





































- Governing load combination is Dead+Roof Live.
- Axial capacity of member is 3203.75 lb.
- Maximum hanger forces: 261.333 lb (Left) and 261.333 lb (Right).

## Minimum Bearing

<i>Span</i>	<i>Actual Length ft</i>	<i>Left Support Min. Bearing in</i>	<i>Right Support Min. Bearing in</i>
Span 1	9'4"	1.5	1.5

### Notes:

- Locations of maximum stress, moment, etc. are measured from the left end of the member.
- Bearing across full width of beam is required.
- Structural adequacy of supporting members must be confirmed.
- Bearing lengths required may be limited by bearing stress on supporting members.
- A negative reaction indicates that the beam must be fastened to the support to resist uplift.
- See manufacturer's literature for side loaded connection requirements.
- Cantilever deflection allowables are based on twice the span length.
- Timber design if governed by NDS 1997.



**Mr. & Mrs. Friedman's Residence, Windmill Lake Estates, Weston, Florida**



Exhibit E

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**AL ALI, PhD, PE 53318**

```

=====
# 1 Concentrated Load:      3.700 K           3.330 K
    Distance:                4.330 Ft          4.330 Ft

# 2 Concentrated Load:      0.780 K           0.940 K
    Distance:                3.000 Ft          3.000 Ft

# 1 Uniform Load:           0.120 K /Ft         0.140 K /Ft
    Distance to Begin:       0.000 Ft          0.000 Ft
    Distance to End:         6.000 Ft          6.000 Ft
  
```

```

# 2 Uniform Load:           0.094 K /Ft         0.113 K /Ft
    Distance to Begin:       0.000 Ft          0.000 Ft
    Distance to End:         3.200 Ft          6.000 Ft

# 3 Uniform Load:           0.200 K /Ft         0.070 K /Ft
    Distance to Begin:       0.000 Ft          0.000 Ft
    Distance to End:         6.000 Ft          6.000 Ft
  
```

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C R I T I C A L   S H E A R S   &   M O M E N T S

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COMB 4	DEAD LOAD	LOAD COMB 1	LOAD COMB 2	LOAD COMB 3	LOAD
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```

Load Combination Dead Load:
Load Combination # 1:
Load Combination # 2:
Load Combination # 3:
Load Combination # 4:
  
```

Shear	Left End:	5.276 K	0.000 K	0.000 K	0.000 K	-
Moment	Left End:	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	-
Shear	Right End:	8.553 K	8.553 K	4.920 K	4.920 K	-
Moment	Right End:	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	-
Maximum Moment	:	-8.553 K -Ft	-8.553 K -Ft	-7.682 K -Ft	-7.682 K -Ft	-
13.395 K -Ft	Located at:	4.330 Ft	4.330 Ft	4.330 Ft	4.330 Ft	-
4.330 Ft	Max Deflection	:	0.072 In	0.072 In	0.072 In	-
0.167 In	Located at:	3.169 Ft	3.169 Ft	3.169 Ft	3.169 Ft	-
3.174 Ft	Dead Part:	:	0.072 In	0.072 In	0.072 In	-
0.072 In	Inflection Points:	0.000 Ft	0.000 Ft	0.000 Ft	0.000 Ft	-
0.000 Ft	:	6.000 Ft	6.000 Ft	6.000 Ft	6.000 Ft	-
6.000 Ft	Reaction	Left End:	-3.641 K	-6.570 K	-5.276 K	-3.121 K
5.276 K	Reaction	Right End:	-5.741 K	-10.732 K	-8.553 K	-4.920 K
8.553 K						

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C R I T I C A L   S H E A R S   &   M O M E N T S

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LOAD COMB 5

LOAD COMB 6

LOAD COMB 7

LOAD COMB 8

LOAD

COMB 9

Load Combination # 5: 1.200 x Dead Load + 1.000 x L + 1.400 x E + 0.200 x R  
 Load Combination # 6: 0.900 x Dead Load + 1.600 x W  
 Load Combination # 7: 0.900 x Dead Load + 1.400 x E  
 Load Combination # 8: 1.200 x Dead Load - 0.800 x W + 1.600 x R  
 Load Combination # 9: 1.200 x Dead Load + 1.000 x L - 1.600 x W + 0.500 x R

Shear	Left End:	-5.276 K	-2.340 K	-2.340 K	-3.121 K	-
5.276 K	Moment	Left End:	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft
0.000 K -Ft	Shear	Right End:	8.553 K	3.690 K	3.690 K	4.920 K
8.553 K	Moment	Right End:	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft
0.000 K -Ft	Maximum Moment	:	-13.395 K -Ft	-5.761 K -Ft	-5.761 K -Ft	-7.682 K -Ft
13.395 K -Ft	Located at:	4.330 Ft	4.330 Ft	3.300 Ft	4.330 Ft	4.330 Ft
4.330 Ft	Max Deflection	:	0.167 In	0.072 In	0.072 In	0.072 In
0.167 In	Located at:	3.174 Ft	3.174 Ft	3.169 Ft	3.169 Ft	3.169 Ft
3.174 Ft	Dead Part:	0.072 In	0.072 In	0.072 In	0.072 In	0.072 In
0.072 In	Inflection Points:	0.000 Ft	0.000 Ft	0.000 Ft	0.000 Ft	0.000 Ft
0.000 Ft		6.000 Ft	6.000 Ft	6.000 Ft	6.000 Ft	6.000 Ft
6.000 Ft	Reaction	Left End:	-5.276 K	-2.340 K	-2.340 K	-3.121 K
5.276 K	Reaction	Right End:	8.553 K	3.690 K	3.690 K	4.920 K
8.553 K						

LOAD COMB 11

LOAD COMB 12

LOAD COMB 13

LOAD

COMB 14

Load Combination #10: 1.200 x Dead Load + 1.000 x L + 1.400 x E + 0.200 x R  
 Load Combination #11: 0.900 x Dead Load + 1.600 x W  
 Load Combination #12: 0.900 x Dead Load + 1.400 x E

Shear	Left End:	-5.276 K	-2.340 K	-2.340 K	-3.121 K	-
5.276 K	Moment	Left End:	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft
0.000 K -Ft	Shear	Right End:	8.553 K	3.690 K	3.690 K	4.920 K
8.553 K	Moment	Right End:	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft
0.000 K -Ft	Maximum Moment	:	-13.395 K -Ft	-5.761 K -Ft	-5.761 K -Ft	-7.682 K -Ft
13.395 K -Ft	Located at:	4.330 Ft	4.330 Ft	3.300 Ft	4.330 Ft	4.330 Ft
4.330 Ft	Max Deflection	:	0.167 In	0.072 In	0.072 In	0.072 In
0.167 In	Located at:	3.174 Ft	3.174 Ft	3.169 Ft	3.169 Ft	3.169 Ft
3.174 Ft	Dead Part:	0.072 In	0.072 In	0.072 In	0.072 In	0.072 In
0.072 In	Inflection Points:	0.000 Ft	0.000 Ft	0.000 Ft	0.000 Ft	0.000 Ft
0.000 Ft		6.000 Ft	6.000 Ft	6.000 Ft	6.000 Ft	6.000 Ft
6.000 Ft	Reaction	Left End:	-5.276 K	-2.340 K	-2.340 K	-3.121 K
5.276 K	Reaction	Right End:	8.553 K	3.690 K	3.690 K	4.920 K
8.553 K						



Shear	Left End:	9.931 K	4.532 K	4.532 K	6.043 K	
9.931 K						
Moment	Left End:	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	
0.000 K -Ft						
Shear	Right End:	-9.931 K	-4.532 K	-4.532 K	-6.043 K	-
9.931 K						
Moment	Right End:	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	
0.000 K -Ft						
Maximum Moment	:	43.868 K -Ft	20.022 K -Ft	20.022 K -Ft	26.696 K -Ft	
43.868 K -Ft						
Located at:		8.835 Ft	8.835 Ft	8.835 Ft	8.835 Ft	
8.835 Ft						
Max Deflection	:	-0.042 In	-0.024 In	-0.024 In	-0.024 In	-
0.042 In						
Located at:		8.835 Ft	8.835 Ft	8.835 Ft	8.835 Ft	
8.835 Ft						
Dead Part:		-0.024 In	-0.024 In	-0.024 In	-0.024 In	-
0.024 In						
Inflection Points:		0.000 Ft	0.000 Ft	0.000 Ft	0.000 Ft	
0.000 Ft						
Located at:		17.670 Ft	17.670 Ft	17.670 Ft	17.670 Ft	
17.670 Ft						
Reaction	Left End:	9.931 K	4.532 K	4.532 K	6.043 K	
9.931 K						
Reaction	Right End:	9.931 K	4.532 K	4.532 K	6.043 K	
9.931 K						

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SECTION DESIGN INFORMATION

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Load Combination	#10:					
Load Combination	#11:					
Load Combination	#12:	0.				

  

Shear	Left End:	9.931 K	4.532 K	4.532 K	6.043 K
Moment	Left End:	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft
Shear	Right End:	-9.931 K	-4.532 K	-4.532 K	-6.043 K
Moment	Right End:	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft	0.000 K -Ft
Maximum Moment	:	43.868 K -Ft	20.022 K -Ft	20.022 K -Ft	26.696 K -Ft
Located at:		8.835 Ft	8.835 Ft	8.835 Ft	8.835 Ft
Max Deflection	:	-0.042 In	-0.024 In	-0.024 In	-0.024 In
Located at:		8.835 Ft	8.835 Ft	8.835 Ft	8.835 Ft
Dead Part:		-0.024 In	-0.024 In	-0.024 In	-0.024 In
Inflection Points:		0.000 Ft	0.000 Ft	0.000 Ft	0.000 Ft
Located at:		17.670 Ft	17.670 Ft	17.670 Ft	17.670 Ft
Reaction	Left End:	9.931 K	4.532 K	4.532 K	6.043 K
Reaction	Right End:	9.931 K	4.532 K	4.532 K	6.043 K



**Mr. & Mrs. Friedman's Residence, Windmill Lake Estates, Weston, Florida**



Exhibit F

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**AL ALI, PhD, PE 53318**

## Steel Column Check SC1

Element: **SC1**  
 Description: Steel Column with worst loading conditions  
 Date: **10/24/2009 01:02 PM**  
 Design

Company: **Universal Engineering, Inc.**  
 User: **Dr. AL ALI**  
 Software: **Digital Canal Steel Beam Column**

### GENERAL INFORMATION

Description	Value	Description	Value
Run Mode	Check Mode	$K_y$	1.00
Design Code	AISC AISC 360	$K_z$	1.00
Beam-Column Length	12.00	Translation Deflection Limit	$L / 240$
Steel Yield Stress	50.00	Displacement Deflection Limit	$L / 360$
$C_b$ Calculation	$1.75 + 1.0$	Unbraced (LTB) Length	
$C_{mx}$ Calculation			
$C_{mz}$ Calculation			
$L_x$			
$L_y$			
$L_z$			
$K_x$			TS3.5x3.5x.25

### LOAD INFORMATION

Ref. No.	Load Case	Load Type	Begin Position	End Value	End Position
1	Dead	Concen	Z	-	-
2	Live	Concen	Z	-	-
3	Wind	Concen	Z	-	-

### SELECTED LOAD COMBINATIONS

Load Combination	Dead	Live	Dependent	Conditional
LC1: 1.0DL+1.0LL+1.0WL+1.0SL				X
LC2: 1.4DL			X	
LC3: 1.2DL+1.6LL+0.5SL			X	
LC4: 1.2DL+1.6SL+0.5LL	X		X	
LC5: 1.2DL+1.6SL+0.8WL	X		X	
LC6: 1.2DL+1.3WL+0.5LL+0.5SL	X		X	
LC7: 1.2DL+0.5LL+0.2SL	X		X	

### CRITICAL STRESS SUMMARY

Ref. No.	Section Name	Status	Governing Criteria	Stress Ratio	Load Combination	Distance (ft)



**Mr. & Mrs. Friedman's Residence, Windmill Lake Estates, Weston, Florida**



Exhibit G

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## MF1

Based on loadings in Exhibit B, use 16"X18", 2#5 bottom and 1 #5 top

## MF2

Based on loadings in Exhibit B, use 16"X24", 3#5 bottom and 1 #5 top

## MF3

Based on loadings in Exhibit B, use 16"X24", 3#5 bottom and 1 #5 top

## F3

Based on loadings in Exhibit B, for locations receiving less than 18 kips. Use 3 ft. X 3ft. X 16", 5#5 each way

## F3.5

Based on loadings in Exhibit B, for locations receiving less than 20 kips but more than 18 kips. Use 3 ft. X 3ft. X 16", 5#5 each way

## SW-

Stepped edges @ 12" on all sides  
longitudinally

## TE-

Thickened edge for minimum 10" for each 10" thickness



**Mr. & Mrs. Friedman's Residence, Windmill Lake Estates, Weston, Florida**



Exhibit H

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