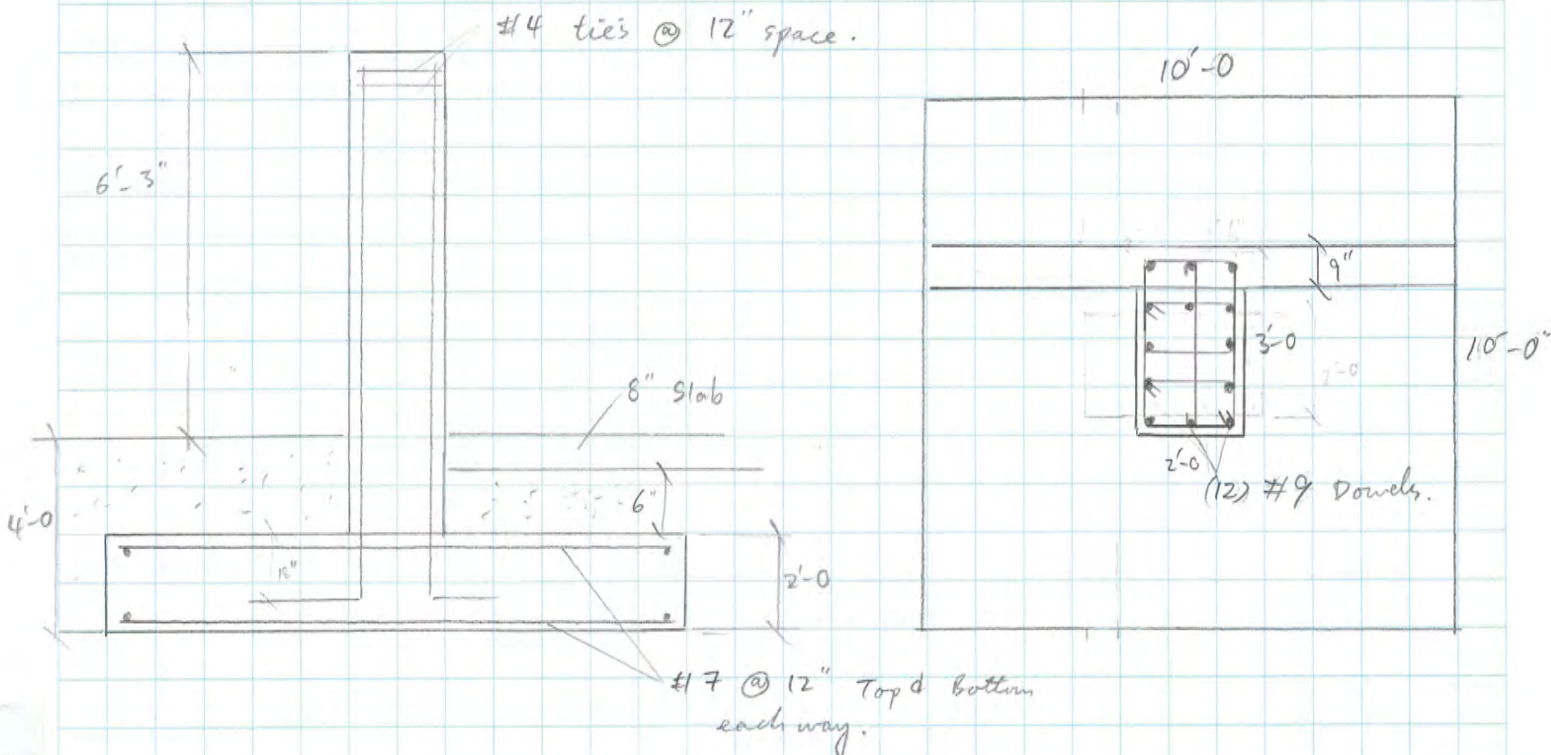


Exterior Spread Footing (Under 8'-3" pier height)

	Z	X	Y
DL	61.70	0.32	0.38
(Uplift)	31.05	0.00	-0.28
LL	114.31	0.06	0.52
(Uplift)	-0.04	0.00	-0.38
Snow L	18.48	0.56	0.67
(Uplift)	4.31	0	-0.57
W L	2.52	10.88	10.49
(Uplift)	-21.87	-9.98	-11.68
Seis L	0.21	0.40	0.40
(Uplift)	-0.21	-0.41	-0.40

Footing size = 10'-0" X 10'-0" X 2'-0"

Pier size = 2' X 3' X 8'-3" (may vary according to design)



Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:10:07 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\C-015 Process Building Foundations\Exterior Footing H under 8.25ft.mcs			

DETAIL REPORT FOR 1**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location
Foundation Description FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi)	4000
Unit Weight (pcf)	150
Pier Concrete Cover - E-W Dir (in)	2
Pier Concrete Cover - N-S Dir (in)	2
Footing Side Concrete Cover - E-W Dir (in)	3
Footing Side Concrete Cover - N-S Dir (in)	3
Footing Top Concrete Cover (in)	2
Footing Bottom Concrete Cover - X Dir (in)	3

SOIL PARAMETERS:

Unit Weight (pcf)	120
Allowable Net Bearing Capacity (psf)	5000
Bearing Capacity Method	Linear Soil Pressure
Soil Type	Granular
Passive Pressure Coefficient Kp	5
Soil To Concrete Friction f	0.5
Allowable Increase in Soil Pressure due to Short Term Loads (%)	
Wind 0 Earthquake 0 Test 0	
Erection Stability Ratio	1.5
Operation Stability Ratio	1.5
Test Stability Ratio	1.5
Safety Factor against Lateral Forces	1.5

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft)	4
Minimum Soil Cover (ft)	2
Grade Elevation (ft)	100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi)	60
Unit Weight (pcf)	490
Modulus of Elasticity (ksi)	29000
Pier Min Rebar Spacing (in)	3
Footing Min Rebar Spacing (in)	6
Footing Max Rebar Spacing (in)	18

REBAR PARAMETERS:

Max Long Bar Size	7
Min Long Bar Size	5
Max Tie Bar Size	4
Min Tie Bar Size	3
Max Ftg Bar Size	18
Temp & Shrinkage Steel Ratio	0.0018

BUOYANCY CRITERIA:

Consider Buoyancy:	No
Consider soil for buoyancy:	No
Water table below grade (ft)	0

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:10:07 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\116 Process Building Foundations\Exterior Footing H under 8.25ft.mcs			

DETAIL REPORT FOR 1**APPLIED LOADS**

P1

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	61.70	0.32	0.00	0.38	0.00
2 - Live	114.31	0.06	0.00	0.52	0.00
3 - Snow Load	18.48	0.56	0.00	0.67	0.00
4 - Wind	2.52	10.88	0.00	10.49	0.00
5 - Earthquake	0.21	0.40	0.00	0.40	0.00

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead + Snow Load	80.18	0.88	0.00	1.05	0.00
2 - Dead + Live	176.01	0.38	0.00	0.90	0.00
3 - Dead + 0.75Live + 0.75Snow Load	161.29	0.79	0.00	1.27	0.00
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	163.18	8.95	0.00	9.14	0.00
5 - Dead + Wind	64.22	11.20	0.00	10.87	0.00
6 - 0.6Dead + Wind	39.54	11.07	0.00	10.72	0.00
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	161.40	0.99	0.00	1.48	0.00
8 - Dead + 0.7Earthquake	61.85	0.60	0.00	0.66	0.00
9 - 0.6Dead + 0.7Earthquake	37.17	0.47	0.00	0.51	0.00

FACTORED (ULTIMATE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	86.38	0.45	0.00	0.53	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow Load	266.18	0.76	0.00	1.62	0.00
3 - 1.2Dead + Live + 1.6Snow Load	217.92	1.34	0.00	2.05	0.00
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	105.62	9.98	0.00	9.92	0.00
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	201.62	18.13	0.00	18.10	0.00
6 - 0.9Dead + 1.6Wind	59.56	17.70	0.00	17.13	0.00
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	192.26	0.96	0.00	1.51	0.00
8 - 0.9Dead + Earthquake	55.74	0.69	0.00	0.74	0.00

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:10:07 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\116 Process Building Foundations\Exterior Footing H under 8.25ft.mcs			

DETAIL REPORT FOR 1**BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD**

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead + Snow Load	1.23	5.48	0.08	0.07	10.78	12.86	
2 - Dead + Live	1.87	5.48	0.04	0.02	4.66	11.03	
3 - Dead + 0.75Live + 0.75Snow Load	1.80	5.48	0.06	0.04	9.62	15.59	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	2.50	5.48	0.45	0.44	109.58	111.96	
5 - Dead + Wind	1.98	5.48	0.89	0.92	137.20	133.16	
6 - 0.6Dead + Wind	1.59	5.48	1.44	1.49	135.63	131.30	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	1.82	5.48	0.07	0.05	12.19	18.16	
8 - Dead + 0.7Earthquake	1.08	5.48	0.05	0.05	7.35	8.09	
9 - 0.6Dead + 0.7Earthquake	0.66	5.48	0.07	0.07	5.78	6.22	

STABILITY RATIO / SLIDING SAFETY FACTOR

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead + Snow Load	77.31	92.24	1.50	100.00	100.00	1.50	
2 - Dead + Live	100.00	100.00	1.50	100.00	100.00	1.50	
3 - Dead + 0.75Live + 0.75Snow Load	95.01	100.00	1.50	100.00	100.00	1.50	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	13.33	13.62	1.50	18.33	18.73	1.50	
5 - Dead + Wind	6.75	6.55	1.50	10.86	10.54	1.50	
6 - 0.6Dead + Wind	4.15	4.02	1.50	8.27	8.01	1.50	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	81.59	100.00	1.50	100.00	100.00	1.50	
8 - Dead + 0.7Earthquake	100.00	100.00	1.50	100.00	100.00	1.50	
9 - 0.6Dead + 0.7Earthquake	85.32	91.83	1.50	100.00	100.00	1.50	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:10:07 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Exterior Footing H under 8.25ft.mcs			

DETAIL REPORT FOR 1**FOOTING DESIGN INFORMATION**

E-W Dim (ft) 12.00
 N-S Dim (ft) 12.00
 Thickness (ft) 2.00

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
6. 0.9Dead + 1.6Wind	12	7	12	0.6	0.01	-0.9	E-W
6. 0.9Dead + 1.6Wind	12	7	12	0.6	0.01	-0.76	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	12	7	12	0.6	0.52	25.43	E-W
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	12	7	12	0.6	0.52	20.8	N-S

PUNCHING SHEAR**P1**

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
2. 1.2Dead + 1.6Live + 0.5Snow Load	242.78	60.70	189.74	

MAXIMUM SHEAR - E-W DIRECTION

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	8.67	-28.13	9.77	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	8.67	-77.95	27.07	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	8.67	-65.25	22.66	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	8.67	-44.68	15.52	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	8.67	-81.36	28.25	94.87	
6 - 0.9Dead + 1.6Wind	8.67	-40.60	14.10	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	8.67	-57.65	20.02	94.87	
8 - 0.9Dead + Earthquake	8.67	-18.64	6.47	94.87	

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DETAIL REPORT FOR 1**MAXIMUM SHEAR - N-S DIRECTION**

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	9.17	-24.03	8.35	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	9.17	-67.25	23.35	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	9.17	-56.33	19.56	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	9.17	-38.51	13.37	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	9.17	-70.21	24.38	94.87	
6 - 0.9Dead + 1.6Wind	9.17	-34.94	12.13	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	9.17	-49.68	17.25	94.87	
8 - 0.9Dead + Earthquake	9.17	-15.94	5.54	94.87	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
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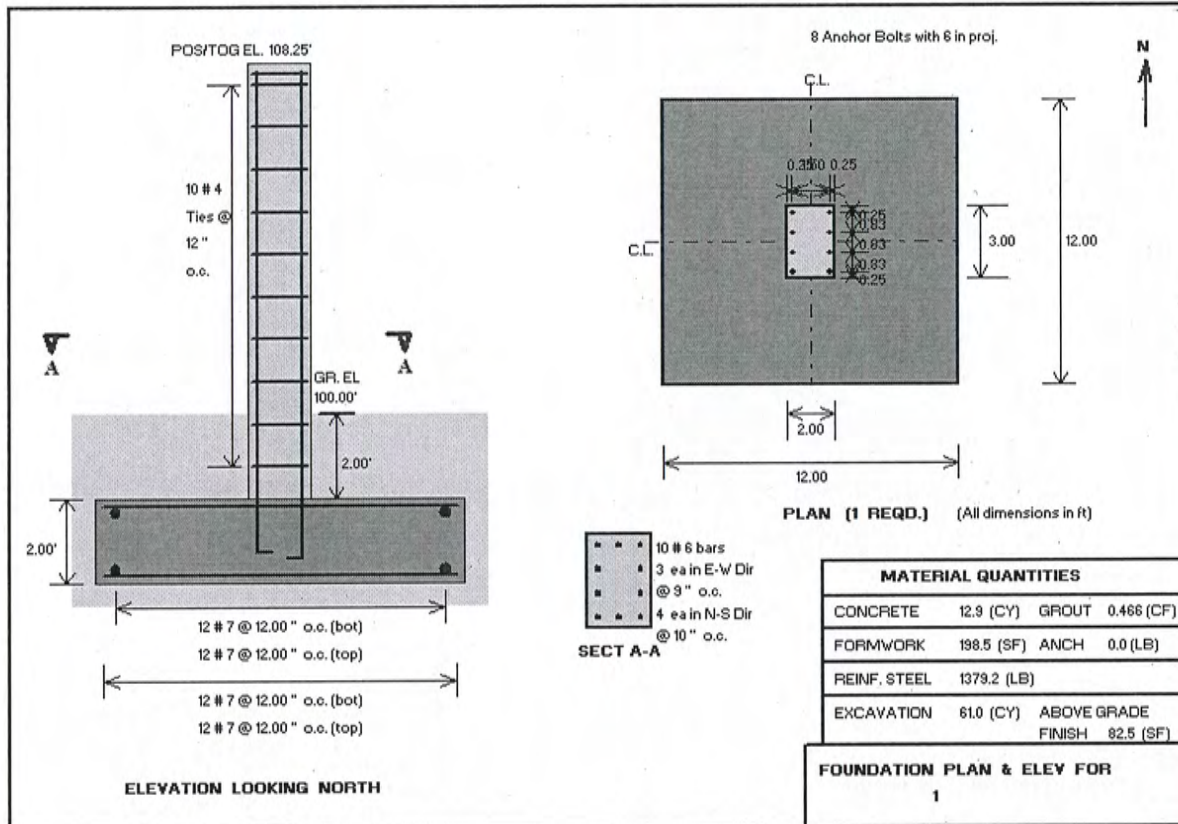
DETAIL REPORT FOR 1**PIER/BASE PLATE DESIGN INFORMATION**

	P1
E-W Dim (ft)	2.00
N-S Dim (ft)	3.00
Height above grade (ft)	8.25
E-W Offset (ft)	0.00
N-S Offset (ft)	0.00
Requested Reinf. Ratio	0.0018
Provided Reinf. Ratio	0.0051
Long Bar Size	6
Bars in E-W Dir	3
Bars in N-S Dir	4
Total Long Bars	10
Tie Bar Size	4
Total No. of Ties	11
Major Tie Spacing (in)	12

PIER ULTIMATE LOAD CAPACITIES

	P1						
Load	Axial	Axial	Mom N-S	Mom N-S	Mom E-W	Mom E-W	Rem
Comb	Load	Capa.		Capa		Capa	
	(kips)	(kips)	(kip ft)	(kip ft)	(kip ft)	(kip ft)	
1 - 1.4Dead	99.29	1657.59	11.19	200.62	14.05	243.92	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	277.25	1657.59	32.79	210.17	40.06	245.51	
3 - 1.2Dead + Live + 1.6Snow Load	228.99	1657.59	26.72	207.55	32.90	245.09	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	116.69	383.54	105.35	346.13	102.99	338.46	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	212.69	371.82	196.31	342.99	189.97	332.02	
6 - 0.9Dead + 1.6Wind	67.86	84.79	184.40	230.41	176.83	220.95	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	203.33	1657.59	23.56	206.17	29.12	244.86	
8 - 0.9Dead + Earthquake	64.04	1657.59	7.16	199.13	9.03	243.54	

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DETAIL REPORT FOR 1

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DETAIL REPORT FOR 1**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location
Foundation Description FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi)	4000
Unit Weight (pcf)	150
Pier Concrete Cover - E-W Dir (in)	2
Pier Concrete Cover - N-S Dir (in)	2
Footing Side Concrete Cover - E-W Dir (in)	3
Footing Side Concrete Cover - N-S Dir (in)	3
Footing Top Concrete Cover (in)	2
Footing Bottom Concrete Cover - X Dir (in)	3

SOIL PARAMETERS:

Unit Weight (pcf)	120
Allowable Net Bearing Capacity (psf)	5000
Bearing Capacity Method	Linear Soil Pressure
Soil Type	Granular
Passive Pressure Coefficient Kp	5
Soil To Concrete Friction f	0.5
Allowable Increase in Soil Pressure due to Short Term Loads (%)	
Wind	0
Earthquake	0
Test	0
Erection Stability Ratio	1.5
Operation Stability Ratio	1.5
Test Stability Ratio	1.5
Safety Factor against Lateral Forces	1.5

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft)	4
Minimum Soil Cover (ft)	2
Grade Elevation (ft)	100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi)	60
Unit Weight (pcf)	490
Modulus of Elasticity (ksi)	29000
Pier Min Rebar Spacing (in)	3
Footing Min Rebar Spacing (in)	6
Footing Max Rebar Spacing (in)	18

REBAR PARAMETERS:

Max Long Bar Size	7
Min Long Bar Size	5
Max Tie Bar Size	4
Min Tie Bar Size	3
Max Ftg Bar Size	18
Temp & Shrinkage Steel Ratio	0.0018

BUOYANCY CRITERIA:

Consider Buoyancy:	No
Consider soil for buoyancy:	No
Water table below grade (ft)	0

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
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DETAIL REPORT FOR 1**APPLIED LOADS**

P1

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	31.05	0.00	0.00	-0.28	0.00
2 - Live	-0.04	0.00	0.00	-0.38	0.00
3 - Snow Load	4.31	0.00	0.00	-0.52	0.00
4 - Wind	-21.87	-9.98	0.00	-11.68	0.00
5 - Earthquake	-0.21	-0.41	0.00	-0.40	0.00

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead + Snow Load	35.36	0.00	0.00	-0.80	0.00
2 - Dead + Live	31.01	0.00	0.00	-0.66	0.00
3 - Dead + 0.75Live + 0.75Snow Load	34.25	0.00	0.00	-0.96	0.00
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	17.85	-7.49	0.00	-9.72	0.00
5 - Dead + Wind	9.18	-9.98	0.00	-11.96	0.00
6 - 0.6Dead + Wind	-3.24	-9.98	0.00	-11.85	0.00
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	34.14	-0.22	0.00	-1.17	0.00
8 - Dead + 0.7Earthquake	30.90	-0.29	0.00	-0.56	0.00
9 - 0.6Dead + 0.7Earthquake	18.48	-0.29	0.00	-0.45	0.00

FACTORED (ULTIMATE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	43.47	0.00	0.00	-0.39	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow Load	39.35	0.00	0.00	-1.20	0.00
3 - 1.2Dead + Live + 1.6Snow Load	44.12	0.00	0.00	-1.55	0.00
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	26.66	-7.98	0.00	-10.51	0.00
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	4.38	-15.97	0.00	-19.66	0.00
6 - 0.9Dead + 1.6Wind	-7.05	-15.97	0.00	-18.94	0.00
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	37.87	-0.41	0.00	-1.22	0.00
8 - 0.9Dead + Earthquake	27.74	-0.41	0.00	-0.65	0.00

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
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DETAIL REPORT FOR 1**BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD**

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead + Snow Load	0.87	5.48	0.08	0.00	0.00	9.80	
2 - Dead + Live	0.84	5.48	0.07	0.00	0.00	8.09	
3 - Dead + 0.75Live + 0.75Snow Load	0.87	5.48	0.10	0.00	0.00	11.70	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	1.45	5.48	1.15	0.89	91.69	119.01	
5 - Dead + Wind	1.61	5.48	1.55	1.29	122.26	146.51	
6 - 0.6Dead + Wind	1.75	5.48	3.02	2.54	122.26	145.14	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	0.89	5.48	0.12	0.02	2.64	14.27	
8 - Dead + 0.7Earthquake	0.84	5.48	0.06	0.03	3.52	6.86	
9 - 0.6Dead + 0.7Earthquake	0.52	5.48	0.08	0.05	3.52	5.49	

STABILITY RATIO / SLIDING SAFETY FACTOR

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead + Snow Load	74.02	100.00	1.50	100.00	100.00	1.50	
2 - Dead + Live	86.50	100.00	1.50	100.00	100.00	1.50	
3 - Dead + 0.75Live + 0.75Snow Load	61.44	100.00	1.50	100.00	100.00	1.50	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	5.21	6.77	1.50	9.77	12.68	1.50	
5 - Dead + Wind	3.88	4.65	1.50	7.57	9.07	1.50	
6 - 0.6Dead + Wind	1.87	2.17	1.50	5.68	6.74	1.50	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	50.32	100.00	1.50	88.45	100.00	1.50	
8 - Dead + 0.7Earthquake	100.00	100.00	1.50	100.00	100.00	1.50	
9 - 0.6Dead + 0.7Earthquake	76.32	100.00	1.50	100.00	100.00	1.50	

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DETAIL REPORT FOR 1**FOOTING DESIGN INFORMATION**

E-W Dim (ft)	12.00
N-S Dim (ft)	12.00
Thickness (ft)	2.00

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
6. 0.9Dead + 1.6Wind	12	7	12	0.6	0.08	-5.59	E-W
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	12	7	12	0.6	0.07	-5.2	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	12	7	12	0.6	0.52	7.47	E-W
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	12	7	12	0.6	0.52	7.48	N-S

PUNCHING SHEAR**P1**

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
1. 1.4Dead	47.91	11.98	189.74	

MAXIMUM SHEAR - E-W DIRECTION

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	3.33	15.66	5.44	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	3.33	14.01	4.86	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	3.33	15.33	5.32	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	3.33	20.29	7.05	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	3.33	23.91	8.30	94.87	
6 - 0.9Dead + 1.6Wind	3.33	21.03	7.30	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	3.33	14.10	4.90	94.87	
8 - 0.9Dead + Earthquake	3.33	10.51	3.65	94.87	

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DETAIL REPORT FOR 1**MAXIMUM SHEAR - N-S DIRECTION**

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	2.83	13.75	4.77	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	2.83	13.24	4.60	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	2.83	14.74	5.12	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	2.83	20.52	7.13	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	2.83	25.51	8.86	94.87	
6 - 0.9Dead + 1.6Wind	2.83	24.36	8.46	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	2.83	12.90	4.48	94.87	
8 - 0.9Dead + Earthquake	2.83	9.23	3.21	94.87	

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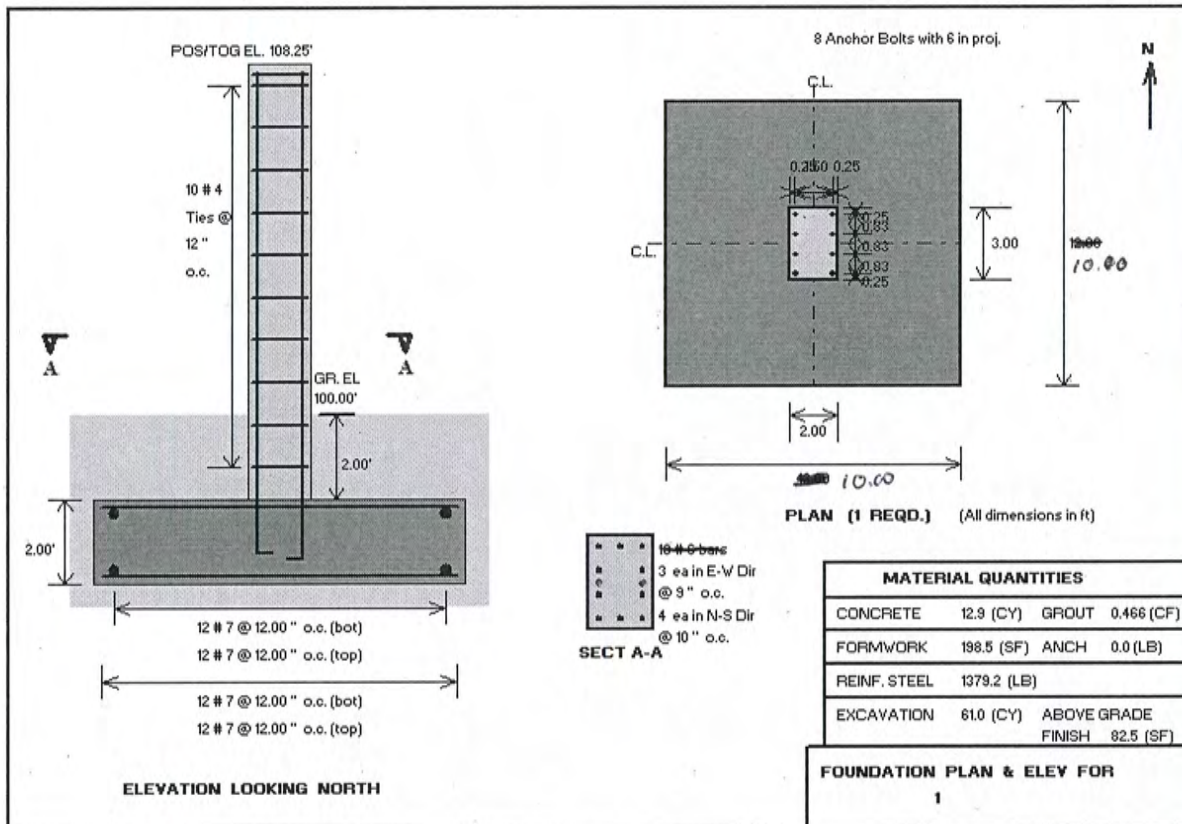
DETAIL REPORT FOR 1**PIER/BASE PLATE DESIGN INFORMATION**

	P1
E-W Dim (ft)	2.00
N-S Dim (ft)	3.00
Height above grade (ft)	8.25
E-W Offset (ft)	0.00
N-S Offset (ft)	0.00
Requested Reinf. Ratio	0.0018
Provided Reinf. Ratio	0.0051
Long Bar Size	6
Bars in E-W Dir	3
Bars in N-S Dir	4
Total Long Bars	10
Tie Bar Size	4
Total No. of Ties	11
Major Tie Spacing (in)	12

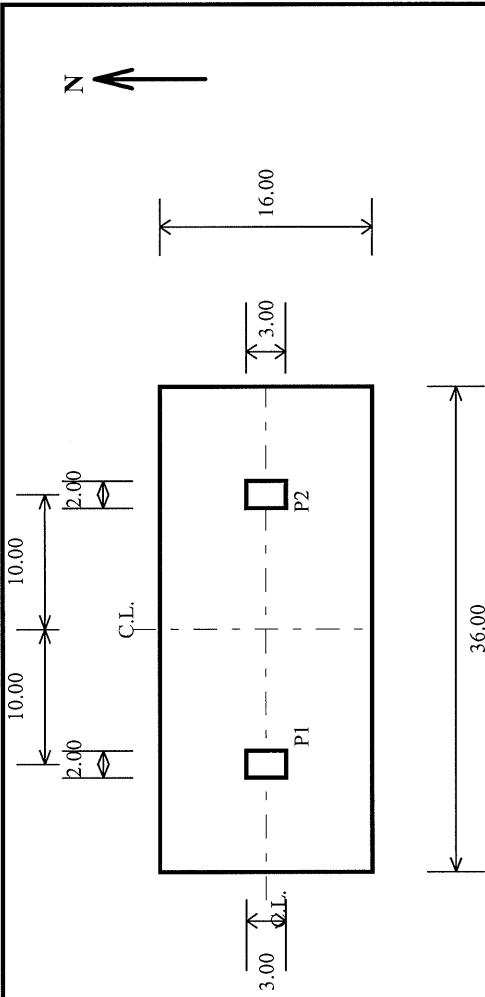
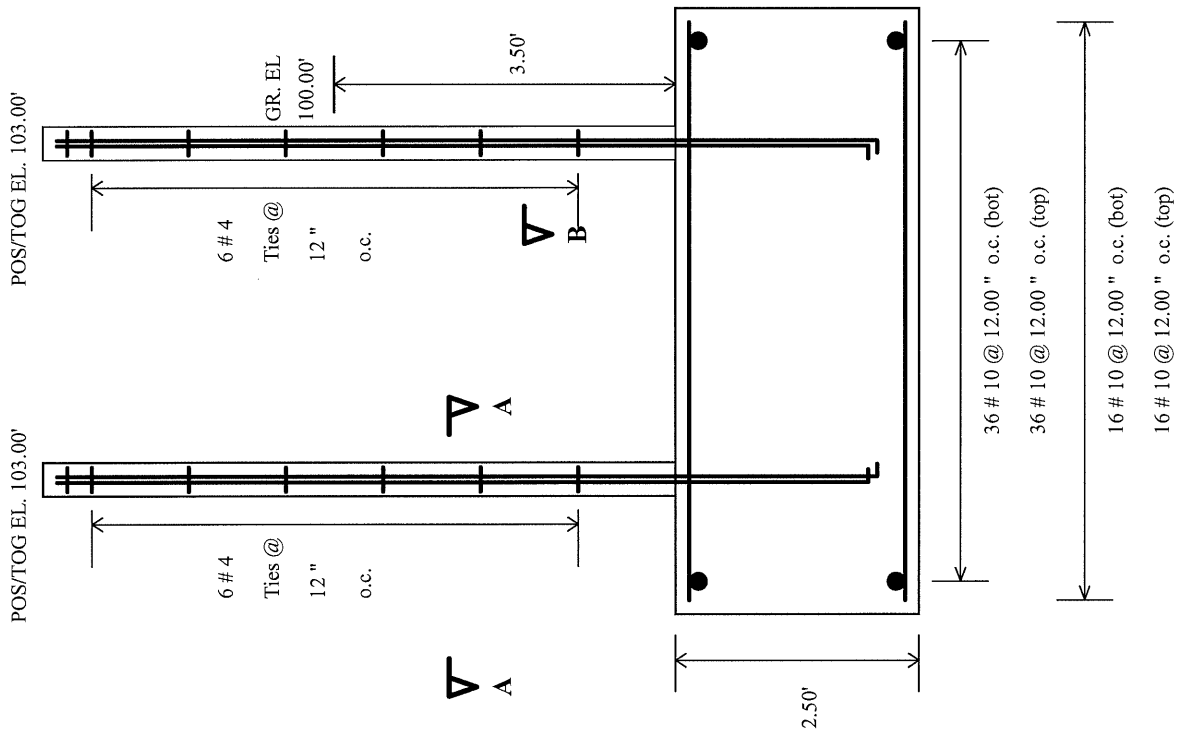
PIER ULTIMATE LOAD CAPACITIES

	P1						
Load	Axial	Axial	Mom N-S	Mom N-S	Mom E-W	Mom E-W	Rem
Comb	Load	Capa.		Capa		Capa	
	(kips)	(kips)	(kip ft)	(kip ft)	(kip ft)	(kip ft)	
1 - 1.4Dead	56.38	1657.59	6.28	198.39	7.94	243.54	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	50.42	1632.60	5.61	181.03	12.40	404.26	
3 - 1.2Dead + Live + 1.6Snow Load	55.19	1577.80	6.15	171.88	15.96	461.40	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	37.73	100.01	82.52	218.71	108.15	286.66	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	15.45	16.39	164.09	173.99	201.78	213.96	
6 - 0.9Dead + 1.6Wind	1.26	1.27	163.67	182.13	194.14	215.08	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	48.94	1619.71	5.44	179.87	12.57	417.37	
8 - 0.9Dead + Earthquake	36.04	1657.59	4.24	199.95	6.71	314.19	

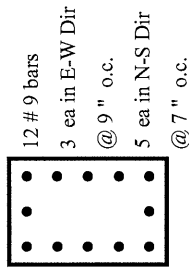
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DETAIL REPORT FOR 1

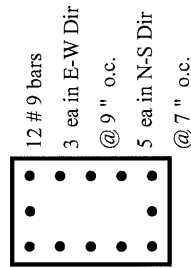
Proj. No.: 11021 Engr: ECS Date: 7/20/2012
 Checker: Date:



PLAN (1 REQD.) (All dimensions in ft)



SECTION A-A



SECTION B-B

MATERIAL QUANTITIES			
CONCRETE	56.2 (CY)	GROUT	0.466 (CF)
FORMWORK	390.0 (SF)	ANCH	0.0 (LB)
REINF. STEEL	10538.9 (LB)		
EXCAVATION	287.0 (CY)	ABOVE GRADE	
	FINISH	60.0 (SF)	

FOUNDATION PLAN & ELEV FOR
F-4 (PINK)

ELEVATION LOOKING NORTH

Process Building Foundation Check - F-4 (Pink)

Node 25

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	34.61	-0.3	0	-2.29	0
Live	64.54	-0.01	0	-9.26	0
Snow	31.87	-0.54	0	-1.45	0
Wind X	-26.39	1.34	0	2.06	0
Wind Y	-216.68	-0.96	0	-20	0
Ex	1.69	0.41	0	0.21	0
Ey	-52.21	-0.04	0	-9.14	0

Node 28

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	55.88	0.34	0	2.52	0
Live	-32.83	0.38	0	-7.92	0
Snow	42.16	0.12	0	3.68	0
Wind X	1.58	-0.63	0	1.28	0
Wind Y	160.67	1.13	0	24.16	0
Ex	4.88	0.23	0	0.28	0
Ey	-49.69	-0.01	0	-8.86	0

Node 26

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	41.1	-0.38	0	1.58	0
Live	-60.6	-0.08	0	-8.85	0
Snow	46.5	-0.68	0	2.43	0
Wind X	6.86	-1.13	0	-0.25	0
Wind Y	177.11	-0.84	0	29.82	0
Ex	2.5	0.44	0	0.12	0
Ey	-51.05	-0.02	0	-8.81	0

Node 29

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	99.09	-1.41	0	-9.64	0
Live	85.24	-1.65	0	-9.6	0
Snow	97.78	-0.51	0	-12.47	0
Wind X	-50.57	2.16	0	12.58	0
Wind Y	-191.27	-1.81	0	-25.53	0
Ex	2.43	3.54	0	0.15	0
Ey	-53.83	-0.57	0	-14.14	0

Node 27

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	39.14	-0.23	0	-1.85	0
Live	69.79	-0.03	0	-10.52	0
Snow	28.6	-0.42	0	0.79	0
Wind X	-30.4	1.81	0	3.14	0
Wind Y	-196.52	-1.53	0	-17.28	0
Ex	0.8	0.44	0	0.52	0
Ey	-48.71	-0.02	0	-10.87	0

Node 30

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	80.12	-0.93	0	3.36	0
Live	-20.28	-0.64	0	-3.23	0
Snow	87.17	-0.93	0	1.42	0
Wind X	31.39	-1.75	0	7.21	0
Wind Y	131.69	-1.55	0	23.02	0
Ex	0.22	2.59	0	0.25	0
Ey	-49.92	-0.46	0	-12.52	0

Process Building Foundation Check - F-6 (Purple-1)

Node 37

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	46.4	-1.7	0	1.07	0
Live	28.93	-4.18	0	-1.15	0
Snow	36.46	-1.05	0	1.66	0
Wind X	114.5	24.75	0	3.28	0
Wind Y	-5.62	7.33	0	4.66	0
Ex	37.88	8.07	0	0.11	0
Ey	4.14	0.1	0	1.64	0

Node 38

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	42.8	1.65	0	0.72	0
Live	54.49	-1.26	0	0.81	0
Snow	30.32	1.54	0	1.27	0
Wind X	-132.51	-22.82	0	7.9	0
Wind Y	30.19	5.48	0	6.74	0
Ex	37.64	7.66	0	0.02	0
Ey	0.69	0.23	0	0.49	0

Process Building Foundation Check - F-4 (Purple-2)

Node 39

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	43.51	0.25	0	-1.07	0
Live	66.03	0.05	0	-7.32	0
Snow	13.51	0.45	0	0.02	0
Wind X	-18.65	-10.64	0	1.67	0
Wind Y	220.6	11.76	0	32.22	0
Ex	0.53	0.59	0	0.17	0
Ey	47.81	0.02	0	6.25	0

Node 40

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	49.41	0.37	0	3.01	0
Live	-65.43	0.11	0	-7.24	0
Snow	19.36	0.68	0	1.57	0
Wind X	18.58	9.01	0	3.32	0
Wind Y	-264.12	11.11	0	-31.93	0
Ex	0.18	0.57	0	0.16	0
Ey	49.48	0.02	0	6.24	0

Process Building Foundation Check - F-8

Node 41

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	52.76	-3.34	0	-0.58	0
Live	15.32	-2.02	0	-0.24	0
Snow	28.25	-2.13	0	-1.07	0
Wind X	64.64	9.95	0	-11.53	0
Wind Y	-28.37	-3.43	0	-9.41	0
Ex	33.69	5.41	0	0.01	0
Ey	0.03	0.2	0	0.51	0

Node 42

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	48.27	1.95	0	-0.47	0
Live	5.33	-0.84	0	-0.23	0
Snow	24.63	0.8	0	-0.85	0
Wind X	-98.83	-11.88	0	-11.78	0
Wind Y	15.26	2.9	0	10.79	0
Ex	33.48	5.32	0	0.02	0
Ey	0.91	0.26	0	0.51	0

Updated 6/11/2012

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/4/2012
Foundation Name	F-4 (Pink)		Time	12:47:55 PM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\116 Process Building Foundations\Check\ F-4 (Ln P review2).mcs			

DETAIL REPORT FOR F-4 (Pink)**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location: Victor CO
Foundation Description: FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi) 4000
 Unit Weight (pcf) 150
 Pier Concrete Cover - E-W Dir (in) 2
 Pier Concrete Cover - N-S Dir (in) 2
 Footing Side Concrete Cover - E-W Dir (in) 3
 Footing Side Concrete Cover - N-S Dir (in) 3
 Footing Top Concrete Cover (in) 2
 Footing Bottom Concrete Cover - X Dir (in) 3

SOIL PARAMETERS:

Unit Weight (pcf) 120
 Allowable Net Bearing Capacity (psf) 4000
 Bearing Capacity Method Linear Soil Pressure
 Soil Type Granular
 Passive Pressure Coefficient Kp 3.69
 Soil To Concrete Friction f 0.5
 Allowable Increase in Soil Pressure due to Short Term Loads (%)
 Wind 33.33 Earthquake 33.33 Test 20
 Erection Stability Ratio 1.5
 Operation Stability Ratio 1.5
 Test Stability Ratio 1.5
 Safety Factor against Lateral Forces 1.5

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft) 6
 Minimum Soil Cover (ft) 0
 Grade Elevation (ft) 100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi) 60
 Unit Weight (pcf) 490
 Modulus of Elasticity (ksi) 29000
 Pier Min Rebar Spacing (in) 3
 Footing Min Rebar Spacing (in) 6
 Footing Max Rebar Spacing (in) 18

REBAR PARAMETERS:

Max Long Bar Size 10
 Min Long Bar Size 7
 Max Tie Bar Size 4
 Min Tie Bar Size 3
 Max Ftg Bar Size 18
 Temp & Shrinkage Steel Ratio 0.0018

BUOYANCY CRITERIA:

Consider Buoyancy: No
 Consider soil for buoyancy: No
 Water table below grade (ft) 0

Updated 6/1/2012

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/4/2012
Foundation Name	F-4 (Pink)		Time	12:47:55 PM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\IC-015 Process Building Foundations\Check\ F-4 (Ln P review2).mcs			

DETAIL REPORT FOR F-4 (Pink)**APPLIED LOADS****P1**

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	44.23	1.03	0.00	-0.37	0.00
2 - Live	67.61	7.33	0.00	-0.05	0.00
3 - Snow	14.33	-0.05	0.00	-0.68	0.00
4 - Wind X	-20.23	-3.91	0.00	10.55	0.00
5 - Wind Y	217.70	29.91	0.00	-10.90	0.00
6 - Earthquake X	0.52	-0.14	0.00	0.58	0.00
7 - Earthquake Y	47.02	6.15	0.00	0.02	0.00

P2

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	46.57	-2.96	0.00	-0.31	0.00
2 - Live	-67.69	7.19	0.00	-0.12	0.00
3 - Snow	19.14	-1.59	0.00	-0.56	0.00
4 - Wind X	19.48	-3.30	0.00	10.08	0.00
5 - Wind Y	-260.77	31.21	0.00	-10.68	0.00
6 - Earthquake X	-0.79	-0.13	0.00	0.54	0.00
7 - Earthquake Y	-48.77	6.14	0.00	-0.02	0.00

Updated 6/1/2012

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/4/2012
Foundation Name	F-4 (PInk)		Time	12:47:55 PM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\015 Process Building Foundations\Check\			
Filename:	F-4 (Ln P review2).mcs			

DETAIL REPORT FOR F-4 (Pink)

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	44.23	1.03	0.00	-0.37	0.00
2 - Dead + Live	111.84	8.36	0.00	-0.42	0.00
3 - Dead + Snow	58.56	0.98	0.00	-1.05	0.00
4 - Dead + 0.75Live + 0.75Snow	105.69	6.49	0.00	-0.92	0.00
5 - Dead + Wind X	24.00	-2.88	0.00	10.18	0.00
6 - Dead + Wind Y	261.93	30.94	0.00	-11.27	0.00
7 - Dead + 0.7Earthquake X	44.59	0.93	0.00	0.04	0.00
8 - Dead + 0.7Earthquake Y	77.14	5.34	0.00	-0.36	0.00
9 - 0.6Dead + Wind X	6.31	-3.29	0.00	10.33	0.00
10 - 0.6Dead + Wind Y	244.24	30.53	0.00	-11.12	0.00
11 - 0.75Dead + 0.7Earthquake X	33.54	0.67	0.00	0.13	0.00
12 - 0.75Dead + 0.7Earthquake Y	66.09	5.08	0.00	-0.26	0.00

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	46.57	-2.96	0.00	-0.31	0.00
2 - Dead + Live	-21.12	4.23	0.00	-0.43	0.00
3 - Dead + Snow	65.71	-4.55	0.00	-0.87	0.00
4 - Dead + 0.75Live + 0.75Snow	10.16	1.24	0.00	-0.82	0.00
5 - Dead + Wind X	66.05	-6.26	0.00	9.77	0.00
6 - Dead + Wind Y	-214.20	28.25	0.00	-10.99	0.00
7 - Dead + 0.7Earthquake X	46.02	-3.05	0.00	0.07	0.00
8 - Dead + 0.7Earthquake Y	12.43	1.34	0.00	-0.32	0.00
9 - 0.6Dead + Wind X	47.42	-5.08	0.00	9.89	0.00
10 - 0.6Dead + Wind Y	-232.83	29.43	0.00	-10.87	0.00
11 - 0.75Dead + 0.7Earthquake X	34.37	-2.31	0.00	0.15	0.00
12 - 0.75Dead + 0.7Earthquake Y	0.79	2.08	0.00	-0.25	0.00

Updated 6/11/2012

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/4/2012
Foundation Name	F-4 (Pink)		Time	12:47:55 PM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-4 (Ln P review2).mcs			

DETAIL REPORT FOR F-4 (Pink)

FACTORED (ULTIMATE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	61.92	1.44	0.00	-0.52	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow	168.42	12.94	0.00	-0.86	0.00
3 - 1.2Dead + Live + 1.6Snow	143.61	8.49	0.00	-1.58	0.00
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	95.48	2.29	0.00	16.05	0.00
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	476.17	56.40	0.00	-18.27	0.00
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	124.07	8.42	0.00	-0.05	0.00
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	170.57	14.71	0.00	-0.61	0.00
8 - 0.9Dead + 1.6Wind X	7.44	-5.33	0.00	16.55	0.00
9 - 0.9Dead + 1.6Wind Y	388.13	48.78	0.00	-17.77	0.00
10 - 0.9Dead + Earthquake X	40.33	0.79	0.00	0.25	0.00
11 - 0.9Dead + Earthquake Y	86.83	7.08	0.00	-0.31	0.00

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	65.20	-4.14	0.00	-0.43	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow	-42.85	7.16	0.00	-0.84	0.00
3 - 1.2Dead + Live + 1.6Snow	18.82	1.09	0.00	-1.39	0.00
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	28.93	-2.44	0.00	15.36	0.00
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	-419.47	52.78	0.00	-17.86	0.00
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	-8.77	3.19	0.00	-0.06	0.00
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	-56.75	9.46	0.00	-0.62	0.00
8 - 0.9Dead + 1.6Wind X	73.08	-7.94	0.00	15.85	0.00
9 - 0.9Dead + 1.6Wind Y	-375.32	47.27	0.00	-17.37	0.00
10 - 0.9Dead + Earthquake X	41.12	-2.79	0.00	0.26	0.00
11 - 0.9Dead + Earthquake Y	-6.86	3.48	0.00	-0.30	0.00

Updated 6/1/2012

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/4/2012
Foundation Name	F-4 (Pink)		Time	12:47:55 PM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Check\ F-4 (Ln P review2).mcs			

DETAIL REPORT FOR F-4 (Pink)

BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead	0.97	4.72	0.01	0.01	6.03	6.12	
2 - Dead + Live	1.32	4.72	0.01	2.17	1216.29	7.65	
3 - Dead + Snow	1.05	4.72	0.03	0.07	39.37	17.28	
4 - Dead + 0.75Live + 0.75Snow	1.28	4.72	0.03	1.51	885.71	15.64	
5 - Dead + Wind X	1.19	6.05	0.32	0.61	338.24	179.55	
6 - Dead + Wind Y	2.36	6.05	0.39	8.18	4228.59	200.34	
7 - Dead + 0.7Earthquake X	0.97	6.05	0.00	0.01	4.84	0.94	
8 - Dead + 0.7Earthquake Y	1.14	6.05	0.01	1.05	587.07	6.12	
9 - 0.6Dead + Wind X	0.80	6.05	0.54	1.00	335.83	182.00	
10 - 0.6Dead + Wind Y	3.89	6.05	0.68	14.45	4231.00	197.89	
11 - 0.75Dead + 0.7Earthquake X	0.73	6.05	0.01	0.02	6.35	2.47	
12 - 0.75Dead + 0.7Earthquake Y	0.90	6.05	0.01	1.41	588.58	4.59	

STABILITY RATIO / SLIDING SAFETY FACTOR

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead	100.00	100.00	1.50	100.00	100.00	1.50	
2 - Dead + Live	26.31	41.00	1.50	100.00	28.91	1.50	
3 - Dead + Snow	100.00	100.00	1.50	100.00	100.00	1.50	
4 - Dead + 0.75Live + 0.75Snow	100.00	100.00	1.50	100.00	48.71	1.50	
5 - Dead + Wind X	24.91	100.00	1.50	23.50	39.79	1.50	
6 - Dead + Wind Y	3.06	7.02	1.50	20.11	5.79	1.50	
7 - Dead + 0.7Earthquake X	100.00	100.00	1.50	100.00	100.00	1.50	
8 - Dead + 0.7Earthquake Y	100.00	100.00	1.50	100.00	54.46	1.50	
9 - 0.6Dead + Wind X	14.73	85.56	1.50	17.65	30.08	1.50	
10 - 0.6Dead + Wind Y	2.04	4.96	1.50	15.27	3.84	1.50	
11 - 0.75Dead + 0.7Earthquake X	100.00	100.00	1.50	100.00	100.00	1.50	
12 - 0.75Dead + 0.7Earthquake Y	100.00	100.00	1.50	100.00	41.01	1.50	

Updated 6/1/2012

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/4/2012
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Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Check\			
	F-4 (Ln P review2).mcs			

DETAIL REPORT FOR F-4 (Pink)

FOOTING DESIGN INFORMATION

E-W Dim (ft)	36.00
N-S Dim (ft)	16.00
Thickness (ft)	2.50

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
5. 1.2Dead + Live + 0.5Snow + 1.6Wind Y	16	10	12	1.27	0.41	-37.9	E-W
9. 0.9Dead + 1.6Wind Y	36	10	12	1.27	0.02	-1.83	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
9. 0.9Dead + 1.6Wind Y	16	10	12	1.27	1.32	151.66	E-W
4. 1.2Dead + Live + 0.5Snow + 1.6Wind X	36	10	12	1.27	0.65	7.1	N-S

PUNCHING SHEAR

P1

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
5. 1.2Dead + Live + 0.5Snow + 1.6Wind Y	487.87	72.17	189.74	

P2

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
8. 0.9Dead + 1.6Wind X	73.55	10.88	189.74	

Area Required is 4% over what's provided, yet considering all safety factors included in calculations, it's justified.

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/4/2012
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Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Check\ F-4 (Ln P review2).mcs			

DETAIL REPORT FOR F-4 (Pink)**MAXIMUM SHEAR - E-W DIRECTION**

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	24.58	29.88	5.99	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	11.42	-63.15	12.65	94.87	
3 - 1.2Dead + Live + 1.6Snow	11.42	-54.45	10.91	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	11.42	-36.24	7.26	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	4.58	245.42	49.16	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	11.42	-47.61	9.54	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	11.42	-64.56	12.93	94.87	
8 - 0.9Dead + 1.6Wind X	24.58	31.37	6.29	94.87	
9 - 0.9Dead + 1.6Wind Y	4.58	323.11	64.73	94.87	
10 - 0.9Dead + Earthquake X	24.58	18.50	3.71	94.87	
11 - 0.9Dead + Earthquake Y	11.42	-34.29	6.87	94.87	

MAXIMUM SHEAR - N-S DIRECTION

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	12.17	-37.00	3.29	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	3.83	36.74	3.27	94.87	
3 - 1.2Dead + Live + 1.6Snow	3.83	46.35	4.13	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	12.17	-54.72	4.87	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	3.83	41.41	3.69	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	3.83	33.30	2.97	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	3.83	33.64	3.00	94.87	
8 - 0.9Dead + 1.6Wind X	12.17	-43.42	3.87	94.87	
9 - 0.9Dead + 1.6Wind Y	3.83	28.88	2.57	94.87	
10 - 0.9Dead + Earthquake X	12.17	-23.72	2.11	94.87	
11 - 0.9Dead + Earthquake Y	3.83	23.74	2.11	94.87	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/4/2012
Foundation Name	F-4 (Pink)		Time	12:47:55 PM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\015 Process Building Foundations\Check\			
Filename:	F-4 (Ln P review2).mcs			

DETAIL REPORT FOR F-4 (Pink)

PIER/BASE PLATE DESIGN INFORMATION

	P1	P2
E-W Dim (ft)	2.50	2.50
N-S Dim (ft)	4.00	4.00
Height above grade (ft)	3.00	3.00
E-W Offset (ft)	-10.00	10.00
N-S Offset (ft)	0.00	0.00
Requested Reinf. Ratio	0.0050	0.0050
Provided Reinf. Ratio	0.0097	0.0097
Long Bar Size	9	9
Bars in E-W Dir	4	4
Bars in N-S Dir	5	5
Total Long Bars	14	14
Tie Bar Size	4	4
Total No. of Ties	7	7
Major Tie Spacing (in)	12	12

PIER ULTIMATE LOAD CAPACITIES

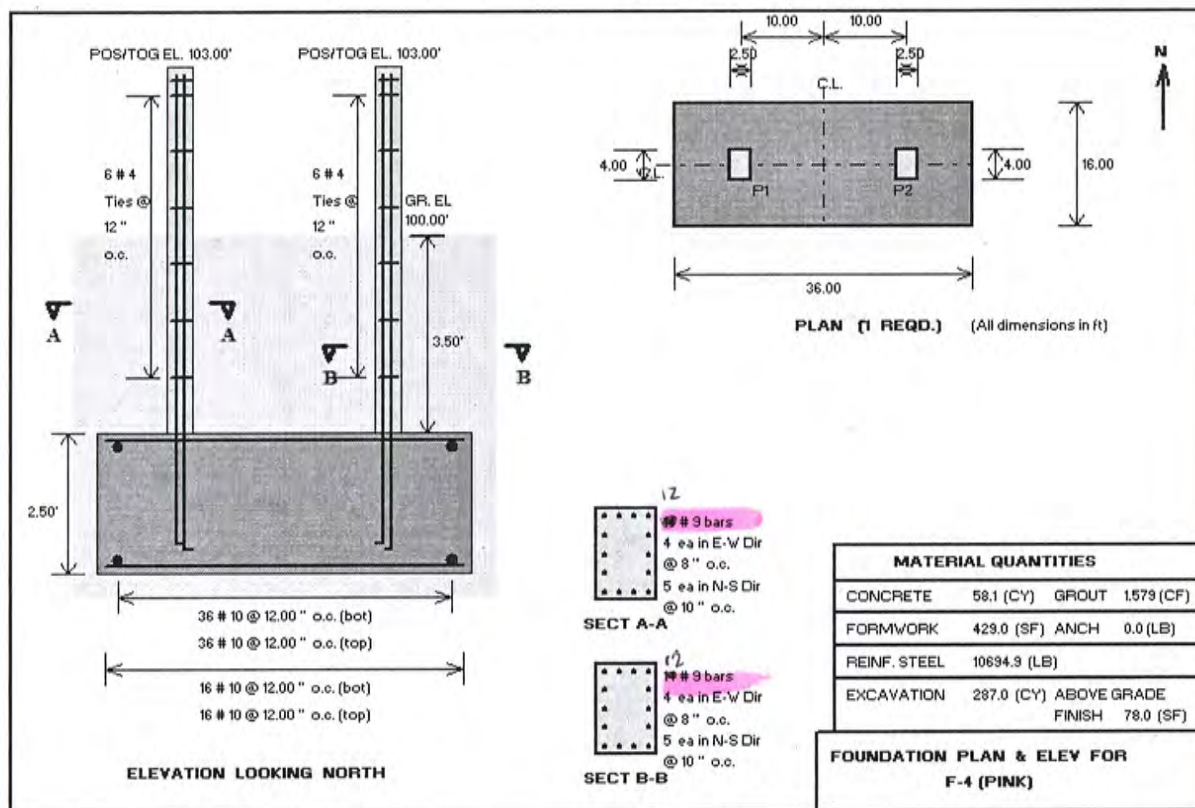
	P1						
Load Comb	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	Rem
1 - 1.4Dead	75.57	2957.98	9.45	419.36	12.85	533.26	
2 - 1.2Dead + 1.6Live + 0.5Snow	180.12	2288.60	84.10	1064.54	30.62	389.00	
3 - 1.2Dead + Live + 1.6Snow	155.31	2562.31	55.16	906.95	26.40	439.67	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	107.18	1947.40	14.85	269.96	104.30	1887.70	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	487.87	1665.02	366.58	1243.49	118.78	405.92	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	135.77	2443.68	54.70	980.36	23.08	418.62	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	182.27	2155.04	95.59	1125.63	30.99	366.59	
8 - 0.9Dead + 1.6Wind X	16.21	195.77	34.64	418.28	107.56	1298.80	
9 - 0.9Dead + 1.6Wind Y	396.90	1565.38	317.09	1242.52	115.52	455.44	
10 - 0.9Dead + Earthquake X	49.10	2957.98	6.14	419.36	8.35	533.26	
11 - 0.9Dead + Earthquake Y	95.60	2255.06	46.00	1080.75	16.25	383.43	

	P2						
Load Comb	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	Rem
1 - 1.4Dead	78.85	2582.00	26.94	881.20	13.40	440.53	
2 - 1.2Dead + 1.6Live + 0.5Snow	-31.15	-322.03	46.52	482.70	5.49	57.47	
3 - 1.2Dead + Live + 1.6Snow	30.52	2746.65	7.11	646.26	9.02	804.05	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	40.63	729.71	15.84	284.18	99.81	1794.81	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	-407.77	-433.26	343.06	364.59	116.09	124.37	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	2.93	2.96	20.74	811.35	0.50	19.45	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	-45.05	-339.36	61.49	464.62	-7.66	-58.43	
8 - 0.9Dead + 1.6Wind X	81.86	1173.04	51.64	740.02	103.02	1476.28	
9 - 0.9Dead + 1.6Wind Y	-366.54	-433.73	307.27	363.72	112.89	134.58	
10 - 0.9Dead + Earthquake X	49.90	2520.49	18.16	915.93	8.48	429.13	
11 - 0.9Dead + Earthquake Y	1.92	1.94	22.59	810.76	1.94	69.71	

updated 6/1/2012

Dimensional Solutions FOUNDATION3D	Version 5.8.2	Date 6/4/2012
Foundation Name F-4 (Pink)	Engineer ECS	Time 12:47:55 PM
Designed By: FLSmith Salt Lake City	Checker	
P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Check\		
Filename: F-4 (Ln P review2).mcs		

DETAIL REPORT FOR F-4 (Pink)



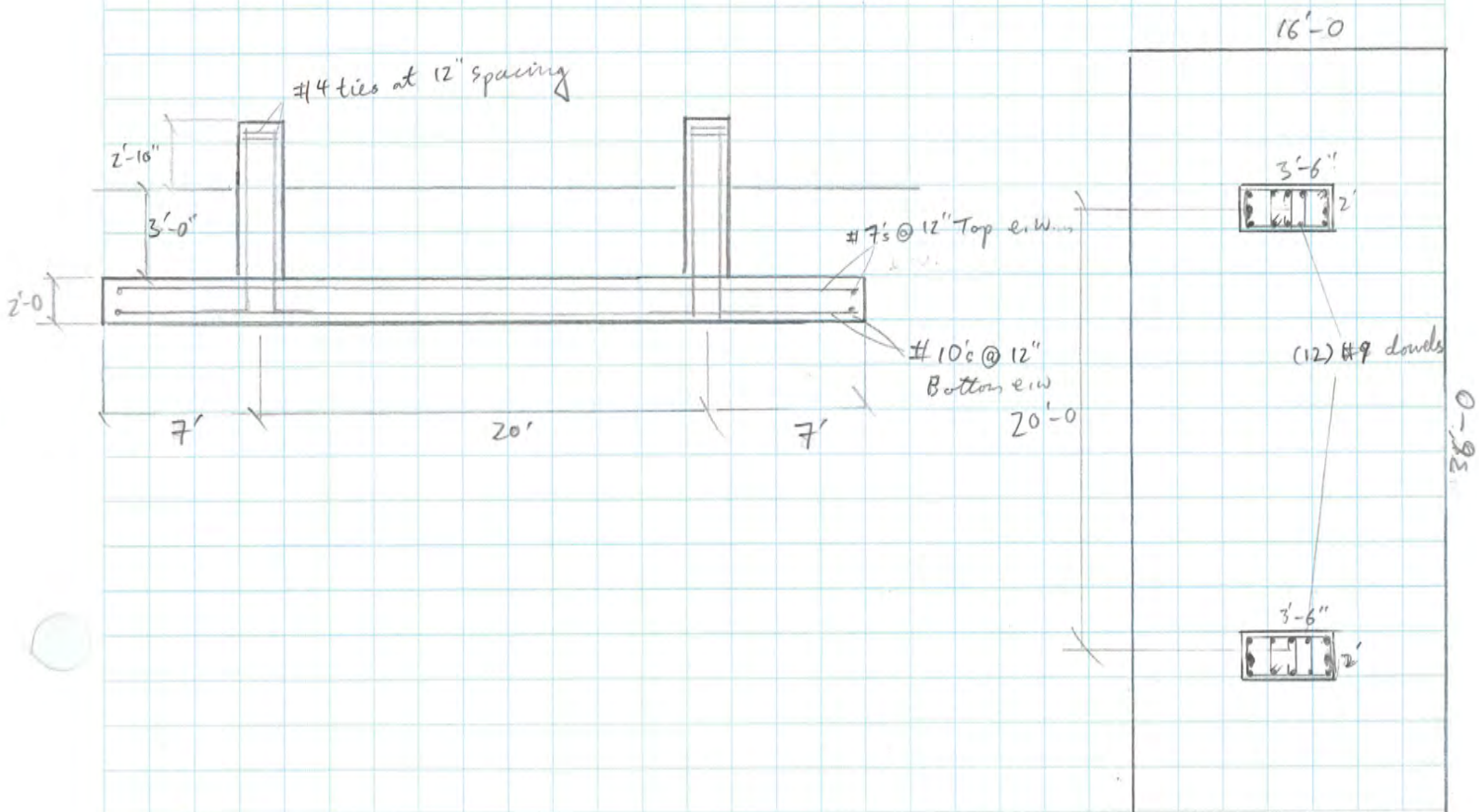
FLSMIDTH	PROJECT	PROJ NO.
	SUBJECT	CALC NO.
	<u>Updated</u>	BY
		DATE 3/19/2012
		CHK
		DATE
		SHEET OF REV

Interior Combine Footing (Col ln E + ln 849)						
	P.1) Z	X	Y	P.2) Z	X	Y
DL	98.41	-1.41	-9.69	80.08	-0.92	3.30
LL	66.78	-1.66	-6.62	-1.87	-0.57	-0.89
(Uplift)	48.27	-1.60	-3.46	13.34	-0.52	1.29
Snow L	97.15	-0.52	-12.60	88.00	-0.92	1.42
WL	110.33	-1.32	-25.88	-170.33	-1.60	-25.40
(Uplift)	-191.36	-1.81	32.96	132.01	-1.81	23.83
Seis L	54.18	-0.57	-14.18	-54.18	0.46	-12.57
(Uplift)	-54.16	0.57	14.18	50.23	-0.46	12.57

Footing Size : 16' X 36" X 2'

(combine)

Pier Size : 3'-6" X 2' X 5'-10" (May Vary according to design)



Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-4 (Pink)		Time	10:46:00 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-4.mcs			

DETAIL REPORT FOR F-4 (Pink)**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location: Victor CO
Foundation Description: FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi) 4000
 Unit Weight (pcf) 150
 Pier Concrete Cover - E-W Dir (in) 2
 Pier Concrete Cover - N-S Dir (in) 2
 Footing Side Concrete Cover - E-W Dir (in) 3
 Footing Side Concrete Cover - N-S Dir (in) 3
 Footing Top Concrete Cover (in) 2
 Footing Bottom Concrete Cover - X Dir (in) 3

SOIL PARAMETERS:

Unit Weight (pcf) 120
 Allowable Net Bearing Capacity (psf) 4000
 Bearing Capacity Method Linear Soil Pressure
 Soil Type Granular
 Passive Pressure Coefficient Kp 3.69
 Soil To Concrete Friction f 0.5
 Allowable Increase in Soil Pressure due to Short Term Loads (%)
 Wind 33.33 Earthquake 33.33 Test 20
 Erection Stability Ratio 1.5
 Operation Stability Ratio 1.5
 Test Stability Ratio 1.5
 Safety Factor against Lateral Forces 1.5

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft) 6
 Minimum Soil Cover (ft) 0
 Grade Elevation (ft) 100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi) 60
 Unit Weight (pcf) 490
 Modulus of Elasticity (ksi) 29000
 Pier Min Rebar Spacing (in) 3
 Footing Min Rebar Spacing (in) 6
 Footing Max Rebar Spacing (in) 18

REBAR PARAMETERS:

Max Long Bar Size 10
 Min Long Bar Size 7
 Max Tie Bar Size 4
 Min Tie Bar Size 3
 Max Ftg Bar Size 18
 Temp & Shrinkage Steel Ratio 0.0018

BUOYANCY CRITERIA:

Consider Buoyancy: No
 Consider soil for buoyancy: No
 Water table below grade (ft) 0

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-4 (Pink)		Time	10:46:00 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-4.mcs			

DETAIL REPORT FOR F-4 (Pink)**APPLIED LOADS****P1**

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	34.61	-2.29	0.00	-0.30	0.00
2 - Live	64.54	-9.26	0.00	-0.01	0.00
3 - Snow	31.87	-1.45	0.00	-0.54	0.00
4 - Wind X	-26.39	2.06	0.00	1.34	0.00
5 - Wind Y	-216.68	-20.00	0.00	-0.96	0.00
6 - Earthquake X	1.69	0.21	0.00	0.41	0.00
7 - Earthquake Y	-52.21	9.14	0.00	-0.04	0.00

P2

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	41.10	1.58	0.00	-0.38	0.00
2 - Live	-60.60	8.85	0.00	-0.08	0.00
3 - Snow	46.50	2.43	0.00	-0.68	0.00
4 - Wind X	6.86	-0.25	0.00	-1.13	0.00
5 - Wind Y	177.11	-29.82	0.00	-0.84	0.00
6 - Earthquake X	2.50	0.12	0.00	0.44	0.00
7 - Earthquake Y	51.05	8.81	0.00	-0.02	0.00

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS**P1**

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	34.61	-2.29	0.00	-0.30	0.00
2 - Dead + Live	99.15	-11.55	0.00	-0.31	0.00
3 - Dead + Snow	66.48	-3.74	0.00	-0.84	0.00
4 - Dead + 0.75Live + 0.75Snow	106.92	-10.32	0.00	-0.71	0.00
5 - Dead + Wind X	8.22	-0.23	0.00	1.04	0.00
6 - Dead + Wind Y	-182.07	-22.29	0.00	-1.26	0.00
7 - Dead + 0.7Earthquake X	35.79	-2.14	0.00	-0.01	0.00
8 - Dead + 0.7Earthquake Y	-1.94	4.11	0.00	-0.33	0.00
9 - 0.6Dead + Wind X	-5.62	0.69	0.00	1.16	0.00
10 - 0.6Dead + Wind Y	-195.91	-21.37	0.00	-1.14	0.00
11 - 0.75Dead + 0.7Earthquake X	27.14	-1.57	0.00	0.06	0.00
12 - 0.75Dead + 0.7Earthquake Y	-10.59	4.68	0.00	-0.25	0.00

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	41.10	1.58	0.00	-0.38	0.00
2 - Dead + Live	-19.50	10.43	0.00	-0.46	0.00
3 - Dead + Snow	87.60	4.01	0.00	-1.06	0.00
4 - Dead + 0.75Live + 0.75Snow	30.53	10.04	0.00	-0.95	0.00
5 - Dead + Wind X	47.96	1.33	0.00	-1.51	0.00
6 - Dead + Wind Y	218.21	-28.24	0.00	-1.22	0.00
7 - Dead + 0.7Earthquake X	42.85	1.66	0.00	-0.07	0.00
8 - Dead + 0.7Earthquake Y	76.84	7.75	0.00	-0.39	0.00
9 - 0.6Dead + Wind X	31.52	0.70	0.00	-1.36	0.00
10 - 0.6Dead + Wind Y	201.77	-28.87	0.00	-1.07	0.00
11 - 0.75Dead + 0.7Earthquake X	32.58	1.27	0.00	0.02	0.00
12 - 0.75Dead + 0.7Earthquake Y	66.56	7.35	0.00	-0.30	0.00

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-4 (Pink)		Time	10:46:00 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-4.mcs			

DETAIL REPORT FOR F-4 (Pink)**FACTORED (ULTIMATE) LOAD COMBINATIONS****P1**

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	48.45	-3.21	0.00	-0.42	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow	160.73	-18.29	0.00	-0.65	0.00
3 - 1.2Dead + Live + 1.6Snow	157.06	-14.33	0.00	-1.23	0.00
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	79.78	-9.44	0.00	1.50	0.00
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	-224.68	-44.73	0.00	-2.18	0.00
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	114.14	-12.09	0.00	-0.07	0.00
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	60.24	-3.16	0.00	-0.52	0.00
8 - 0.9Dead + 1.6Wind X	-11.08	1.24	0.00	1.87	0.00
9 - 0.9Dead + 1.6Wind Y	-315.54	-34.06	0.00	-1.81	0.00
10 - 0.9Dead + Earthquake X	32.84	-1.85	0.00	0.14	0.00
11 - 0.9Dead + Earthquake Y	-21.06	7.08	0.00	-0.31	0.00

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	57.54	2.21	0.00	-0.53	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow	-24.39	17.27	0.00	-0.92	0.00
3 - 1.2Dead + Live + 1.6Snow	63.12	14.63	0.00	-1.62	0.00
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	22.95	11.56	0.00	-2.68	0.00
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	295.35	-35.75	0.00	-2.22	0.00
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	0.52	11.35	0.00	-0.23	0.00
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	49.07	20.04	0.00	-0.69	0.00
8 - 0.9Dead + 1.6Wind X	47.97	1.02	0.00	-2.15	0.00
9 - 0.9Dead + 1.6Wind Y	320.37	-46.29	0.00	-1.69	0.00
10 - 0.9Dead + Earthquake X	39.49	1.54	0.00	0.10	0.00
11 - 0.9Dead + Earthquake Y	88.04	10.23	0.00	-0.36	0.00

BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead	0.95	4.72	0.01	0.11	58.51	6.12	
2 - Dead + Live	1.29	4.72	0.01	2.20	1196.58	6.93	
3 - Dead + Snow	1.15	4.72	0.03	0.35	213.63	17.10	
4 - Dead + 0.75Live + 0.75Snow	1.28	4.72	0.02	1.27	766.47	14.96	
5 - Dead + Wind X	1.02	6.05	0.01	0.78	407.30	4.23	
6 - Dead + Wind Y	1.93	6.05	0.04	7.09	3548.03	22.32	
7 - Dead + 0.7Earthquake X	0.96	6.05	0.00	0.12	66.26	0.77	
8 - Dead + 0.7Earthquake Y	1.20	6.05	0.01	1.66	894.41	6.50	
9 - 0.6Dead + Wind X	0.64	6.05	0.01	1.26	383.90	1.78	
10 - 0.6Dead + Wind Y	2.14	6.05	0.07	12.38	3524.63	19.87	
11 - 0.75Dead + 0.7Earthquake X	0.72	6.05	0.00	0.13	51.63	0.76	
12 - 0.75Dead + 0.7Earthquake Y	0.96	6.05	0.01	2.18	879.79	4.97	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-4 (Pink)		Time	10:46:00 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\116 Process Building Foundations\Check\			

DETAIL REPORT FOR F-4 (Pink)**STABILITY RATIO / SLIDING SAFETY FACTOR**

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead	100.00	100.00	1.50	100.00	100.00	1.50	
2 - Dead + Live	27.68	14.23	1.50	100.00	100.00	1.50	
3 - Dead + Snow	100.00	100.00	1.50	100.00	100.00	1.50	
4 - Dead + 0.75Live + 0.75Snow	100.00	100.00	1.50	100.00	100.00	1.50	
5 - Dead + Wind X	100.00	100.00	1.50	100.00	100.00	1.50	
6 - Dead + Wind Y	3.69	7.57	1.50	100.00	6.62	1.50	
7 - Dead + 0.7Earthquake X	100.00	100.00	1.50	100.00	100.00	1.50	
8 - Dead + 0.7Earthquake Y	100.00	55.78	1.50	100.00	29.85	1.50	
9 - 0.6Dead + Wind X	43.57	31.01	1.50	100.00	100.00	1.50	
10 - 0.6Dead + Wind Y	2.42	5.28	1.50	100.00	4.51	1.50	
11 - 0.75Dead + 0.7Earthquake X	100.00	100.00	1.50	100.00	100.00	1.50	
12 - 0.75Dead + 0.7Earthquake Y	37.02	16.81	1.50	100.00	23.80	1.50	

FOOTING DESIGN INFORMATION

E-W Dim (ft)	36.00
N-S Dim (ft)	16.00
Thickness (ft)	2.50

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
1.2Dead + Live + 0.5Snow + 1.6Wind Y	16	10	12	1.27	0.51	-47.58	E-W
0.9Dead + Earthquake Y	36	10	12	1.27	0	0	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
0.9Dead + 1.6Wind Y	16	10	12	1.27	1.06	97.04	E-W
1.2Dead + Live + 1.6Snow	36	10	12	1.27	0.65	8.85	N-S

PUNCHING SHEAR**P1**

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
1.2Dead + 1.6Live + 0.5Snow	159.33	27.36	189.74	

P2

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
0.9Dead + 1.6Wind Y	322.96	55.45	189.74	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-4 (Pink)		Time	10:46:00 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-4.mcs			

DETAIL REPORT FOR F-4 (Pink)**MAXIMUM SHEAR - E-W DIRECTION**

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	24.83	24.85	4.98	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	4.83	56.23	11.26	94.87	
3 - 1.2Dead + Live + 1.6Snow	11.17	-58.03	11.62	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	11.17	-31.00	6.21	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	24.83	114.51	22.94	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	11.17	-40.48	8.11	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	11.17	-30.43	6.10	94.87	
8 - 0.9Dead + 1.6Wind X	31.17	-18.20	3.65	94.87	
9 - 0.9Dead + 1.6Wind Y	31.17	-186.57	37.37	94.87	
10 - 0.9Dead + Earthquake X	24.83	16.78	3.36	94.87	
11 - 0.9Dead + Earthquake Y	31.17	-34.56	6.92	94.87	

MAXIMUM SHEAR - N-S DIRECTION

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	4.33	33.78	3.01	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	4.33	41.78	3.72	94.87	
3 - 1.2Dead + Live + 1.6Snow	4.33	65.34	5.82	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	4.33	32.41	2.89	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	4.33	25.87	2.30	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	4.33	35.06	3.12	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	4.33	34.21	3.05	94.87	
8 - 0.9Dead + 1.6Wind X	4.33	13.03	1.16	94.87	
9 - 0.9Dead + 1.6Wind Y	4.33	6.49	0.58	94.87	
10 - 0.9Dead + Earthquake X	11.67	-22.60	2.01	94.87	
11 - 0.9Dead + Earthquake Y	4.33	21.44	1.91	94.87	

PIER/BASE PLATE DESIGN INFORMATION

	P1	P2
E-W Dim (ft)	2.00	2.00
N-S Dim (ft)	3.00	3.00
Height above grade (ft)	3.00	3.00
E-W Offset (ft)	-10.00	10.00
N-S Offset (ft)	0.00	0.00
Requested Reinf. Ratio	0.0050	0.0050
Provided Reinf. Ratio	0.0139	0.0139
Long Bar Size	9	9
Bars in E-W Dir	3	3
Bars in N-S Dir	5	5
Total Long Bars	12	12
Tie Bar Size	4	4
Total No. of Ties	7	7
Major Tie Spacing (in)	12	12

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-4 (Pink)		Time	10:46:00 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\116 Process Building Foundations\Check\			

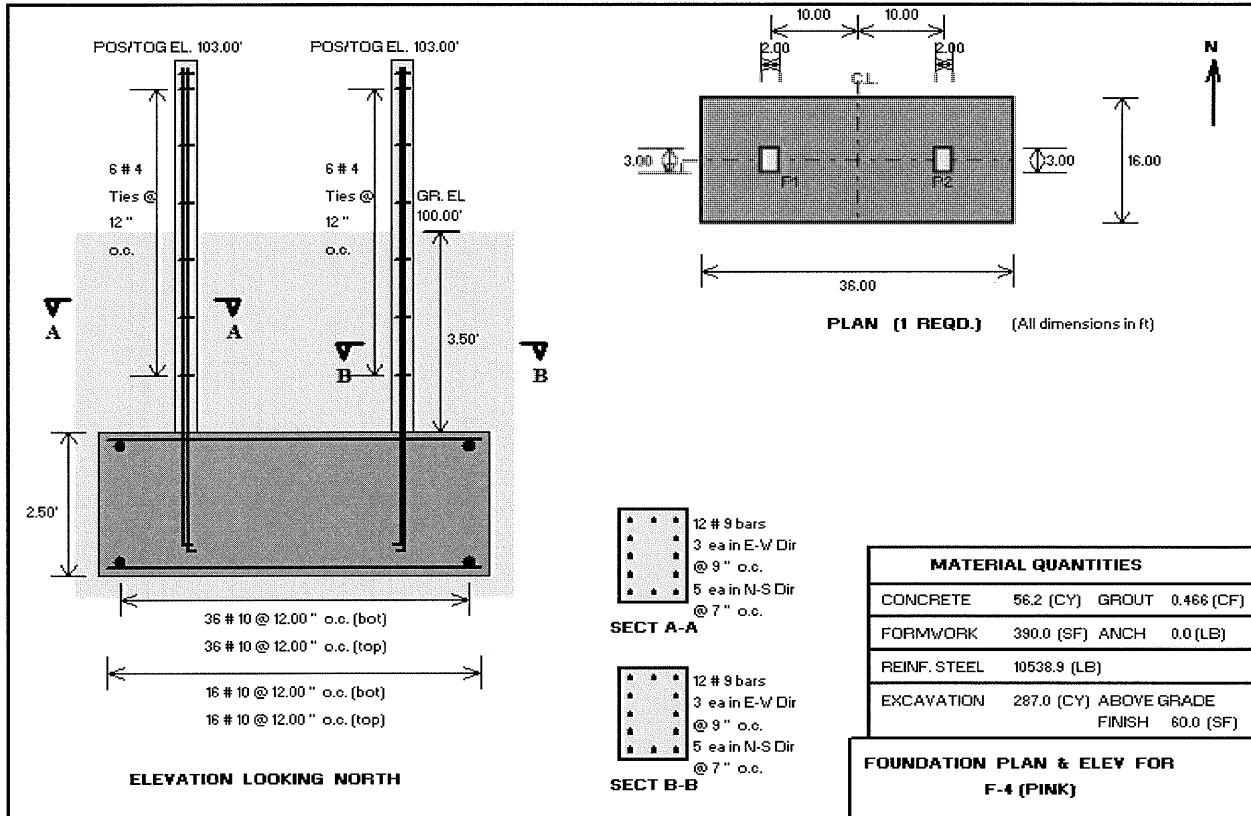
DETAIL REPORT FOR F-4 (Pink)**PIER ULTIMATE LOAD CAPACITIES****P1**

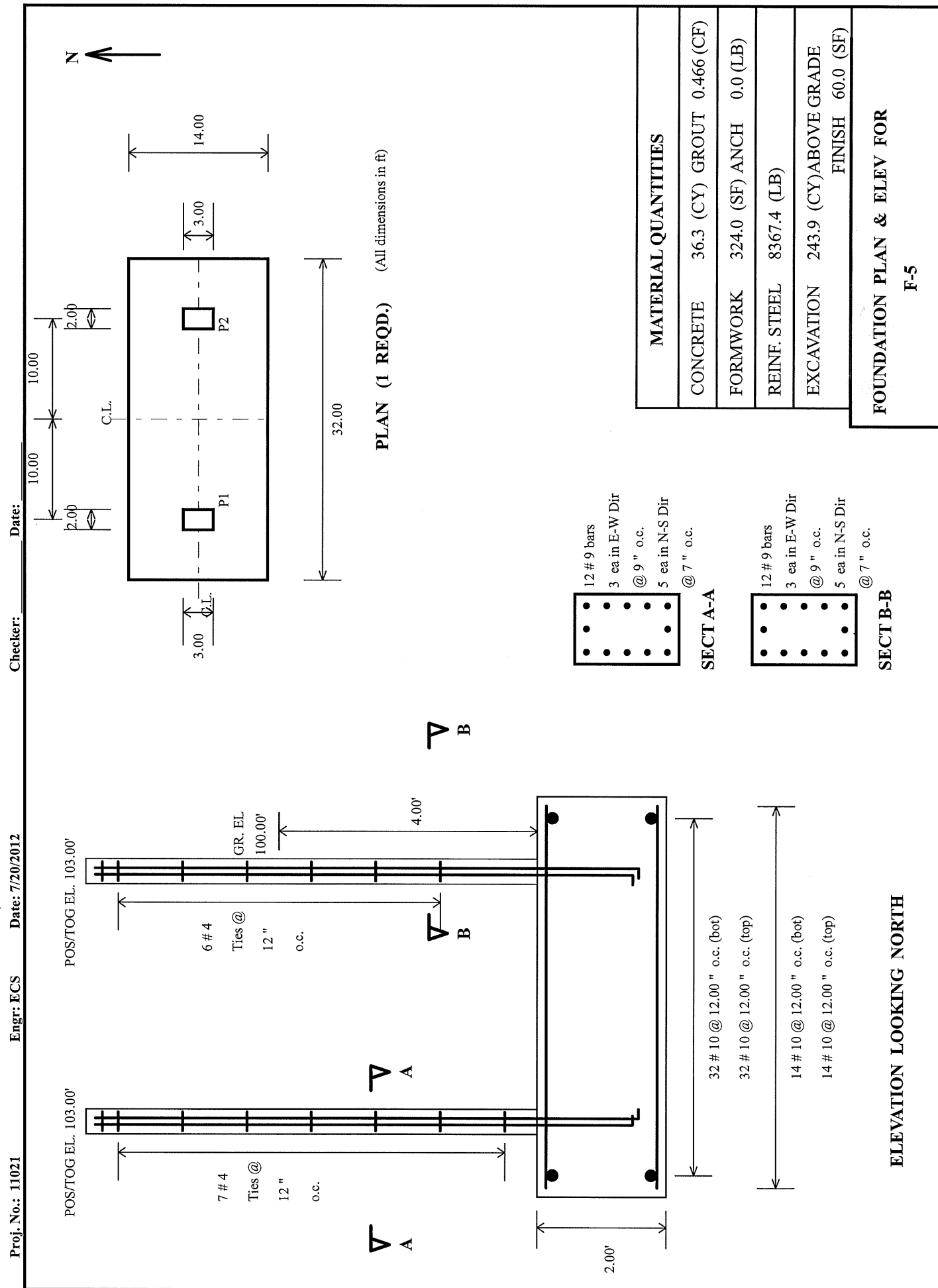
Load Comb	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	Rem
1 - 1.4Dead	56.64	1461.31	20.84	536.58	7.93	204.53	
2 - 1.2Dead + 1.6Live + 0.5Snow	167.75	969.63	118.88	684.85	23.49	136.22	
3 - 1.2Dead + Live + 1.6Snow	164.08	1142.52	93.13	647.08	22.97	159.97	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	86.80	971.73	61.34	684.41	12.15	136.51	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	-217.66	-250.69	290.76	334.94	-30.47	-35.10	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	121.16	1036.62	78.57	670.24	16.96	145.60	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	67.26	1612.85	20.53	468.85	9.42	205.24	
8 - 0.9Dead + 1.6Wind X	-5.81	-211.30	8.03	292.00	12.18	443.10	
9 - 0.9Dead + 1.6Wind Y	-310.27	-354.29	221.40	253.32	-43.44	-52.11	
10 - 0.9Dead + Earthquake X	38.10	1594.55	12.03	477.64	5.33	205.78	
11 - 0.9Dead + Earthquake Y	-15.80	-143.62	46.01	418.50	-2.21	-20.12	

P2

Load Comb	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	Rem
1 - 1.4Dead	65.73	1751.50	14.38	379.39	9.20	245.98	
2 - 1.2Dead + 1.6Live + 0.5Snow	-17.37	-73.16	112.26	472.76	6.01	25.40	
3 - 1.2Dead + Live + 1.6Snow	70.14	481.03	95.12	653.10	10.56	68.39	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	29.97	244.76	75.15	613.85	17.45	142.51	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	302.37	910.18	232.38	696.96	42.33	127.90	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	7.54	50.33	73.79	492.61	1.51	10.07	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	56.09	234.75	130.27	544.36	7.85	33.02	
8 - 0.9Dead + 1.6Wind X	53.23	1794.24	6.64	215.07	13.98	471.24	
9 - 0.9Dead + 1.6Wind Y	325.63	787.75	300.89	718.04	45.59	105.63	
10 - 0.9Dead + Earthquake X	44.76	1739.78	10.02	386.49	6.27	245.54	
11 - 0.9Dead + Earthquake Y	93.30	965.29	66.51	685.75	13.06	135.61	

Dimensional Solutions FOUNDATION3D	Version 5.8.2	Date 7/20/2012
Foundation Name F-4 (Pink)		Time 10:46:00 AM
Designed By: FLSmith Salt Lake City	Engineer ECS	Checker
P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\		
Filename: F-4.mcs		

DETAIL REPORT FOR F-4 (Pink)



Process Building Foundation Check - F-5 (Blue)

Node 31

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	47.61	-2.96	0	0.22	0
Live	46.94	-1.13	0	-0.52	0
Snow	43.71	-3.16	0	0.4	0
Wind X	104.3	16.48	0	-0.02	0
Wind Y	-20.43	-11.56	0	-0.31	0
Ex	44.27	9.87	0	0	0
Ey	-1.16	0	0	-0.56	0

Node 34

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	72.15	4.85	0	-0.2	0
Live	122.75	10.09	0	-0.63	0
Snow	58.63	5.01	0	-0.33	0
Wind X	-179.34	-27.67	0	0.01	0
Wind Y	6.91	5.12	0	0.34	0
Ex	60.86	12.55	0	0	0
Ey	-3.45	-1.45	0	-0.53	0

Node 32

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	48.37	2.25	0	0.17	0
Live	38.95	3.42	0	-0.18	0
Snow	53.96	2.32	0	0.29	0
Wind X	-113.08	-17.94	0	-0.1	0
Wind Y	-31.62	-7.64	0	0.1	0
Ex	43.5	8.45	0	0.01	0
Ey	-1.15	-0.06	0	-0.55	0

Node 35

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	71.77	-3.65	0	0.71	0
Live	100.45	-3.64	0	0.53	0
Snow	30.13	-1.22	0	1.27	0
Wind X	68.9	11.07	0	10.4	0
Wind Y	-38.28	3.89	0	-10.2	0
Ex	29.18	3.77	0	0.02	0
Ey	-1.56	-0.01	0	-0.5	0

Node 33

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	68.33	-3.15	0	-0.26	0
Live	138.23	-5.01	0	-1.34	0
Snow	44.17	-0.45	0	-0.44	0
Wind X	121.8	29.2	0	0.21	0
Wind Y	-60.51	7.53	0	-0.07	0
Ex	60.04	14.45	0	0	0
Ey	-5.07	-1.79	0	-0.54	0

Node 36

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	80.12	-0.93	0	3.36	0
Live	-20.28	-0.64	0	-3.23	0
Snow	87.17	-0.93	0	1.42	0
Wind X	31.39	-1.75	0	7.21	0
Wind Y	131.69	-1.55	0	23.02	0
Ex	0.22	2.59	0	0.25	0
Ey	-49.92	-0.46	0	-12.52	0

Process Building Foundation Check - F-6 (Purple-1)

Node 37

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	46.4	-1.7	0	1.07	0
Live	28.93	-4.18	0	-1.15	0
Snow	36.46	-1.05	0	1.66	0
Wind X	114.5	24.75	0	3.28	0
Wind Y	-5.62	7.33	0	4.66	0
Ex	37.88	8.07	0	0.11	0
Ey	4.14	0.1	0	1.64	0

Node 38

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	42.8	1.65	0	0.72	0
Live	54.49	-1.26	0	0.81	0
Snow	30.32	1.54	0	1.27	0
Wind X	-132.51	-22.82	0	7.9	0
Wind Y	30.19	5.48	0	6.74	0
Ex	37.64	7.66	0	0.02	0
Ey	0.69	0.23	0	0.49	0

Process Building Foundation Check - F-7 (Purple-2)

Node 39

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	43.51	0.25	0	-1.07	0
Live	66.03	0.05	0	-7.32	0
Snow	13.51	0.45	0	0.02	0
Wind X	-18.65	-10.64	0	1.67	0
Wind Y	220.6	11.76	0	32.22	0
Ex	0.53	0.59	0	0.17	0
Ey	47.81	0.02	0	6.25	0

Node 40

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	49.41	0.37	0	3.01	0
Live	-65.43	0.11	0	-7.24	0
Snow	19.36	0.68	0	1.57	0
Wind X	18.58	9.01	0	3.32	0
Wind Y	-264.12	11.11	0	-31.93	0
Ex	0.18	0.57	0	0.16	0
Ey	49.48	0.02	0	6.24	0

Process Building Foundation Check - F-8

Node 41

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	52.76	-3.34	0	-0.58	0
Live	15.32	-2.02	0	-0.24	0
Snow	28.25	-2.13	0	-1.07	0
Wind X	64.64	9.95	0	-11.53	0
Wind Y	-28.37	-3.43	0	-9.41	0
Ex	33.69	5.41	0	0.01	0
Ey	0.03	0.2	0	0.51	0

Node 42

Type	Axial (kip)	F _x (kip)	M _y (kip*ft)	F _y (kip)	M _x (kip*ft)
Dead	48.27	1.95	0	-0.47	0
Live	5.33	-0.84	0	-0.23	0
Snow	24.63	0.8	0	-0.85	0
Wind X	-98.83	-11.88	0	-11.78	0
Wind Y	15.26	2.9	0	10.79	0
Ex	33.48	5.32	0	0.02	0
Ey	0.91	0.26	0	0.51	0

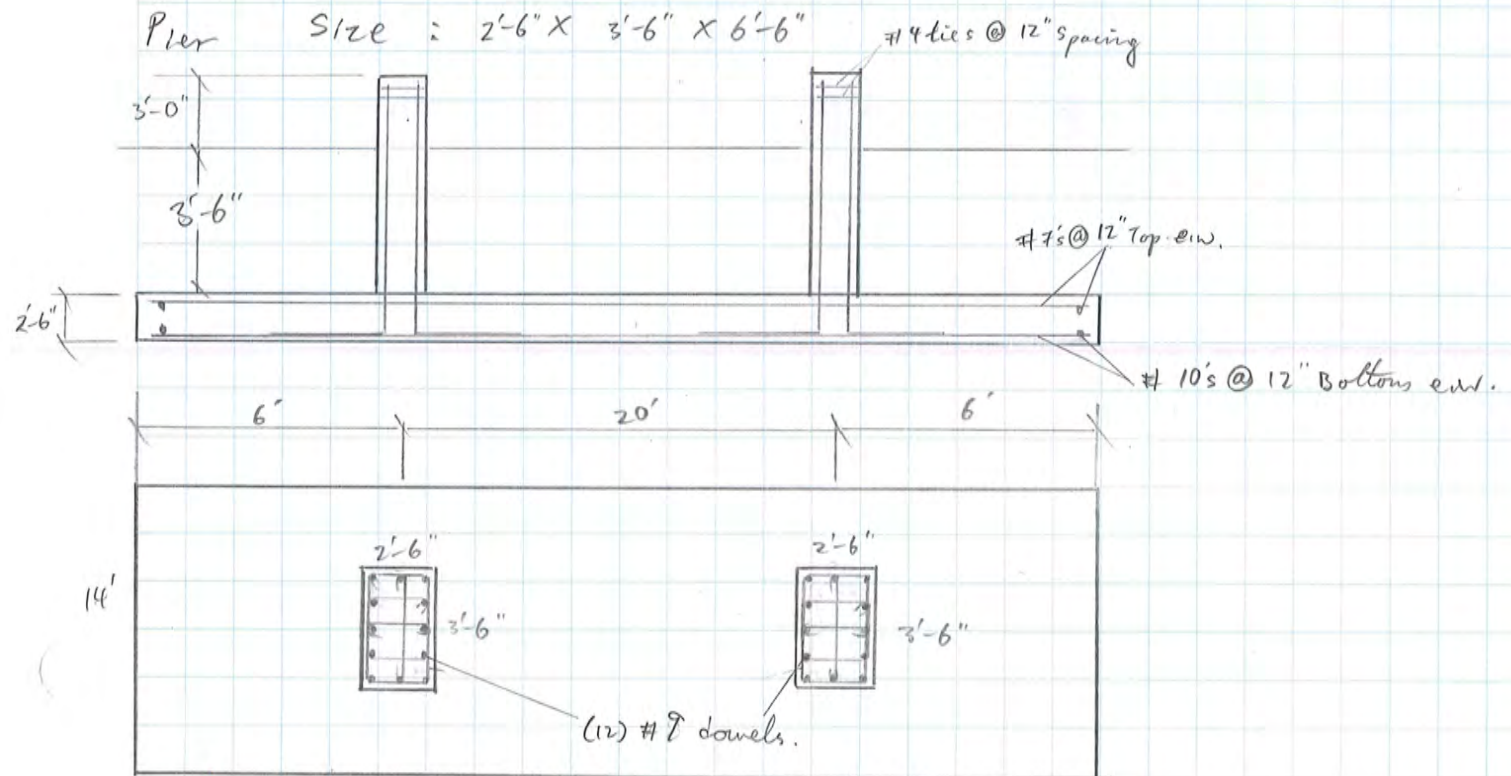
FLSMIDTH	PROJECT	PROJ NO. 11021
	SUBJECT	CALC NO.
	Updated	BY DATE 4/18/2012
		CHK DATE
		SHEET OF REV

Interior Crane Column Footing

	(P1) Z	X	Y	(P2) Z	X	Y
DL	72.15	4.85	-0.2	68.33	-3.15	-0.26
(Uplift)	48.37	2.25	0.17	47.61	-2.76	0.22
LL	101.95	9.28	-0.30	131.39	-4.28	-1.27
(Uplift)	0.91	0.36	-0.01	-0.43	0.43	-0.01
Snow Load	58.63	5.01	-0.33	44.17	-0.45	-0.44
(Uplift)	53.96	2.32	0.29	43.71	-3.16	0.40
WL	132.59	23.79	0.01	-153.86	29.20	0.06
(Uplift)	-179.34	-27.67	0.19	121.80	-28.90	0.21
Seis L	60.86	12.55	0	-60.55	14.45	-0.01
(Uplift)	-60.34	-12.53	0	60.04	-14.44	0

Footing Size : 32' X 14' X 2'-6"

Pier Size : 2'-6" X 3'-6" X 6'-6"



Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-5		Time	10:48:34 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-5.mcs			

DETAIL REPORT FOR F-5**PROJECT INFORMATION**

Project Name: CC&V Hlgh Grade Mill
Project Number: 11021
Client: CC&V
Project Location Victor CO
Foundation Description FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi) 4000
 Unit Weight (pcf) 150
 Pier Concrete Cover - E-W Dir (in) 2
 Pier Concrete Cover - N-S Dir (in) 2
 Footing Side Concrete Cover - E-W Dir (in) 3
 Footing Side Concrete Cover - N-S Dir (in) 3
 Footing Top Concrete Cover (in) 2
 Footing Bottom Concrete Cover - X Dir (in) 3

SOIL PARAMETERS:

Unit Weight (pcf) 120
 Allowable Net Bearing Capacity (psf) 4000
 Bearing Capacity Method Linear Soil Pressure
 Soil Type Granular
 Passive Pressure Coefficient Kp 3.69
 Soil To Concrete Friction f 0.5
 Allowable Increase in Soil Pressure due to Short Term Loads (%)
 Wind 33.33 Earthquake 33.33 Test 20
 Erection Stability Ratio 1.5
 Operation Stability Ratio 1.5
 Test Stability Ratio 1.5
 Safety Factor against Lateral Forces 1.5

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft) 6
 Minimum Soil Cover (ft) 0
 Grade Elevation (ft) 100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi) 60
 Unit Weight (pcf) 490
 Modulus of Elasticity (ksi) 29000
 Pier Min Rebar Spacing (in) 3
 Footing Min Rebar Spacing (in) 6
 Footing Max Rebar Spacing (in) 18

REBAR PARAMETERS:

Max Long Bar Size 10
 Min Long Bar Size 7
 Max Tie Bar Size 4
 Min Tie Bar Size 3
 Max Ftg Bar Size 18
 Temp & Shrinkage Steel Ratio 0.0018

BUOYANCY CRITERIA:

Consider Buoyancy: No
 Consider soil for buoyancy: No
 Water table below grade (ft) 0

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-5		Time	10:48:34 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-5.mcs			

DETAIL REPORT FOR F-5**APPLIED LOADS****P1**

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	68.33	-3.15	0.00	-0.26	0.00
2 - Live	138.23	-5.01	0.00	-1.34	0.00
3 - Snow	44.17	-0.45	0.00	-0.44	0.00
4 - Wind X	121.80	29.20	0.00	0.21	0.00
5 - Wind Y	-60.51	7.53	0.00	-0.07	0.00
6 - Earthquake X	60.04	14.45	0.00	0.00	0.00
7 - Earthquake Y	-5.07	-1.79	0.00	-0.54	0.00

P2

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	72.15	4.85	0.00	-0.20	0.00
2 - Live	122.75	10.09	0.00	-0.63	0.00
3 - Snow	58.63	5.01	0.00	-0.33	0.00
4 - Wind X	-179.34	-27.67	0.00	0.01	0.00
5 - Wind Y	6.91	5.12	0.00	0.34	0.00
6 - Earthquake X	60.86	12.55	0.00	0.00	0.00
7 - Earthquake Y	-3.45	-1.45	0.00	-0.53	0.00

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS**P1**

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	68.33	-3.15	0.00	-0.26	0.00
2 - Dead + Live	206.56	-8.16	0.00	-1.60	0.00
3 - Dead + Snow	112.50	-3.60	0.00	-0.70	0.00
4 - Dead + 0.75Live + 0.75Snow	205.13	-7.25	0.00	-1.60	0.00
5 - Dead + Wind X	190.13	26.05	0.00	-0.05	0.00
6 - Dead + Wind Y	7.82	4.38	0.00	-0.33	0.00
7 - Dead + 0.7Earthquake X	110.36	6.97	0.00	-0.26	0.00
8 - Dead + 0.7Earthquake Y	64.78	-4.40	0.00	-0.64	0.00
9 - 0.6Dead + Wind X	162.80	27.31	0.00	0.05	0.00
10 - 0.6Dead + Wind Y	-19.51	5.64	0.00	-0.23	0.00
11 - 0.75Dead + 0.7Earthquake X	93.28	7.75	0.00	-0.20	0.00
12 - 0.75Dead + 0.7Earthquake Y	47.70	-3.62	0.00	-0.57	0.00

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	72.15	4.85	0.00	-0.20	0.00
2 - Dead + Live	194.90	14.94	0.00	-0.83	0.00
3 - Dead + Snow	130.78	9.86	0.00	-0.53	0.00
4 - Dead + 0.75Live + 0.75Snow	208.19	16.18	0.00	-0.92	0.00
5 - Dead + Wind X	-107.19	-22.82	0.00	-0.19	0.00
6 - Dead + Wind Y	79.06	9.97	0.00	0.14	0.00
7 - Dead + 0.7Earthquake X	114.75	13.64	0.00	-0.20	0.00
8 - Dead + 0.7Earthquake Y	69.74	3.84	0.00	-0.57	0.00
9 - 0.6Dead + Wind X	-136.05	-24.76	0.00	-0.11	0.00
10 - 0.6Dead + Wind Y	50.20	8.03	0.00	0.22	0.00
11 - 0.75Dead + 0.7Earthquake X	96.71	12.42	0.00	-0.15	0.00
12 - 0.75Dead + 0.7Earthquake Y	51.70	2.62	0.00	-0.52	0.00

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-5		Time	10:48:34 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-5.mcs			

DETAIL REPORT FOR F-5**FACTORED (ULTIMATE) LOAD COMBINATIONS****P1**

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	95.66	-4.41	0.00	-0.36	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow	325.25	-12.02	0.00	-2.68	0.00
3 - 1.2Dead + Live + 1.6Snow	290.90	-9.51	0.00	-2.36	0.00
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	437.19	37.71	0.00	-1.54	0.00
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	145.50	3.03	0.00	-1.98	0.00
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	289.10	5.57	0.00	-1.74	0.00
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	223.99	-10.67	0.00	-2.28	0.00
8 - 0.9Dead + 1.6Wind X	256.38	43.89	0.00	0.10	0.00
9 - 0.9Dead + 1.6Wind Y	-35.32	9.21	0.00	-0.35	0.00
10 - 0.9Dead + Earthquake X	121.54	11.62	0.00	-0.23	0.00
11 - 0.9Dead + Earthquake Y	56.43	-4.63	0.00	-0.77	0.00

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	101.01	6.79	0.00	-0.28	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow	312.30	24.47	0.00	-1.41	0.00
3 - 1.2Dead + Live + 1.6Snow	303.14	23.93	0.00	-1.40	0.00
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	-48.30	-25.86	0.00	-1.02	0.00
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	249.70	26.61	0.00	-0.49	0.00
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	281.92	29.46	0.00	-0.94	0.00
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	217.61	15.46	0.00	-1.47	0.00
8 - 0.9Dead + 1.6Wind X	-222.01	-39.91	0.00	-0.16	0.00
9 - 0.9Dead + 1.6Wind Y	75.99	12.56	0.00	0.36	0.00
10 - 0.9Dead + Earthquake X	125.80	16.92	0.00	-0.18	0.00
11 - 0.9Dead + Earthquake Y	61.49	2.92	0.00	-0.71	0.00

BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead	1.13	4.72	0.01	0.11	53.50	4.14	
2 - Dead + Live	1.74	4.72	0.03	0.07	55.58	21.87	
3 - Dead + Snow	1.45	4.72	0.02	0.40	239.14	11.07	
4 - Dead + 0.75Live + 0.75Snow	1.79	4.72	0.03	0.14	110.92	22.64	
5 - Dead + Wind X	2.25	6.05	0.00	6.70	2944.13	2.16	
6 - Dead + Wind Y	1.34	6.05	0.00	1.90	841.55	1.71	
7 - Dead + 0.7Earthquake X	1.39	6.05	0.01	0.39	229.34	4.14	
8 - Dead + 0.7Earthquake Y	1.12	6.05	0.02	0.09	44.43	10.88	
9 - 0.6Dead + Wind X	3.12	6.05	0.00	12.33	2965.53	0.50	
10 - 0.6Dead + Wind Y	0.89	6.05	0.00	3.36	820.15	0.05	
11 - 0.75Dead + 0.7Earthquake X	1.11	6.05	0.01	0.47	215.96	3.11	
12 - 0.75Dead + 0.7Earthquake Y	0.84	6.05	0.03	0.08	31.05	9.85	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-5		Time	10:48:34 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-5.mcs			

DETAIL REPORT FOR F-5**STABILITY RATIO / SLIDING SAFETY FACTOR**

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead	100.00	100.00	1.50	100.00	100.00	1.50	
2 - Dead + Live	100.00	91.58	1.50	100.00	65.02	1.50	
3 - Dead + Snow	100.00	100.00	1.50	100.00	57.79	1.50	
4 - Dead + 0.75Live + 0.75Snow	100.00	84.82	1.50	100.00	50.03	1.50	
5 - Dead + Wind X	5.08	12.36	1.50	100.00	87.18	1.50	
6 - Dead + Wind Y	100.00	49.39	1.50	100.00	19.76	1.50	
7 - Dead + 0.7Earthquake X	100.00	49.94	1.50	100.00	17.12	1.50	
8 - Dead + 0.7Earthquake Y	100.00	100.00	1.50	100.00	100.00	1.50	
9 - 0.6Dead + Wind X	2.77	7.42	1.50	100.00	71.47	1.50	
10 - 0.6Dead + Wind Y	100.00	5.90	1.50	100.00	13.48	1.50	
11 - 0.75Dead + 0.7Earthquake X	100.00	40.10	1.50	100.00	14.40	1.50	
12 - 0.75Dead + 0.7Earthquake Y	100.00	100.00	1.50	100.00	100.00	1.50	

FOOTING DESIGN INFORMATION

E-W Dim (ft)	32.00
N-S Dim (ft)	14.00
Thickness (ft)	2.00

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
2. 1.2Dead + 1.6Live + 0.5Snow	14	10	12	1.27	0.82	-58.4	E-W
11. 0.9Dead + Earthquake Y	32	10	12	1.27	0	0	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
8. 0.9Dead + 1.6Wind X	14	10	12	1.27	1.2	105.71	E-W
2. 1.2Dead + 1.6Live + 0.5Snow	32	10	12	1.27	0.52	22.43	N-S

PUNCHING SHEAR**P1**

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
4. 1.2Dead + Live + 0.5Snow + 1.6Wind X	426.13	106.53	189.74	

P2

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
2. 1.2Dead + 1.6Live + 0.5Snow	291.81	72.95	189.74	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-5		Time	10:48:34 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-5.mcs			

DETAIL REPORT FOR F-5**MAXIMUM SHEAR - E-W DIRECTION**

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	8.67	-49.21	14.65	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	8.67	-155.40	46.25	94.87	
3 - 1.2Dead + Live + 1.6Snow	8.67	-142.82	42.50	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	8.67	-158.96	47.31	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	23.33	97.67	29.07	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	8.67	-146.93	43.73	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	8.67	-107.09	31.87	94.87	
8 - 0.9Dead + 1.6Wind X	3.33	204.66	60.91	94.87	
9 - 0.9Dead + 1.6Wind Y	28.67	-28.32	8.43	94.87	
10 - 0.9Dead + Earthquake X	8.67	-68.23	20.31	94.87	
11 - 0.9Dead + Earthquake Y	23.33	30.85	9.18	94.87	

MAXIMUM SHEAR - N-S DIRECTION

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	3.83	59.18	7.71	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	3.83	181.84	23.68	94.87	
3 - 1.2Dead + Live + 1.6Snow	3.83	169.67	22.09	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	3.83	112.58	14.66	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	3.83	114.25	14.88	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	3.83	162.54	21.16	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	3.83	127.93	16.66	94.87	
8 - 0.9Dead + 1.6Wind X	3.83	12.56	1.64	94.87	
9 - 0.9Dead + 1.6Wind Y	3.83	14.24	1.85	94.87	
10 - 0.9Dead + Earthquake X	3.83	71.14	9.26	94.87	
11 - 0.9Dead + Earthquake Y	3.83	36.53	4.76	94.87	

PIER/BASE PLATE DESIGN INFORMATION

	P1	P2
E-W Dim (ft)	2.00	2.00
N-S Dim (ft)	3.00	3.00
Height above grade (ft)	3.00	3.00
E-W Offset (ft)	-10.00	10.00
N-S Offset (ft)	0.00	0.00
Requested Reinf. Ratio	0.0050	0.0050
Provided Reinf. Ratio	0.0139	0.0139
Long Bar Size	9	9
Bars in E-W Dir	3	3
Bars in N-S Dir	5	5
Total Long Bars	12	12
Tie Bar Size	4	4
Total No. of Ties	8	7
Major Tie Spacing (in)	12	12

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	7/20/2012
Foundation Name	F-5		Time	10:48:34 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-5.mcs			

DETAIL REPORT FOR F-5**PIER ULTIMATE LOAD CAPACITIES****P1**

Load Comb	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	Rem
1 - 1.4Dead	104.48	1623.23	31.24	463.79	14.63	204.83	
2 - 1.2Dead + 1.6Live + 0.5Snow	332.81	1658.41	87.60	436.48	46.59	232.54	
3 - 1.2Dead + Live + 1.6Snow	298.46	1722.57	69.01	398.33	41.78	240.35	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	444.75	1063.03	278.67	664.12	62.27	149.29	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	153.06	1880.75	21.62	271.39	21.43	271.72	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	296.66	1880.75	40.41	271.70	41.53	282.63	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	231.55	1527.75	76.79	505.94	32.42	213.74	
8 - 0.9Dead + 1.6Wind X	262.05	564.50	317.05	681.04	36.69	79.35	
9 - 0.9Dead + 1.6Wind Y	-29.65	-179.53	64.49	390.58	-4.15	-25.14	
10 - 0.9Dead + Earthquake X	127.21	1036.26	82.54	670.32	17.81	145.54	
11 - 0.9Dead + Earthquake Y	62.10	1202.59	32.61	630.26	8.69	168.37	

P2

Load Comb	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	Rem
1 - 1.4Dead	109.83	1338.67	48.14	585.73	15.38	187.36	
2 - 1.2Dead + 1.6Live + 0.5Snow	319.86	1157.66	178.03	642.99	44.78	162.09	
3 - 1.2Dead + Live + 1.6Snow	310.70	1153.43	173.88	644.14	43.50	161.50	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	-40.74	-101.45	181.00	451.08	7.13	17.79	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	257.26	930.99	192.09	692.75	36.02	130.94	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	289.48	939.86	213.55	690.96	40.53	132.14	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	225.17	1249.60	111.19	615.94	31.52	174.96	
8 - 0.9Dead + 1.6Wind X	-216.34	-256.07	279.35	330.71	-30.29	-35.85	
9 - 0.9Dead + 1.6Wind Y	81.66	646.43	88.74	702.46	11.43	88.87	
10 - 0.9Dead + Earthquake X	131.47	793.44	120.26	717.47	18.41	107.35	
11 - 0.9Dead + Earthquake Y	67.16	1611.14	20.56	469.68	9.40	205.29	

Dimensional Solutions FOUNDATION3D

Version 5.8.2

Date 7/20/2012

Foundation Name

F-5

Time

10:48:34 AM

Designed By:

FLSmith Salt Lake City

Engineer

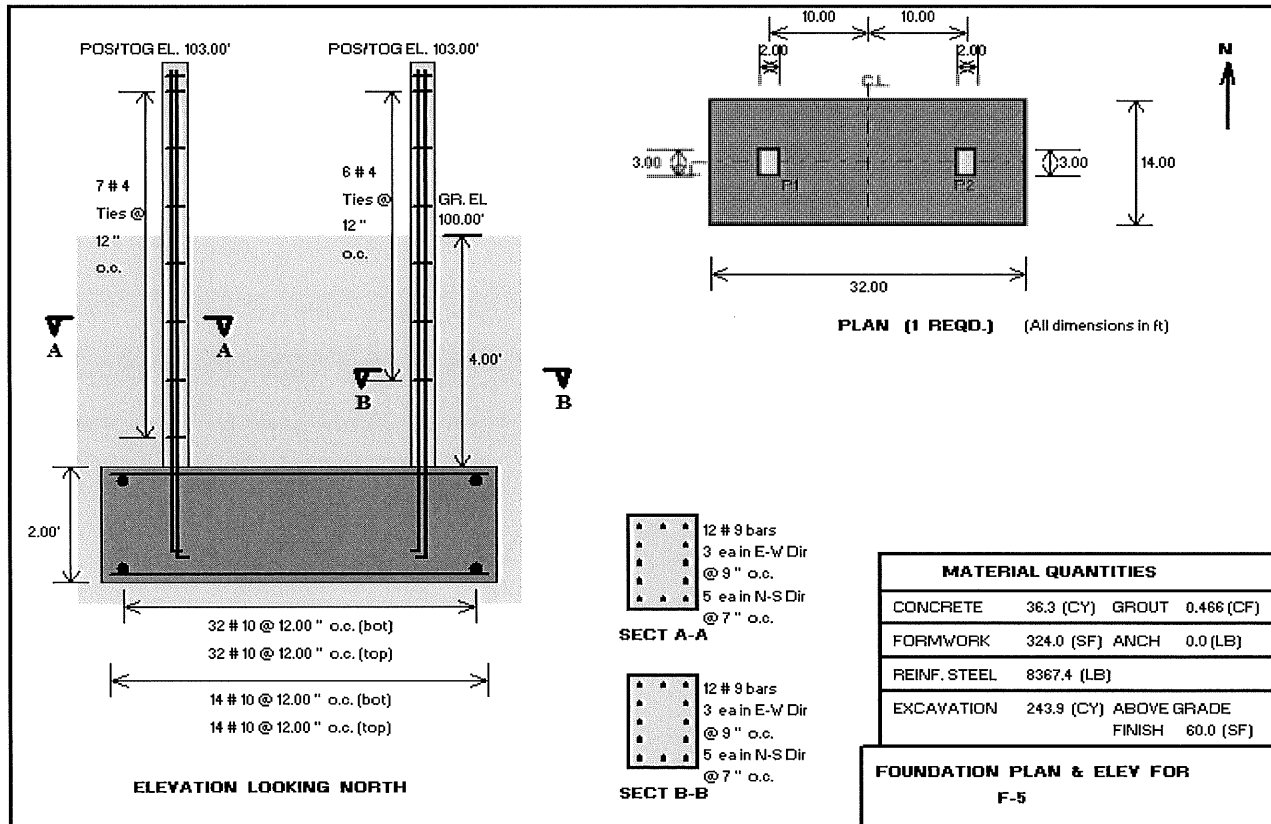
ECS

Checker

P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\

Filename:

F-5.mcs

DETAIL REPORT FOR F-5

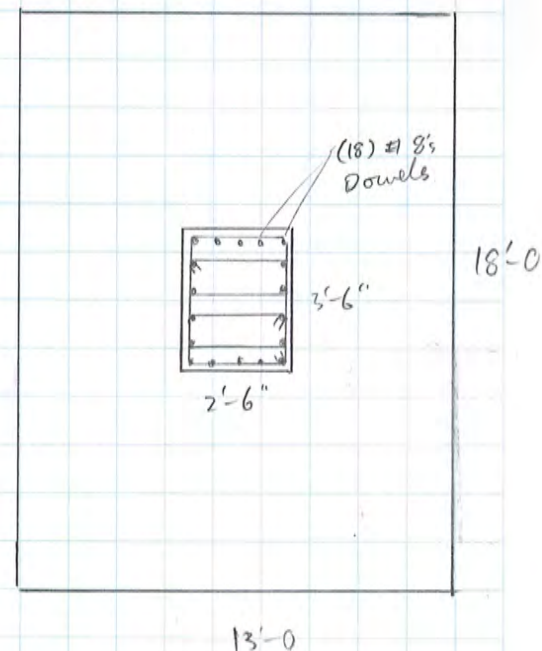
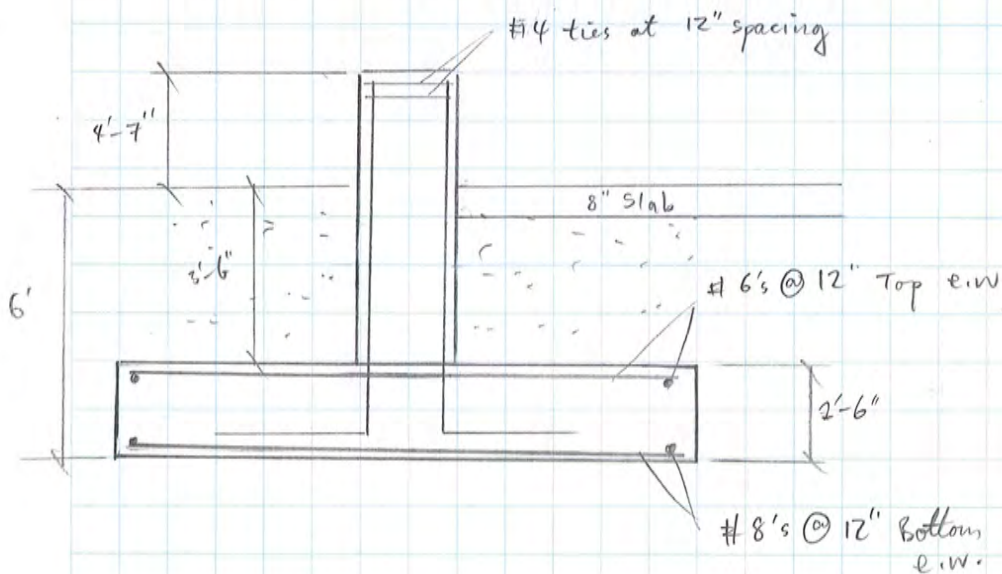
FLSMIDTH	PROJECT	PROJ NO.
	SUBJECT	CALC NO.
	Updated	BY DATE 3/22/2012
		CHK DATE
		SHEET OF REV

Exterior fiber building spread footing

	Z	X	Y	M _x
DL	50.37	0	2.02	47.27
(Uplift)	30.95	0	-2.02	-47.22
LL	62.28	0	0.57	28.87
(Uplift)	-0.06	0	-1.25	-10.05
Snow L	42.41	0	3.83	90.56
(Uplift)	5.53	0	-3.85	-89.86
WL	-1.59	1.22	20.26	221.69
(Uplift)	-24.34	-1.25	-20.26	-363.67
(Seis L)	0.22	0.04	0.89	23.82
Uplift	-0.22	-0.04	-0.89	-23.82

Footing Size = 13'-0" X 18'-0" X 2'-6"

Pier Size = 2'-6" X 3'-6" X 8'-1"



Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:15:43 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
	P:\11021\116 - Calculations\116.d - Arch_Civil_StructC-015 Process Building Foundations\			
Filename:	Exterior Spread filter footing.mcs			

DETAIL REPORT FOR 1**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location
Foundation Description FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi) 4000
 Unit Weight (pcf) 150
 Pier Concrete Cover - E-W Dir (in) 2
 Pier Concrete Cover - N-S Dir (in) 2
 Footing Side Concrete Cover - E-W Dir (in) 3
 Footing Side Concrete Cover - N-S Dir (in) 3
 Footing Top Concrete Cover (in) 2
 Footing Bottom Concrete Cover - X Dir (in) 3

SOIL PARAMETERS:

Unit Weight (pcf) 120
 Allowable Net Bearing Capacity (psf) 5000
 Bearing Capacity Method Linear Soil Pressure
 Soil Type Granular
 Passive Pressure Coefficient Kp 5
 Soil To Concrete Friction f 0.5
 Allowable Increase in Soil Pressure due to Short Term Loads (%)
 Wind 33.33 Earthquake 33.33 Test 20
 Erection Stability Ratio 1.5
 Operation Stability Ratio 1.5
 Test Stability Ratio 1.5
 Safety Factor against Lateral Forces 1.5

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft) 6
 Minimum Soil Cover (ft) 3.5
 Grade Elevation (ft) 100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi) 60
 Unit Weight (pcf) 490
 Modulus of Elasticity (ksi) 29000
 Pier Min Rebar Spacing (in) 3
 Footing Min Rebar Spacing (in) 6
 Footing Max Rebar Spacing (in) 18

REBAR PARAMETERS:

Max Long Bar Size 9
 Min Long Bar Size 5
 Max Tie Bar Size 4
 Min Tie Bar Size 3
 Max Flg Bar Size 18
 Temp & Shrinkage Steel Ratio 0.0018

BUOYANCY CRITERIA:

Consider Buoyancy: No
 Consider soil for buoyancy: No
 Water table below grade (ft) 0

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:15:43 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Exterior Spread filter footing.mcs			

DETAIL REPORT FOR 1**APPLIED LOADS**

P1

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	50.37	0.00	0.00	2.02	47.27
2 - Live	62.28	0.00	0.00	0.57	28.87
3 - Snow Load	42.41	0.00	0.00	3.83	90.56
4 - Wind	-1.59	1.22	0.00	20.26	221.69
5 - Earthquake	0.22	0.04	0.00	0.89	23.82

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead + Snow Load	92.78	0.00	0.00	5.85	137.83
2 - Dead + Live	112.65	0.00	0.00	2.59	76.14
3 - Dead + 0.75Live + 0.75Snow Load	128.89	0.00	0.00	5.32	136.84
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	127.70	0.92	0.00	20.52	303.11
5 - Dead + Wind	48.78	1.22	0.00	22.28	268.96
6 - 0.6Dead + Wind	28.63	1.22	0.00	21.47	250.05
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	129.00	0.02	0.00	5.79	149.35
8 - Dead + 0.7Earthquake	50.52	0.03	0.00	2.64	63.94
9 - 0.6Dead + 0.7Earthquake	30.38	0.03	0.00	1.84	45.04

FACTORED (ULTIMATE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	70.52	0.00	0.00	2.83	66.18
2 - 1.2Dead + 1.6Live + 0.5Snow Load	181.30	0.00	0.00	5.25	148.20
3 - 1.2Dead + Live + 1.6Snow Load	190.58	0.00	0.00	9.12	230.49
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	127.03	0.98	0.00	24.76	378.97
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	141.39	1.95	0.00	37.33	485.58
6 - 0.9Dead + 1.6Wind	42.79	1.95	0.00	34.23	397.25
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	131.43	0.04	0.00	4.65	127.53
8 - 0.9Dead + Earthquake	45.55	0.04	0.00	2.71	66.36

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:15:43 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Exterior Spread filter footing.mcs			

DETAIL REPORT FOR 1**BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD**

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead + Snow Load	1.51	5.72	0.70	0.00	0.00	199.72	
2 - Dead + Live	1.45	5.72	0.34	0.00	0.00	103.54	
3 - Dead + 0.75Live + 0.75Snow Load	1.65	5.72	0.60	0.00	0.00	193.13	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	2.13	7.39	1.62	0.03	9.68	520.16	
5 - Dead + Wind	1.78	7.39	2.09	0.05	12.91	504.68	
6 - 0.6Dead + Wind	1.33	7.39	3.30	0.09	12.91	477.23	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	1.68	7.39	0.65	0.00	0.22	210.58	
8 - Dead + 0.7Earthquake	1.17	7.39	0.38	0.00	0.30	91.91	
9 - 0.6Dead + 0.7Earthquake	0.72	7.39	0.44	0.00	0.30	64.45	

STABILITY RATIO / SLIDING SAFETY FACTOR

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead + Snow Load	12.88	100.00	1.50	40.26	100.00	1.50	
2 - Dead + Live	26.56	100.00	1.50	94.76	100.00	1.50	
3 - Dead + 0.75Live + 0.75Snow Load	15.00	100.00	1.50	47.66	100.00	1.50	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	5.55	100.00	1.50	12.33	100.00	1.50	
5 - Dead + Wind	4.31	100.00	1.50	9.58	100.00	1.50	
6 - 0.6Dead + Wind	2.72	72.72	1.50	7.68	100.00	1.50	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	13.76	100.00	1.50	43.82	100.00	1.50	
8 - Dead + 0.7Earthquake	23.84	100.00	1.50	81.11	100.00	1.50	
9 - 0.6Dead + 0.7Earthquake	20.41	100.00	1.50	90.30	100.00	1.50	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:15:43 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\015 Process Building Foundations\Exterior Spread filter footing.mcs			

DETAIL REPORT FOR 1**FOOTING DESIGN INFORMATION**

E-W Dim (ft)	13.00
N-S Dim (ft)	18.00
Thickness (ft)	2.50

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
8. 0.9Dead + Earthquake	18	6	12	0.44	0	0	E-W
6. 0.9Dead + 1.6Wind	13	6	12	0.44	0.16	-14.6	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
3. 1.2Dead + Live + 1.6Snow Load	18	8	12	0.79	0.65	11.97	E-W
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	13	8	12	0.79	0.65	41.42	N-S

PUNCHING SHEAR**P1**

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
3. 1.2Dead + Live + 1.6Snow Load	176.42	27.36	189.74	

MAXIMUM SHEAR - E-W DIRECTION

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	3.08	20.25	3.61	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	9.92	-46.02	8.19	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	3.08	48.22	8.59	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	9.92	-34.01	6.06	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	9.92	-38.28	6.82	94.87	
6 - 0.9Dead + 1.6Wind	9.92	-14.14	2.52	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	9.92	-34.23	6.09	94.87	
8 - 0.9Dead + Earthquake	9.92	-13.10	2.33	94.87	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:15:43 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Exterior Spread filter footing.mcs			

DETAIL REPORT FOR 1**MAXIMUM SHEAR - N-S DIRECTION**

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	12.92	-30.60	7.54	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	12.92	-68.56	16.90	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	12.92	-79.50	19.60	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	12.92	-82.76	20.41	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	12.92	-103.00	25.39	94.87	
6 - 0.9Dead + 1.6Wind	12.92	-66.62	16.43	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	12.92	-52.65	12.98	94.87	
8 - 0.9Dead + Earthquake	12.92	-21.98	5.42	94.87	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:15:43 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\			
Filename:	Exterior Spread filter footing.mcs			

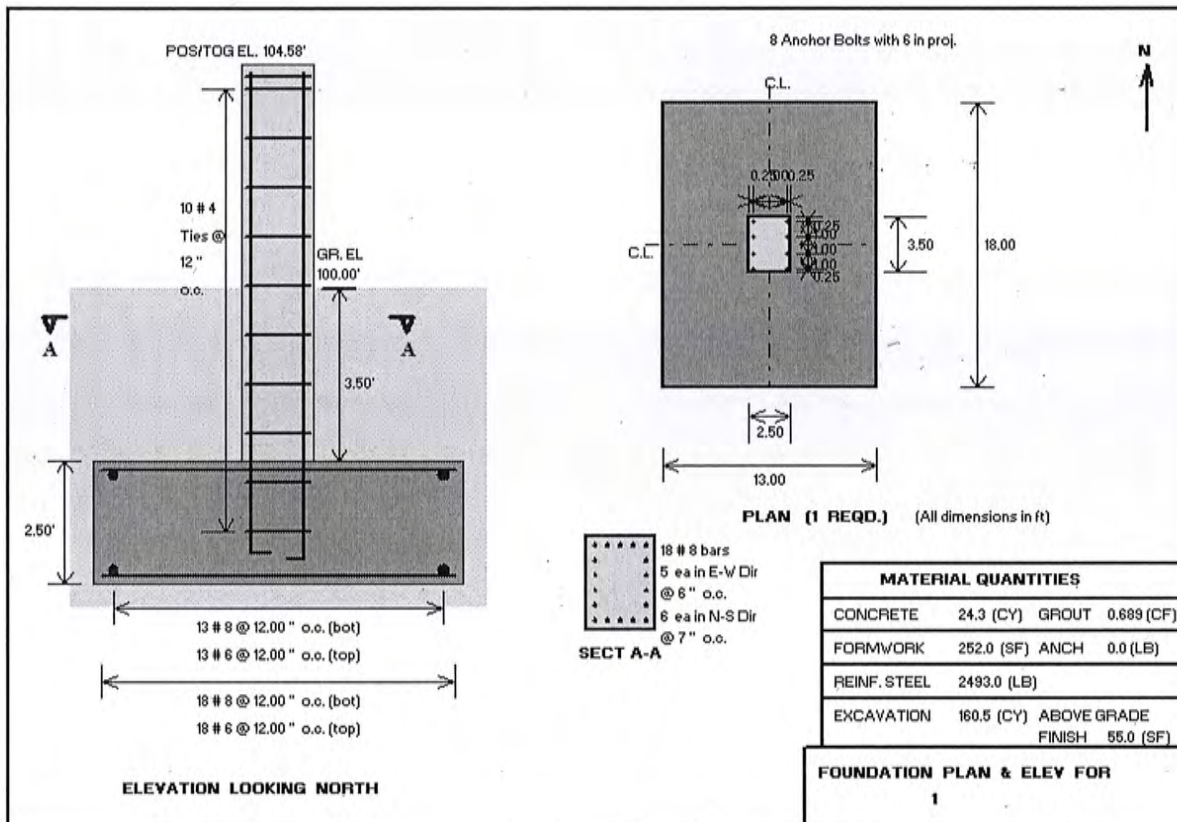
DETAIL REPORT FOR 1**PIER/BASE PLATE DESIGN INFORMATION**

	P1
E-W Dim (ft)	2.50
N-S Dim (ft)	3.50
Height above grade (ft)	4.58
E-W Offset (ft)	0.00
N-S Offset (ft)	0.00
Requested Reinf. Ratio	0.0018
Provided Reinf. Ratio	0.0112
Long Bar Size	8
Bars in E-W Dir	5
Bars in N-S Dir	6
Total Long Bars	18
Tie Bar Size	4
Total No. of Ties	11
Major Tie Spacing (in)	12

PIER ULTIMATE LOAD CAPACITIES

	P1						
Load	Axial	Axial	Mom N-S	Mom N-S	Mom E-W	Mom E-W	Rem
Comb	Load	Capa.		Capa		Capa	
	(kips)	(kips)	(kip ft)	(kip ft)	(kip ft)	(kip ft)	
1 - 1.4Dead	85.36	1526.57	10.67	190.68	89.03	1585.94	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	194.02	1593.75	24.25	199.01	190.62	1560.51	
3 - 1.2Dead + Live + 1.6Snow Load	203.31	1115.50	25.41	139.67	304.20	1666.97	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	139.75	343.76	17.47	42.82	579.03	1421.92	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	154.11	259.67	19.26	32.46	787.16	1326.52	
6 - 0.9Dead + 1.6Wind	52.33	86.93	15.77	26.20	673.86	1119.47	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	144.15	1421.90	18.02	177.52	165.10	1621.20	
8 - 0.9Dead + Earthquake	55.10	1034.60	6.89	129.45	88.24	1656.03	

Dimensional Solutions FOUNDATION3D	Version 5.8.2	Date 4/4/2012
Foundation Name 1		Time 10:15:43 AM
Designed By: FLSmidth Salt Lake City	Engineer WChan	Checker
P:\11021\116 - Calculations\116.d - Arch_Civil_StructC-015 Process Building Foundations\		
Filename: Exterior Spread filter footing.mcs		

DETAIL REPORT FOR 1

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:17:52 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
	P:\11021\116 - Calculations\116.d - Arch Civil_Struc\015 Process Building Foundations\			
Filename:	Exterior Spread filter footing (uplift).mcs			

DETAIL REPORT FOR 1**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location
Foundation Description FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi) 4000
 Unit Weight (pcf) 150
 Pier Concrete Cover - E-W Dir (in) 2
 Pier Concrete Cover - N-S Dir (in) 2
 Footing Side Concrete Cover - E-W Dir (in) 3
 Footing Side Concrete Cover - N-S Dir (in) 3
 Footing Top Concrete Cover (in) 2
 Footing Bottom Concrete Cover - X Dir (in) 3

SOIL PARAMETERS:

Unit Weight (pcf) 120
 Allowable Net Bearing Capacity (psf) 5000
 Bearing Capacity Method Linear Soil Pressure
 Soil Type Granular
 Passive Pressure Coefficient Kp 5
 Soil To Concrete Friction f 0.5
 Allowable Increase in Soil Pressure due to Short Term Loads (%)
 Wind 33.33 Earthquake 33.33 Test 20
 Erection Stability Ratio 1.5
 Operation Stability Ratio 1.5
 Test Stability Ratio 1.5
 Safety Factor against Lateral Forces 1.5

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft) 6
 Minimum Soil Cover (ft) 3.5
 Grade Elevation (ft) 100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi) 60
 Unit Weight (pcf) 490
 Modulus of Elasticity (ksi) 29000
 Pier Min Rebar Spacing (in) 3
 Footing Min Rebar Spacing (in) 6
 Footing Max Rebar Spacing (in) 18

REBAR PARAMETERS:

Max Long Bar Size 9
 Min Long Bar Size 5
 Max Tie Bar Size 4
 Min Tie Bar Size 3
 Max Ftg Bar Size 18
 Temp & Shrinkage Steel Ratio 0.0018

BUOYANCY CRITERIA:

Consider Buoyancy: No
 Consider soil for buoyancy: No
 Water table below grade (ft) 0

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:17:52 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Exterior Spread filter footing (uplift).mcs			

DETAIL REPORT FOR 1**APPLIED LOADS**

P1

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	30.95	0.00	0.00	-2.02	-47.22
2 - Live	-0.06	0.00	0.00	-1.25	-10.05
3 - Snow Load	5.53	0.00	0.00	-3.85	-89.86
4 - Wind	-24.34	-1.25	0.00	-20.26	-363.67
5 - Earthquake	-0.22	0.00	0.00	-0.89	-23.82

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead + Snow Load	36.48	0.00	0.00	-5.87	-137.08
2 - Dead + Live	30.89	0.00	0.00	-3.27	-57.27
3 - Dead + 0.75Live + 0.75Snow Load	35.05	0.00	0.00	-5.85	-122.15
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	16.80	-0.94	0.00	-21.04	-394.91
5 - Dead + Wind	6.61	-1.25	0.00	-22.28	-410.89
6 - 0.6Dead + Wind	-5.77	-1.25	0.00	-21.47	-392.00
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	34.94	0.00	0.00	-6.31	-134.66
8 - Dead + 0.7Earthquake	30.80	0.00	0.00	-2.64	-63.89
9 - 0.6Dead + 0.7Earthquake	18.42	0.00	0.00	-1.84	-45.01

FACTORED (ULTIMATE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	43.33	0.00	0.00	-2.83	-66.11
2 - 1.2Dead + 1.6Live + 0.5Snow Load	39.81	0.00	0.00	-6.35	-117.67
3 - 1.2Dead + Live + 1.6Snow Load	45.93	0.00	0.00	-9.83	-210.49
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	26.52	-1.00	0.00	-24.79	-491.38
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	0.90	-2.00	0.00	-38.02	-693.52
6 - 0.9Dead + 1.6Wind	-11.09	-2.00	0.00	-34.23	-624.37
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	37.97	0.00	0.00	-5.33	-108.51
8 - 0.9Dead + Earthquake	27.64	0.00	0.00	-2.71	-66.32

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:17:52 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\C-015 Process Building Foundations\Exterior Spread filter footing (uplift).mcs			

DETAIL REPORT FOR 1**BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD**

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead + Snow Load	1.26	5.72	0.87	0.00	0.00	199.18	
2 - Dead + Live	1.09	5.72	0.41	0.00	0.00	91.87	
3 - Dead + 0.75Live + 0.75Snow Load	1.24	5.72	0.81	0.00	0.00	183.99	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	1.80	7.39	2.94	0.05	9.92	617.51	
5 - Dead + Wind	1.80	7.39	3.24	0.07	13.23	646.61	
6 - 0.6Dead + Wind	1.72	7.39	5.63	0.12	13.23	619.18	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	1.26	7.39	0.88	0.00	0.00	201.44	
8 - Dead + 0.7Earthquake	1.09	7.39	0.41	0.00	0.00	91.86	
9 - 0.6Dead + 0.7Earthquake	0.67	7.39	0.48	0.00	0.00	64.42	

STABILITY RATIO / SLIDING SAFETY FACTOR

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead + Snow Load	10.37	100.00	1.50	35.32	100.00	1.50	
2 - Dead + Live	21.93	100.00	1.50	62.55	100.00	1.50	
3 - Dead + 0.75Live + 0.75Snow Load	11.15	100.00	1.50	35.35	100.00	1.50	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	3.06	100.00	1.50	9.39	100.00	1.50	
5 - Dead + Wind	2.78	98.09	1.50	8.64	100.00	1.50	
6 - 0.6Dead + Wind	1.55	14.83	1.50	6.88	100.00	1.50	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	10.18	100.00	1.50	32.73	100.00	1.50	
8 - Dead + 0.7Earthquake	21.92	100.00	1.50	77.38	100.00	1.50	
9 - 0.6Dead + 0.7Earthquake	18.75	100.00	1.50	87.04	100.00	1.50	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:17:52 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\015 Process Building Foundations\			
Filename:	Exterior Spread filter footing (uplift).mcs			

DETAIL REPORT FOR 1**FOOTING DESIGN INFORMATION**

E-W Dim (ft)	13.00
N-S Dim (ft)	18.00
Thickness (ft)	2.50

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
6. 0.9Dead + 1.6Wind	18	6	12	0.44	0.01	-0.51	E-W
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	13	6	12	0.44	0.26	-24.24	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
3. 1.2Dead + Live + 1.6Snow Load	18	8	12	0.79	0.65	3.45	E-W
6. 0.9Dead + 1.6Wind	13	8	12	0.79	0.65	35.77	N-S

PUNCHING SHEAR**P1**

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
3. 1.2Dead + Live + 1.6Snow Load	48.11	7.46	189.74	

MAXIMUM SHEAR - E-W DIRECTION

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	9.92	-13.80	2.46	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	3.08	12.46	2.22	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	3.08	13.91	2.48	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	3.08	10.19	1.82	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	3.08	5.00	0.89	94.87	
6 - 0.9Dead + 1.6Wind	9.92	2.13	0.38	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	9.92	-12.02	2.14	94.87	
8 - 0.9Dead + Earthquake	3.08	8.82	1.57	94.87	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:17:52 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\C-015 Process Building Foundations\Exterior Spread filter footing (uplift).mcs			

DETAIL REPORT FOR 1**MAXIMUM SHEAR - N-S DIRECTION**

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	5.08	22.92	5.65	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	5.08	27.32	6.74	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	5.08	37.81	9.32	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	5.08	61.99	15.28	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	5.08	85.66	21.12	94.87	
6 - 0.9Dead + 1.6Wind	5.08	87.27	21.52	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	5.08	25.46	6.28	94.87	
8 - 0.9Dead + Earthquake	5.08	16.92	4.17	94.87	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	10:17:52 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Exterior Spread filter footing (uplift).mcs			

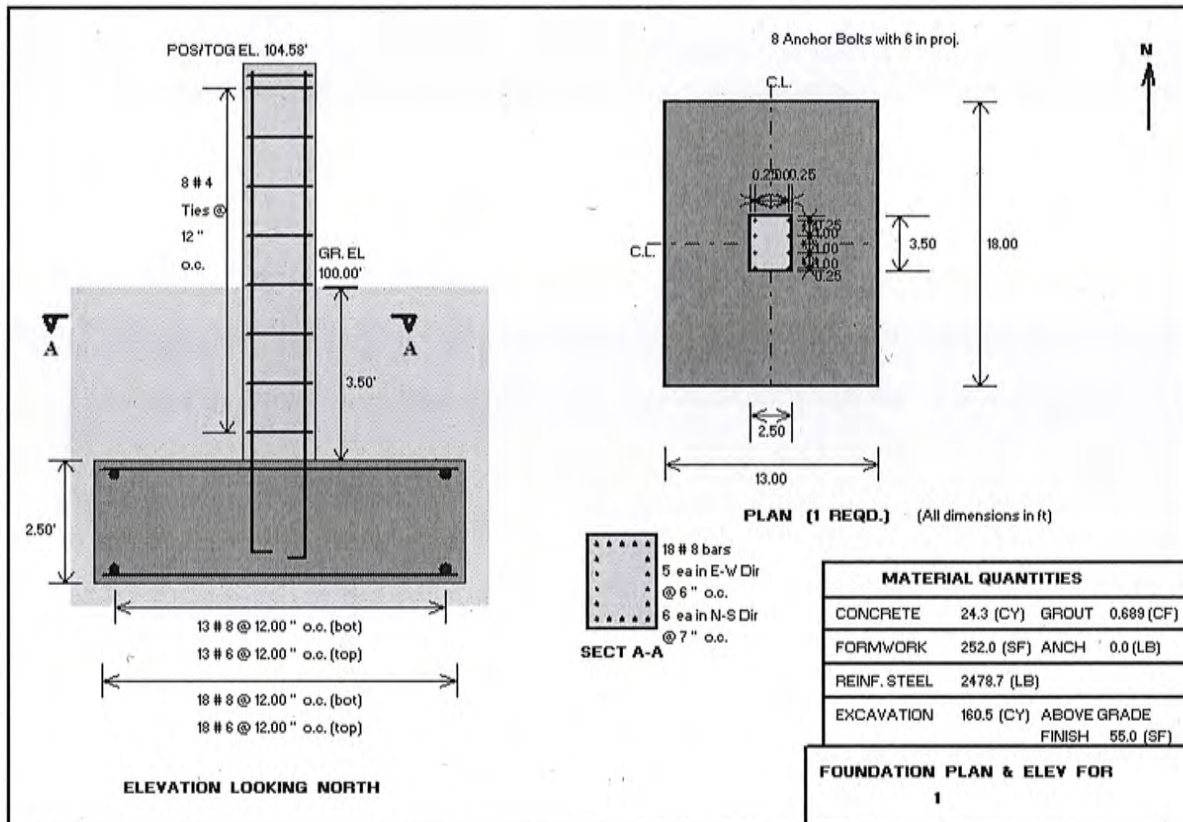
DETAIL REPORT FOR 1**PIER/BASE PLATE DESIGN INFORMATION**

	P1
E-W Dim (ft)	2.50
N-S Dim (ft)	3.50
Height above grade (ft)	4.58
E-W Offset (ft)	0.00
N-S Offset (ft)	0.00
Requested Reinf. Ratio	0.0018
Provided Reinf. Ratio	0.0112
Long Bar Size	8
Bars in E-W Dir	5
Bars in N-S Dir	6
Total Long Bars	18
Tie Bar Size	4
Total No. of Ties	9
Major Tie Spacing (in)	12

PIER ULTIMATE LOAD CAPACITIES

	P1						
Load	Axial	Axial	Mom N-S	Mom N-S	Mom E-W	Mom E-W	Rem
Comb	Load	Capa.		Capa		Capa	
	(kips)	(kips)	(kip ft)	(kip ft)	(kip ft)	(kip ft)	
1 - 1.4Dead	58.18	1088.88	7.27	136.13	88.96	1664.80	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	52.54	406.97	6.57	50.88	168.97	1308.69	
3 - 1.2Dead + Live + 1.6Snow Load	58.65	270.90	7.33	33.87	289.95	1339.31	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	39.24	61.86	8.08	12.74	691.70	1090.59	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	13.63	13.99	16.16	16.59	1000.68	1027.70	
6 - 0.9Dead + 1.6Wind	-1.54	-1.56	16.16	20.99	900.98	1170.94	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	50.69	450.67	6.34	56.59	151.60	1345.70	
8 - 0.9Dead + Earthquake	37.18	623.55	4.65	77.94	88.20	1479.26	

Dimensional Solutions FOUNDATION3D	Version 5.8.2	Date 4/4/2012
Foundation Name 1		Time 10:17:52 AM
Designed By: FLSmith Salt Lake City	Engineer WChan	Checker
P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\015 Process Building Foundations\		
Filename: Exterior Spread filter footing (uplift).mcs		

DETAIL REPORT FOR 1

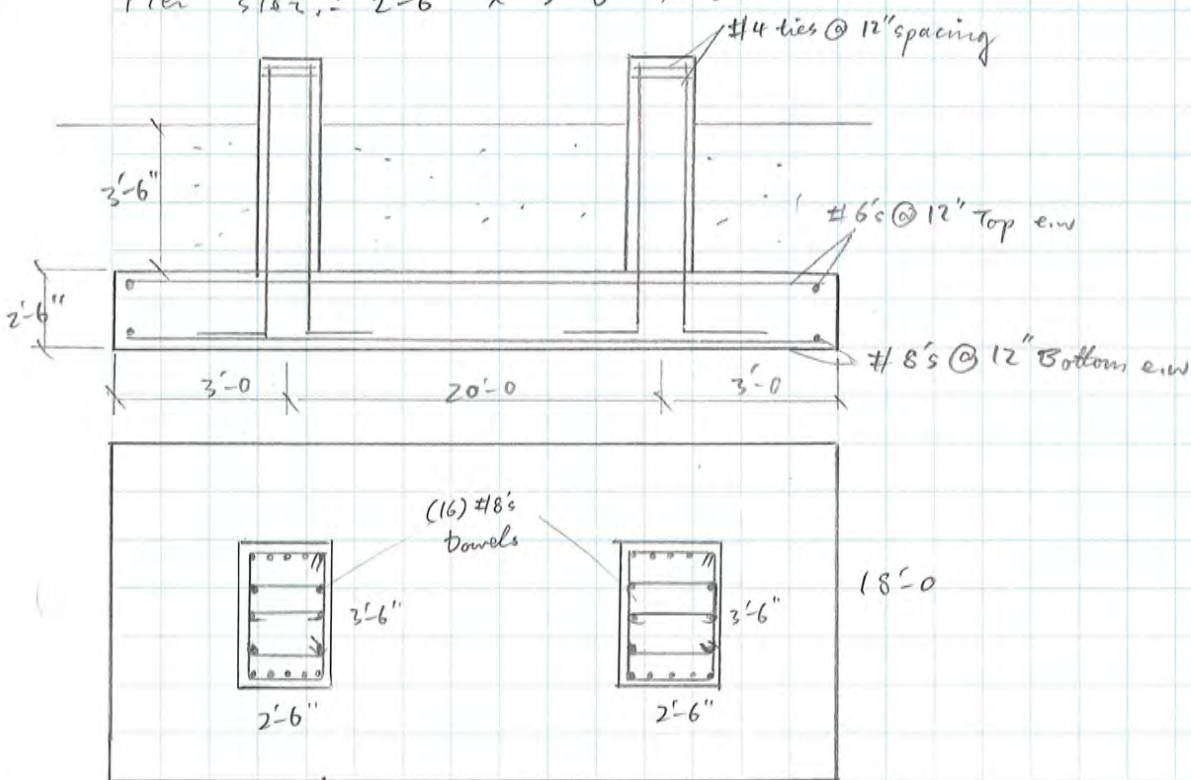
FLSMIDTH	PROJECT	PROJ NO.
	SUBJECT	CALC NO.
	Updated	BY DATE 3/22/2012
		CHK DATE
		SHEET OF REV

Exterior filter building combine footing

	P1) Z	X	Y	M _x	P2) Z	X	Y	M _x
DL	54.69	3.86	2.01	47.17	54.01	-1.91	1.99	47.09
(Uplift)	48.91	1.72	-2.01	-47.08	49.09	-3.89	-2.00	-46.92
LL	45.15	2.79	-0.98	23.24	42.51	-2.39	-0.99	23.68
(Uplift)	-3.35	-0.45	-0.38	-4.91	3.36	-0.48	-0.14	-4.26
Snow L	42.17	3.04	3.81	89.95	43.86	-1.32	3.79	90.06
(Uplift)	33.28	0.76	-3.82	-89.47	35.09	-3.43	-3.81	-89.35
Wind L	51.80	7.34	19.95	350.88	-88.57	8.04	20.19	358.23
(Uplift)	-72.67	-12.01	-19.96	-350.62	46.69	-9.93	-20.17	-358.68
Seis L	24.90	4.15	1.00	24.64	-24.71	4.06	0.98	23.87
(Uplift)	-24.60	-4.13	-1.00	-24.64	24.41	-4.04	-0.98	-23.87

Combine footing size : 26'-0" X 18'-0" X 2'-6"

Pier size : 2'-6" X 3'-6" X 8'-1"



Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	9:23:02 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Combine Filter Building Footing.mcs			

DETAIL REPORT FOR 1**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location
Foundation Description FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi) 4000
 Unit Weight (pcf) 150
 Pier Concrete Cover - E-W Dir (in) 2
 Pier Concrete Cover - N-S Dir (in) 2
 Footing Side Concrete Cover - E-W Dir (in) 3
 Footing Side Concrete Cover - N-S Dir (in) 3
 Footing Top Concrete Cover (in) 2
 Footing Bottom Concrete Cover - X Dir (in) 3

SOIL PARAMETERS:

Unit Weight (pcf) 120
 Allowable Net Bearing Capacity (psf) 5000
 Bearing Capacity Method Linear Soil Pressure
 Soil Type Granular
 Passive Pressure Coefficient Kp 5
 Soil To Concrete Friction f 0.5
 Allowable Increase in Soil Pressure due to Short Term Loads (%)
 Wind 33.33 Earthquake 33.33 Test 20
 Erection Stability Ratio 1.5
 Operation Stability Ratio 1.5
 Test Stability Ratio 1.5
 Safety Factor against Lateral Forces 1.5

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft) 6
 Minimum Soil Cover (ft) 3.5
 Grade Elevation (ft) 100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi) 60
 Unit Weight (pcf) 490
 Modulus of Elasticity (ksi) 29000
 Pier Min Rebar Spacing (in) 3
 Footing Min Rebar Spacing (in) 6
 Footing Max Rebar Spacing (in) 18

REBAR PARAMETERS:

Max Long Bar Size 8
 Min Long Bar Size 5
 Max Tie Bar Size 5
 Min Tie Bar Size 3
 Max Ftg Bar Size 18
 Temp & Shrinkage Steel Ratio 0.0018

BUOYANCY CRITERIA:

Consider Buoyancy: No
 Consider soil for buoyancy: No
 Water table below grade (ft) 0

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	9:23:02 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Combine Filter Building Footing.mcs			

DETAIL REPORT FOR 1**APPLIED LOADS****P1**

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	54.69	3.86	0.00	2.01	47.17
2 - Live	45.15	2.79	0.00	-0.98	23.24
3 - Snow Load	42.17	3.04	0.00	3.81	89.95
4 - Wind	51.80	7.34	0.00	19.95	350.88
5 - Earthquake	24.90	4.15	0.00	1.00	24.64

P2

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	54.01	-1.91	0.00	1.99	47.09
2 - Live	42.51	-2.39	0.00	-0.99	23.68
3 - Snow Load	43.86	-1.32	0.00	3.79	90.06
4 - Wind	-88.57	8.04	0.00	20.19	358.23
5 - Earthquake	-24.71	4.06	0.00	0.98	23.87

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	9:23:02 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Combine Filter Building Footing.mcs			

DETAIL REPORT FOR 1**UNFACTORED (ALLOWABLE) LOAD COMBINATIONS****P1**

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead + Snow Load	96.86	6.90	0.00	5.82	137.12
2 - Dead + Live	99.84	6.65	0.00	1.03	70.41
3 - Dead + 0.75Live + 0.75Snow Load	120.18	8.23	0.00	4.13	132.06
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	159.03	13.74	0.00	19.10	395.22
5 - Dead + Wind	106.49	11.20	0.00	21.96	398.05
6 - 0.6Dead + Wind	84.61	9.66	0.00	21.16	379.18
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	133.25	10.41	0.00	4.66	145.00
8 - Dead + 0.7Earthquake	72.12	6.77	0.00	2.71	64.42
9 - 0.6Dead + 0.7Earthquake	50.24	5.22	0.00	1.91	45.55

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead + Snow Load	97.87	-3.23	0.00	5.78	137.15
2 - Dead + Live	96.52	-4.30	0.00	1.00	70.77
3 - Dead + 0.75Live + 0.75Snow Load	118.79	-4.69	0.00	4.09	132.40
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	52.36	1.34	0.00	19.23	401.07
5 - Dead + Wind	-34.56	6.13	0.00	22.18	405.32
6 - 0.6Dead + Wind	-56.16	6.89	0.00	21.38	386.48
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	105.81	-2.56	0.00	4.60	144.93
8 - Dead + 0.7Earthquake	36.71	0.93	0.00	2.68	63.80
9 - 0.6Dead + 0.7Earthquake	15.11	1.70	0.00	1.88	44.96

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
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DETAIL REPORT FOR 1**FACTORED (ULTIMATE) LOAD COMBINATIONS****P1**

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	76.57	5.40	0.00	2.81	66.04
2 - 1.2Dead + 1.6Live + 0.5Snow Load	158.95	10.62	0.00	2.75	138.76
3 - 1.2Dead + Live + 1.6Snow Load	178.25	12.29	0.00	7.53	223.76
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	174.54	15.37	0.00	24.47	481.23
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	214.74	20.69	0.00	35.26	686.23
6 - 0.9Dead + 1.6Wind	132.10	15.22	0.00	33.73	603.86
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	144.11	12.18	0.00	3.19	122.47
8 - 0.9Dead + Earthquake	74.12	7.62	0.00	2.81	67.09

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	75.61	-2.67	0.00	2.79	65.93
2 - 1.2Dead + 1.6Live + 0.5Snow Load	154.76	-6.78	0.00	2.70	139.43
3 - 1.2Dead + Live + 1.6Snow Load	177.50	-6.79	0.00	7.46	224.28
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	64.13	2.03	0.00	24.60	487.19
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	-12.46	7.52	0.00	35.60	698.39
6 - 0.9Dead + 1.6Wind	-93.10	11.15	0.00	34.10	615.55
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	91.38	-0.89	0.00	3.14	122.07
8 - 0.9Dead + Earthquake	23.90	2.34	0.00	2.77	66.25

BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead + Snow Load	1.53	5.72	0.67	0.08	44.97	384.47	
2 - Dead + Live	1.35	5.72	0.28	0.02	10.88	160.47	
3 - Dead + 0.75Live + 0.75Snow Load	1.58	5.72	0.55	0.03	19.70	342.57	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	2.55	7.39	1.95	1.55	923.49	1160.40	
5 - Dead + Wind	2.52	7.39	2.69	2.74	1245.87	1222.70	
6 - 0.6Dead + Wind	2.64	7.39	4.53	4.84	1250.56	1169.80	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	1.70	7.39	0.61	0.32	199.80	377.91	
8 - Dead + 0.7Earthquake	1.32	7.39	0.36	0.57	280.95	179.38	
9 - 0.6Dead + 0.7Earthquake	0.86	7.39	0.43	0.97	285.64	126.48	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
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DETAIL REPORT FOR 1**STABILITY RATIO / SLIDING SAFETY FACTOR**

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead + Snow Load	13.53	100.00	1.50	40.88	100.00	1.50	
2 - Dead + Live	32.50	100.00	1.50	100.00	100.00	1.50	
3 - Dead + 0.75Live + 0.75Snow Load	16.34	100.00	1.50	60.36	100.00	1.50	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	4.61	61.41	1.50	12.59	28.22	1.50	
5 - Dead + Wind	2.87	27.69	1.50	9.35	20.53	1.50	
6 - 0.6Dead + Wind	1.69	15.15	1.50	7.39	15.55	1.50	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	14.82	84.79	1.50	53.59	55.96	1.50	
8 - Dead + 0.7Earthquake	24.68	92.30	1.50	80.06	48.62	1.50	
9 - 0.6Dead + 0.7Earthquake	21.01	63.75	1.50	87.92	39.88	1.50	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
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DETAIL REPORT FOR 1**FOOTING DESIGN INFORMATION**

E-W Dim (ft) 26.00
 N-S Dim (ft) 18.00
 Thickness (ft) 2.50

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
3. 1.2Dead + Live + 1.6Snow Load	18	6	12	0.44	0.34	-31.71	E-W
6. 0.9Dead + 1.6Wind	26	6	12	0.44	0.2	-18.28	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	18	8	12	0.79	0.65	7.52	E-W
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	26	8	12	0.79	0.65	40.79	N-S

PUNCHING SHEAR**P1**

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	209.19	32.44	189.74	

P2

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
3. 1.2Dead + Live + 1.6Snow Load	163.26	25.32	189.74	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
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DETAIL REPORT FOR 1**MAXIMUM SHEAR - E-W DIRECTION**

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	6.42	-46.23	8.23	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	6.42	-86.88	15.47	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	6.42	-97.95	17.44	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	6.42	-80.95	14.41	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	6.42	-84.44	15.04	94.87	
6 - 0.9Dead + 1.6Wind	6.42	-39.46	7.03	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	6.42	-73.56	13.10	94.87	
8 - 0.9Dead + Earthquake	6.42	-36.64	6.52	94.87	

MAXIMUM SHEAR - N-S DIRECTION

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	12.92	-62.75	7.74	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	12.92	-117.11	14.44	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	12.92	-146.58	18.07	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	12.92	-170.54	21.02	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	12.92	-202.43	24.95	94.87	
6 - 0.9Dead + 1.6Wind	12.92	-157.00	19.35	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	12.92	-93.31	11.50	94.87	
8 - 0.9Dead + Earthquake	12.92	-44.94	5.54	94.87	

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DETAIL REPORT FOR 1**PIER/BASE PLATE DESIGN INFORMATION**

	P1	P2
E-W Dim (ft)	2.50	2.50
N-S Dim (ft)	3.50	3.50
Height above grade (ft)	3.50	3.50
E-W Offset (ft)	-10.00	10.00
N-S Offset (ft)	0.00	0.00
Requested Reinf. Ratio	0.0018	0.0018
Provided Reinf. Ratio	0.0100	0.0100
Long Bar Size	8	8
Bars in E-W Dir	5	5
Bars in N-S Dir	5	5
Total Long Bars	16	16
Tie Bar Size	4	4
Total No. of Ties	8	8
Major Tie Spacing (in)	12	12

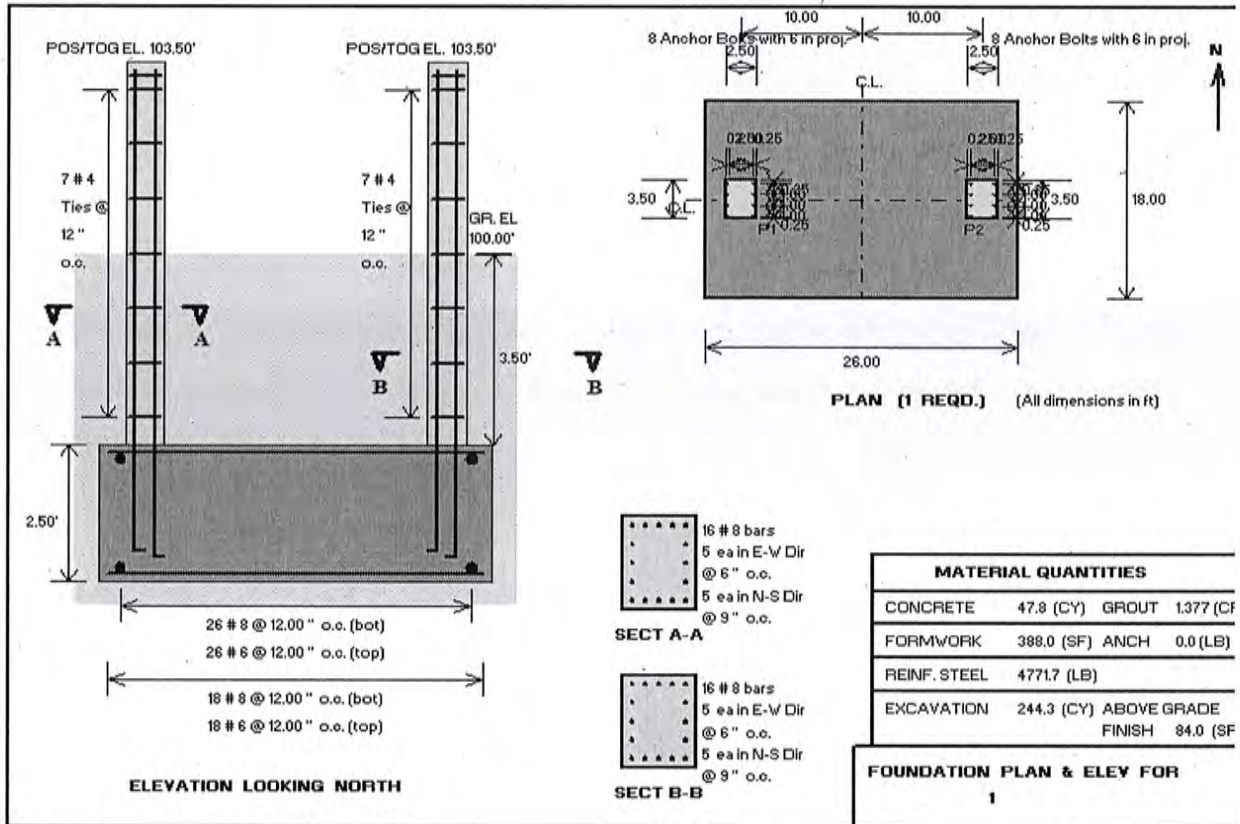
PIER ULTIMATE LOAD CAPACITIES

Load Comb	P1						Rem
	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	
1 - 1.4Dead	89.43	1253.67	37.83	528.68	85.74	1185.88	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	169.98	1263.86	74.31	550.49	158.01	1159.80	
3 - 1.2Dead + Live + 1.6Snow Load	189.27	852.51	86.00	387.17	276.46	1243.75	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	185.56	306.54	107.58	177.11	652.50	1074.14	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	225.77	242.06	144.80	155.27	933.03	1000.50	
6 - 0.9Dead + 1.6Wind	140.37	149.42	106.53	113.40	839.96	893.74	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	155.14	1132.73	85.26	622.51	144.83	1057.25	
8 - 0.9Dead + Earthquake	82.39	964.33	53.37	624.57	86.76	1015.06	

Load Comb	P2						Rem
	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	
1 - 1.4Dead	88.48	1518.16	18.72	321.13	85.43	1458.97	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	165.78	1461.52	47.43	417.93	158.32	1387.76	
3 - 1.2Dead + Live + 1.6Snow Load	188.52	1048.31	47.56	264.37	276.52	1536.50	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	75.16	122.62	14.20	23.16	659.42	1075.99	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	-1.43	-1.45	52.65	58.25	947.57	1048.72	
6 - 0.9Dead + 1.6Wind	-84.83	-90.81	78.01	83.55	854.21	914.75	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	102.41	1164.01	12.80	145.44	144.02	1635.27	
8 - 0.9Dead + Earthquake	32.17	460.78	16.39	234.72	85.65	1226.70	

Dimensional Solutions FOUNDATION3D	Version 5.8.2	Date 4/4/2012
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DETAIL REPORT FOR 1



Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
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Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
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DETAIL REPORT FOR 1**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location
Foundation Description FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi) 4000
 Unit Weight (pcf) 150
 Pier Concrete Cover - E-W Dir (in) 2
 Pier Concrete Cover - N-S Dir (in) 2
 Footing Side Concrete Cover - E-W Dir (in) 3
 Footing Side Concrete Cover - N-S Dir (in) 3
 Footing Top Concrete Cover (in) 2
 Footing Bottom Concrete Cover - X Dir (in) 3

SOIL PARAMETERS:

Unit Weight (pcf) 120
 Allowable Net Bearing Capacity (psf) 5000
 Bearing Capacity Method Linear Soil Pressure
 Soil Type Granular
 Passive Pressure Coefficient Kp 5
 Soil To Concrete Friction f 0.5
 Allowable Increase in Soil Pressure due to Short Term Loads (%)
 Wind 33.33 Earthquake 33.33 Test 20
 Erection Stability Ratio 1.5
 Operation Stability Ratio 1.5
 Test Stability Ratio 1.5
 Safety Factor against Lateral Forces 1.5

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft) 6
 Minimum Soil Cover (ft) 3.5
 Grade Elevation (ft) 100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi) 60
 Unit Weight (pcf) 490
 Modulus of Elasticity (ksi) 29000
 Pier Min Rebar Spacing (in) 3
 Footing Min Rebar Spacing (in) 6
 Footing Max Rebar Spacing (in) 18

REBAR PARAMETERS:

Max Long Bar Size 8
 Min Long Bar Size 5
 Max Tie Bar Size 5
 Min Tie Bar Size 3
 Max Ftg Bar Size 18
 Temp & Shrinkage Steel Ratio 0.0018

BUOYANCY CRITERIA:

Consider Buoyancy: No
 Consider soil for buoyancy: No
 Water table below grade (ft) 0

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
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DETAIL REPORT FOR 1**APPLIED LOADS****P1**

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	48.91	1.72	0.00	-2.01	-47.08
2 - Live	-3.35	-0.45	0.00	-0.38	-4.91
3 - Snow Load	33.28	0.76	0.00	-3.82	-89.47
4 - Wind	-92.67	-12.01	0.00	-19.96	-350.62
5 - Earthquake	-24.60	-4.13	0.00	-1.00	-24.64

P2

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	49.09	-3.89	0.00	-2.00	-46.92
2 - Live	3.36	-0.48	0.00	-0.14	-4.26
3 - Snow Load	35.09	-3.43	0.00	-3.81	-89.35
4 - Wind	46.69	-9.93	0.00	-20.17	-358.68
5 - Earthquake	24.41	-4.04	0.00	-0.98	-23.87

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DETAIL REPORT FOR 1**UNFACTORED (ALLOWABLE) LOAD COMBINATIONS****P1**

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead + Snow Load	82.19	2.48	0.00	-5.83	-136.55
2 - Dead + Live	45.56	1.27	0.00	-2.39	-51.99
3 - Dead + 0.75Live + 0.75Snow Load	71.36	1.95	0.00	-5.16	-117.87
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	1.86	-7.06	0.00	-20.13	-380.83
5 - Dead + Wind	-43.76	-10.29	0.00	-21.97	-397.70
6 - 0.6Dead + Wind	-63.32	-10.98	0.00	-21.17	-378.87
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	58.44	-0.22	0.00	-5.69	-130.80
8 - Dead + 0.7Earthquake	31.69	-1.17	0.00	-2.71	-64.33
9 - 0.6Dead + 0.7Earthquake	12.13	-1.86	0.00	-1.91	-45.50

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead + Snow Load	84.18	-7.32	0.00	-5.81	-136.27
2 - Dead + Live	52.45	-4.37	0.00	-2.14	-51.18
3 - Dead + 0.75Live + 0.75Snow Load	77.93	-6.82	0.00	-4.96	-117.13
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	112.95	-14.27	0.00	-20.09	-386.14
5 - Dead + Wind	95.78	-13.82	0.00	-22.17	-405.60
6 - 0.6Dead + Wind	76.14	-12.26	0.00	-21.37	-386.83
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	90.74	-8.94	0.00	-5.48	-129.66
8 - Dead + 0.7Earthquake	66.18	-6.72	0.00	-2.69	-63.63
9 - 0.6Dead + 0.7Earthquake	46.54	-5.16	0.00	-1.89	-44.86

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DETAIL REPORT FOR 1**FACTORED (ULTIMATE) LOAD COMBINATIONS****P1**

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	68.47	2.41	0.00	-2.81	-65.91
2 - 1.2Dead + 1.6Live + 0.5Snow Load	69.97	1.72	0.00	-4.93	-109.09
3 - 1.2Dead + Live + 1.6Snow Load	108.59	2.83	0.00	-8.90	-204.56
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	37.80	-6.33	0.00	-24.49	-480.14
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	-76.29	-17.22	0.00	-36.64	-667.13
6 - 0.9Dead + 1.6Wind	-104.25	-17.67	0.00	-33.75	-603.36
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	37.40	-2.36	0.00	-4.56	-103.94
8 - 0.9Dead + Earthquake	19.42	-2.58	0.00	-2.81	-67.01

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	68.73	-5.45	0.00	-2.80	-65.69
2 - 1.2Dead + 1.6Live + 0.5Snow Load	81.83	-7.15	0.00	-4.53	-107.80
3 - 1.2Dead + Live + 1.6Snow Load	118.41	-10.64	0.00	-8.64	-203.52
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	152.40	-18.10	0.00	-24.63	-486.21
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	154.52	-22.75	0.00	-36.72	-679.13
6 - 0.9Dead + 1.6Wind	118.89	-19.39	0.00	-34.07	-616.12
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	93.70	-9.87	0.00	-4.28	-102.30
8 - 0.9Dead + Earthquake	68.59	-7.54	0.00	-2.78	-66.10

BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead + Snow Load	1.46	5.72	0.70	0.05	26.08	383.40	
2 - Dead + Live	1.15	5.72	0.30	0.08	39.45	146.21	
3 - Dead + 0.75Live + 0.75Snow Load	1.38	5.72	0.62	0.04	19.43	331.16	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	2.33	7.39	2.31	1.82	908.31	1149.06	
5 - Dead + Wind	2.44	7.39	2.81	2.68	1166.36	1222.63	
6 - 0.6Dead + Wind	2.65	7.39	4.82	4.84	1173.88	1169.79	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	1.51	7.39	0.69	0.44	235.99	366.50	
8 - Dead + 0.7Earthquake	1.29	7.39	0.37	0.56	269.92	179.22	
9 - 0.6Dead + 0.7Earthquake	0.84	7.39	0.44	0.96	277.45	126.38	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	9:25:56 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\C-015 Process Building Foundations\Combine Filter Building Footing (uplift).mcs			

DETAIL REPORT FOR 1**STABILITY RATIO / SLIDING SAFETY FACTOR**

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead + Snow Load	12.90	100.00	1.50	39.52	83.26	1.50	
2 - Dead + Live	29.61	100.00	1.50	94.00	100.00	1.50	
3 - Dead + 0.75Live + 0.75Snow Load	14.47	100.00	1.50	44.60	80.99	1.50	
4 - Dead + 0.75Live + 0.75Snow Load + 0.75Wind	3.90	37.43	1.50	10.80	17.69	1.50	
5 - Dead + Wind	2.67	19.93	1.50	9.13	14.34	1.50	
6 - 0.6Dead + Wind	1.58	11.54	1.50	7.21	10.74	1.50	
7 - Dead + 0.75Live + 0.75Snow Load + 0.525Earth	13.07	83.23	1.50	40.44	43.06	1.50	
8 - Dead + 0.7Earthquake	24.15	88.03	1.50	78.90	46.74	1.50	
9 - 0.6Dead + 0.7Earthquake	20.55	61.39	1.50	86.90	38.81	1.50	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	9:25:56 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\C-015 Process Building Foundations\Combine Filter Building Footing (uplift).mcs			

DETAIL REPORT FOR 1**FOOTING DESIGN INFORMATION**

E-W Dim (ft) 26.00
 N-S Dim (ft) 18.00
 Thickness (ft) 2.50

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
3. 1.2Dead + Live + 1.6Snow Load	18	6	12	0.44	0.23	-20.7	E-W
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	26	6	12	0.44	0.23	-21.34	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	18	8	12	0.79	0.65	10.1	E-W
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	26	8	12	0.79	0.65	34.32	N-S

PUNCHING SHEAR**P1**

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
3. 1.2Dead + Live + 1.6Snow Load	101.87	15.80	189.74	

P2

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
5. 1.2Dead + Live + 0.5Snow Load + 1.6Wind	156.68	24.30	189.74	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	9:25:56 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Combine Filter Building Footing (uplift).mcs			

DETAIL REPORT FOR 1**MAXIMUM SHEAR - E-W DIRECTION**

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	19.58	42.51	7.57	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	19.58	47.07	8.38	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	19.58	66.94	11.92	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	19.58	71.84	12.79	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	19.58	58.08	10.34	94.87	
6 - 0.9Dead + 1.6Wind	19.58	37.54	6.69	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	19.58	47.76	8.51	94.87	
8 - 0.9Dead + Earthquake	19.58	34.09	6.07	94.87	

MAXIMUM SHEAR - N-S DIRECTION

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	5.08	58.50	7.21	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	5.08	69.82	8.61	94.87	
3 - 1.2Dead + Live + 1.6Snow Load	5.08	109.16	13.46	94.87	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	5.08	156.75	19.32	94.87	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	5.08	169.78	20.93	94.87	
6 - 0.9Dead + 1.6Wind	5.08	155.69	19.19	94.87	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	5.08	62.85	7.75	94.87	
8 - 0.9Dead + Earthquake	5.08	42.10	5.19	94.87	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	4/4/2012
Foundation Name	1		Time	9:25:56 AM
Designed By:	FLSmith Salt Lake City	Engineer	WChan	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\015 Process Building Foundations\Combine Filter Building Footing (uplift).mcs			

DETAIL REPORT FOR 1**PIER/BASE PLATE DESIGN INFORMATION**

	P1	P2
E-W Dim (ft)	2.50	2.50
N-S Dim (ft)	3.50	3.50
Height above grade (ft)	3.50	3.50
E-W Offset (ft)	-10.00	10.00
N-S Offset (ft)	0.00	0.00
Requested Reinf. Ratio	0.0018	0.0018
Provided Reinf. Ratio	0.0100	0.0100
Long Bar Size	8	8
Bars in E-W Dir	5	5
Bars in N-S Dir	5	5
Total Long Bars	16	16
Tie Bar Size	4	4
Total No. of Ties	8	8
Major Tie Spacing (in)	12	12

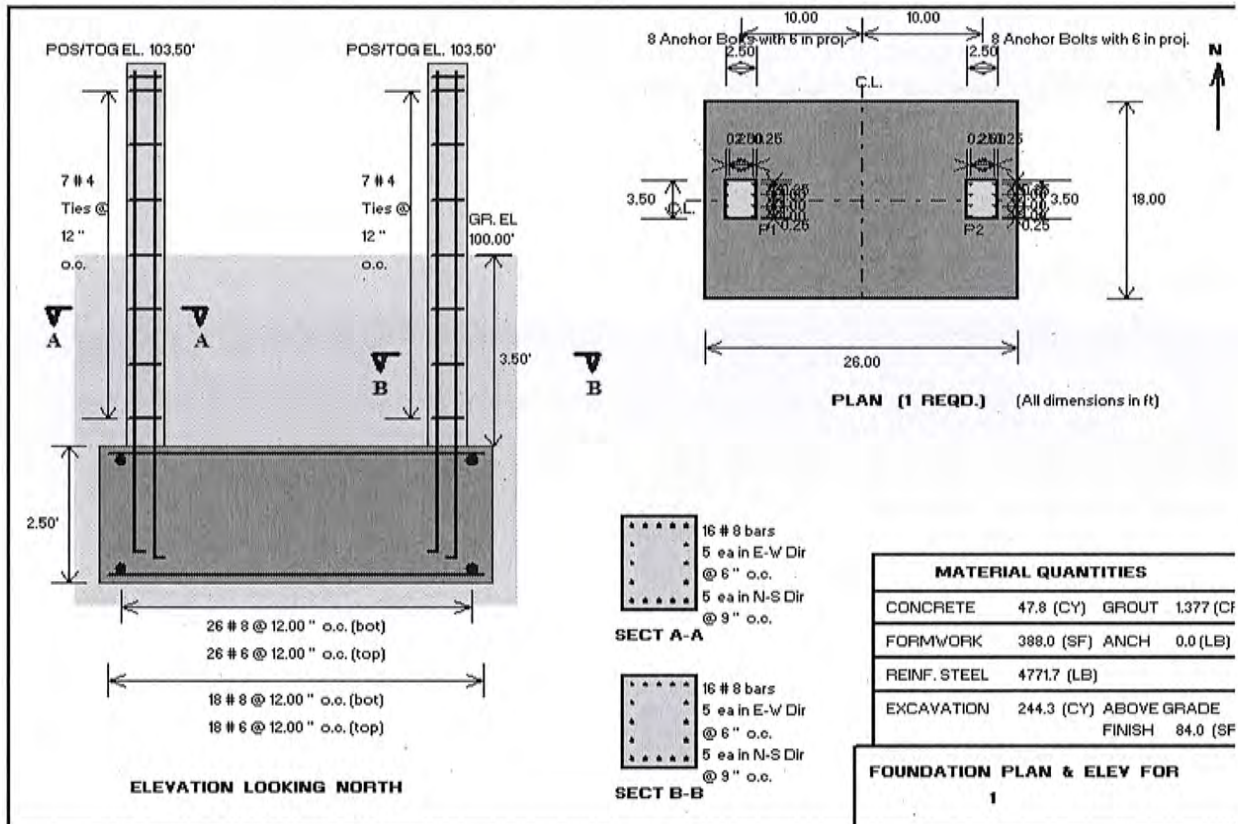
PIER ULTIMATE LOAD CAPACITIES

P1							
Load Comb	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	Rem
1 - 1.4Dead	81.34	1431.24	16.86	296.49	85.61	1498.60	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	81.00	889.13	12.07	130.24	143.60	1567.41	
3 - 1.2Dead + Live + 1.6Snow Load	119.62	646.57	19.81	106.78	266.89	1433.43	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	48.83	75.41	44.30	68.41	651.59	1006.36	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	-65.26	-66.81	120.55	123.42	923.60	945.57	
6 - 0.9Dead + 1.6Wind	-95.98	-102.06	123.68	131.53	839.58	892.91	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	48.42	445.41	16.55	152.16	135.83	1249.16	
8 - 0.9Dead + Earthquake	27.69	360.82	18.07	235.54	86.68	1128.66	

P2							
Load Comb	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	Rem
1 - 1.4Dead	81.59	1217.39	38.12	566.49	85.29	1256.54	
2 - 1.2Dead + 1.6Live + 0.5Snow Load	92.85	866.98	50.06	466.80	139.50	1301.08	
3 - 1.2Dead + Live + 1.6Snow Load	129.44	626.02	74.45	359.26	263.98	1272.91	
4 - 1.2Dead + 1.6Snow Load + 0.8Wind	163.43	307.32	126.70	238.15	658.63	1237.79	
5 - 1.2Dead + Live + 0.5Snow Load + 1.6Wind	165.54	200.50	159.26	192.92	936.15	1133.95	
6 - 0.9Dead + 1.6Wind	127.15	162.75	135.72	173.74	854.62	1094.00	
7 - 1.2Dead + Live + 0.2Snow Load + Earthquake	104.72	916.67	69.12	605.03	132.28	1157.58	
8 - 0.9Dead + Earthquake	76.86	977.13	52.79	671.12	85.56	1087.66	

Dimensional Solutions FOUNDATION3D	Version 5.8.2	Date 4/4/2012
Foundation Name 1		Time 9:25:56 AM
Designed By: FLSmidth Salt Lake City	Engineer WChan	Checker
P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\C-015 Process Building Foundations\		
Filename: Combine Filter Building Footing (uplift).mcs		

DETAIL REPORT FOR 1



	PROJECT	PROJ NO. 11021
	Update on Ln E. 7, 8 & 9	
	SUBJECT	CALC NO.
	Footings	BY Wchen DATE 6/4/2012
	CHK	DATE
	SHEET	OF REV

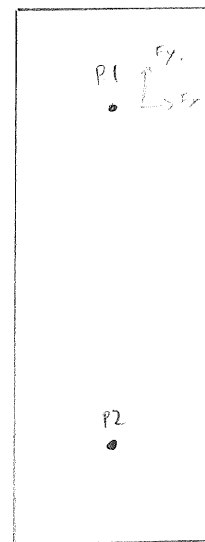
Load updated (F-1 @ E9)

	Fz	Fx	Fy
DL	86.24	0.92	-0.08
LL	21.16	0.62	-0.13
SL	105.92	0.92	-0.03
WLx	-29.85 / 1.96	1.76 / 2.66	0.09 / 0.10
WLy	-31.46 / -36.39	1.43 / 1.82	-0.17 / 0.17
Seis Lx	-0.9 / 0.88	2.52 / -2.49	-0.01 / 0.01
Seis Ly	3.34 / -3.34	-0.49 / 0.49	0.02 / -0.02

The Current 10'X 10'X2' square footing sustained.

Load updated (F-4 @ E7 + E8)

	Fz		Fx		Fy	
	P1	P2	P1	P2	P1	P2
DL	97.48	77.10	0.46	1.41	8.78	-3.04
LL	100.57	0.61	0.72	1.69	9.37	2.23
SL	73.35	56.41	-0.05	0.52	10.10	0.06
WLx +	-77.29	41.22	0.05	1.50	-10.85	-7.63
WLx -	-50.56	62.30	-0.02	-2.21	-9.72	-9.40
WLy +	118.73	-166.38	-0.02	1.44	23.38	24.91
WLy -	-188.17	150.57	0.01	1.66	-29.01	-24.31
Seis X +	-1.50	-0.09	0.19	3.58	0.17	0.11
Seis X -	1.29	0.30	-0.19	-3.54	-0.20	0.14
Seis Y +	54.12	-54.34	0.02	0.61	13.45	12.66
Seis Y -	-54.11	54.33	-0.02	-0.61	-13.45	-12.66



The current 16'X 36' X 2'-6" Footing sustained.

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-1		Time	8:32:16 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\IC-015 Process Building Foundations\Check\			
Filename:	F-1 (E9 review).mcs			

DETAIL REPORT FOR F-1**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location: Victor CO
Foundation Description: FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi) 4000
 Unit Weight (pcf) 150
 Pier Concrete Cover - E-W Dir (in) 2
 Pier Concrete Cover - N-S Dir (in) 2
 Footing Side Concrete Cover - E-W Dir (in) 3
 Footing Side Concrete Cover - N-S Dir (in) 3
 Footing Top Concrete Cover (in) 2
 Footing Bottom Concrete Cover - X Dir (in) 3

SOIL PARAMETERS:

Unit Weight (pcf) 120
 Allowable Net Bearing Capacity (psf) 4000
 Bearing Capacity Method Linear Soil Pressure
 Soil Type Granular
 Passive Pressure Coefficient Kp 3.69
 Soil To Concrete Friction f 0.5
 Allowable Increase in Soil Pressure due to Short Term Loads (%)
 Wind 33.33 Earthquake 33.33 Test 20
 Erection Stability Ratio 1.5
 Operation Stability Ratio 1.5
 Test Stability Ratio 1.5
 Safety Factor against Lateral Forces 1.5

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft) 4
 Minimum Soil Cover (ft) 0
 Grade Elevation (ft) 100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi) 60
 Unit Weight (pcf) 490
 Modulus of Elasticity (ksi) 29000
 Pier Min Rebar Spacing (in) 3
 Footing Min Rebar Spacing (in) 6
 Footing Max Rebar Spacing (in) 18

REBAR PARAMETERS:

Max Long Bar Size 10
 Min Long Bar Size 7
 Max Tie Bar Size 4
 Min Tie Bar Size 3
 Max Flt Bar Size 18
 Temp & Shrinkage Steel Ratio 0.0018

BUOYANCY CRITERIA:

Consider Buoyancy: No
 Consider soil for buoyancy: No
 Water table below grade (ft) 0

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-1		Time	8:32:16 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
Filename:	F-1 (E9.review).mcs			

DETAIL REPORT FOR F-1**APPLIED LOADS**

P1

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	86.24	0.92	0.00	-0.08	0.00
2 - Live	21.16	0.62	0.00	-0.13	0.00
3 - Snow	105.92	0.92	0.00	-0.03	0.00
4 - Wind X	1.96	-2.66	0.00	0.10	0.00
5 - Wind Y	-36.39	1.82	0.00	0.17	0.00
6 - Earthquake X	0.88	-2.49	0.00	0.01	0.00
7 - Earthquake Y	-3.34	0.49	0.00	-0.02	0.00

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	86.24	0.92	0.00	-0.08	0.00
2 - Dead + Live	107.40	1.54	0.00	-0.21	0.00
3 - Dead + Snow	192.16	1.84	0.00	-0.11	0.00
4 - Dead + 0.75Live + 0.75Snow	181.55	2.08	0.00	-0.20	0.00
5 - Dead + Wind X	88.20	-1.74	0.00	0.02	0.00
6 - Dead + Wind Y	49.85	2.74	0.00	0.09	0.00
7 - Dead + 0.7Earthquake X	86.86	-0.82	0.00	-0.07	0.00
8 - Dead + 0.7Earthquake Y	83.90	1.26	0.00	-0.09	0.00
9 - 0.6Dead + Wind X	53.70	-2.11	0.00	0.05	0.00
10 - 0.6Dead + Wind Y	15.35	2.37	0.00	0.12	0.00
11 - 0.6Dead + 0.7Earthquake X	52.36	-1.19	0.00	-0.04	0.00
12 - 0.6Dead + 0.7Earthquake Y	49.41	0.90	0.00	-0.06	0.00

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-1		Time	8:32:16 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\116 Process Building Foundations\Check\			
	F-1 (E9 review).mcs			

DETAIL REPORT FOR F-1**FACTORED (ULTIMATE) LOAD COMBINATIONS**

Load Comb	P1				
	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	120.74	1.29	0.00	-0.11	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow	190.30	2.56	0.00	-0.32	0.00
3 - 1.2Dead + Live + 1.6Snow	294.12	3.20	0.00	-0.27	0.00
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	180.74	-2.07	0.00	-0.08	0.00
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	119.38	5.10	0.00	0.03	0.00
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	146.71	-0.58	0.00	-0.22	0.00
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	142.49	2.40	0.00	-0.25	0.00
8 - 0.9Dead + 1.6Wind X	80.75	-3.43	0.00	0.09	0.00
9 - 0.9Dead + 1.6Wind Y	19.39	3.74	0.00	0.20	0.00
10 - 0.9Dead + Earthquake X	78.50	-1.66	0.00	-0.06	0.00
11 - 0.9Dead + Earthquake Y	74.28	1.32	0.00	-0.09	0.00

BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD

Load Comb	Max		All		Ecc		Ecc		Moment		Rem
	Pressure (ksf)		Pressure (ksf)		N/S Dir (ft)		E/W Dir (ft)		N/S axis (kip-ft)	E/W axis (kip-ft)	
1 - Dead	1.45		4.48		0.00		0.03		4.60	0.40	
2 - Dead + Live	1.68		4.48		0.01		0.05		7.70	1.05	
3 - Dead + Snow	2.54		4.48		0.00		0.04		9.20	0.55	
4 - Dead + 0.75Live + 0.75Snow	2.44		4.48		0.00		0.04		10.38	1.00	
5 - Dead + Wind X	1.50		5.81		0.00		0.06		8.70	0.10	
6 - Dead + Wind Y	1.14		5.81		0.00		0.13		13.70	0.45	
7 - Dead + 0.7Earthquake X	1.45		5.81		0.00		0.03		4.12	0.37	
8 - Dead + 0.7Earthquake Y	1.44		5.81		0.00		0.05		6.32	0.47	
9 - 0.6Dead + Wind X	0.94		5.81		0.00		0.12		10.54	0.26	
10 - 0.6Dead + Wind Y	0.56		5.81		0.01		0.24		11.86	0.61	
11 - 0.6Dead + 0.7Earthquake X	0.90		5.81		0.00		0.07		5.96	0.21	
12 - 0.6Dead + 0.7Earthquake Y	0.86		5.81		0.00		0.05		4.48	0.31	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-1		Time	8:32:16 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\F-1 (E9 review).mcs			

DETAIL REPORT FOR F-1

STABILITY RATIO / SLIDING SAFETY FACTOR

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead	100.00	100.00	1.50	100.00	100.00	1.50	
2 - Dead + Live	100.00	100.00	1.50	100.00	70.34	1.50	
3 - Dead + Snow	100.00	100.00	1.50	100.00	81.90	1.50	
4 - Dead + 0.75Live + 0.75Snow	100.00	100.00	1.50	100.00	70.07	1.50	
5 - Dead + Wind X	100.00	82.93	1.50	100.00	56.73	1.50	
6 - Dead + Wind Y	100.00	38.67	1.50	100.00	29.03	1.50	
7 - Dead + 0.7Earthquake X	100.00	100.00	1.50	100.00	100.00	1.50	
8 - Dead + 0.7Earthquake Y	100.00	100.00	1.50	100.00	76.46	1.50	
9 - 0.6Dead + Wind X	100.00	41.44	1.50	100.00	33.33	1.50	
10 - 0.6Dead + Wind Y	100.00	20.66	1.50	100.00	21.53	1.50	
11 - 0.6Dead + 0.7Earthquake X	100.00	72.23	1.50	100.00	58.42	1.50	
12 - 0.6Dead + 0.7Earthquake Y	100.00	92.81	1.50	100.00	76.09	1.50	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-1		Time	8:32:16 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Check\F-1 (E9 review).mcs			

DETAIL REPORT FOR F-1**FOOTING DESIGN INFORMATION**

E-W Dim (ft)	10.00
N-S Dim (ft)	10.00
Thickness (ft)	2.00

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
11. 0.9Dead + Earthquake Y	10	7	12	0.6	0	0	E-W
11. 0.9Dead + Earthquake Y	10	7	12	0.6	0	0	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
3. 1.2Dead + Live + 1.6Snow	10	7	12	0.6	0.52	21.57	E-W
3. 1.2Dead + Live + 1.6Snow	10	7	12	0.6	0.52	13.51	N-S

PUNCHING SHEAR**P1**

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
3. 1.2Dead + Live + 1.6Snow	226.60	48.01	189.74	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-1		Time	8:32:16 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021116 - Calculations\116.d - Arch_Civil_Struct\C-015 Process Building Foundations\Check\			
	F-1 (E9 review).mcs			

DETAIL REPORT FOR F-1**MAXIMUM SHEAR - E-W DIRECTION**

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	7.92	-27.10	11.29	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	7.92	-42.04	17.52	94.87	
3 - 1.2Dead + Live + 1.6Snow	7.92	-63.98	26.66	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	2.08	39.81	16.59	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	7.92	-28.52	11.88	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	2.08	31.98	13.32	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	7.92	-32.00	13.33	94.87	
8 - 0.9Dead + 1.6Wind X	2.08	19.36	8.07	94.87	
9 - 0.9Dead + 1.6Wind Y	7.92	-6.73	2.81	94.87	
10 - 0.9Dead + Earthquake X	2.08	18.02	7.51	94.87	
11 - 0.9Dead + Earthquake Y	7.92	-16.97	7.07	94.87	

MAXIMUM SHEAR - N-S DIRECTION

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	1.33	16.98	7.07	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	1.33	26.20	10.92	94.87	
3 - 1.2Dead + Live + 1.6Snow	1.33	40.03	16.68	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	1.33	24.85	10.35	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	1.33	16.64	6.93	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	1.33	20.36	8.48	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	1.33	19.81	8.25	94.87	
8 - 0.9Dead + 1.6Wind X	8.67	-11.34	4.72	94.87	
9 - 0.9Dead + 1.6Wind Y	8.67	-3.20	1.33	94.87	
10 - 0.9Dead + Earthquake X	1.33	11.03	4.60	94.87	
11 - 0.9Dead + Earthquake Y	1.33	10.48	4.37	94.87	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-1		Time	8:32:16 AM
Designed By:	FLSmdth Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-1 (E9 review).mcs			

DETAIL REPORT FOR F-1**PIER/BASE PLATE DESIGN INFORMATION**

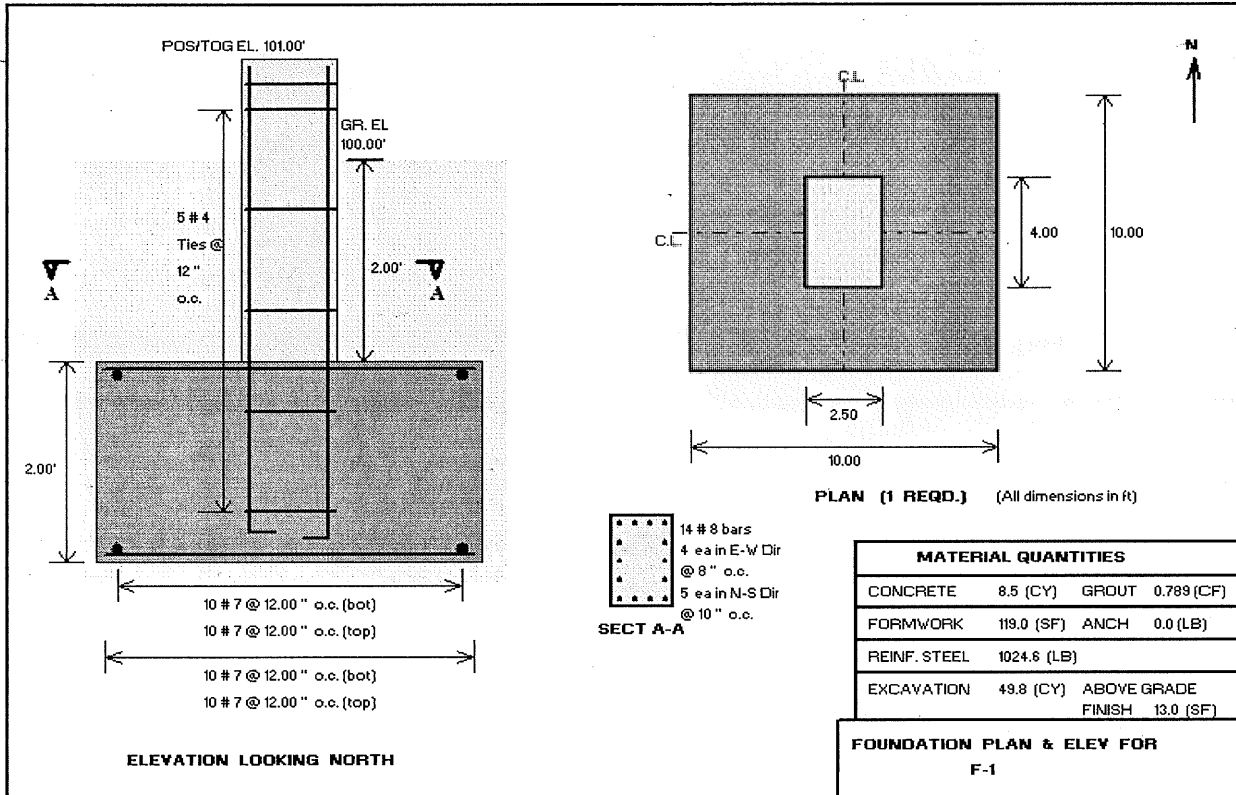
	P1
E-W Dim (ft)	2.50
N-S Dim (ft)	4.00
Height above grade (ft)	1.00
E-W Offset (ft)	0.00
N-S Offset (ft)	0.00
Requested Reinf. Ratio	0.0050
Provided Reinf. Ratio	0.0076
Long Bar Size	8
Bars in E-W Dir	4
Bars in N-S Dir	5
Total Long Bars	14
Tie Bar Size	4
Total No. of Ties	6
Major Tie Spacing (in)	12

PIER ULTIMATE LOAD CAPACITIES

	P1						
Load	Axial	Axial	Mom N-S	Mom N-S	Mom E-W	Mom E-W	Rem
Comb	Load	Capa.		Capa		Capa	
	(kips)	(kips)	(kip ft)	(kip ft)	(kip ft)	(kip ft)	
1 - 1.4Dead	127.04	2869.56	15.88	414.09	21.60	515.89	
2 - 1.2Dead + 1.6Live + 0.5Snow	195.70	2869.56	24.46	414.09	33.27	515.89	
3 - 1.2Dead + Live + 1.6Snow	299.52	2869.56	37.44	414.09	50.92	515.89	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	186.14	2869.56	23.27	414.09	31.64	515.89	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	124.78	2869.56	15.60	414.09	21.21	515.89	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	152.11	2869.56	19.01	414.09	25.86	515.89	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	147.89	2869.56	18.49	414.09	25.14	515.89	
8 - 0.9Dead + 1.6Wind X	84.80	2869.56	10.60	414.09	14.42	515.89	
9 - 0.9Dead + 1.6Wind Y	23.44	2189.27	11.22	1042.54	3.99	372.01	
10 - 0.9Dead + Earthquake X	82.55	2869.56	10.32	414.09	14.03	515.89	
11 - 0.9Dead + Earthquake Y	78.33	2869.56	9.79	414.09	13.32	515.89	

Dimensional Solutions FOUNDATION3D	Version - 5.8.2	Date 6/5/2012
Foundation Name F-1	Engineer ECS	Time 8:32:16 AM
Designed By: FLSmidth Salt Lake City	Checker	
P:\11021\116 - Calculations\116.d - Arch_Civil_StructC-015 Process Building Foundations\Check\		
Filename: F-1 (E9 review).mcs		

DETAIL REPORT FOR F-1



Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-4 (Pink)		Time	10:53:04 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
Filename:	F-4 (E7,8 review-).mcs			

DETAIL REPORT FOR F-4 (Pink)**PROJECT INFORMATION**

Project Name: CC&V High Grade Mill
Project Number: 11021
Client: CC&V
Project Location: Victor CO
Foundation Description: FOUNDATION

DESIGN CODE ACI 318 - 2008 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi)	4000
Unit Weight (pcf)	150
Pier Concrete Cover - E-W Dir (in)	2
Pier Concrete Cover - N-S Dir (in)	2
Footing Side Concrete Cover - E-W Dir (in)	3
Footing Side Concrete Cover - N-S Dir (in)	3
Footing Top Concrete Cover (in)	2
Footing Bottom Concrete Cover - X Dir (in)	3

SOIL PARAMETERS:

Unit Weight (pcf)	120				
Allowable Net Bearing Capacity (psf)	4000				
Bearing Capacity Method	Linear Soil Pressure				
Soil Type	Granular				
Passive Pressure Coefficient Kp	3.69				
Soil To Concrete Friction f	0.5				
Allowable Increase in Soil Pressure due to Short Term Loads (%)					
Wind	33.33	Earthquake	33.33	Test	20
Erection Stability Ratio	1.5				
Operation Stability Ratio	1.5				
Test Stability Ratio	1.5				
Safety Factor against Lateral Forces	1.5				

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft)	6
Minimum Soil Cover (ft)	0
Grade Elevation (ft)	100

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi)	60
Unit Weight (pcf)	490
Modulus of Elasticity (ksi)	29000
Pier Min Rebar Spacing (in)	3
Footing Min Rebar Spacing (in)	6
Footing Max Rebar Spacing (in)	18

REBAR PARAMETERS:

Max Long Bar Size	10
Min Long Bar Size	7
Max Tie Bar Size	4
Min Tie Bar Size	3
Max Ftg Bar Size	18
Temp & Shrinkage Steel Ratio	0.0018

BUOYANCY CRITERIA:

Consider Buoyancy:	No
Consider soil for buoyancy:	No
Water table below grade (ft)	0

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-4 (Pink)		Time	10:53:04 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\F-4 (E7,8 review-).mcs			

DETAIL REPORT FOR F-4 (Pink)

APPLIED LOADS

P1

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	97.48	8.78	0.00	0.46	0.00
2 - Live	100.57	9.37	0.00	0.72	0.00
3 - Snow	73.35	10.10	0.00	-0.05	0.00
4 - Wind X	-50.56	-9.72	0.00	-0.02	0.00
5 - Wind Y	-188.17	-29.01	0.00	0.01	0.00
6 - Earthquake X	1.29	-0.20	0.00	-0.19	0.00
7 - Earthquake Y	-54.11	-13.45	0.00	-0.02	0.00

P2

Load Case	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	77.10	-3.04	0.00	1.41	0.00
2 - Live	0.61	2.23	0.00	1.69	0.00
3 - Snow	56.41	0.06	0.00	0.52	0.00
4 - Wind X	62.30	-9.72	0.00	-2.21	0.00
5 - Wind Y	150.57	-24.31	0.00	1.66	0.00
6 - Earthquake X	0.30	-0.14	0.00	-3.54	0.00
7 - Earthquake Y	54.33	-12.66	0.00	-0.61	0.00

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-4 (Pink)		Time	10:53:04 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\F-4 (E7,8 review-).mcs			

DETAIL REPORT FOR F-4 (Pink)

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	97.48	8.78	0.00	0.46	0.00
2 - Dead + Live	198.05	18.15	0.00	1.18	0.00
3 - Dead + Snow	170.83	18.88	0.00	0.41	0.00
4 - Dead + 0.75Live + 0.75Snow	227.92	23.38	0.00	0.96	0.00
5 - Dead + Wind X	46.92	-0.94	0.00	0.44	0.00
6 - Dead + Wind Y	-90.69	-20.23	0.00	0.47	0.00
7 - Dead + 0.7Earthquake X	98.38	8.64	0.00	0.33	0.00
8 - Dead + 0.7Earthquake Y	59.60	-0.64	0.00	0.45	0.00
9 - 0.6Dead + Wind X	7.93	-4.45	0.00	0.26	0.00
10 - 0.6Dead + Wind Y	-129.68	-23.74	0.00	0.29	0.00
11 - 0.75Dead + 0.7Earthquake X	74.01	6.45	0.00	0.21	0.00
12 - 0.75Dead + 0.7Earthquake Y	35.23	-2.83	0.00	0.33	0.00

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - Dead	77.10	-3.04	0.00	1.41	0.00
2 - Dead + Live	77.71	-0.81	0.00	3.10	0.00
3 - Dead + Snow	133.51	-2.98	0.00	1.93	0.00
4 - Dead + 0.75Live + 0.75Snow	119.87	-1.32	0.00	3.07	0.00
5 - Dead + Wind X	139.40	-12.76	0.00	-0.80	0.00
6 - Dead + Wind Y	227.67	-27.35	0.00	3.07	0.00
7 - Dead + 0.7Earthquake X	77.31	-3.14	0.00	-1.07	0.00
8 - Dead + 0.7Earthquake Y	115.13	-11.90	0.00	0.98	0.00
9 - 0.6Dead + Wind X	108.56	-11.54	0.00	-1.36	0.00
10 - 0.6Dead + Wind Y	196.83	-26.13	0.00	2.51	0.00
11 - 0.75Dead + 0.7Earthquake X	58.04	-2.38	0.00	-1.42	0.00
12 - 0.75Dead + 0.7Earthquake Y	95.86	-11.14	0.00	0.63	0.00

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-4 (Pink)		Time	10:53:04 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\IC-015 Process Building Foundations\Check\			
	F-4 (E7,8 review-).mcs			

DETAIL REPORT FOR F-4 (Pink)

FACTORED (ULTIMATE) LOAD COMBINATIONS

P1

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	136.47	12.29	0.00	0.64	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow	314.56	30.58	0.00	1.68	0.00
3 - 1.2Dead + Live + 1.6Snow	334.91	36.07	0.00	1.19	0.00
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	173.33	9.40	0.00	1.22	0.00
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	-46.85	-21.46	0.00	1.26	0.00
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	233.51	21.73	0.00	1.07	0.00
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	178.11	8.48	0.00	1.24	0.00
8 - 0.9Dead + 1.6Wind X	6.84	-7.65	0.00	0.38	0.00
9 - 0.9Dead + 1.6Wind Y	-213.34	-38.51	0.00	0.43	0.00
10 - 0.9Dead + Earthquake X	89.02	7.70	0.00	0.22	0.00
11 - 0.9Dead + Earthquake Y	33.62	-5.55	0.00	0.39	0.00

P2

Load Comb	Axial (kips)	Shear E-W (kips)	Mom N-S (kip ft)	Shear N-S (kips)	Mom E-W (kip ft)
1 - 1.4Dead	107.94	-4.26	0.00	1.97	0.00
2 - 1.2Dead + 1.6Live + 0.5Snow	121.70	-0.05	0.00	4.66	0.00
3 - 1.2Dead + Live + 1.6Snow	183.39	-1.32	0.00	4.21	0.00
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	221.02	-16.94	0.00	0.11	0.00
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	362.25	-40.28	0.00	6.30	0.00
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	104.71	-1.55	0.00	-0.05	0.00
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	158.74	-14.07	0.00	2.88	0.00
8 - 0.9Dead + 1.6Wind X	169.07	-18.29	0.00	-2.27	0.00
9 - 0.9Dead + 1.6Wind Y	310.30	-41.63	0.00	3.93	0.00
10 - 0.9Dead + Earthquake X	69.69	-2.88	0.00	-2.27	0.00
11 - 0.9Dead + Earthquake Y	123.72	-15.40	0.00	0.66	0.00

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-4 (Pink)		Time	10:53:04 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-4 (E7,8 review-).mcs			

DETAIL REPORT FOR F-4 (Pink)**BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD**

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead	1.17	4.72	0.03	0.24	152.14	16.83	
2 - Dead + Live	1.62	4.72	0.05	1.41	1047.34	38.52	
3 - Dead + Snow	1.42	4.72	0.03	0.30	230.10	21.06	
4 - Dead + 0.75Live + 0.75Snow	1.70	4.72	0.04	1.08	882.01	36.27	
5 - Dead + Wind X	1.37	6.05	0.00	1.22	801.50	3.24	
6 - Dead + Wind Y	1.87	6.05	0.05	4.55	2755.38	31.86	
7 - Dead + 0.7Earthquake X	1.17	6.05	0.01	0.25	161.21	6.67	
8 - Dead + 0.7Earthquake Y	1.25	6.05	0.02	0.69	442.45	12.86	
9 - 0.6Dead + Wind X	0.95	6.05	0.03	2.17	862.36	9.97	
10 - 0.6Dead + Wind Y	1.48	6.05	0.07	8.08	2816.24	25.13	
11 - 0.75Dead + 0.7Earthquake X	0.88	6.05	0.02	0.25	123.18	10.88	
12 - 0.75Dead + 0.7Earthquake Y	0.98	6.05	0.02	1.00	480.48	8.65	

STABILITY RATIO / SLIDING SAFETY FACTOR

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead	100.00	100.00	1.50	100.00	70.72	1.50	
2 - Dead + Live	100.00	89.48	1.50	100.00	26.33	1.50	
3 - Dead + Snow	100.00	84.28	1.50	100.00	29.61	1.50	
4 - Dead + 0.75Live + 0.75Snow	100.00	75.06	1.50	100.00	22.33	1.50	
5 - Dead + Wind X	100.00	100.00	1.50	100.00	30.06	1.50	
6 - Dead + Wind Y	7.36	12.84	1.50	100.00	8.14	1.50	
7 - Dead + 0.7Earthquake X	100.00	100.00	1.50	100.00	73.88	1.50	
8 - Dead + 0.7Earthquake Y	100.00	100.00	1.50	100.00	32.38	1.50	
9 - 0.6Dead + Wind X	100.00	56.74	1.50	100.00	17.70	1.50	
10 - 0.6Dead + Wind Y	3.60	7.12	1.50	100.00	5.18	1.50	
11 - 0.75Dead + 0.7Earthquake X	100.00	100.00	1.50	100.00	80.17	1.50	
12 - 0.75Dead + 0.7Earthquake Y	100.00	73.94	1.50	100.00	23.30	1.50	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-4 (Pink)		Time	10:53:04 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-4 (E7,8 review-).mcs			

DETAIL REPORT FOR F-4 (Pink)

FOOTING DESIGN INFORMATION

E-W Dim (ft) 36.00
 N-S Dim (ft) 16.00
 Thickness (ft) 2.50

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
9. 0.9Dead + 1.6Wind Y	16	10	12	1.27	0.38	-35.71	E-W
11. 0.9Dead + Earthquake Y	36	10	12	1.27	0	0	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
9. 0.9Dead + 1.6Wind Y	16	10	12	1.27	0.65	56.93	E-W
3. 1.2Dead + Live + 1.6Snow	36	10	12	1.27	0.65	17.36	N-S

PUNCHING SHEAR

P1

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
3. 1.2Dead + Live + 1.6Snow	315.01	46.60	189.74	

P2

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
5. 1.2Dead + Live + 0.5Snow + 1.6Wind Y	352.48	52.14	189.74	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-4 (Pink)		Time	10:53:04 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021116 - Calculations\116.d - Arch_Civil_Struct\C-015 Process Building Foundations\Check\			
	F-4 (E7,8 review-).mcs			

DETAIL REPORT FOR F-4 (Pink)**MAXIMUM SHEAR - E-W DIRECTION**

Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	11.42	-56.27	11.27	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	11.42	-120.80	24.20	94.87	
3 - 1.2Dead + Live + 1.6Snow	11.42	-131.42	26.33	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	24.58	85.47	17.12	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	24.58	138.91	27.83	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	11.42	-90.60	18.15	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	11.42	-66.76	13.37	94.87	
8 - 0.9Dead + 1.6Wind X	24.58	66.37	13.29	94.87	
9 - 0.9Dead + 1.6Wind Y	24.58	109.53	21.94	94.87	
10 - 0.9Dead + Earthquake X	11.42	-36.49	7.31	94.87	
11 - 0.9Dead + Earthquake Y	24.58	51.32	10.28	94.87	

MAXIMUM SHEAR - N-S DIRECTION

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 1.4Dead	12.17	-66.71	5.94	94.87	
2 - 1.2Dead + 1.6Live + 0.5Snow	12.17	-114.02	10.15	94.87	
3 - 1.2Dead + Live + 1.6Snow	12.17	-133.10	11.85	94.87	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	12.17	-100.90	8.98	94.87	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	12.17	-85.82	7.64	94.87	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	12.17	-87.26	7.77	94.87	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	12.17	-88.84	7.91	94.87	
8 - 0.9Dead + 1.6Wind X	3.83	47.51	4.23	94.87	
9 - 0.9Dead + 1.6Wind Y	12.17	-30.11	2.68	94.87	
10 - 0.9Dead + Earthquake X	3.83	43.49	3.87	94.87	
11 - 0.9Dead + Earthquake Y	12.17	-42.55	3.79	94.87	

Dimensional Solutions FOUNDATION3D	Version	5.8.2	Date	6/5/2012
Foundation Name	F-4 (Pink)		Time	10:53:04 AM
Designed By:	FLSmith Salt Lake City	Engineer	ECS	Checker
Filename:	P:\11021\116 - Calculations\116.d - Arch_Civil_Struc\C-015 Process Building Foundations\Check\			
	F-4 (E7,8 review-).mcs			

DETAIL REPORT FOR F-4 (Pink)**PIER/BASE PLATE DESIGN INFORMATION**

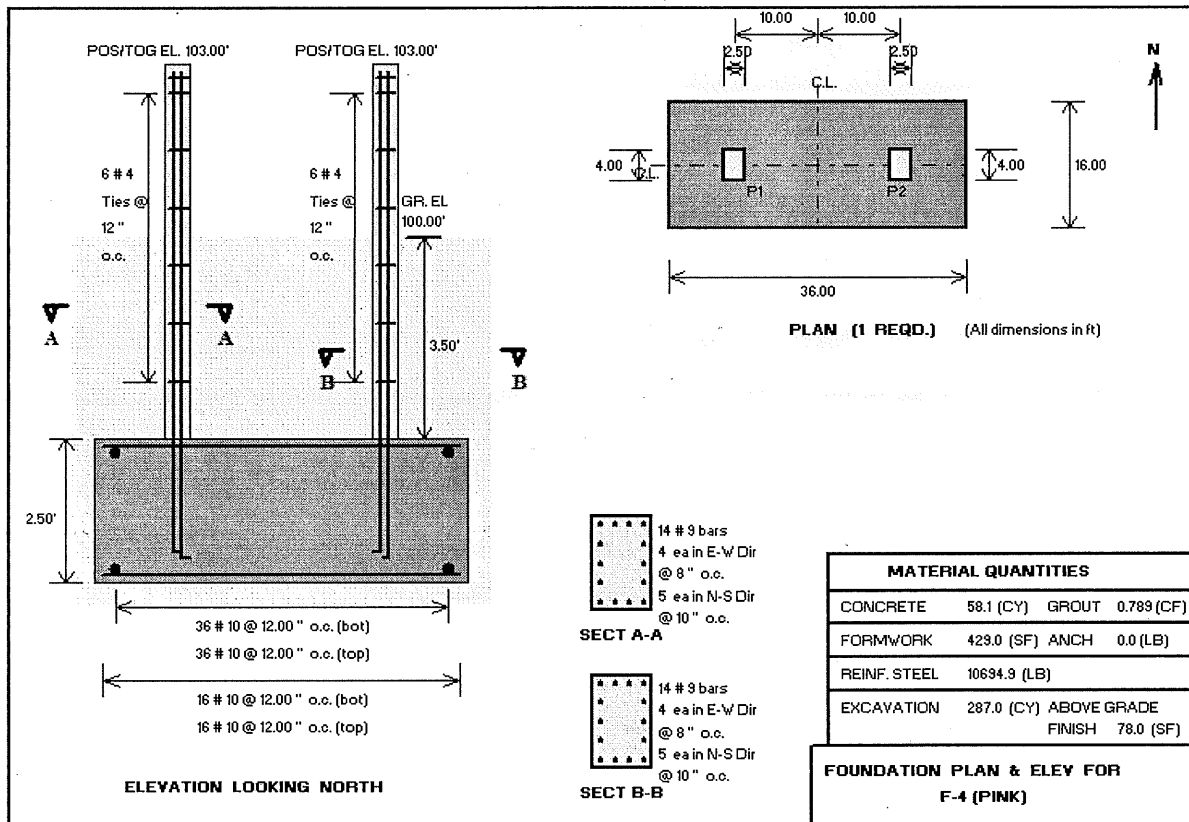
	P1	P2
E-W Dim (ft)	2.50	2.50
N-S Dim (ft)	4.00	4.00
Height above grade (ft)	3.00	3.00
E-W Offset (ft)	-10.00	10.00
N-S Offset (ft)	0.00	0.00
Requested Reinf. Ratio	0.0050	0.0050
Provided Reinf. Ratio	0.0097	0.0097
Long Bar Size	9	9
Bars in E-W Dir	4	4
Bars in N-S Dir	5	5
Total Long Bars	14	14
Tie Bar Size	4	4
Total No. of Ties	7	7
Major Tie Spacing (in)	12	12

PIER ULTIMATE LOAD CAPACITIES

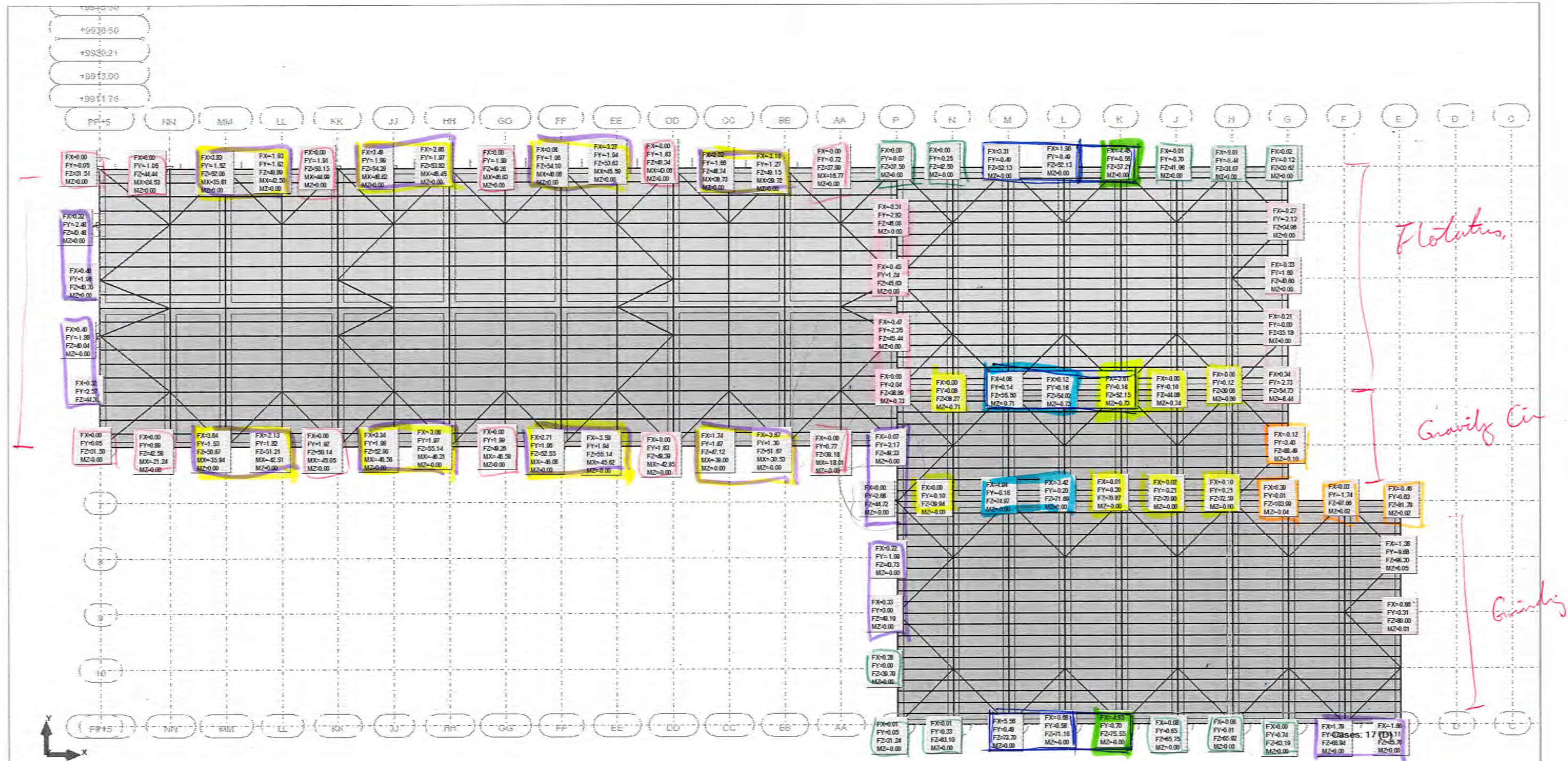
Load Comb	P1						Rem
	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	
1 - 1.4Dead	150.12	2137.34	79.90	1133.05	25.52	363.61	
2 - 1.2Dead + 1.6Live + 0.5Snow	326.26	1970.48	198.76	1195.59	55.46	335.20	
3 - 1.2Dead + Live + 1.6Snow	346.61	1836.85	234.43	1236.67	58.92	312.54	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	185.03	2625.16	61.13	864.54	31.45	451.50	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	-35.15	-162.86	139.49	646.37	8.21	38.04	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	245.21	2040.81	141.22	1170.84	41.69	347.15	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	189.81	2738.31	55.09	778.76	32.27	485.47	
8 - 0.9Dead + 1.6Wind X	15.61	312.23	49.73	994.65	2.65	53.08	
9 - 0.9Dead + 1.6Wind Y	-204.57	-360.58	250.34	441.47	-34.78	-61.32	
10 - 0.9Dead + Earthquake X	97.80	2183.38	50.06	1113.52	16.63	371.06	
11 - 0.9Dead + Earthquake Y	42.40	1543.46	36.06	1303.92	7.21	262.61	

Load Comb	P2						Rem
	Axial Load (kips)	Axial Capa. (kips)	Mom N-S (kip ft)	Mom N-S Capa (kip ft)	Mom E-W (kip ft)	Mom E-W Capa (kip ft)	
1 - 1.4Dead	121.59	2895.26	27.66	658.28	20.67	494.07	
2 - 1.2Dead + 1.6Live + 0.5Snow	133.40	2957.98	16.68	369.80	30.26	671.16	
3 - 1.2Dead + Live + 1.6Snow	195.09	2957.98	24.39	419.36	33.16	533.26	
4 - 1.2Dead + Live + 0.5Snow + 1.6Wind X	232.72	2273.92	110.11	1071.71	39.56	386.56	
5 - 1.2Dead + Live + 0.5Snow + 1.6Wind Y	373.95	1792.11	261.85	1248.82	63.57	304.92	
6 - 1.2Dead + Live + 0.2Snow + Earthquake X	116.41	2957.98	14.55	419.36	19.79	533.26	
7 - 1.2Dead + Live + 0.2Snow + Earthquake Y	170.44	2127.84	91.43	1136.96	28.98	362.03	
8 - 0.9Dead + 1.6Wind X	177.85	1852.08	118.87	1232.36	30.23	315.13	
9 - 0.9Dead + 1.6Wind Y	319.08	1547.12	270.61	1303.24	54.24	263.22	
10 - 0.9Dead + Earthquake X	78.47	2851.82	18.69	684.86	14.76	518.80	
11 - 0.9Dead + Earthquake Y	132.50	1694.44	100.07	1272.81	22.52	288.31	

Dimensional Solutions FOUNDATION3D	Version 5.8.2	Date 6/5/2012
Foundation Name F-4 (Pink)		Time 10:53:04 AM
Designed By: FLSmith Salt Lake City	Engineer ECS	Checker
P:\11021\116 - Calculations\116.d - Arch_Civil_Struct\015 Process Building Foundations\Check\		
Filename: F-4 (E7,8 review-).mcs		

DETAIL REPORT FOR F-4 (Pink)

View - Reaction forces(kip),Reaction moments(kip*ft), Cases: 17 (D)



Base Plate Design per Design Guide 1, 2nd Edition

W24 Column *w/ SHEAR LUG*

Loads:

$P_u := -446 \text{ kip}$	Ultimate Vertical Load (negative is uplift)
$V_u := 62 \text{ kip}$	Ultimate Shear Load
$M_u := 0 \text{ kip}\cdot\text{ft}$	Ultimate Bending Moment

Load Resistance Factors:

$\phi_c := 0.65$	Compressive Load Factor
$\phi_t := 0.75$	Tensile Load Factor
$\phi_f := 0.9$	Flexural Load Factor
$\phi_v := 0.75$	Shear Load Factor

Properties:

$A_c := 16 \text{ ft}^2 = 2.304 \times 10^3 \text{ in}^2$	Concrete Pedestal Area
$f_c := 4 \text{ ksi}$	Concrete Compressive Strength
$F_y := 36 \text{ ksi}$	Steel Yield Strength
$B := 14 \text{ in}$	Base Plate Width
$N := 26 \text{ in}$	Base Plate Length
$t_p := 1.5 \text{ in}$	Base Plate Thickness
$A_1 := B \cdot N = 364 \cdot \text{in}^2$	Base Plate Area
$A_2 := \min(4 \text{ ft}^2, 4 \cdot A_1) = 576 \text{ in}^2$	Concrete Area
$\text{MemberSize} := \text{"W24X146"}$	Column
$d := \text{vlookup}(\text{MemberSize}, \text{Data}, 4)_0 \text{ in} = 24.7 \cdot \text{in}$	Depth of Column
$b_f := \text{vlookup}(\text{MemberSize}, \text{Data}, 7)_0 \text{ in} = 12.9 \cdot \text{in}$	Width of Column
$t_f := \text{vlookup}(\text{MemberSize}, \text{Data}, 11)_0 \text{ in} = 1.09 \text{ in}$	Column Flange Width

☐ Concentric Compressive Axial Loads

☐ Tensile Axial Loads

☐ Base Plates with Small Moments

☐ Base Plates with Large Moments

☒ Shear Design

Section 3.5 Design for Shear

Section 3.5.1 Friction

$$\mu := 0.4$$

Friction Factor

$$A_n := B \cdot N = 364 \text{ in}^2$$

Base Plate Area

$$V_n := \min(\mu \cdot P_u, 0.2 \cdot f_c \cdot A_c) = -178.4 \text{ kip}$$

Nominal Friction Capacity

$$\phi_v \cdot V_n = -133.8 \text{ kip}$$

Friction Capacity (No tensile Force)

$$\text{Check}_{\text{Friction}} = \text{"No Friction"}$$

Section 3.5.2 Anchor Bolts

$$n_{\text{bolts}} := 8$$

Number of Bolts

$$N_y := n_{\text{bolts}} \cdot A_{\text{eff}} \cdot F_y = 500.456 \text{ kip}$$

Shear Force Provided by Bolts

$$\text{Ratio} := \frac{T_{u,\text{max}}}{n_{\text{bolts}} \cdot \phi_t \cdot R_n} + \frac{V_u}{\phi_v \cdot N_y} = 3.836$$

Anchor Bolt Interaction Ratio

$$\text{Check}_{\text{Anchor.Bolts}} = \text{"Increase Bolt Size or Use Shear Lug"}$$

Section 3.5.3 Shear Lug

$$l := 12 \text{ in}$$

Shear Lug Length

$$t := 1.5 \text{ in}$$

Shear Lug Thickness

$$d := 4 \text{ in}$$

Embedded Shear Lug Depth

$$t_{\text{grout}} := 1 \text{ in}$$

Grout Thickness

$$A_l := l \cdot d = 48 \text{ in}^2$$

Shear Lug Area

$$\phi P_{n1} := 0.8 \cdot f_c \cdot A_l = 153.6 \text{ kip}$$

Shear Lug Capacity

$$a := \frac{d}{2} + t_{\text{grout}} = 3 \text{ in}$$

Moment Arm

$$M_{lug} := V_u \cdot a = 15.5 \cdot \text{kip} \cdot \text{ft}$$

Shear Lug Factored Moment

$$S_{lug} := 1 \cdot \frac{t^2}{4} = 6.75 \cdot \text{in}^3$$

Shear Lug Section Modulus

$$\text{Check}_{Lug.Thickness} := \text{if} \left(\frac{M_{lug}}{S_{lug}} > 0.9F_y, \text{"Increase Thickness"}, \text{"OK"} \right) = \text{"OK"}$$

Section 3.5.3.1 Shear Lug Weld

$$f_w := \sqrt{\left(V_u \cdot \frac{a}{t} \right)^2 + \left(\frac{V_u}{2} \right)^2} = 127.816 \cdot \text{kip}$$

Factored Weld Force

$$D_{weld} := \frac{1}{4} \text{in}$$

Weld Size

$$F_{EXX} := 70 \text{ksi}$$

Weld Strength

$$\phi R_n := 0.75 \cdot 0.6 \cdot F_{EXX} \cdot 0.707 \cdot D_{weld} \cdot (2 \cdot l + 2 \cdot t) = 150.326 \cdot \text{kip}$$

Weld Capacity

$$\text{Check}_{Lug.Weld} := \text{if} (f > \phi R_n, \text{"Increase Weld"}, \text{"OK"}) = \text{"OK"}$$

☒ Shear Design

Base Plate Design per Design Guide 1, 2nd Edition

W24 Column *w/SHRUB LUG*

Loads:

$$P_u := -213 \text{ kip}$$

Ultimate Vertical Load (negative is uplift)

$$V_u := 62 \text{ kip}$$

Ultimate Shear Load

$$M_u := 0 \text{ kip}\cdot\text{ft}$$

Ultimate Bending Moment

Load Resistance Factors:

$$\phi_c := 0.65$$

Compressive Load Factor

$$\phi_t := 0.75$$

Tensile Load Factor

$$\phi_f := 0.9$$

Flexural Load Factor

$$\phi_v := 0.75$$

Shear Load Factor

Properties:

$$A_c := 16 \text{ ft}^2 = 2.304 \times 10^3 \text{ in}^2$$

Concrete Pedestal Area

$$f_c := 4 \text{ ksi}$$

Concrete Compressive Strength

$$F_y := 36 \text{ ksi}$$

Steel Yield Strength

$$B := 14 \text{ in}$$

Base Plate Width

$$N := 26 \text{ in}$$

Base Plate Length

$$t_p := 1.5 \text{ in}$$

Base Plate Thickness

$$A_1 := B \cdot N = 364 \text{ in}^2$$

Base Plate Area

$$A_2 := \min(4 \text{ ft}^2, 4 \cdot A_1) = 576 \text{ in}^2$$

Concrete Area

$$\text{MemberSize} := \text{"W24X117"}$$

Column

$$d := \text{vlookup}(\text{MemberSize}, \text{Data}, 4)_0 \text{ in} = 24.3 \text{ in}$$

Depth of Column

$$b_f := \text{vlookup}(\text{MemberSize}, \text{Data}, 7)_0 \text{ in} = 12.8 \text{ in}$$

Width of Column

$$t_f := \text{vlookup}(\text{MemberSize}, \text{Data}, 11)_0 \text{ in} = 0.85 \text{ in}$$

Column Flange Width

☐ Concentric Compressive Axial Loads

☐ Tensile Axial Loads

☐ Base Plates with Small Moments

☐ Base Plates with Large Moments

☒ Shear Design

Section 3.5 Design for Shear

Section 3.5.1 Friction

$$\mu := 0.4$$

Friction Factor

$$A_{\text{base}} := B \cdot N = 364 \text{ in}^2$$

Base Plate Area

$$V_n := \min(\mu \cdot P_u, 0.2 \cdot f_c \cdot A_c) = -85.2 \cdot \text{kip}$$

Nominal Friction Capacity

$$\phi_v \cdot V_n = -63.9 \cdot \text{kip}$$

Friction Capacity (No tensile Force)

 Check_{Friction} = "No Friction"

Section 3.5.2 Anchor Bolts

$$n_{\text{bolts}} := 8$$

Number of Bolts

$$N_y := n_{\text{bolts}} \cdot A_{\text{eff}} \cdot F_y = 346.402 \cdot \text{kip}$$

Shear Force Provided by Bolts

$$\text{Ratio} := \frac{T_{u,\text{max}}}{n_{\text{bolts}} \cdot \phi_t \cdot R_n} + \frac{V_u}{\phi_v \cdot N_y} = 2.074$$

Anchor Bolt Interaction Ratio

 Check_{Anchor.Bolts} = "Increase Bolt Size or Use Shear Lug"

Section 3.5.3 Shear Lug

$$l_w := 12 \text{ in}$$

Shear Lug Length

$$t := 1.5 \text{ in}$$

Shear Lug Thickness

$$d := 4 \text{ in}$$

Embedded Shear Lug Depth

$$t_{\text{grout}} := 1 \text{ in}$$

Grout Thickness

$$A_l := l \cdot d = 48 \text{ in}^2$$

Shear Lug Area

$$\phi P_{n1} := 0.8 \cdot f_c \cdot A_l = 153.6 \cdot \text{kip}$$

Shear Lug Capacity

$$a := \frac{d}{2} + t_{\text{grout}} = 3 \text{ in}$$

Moment Arm

$$M_{lug} := V_u \cdot a = 15.5 \cdot \text{kip} \cdot \text{ft}$$

Shear Lug Factored Moment

$$S_{lug} := 1 \cdot \frac{t^2}{4} = 6.75 \cdot \text{in}^3$$

Shear Lug Section Modulus

$$\text{Check}_{Lug.Thickness} := \text{if} \left(\frac{M_{lug}}{S_{lug}} > 0.9F_y, \text{"Increase Thickness"}, \text{"OK"} \right) = \text{"OK"}$$

Section 3.5.3.1 Shear Lug Weld

$$f_w := \sqrt{\left(V_u \cdot \frac{a}{t} \right)^2 + \left(\frac{V_u}{2} \right)^2} = 127.816 \cdot \text{kip}$$

Factored Weld Force

$$D_{weld} := \frac{1}{4} \cdot \text{in}$$

Weld Size

$$F_{EXX} := 70 \text{ksi}$$

Weld Strength

$$\phi R_n := 0.75 \cdot 0.6 \cdot F_{EXX} \cdot 0.707 \cdot D_{weld} \cdot (2 \cdot l + 2 \cdot t) = 150.326 \cdot \text{kip}$$

Weld Capacity

$$\text{Check}_{Lug.Weld} := \text{if} (f > \phi R_n, \text{"Increase Weld"}, \text{"OK"}) = \text{"OK"}$$

Shear Design