

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0110456

Insp Area: 2

Thos Bros: 337E1

Site Address: 2326 FLORIN RD SAC

Parcel No: 047-0012-031

Sub-Type: REP

Housing (Y/N): N

CONTRACTOR

REX MOORE ELECTRIC
3601 PARKWAY PL
PO BOX 980010 95798

OWNER

ARC PROPERTIES INC
8100 AMF DR
MECHANICSVILLE VA 23111

ARCHITECT

Nature of Work: REWIRE SCORING MACHINE FOR BOWLING ALLEY

CONSTRUCTION LENDING AGENCY : I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C).

Lender's Name \_\_\_\_\_ Lender's Address \_\_\_\_\_

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class BC10 License Number 254218 Date 5/10/2002 Contractor Signature C. Von Buren

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code; any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.00);

I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law).

I am exempt under Sec. \_\_\_\_\_ B & PC for this reason: \_\_\_\_\_

Date \_\_\_\_\_ Owner Signature \_\_\_\_\_

IN ISSUING THIS BUILDING PERMIT, the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and hereby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

Date 8/23/01 Applicant/Agent Signature C. Von Buren

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury one of the following declarations:

I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.

I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier COMMERCIAL UNION Policy Number 682 2353 00 Exp Date 10/01/2001

(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date 8/23/01 Applicant Signature C. Von Buren

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

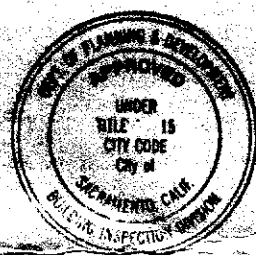
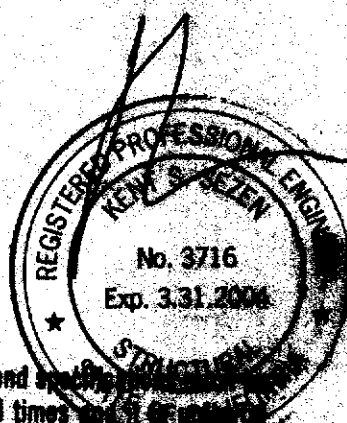
# Sezen & Sezen Structural Engineering

A Division of Sezen & Cain, Inc.  
274 E. Hamilton Avenue, Suite C  
Campbell, California 95008-0240  
Voice: 408.871.7273 Fax: 408.871.7274

CITY OF SACRAMENTO  
PERMIT ASSISTANCE

NOV 19 2001

**RECEIVED**



This set of plans and specifications shall be kept on the job at all times and shall not be altered or modified to make any changes or alterations from the same without written permission from the Building Inspection Division.

The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law.

Permit # 0110496

Address: 2326 Florin Rd

## Structural Calculations For:

**New Scoring Equipment Support**  
**Alpine Lanes**  
**2326 Florin Road**  
**Sacramento, CA**

**ISSUED**

NOV 19 2001

Sacramento Building Division

SCSE Job Number: 1336-1

Client:  
**AMF Bowling Centers, Inc.**  
466 Holt Boulevard  
Montclair, CA 91763  
909-626-4999

A handwritten signature in cursive script that reads "John Tang".

August 10, 2001

**AMF BOWLING PRODUCTS  
Static Load Requirements for  
Overhead Displays & Curtain Wall Structures**

Whenever an AMF customer orders automatic scoring, the customer agrees to indemnify AMF against any loss or damage to person or property relating to the manner in which the equipment is installed in the bowling center. In addition, the customer must obtain certification from a licensed structural engineer or architect in the State in which the bowling center is located and provide the support (as defined below and by the annexed drawing) required by the certificate. The certificate must satisfy the requirements stated below, applicable law and professional standards and must be based on an investigation of the bowling center or plans and specifications of the bowling center. AMF's obligation to ship the order is subject to AMF's receipt of this certificate bearing the structural engineer or architect's seal.

\_\_\_\_\_  
(Customer's signature)

**CERTIFICATION**

*"I investigated the bowling center or the drawings for such structures at **Alpine Lanes** located at **2326 Florin Rd** in **Sacramento, California** and certify:*

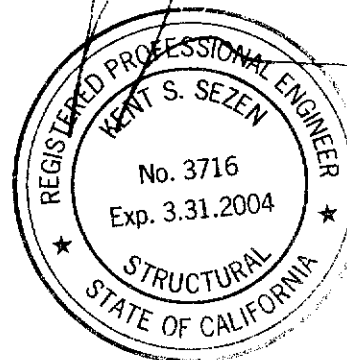
*The device, structure or manner of installation (the "Support") shown on the attached photos, will support overhead display units not exceeding the static load for each pair of bowling lanes, as indicated by the total of the weights checked on the chart below. The attached photos show the location and detail where the overhead display units may be hung using a 3/16" chain (single and dual) or a 1/4" chain (triple) that may be wrapped around the Support and linked together. I acknowledge that AMF installers will not drill or bolt anything to the Support."*

HOUSING	27" MNTR.	Check Type	34" MNTR.	Check Type
Singe	170 lbs. [77.2 kg.]	<input checked="" type="checkbox"/>	200 lbs. [90.8 kg.]	<input type="checkbox"/>
Dual	299 lbs [135.7 kg.]	<input checked="" type="checkbox"/>	359 lbs. [163 kg.]	<input type="checkbox"/>
Triple	425.5 lbs. [193.2 lbs.]	<input checked="" type="checkbox"/>	515.5 lbs. [234 kg.]	<input type="checkbox"/>

The curtain wall structure of the bowling center will support AMF equipment not to exceed 50 pounds [22.7 kg.] static load for each pair of bowling lanes.

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A division of Sezen & Cain, Inc.  
274 E. Hamilton Ave. Suite C  
Campbell, CA 95008  
408-871-7273

Signed **Kent Sabri Sezen** SE# 3716



Send to:  
AMF Bowling Products  
Technical Services Department  
8100 AMF Drive  
Mechanicsville, VA 23111

Units to be defined for the calculations to follow.

$$\text{kip} \equiv 1000 \cdot \text{lb} \quad \text{sf} \equiv \text{ft}^2 \quad \text{cf} \equiv \text{ft}^3$$

$$\text{pli} \equiv \frac{\text{lb}}{\text{in}} \quad \text{plf} \equiv \frac{\text{lb}}{\text{ft}} \quad \text{kli} \equiv 1000 \cdot \text{pli} \quad \text{klf} \equiv 1000 \cdot \text{plf} \quad \text{psi} \equiv \frac{\text{lb}}{\text{in}^2} \quad \text{psf} \equiv \frac{\text{lb}}{\text{ft}^2} \quad \text{ksi} \equiv 1000 \cdot \text{psi} \quad \text{ksf} \equiv 1000 \cdot \text{psf}$$

$$\text{pci} \equiv \frac{\text{lb}}{\text{in}^3} \quad \text{pcf} \equiv \frac{\text{lb}}{\text{ft}^3} \quad \text{kci} \equiv 1000 \cdot \text{pci} \quad \text{kcf} \equiv 1000 \cdot \text{pcf}$$

## AMF Bowling, Sacramento. Job 1336-01

Analysis of triple overhead monitor support.

$$DL_{3\text{monitor}} := 516 \cdot \text{lb} \quad \text{Assuming 34" monitors are being use.}$$

Check unistrut channel.

Assume worst loading condition, which is load at middle of span.

$$\text{span} := 2 \cdot \text{ft}$$

$$M := DL_{3\text{monitor}} \cdot \frac{\text{span}}{4} \quad M = 258 \text{ lb ft}$$

$$F_y := 33 \cdot \text{ksi}$$

$$S_x := \frac{M}{0.6 \cdot F_y \cdot (90\%)} \quad S_x = 0.174 \text{ in}^3 \quad \text{Use 90\% in case P1000H3 (pierced channel) is used.}$$

*P1000 H3 unistrut channel is adequate.  $S = 0.202$*

Check 4x framing supporting threaded rod anchor.

$$P_{DL} := 516 \cdot \text{lb}$$

$$\text{span} := 24 \cdot \text{in}$$

*4x4 DF#2 w/ holed drilled in it to accept threaded rod is adequate. See spreadsheet for detailed analysis.*

Check extra 2x framing below existing 2x4 roof rafter.

$$P_{DL} := 516 \cdot \text{lb}$$

*Extra existing 2x8 DF#2 is adequate to support the equipment weight.*

Project Name: **AMF Bowling** Job: **1336-01** General wood beam spreadsheet analysis by Kent S. Sezen, MS, SE  
spreadsheet improvements by Kent Sezen and Joe Cain

Member name: **RF#1** Member location: **blocking to support threaded rod**

	Fb psi	Ft psi	Fv psi	Fc (perp) psi	Fc (parallel) psi	E psi	use	code
Design values	875	575	95	625	1300	1600000		1 DF#2 Lumber

load duration factor	wet service factor	temp. factor	beam stability factor	size factor	Fb size factor	flat use factor	repetitive member factor	form factor
CD	CM	C1	CL	CV	CF	Cfu	Cr	Cf
0.90	1.00	1.00	0.998	1.000	1.50	1.00	1.00	1.00

load duration CD 0.90 CD used 0.90  
duration factor

repetitive member Cr 1.15 use 0 Cr used 0.00  
three or more 1 1 1.00  
two or less 1 1 1.00

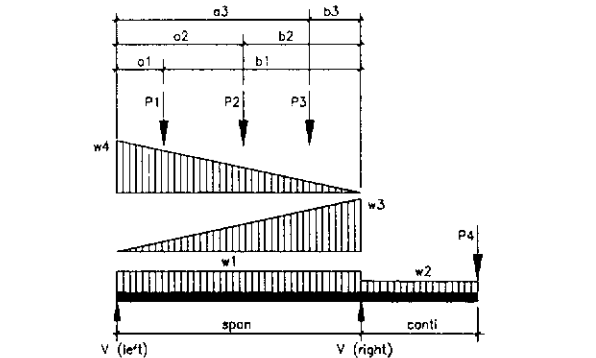
beam design values span/load conditions distance  
wDL1 dead load (plf) 10.00 at midspan span (feet) 2.00  
wLL1 live load (plf) 0.00 at midspan canti (feet) no canti  
w1 total load (plf) 10 at midspan "a1" (feet) 0.50  
"b1" (feet) 1.50  
wDL2 dead load (plf) 0.00 at cantilever "a2" (feet) 1.00  
wLL2 live load (plf) 0.00 at cantilever "b2" (feet) 1.00  
w2 total load (plf) 0 at cantilever "a3" (feet) 1.50  
"b3" (feet) 0.50

wDL3 dead load (plf) 0.00 triangular to right  
wLL3 live load (plf) 0.00 triangular to right  
w3 total load (plf) 0 triangular to right  
wDL4 dead load (plf) 0.00 triangular to left  
wLL4 live load (plf) 0.00 triangular to left  
w3 total load (plf) 0 triangular to left

PDL1 point dead load (lb) 0.00 at "a1"  
PLL1 point live load (lb) 0.00 at "a1"  
P1 total point load (lb) 0 at "a1"  
PDL2 point dead load (lb) 516.00 at "a2"  
PLL2 point live load (lb) 0.00 at "a2"  
P2 total point load (lb) 516 at "a2"  
PDL3 point dead load (lb) 0.00 at "a3"  
PLL3 point live load (lb) 0.00 at "a3"  
P3 total point load (lb) 0 at "a3"  
PDL4 point dead load (lb) 0.00 at cantilever  
PLL4 point live load (lb) 0.00 at cantilever  
P4 total point load (lb) 0 at cantilever

geometry beam width (inches) 2.50  
beam depth (inches) 3.50  
material type DF#2 Lumber df2  
conditions quantity 1  
beam used upright 1  
beam used on side 0 upright  
Lu unsupported length > 0 (inches) 24.00  
Lu/d > 0 6.86

Shears values  
VDL (left) 268 lbs  
VLL (left) 0 lbs  
VDL (right) left side 268 lbs  
VLL (right) left side 0 lbs  
VDL (right) right 0 lbs  
VLL (right) right side 0 lbs  
V max (total) 268 lbs

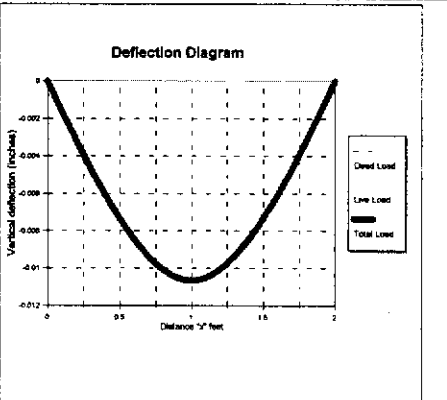
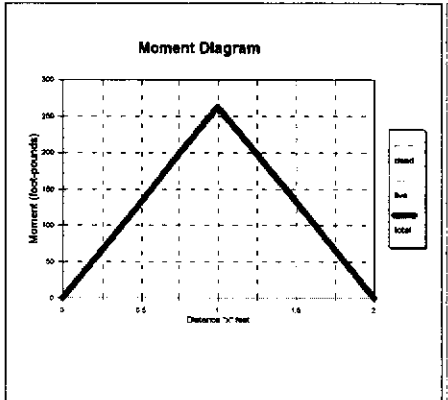
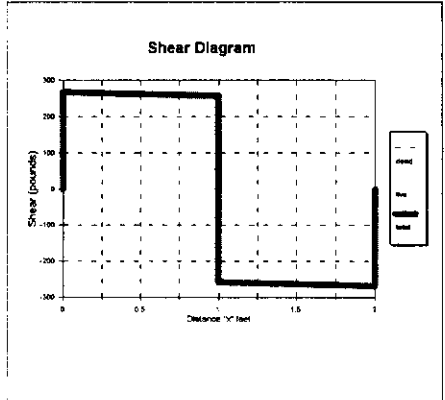


Reaction @ left support		Reaction @ right support	
R DL (lbs)	268	R DL (lbs)	268
R LL (lbs)	0	R LL (lbs)	0
Total (lbs)	268	Total (lbs)	268

camber		use	
camber w/ creep	0.02	1	0.02
camber w/o creep	0.01	0	0.00
			0.00

Moments		values	
Ni max @ span (DL)	283	R-lbs	
Ni max @ span (LL)	0	R-lbs	
Ni @ support (DL)	0	R-lbs	
Ni @ support (LL)	0	R-lbs	
M max (total)	263	R-lbs	

quantity	1	2.5	x	3.5	DF#2 Lumber	simple span beam	0.00	camber (inches)
Using required geometric properties	values							
area req'd (in <sup>2</sup> )	4.70							
section mod. req'd (in <sup>3</sup> )	2.68							
actual geometric properties	values							
area used (in <sup>2</sup> )	8.75	okay						
section mod. used (in <sup>3</sup> )	5.10	okay						
deflection criteria	values							
span/240	0.1000							
span/360	0.0667							
span/480	0.0500							
span/600	0.0400							
span/720	0.0333							



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Project Name: **AMF Bowling** Job: **1336-01**

General wood beam spreadsheet analysis by Karl S. Sezen, MS, SE  
spreadsheet improvements by Karl Sezen and Joe Cain

Member name: **Extra 2x10** Member location: **below existing roof rafter**

	Fb psi	Ft psi	Fv psi	Fc (perp) psi	Fc (parallel) psi	E psi	use	code
Design values	875	575	95	625	1300	1600000		1 DF#2 Lumber

load duration factor	wet service factor	temp. factor	beam stability factor	size factor	Fb size factor	flat use factor	repetitive member factor	form factor
CD	CM	Ct	CL	CV	CF	Cfu	Cr	Cf
1.25	1.00	1.00	0.786	1.000	1.20	1.00	1.00	1.00

load duration factor  
duration factor

CD used  
1.25

repetitive member  
three or more  
two or less

Cr use Cr used  
1.15 0 0.00  
1 1 1.00

**beam design**

values	span/load conditions	values
wDL1 dead load (plf) 0.00	at midspan	span (feet) 8.00
wLL1 live load (plf) 0.00	at midspan	cantl (feet) no cantl
w1 total load (plf) 0	at midspan	"a1" (feet) 0.00
wDL2 dead load (plf) 0.00	at cantilever	"b1" (feet) 7.50
wLL2 live load (plf) 0.00	at cantilever	"a2" (feet) 4.00
w2 total load (plf) 0	at cantilever	"b2" (feet) 4.00
wDL3 dead load (plf) 0.00	triangular to right	"a3" (feet) 5.00
wLL3 live load (plf) 0.00	triangular to right	"b3" (feet) 3.00
w3 total load (plf) 0	triangular to right	
wDL4 dead load (plf) 0.00	triangular to left	geometry
wLL4 live load (plf) 0.00	triangular to left	beam width (inches) 1.50
w3 total load (plf) 0	triangular to left	beam depth (inches) 7.25

**material type**

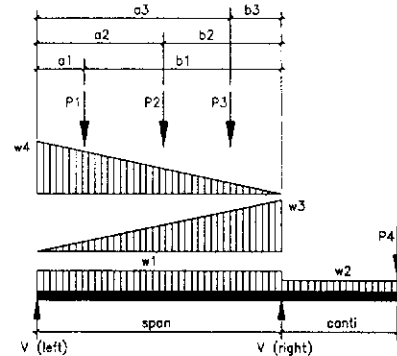
DF#2 Lumber

**conditions**

values
quantity 1
beam used upright 1
beam used on side 0
Lu unsupported length > 0 (inches) 96.00
Lu/d > 0 13.24

**Shears**

values
V DL (left) 258
V LL (left) 0
V DL (right) left side 258
V LL (right) left side 0
V DL (right) right 0
V LL (right) right side 0
V max (total) 258



Reaction @ left support

R DL (lbs)	258
R LL (lbs)	0
Total (lbs)	258

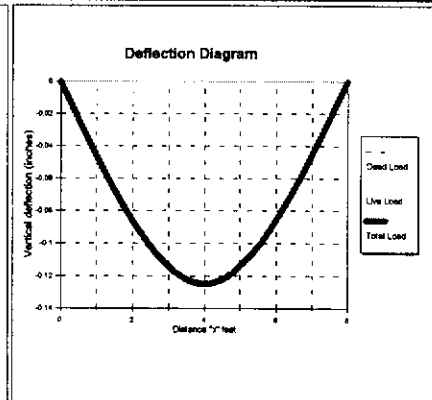
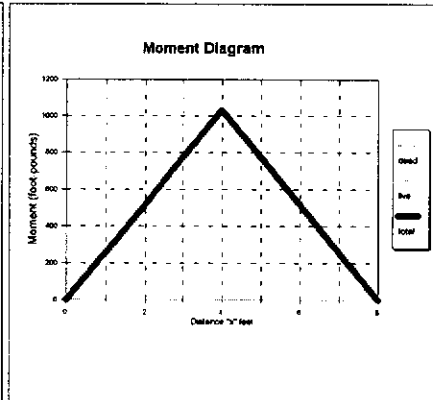
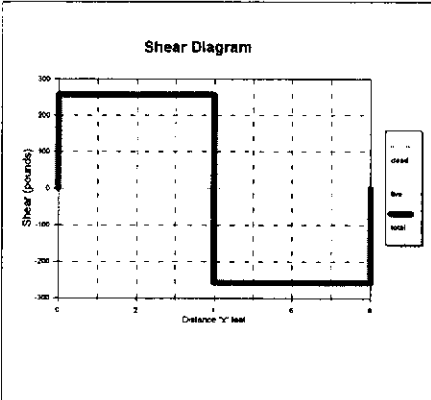
Reaction @ right support

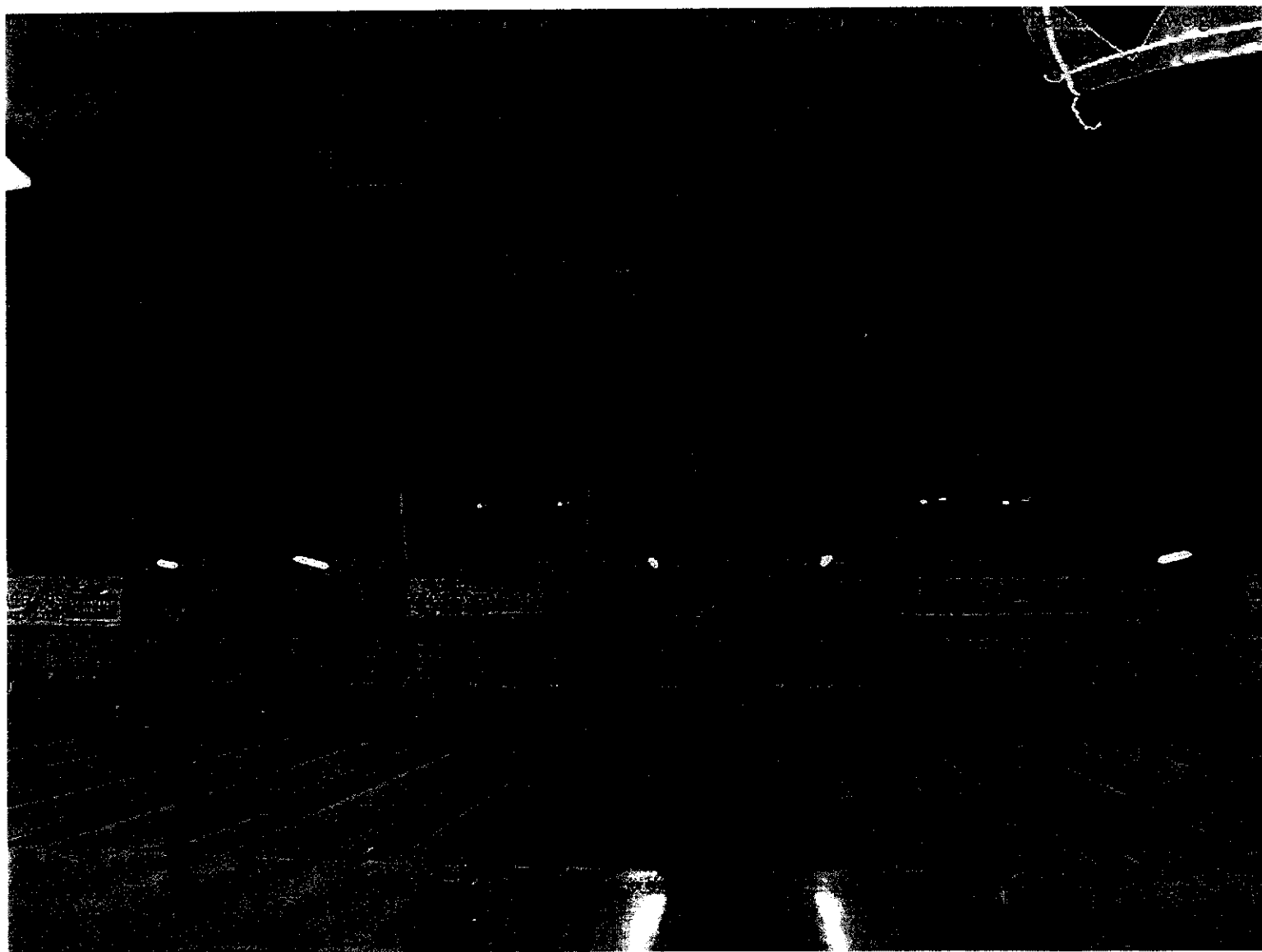
R DL (lbs)	258
R LL (lbs)	0
Total (lbs)	258

camber	use	Camber used
camber w/ creep 0.19	1	0.19
camber w/o creep 0.12	0	0.00
		0.00

Moments	values	ft-lbs
M max @ span (DL)	1032	ft-lbs
M max @ span (LL)	0	ft-lbs
M @ support (DL)	0	ft-lbs
M @ support (LL)	0	ft-lbs
M max (total)	1032	ft-lbs

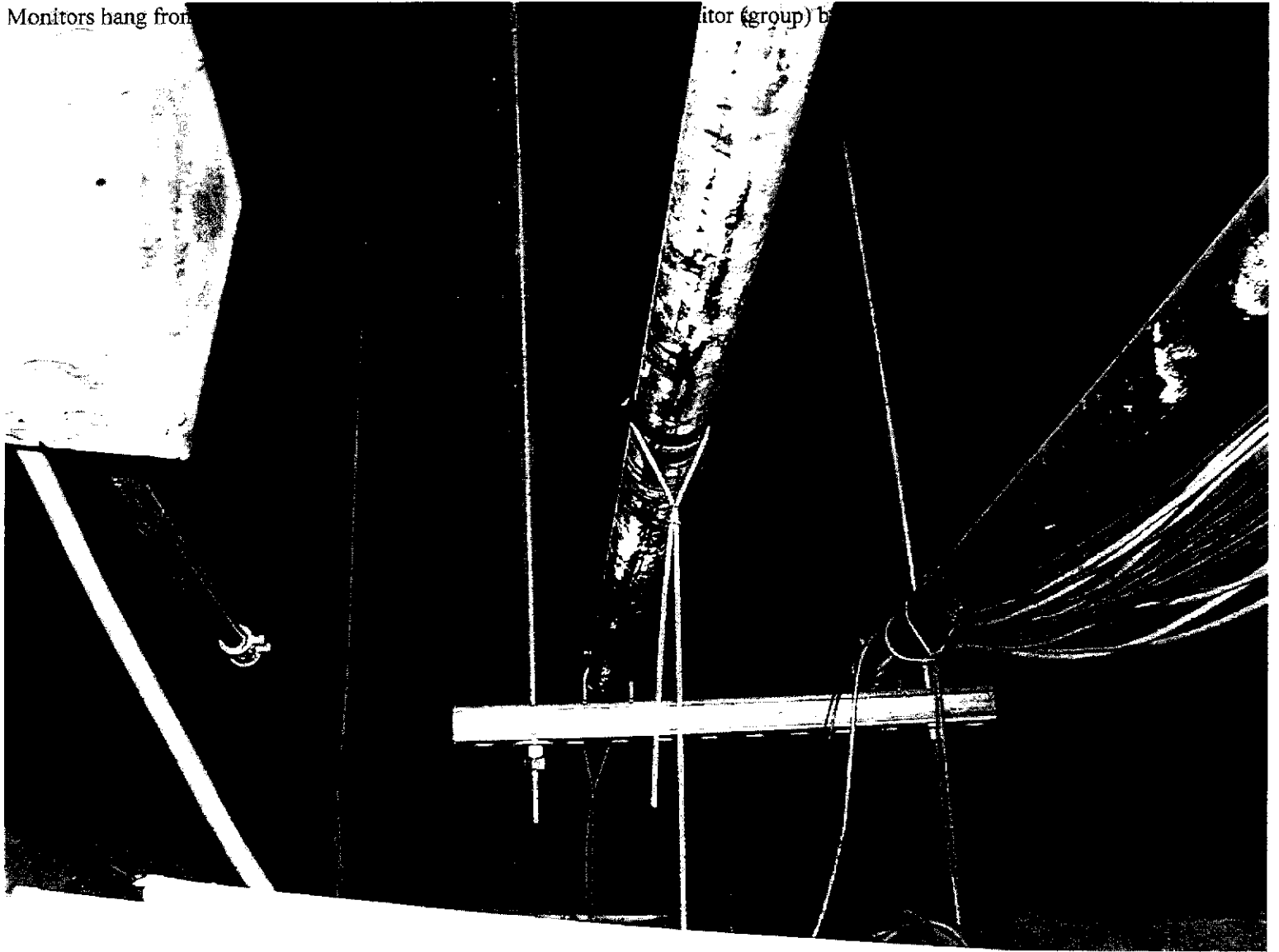
quantity	beam size	deflec. span	DF#2 Lumber	simple span beam	0.00	camber (inches)	
Using 1	1.5	x	7.25	DF#2 Lumber	simple span beam	0.00	
required geometric properties	values	deflec. span	inches	simple span beam	deflec. cant.	0.00	camber (inches)
area req'd (in <sup>2</sup> )	3.26	dead load	0.1248		dead load	0.0000	inches
section mod. req'd (in <sup>3</sup> )	12.01	live load	0.0000	okay	live load	no cantilever	0.0000
		total load	0.1248	okay	total load	no cantilever	0.0000
actual geometric properties	values	deflection	inches	deflection	criteria	inches	
area used (in <sup>2</sup> )	10.88	span/240	0.4000	span/240	0.0000	0.0000	
section mod. used (in <sup>3</sup> )	13.14	span/360	0.2667	span/360	0.0000	0.0000	
		span/480	0.2000	span/480	0.0000	0.0000	
		span/600	0.1600	span/600	0.0000	0.0000	
		span/720	0.1333	span/720	0.0000	0.0000	



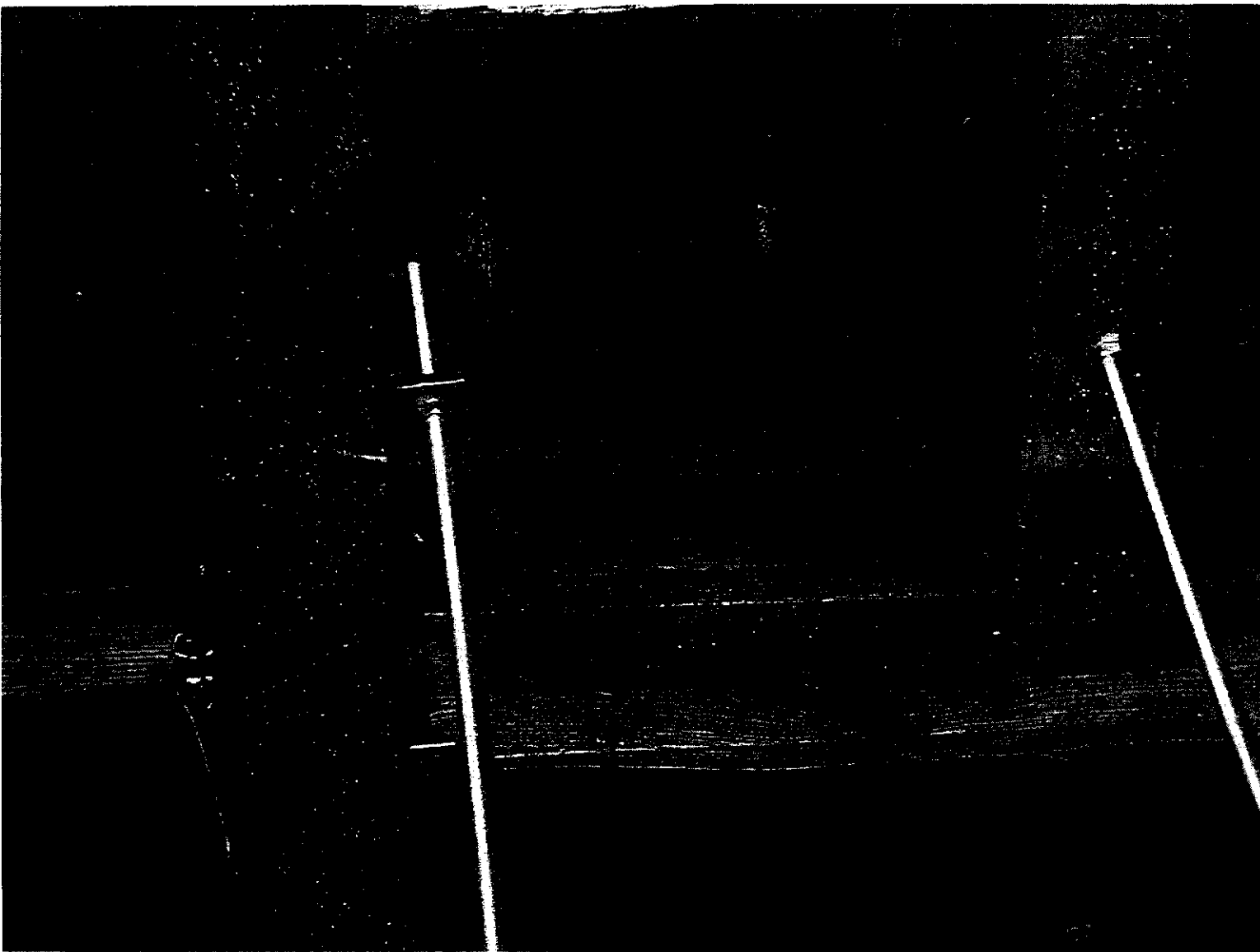


Monitors hang from

itor (group) b









wall consist of 2x4 studs @ 24" on center which in turn are supported by

