4th DIMENSION DESIGN, INC.
A STRUCTURAL ENGINEERING FIRM

DESIGN CALCULATIONS

LACROSSE CENTRAL HS GREENHOUSE
LACROSSE, WI

UNITED GREENHOUSE SYSTEMS, INC.

GREENHOUSE STRUCTURAL COMPONENT DESIGN

MARCH 25, 2025
Pages 1 thru 100

WISCONSIN
JOEL A. NELSON
E-41443
MILWAUKEE, WI
3-25-25
PROFESSIONAL ENGINEER

Prepared by:
4th DIMENSION DESIGN, INC.
817 Venture Court
Waukesha, Wisconsin 53189
262-896-6500
www.4dd.com

UNITED GREENHOUSE SYSTEMS, INC.
1857 TOWER DRIVE
EDGERTON, WI 53534
PHONE: (800) 433-6834
(608) 884-8941
FAX: (608) 884-6137

DESIGN LOADS FOR:

LA CROSSE CENTRAL HIGH SCHOOL GREENHOUSE

LA CROSSE, WI

GROUND SNOW LOAD OF 40 PSF, WIND EXPOSURE B, RISK CAT. II, SINGLE HOUSE

GREENHOUSE LOADING IS BASED ON THE 2018 WISCONSIN COMMERCIAL BUILDING CODE (BASED ON THE 2015 INTERNATIONAL BUILDING CODE). THE GREENHOUSE WILL BE DESIGNED USING THE LOADS AS INDICATED BELOW UNLESS OTHERWISE STATED IN THE UNITED GREENHOUSE SYSTEMS, INC. PROPOSAL, IN LOAD COMBINATIONS PER ASCE7-10. THE PURCHASER IS TO VERIFY THESE LOADS WITH THE DESIGN PROFESSIONAL OF RECORD AND THE AUTHORITY HAVING JURISDICTION FOR THE BUILDING SITE. IF THE PURCHASER OF THE GREENHOUSE HAS DOCUMENTS OR KNOWLEDGE OF LOADING REQUIREMENTS THAT VARY FROM THAT SHOWN BELOW, THIS SHEET MUST BE MARKED WITH CORRECTIONS AND RETURNED TO UNITED GREENHOUSE SYSTEMS, INC. FOR REVISION OF PROPOSAL AND ASSOCIATED COSTS.

DESIGN LOADS

ROOF:

GROUND SNOW LOAD (Pg) = 40 PSF
RISK CATEGORY = II
SNOW IMPORTANCE FACTOR (Is) = 1.0
SNOW LOAD EXPOSURE FACTOR (Ce) = 1.0
ROOF THERMAL FACTOR (Ct) = 0.85 (CONT. HEATED PER ASCE7)
ROOF SLOPE FACTOR (Cs) = 0.67
ROOF SNOW = 0.7 x (Ce) x (Ct) x (Cs) x (Is) x (Pg) = 16 PSF
LIVE LOAD = 20 PSF (REDUCIBLE PER ASCE7)
DEAD LOAD = GREENHOUSE SELF-WEIGHT
COLLATERAL LOAD = 5 PSF
- UNIFORMLY DIST. ON TRUSS BOTTOM CHORDS

WIND:

WIND SPEED = 115 MPH ULTIMATE (89.1 MPH NOMINAL)
WIND EXPOSURE = B
WIND RISK CATEGORY = II
ENCLOSURE CLASSIFICATION = ENCLOSED
COMPONENT & CLADDING DESIGN PRESSURE = PER ASCE7-10

SEISMIC:

SEISMIC RISK CATEGORY (IF APPLICABLE) = II
SEISMIC IMPORTANCE FACTOR (I) = 1.0
SEISMIC SITE CLASS = D (ASSUMED)
SEISMIC DESIGN CATEGORY = A
SPECTRA RESPONSE COEFFICIENTS PER ASCE7
FORCE RESISTING SYSTEM (MAY VARY):
- ORDINARY MOMENT FRAMES OF STEEL
- STEEL CONCENTRICALLY BRACED FRAMES
DESIGN BASE SHEAR = BUILDING DEAD WEIGHT x 0.017
ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE

ADDITIONAL INFO

- GREENHOUSE SIZE:
  41'-6" WIDE x 60' LONG x 12' UNDER GUTTER HEIGHT
- LOADING ASSUMES THIS TO BE A SINGLE HOUSE ONLY, WITHOUT ADDITIONAL GUTTER CONNECTED HOUSES.
- ADJACENT BUILDINGS WOULD NOT REQUIRE A SNOW DRIFT LOAD TO BE APPLIED TO THE GREENHOUSE.
- BOTTOM OF TRUSS BOTTOM CHORD IS AT APPROX. 12'-0" ABOVE FINISH FLOOR.
- KNEEBRACES AT APPROX. 8'-6" (+/- 1'-0") ABOVE FINISH FLOOR.
- ASSUMED BUILDING LOCATION:
  1801 LOSEY BLVD S,
  LA CROSSE, WI 54601

CONCRETE FOUNDATION, ANCHOR BOLTS, AND ENGINEERING OF SUCH BY OTHERS. f'_c = 3000 PSI WILL BE ASSUMED FOR BASE PLATE DESIGN AND REACTIONS WILL BE PROVIDED IN THE DESIGN CALCULATION. UNITED GREENHOUSE SYSTEMS, INC. IS A COMPONENT METAL BUILDING/GREENHOUSE MANUFACTURER AND SUPPLIER. THEIR GREENHOUSE STEEL STRUCTURAL ENGINEERING REPRESENTATIVE IS NOT TO BE CONSIDERED THE PROJECT DESIGN PROFESSIONAL OF RECORD. THE DESIGN OF ANY MATERIALS NOT DIRECTLY SUPPLIED BY UNITED GREENHOUSE SYSTEMS, INC. IS NOT PROVIDED UNDER THE SCOPE OF THIS PROPOSAL. GREENHOUSE GLAZING/COVERING IS NOT A DESIGNED ELEMENT - ANY MAINTENANCE WORK MUST BE PERFORMED IN A WAY THAT DOES NOT PUT THE LOAD OF A WORKER(S) ON THE ROOF GLAZING/COVERING. UNITED GREENHOUSE SYSTEMS, INC. TAKES NO RESPONSIBILITY FOR THE EVALUATION OF ANY EXISTING OR ADJACENT STRUCTURES WHOSE CONDITION(S) MAY BE AFFECTED IN ANY WAY BY THE PRESENCE OF THE GREENHOUSE.

4th Dimension Design, Inc.
817 Venture Ct
Waukesha, WI 53189
262.896.6500
andrea.kohl@4dd.com

Code Search

Code: International Building Code 2015

Occupancy:

Occupancy Group = U Utility & Miscellaneous

Risk Category & Importance Factors:

Risk Category =	II
Wind factor =	1.00
Snow factor =	1.00
Seismic factor =	1.00

Type of Construction:

Fire Rating:

Roof =	0.0 hr
Floor =	0.0 hr

Building Geometry:

Roof angle (θ)	6.00 / 12	26.6 deg
Building length (L)	60.0 ft	
Least width (B)	41.5 ft	
Mean Roof Ht (h)	17.2 ft	
Parapet ht above grd	0.0 ft	
Minimum parapet ht	0.0 ft	

Live Loads:

Roof

0 to 200 sf:	18 psf
200 to 600 sf:	21.6 - 0.018Area, but not less than 12 psf
over 600 sf:	12 psf

Floor:

Typical Floor		N/A
Partitions		N/A
Partitions	N/A	
Partitions		N/A
Partitions	N/A	

4th Dimension Design, Inc.
817 Venture Ct
Waukesha, WI 53189
262.896.6500
andrea.kohl@4dd.com

JOB TITLE	LA CROSSE CENTRAL HIGH SCHOOL		
JOB NO.	14677	**SHEET NO.**	
CALCULATED BY		**DATE**	
CHECKED BY		**DATE**	

Wind Loads : ASCE 7- 10

Ultimate Wind Speed	115 mph
Nominal Wind Speed	89.1 mph
Risk Category	II
Exposure Category	B
Enclosure Classif.	Enclosed Building
Internal pressure	+/-0.18
Directionality (Kd)	0.85
Kh case 1	0.701
Kh case 2	0.598
Type of roof	Gable

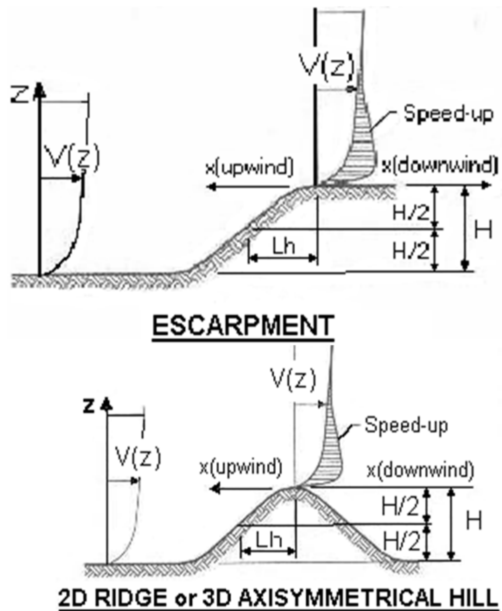
Topographic Factor (Kzt)

Topography	Flat
Hill Height (H)	80.0 ft
Half Hill Length (Lh)	100.0 ft
Actual H/Lh =	0.80
Use H/Lh =	0.50
Modified Lh =	160.0 ft
From top of crest: x =	50.0 ft
Bldg up/down wind?	downwind

H/Lh= 0.50	K_1 = 0.000
x/Lh = 0.31	K_2 = 0.792
z/Lh = 0.11	K_3 = 1.000

At Mean Roof Ht:

$Kzt = (1+K_1K_2K_3)^2 =$ 1.00



Gust Effect Factor

h =	17.2 ft
B =	41.5 ft
/z (0.6h) =	30.0 ft

Flexible structure if natural frequency < 1 Hz (T > 1 second).
However, if building h/B < 4 then probably rigid structure (rule of thumb).
h/B = 0.41 Rigid structure

G = 0.85 Using rigid structure default

Rigid Structure

ē =	0.33
ℓ =	320 ft
z_{min} =	30 ft
c =	0.30
g_Q, g_v =	3.4
L_z =	310.0 ft
Q =	0.91
I_z =	0.30
G =	0.87 use G = 0.85

Flexible or Dynamically Sensitive Structure

Natural Frequency (η_1) =	0.0 Hz				
Damping ratio (β) =	0				
/b =	0.45				
/α =	0.25				
Vz =	74.1				
N_1 =	0.00				
R_n =	0.000				
R_h =	28.282	η =	0.000	h =	17.2 ft
R_B =	28.282	η =	0.000		
R_L =	28.282	η =	0.000		
g_R =	0.000				
R =	0.000				
G =	0.000				

4th Dimension Design, Inc.
817 Venture Ct
Waukesha, WI 53189
262.896.6500
andrea.kohl@4dd.com

JOB TITLE LA CROSSE CENTRAL HIGH SCHOOL
JOB NO. 14677 **SHEET NO.**
CALCULATED BY **DATE**
CHECKED BY **DATE**

Wind Loads - MWFRS h≤60' (Low-rise Buildings) Enclosed/partially enclosed only

Kz = Kh (case 1) = 0.70
Base pressure (qh) = **20.2 psf**
GCpi = +/-0.18

Edge Strip (a) = 4.2 ft
End Zone (2a) = 8.3 ft
Zone 2 length = 20.8 ft

Wind Pressure Coefficients

	CASE A				CASE B		
		θ = 26.6 deg					
Surface	GCpf	w/-GCpi	w/+GCpi		GCpf	w/-GCpi	w/+GCpi
1	0.55	0.73	0.37		-0.45	-0.27	-0.63
2	-0.10	0.08	-0.28		-0.69	-0.51	-0.87
3	-0.45	-0.27	-0.63		-0.37	-0.19	-0.55
4	-0.39	-0.21	-0.57		-0.45	-0.27	-0.63
5					0.40	0.58	0.22
6					-0.29	-0.11	-0.47
1E	0.73	0.91	0.55		-0.48	-0.30	-0.66
2E	-0.19	-0.01	-0.37		-1.07	-0.89	-1.25
3E	-0.58	-0.40	-0.76		-0.53	-0.35	-0.71
4E	-0.53	-0.35	-0.71		-0.48	-0.30	-0.66
5E					0.61	0.79	0.43
6E					-0.43	-0.25	-0.61

Ultimate Wind Surface Pressures (psf)

1	14.7	7.5	-5.4	-12.7
2	1.6	-5.6	-10.3	-17.5
3	-5.4	-12.6	-3.8	-11.1
4	-4.2	-11.5	-5.4	-12.7
5			11.7	4.4
6			-2.2	-9.5
1E	18.3	11.0	-6.0	-13.3
2E	-0.2	-7.5	-17.9	-25.2
3E	-8.2	-15.4	-7.1	-14.3
4E	-7.2	-14.4	-6.0	-13.3
5E			15.9	8.7
6E			-5.0	-12.3

Parapet

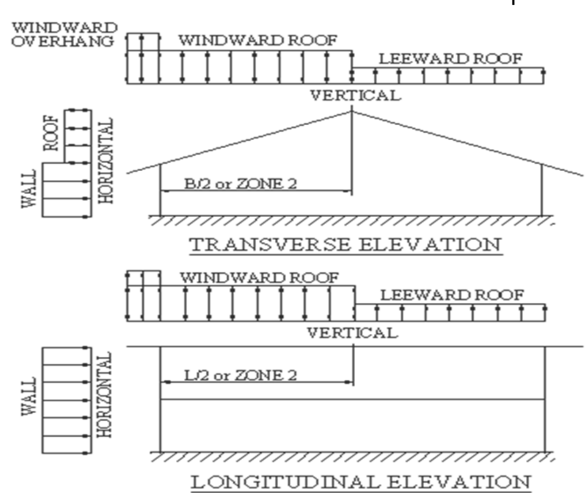
Windward parapet = 0.0 psf (GCpn = +1.5)
Leeward parapet = 0.0 psf (GCpn = -1.0)

Windward roof overhangs = 14.1 psf (upward) add to windward roof pressure

Horizontal MWFRS Simple Diaphragm Pressures (psf)

Transverse direction (normal to L)
Interior Zone: Wall 19.0 psf
Roof 7.0 psf
End Zone: Wall 25.5 psf
Roof 8.0 psf

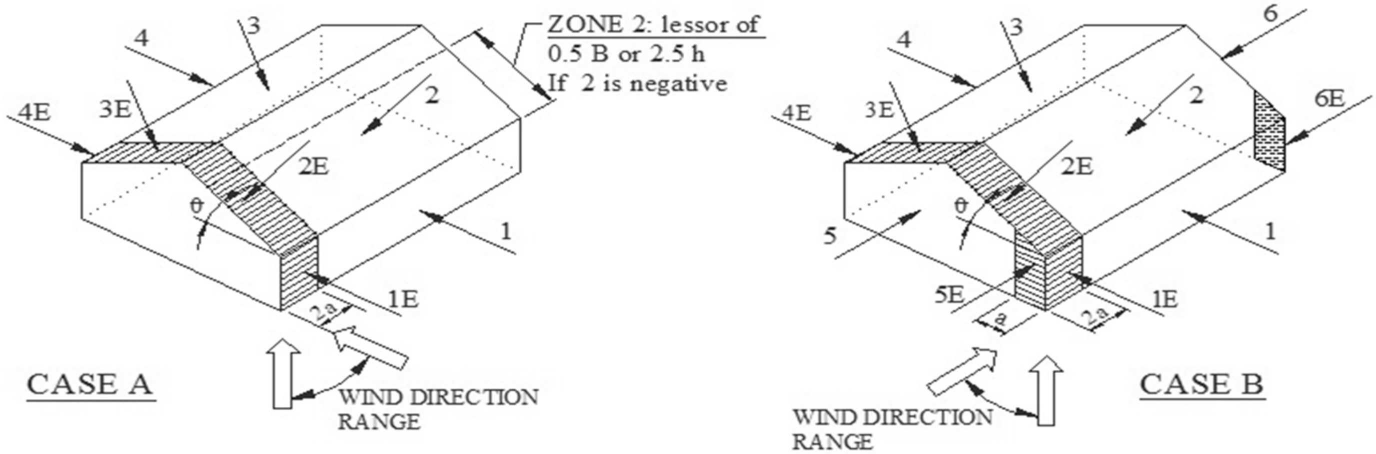
Longitudinal direction (parallel to L)
Interior Zone: Wall 13.9 psf
End Zone: Wall 21.0 psf



The code requires the MWFRS be designed for a min ultimate force of 16 psf multiplied by the wall area plus an 8 psf force applied to the vertical projection of the roof.

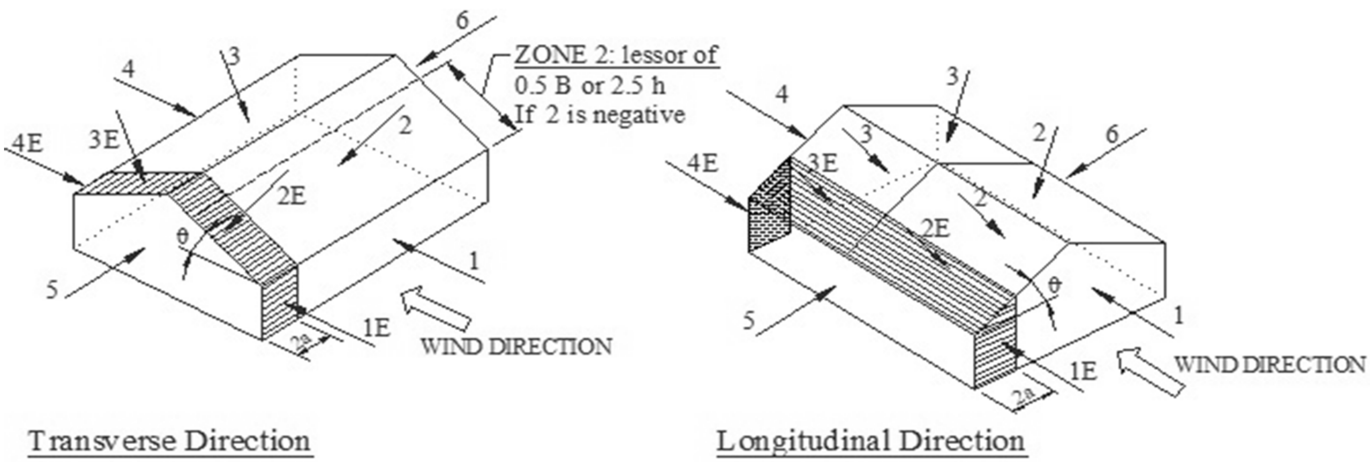
4th Dimension Design, Inc.
817 Venture Ct
Waukesha, WI 53189
262.896.6500
andrea.kohl@4dd.com

Location of MWFRS Wind Pressure Zones



NOTE: Torsional loads are 25% of zones 1 - 6. See code for loading diagram.

ASCE 7 -99 and ASCE 7-10 (& later)



NOTE: Torsional loads are 25% of zones 1 - 4. See code for loading diagram.

~~ASCE 7 -02 and ASCE 7-05~~

4th Dimension Design, Inc.
817 Venture Ct
Waukesha, WI 53189
262.896.6500
andrea.kohl@4dd.com

JOB TITLE LA CROSSE CENTRAL HIGH SCHOOL

JOB NO. 14677 SHEET NO.
CALCULATED BY DATE
CHECKED BY DATE

Ultimate Wind Pressures

Wind Loads - Components & Cladding : h <= 60'

Kh (case 1) =	0.70	h =	17.2 ft
Base pressure (qh) =	**20.2 psf**	a =	4.2 ft
Minimum parapet ht =	0.0 ft	GCpi =	+/-0.18
Roof Angle (θ) =	26.6 deg		
Type of roof =	Gable		

Roof

	GCp +/- GCpi			Surface Pressure (psf)			**User input**	
Area	10 sf	50 sf	100 sf	10 sf	50 sf	100 sf	30 sf	40 sf
Negative Zone 1	-1.08	-1.01	-0.98	-21.8	-20.4	-19.8	-20.8	-20.6
Negative Zone 2	-1.88	-1.53	-1.38	-37.9	-30.9	-27.8	-33.1	-31.8
Negative Zone 3	-2.78	-2.36	-2.18	-56.0	-47.6	-44.0	-50.3	-48.8
Positive All Zones	0.68	0.54	0.48	16.0	16.0	16.0	16.0	16.0
Overhang Zone 2	-2.20	-2.20	-2.20	-44.4	-44.4	-44.4	-44.4	-44.4
Overhang Zone 3	-3.70	-2.86	-2.50	-74.6	-57.7	-50.4	-63.1	-60.0

Overhang pressures in the table above assume an internal pressure coefficient (Gcpi) of 0.0
Overhang soffit pressure equals adj wall pressure (which includes internal pressure of 3.6 psf)

Parapet

qp = 0.0 psf

CASE A = pressure towards building (pos)
CASE B = pressure away from bldg (neg)

	Surface Pressure (psf)			**User input**
Solid Parapet Pressure	10 sf	100 sf	500 sf	20 sf
CASE A : Interior zone:	0.0	0.0	0.0	0.0
Corner zone:	0.0	0.0	0.0	0.0
CASE B : Interior zone:	0.0	0.0	0.0	0.0
Corner zone:	0.0	0.0	0.0	0.0

Walls

	GCp +/- GCpi			Surface Pressure (psf)			**User input**	
Area	10 sf	100 sf	500 sf	10 sf	100 sf	500 sf	30 sf	50 sf
Negative Zone 4	-1.28	-1.10	-0.98	-25.8	-22.2	-19.8	-24.1	-23.3
Negative Zone 5	-1.58	-1.23	-0.98	-31.9	-24.7	-19.8	-28.5	-26.9
Positive Zone 4 & 5	1.18	1.00	0.88	23.8	20.2	17.7	22.1	21.3

4th Dimension Design, Inc.
817 Venture Ct
Waukesha, WI 53189
262.896.6500
andrea.kohl@4dd.com

JOB TITLE LA CROSSE CENTRAL HIGH SCHOOL

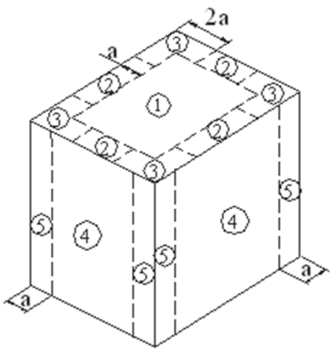
JOB NO. 14677 **SHEET NO.**

CALCULATED BY **DATE**

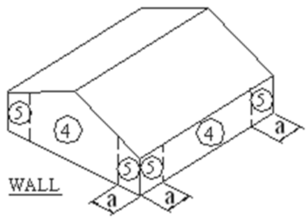
CHECKED BY **DATE**

Ultimate Wind Pressures

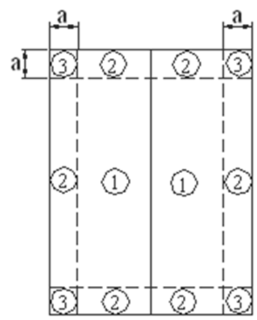
Location of C&C Wind Pressure Zones



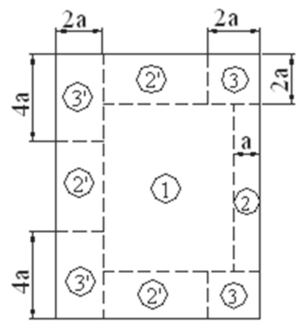
Roofs w/ θ ≤ 10°
and all walls
h > 60'



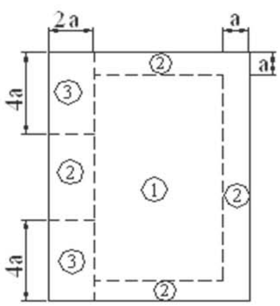
Walls h ≤ 60'
& alt design h<90'



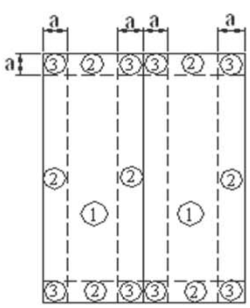
Gable, Sawtooth and
Multispan Gable θ ≤ 7 degrees &
Monoslope ≤ 3 degrees
h ≤ 60' & alt design h<90'



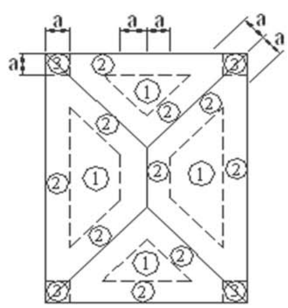
Monoslope roofs
3° < θ ≤ 10°
h ≤ 60' & alt design h<90'



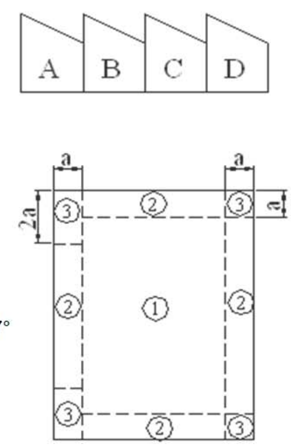
Monoslope roofs
10° < θ ≤ 30°
h ≤ 60' & alt design h<90'



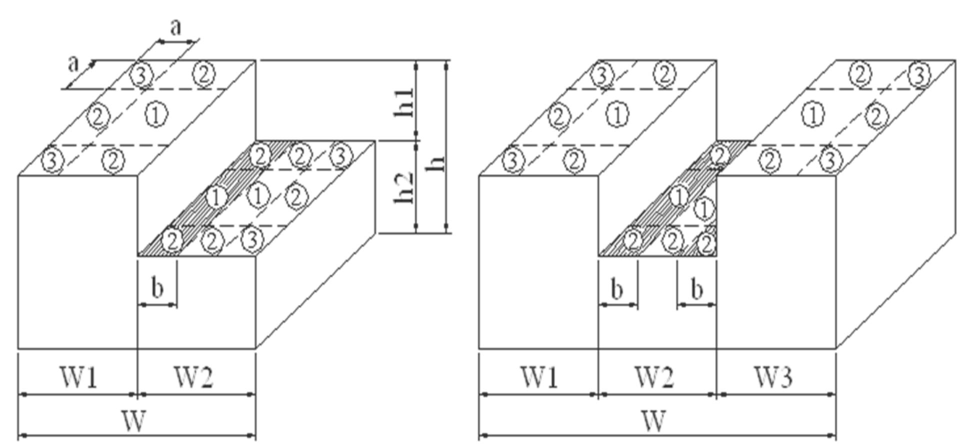
Multispan Gable &
Gable 7° < θ ≤ 45°



Hip 7° < θ ≤ 27°



Sawtooth 10° < θ ≤ 45°
h ≤ 60' & alt design h<90'



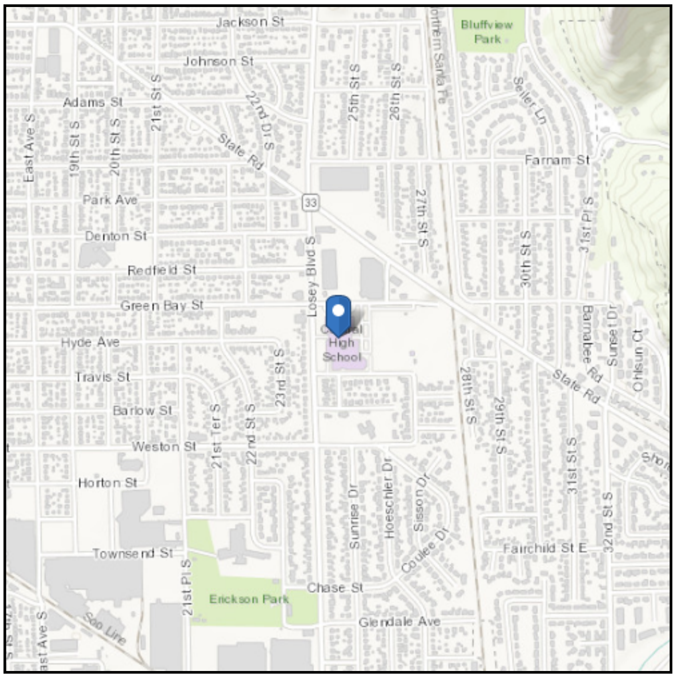
Stepped roofs θ ≤ 3°
h ≤ 60' & alt design h<90'

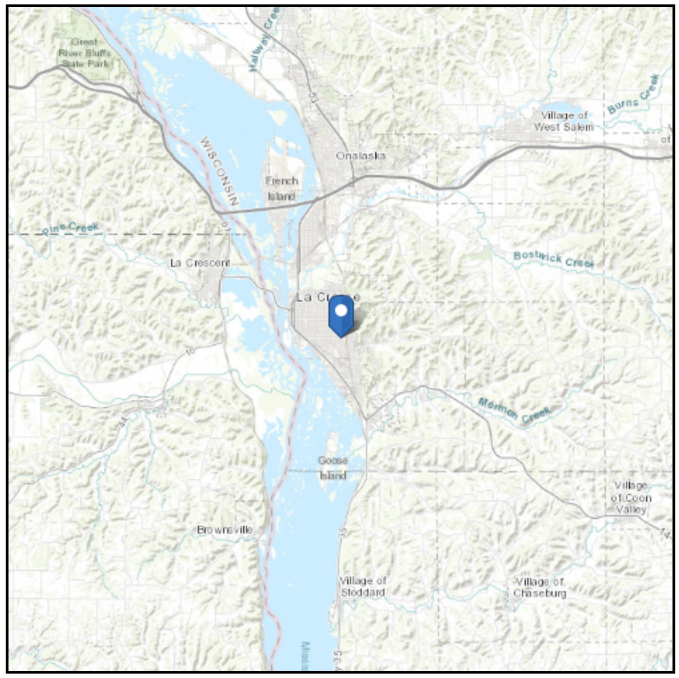
AMERICAN SOCIETY OF CIVIL ENGINEERS

ASCE Hazards Report

Address:
1801 Losey Blvd S
La Crosse, Wisconsin
54601

Standard:	ASCE/SEI 7-10	**Latitude:**	43.793385
Risk Category:	II	**Longitude:**	-91.218917
Soil Class:	D - Stiff Soil	**Elevation:**	664.9313411071986 ft (NAVD 88)





Wind

Results:

Wind Speed	115 Vmph
10-year MRI	76 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Mon Feb 17 2025

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2.

4th Dimension Design, Inc.
817 Venture Ct
Waukesha, WI 53189
262.896.6500
andrea.kohl@4dd.com

JOB TITLE	LA CROSSE CENTRAL HIGH SCHOOL		
JOB NO.	14677	**SHEET NO.**	
CALCULATED BY		**DATE**	
CHECKED BY		**DATE**	

Snow Loads : ASCE 7-10

Nominal Snow Forces

Roof slope	=	26.6 deg	
Horiz. eave to ridge dist (W)	=	20.8 ft	
Roof length parallel to ridge (L)	=	60.0 ft	
Type of Roof		Hip and gable w/ trussed systems	
Ground Snow Load	Pg =	40.0 psf	
Risk Category	=	II	
Importance Factor	I =	1.0	
Thermal Factor	Ct =	0.85	
Exposure Factor	Ce =	1.0	
Pf = 0.7*Ce*Ct*I*Pg	=	23.8 psf	
Unobstructed Slippery Surface		yes	
Sloped-roof Factor	Cs =	0.67	use 0.67
Balanced Snow Load	**Ps =**	**16.0 psf**	
Rain on Snow Surcharge Angle		0.42 deg	
Code Maximum Rain Surcharge		5.0 psf	
Rain on Snow Surcharge	=	0.0 psf	
Ps plus rain surcharge	=	16.0 psf	
Minimum Snow Load	Pm =	0.0 psf	
Uniform Roof Design Snow Load	=	**16.0 psf**	

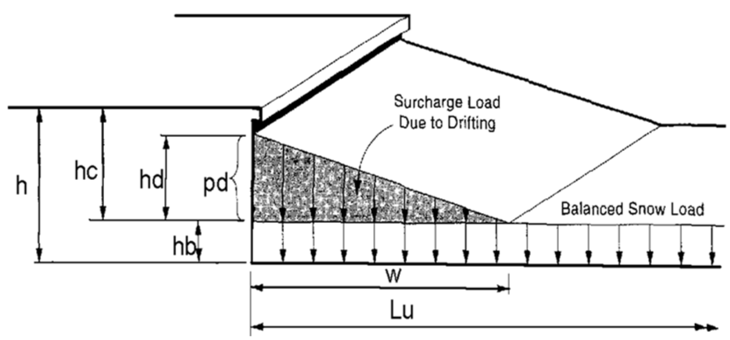
NOTE: Alternate spans of continuous beams and other areas shall be loaded with half the design roof snow load so as to produce the greatest possible effect - see code.

Unbalanced Snow Loads - for Hip & Gable roofs only

Required if slope is between 7 on 12 =	30.26 deg	
and 2.38 deg =	2.38 deg	**Unbalanced snow loads must be applied**
Windward snow load =	4.8 psf	= 0.3Ps
Leeward snow load from ridge to 6.19' =	38.3 psf	= hdγ / √S + Ps
Leeward snow load from 6.19' to the eave =	16.0 psf	= Ps

Windward Snow Drifts 1 - Against walls, parapets, etc

Upwind fetch	lu =	0.0 ft
Projection height	h =	0.0 ft
Snow density	g =	19.2 pcf
Balanced snow height	hb =	0.83 ft
	hd =	1.20 ft
	hc =	-0.83 ft
hc/hb <0.2 = -1.0	**lu<15', drift not req'd**	
Drift height (hc)	=	0.00 ft
Drift width	w =	-6.96 ft
Surcharge load:	pd = γ*hd =	**0.0 psf**
Balanced Snow load:	=	16.0 psf
		16.0 psf



Windward Snow Drifts 2 - Against walls, parapets, etc

Upwind fetch	lu =	0.0 ft
Projection height	h =	0.0 ft
Snow density	g =	19.2 pcf
Balanced snow height	hb =	0.83 ft
	hd =	1.20 ft
	hc =	-0.83 ft
hc/hb <0.2 = -1.0	**lu<15', drift not req'd**	
Drift height (hc)	=	0.00 ft
Drift width	w =	-6.96 ft
Surcharge load:	pd = γ*hd =	**0.0 psf**
Balanced Snow load:	=	16.0 psf
		16.0 psf

AMERICAN SOCIETY OF CIVIL ENGINEERS

Snow

Results:

Ground Snow Load, p_g :	40 lb/ft^2
Mapped Elevation:	664.9 ft
Data Source:	ASCE/SEI 7-10, Fig. 7-1.
Date Accessed:	Mon Feb 17 2025

Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.

Snow load values are mapped to a 0.5 mile resolution. This resolution can create a mismatch between the mapped elevation and the site-specific elevation in topographically complex areas. Engineers should consult the local authority having jurisdiction in locations where the reported 'elevation' and 'mapped elevation' differ significantly from each other.

4th Dimension Design, Inc.
817 Venture Ct
Waukesha, WI 53189
262.896.6500
andrea.kohl@4dd.com

JOB TITLE	LA CROSSE CENTRAL HIGH SCHOOL		
JOB NO.	14677	**SHEET NO.**	
CALCULATED BY		**DATE**	
CHECKED BY		**DATE**	

Seismic Loads:

IBC 2015 — Strength Level Forces

Risk Category : II
Importance Factor (I) : 1.00
Site Class : D

Ss (0.2 sec) = 5.30 %g
S1 (1.0 sec) = 3.60 %g

Fa =	1.600	Sms =	0.085	S_{DS} =	0.057	Design Category =	A
Fv =	2.400	Sm1 =	0.086	S_{D1} =	0.058	Design Category =	A

Seismic Design Category = **A** ASCE7 Section 11.4.1 Exception Applies
Number of Stories: 1
Structure Type: All other building systems
Horizontal Struct Irregularities: No plan Irregularity
Vertical Structural Irregularities: No vertical Irregularity
Flexible Diaphragms: Yes
Building System: **Building Frame Systems**
Seismic resisting system: **Steel ordinary concentrically braced frames**
System Structural Height Limit: **Height not limited**
Actual Structural Height (hn) = 22.4 ft

DESIGN COEFFICIENTS AND FACTORS

Response Modification Coefficient (R) = 3.25
Over-Strength Factor (Ωo) = 2
Deflection Amplification Factor (Cd) = 3.25
S_{DS} = 0.057
S_{D1} = 0.058

Seismic Load Effect (E) = $\rho\, Q_E \pm 0.2 S_{DS} D$ = $\rho\, Q_E \pm$ 0.011D
Special Seismic Load Effect (Em) = $\Omega o\, Q_E \pm 0.2 S_{DS} D$ = $2.0\, Q_E \pm$ 0.011D

ρ = redundancy coefficient
Q_E = horizontal seismic force
D = dead load

PERMITTED ANALYTICAL PROCEDURES

Index Force Analysis (Seismic Category A only) - Minimum lateral force Fx = 0.01Wx at each floor level

Simplified Analysis - Use Equivalent Lateral Force Analysis

Equivalent Lateral-Force Analysis - Permitted

Building period coef. (C_T) = 0.020 — Cu = 1.70
Approx fundamental period (Ta) = $C_T h_n^x$ = 0.206 sec x= 0.75 — Tmax = CuTa = 0.350
User calculated fundamental period (T) = sec — Use T = 0.206
Long Period Transition Period (TL) = ASCE7 map = 12
Seismic response coef. (Cs) = $S_{DS}I/R$ = 0.017
need not exceed Cs = Sd1 I /RT = 0.086
but not less than Cs = 0.010
USE Cs = 0.017
Design Base Shear V = 0.017W

Model & Seismic Response Analysis - Permitted (see code for procedure)

ALLOWABLE STORY DRIFT

Structure Type: Non- masonry, 4 story or less designed to accommodate the story drift

Allowable story drift = 0.025hsx no limit if single story is designed to accommodate the story drift

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

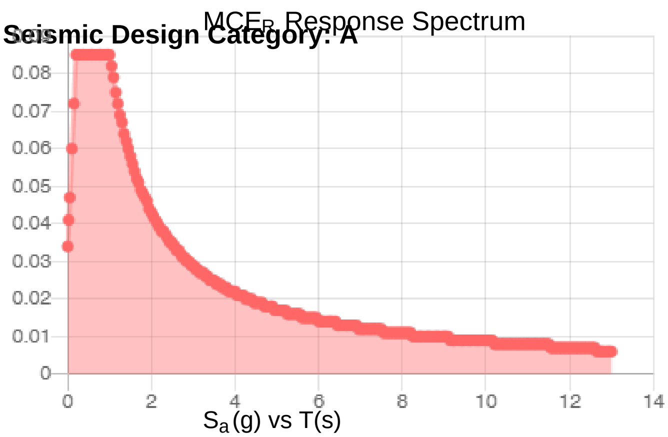
Seismic

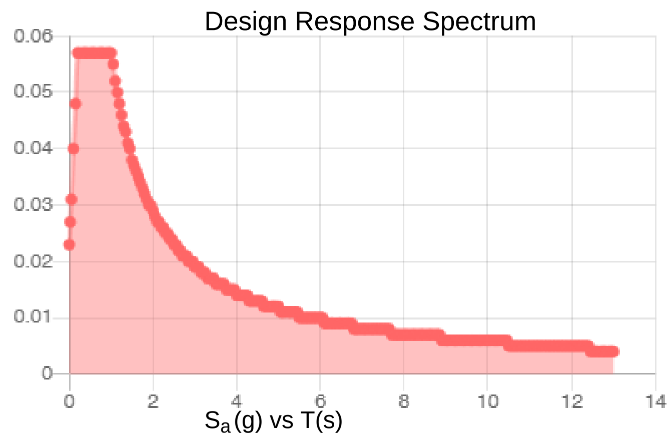
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.053	S_{D1} :	0.058
S_1 :	0.036	T_L :	12
F_a :	1.6	PGA :	0.025
F_v :	2.4	PGA_M :	0.04
S_{MS} :	0.085	F_{PGA} :	1.6
S_{M1} :	0.087	I_e :	1
S_{DS} :	0.057		

Seismic Design Category: A





Data Accessed: **Mon Feb 17 2025**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

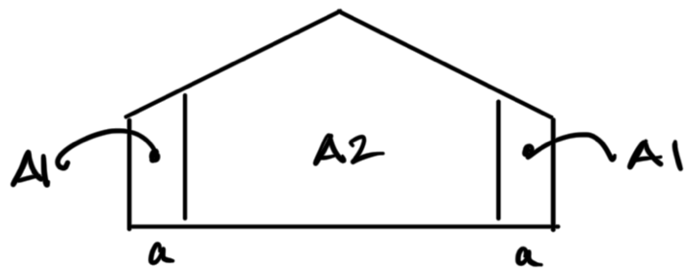
4th DIMENSION DESIGN, INC.

BRACING

14677
PAGE

03.18.25
DATE

X-BRACES IN SIDE WALLS & ROOF



a = 4.2'

A1 = 47 SF × 2 × 21 PSF = 1,974 #

A2 = 538 SF × 13.9 PSF = 7,479 #

FORCE TO BRACE : $\left[\dfrac{1,974 + 7,479}{632 \text{ SF}}\right]$ = 14.95 PSF ULT

USE 16 PSF ULT

0.6 W = 0.6 (16 PSF) = 9.6 PSF (ASD)

BY
AK

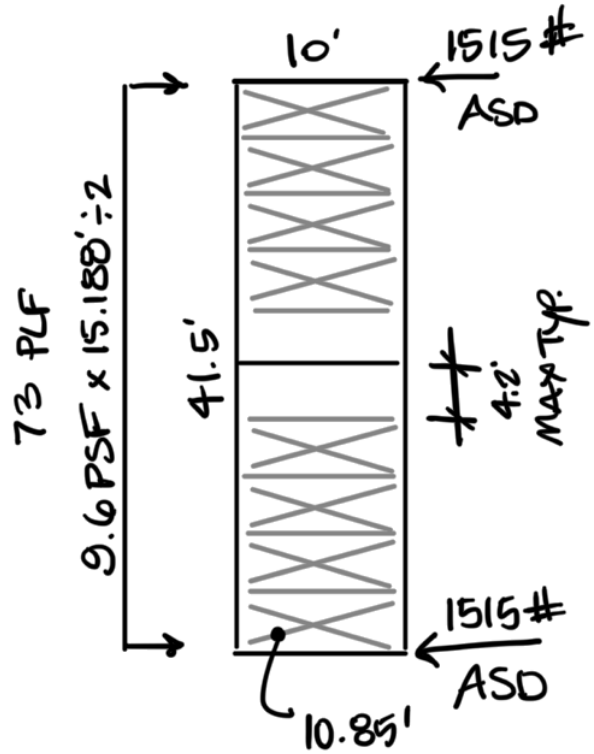
817 Venture Court, Waukesha, Wisconsin 53189 (262) 896-6500

4th DIMENSION DESIGN, INC.

BRACING

14677
PAGE

03.18.25
DATE

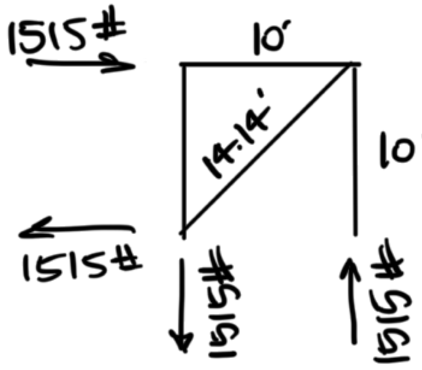


ROOF

$$T = \frac{10.85'}{10'} \times 1{,}515\#$$

$$T = 1{,}644\#\ \text{ASD}$$

w/ 3/16" CABLE = 2.1K



WALL

$$T = 1515\# \times \frac{14.14'}{10'}$$

$$T = 2{,}143\#$$

w/ 1/4" CABLE = 3.5K

CHECK SEISMIC ($C_S = 0.017$)

$$E = 41.6' \times 60' \times 10\ \text{PSF} \times 0.017 = 425\#$$

$$0.7E = 0.7(425\#) = 298\# < 1{,}515\#$$ WIND CONTROLS.

BY AK

PURLINS & GIRTS

14677

03.18.25

PURLINS

DL = 3PSF LL = 18PSF SL = 16 PSF
USL ~ see sketch

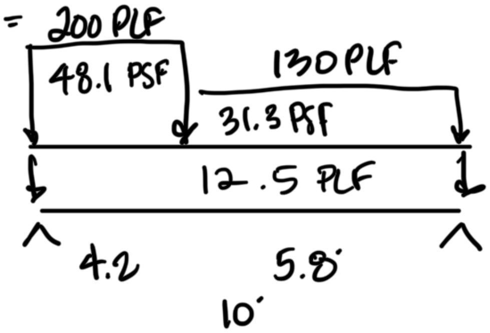
P1 (RIDGE) trib = 4.146'

$$DL + LL = \frac{(87.1\ PLF)(9'\text{-}8")^2}{8} = 1.02\ K\text{-}FT$$

$$DL + SL = \frac{(78.8\ PLF)(9'\text{-}8")^2}{8} = 0.92\ K\text{-}FT$$

$$DL + USL = \frac{(101.8\ PLF)(9'\text{-}8")^2}{8} = 1.19\ K\text{-}FT$$

0.6DL + 0.6WL = = 1.016 KFT



∴ 3" 16 GA PURLIN = 1.4 KFT > 1.02 KFT

AK

4th Dimension Design, Inc.
817 Venture Court
Waukesha, WI 53189
Phone (262) 896-6500
andrea.kohl@4dd.com

Project Title: UGS | LA CROSSE CENTRAL HIGH SCHOOL
Engineer:
Project ID: 14677
Project Descr:

Printed: 18 MAR 2025, 8:30PM

General Beam

File: 14677.ec6

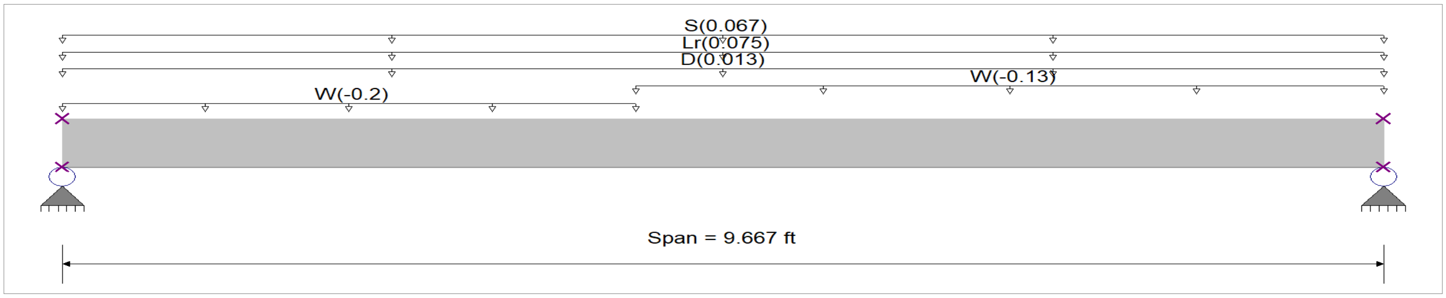
Lic. # : KW-06003674 4TH DIMENSION DESIGN

DESCRIPTION: P1 RIDGE

General Beam Properties

Elastic Modulus 29,000.0 ksi

Span #1 Span Length = 9.667 ft Area = 10.0 in^2 Moment of Inertia = 100.0 in^4



Applied Loads

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

Load for Span Number 1

Uniform Load : W = -0.20 k/ft, Extent = 0.0 -->> 4.20 ft, Tributary Width = 1.0 ft, (WL CC Z3)

Uniform Load : W = -0.130 k/ft, Extent = 4.20 -->> 9.667 ft, Tributary Width = 1.0 ft, (WL Z2)

Uniform Load : D = 0.0130 k/ft, Tributary Width = 1.0 ft, (DL)

Uniform Load : Lr = 0.0750 k/ft, Tributary Width = 1.0 ft, (Lr)

Uniform Load : S = 0.0670 k/ft, Tributary Width = 1.0 ft, (SL)

DESIGN SUMMARY

Maximum Bending =	1.028 k-ft	**Maximum Shear =**	0.4774 k
Load Combination	+D+Lr+H	Load Combination	+0.60D+0.60W+0.60H
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	4.834 ft	Location of maximum on span	0.000 ft

Maximum Deflection

Max Downward Transient Deflection	0.005 in	22646
Max Upward Transient Deflection	-0.011 in	10762
Max Downward Total Deflection	0.006 in	19300
Max Upward Total Deflection	-0.006 in	19546

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	-0.858	-0.692
Overall MINimum	-0.858	-0.692
+D+H	0.063	0.063
+D+L+H	0.063	0.063
+D+Lr+H	0.425	0.425
+D+S+H	0.387	0.387
+D+0.750Lr+0.750L+H	0.335	0.335
+D+0.750L+0.750S+H	0.306	0.306
+D+0.60W+H	-0.452	-0.352
+D+0.70E+H	0.063	0.063
+D+0.750Lr+0.750L+0.450W+H	-0.052	0.023
+D+0.750L+0.750S+0.450W+H	-0.081	-0.006
+D+0.750L+0.750S+0.5250E+H	0.306	0.306
+0.60D+0.60W+0.60H	-0.477	-0.378
+0.60D+0.70E+0.60H	0.038	0.038
D Only	0.063	0.063
Lr Only	0.363	0.363
L Only		
S Only	0.324	0.324
W Only	-0.858	-0.692

PURLINS & GIRTS

14677

03.18.25

4th DIMEN

PURLINS

DL = 3PSF LL = 18PSF SL = 16 PSF

USL = 38.3 PSF

P2 trib = 4.099'

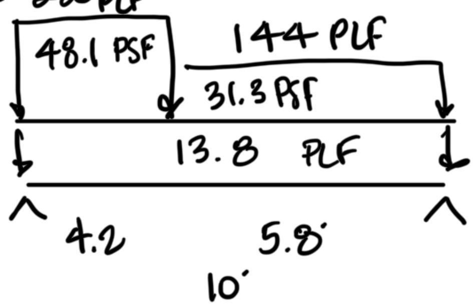
$$DL + LL = \frac{(85.1\ PLF)(9'\text{-}8")^2}{8} = 1.00\ K\text{-}FT$$

$$DL + SL = \frac{(77\ PLF)(9'\text{-}8")^2}{8} = 0.91\ K\text{-}FT$$

$$DL + USL = \frac{(155.2\ PLF)(9'\text{-}8")^2}{8} = 1.98\ K\text{-}FT$$

0.6DL + 0.6WL = 220 PLF = 1.13 KFT

trib = 4.583'



∴ 3" 12GA PURLIN = 2.205 KFT > 1.98 KFT

AK

817 Venture

4th Dimension Design, Inc.
817 Venture Court
Waukesha, WI 53189
Phone (262) 896-6500
andrea.kohl@4dd.com

Project Title: UGS | LA CROSSE CENTRAL HIGH SCHOOL
Engineer:
Project ID: 14677
Project Descr:

Printed: 18 MAR 2025, 9:20PM
File: 14677.ec6

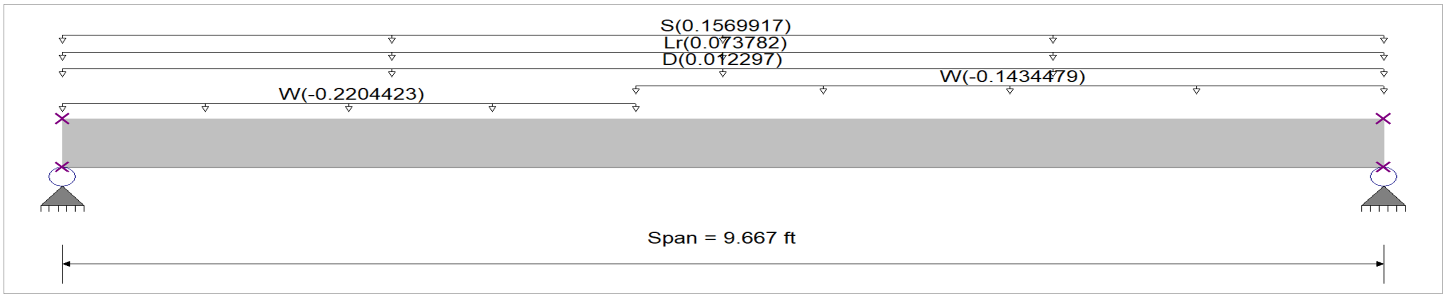
General Beam

Lic. # : KW-06003674 4TH DIMENSION DESIGN

DESCRIPTION: P2

General Beam Properties

Elastic Modulus	29,000.0 ksi			
Span #1	Span Length = 9.667 ft	Area = 10.0 in^2	Moment of Inertia =	100.0 in^4



Applied Loads

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

Load for Span Number 1

Uniform Load : W = -0.04810 ksf, Extent = 0.0 -->> 4.20 ft, Tributary Width = 4.583 ft, (WL CC Z3)

Uniform Load : W = -0.03130 ksf, Extent = 4.20 -->> 9.667 ft, Tributary Width = 4.583 ft, (WL Z2)

Uniform Load : D = 0.0030 ksf, Tributary Width = 4.099 ft, (DL)

Uniform Load : Lr = 0.0180 ksf, Tributary Width = 4.099 ft, (Lr)

Uniform Load : S = 0.03830 ksf, Tributary Width = 4.099 ft, (USL)

DESIGN SUMMARY

Maximum Bending =	1.978 k-ft	**Maximum Shear =**	0.8183 k
Load Combination	+D+S+H	Load Combination	+D+S+H
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	4.834 ft	Location of maximum on span	0.000 ft

Maximum Deflection

Max Downward Transient Deflection	0.011 in	10818
Max Upward Transient Deflection	-0.012 in	9758
Max Downward Total Deflection	0.012 in	10033
Max Upward Total Deflection	-0.007 in	17500

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	-0.946	0.818
Overall MINimum	-0.946	-0.764
+D+H	0.059	0.059
+D+L+H	0.059	0.059
+D+Lr+H	0.416	0.416
+D+S+H	0.818	0.818
+D+0.750Lr+0.750L+H	0.327	0.327
+D+0.750L+0.750S+H	0.629	0.629
+D+0.60W+H	-0.508	-0.399
+D+0.70E+H	0.059	0.059
+D+0.750Lr+0.750L+0.450W+H	-0.099	-0.017
+D+0.750L+0.750S+0.450W+H	0.203	0.285
+D+0.750L+0.750S+0.5250E+H	0.629	0.629
+0.60D+0.60W+0.60H	-0.532	-0.422
+0.60D+0.70E+0.60H	0.036	0.036
D Only	0.059	0.059
Lr Only	0.357	0.357
L Only		
S Only	0.759	0.759
W Only	-0.946	-0.764

PURLINS & GIRTS

14677

03.18.25

PURLINS

DL = 3PSF LL = 18PSF SL = 16 PSF

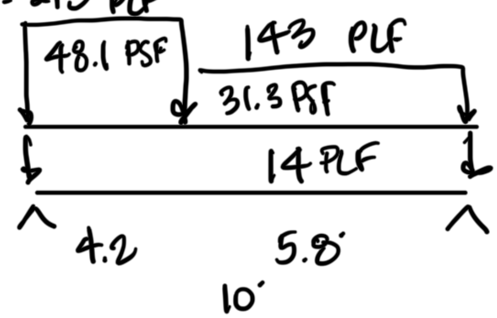
P3 trib = 4.063'

$$DL + LL = \frac{(85.4\,PLF)(9'\text{-}8")^2}{8} = 1.00\ K\text{-}FT$$

$$DL + SL = \frac{(77.2\,PLF)(9'\text{-}8")^2}{8} = 0.91\ K\text{-}FT$$

0.6DL + 0.6WL = 219 PLF = 1.13 KFT

trib = 4.542'



∴ 3" 16GA PURLIN = 1.4 KFT > 1.13 KFT

AK

4th Dimension Design, Inc.
817 Venture Court
Waukesha, WI 53189
Phone (262) 896-6500
andrea.kohl@4dd.com

Project Title: UGS | LA CROSSE CENTRAL HIGH SCHOOL
Engineer:
Project ID: 14677
Project Descr:

Printed: 18 MAR 2025, 8:52PM

General Beam

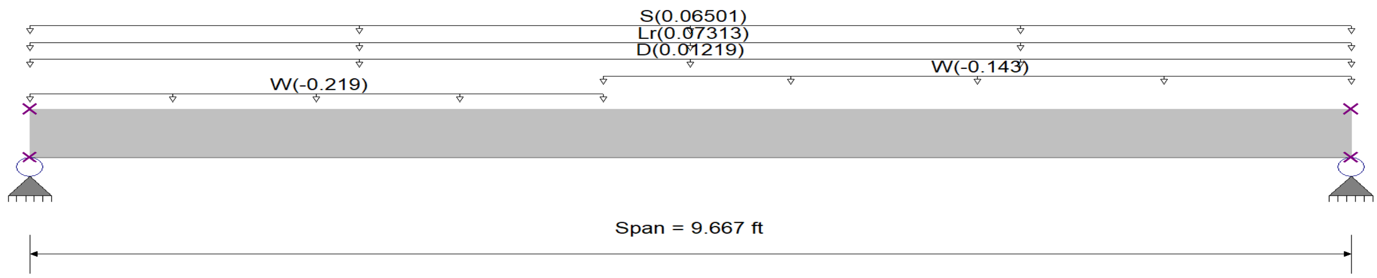
File: 14677.ec6

Lic. # : KW-06003674 4TH DIMENSION DESIGN

DESCRIPTION: P3

General Beam Properties

Elastic Modulus 29,000.0 ksi
Span #1 Span Length = 9.667 ft Area = 10.0 in^2 Moment of Inertia = 100.0 in^4



Applied Loads

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

Load for Span Number 1

Uniform Load : W = -0.2190 k/ft, Extent = 0.0 -->> 4.20 ft, Tributary Width = 1.0 ft, (WL CC Z3)

Uniform Load : W = -0.1430 k/ft, Extent = 4.20 -->> 9.667 ft, Tributary Width = 1.0 ft, (WL Z2)

Uniform Load : D = 0.01219 k/ft, Tributary Width = 1.0 ft, (DL)

Uniform Load : Lr = 0.07313 k/ft, Tributary Width = 1.0 ft, (Lr)

Uniform Load : S = 0.06501 k/ft, Tributary Width = 1.0 ft, (USL)

DESIGN SUMMARY

Maximum Bending =	1.129 k-ft	Maximum Shear =	0.5293 k
Load Combination	+0.60D+0.60W+0.60H	Load Combination	+0.60D+0.60W+0.60H
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	4.302 ft	Location of maximum on span	0.000 ft

Maximum Deflection

Max Downward Transient Deflection	0.005 in	23225
Max Upward Transient Deflection	-0.012 in	9806
Max Downward Total Deflection	0.006 in	19907
Max Upward Total Deflection	-0.007 in	17580

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	-0.941	-0.761
Overall MINimum	-0.941	-0.761
+D+H	0.059	0.059
+D+L+H	0.059	0.059
+D+Lr+H	0.412	0.412
+D+S+H	0.373	0.373
+D+0.750Lr+0.750L+H	0.324	0.324
+D+0.750L+0.750S+H	0.295	0.295
+D+0.60W+H	-0.506	-0.397
+D+0.70E+H	0.059	0.059
+D+0.750Lr+0.750L+0.450W+H	-0.099	-0.018
+D+0.750L+0.750S+0.450W+H	-0.129	-0.048
+D+0.750L+0.750S+0.5250E+H	0.295	0.295
+0.60D+0.60W+0.60H	-0.529	-0.421
+0.60D+0.70E+0.60H	0.035	0.035
D Only	0.059	0.059
Lr Only	0.353	0.353
L Only		
S Only	0.314	0.314
W Only	-0.941	-0.761

4th DIMENSION DESIGN, INC.

PURLINS & GIRTS

14677
PAGE

03.18.25
DATE

PURLINS

DL = 3PSF LL = 18PSF SL = 16 PSF

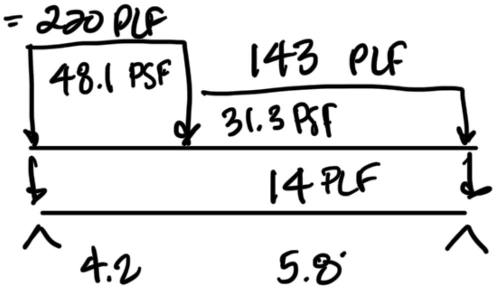
P4 trib = 4.073'

$$DL + LL = \frac{(85.6\,PLF)(9'\text{-}8")^2}{8} = 1.00 \text{ K-FT}$$

$$DL + SL = \frac{(77.4\,PLF)(9'\text{-}8")^2}{8} = 0.91 \text{ K-FT}$$

0.6DL + 0.6WL = 220 PLF = 1.13 KFT

trib = 4.554'



∴ 3" 16GA PURLIN = 1.4 KFT > 1.13 KFT

BY AK

4th Dimension Design, Inc.
817 Venture Court
Waukesha, WI 53189
Phone (262) 896-6500
andrea.kohl@4dd.com

Project Title: UGS | LA CROSSE CENTRAL HIGH SCHOOL
Engineer:
Project ID: 14677
Project Descr:

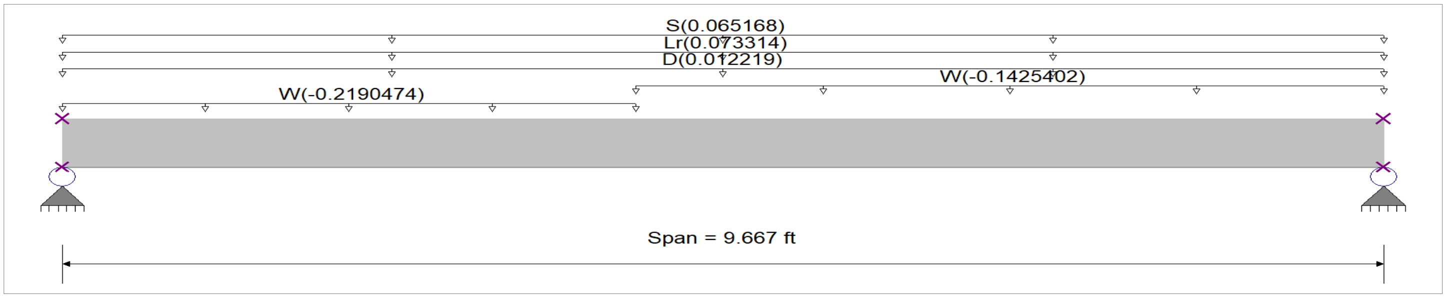
Printed: 18 MAR 2025, 9:14PM
File: 14677.ec6

General Beam

DESCRIPTION: P4

General Beam Properties

Elastic Modulus 29,000.0 ksi
Span #1 Span Length = 9.667 ft Area = 10.0 in^2 Moment of Inertia = 100.0 in^4



Applied Loads

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

Load for Span Number 1

Uniform Load : W = -0.04810 ksf, Extent = 0.0 -->> 4.20 ft, Tributary Width = 4.554 ft, (WL CC Z3)

Uniform Load : W = -0.03130 ksf, Extent = 4.20 -->> 9.667 ft, Tributary Width = 4.554 ft, (WL Z2)

Uniform Load : D = 0.0030 ksf, Tributary Width = 4.073 ft, (DL)

Uniform Load : Lr = 0.0180 ksf, Tributary Width = 4.073 ft, (Lr)

Uniform Load : S = 0.0160 ksf, Tributary Width = 4.073 ft, (USL)

DESIGN SUMMARY

Maximum Bending =	1.127 k-ft	**Maximum Shear =**	0.5289 k
Load Combination	+0.60D+0.60W+0.60H	Load Combination	+0.60D+0.60W+0.60H
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	4.302 ft	Location of maximum on span	0.000 ft

Maximum Deflection

Max Downward Transient Deflection	0.005 in	23167
Max Upward Transient Deflection	-0.012 in	9820
Max Downward Total Deflection	0.006 in	19857
Max Upward Total Deflection	-0.007 in	17612

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	-0.940	-0.759
Overall MINimum	-0.940	-0.759
+D+H	0.059	0.059
+D+L+H	0.059	0.059
+D+Lr+H	0.413	0.413
+D+S+H	0.374	0.374
+D+0.750Lr+0.750L+H	0.325	0.325
+D+0.750L+0.750S+H	0.295	0.295
+D+0.60W+H	-0.505	-0.396
+D+0.70E+H	0.059	0.059
+D+0.750Lr+0.750L+0.450W+H	-0.098	-0.017
+D+0.750L+0.750S+0.450W+H	-0.128	-0.046
+D+0.750L+0.750S+0.5250E+H	0.295	0.295
+0.60D+0.60W+0.60H	-0.529	-0.420
+0.60D+0.70E+0.60H	0.035	0.035
D Only	0.059	0.059
Lr Only	0.354	0.354
L Only		
S Only	0.315	0.315
W Only	-0.940	-0.759

4th DIM

14677

03.18.25

PURLINS & GIRTS

PURLINS

DL = 3PSF   LL = 18PSF   SL = 16 PSF

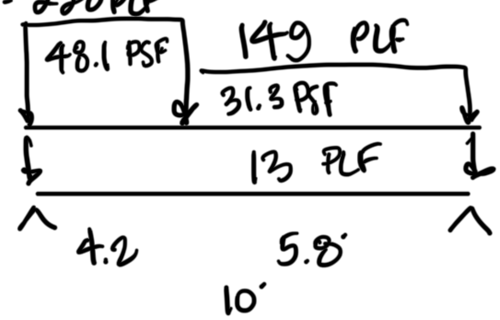
P5   trib = 4.24'

$$DL + LL = \frac{(89.1\ PLF)(9'\text{-}8")^2}{8} = 1.04\ K\text{-}FT$$

$$DL + SL = \frac{(80.6\ PLF)(9'\text{-}8")^2}{8} = 0.95\ K\text{-}FT$$

0.6DL + 0.6WL = 228 PLF   = 1.173 kFT

trib = 4.74'



∴ 3" 16GA PURLIN = 1.4 KFT > 1.173 KFT

AK

817 Ventu

4th Dimension Design, Inc.
817 Venture Court
Waukesha, WI 53189
Phone (262) 896-6500
andrea.kohl@4dd.com

Project Title: UGS | LA CROSSE CENTRAL HIGH SCHOOL
Engineer:
Project ID: 14677
Project Descr:

Printed: 18 MAR 2025, 9:17PM

General Beam

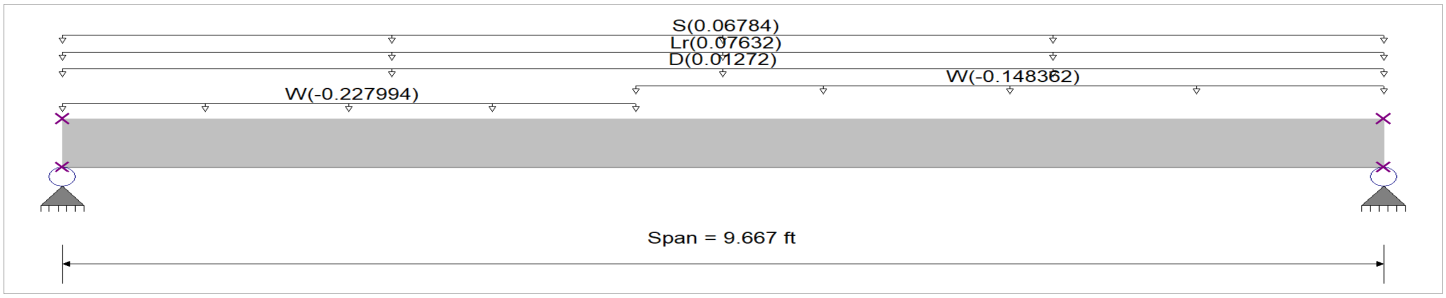
File: 14677.ec6

Lic. # : KW-06003674 4TH DIMENSION DESIGN

DESCRIPTION: P5

General Beam Properties

Elastic Modulus 29,000.0 ksi
Span #1 Span Length = 9.667 ft Area = 10.0 in^2 Moment of Inertia = 100.0 in^4



Applied Loads

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

Load for Span Number 1
Uniform Load : W = -0.04810 ksf, Extent = 0.0 -->> 4.20 ft, Tributary Width = 4.740 ft, (WL CC Z3)

Uniform Load : W = -0.03130 ksf, Extent = 4.20 -->> 9.667 ft, Tributary Width = 4.740 ft, (WL Z2)

Uniform Load : D = 0.0030 ksf, Tributary Width = 4.240 ft, (DL)

Uniform Load : Lr = 0.0180 ksf, Tributary Width = 4.240 ft, (Lr)

Uniform Load : S = 0.0160 ksf, Tributary Width = 4.240 ft, (USL)

DESIGN SUMMARY

Maximum Bending =	1.173 k-ft	**Maximum Shear =**	0.5505 k
Load Combination	+0.60D+0.60W+0.60H	Load Combination	+0.60D+0.60W+0.60H
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	4.302 ft	Location of maximum on span	0.000 ft

Maximum Deflection

Max Downward Transient Deflection	0.005 in	22254
Max Upward Transient Deflection	-0.012 in	9435
Max Downward Total Deflection	0.006 in	19075
Max Upward Total Deflection	-0.007 in	16921

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	-0.979	-0.790
Overall MINimum	-0.979	-0.790
+D+H	0.061	0.061
+D+L+H	0.061	0.061
+D+Lr+H	0.430	0.430
+D+S+H	0.389	0.389
+D+0.750Lr+0.750L+H	0.338	0.338
+D+0.750L+0.750S+H	0.307	0.307
+D+0.60W+H	-0.526	-0.412
+D+0.70E+H	0.061	0.061
+D+0.750Lr+0.750L+0.450W+H	-0.102	-0.017
+D+0.750L+0.750S+0.450W+H	-0.133	-0.048
+D+0.750L+0.750S+0.5250E+H	0.307	0.307
+0.60D+0.60W+0.60H	-0.550	-0.437
+0.60D+0.70E+0.60H	0.037	0.037
D Only	0.061	0.061
Lr Only	0.369	0.369
L Only		
S Only	0.328	0.328
W Only	-0.979	-0.790

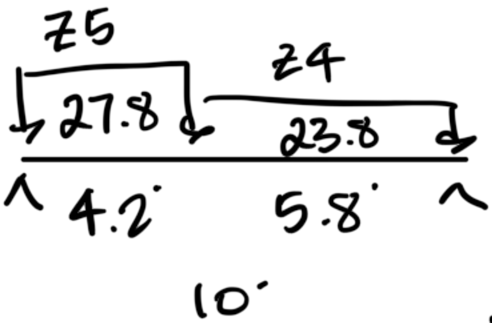
4th DIMENSION DESIGN, INC.

GIRTS

14677
PAGE

03.18.25
DATE

G1

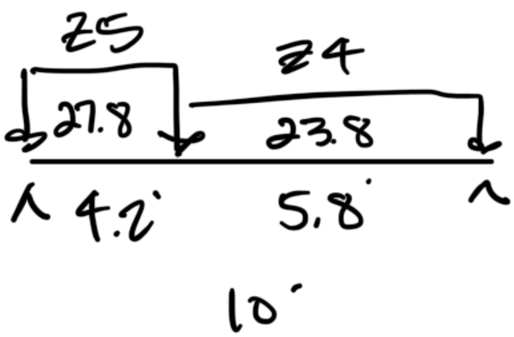


trib = 3.75'

M_{max} = 0.710 K·FT

∴ 3" 18GA

G2

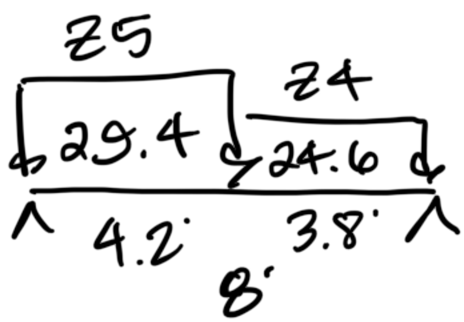


trib = 3.26'

M_{max} = 0.617 K·FT

∴ 3" 18GA.

G3

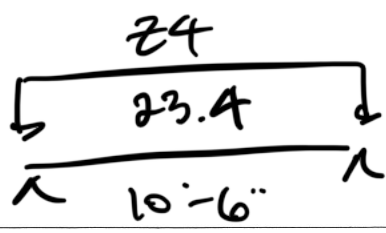


trib = 2.75'

M_{max} = 0.34 KFT

∴ 3" 18GA.

G4



trib = 4.5'

M_{max} = 0.882 KFT

∴ 3" 18GA

BY AK

817 Venture Court, Waukesha, Wisconsin 53189 (262) 896-6500

4th Dimension Design, Inc.
817 Venture Court
Waukesha, WI 53189
Phone (262) 896-6500
andrea.kohl@4dd.com

Project Title: UGS | LA CROSSE CENTRAL HIGH SCHOOL
Engineer:
Project ID: 14677
Project Descr:

Printed: 20 MAR 2025, 1:40PM

General Beam

File: 14677.ec6

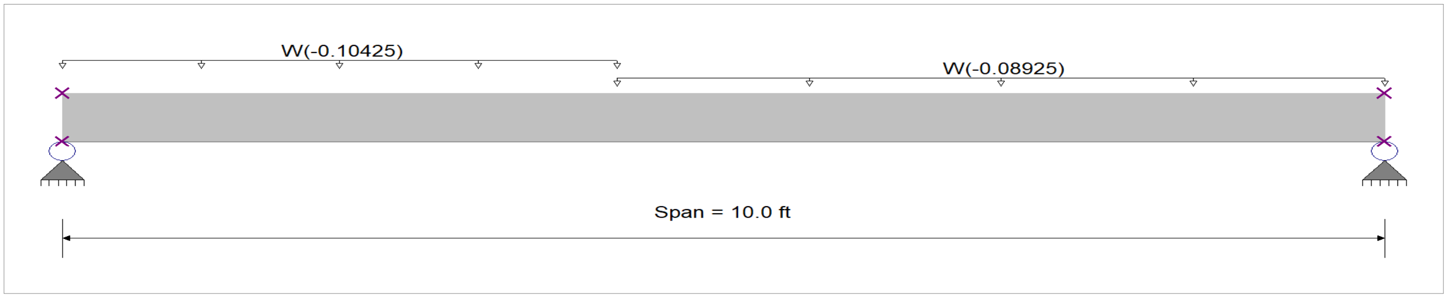
Lic. # : KW-06003674 **4TH DIMENSION DESIGN**

DESCRIPTION: G1

General Beam Properties

Elastic Modulus 29,000.0 ksi

Span #1 Span Length = 10.0 ft Area = 10.0 in^2 Moment of Inertia = 100.0 in^4



Applied Loads

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

Load for Span Number 1

Uniform Load : W = -0.02380 ksf, Extent = 4.20 -->> 10.0 ft, Tributary Width = 3.750 ft, (WL Z4)

Uniform Load : W = -0.02780 ksf, Extent = 0.0 -->> 4.20 ft, Tributary Width = 3.750 ft, (WL CC Z5)

DESIGN SUMMARY

Maximum Bending =	0.710 k-ft	**Maximum Shear =**	0.2976 k
Load Combination	+D+0.60W+H	Load Combination	+D+0.60W+H
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	4.850 ft	Location of maximum on span	0.000 ft

Maximum Deflection

Max Downward Transient Deflection	0.000 in	0
Max Upward Transient Deflection	-0.007 in	16173
Max Downward Total Deflection	0.000 in	0
Max Upward Total Deflection	-0.004 in	26956

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	-0.496	-0.459
Overall MINimum	-0.496	-0.459
+D+H		
+D+L+H		
+D+Lr+H		
+D+S+H		
+D+0.750Lr+0.750L+H		
+D+0.750L+0.750S+H		
+D+0.60W+H	-0.298	-0.276
+D+0.70E+H		
+D+0.750Lr+0.750L+0.450W+H	-0.223	-0.207
+D+0.750L+0.750S+0.450W+H	-0.223	-0.207
+D+0.750L+0.750S+0.5250E+H		
+0.60D+0.60W+0.60H	-0.298	-0.276
+0.60D+0.70E+0.60H		
D Only		
Lr Only		
L Only		
S Only		
W Only	-0.496	-0.459
E Only		
H Only		

4th Dimension Design, Inc.
817 Venture Court
Waukesha, WI 53189
Phone (262) 896-6500
andrea.kohl@4dd.com

Printed: 20 MAR 2025, 1:40PM
File: 14677.ec6

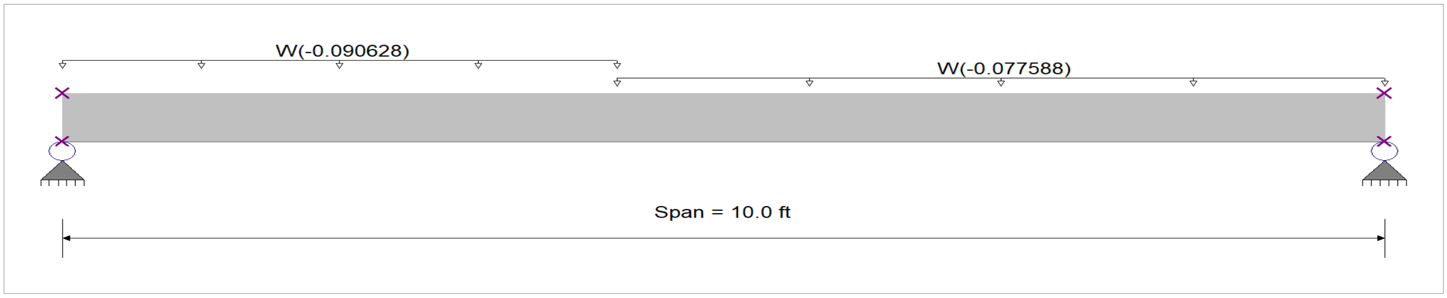
General Beam

Lic. # : KW-06003674
4TH DIMENSION DESIGN

DESCRIPTION: G2

General Beam Properties

Elastic Modulus	29,000.0 ksi				
Span #1	Span Length =	10.0 ft	Area = 10.0 in^2	Moment of Inertia =	100.0 in^4



Applied Loads

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

Load for Span Number 1

Uniform Load : W = -0.02380 ksf, Extent = 4.20 -->> 10.0 ft, Tributary Width = 3.260 ft, (WL Z4)

Uniform Load : W = -0.02780 ksf, Extent = 0.0 -->> 4.20 ft, Tributary Width = 3.260 ft, (WL CC Z5)

DESIGN SUMMARY

Maximum Bending =	0.617 k-ft	**Maximum Shear =**	0.2587 k
Load Combination	+D+0.60W+H	Load Combination	+D+0.60W+H
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	4.850 ft	Location of maximum on span	0.000 ft

Maximum Deflection

Max Downward Transient Deflection	0.000 in	0
Max Upward Transient Deflection	-0.006 in	18604
Max Downward Total Deflection	0.000 in	0
Max Upward Total Deflection	-0.004 in	31008

Vertical Reactions

Support notation : Far left is #1   Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	-0.431	-0.399
Overall MINimum	-0.431	-0.399
+D+H		
+D+L+H		
+D+Lr+H		
+D+S+H		
+D+0.750Lr+0.750L+H		
+D+0.750L+0.750S+H		
+D+0.60W+H	-0.259	-0.240
+D+0.70E+H		
+D+0.750Lr+0.750L+0.450W+H	-0.194	-0.180
+D+0.750L+0.750S+0.450W+H	-0.194	-0.180
+D+0.750L+0.750S+0.5250E+H		
+0.60D+0.60W+0.60H	-0.259	-0.240
+0.60D+0.70E+0.60H		
D Only		
Lr Only		
L Only		
S Only		
W Only	-0.431	-0.399
E Only		
H Only		

4th Dimension Design, Inc.
817 Venture Court
Waukesha, WI 53189
Phone (262) 896-6500
andrea.kohl@4dd.com

Project Title: UGS | LA CROSSE CENTRAL HIGH SCHOOL
Engineer:
Project ID: 14677
Project Descr:

Printed: 20 MAR 2025, 1:41PM

General Beam

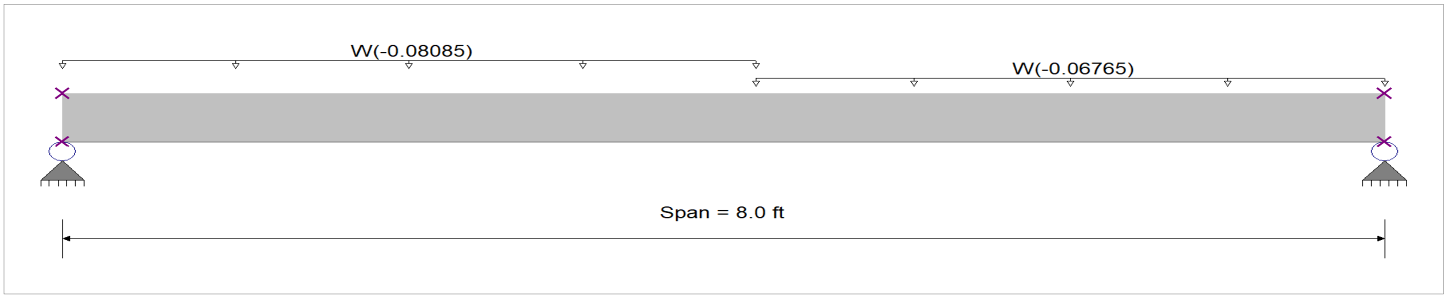
File: 14677.ec6

Lic. # : KW-06003674 4TH DIMENSION DESIGN

DESCRIPTION: G3

General Beam Properties

Elastic Modulus	29,000.0 ksi			
Span #1	Span Length = 8.0 ft	Area = 10.0 in^2	Moment of Inertia =	100.0 in^4



Applied Loads

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

Load for Span Number 1

Uniform Load : W = -0.02460 ksf, Extent = 4.20 -->> 8.0 ft, Tributary Width = 2.750 ft, (WL Z4)

Uniform Load : W = -0.02940 ksf, Extent = 0.0 -->> 4.20 ft, Tributary Width = 2.750 ft, (WL CC Z5)

DESIGN SUMMARY

Maximum Bending =	0.360 k-ft	**Maximum Shear =**	0.1869 k
Load Combination	+D+0.60W+H	Load Combination	+D+0.60W+H
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	3.840 ft	Location of maximum on span	0.000 ft

Maximum Deflection

Max Downward Transient Deflection	0.000 in	0
Max Upward Transient Deflection	-0.002 in	40070
Max Downward Total Deflection	0.000 in	0
Max Upward Total Deflection	-0.001 in	66783

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	-0.311	-0.285
Overall MINimum	-0.311	-0.285
+D+H		
+D+L+H		
+D+Lr+H		
+D+S+H		
+D+0.750Lr+0.750L+H		
+D+0.750L+0.750S+H		
+D+0.60W+H	-0.187	-0.171
+D+0.70E+H		
+D+0.750Lr+0.750L+0.450W+H	-0.140	-0.128
+D+0.750L+0.750S+0.450W+H	-0.140	-0.128
+D+0.750L+0.750S+0.5250E+H		
+0.60D+0.60W+0.60H	-0.187	-0.171
+0.60D+0.70E+0.60H		
D Only		
Lr Only		
L Only		
S Only		
W Only	-0.311	-0.285
E Only		
H Only		

4th Dimension Design, Inc.
817 Venture Court
Waukesha, WI 53189
Phone (262) 896-6500
andrea.kohl@4dd.com

Project Title: UGS | LA CROSSE CENTRAL HIGH SCHOOL
Engineer:
Project ID: 14677
Project Descr:

Printed: 20 MAR 2025, 1:42PM

General Beam

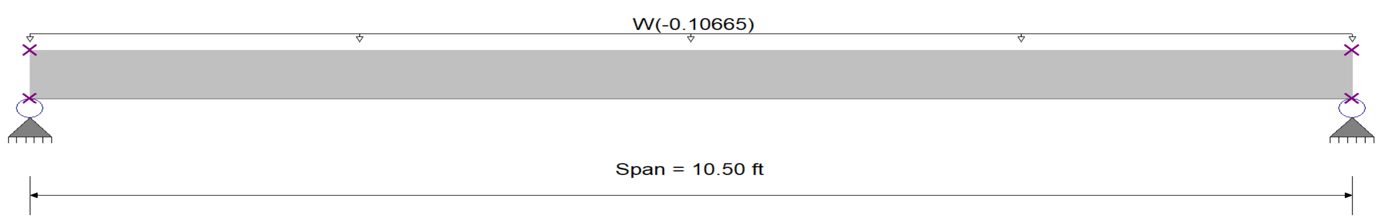
File: 14677.ec6

Lic. # : KW-06003674 **4TH DIMENSION DESIGN**

DESCRIPTION: G4

General Beam Properties

Elastic Modulus 29,000.0 ksi
Span #1 Span Length = 10.50 ft Area = 10.0 in^2 Moment of Inertia = 100.0 in^4



Applied Loads

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

Uniform Load : W = -0.02370 ksf, Tributary Width = 4.50 ft, (WL Z4)

DESIGN SUMMARY

Maximum Bending =	0.882 k-ft	**Maximum Shear =**	0.3359 k
Load Combination	+D+0.60W+H	Load Combination	+D+0.60W+H
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	5.250 ft	Location of maximum on span	0.000 ft

Maximum Deflection

Max Downward Transient Deflection	0.000 in	0
Max Upward Transient Deflection	-0.010 in	12428
Max Downward Total Deflection	0.000 in	0
Max Upward Total Deflection	-0.006 in	20713

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

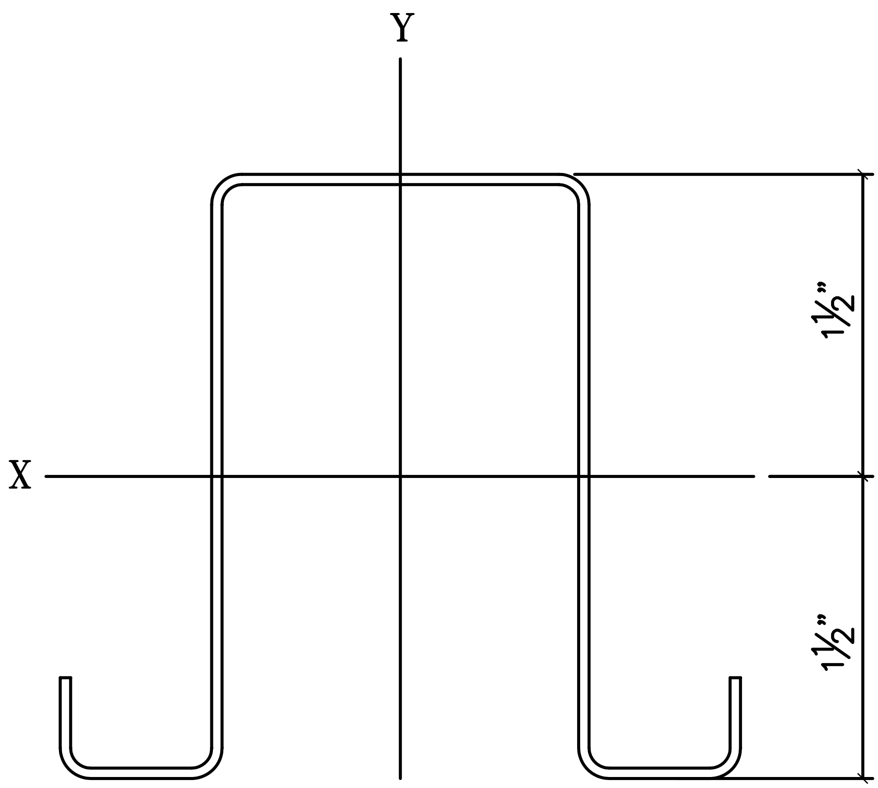
Load Combination	Support 1	Support 2
Overall MAXimum	-0.560	-0.560
Overall MINimum	-0.560	-0.560
+D+H		
+D+L+H		
+D+Lr+H		
+D+S+H		
+D+0.750Lr+0.750L+H		
+D+0.750L+0.750S+H		
+D+0.60W+H	-0.336	-0.336
+D+0.70E+H		
+D+0.750Lr+0.750L+0.450W+H	-0.252	-0.252
+D+0.750L+0.750S+0.450W+H	-0.252	-0.252
+D+0.750L+0.750S+0.5250E+H		
+0.60D+0.60W+0.60H	-0.336	-0.336
+0.60D+0.70E+0.60H		
D Only		
Lr Only		
L Only		
S Only		
W Only	-0.560	-0.560
E Only		
H Only		

4th DIMENSION DESIGN, INC.

3"HAT x 18GA

PAGE

DATE



3" HAT - 18 GA. (0.0516)

Area:		0.5082
Moments of inertia:	X:	0.6308
	Y:	0.5221
Radii of gyration:	X:	1.1141
	Y:	1.0135

Fy = 55 KSI

ASD

$$Sx = \frac{0.6308}{1.5} = 0.4205 \text{ IN}^3$$

$$\text{ALLOW. MOMENT}\left(\frac{Mn}{\Omega}\right) = \left(\frac{0.4205(55)}{1.67}\right)/12 = 1.154 \text{ K-FT}$$

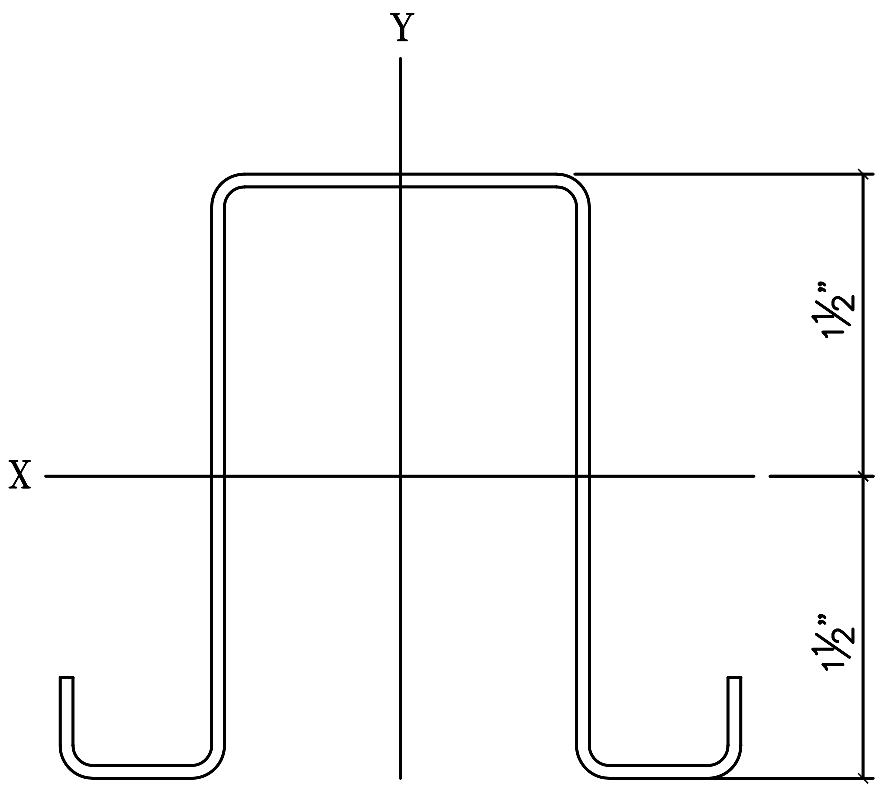
817 Venture Court, Waukesha, Wisconsin 53189 (262) 896-6500

4th DIMENSION DESIGN, INC.

3"HAT x 16GA

PAGE

DATE



3" HAT - 16 GA. (0.0635)

Area:		0.6215
Moments of inertia:	X:	0.7644
	Y:	0.6308
Radii of gyration:	X:	1.1091
	Y:	1.0075

Fy = 55 KSI

ASD

$$Sx = \frac{0.7644}{1.5} = 0.5096 \text{ IN}^3$$

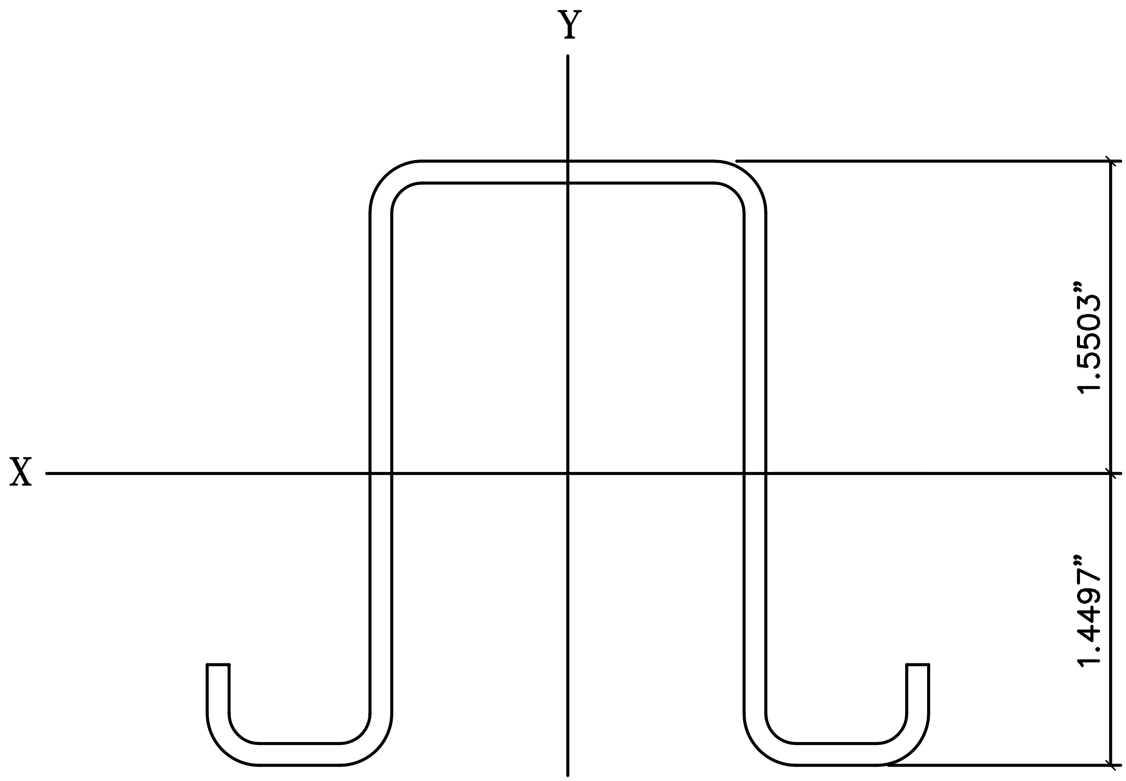
$$\text{ALLOW. MOMENT}\left(\frac{Mn}{\Omega}\right) = \left(\frac{0.5096(55)}{1.67}\right)/12 = 1.400 \text{ K-FT}$$

4th DIMENSION DESIGN, INC.

3"HAT x 12GA PURLINS

PAGE

DATE



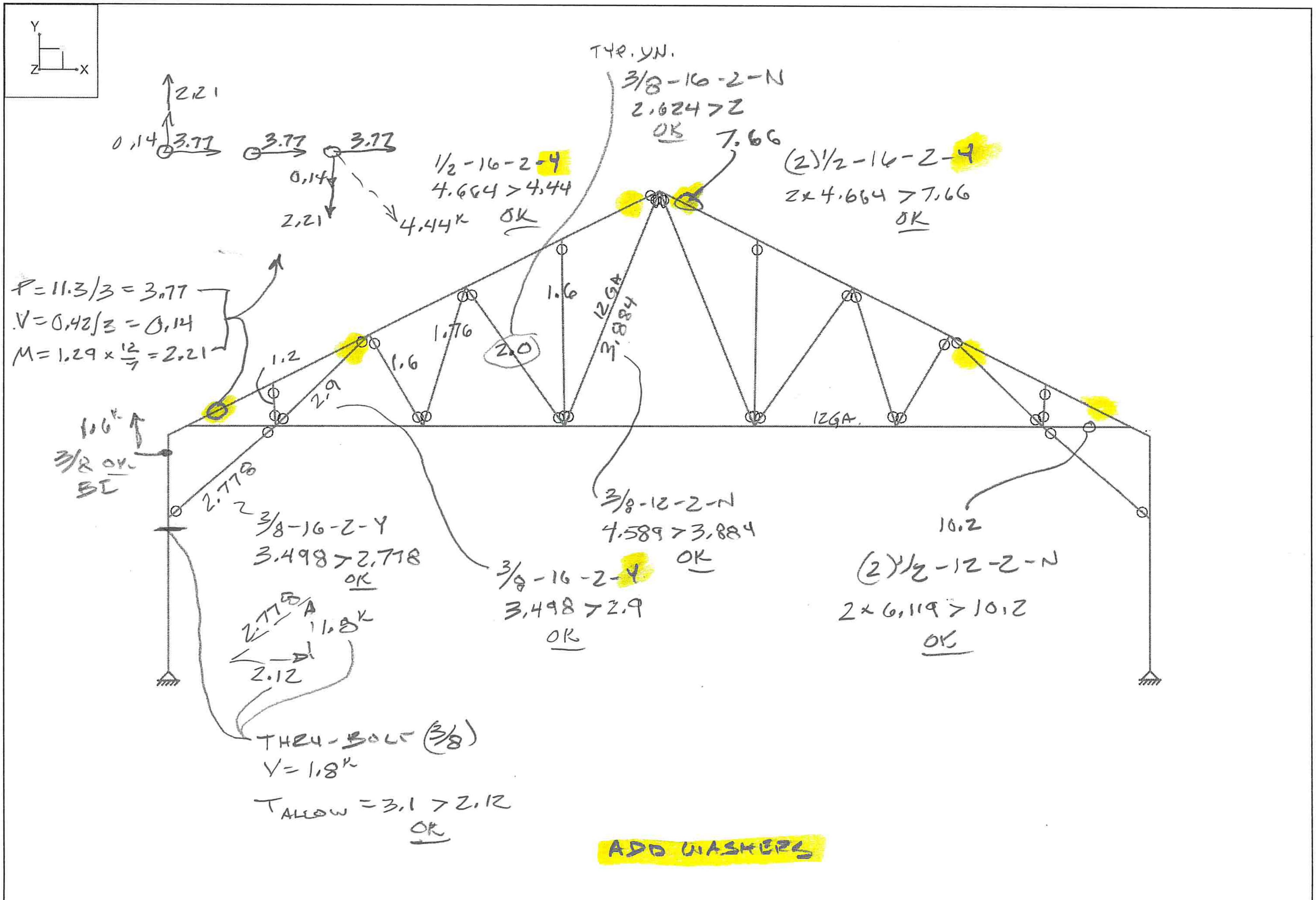
3" HAT - 12 GA. (0.1084)

Area: 1.0433
Moments of inertia: X: 1.2453
Y: 1.1213
Radii of gyration: X: 1.0926
Y: 1.0367
Fy = 55 KSI

ASD

$$Sx = \frac{1.2453}{1.5503} = 0.8033 \text{ IN}^3$$

$$\text{ALLOW. MOMENT}\left(\frac{Mn}{\Omega}\right) = \left(\frac{0.8033(55)}{1.67}\right)/12 = 2.205 \text{ K-FT}$$



4th Dimension Design	41-6 INT TRUSS	SK-1
AK	CONN'S	41-6 INT TRUSS.r3d

GRADE 5/A325 CONNECTION ALLOWABLE LOADS (KIPS PER BOLT)
1/2" DIAM. BOLTED CONNECTIONS

BOLT DIAM(IN)	BOLT AREA(IN^2)	MAT. GAGE	MAT. THICK(IN)	SHEAR PLANES	WASHER OR OUTSIDE MEMB.	WASHER FACTOR	BRG. ALLOW (KIPS)	SHEAR ALLOW(KIPS)	CONN. ALLOW (KIPS PER BOLT)	CASE
1/2	0.196	8	0.1644	2	N	0.750	9.617	9.425	9.425	1/2 - 8 - 2 - N
1/2	0.196	8	0.1644	2	Y	1.000	12.823	9.425	9.425	1/2 - 8 - 2 - Y
1/2	0.196	8	0.1644	1	N	0.750	4.809	4.712	4.712	1/2 - 8 - 1 - N
1/2	0.196	8	0.1644	1	Y	1.000	6.412	4.712	4.712	1/2 - 8 - 1 - Y
1/2	0.196	10	0.1345	2	N	0.750	7.868	9.425	7.868	1/2 - 10 - 2 - N
1/2	0.196	10	0.1345	2	Y	1.000	10.491	9.425	9.425	1/2 - 10 - 2 - Y
1/2	0.196	10	0.1345	1	N	0.750	3.934	4.712	3.934	1/2 - 10 - 1 - N
1/2	0.196	10	0.1345	1	Y	1.000	5.246	4.712	4.712	1/2 - 10 - 1 - Y
1/2	0.196	11	0.1196	2	N	0.750	6.997	9.425	6.997	1/2 - 11 - 2 - N
1/2	0.196	11	0.1196	2	Y	1.000	9.329	9.425	9.329	1/2 - 11 - 2 - Y
1/2	0.196	11	0.1196	1	N	0.750	3.498	4.712	3.498	1/2 - 11 - 1 - N
1/2	0.196	11	0.1196	1	Y	1.000	4.664	4.712	4.664	1/2 - 11 - 1 - Y
1/2	0.196	12	0.1046	2	N	0.750	6.119	9.425	6.119	1/2 - 12 - 2 - N
1/2	0.196	12	0.1046	2	Y	1.000	8.159	9.425	8.159	1/2 - 12 - 2 - Y
1/2	0.196	12	0.1046	1	N	0.750	3.060	4.712	3.060	1/2 - 12 - 1 - N
1/2	0.196	12	0.1046	1	Y	1.000	4.079	4.712	4.079	1/2 - 12 - 1 - Y
1/2	0.196	13	0.0897	2	N	0.750	5.247	9.425	5.247	1/2 - 13 - 2 - N
1/2	0.196	13	0.0897	2	Y	1.000	6.997	9.425	6.997	1/2 - 13 - 2 - Y
1/2	0.196	13	0.0897	1	N	0.750	2.624	4.712	2.624	1/2 - 13 - 1 - N
1/2	0.196	13	0.0897	1	Y	1.000	3.498	4.712	3.498	1/2 - 13 - 1 - Y
1/2	0.196	14	0.0747	2	N	0.750	4.370	9.425	4.370	1/2 - 14 - 2 - N
1/2	0.196	14	0.0747	2	Y	1.000	5.827	9.425	5.827	1/2 - 14 - 2 - Y
1/2	0.196	14	0.0747	1	N	0.750	2.185	4.712	2.185	1/2 - 14 - 1 - N
1/2	0.196	14	0.0747	1	Y	1.000	2.913	4.712	2.913	1/2 - 14 - 1 - Y
1/2	0.196	16	0.0598	2	N	0.750	3.498	9.425	3.498	1/2 - 16 - 2 - N
1/2	0.196	16	0.0598	2	Y	1.000	4.664	9.425	4.664	1/2 - 16 - 2 - Y
1/2	0.196	16	0.0598	1	N	0.750	1.749	4.712	1.749	1/2 - 16 - 1 - N
1/2	0.196	16	0.0598	1	Y	1.000	2.332	4.712	2.332	1/2 - 16 - 1 - Y
1/2	0.196	18	0.0478	2	N	0.750	2.796	9.425	2.796	1/2 - 18 - 2 - N
1/2	0.196	18	0.0478	2	Y	1.000	3.728	9.425	3.728	1/2 - 18 - 2 - Y
1/2	0.196	18	0.0478	1	N	0.750	1.398	4.712	1.398	1/2 - 18 - 1 - N
1/2	0.196	18	0.0478	1	Y	1.000	1.864	4.712	1.864	1/2 - 18 - 1 - Y

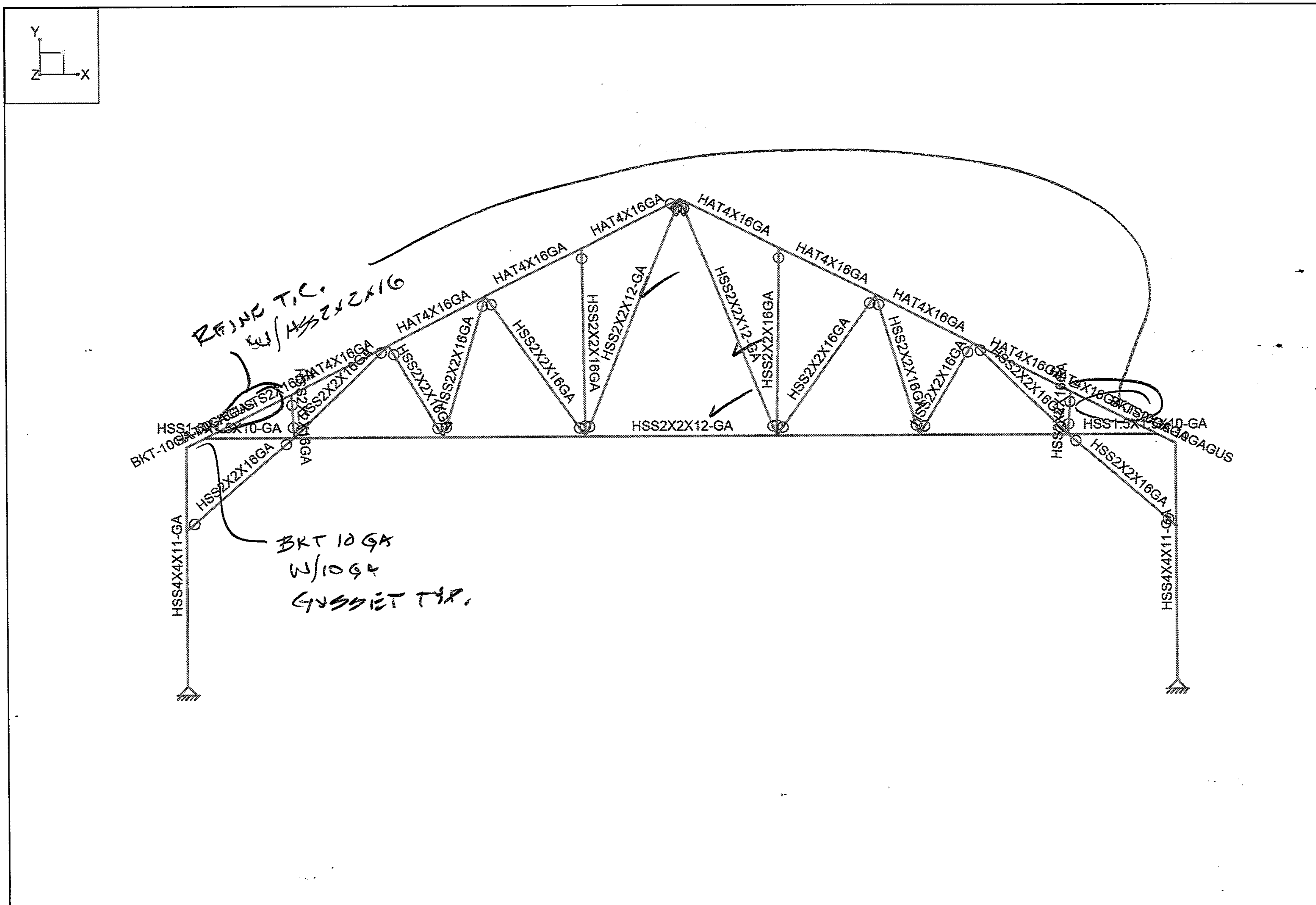
3/8 "DIAM. A325/GRADE 5 COMBINED SHEAR & TENSION
AISC 360-05

Fnt (ksi) = 90
Fnv (ksi - threads included in shear plane) = 48
ASD Safety factor (omega) = 2

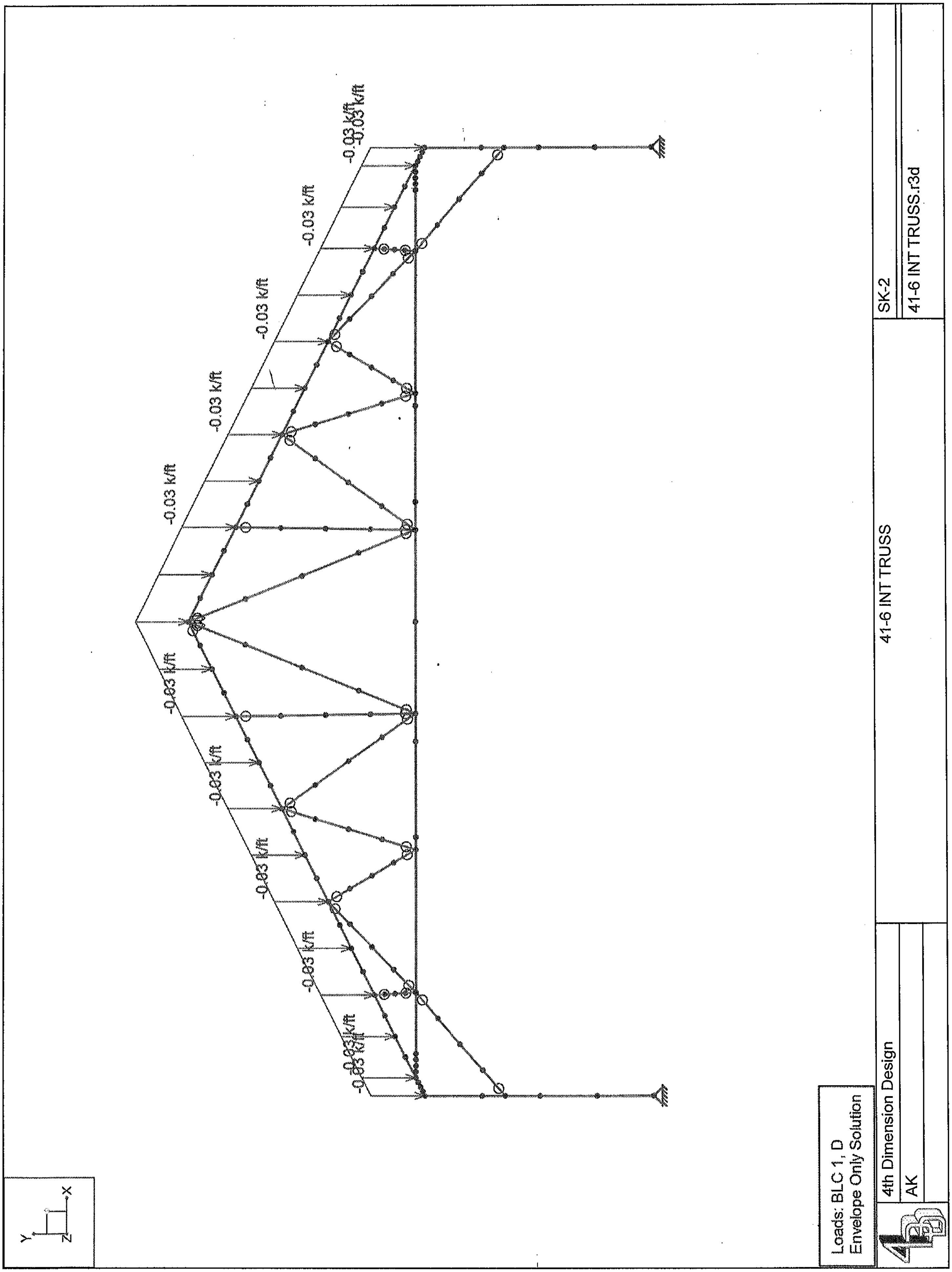
BOLT DIAM. (IN)	BOLT AREA (SQ IN)	SHEAR (KIPS)	SHEAR STRESS (KIPS/SQ IN)	ALLOW TENSILE STRESS (KIPS/SQ IN)	ALLOW TENSION (KIPS)
3/8	0.1104	0.000	0.000	45.000	5.0
3/8	0.1104	0.795	7.198	45.000	5.0
3/8	0.1104	0.800	7.243	44.919	5.0
3/8	0.1104	0.900	8.149	43.221	4.8
3/8	0.1104	1.000	9.054	41.523	4.6
3/8	0.1104	1.100	9.960	39.826	4.4
3/8	0.1104	1.200	10.865	38.128	4.2
3/8	0.1104	1.300	11.770	36.431	4.0
3/8	0.1104	1.400	12.676	34.733	3.8
3/8	0.1104	1.500	13.581	33.035	3.6
3/8	0.1104	1.600	14.487	31.338	3.5
3/8	0.1104	1.700	15.392	29.640	3.3
3/8	0.1104	1.800	16.297	27.942	3.1
3/8	0.1104	1.900	17.203	26.245	2.9
3/8	0.1104	2.000	18.108	24.547	2.7
3/8	0.1104	2.100	19.014	22.849	2.5
3/8	0.1104	2.200	19.919	21.152	2.3
3/8	0.1104	2.300	20.825	19.454	2.1
3/8	0.1104	2.400	21.730	17.756	2.0
3/8	0.1104	2.500	22.635	16.059	1.8
3/8	0.1104	2.600	23.541	14.361	1.6
3/8	0.1104	2.651	24.000	13.500	1.5

A325/GRADE 5 CONNECTION ALLOWABLE LOADS (KIPS PER BOLT)
3/8" DIAM. BOLTED CONNECTIONS

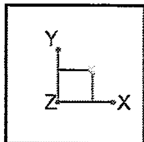
BOLT DIAM(IN)	BOLT AREA(IN^2)	MAT. GAGE	MAT. THICK(IN)	SHEAR PLANES	WASHER OR OUTSIDE MEMB.	WASHER FACTOR	BRG. ALLOW (KIPS)	SHEAR ALLOW(KIPS)	CONN. ALLOW (KIPS PER BOLT)	CASE
3/8	0.110	8	0.1644	2	N	0.750	7.213	5.301	5.301	3/8 - 8 - 2 - N
3/8	0.110	8	0.1644	2	Y	1.000	9.617	5.301	5.301	3/8 - 8 - 2 - Y
3/8	0.110	8	0.1644	1	N	0.750	3.607	2.651	2.651	3/8 - 8 - 1 - N
3/8	0.110	8	0.1644	1	Y	1.000	4.809	2.651	2.651	3/8 - 8 - 1 - Y
3/8	0.110	10	0.1345	2	N	0.750	5.901	5.301	5.301	3/8 - 10 - 2 - N
3/8	0.110	10	0.1345	2	Y	1.000	7.868	5.301	5.301	3/8 - 10 - 2 - Y
3/8	0.110	10	0.1345	1	N	0.750	2.951	2.651	2.651	3/8 - 10 - 1 - N
3/8	0.110	10	0.1345	1	Y	1.000	3.934	2.651	2.651	3/8 - 10 - 1 - Y
3/8	0.110	11	0.1196	2	N	0.750	5.247	5.301	5.247	3/8 - 11 - 2 - N
3/8	0.110	11	0.1196	2	Y	1.000	6.997	5.301	5.301	3/8 - 11 - 2 - Y
3/8	0.110	11	0.1196	1	N	0.750	2.624	2.651	2.624	3/8 - 11 - 1 - N
3/8	0.110	11	0.1196	1	Y	1.000	3.498	2.651	2.651	3/8 - 11 - 1 - Y
3/8	0.110	12	0.1046	2	N	0.750	4.589	5.301	4.589	3/8 - 12 - 2 - N
3/8	0.110	12	0.1046	2	Y	1.000	6.119	5.301	5.301	3/8 - 12 - 2 - Y
3/8	0.110	12	0.1046	1	N	0.750	2.295	2.651	2.295	3/8 - 12 - 1 - N
3/8	0.110	12	0.1046	1	Y	1.000	3.060	2.651	2.651	3/8 - 12 - 1 - Y
3/8	0.110	13	0.0897	2	N	0.750	3.936	5.301	3.936	3/8 - 13 - 2 - N
3/8	0.110	13	0.0897	2	Y	1.000	5.247	5.301	5.247	3/8 - 13 - 2 - Y
3/8	0.110	13	0.0897	1	N	0.750	1.968	2.651	1.968	3/8 - 13 - 1 - N
3/8	0.110	13	0.0897	1	Y	1.000	2.624	2.651	2.624	3/8 - 13 - 1 - Y
3/8	0.110	14	0.0747	2	N	0.750	3.277	5.301	3.277	3/8 - 14 - 2 - N
3/8	0.110	14	0.0747	2	Y	1.000	4.370	5.301	4.370	3/8 - 14 - 2 - Y
3/8	0.110	14	0.0747	1	N	0.750	1.639	2.651	1.639	3/8 - 14 - 1 - N
3/8	0.110	14	0.0747	1	Y	1.000	2.185	2.651	2.185	3/8 - 14 - 1 - Y
3/8	0.110	16	0.0598	2	N	0.750	2.624	5.301	2.624	3/8 - 16 - 2 - N
3/8	0.110	16	0.0598	2	Y	1.000	3.498	5.301	3.498	3/8 - 16 - 2 - Y
3/8	0.110	16	0.0598	1	N	0.750	1.312	2.651	1.312	3/8 - 16 - 1 - N
3/8	0.110	16	0.0598	1	Y	1.000	1.749	2.651	1.749	3/8 - 16 - 1 - Y
3/8	0.110	18	0.0478	2	N	0.750	2.097	5.301	2.097	3/8 - 18 - 2 - N
3/8	0.110	18	0.0478	2	Y	1.000	2.796	5.301	2.796	3/8 - 18 - 2 - Y
3/8	0.110	18	0.0478	1	N	0.750	1.049	2.651	1.049	3/8 - 18 - 1 - N
3/8	0.110	18	0.0478	1	Y	1.000	1.398	2.651	1.398	3/8 - 18 - 1 - Y

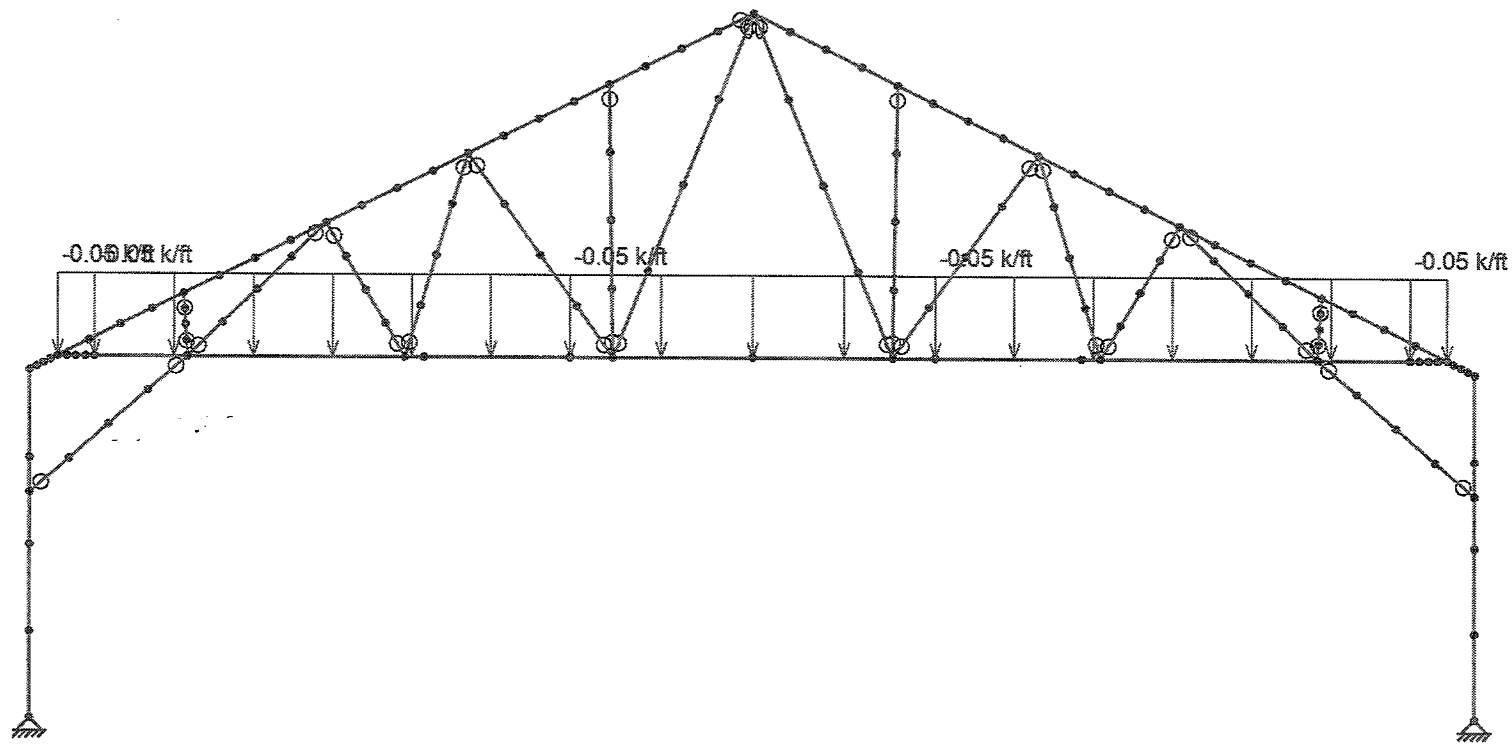


4th Dimension Design	41-6 INT TRUSS	SK-18
AK		41-6 INT TRUSS.r3d



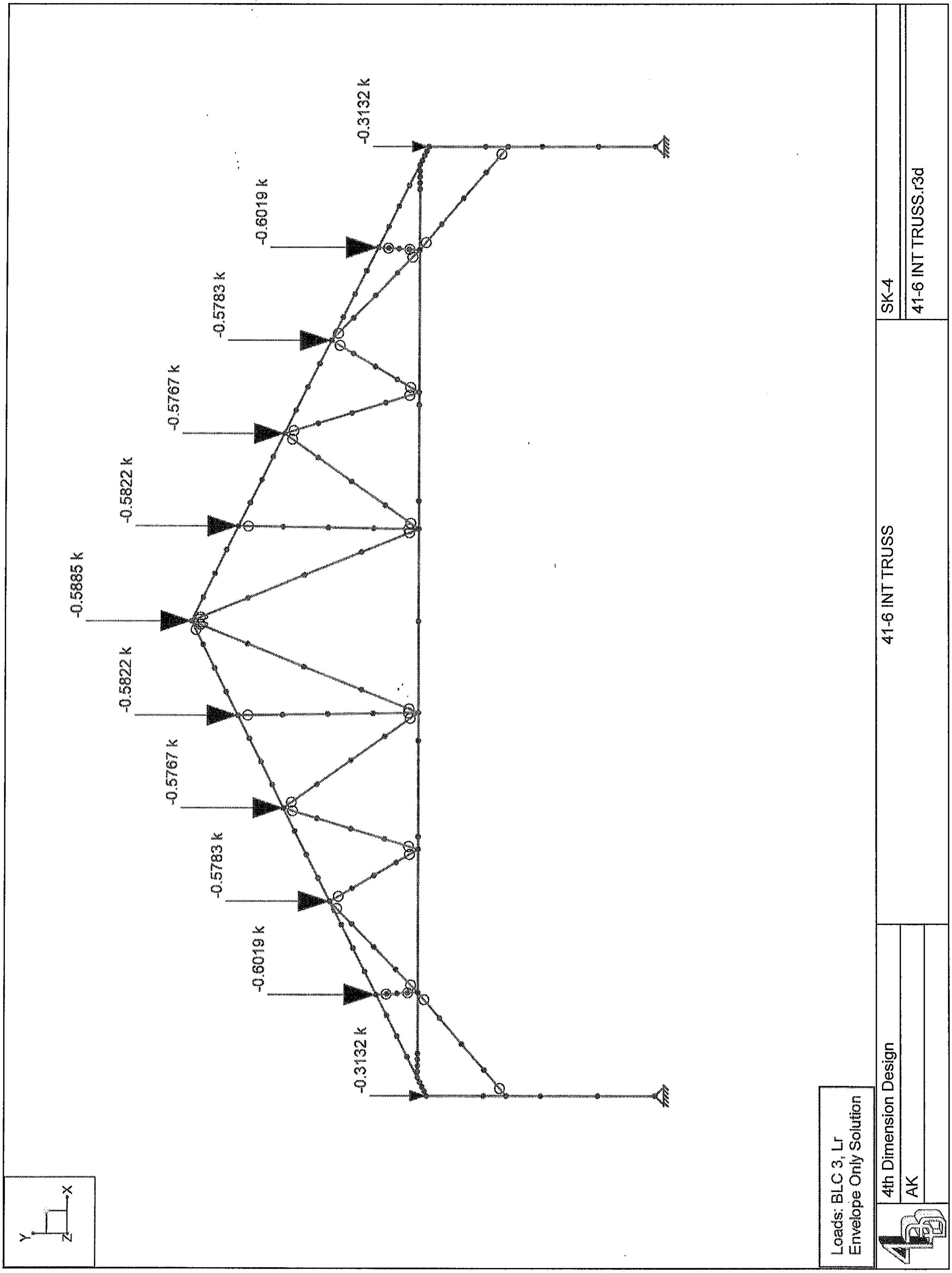
-0.03 k/ft
Loads: BLC 1, D
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-2
41-6 INT TRUSS.r3d
Y
X
Z

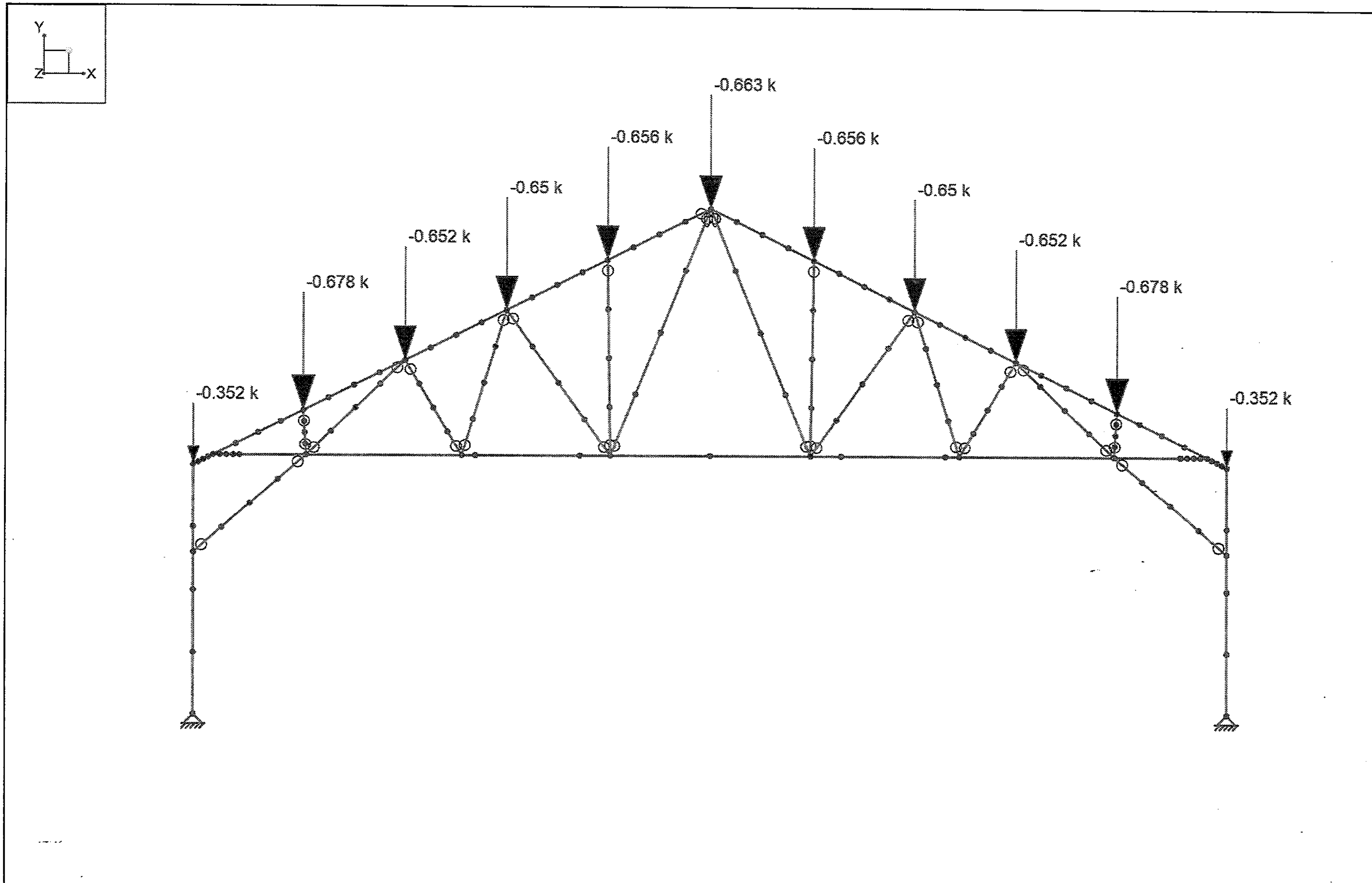




Loads: BLC 2, C
Envelope Only Solution

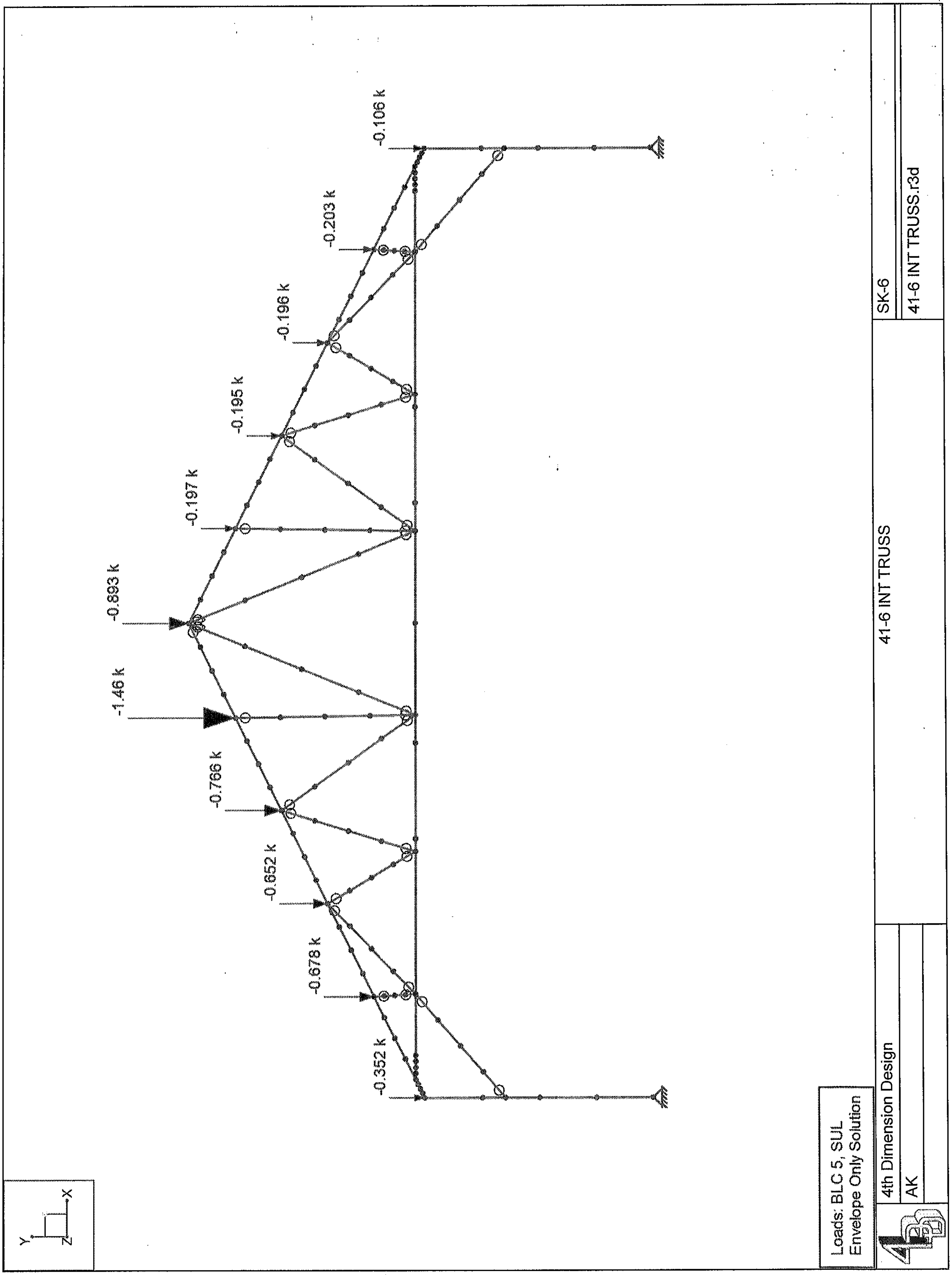
4th Dimension Design	41-6 INT TRUSS	SK-3	
AK		41-6 INT TRUSS.r3d	

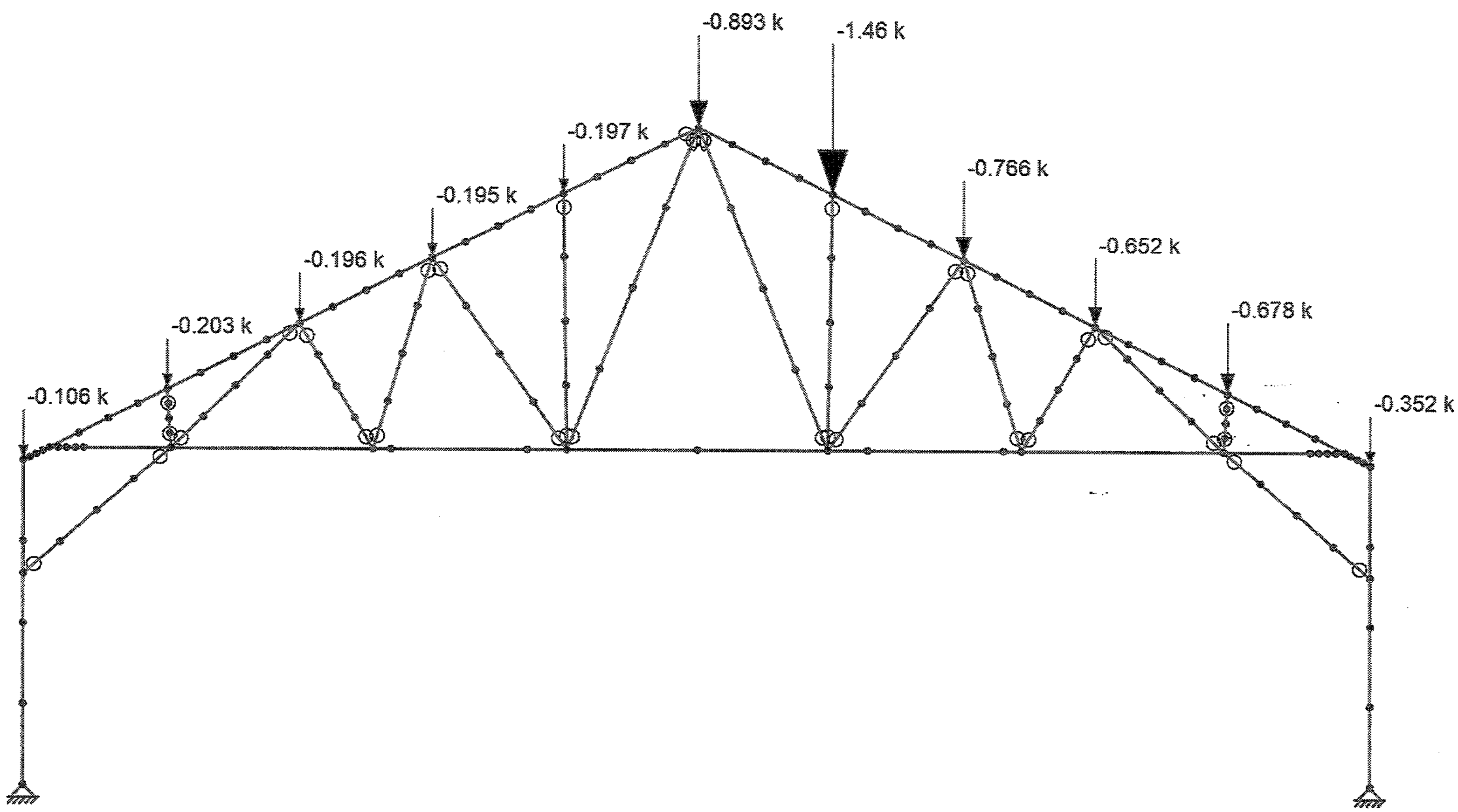

-0.3132 k
-0.6019 k
-0.5783 k
-0.5767 k
-0.5822 k
-0.5885 k
-0.5822 k
-0.5767 k
-0.5783 k
-0.6019 k
-0.3132 k
Loads: BLC 3, Lr
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-4
41-6 INT TRUSS.r3d



Loads: BLC 4, S
Envelope Only Solution

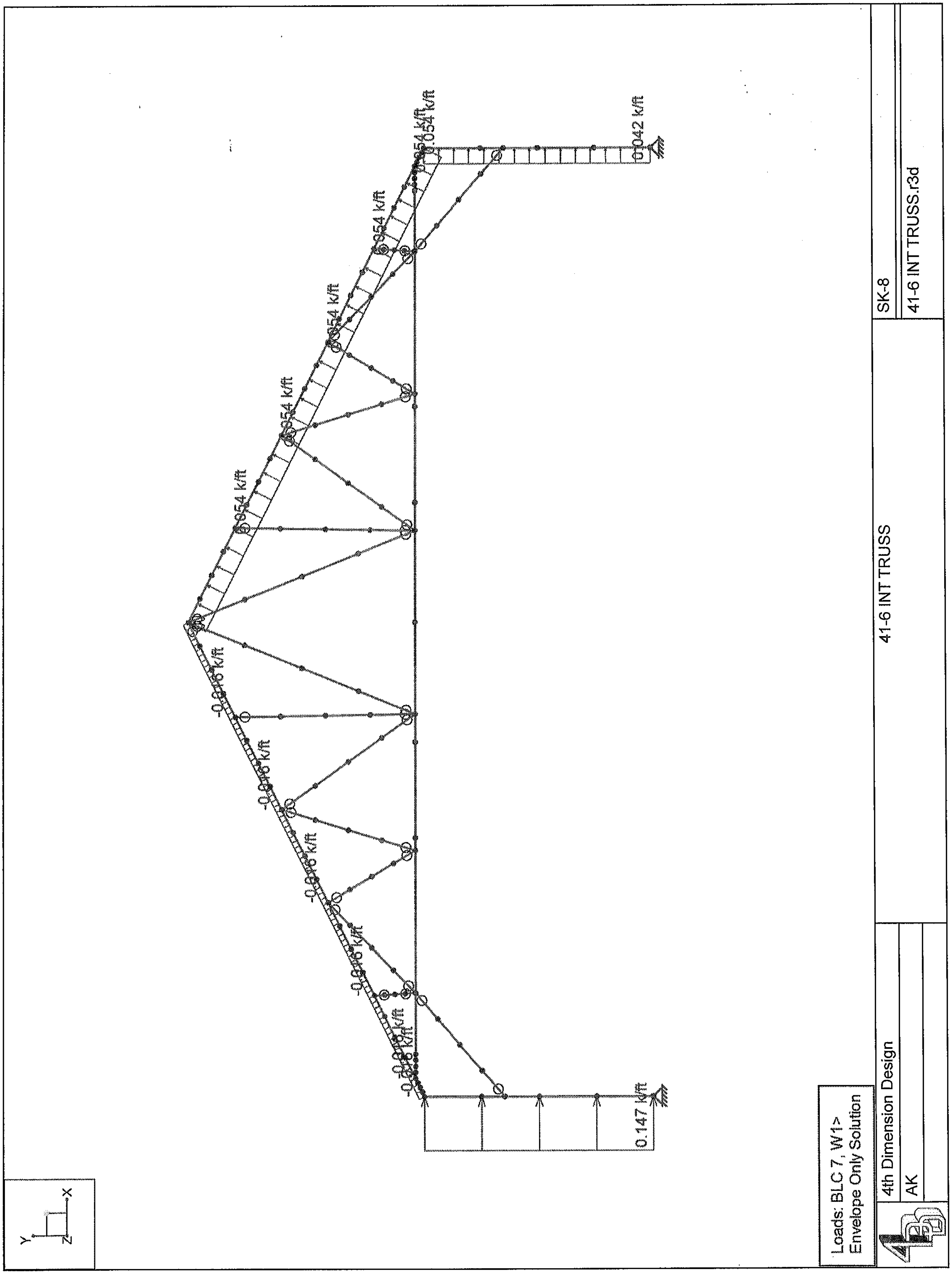
4th Dimension Design	41-6 INT TRUSS	SK-5
AK		41-6 INT TRUSS.r3d

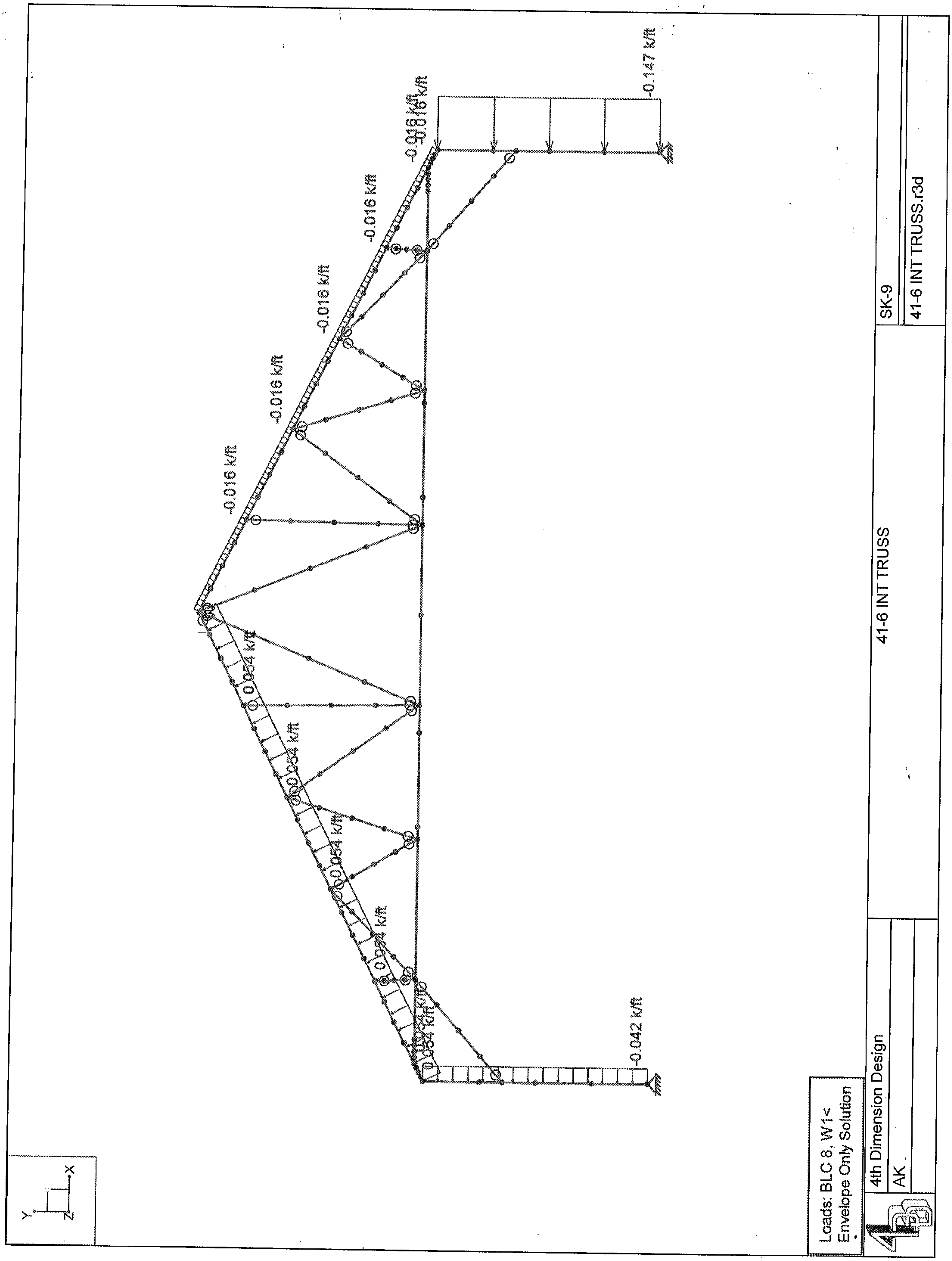

-0.106 k
-0.203 k
-0.196 k
-0.195 k
-0.197 k
-0.893 k
-1.46 k
-0.766 k
-0.652 k
-0.678 k
-0.352 k
Y
X
Z
Loads: BLC 5, SUL
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-6
41-6 INT TRUSS.r3d

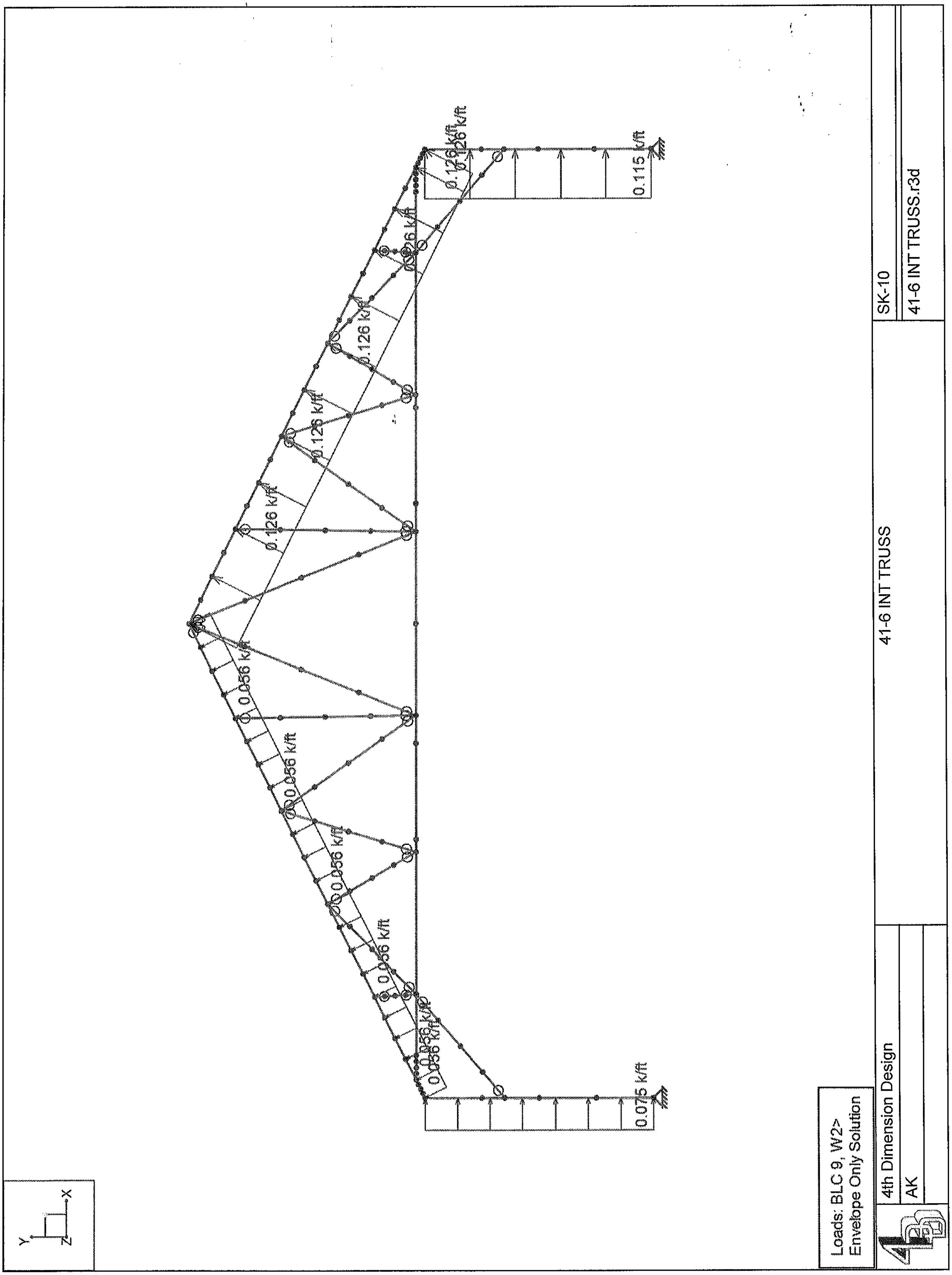


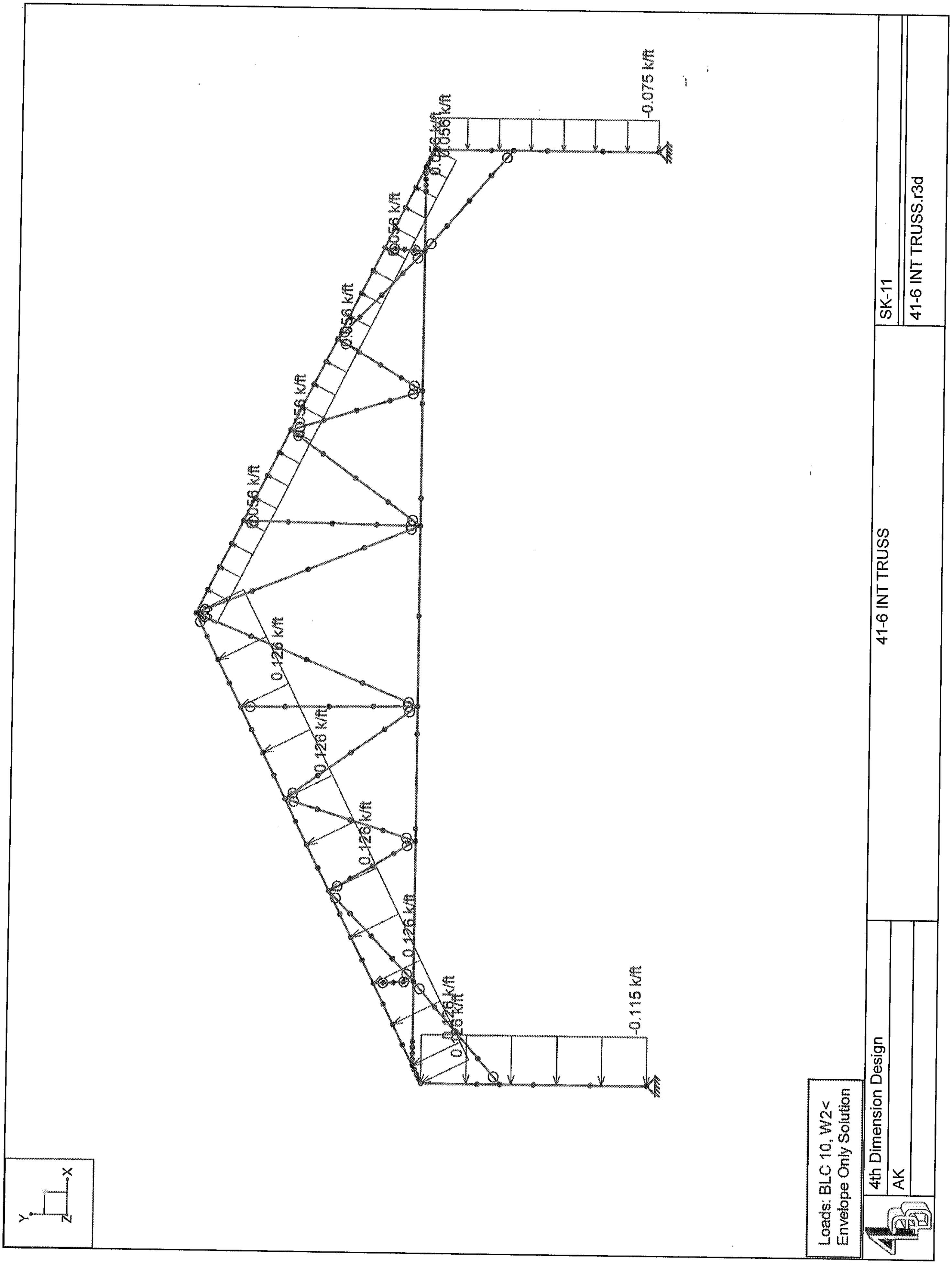
Loads: BLC 6, SUR
Envelope Only Solution

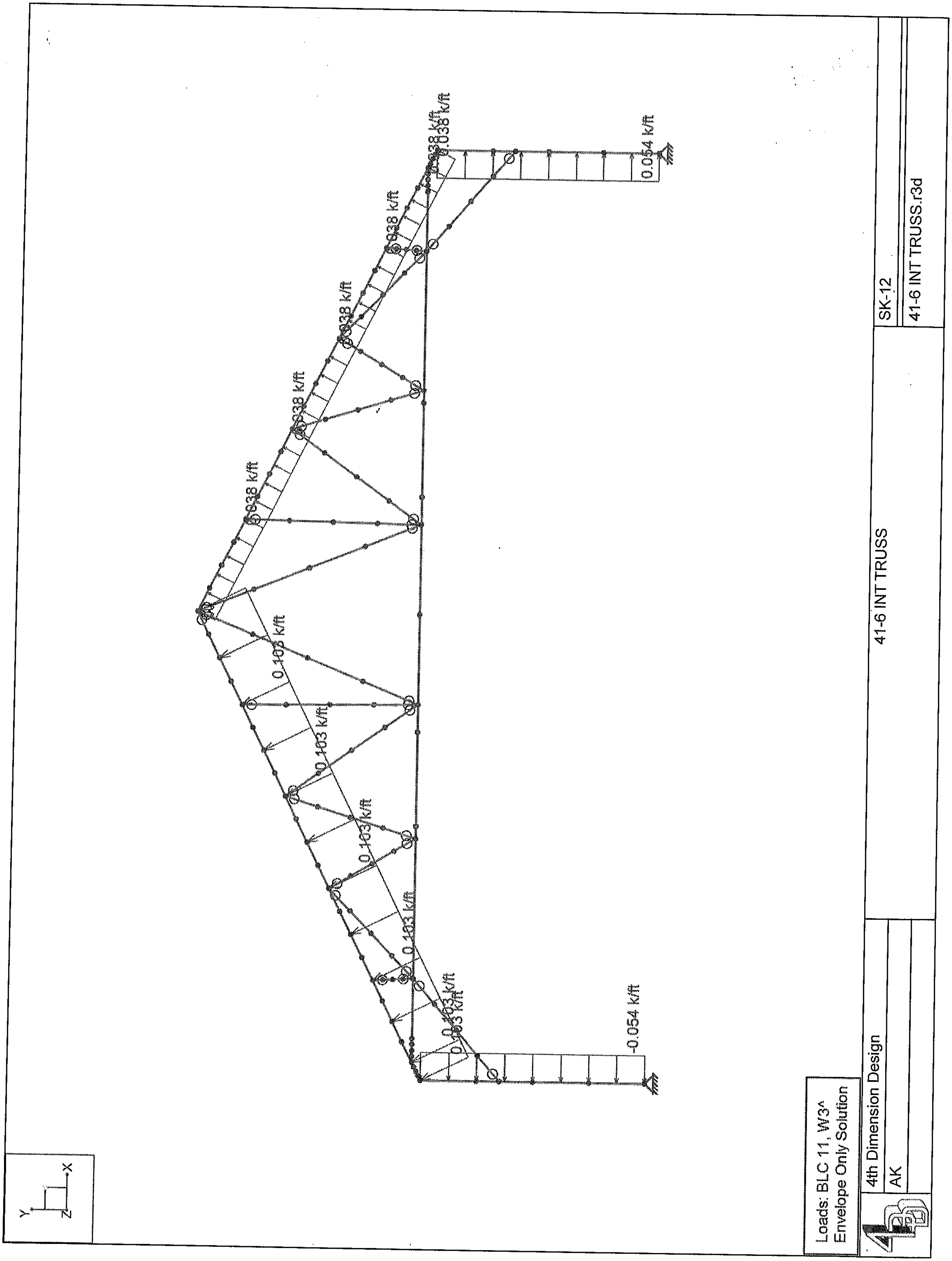
4th Dimension Design	41-6 INT TRUSS	SK-7
AK		41-6 INT TRUSS.r3d

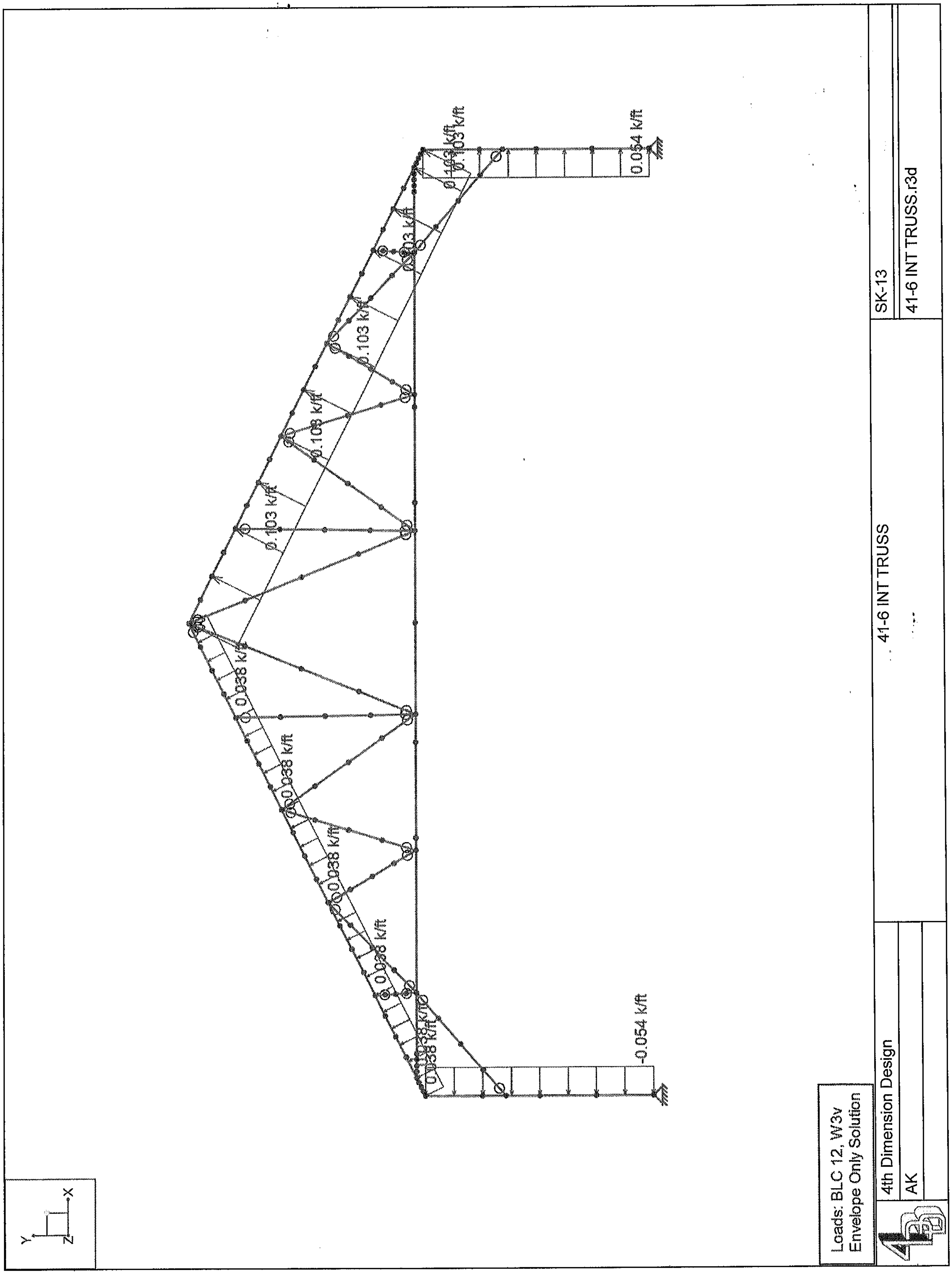

0.054 k/ft
0.042 k/ft
0.147 k/ft
Loads: BLC 7, W1>
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-8
41-6 INT TRUSS.r3d

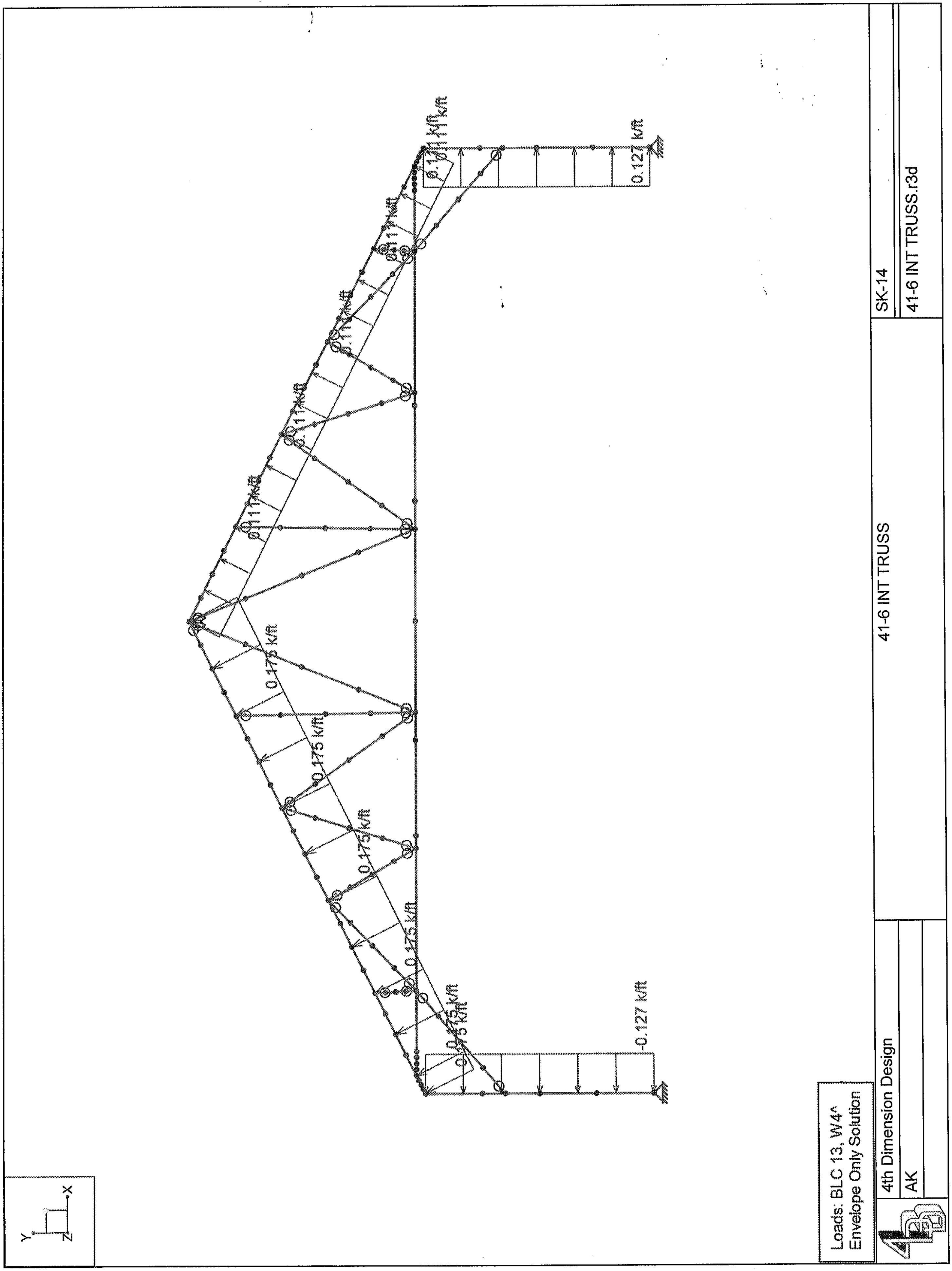

-0.147 k/ft
-0.016 k/ft
-0.016 k/ft
-0.016 k/ft
-0.016 k/ft
-0.016 k/ft
-0.016 k/ft
0.054 k/ft
0.054 k/ft
0.054 k/ft
0.054 k/ft
0.054 k/ft
0.054 k/ft
-0.042 k/ft
Y
X
Z
Loads: BLC 8, W1<
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-9
41-6 INT TRUSS.r3d

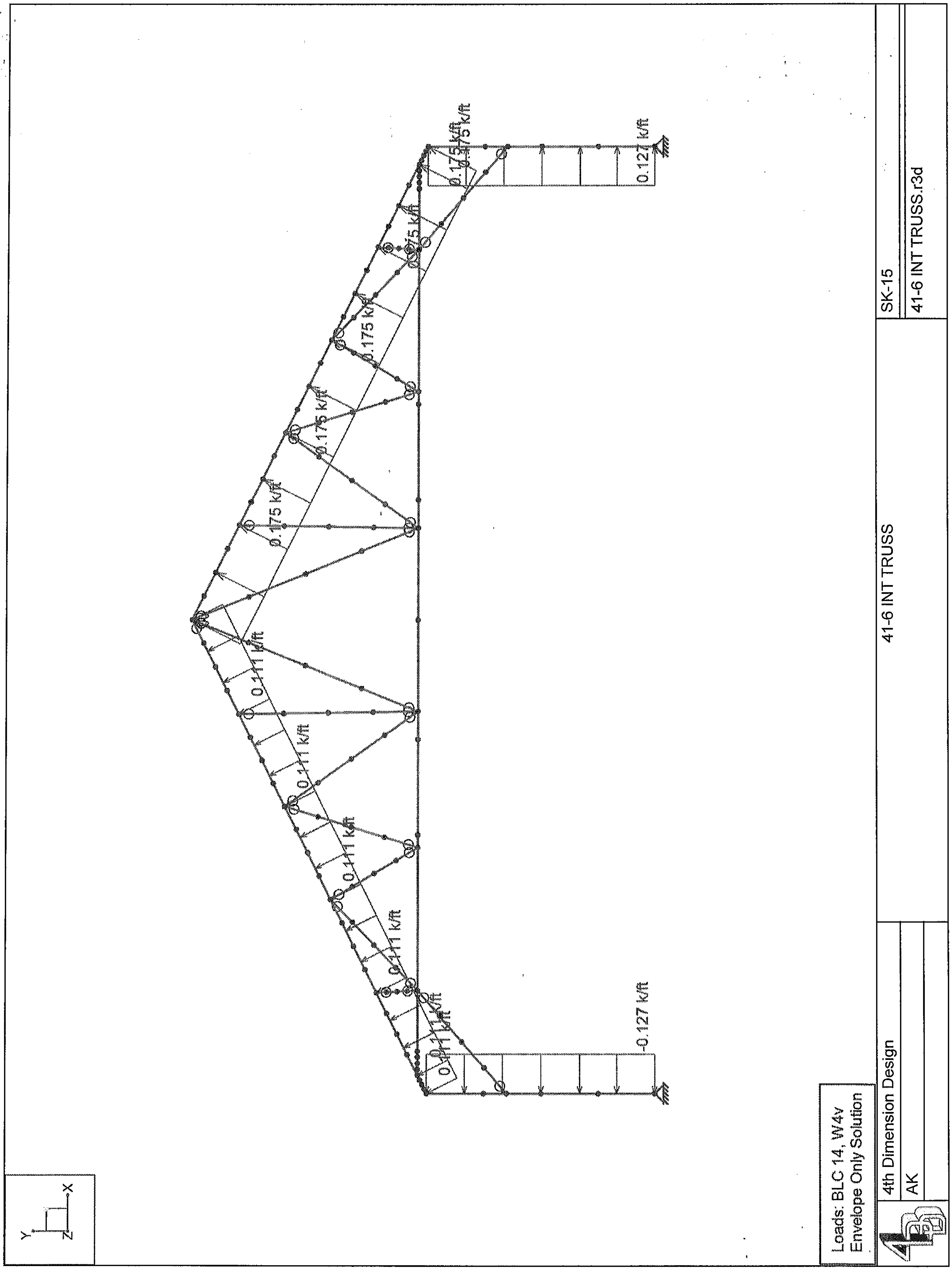

0.126 k/ft
0.126 k/ft
0.126 k/ft
0.126 k/ft
0.126 k/ft
0.126 k/ft
0.115 k/ft
0.056 k/ft
0.056 k/ft
0.056 k/ft
0.056 k/ft
0.056 k/ft
0.056 k/ft
0.075 k/ft
Y
Z
X
Loads: BLC 9, W2>
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-10
41-6 INT TRUSS.r3d

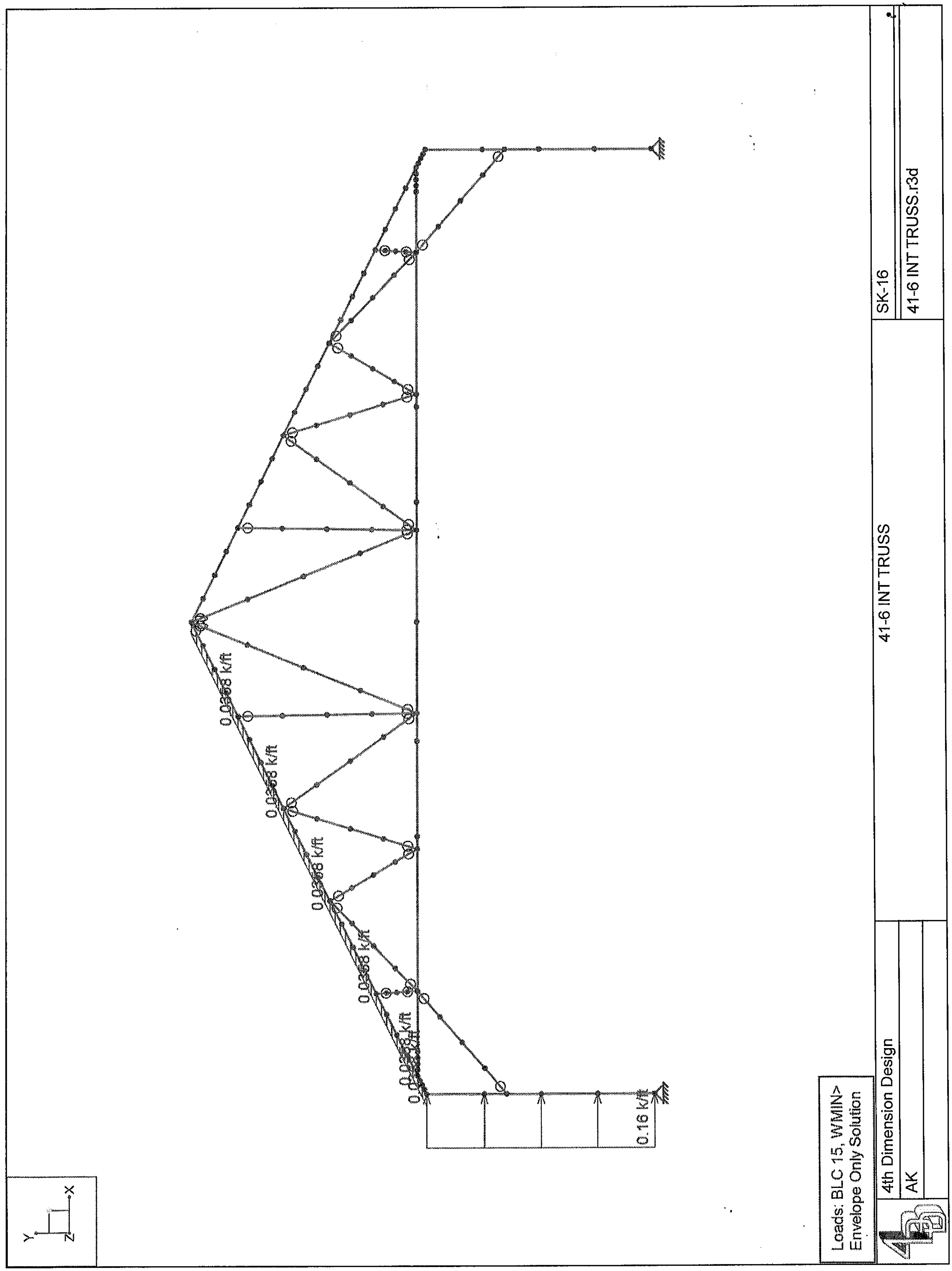

-0.075 k/ft
0.056 k/ft
0.056 k/ft
0.056 k/ft
0.056 k/ft
0.056 k/ft
0.126 k/ft
0.126 k/ft
0.126 k/ft
0.126 k/ft
-0.115 k/ft
Loads: BLC 10, W2<
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-11
41-6 INT TRUSS.r3d

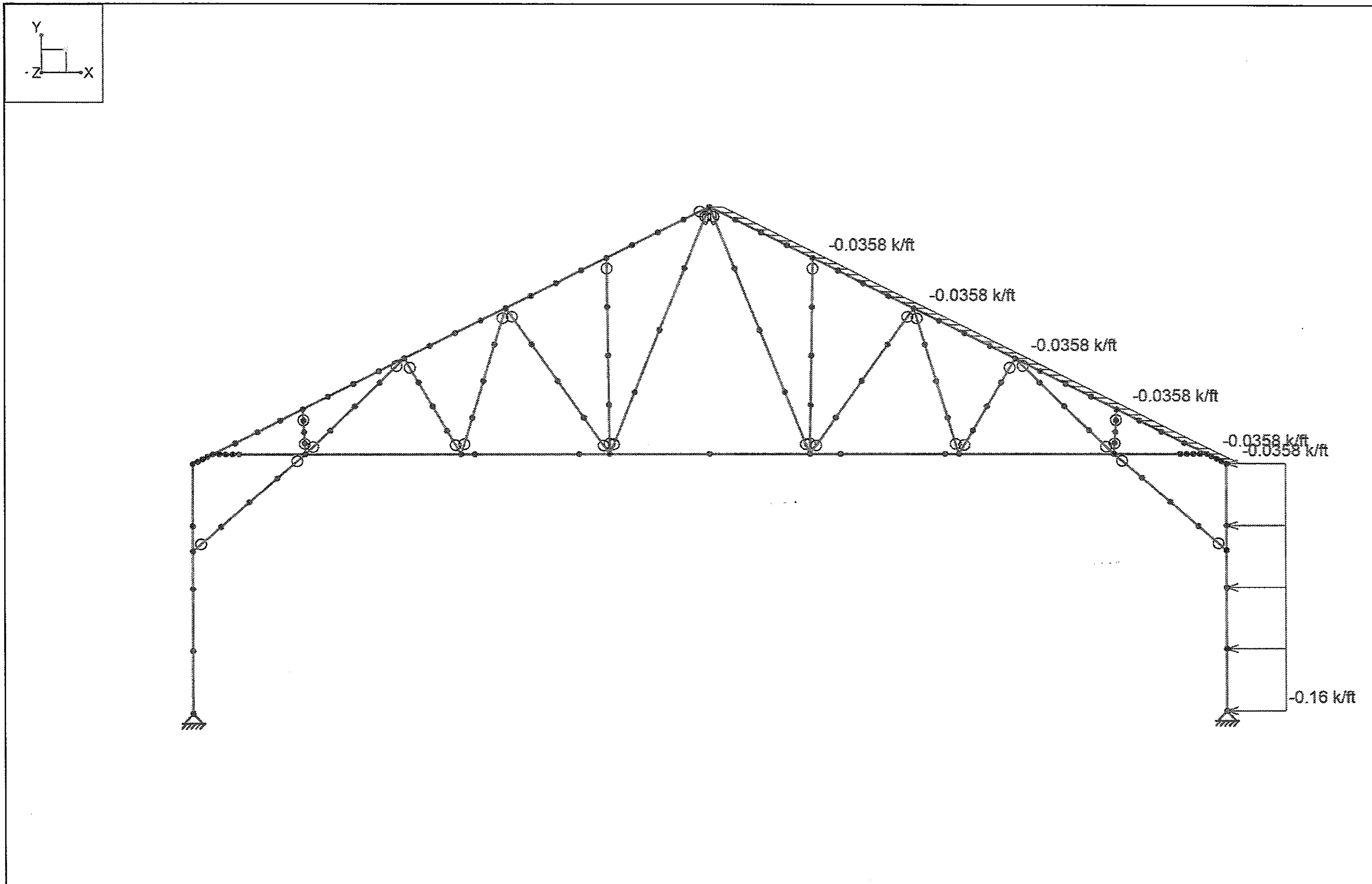

0.038 k/ft
0.054 k/ft
0.103 k/ft
-0.054 k/ft
Loads: BLC 11, W3^
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-12
41-6 INT TRUSS.r3d


0.103 k/ft
0.103 k/ft
0.054 k/ft
0.103 k/ft
0.103 k/ft
0.103 k/ft
0.103 k/ft
0.103 k/ft
0.038 k/ft
0.038 k/ft
0.038 k/ft
0.038 k/ft
0.038 k/ft
0.038 k/ft
-0.054 k/ft
Y
X
Z
Loads: BLC 12, W3v
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-13
41-6 INT TRUSS.r3d


0.111 k/ft
0.127 k/ft
0.175 k/ft
-0.127 k/ft
Loads: BLC 13, W4^
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-14
41-6 INT TRUSS.r3d


0.175 k/ft
0.175 k/ft
0.175 k/ft
0.175 k/ft
0.175 k/ft
0.175 k/ft
0.127 k/ft
0.111 k/ft
0.111 k/ft
0.111 k/ft
0.111 k/ft
0.111 k/ft
-0.127 k/ft
Loads: BLC 14, W4v
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-15
41-6 INT TRUSS.r3d
Y
X
Z


0.0368 k/ft
0.16 k/ft
Loads: BLC 15, WMIN>
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-16
41-6 INT TRUSS.r3d



Loads: BLC 16, WMIN<
Envelope Only Solution

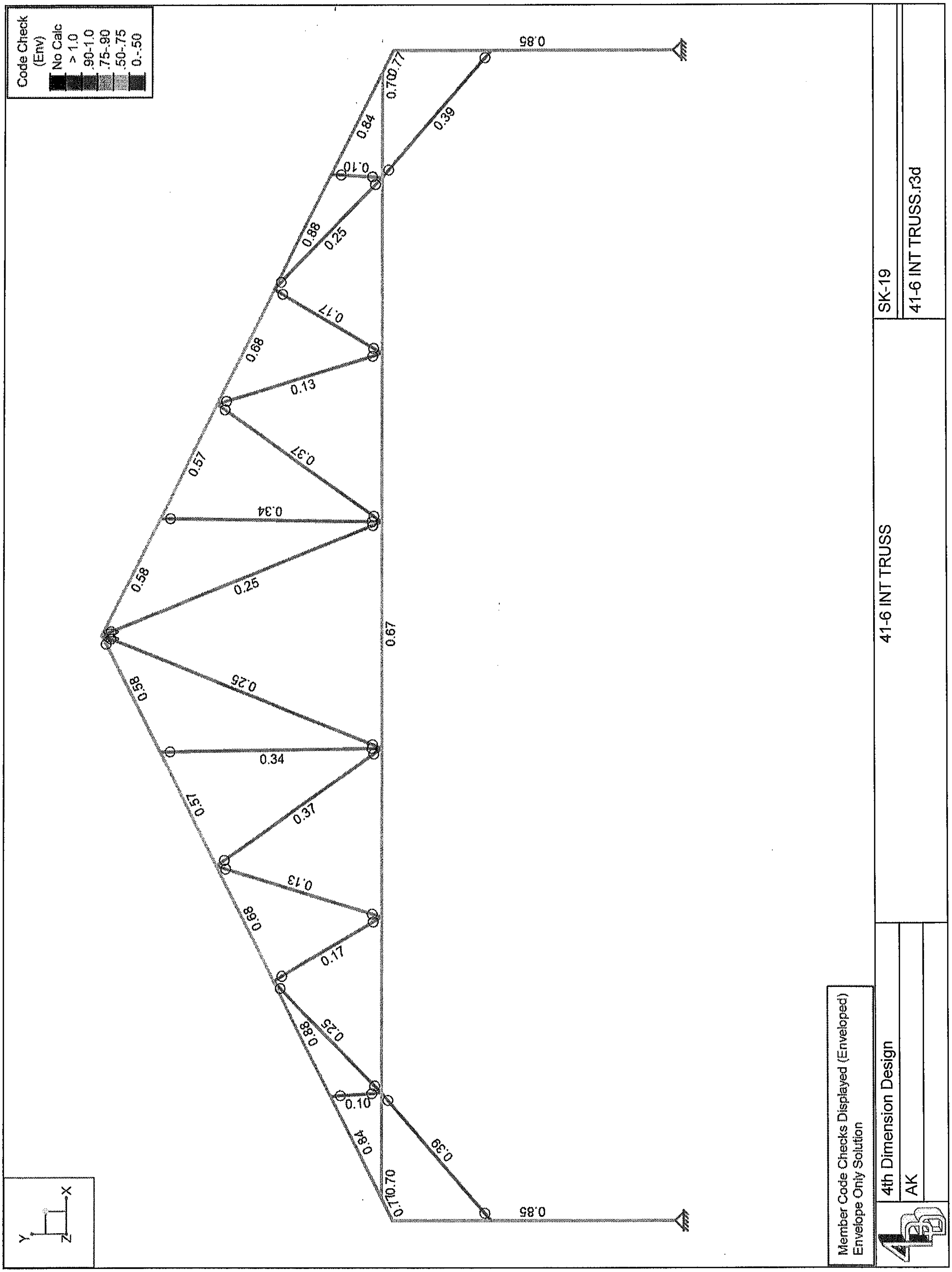
4th Dimension Design	41-6 INT TRUSS	SK-17
AK		41-6 INT TRUSS.r3d

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	D+C+Lr	Yes	Y	1	1	2	1	3	1		
2	D+C+S	Yes	Y	1	1	2	1	4	1		
3	D+C+SUL	Yes	Y	1	1	2	1	5	1		
4	D+C+SUR	Yes	Y	1	1	2	1	6	1		
5	D+C+0.6W1>	Yes	Y	1	1	2	1	7	0.6		
6	D+C+0.6W1<	Yes	Y	1	1	2	1	8	0.6		
7	D+C+0.6W2>	Yes	Y	1	1	2	1	9	0.6		
8	D+C+0.6W2<	Yes	Y	1	1	2	1	10	0.6		
9	D+C+0.6W3^	Yes	Y	1	1	2	1	11	0.6		
10	D+C+0.6W3v	Yes	Y	1	1	2	1	12	0.6		
11	D+C+0.6W4^	Yes	Y	1	1	2	1	13	0.6		
12	D+C+0.6W4v	Yes	Y	1	1	2	1	14	0.6		
13	D+C+0.6WMIN>	Yes	Y	1	1	2	1	15	0.6		
14	D+C+0.6WMIN<	Yes	Y	1	1	2	1	16	0.6		
15	D+C+.75Lr+.45W1>	Yes	Y	1	1	2	1	3	0.75	7	0.45
16	D+C+.75Lr+.45W1<	Yes	Y	1	1	2	1	3	0.75	8	0.45
17	D+C+.75Lr+.45W2>	Yes	Y	1	1	2	1	3	0.75	9	0.45
18	D+C+.75Lr+.45W2<	Yes	Y	1	1	2	1	3	0.75	10	0.45
19	D+C+.75Lr+.45W3^	Yes	Y	1	1	2	1	3	0.75	11	0.45
20	D+C+.75Lr+.45W3v	Yes	Y	1	1	2	1	3	0.75	12	0.45
21	D+C+.75Lr+.45W4^	Yes	Y	1	1	2	1	3	0.75	13	0.45
22	D+C+.75Lr+.45W4v	Yes	Y	1	1	2	1	3	0.75	14	0.45
23	D+C+.75Lr+.45WMIN>	Yes	Y	1	1	2	1	3	0.75	15	0.45
24	D+C+.75Lr+.45WMIN<	Yes	Y	1	1	2	1	3	0.75	16	0.45
25	D+C+.75S+.45W1>	Yes	Y	1	1	2	1	4	0.75	7	0.45
26	D+C+.75S+.45W1<	Yes	Y	1	1	2	1	4	0.75	8	0.45
27	D+C+.75S+.45W2>	Yes	Y	1	1	2	1	4	0.75	9	0.45
28	D+C+.75S+.45W2<	Yes	Y	1	1	2	1	4	0.75	10	0.45
29	D+C+.75S+.45W3^	Yes	Y	1	1	2	1	4	0.75	11	0.45
30	D+C+.75S+.45W3v	Yes	Y	1	1	2	1	4	0.75	12	0.45
31	D+C+.75S+.45W4^	Yes	Y	1	1	2	1	4	0.75	13	0.45
32	D+C+.75S+.45W4v	Yes	Y	1	1	2	1	4	0.75	14	0.45
33	D+C+.75S+.45WMIN>	Yes	Y	1	1	2	1	4	0.75	15	0.45
34	D+C+.75S+.45WMIN<	Yes	Y	1	1	2	1	4	0.75	16	0.45
35	0.6D+0.3C+0.6W1>	Yes	Y	1	0.6	2	0.3	7	0.6		
36	0.6D+0.3C+0.6W1<	Yes	Y	1	0.6	2	0.3	8	0.6		
37	0.6D+0.3C+0.6W2>	Yes	Y	1	0.6	2	0.3	9	0.6		
38	0.6D+0.3C+0.6W2<	Yes	Y	1	0.6	2	0.3	10	0.6		
39	0.6D+0.3C+0.6W3^	Yes	Y	1	0.6	2	0.3	11	0.6		
40	0.6D+0.3C+0.6W3v	Yes	Y	1	0.6	2	0.3	12	0.6		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
41	0.6D+0.3C+0.6W4^	Yes	Y	1	0.6	2	0.3	13	0.6		
42	0.6D+0.3C+0.6W4v	Yes	Y	1	0.6	2	0.3	14	0.6		
43	0.6D+0.3C+0.6WMIN>	Yes	Y	1	0.6	2	0.3	15	0.6		
44	0.6D+0.3C+0.6WMIN<	Yes	Y	1	0.6	2	0.3	16	0.6		

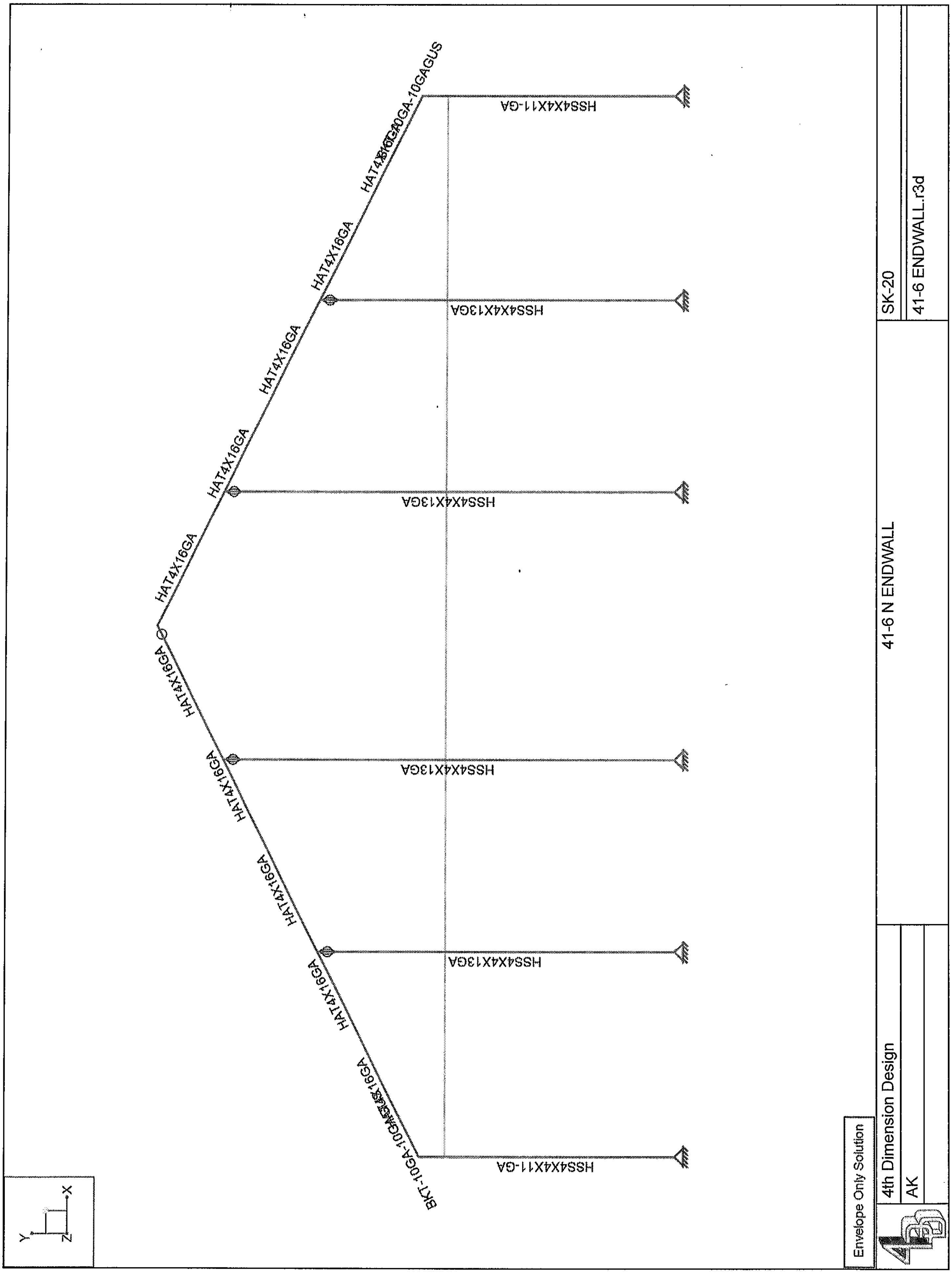

Code Check (Env)
No Calc
> 1.0
.90-1.0
.75-.90
.50-.75
0.-.50
0.85
0.70
0.77
0.84
0.39
0.10
0.88
0.25
0.17
0.68
0.13
0.57
0.37
0.34
0.58
0.25
0.67
0.58
0.25
0.34
0.57
0.37
0.13
0.68
0.17
0.88
0.25
0.10
0.84
0.39
0.70
0.71
0.85
Member Code Checks Displayed (Enveloped)
Envelope Only Solution
4th Dimension Design
AK
41-6 INT TRUSS
SK-19
41-6 INT TRUSS.r3d

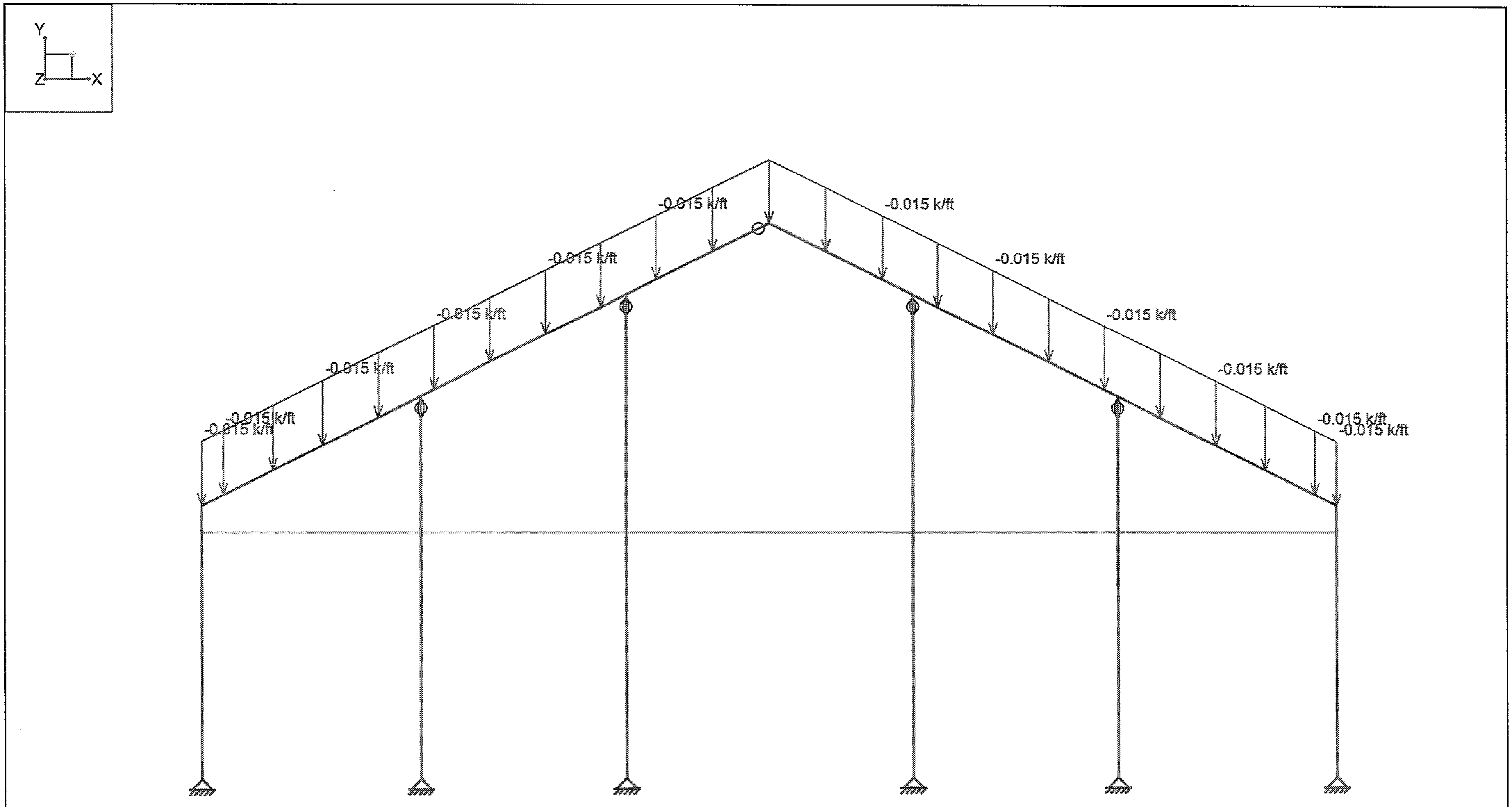
Company : 4th Dimension Design
Designer : AK
Job Number :
Model Name : 41-6 INT TRUSS

Checked By : JN

Envelope AISC 14th (360-10): ASD Steel Code Checks

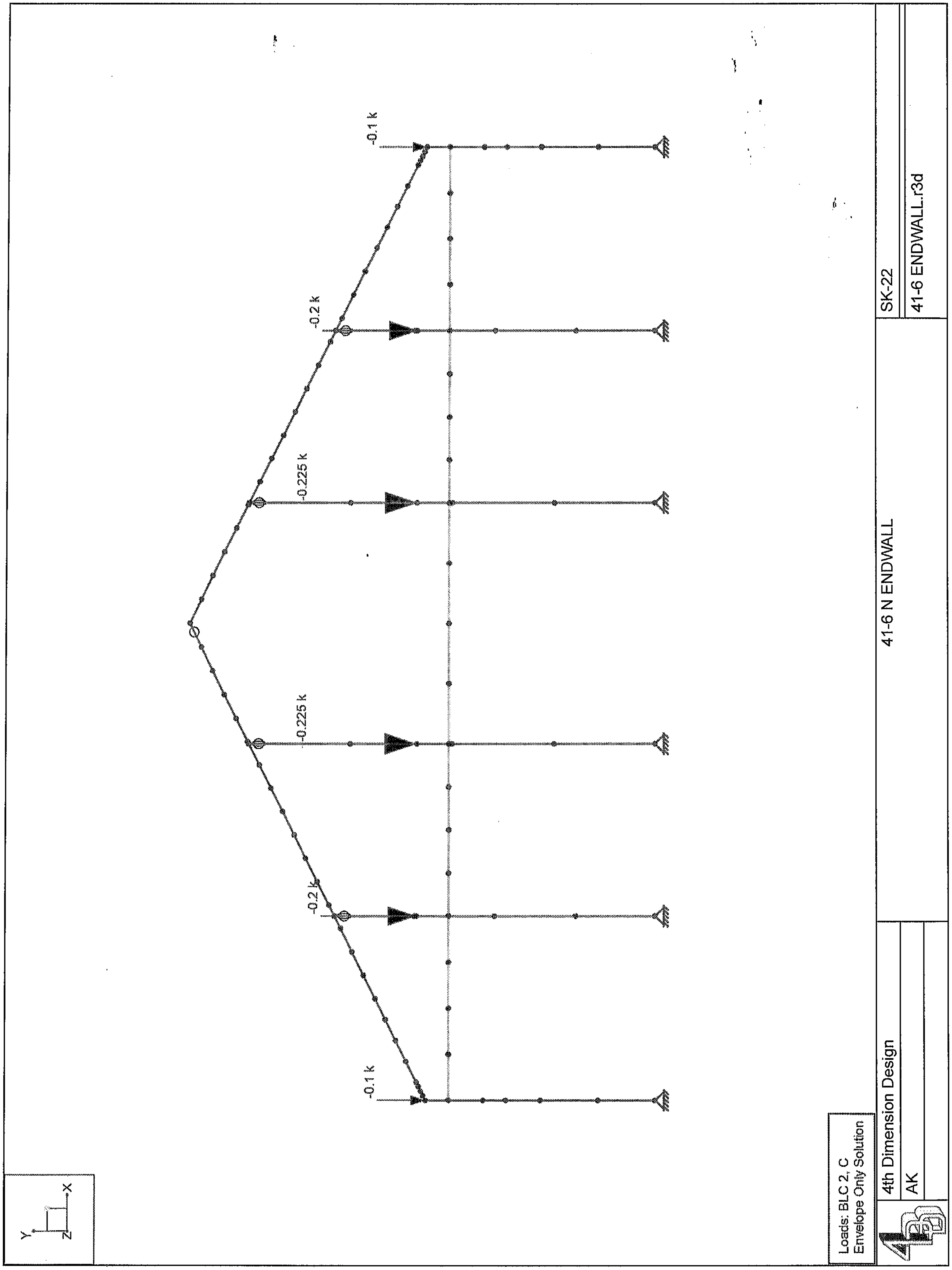
	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	M29	BKT-10GA-10GAGUS	0.769	0	25	0.366	0	y	3	21.535	34.461	0.344	3.463	2.133	H1-1b
2	M16	HAT4X16GA-TS2X16GA	0.838	0	3	0.032	4.041	y	3	30.933	37.725	1.739	2.425	1.394	H1-1a
3	M5	HAT4X16GA	0.878	1.518	3	0.028	4.554	y	41	14.105	21.347	1.213	1.861	1.132	H1-1a
4	M18	HAT4X16GA	0.675	1.932	3	0.026	0	y	41	14.105	21.347	1.213	1.861	1.288	H1-1a
5	M1	HAT4X16GA	0.569	2.929	3	0.026	4.53	y	41	14.124	21.347	1.213	1.861	1.229	H1-1a
6	M2	HAT4X16GA	0.584	1.92	3	0.031	0	y	41	14.036	21.347	1.213	1.861	1.114	H1-1a
7	M24	BKT-10GA-10GAGUS	0.769	0	26	0.366	0	y	4	21.535	34.461	0.344	3.463	2.133	H1-1b
8	M15	HAT4X16GA-TS2X16GA	0.838	0	4	0.032	4.041	y	4	30.933	37.725	1.739	2.425	1.394	H1-1a
9	M32	HAT4X16GA	0.878	1.518	4	0.028	4.554	y	42	14.105	21.347	1.213	1.861	1.131	H1-1a
10	M31	HAT4X16GA	0.675	1.932	4	0.026	0	y	42	14.105	21.347	1.213	1.861	1.288	H1-1a
11	M30	HAT4X16GA	0.569	2.929	4	0.026	4.53	y	42	14.124	21.347	1.213	1.861	1.229	H1-1a
12	M6	HAT4X16GA	0.584	1.92	4	0.031	0	y	42	14.036	21.347	1.213	1.861	1.114	H1-1a
13	M3	HSS1.5X1.5X10-GA	0.7	0	3	0.017	0.258	y	3	9.264	21.329	0.916	0.916	1	H1-1a
14	M23	HSS1.5X1.5X10-GA	0.7	1.063	4	0.017	0.805	y	4	9.264	21.329	0.916	0.916	1	H1-1a
15	M28	HSS2X2X16GA	0.389	2.954	14	0.001	0	y	6	7.313	13.263	0.723	0.723	1.148	H1-1a
16	M7	HSS2X2X16GA	0.389	2.954	13	0.001	0	y	5	7.313	13.263	0.723	0.723	1.148	H1-1a
17	M17	HSS2X2X16GA	0.095	0	3	0	1.811	y	8	12.556	13.263	0.723	0.723	1.14	H1-1b*
18	M22	HSS2X2X16GA	0.095	0	4	0	1.811	y	7	12.556	13.263	0.723	0.723	1.14	H1-1b*
19	M19	HSS2X2X16GA	0.253	2.731	36	0.001	0	y	6	7.973	13.263	0.723	0.723	1.145	H1-1a
20	M4	HSS2X2X16GA	0.253	2.731	35	0.001	0	y	5	7.973	13.263	0.723	0.723	1.145	H1-1a
21	M11	HSS2X2X16GA	0.166	0	25	0	0	y	25	9.505	13.263	0.723	0.723	1.142	H1-1b*
22	M10	HSS2X2X16GA	0.166	0	26	0	0	y	26	9.505	13.263	0.723	0.723	1.142	H1-1b*
23	M14	HSS2X2X16GA	0.133	6.15	25	0	0	y	8	7.047	13.263	0.723	0.723	1.136	H1-1b*
24	M13	HSS2X2X16GA	0.133	6.15	26	0	0	y	7	7.047	13.263	0.723	0.723	1.136	H1-1b*
25	M27	HSS2X2X16GA	0.367	3.57	3	0.001	0	y	3	5.558	13.263	0.723	0.723	1.149	H1-1a
26	M21	HSS2X2X16GA	0.367	3.57	4	0.001	0	y	4	5.558	13.263	0.723	0.723	1.149	H1-1a
27	M26	HSS2X2X16GA	0.342	0	3	0	0	y	3	4.658	13.263	0.723	0.723	1.148	H1-1a*
28	M20	HSS2X2X16GA	0.342	0	4	0	0	y	4	4.658	13.263	0.723	0.723	1.148	H1-1a*
29	M8	HSS4X4X11-GA	0.854	6.465	26	0.084	10	y	5	40.46	66.913	7.085	7.085	1.345	H1-1b
30	M33	HSS4X4X11-GA	0.854	6.465	25	0.084	10	y	6	40.46	66.913	7.085	7.085	1.345	H1-1b
31	M12	HSS2X2X12-GA	0.25	4.999	42	0.001	0	y	12	4.135	22.754	1.352	1.352	1.146	H1-1a
32	M25	HSS2X2X12-GA	0.25	4.999	41	0.001	0	y	11	4.135	22.754	1.352	1.352	1.146	H1-1a
33	M46	HSS2X2X12-GA	0.67	2.672	38	0.034	14.888	y	8	2.127	22.754	1.352	1.352	1.774	H1-1a

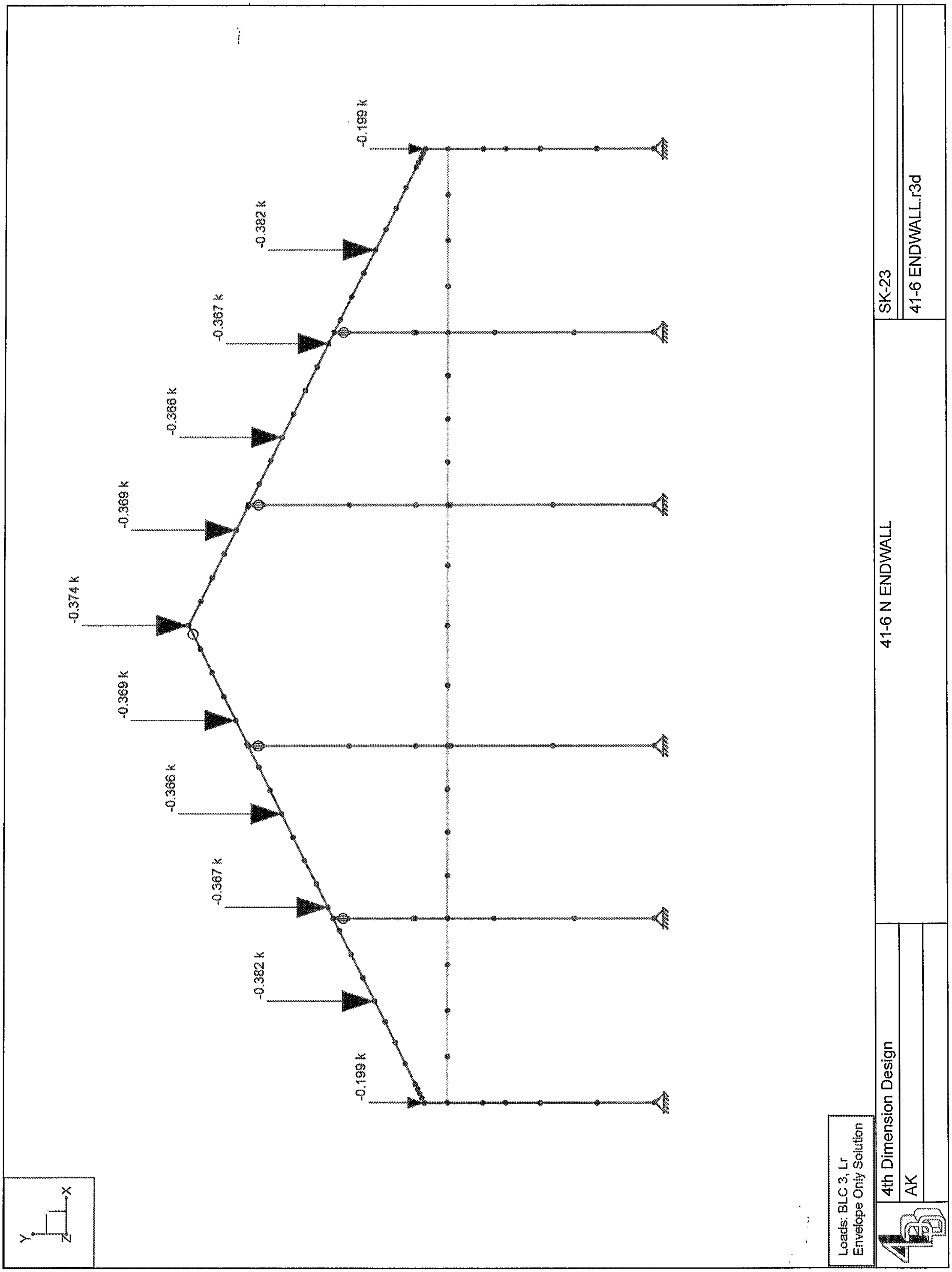

HSS4X4X11-GA
HSS4X4X13GA
HSS4X4X13GA
HSS4X4X13GA
HSS4X4X13GA
HSS4X4X11-GA
HAT4X16GA
BKT-10GA-10GAGUS
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-20
41-6 ENDWALL.r3d

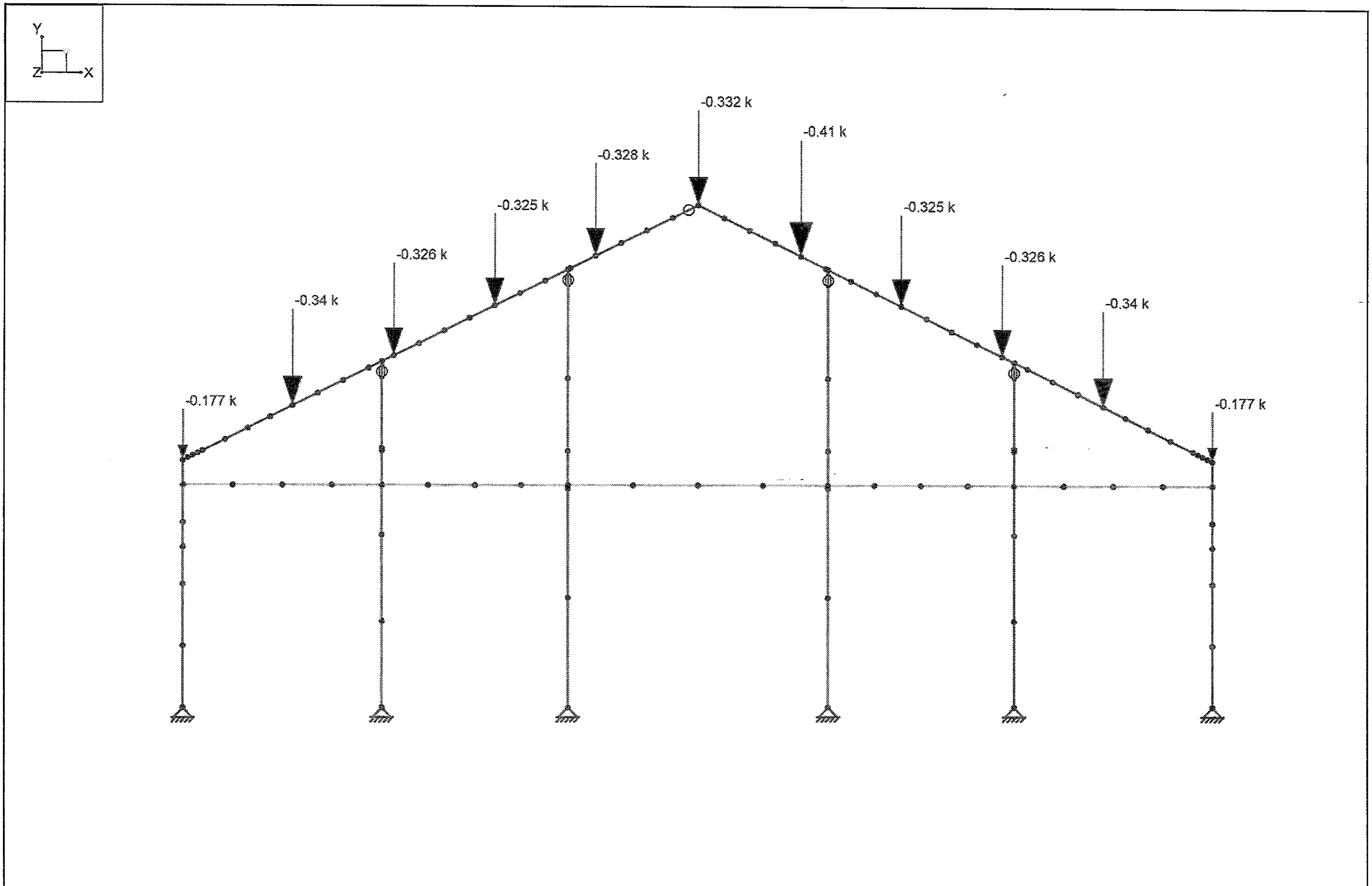


Loads: BLC 1, D
Envelope Only Solution

4th Dimension Design	41-6 N ENDWALL	SK-21	
AK		41-6 ENDWALL.r3d	

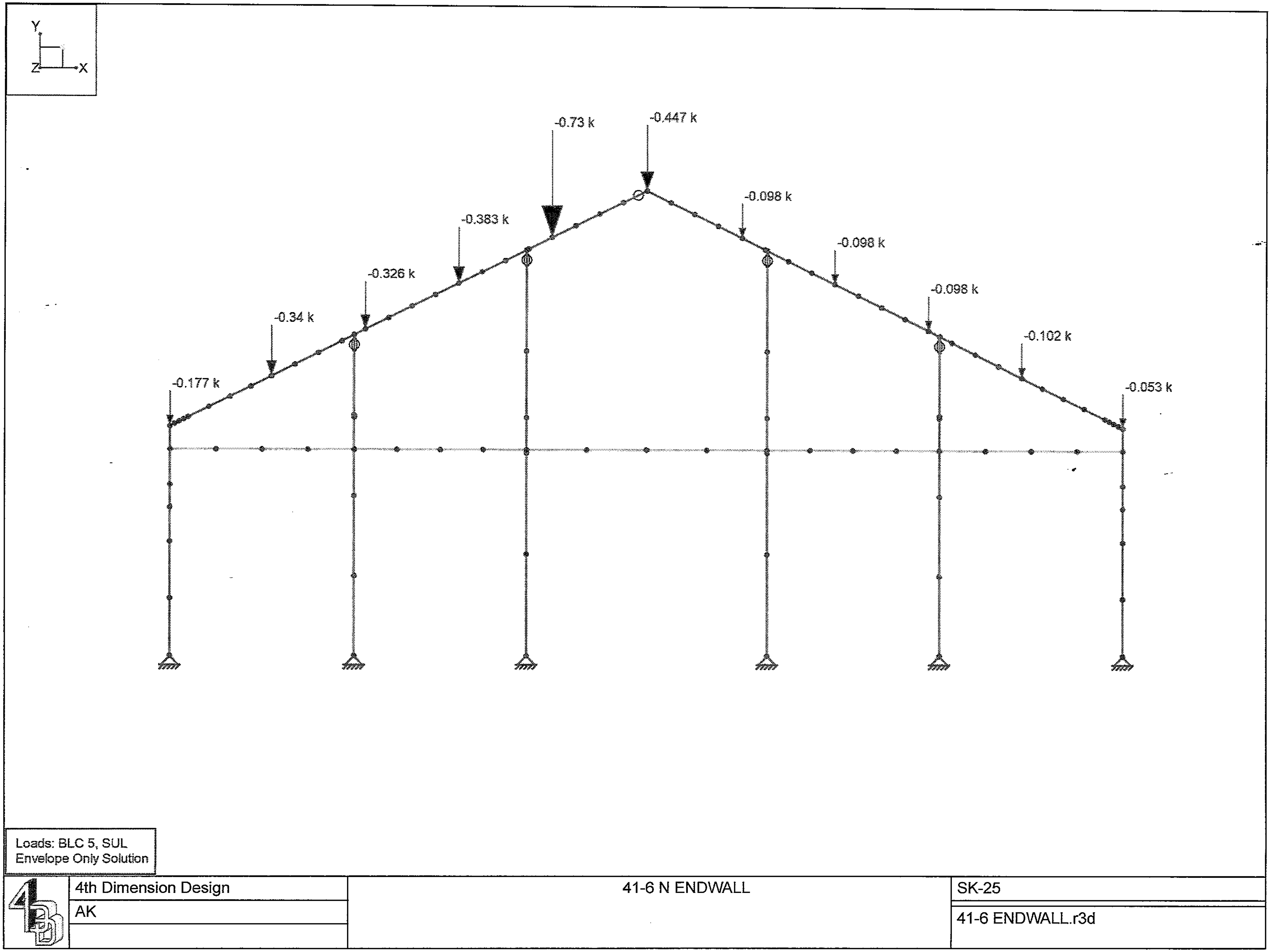

-0.1 k
-0.2 k
-0.225 k
-0.225 k
-0.2 k
-0.1 k
Y
X
Z
Loads: BLC 2, C
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-22
41-6 ENDWALL.r3d

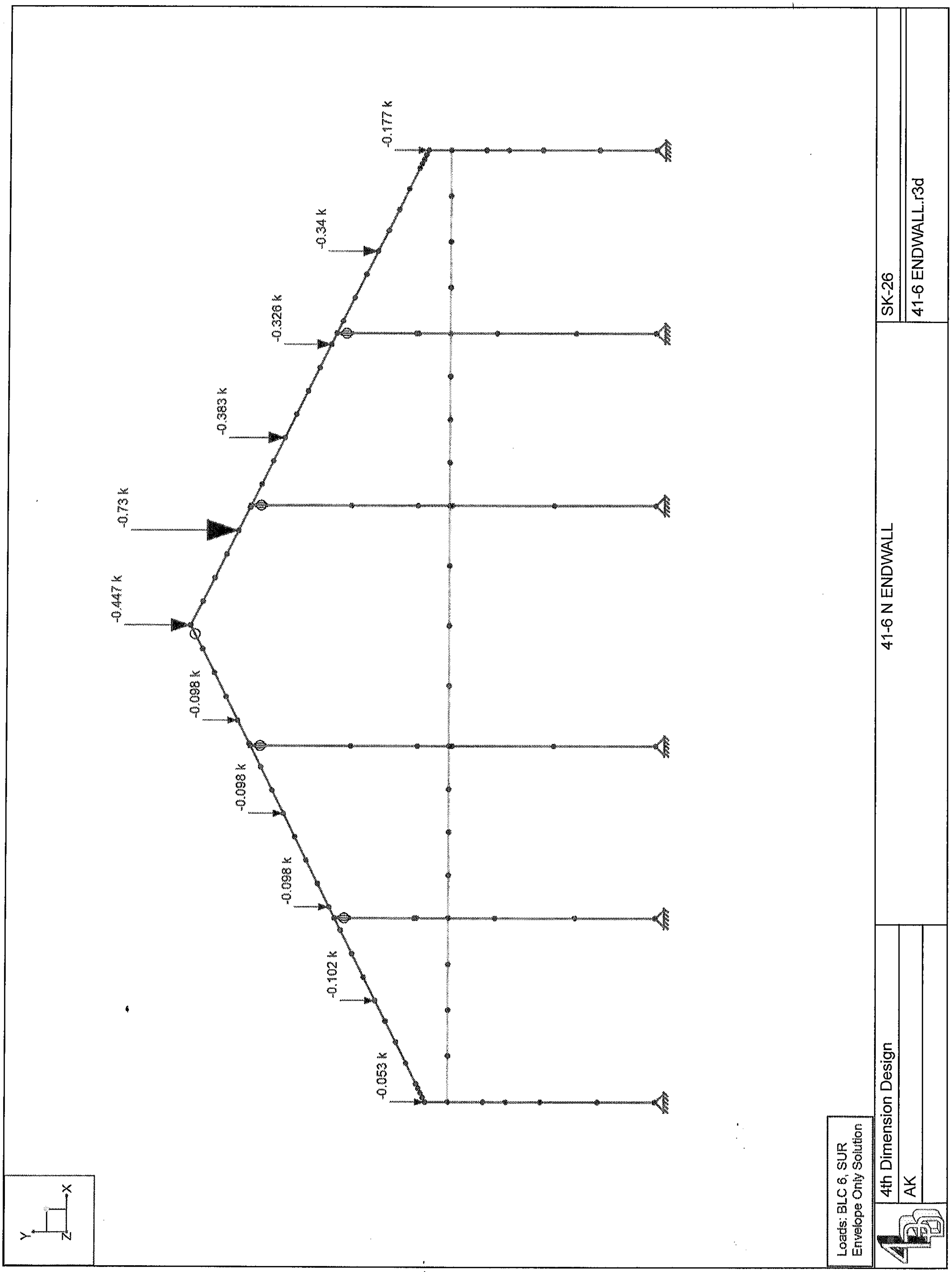

-0.199 k
-0.382 k
-0.367 k
-0.366 k
-0.369 k
-0.374 k
-0.369 k
-0.366 k
-0.367 k
-0.382 k
-0.199 k
Y
X
Z
Loads: BLC 3, Lr
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-23
41-6 ENDWALL.r3d

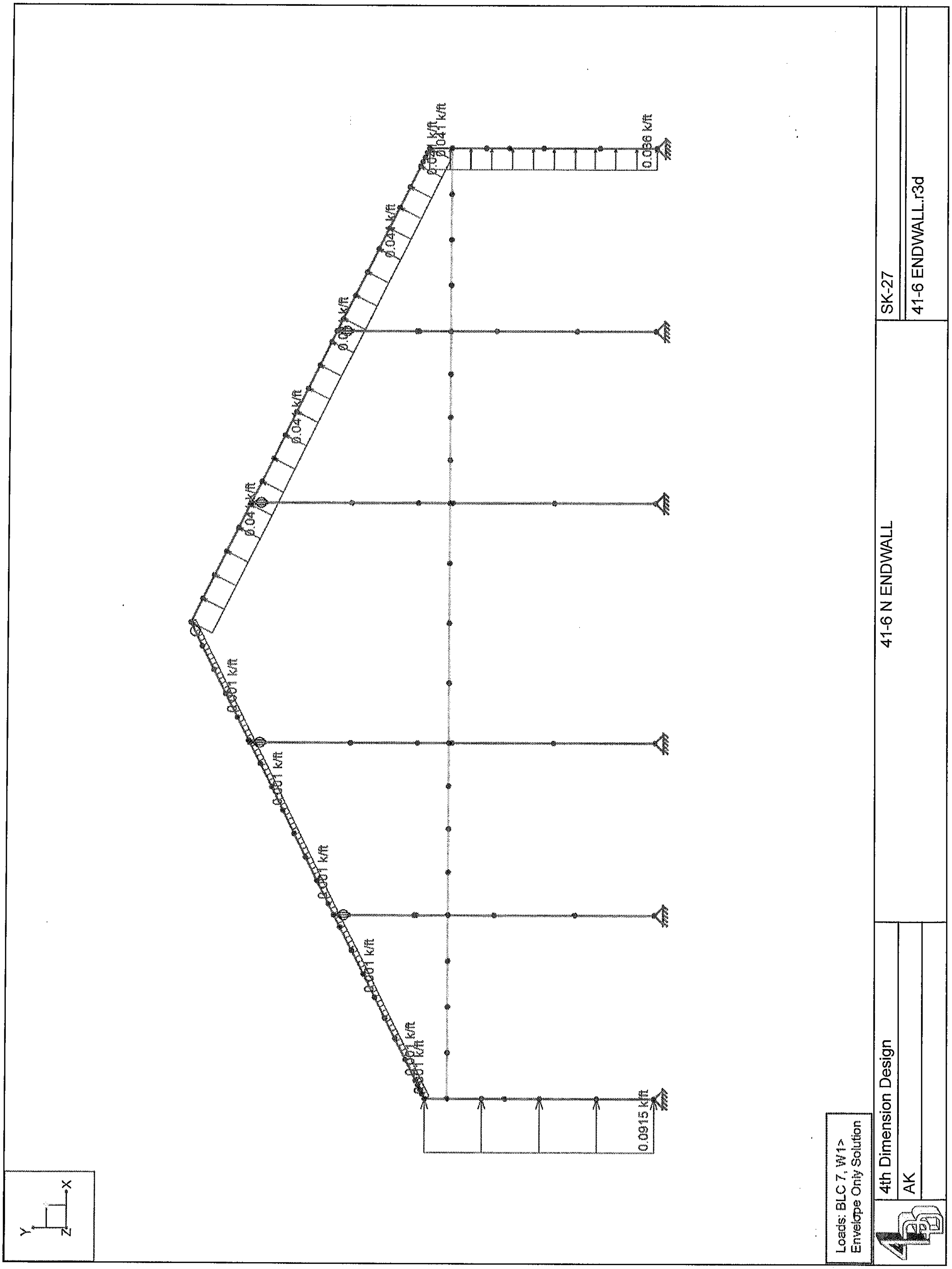


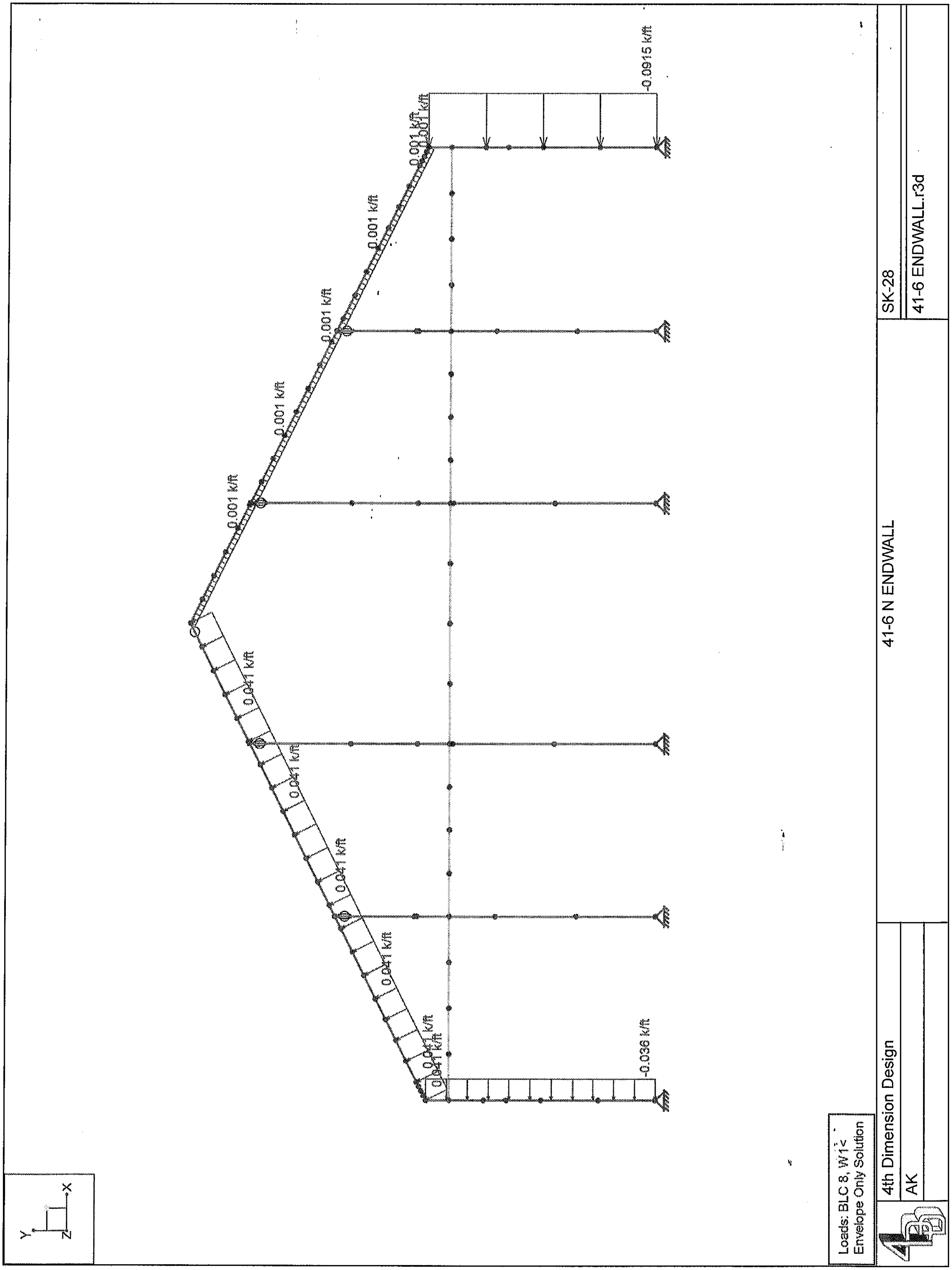
Loads: BLC 4, S
Envelope Only Solution

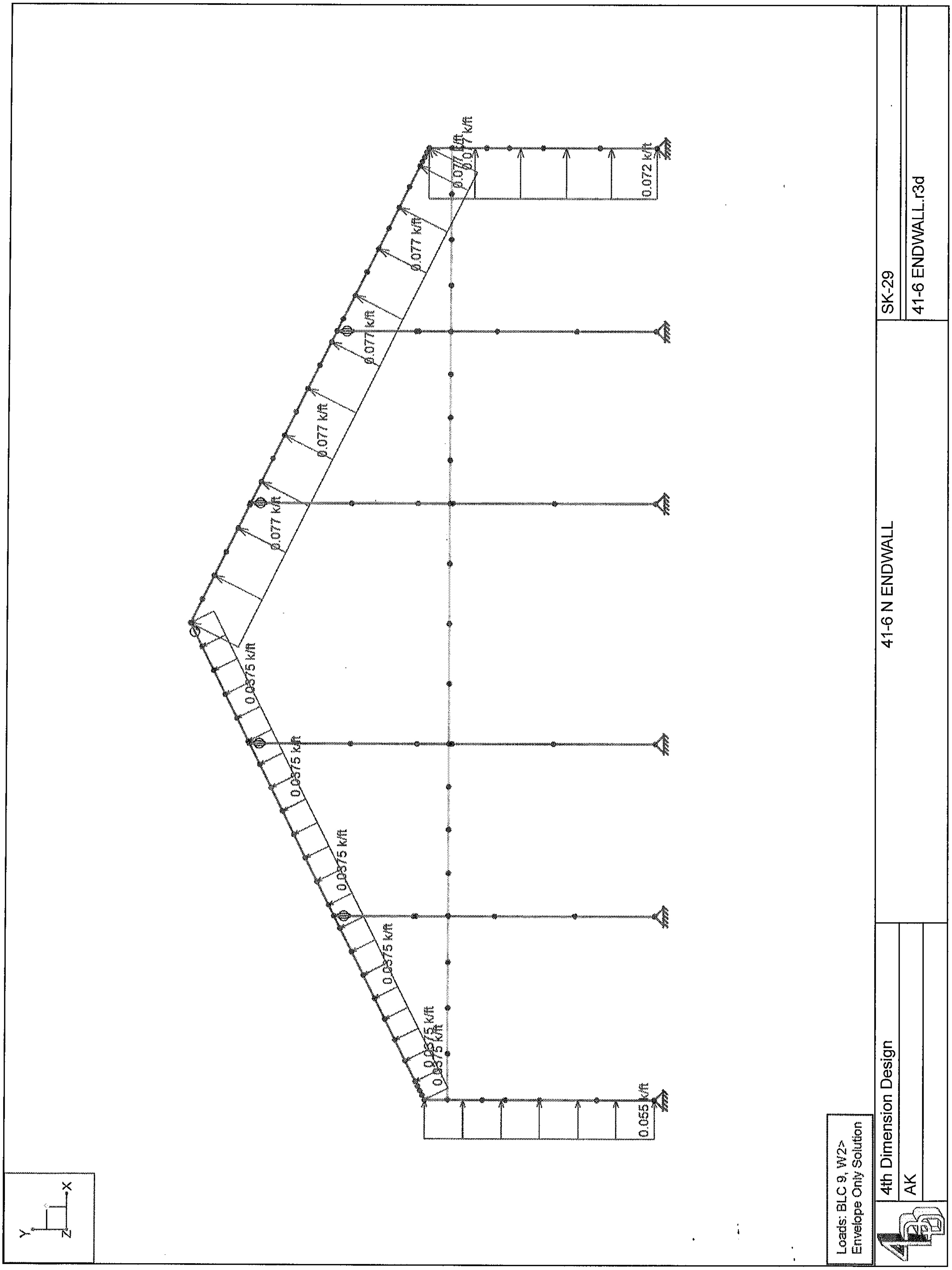
4th Dimension Design	41-6 N ENDWALL	SK-24
AK		41-6 ENDWALL.r3d

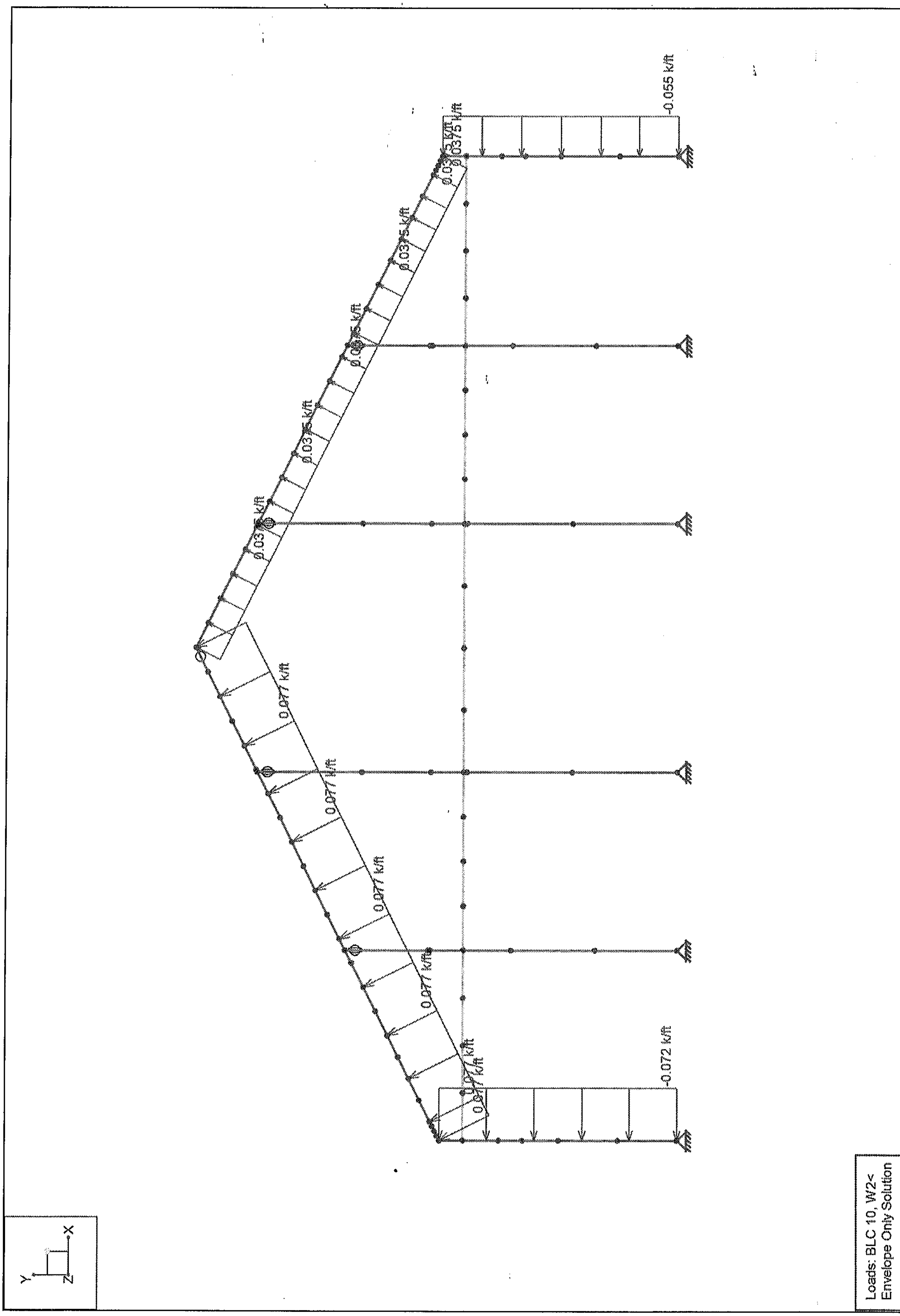

Y
Z
X
-0.73 k
-0.447 k
-0.383 k
-0.098 k
-0.326 k
-0.098 k
-0.34 k
-0.098 k
-0.102 k
-0.177 k
-0.053 k
Loads: BLC 5, SUL
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-25
41-6 ENDWALL.r3d


-0.177 k
-0.34 k
-0.326 k
-0.383 k
-0.73 k
-0.447 k
-0.098 k
-0.098 k
-0.098 k
-0.102 k
-0.053 k
Y
X
Z
Loads: BLC 6, SUR
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-26
41-6 ENDWALL.r3d


0.041 k/ft
0.036 k/ft
0.04 k/ft
0.01 k/ft
0.0915 k/ft
Loads: BLC 7, W1>
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-27
41-6 ENDWALL.r3d


-0.0915 k/ft
0.001 k/ft
0.041 k/ft
-0.036 k/ft
Loads: BLC 8, W1<
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-28
41-6 ENDWALL.r3d


0.077 k/ft
0.077 k/ft
0.077 k/ft
0.077 k/ft
0.077 k/ft
0.077 k/ft
0.072 k/ft
0.0375 k/ft
0.0375 k/ft
0.0375 k/ft
0.0375 k/ft
0.0375 k/ft
0.0375 k/ft
0.055 k/ft
Y
X
Z
Loads: BLC 9, W2>
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-29
41-6 ENDWALL.r3d



Loads: BLC 10, W2<
Envelope Only Solution

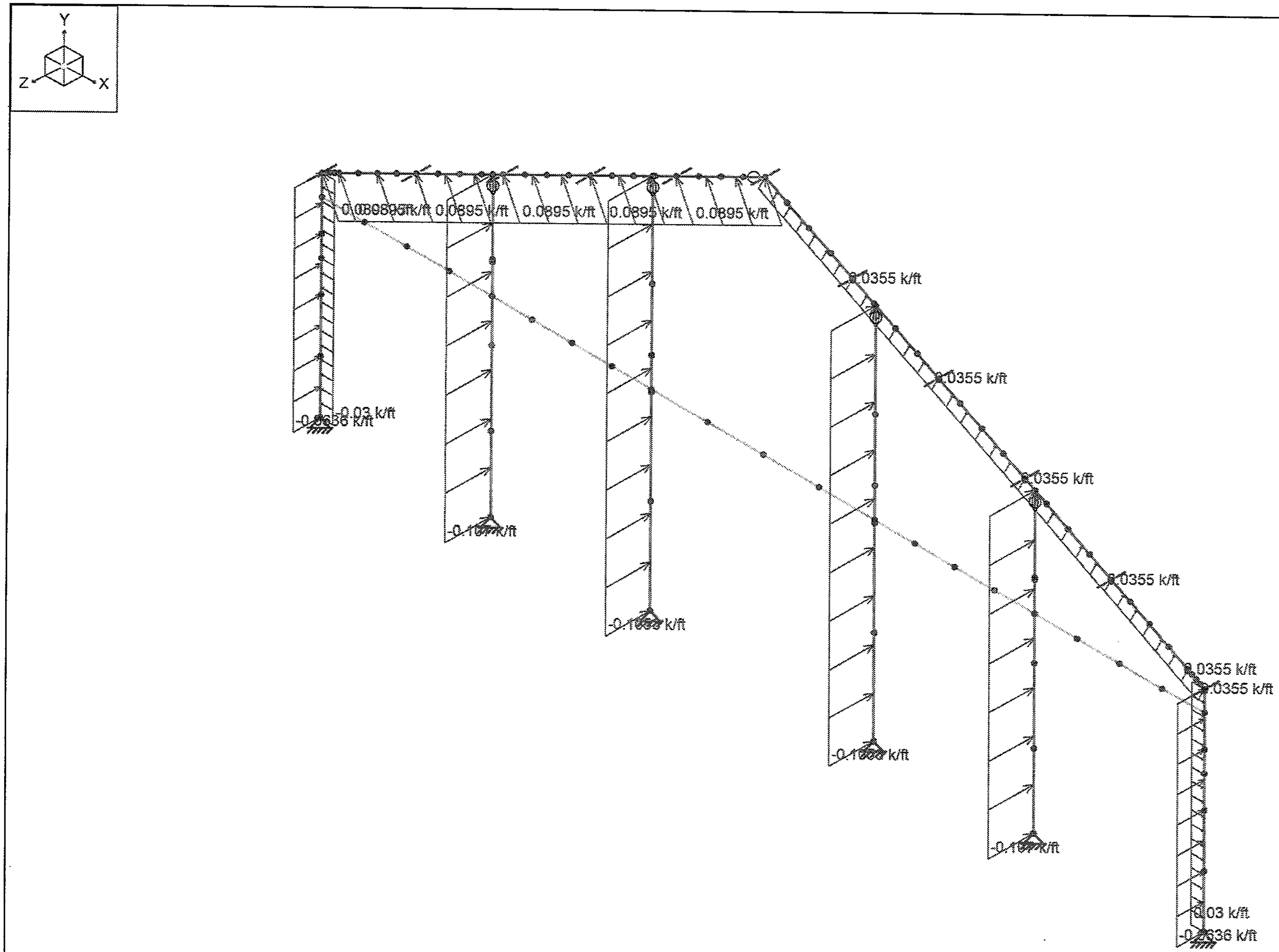
4th Dimension Design

AK

41-6 N ENDWALL

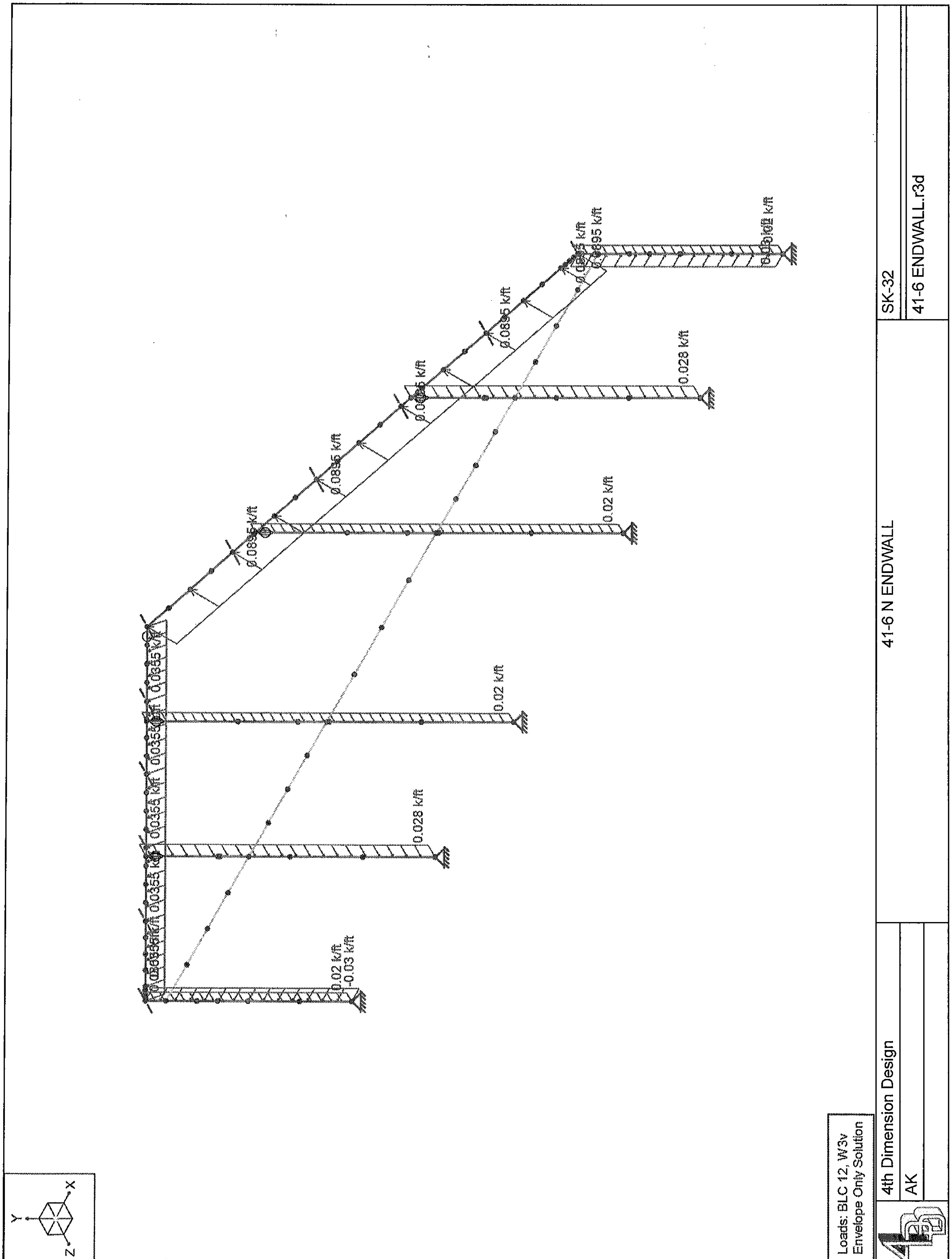
SK-30

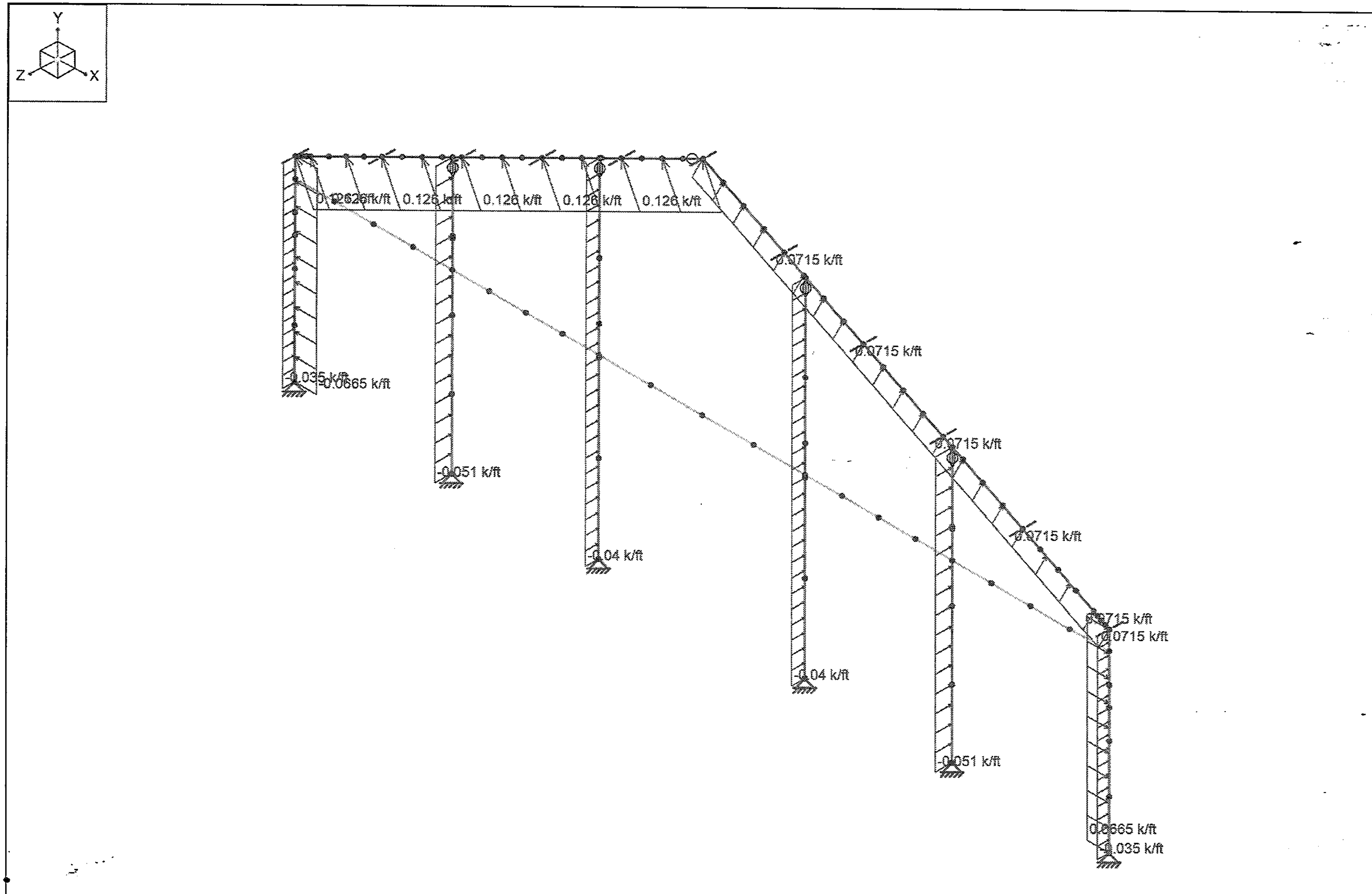
41-6 ENDWALL.r3d



Loads: BLC 11, W3^
Envelope Only Solution

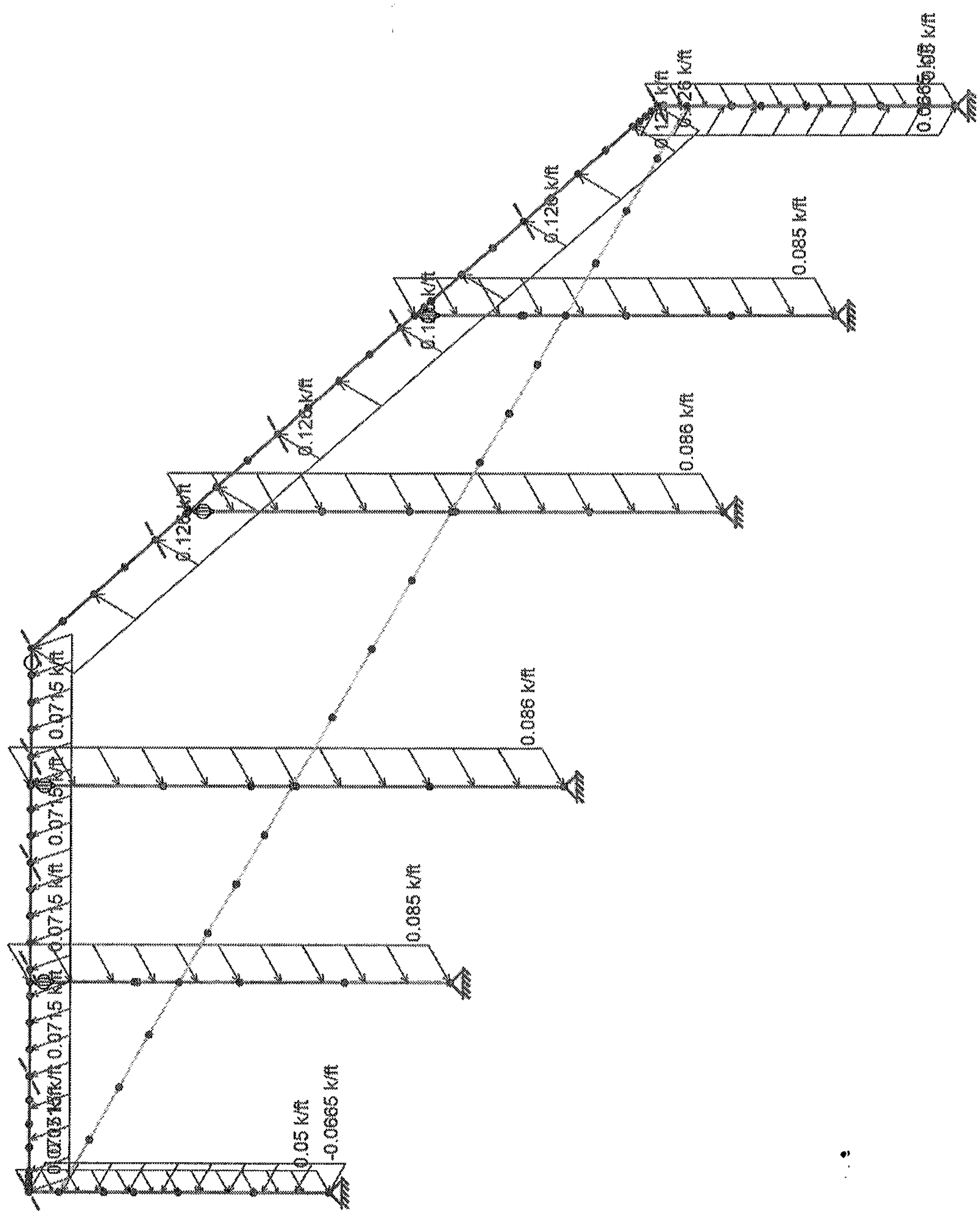
4th Dimension Design	41-6 N ENDWALL	SK-31
AK		41-6 ENDWALL.r3d


0.02 k/ft
-0.03 k/ft
0.028 k/ft
0.02 k/ft
0.02 k/ft
0.028 k/ft
0.0355 k/ft
0.0895 k/ft
Loads: BLC 12, W3v
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-32
41-6 ENDWALL.r3d
Y
X
Z



Loads: BLC 13, W4^
Envelope Only Solution

4th Dimension Design	41-6 N ENDWALL	SK-33
AK		41-6 ENDWALL.r3d



Loads: BLC 14, W4v
Envelope Only Solution

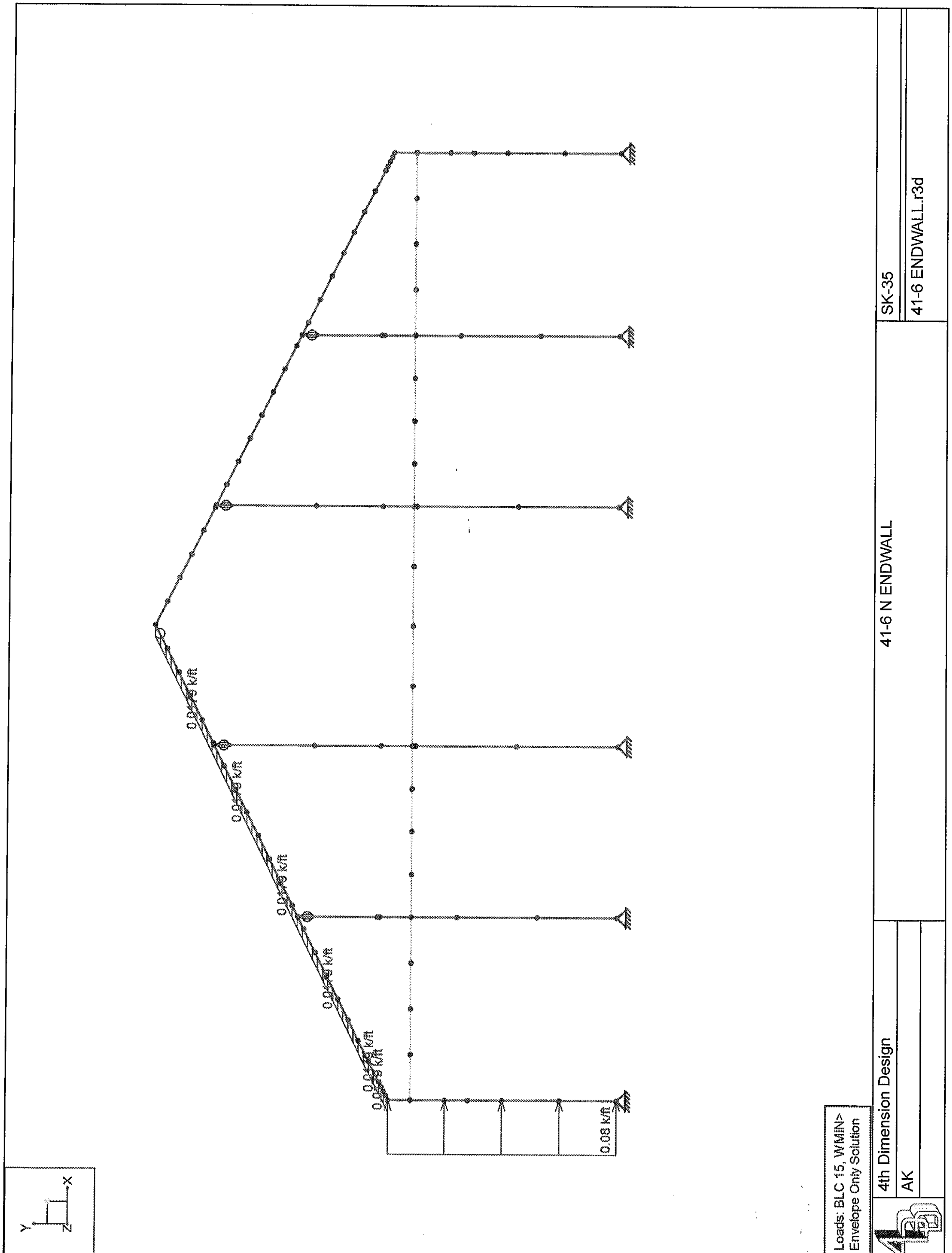
4th Dimension Design

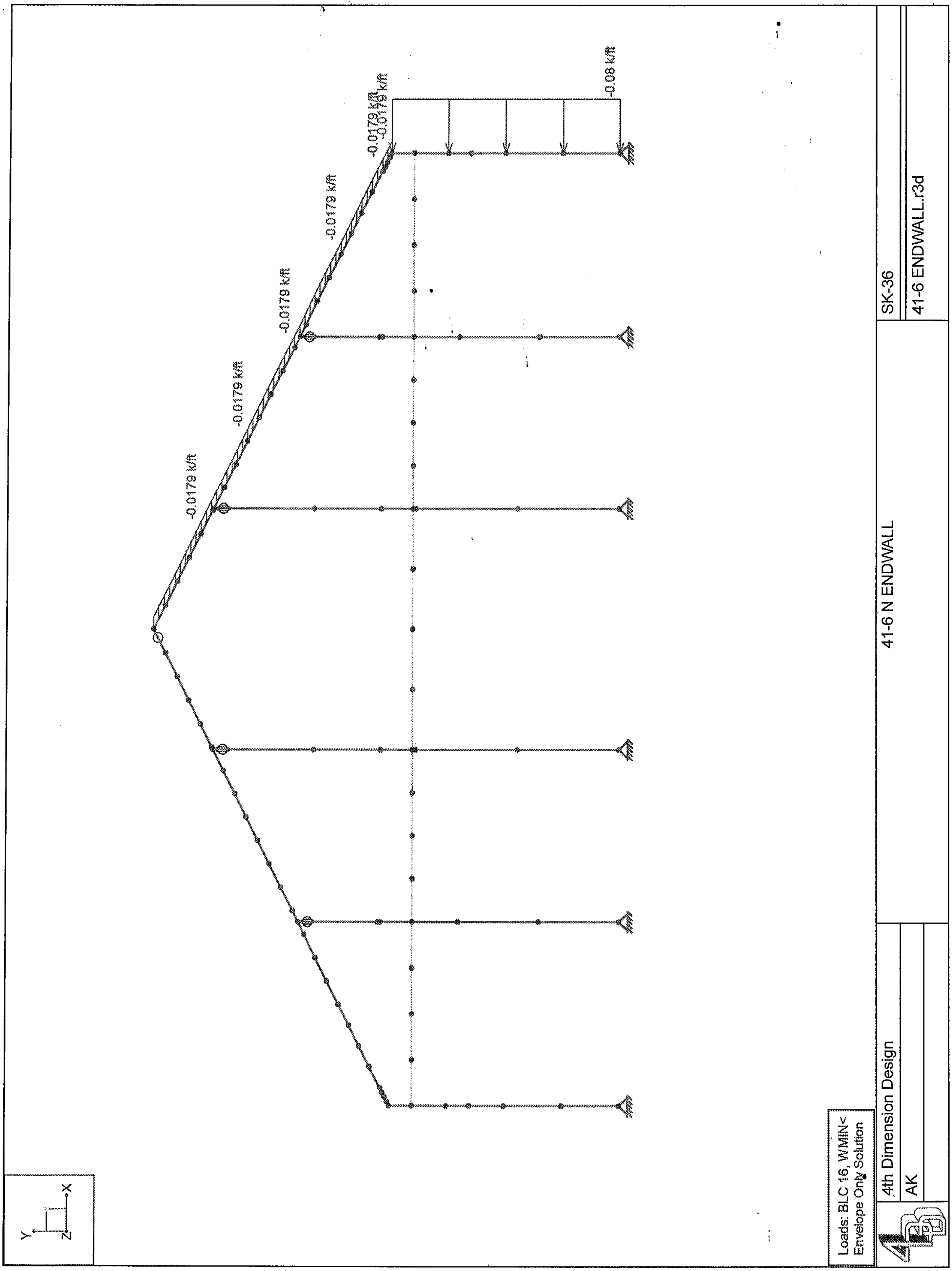
AK

41-6 N ENDWALL

SK-34

41-6 ENDWALL.r3d


0.08 k/ft
Loads: BLC 15, WMIN>
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-35
41-6 ENDWALL.r3d


-0.08 k/ft
-0.0179 k/ft
-0.0179 k/ft
-0.0179 k/ft
-0.0179 k/ft
-0.0179 k/ft
-0.0179 k/ft
-0.0179 k/ft
Y
Z
X
Loads: BLC 16, WMIN<
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-36
41-6 ENDWALL.r3d

Company : 4th Dimension Design
Designer : AK
Job Number :
Model Name : 41-6 N ENDWALL

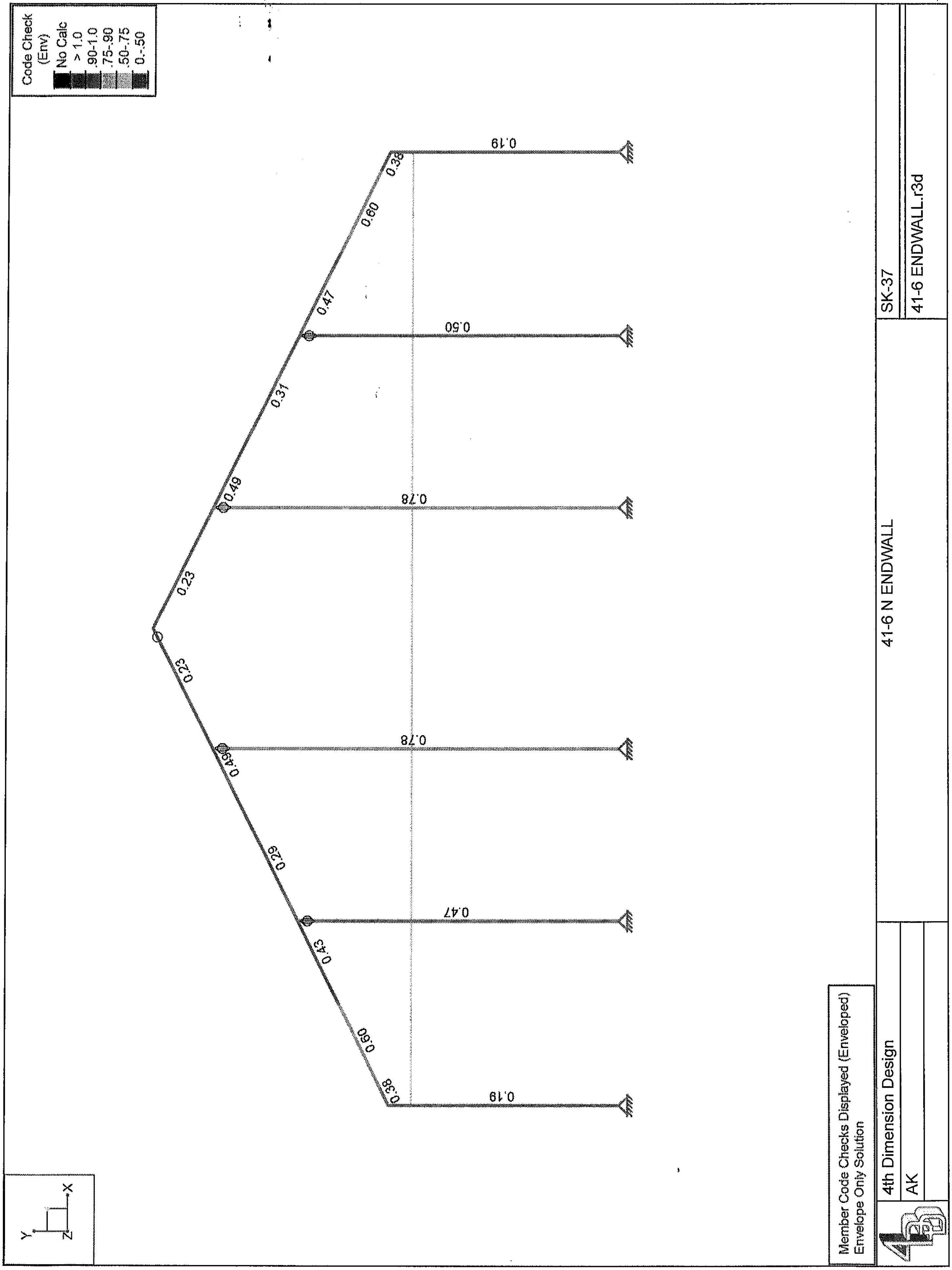
Checked By : JN

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	D+C+Lr	Yes	Y	1	1	2	1	3	1		
2	D+C+S	Yes	Y	1	1	2	1	4	1		
3	D+C+SU(L)	Yes	Y	1	1	2	1	5	1		
4	D+C+SUR	Yes	Y	1	1	2	1	6	1		
5	D+C+0.6W1>	Yes	Y	1	1	2	1	7	0.6		
6	D+C+0.6W1<	Yes	Y	1	1	2	1	8	0.6		
7	D+C+0.6W2>	Yes	Y	1	1	2	1	9	0.6		
8	D+C+0.6W2<	Yes	Y	1	1	2	1	10	0.6		
9	D+C+0.6W3^	Yes	Y	1	1	2	1	11	0.6		
10	D+C+0.6W3v	Yes	Y	1	1	2	1	12	0.6		
11	D+C+0.6W4^	Yes	Y	1	1	2	1	13	0.6		
12	D+C+0.6W4v	Yes	Y	1	1	2	1	14	0.6		
13	D+C+0.6WMIN>	Yes	Y	1	1	2	1	15	0.6		
14	D+C+0.6WMIN<	Yes	Y	1	1	2	1	16	0.6		
15	D+C+0.6WMIN^	Yes	Y	1	1	2	1	17	0.6		
16	D+C+.75Lr+.45W1>	Yes	Y	1	1	2	1	3	0.75	7	0.45
17	D+C+.75Lr+.45W1<	Yes	Y	1	1	2	1	3	0.75	8	0.45
18	D+C+.75Lr+.45W2>	Yes	Y	1	1	2	1	3	0.75	9	0.45
19	D+C+.75Lr+.45W2<	Yes	Y	1	1	2	1	3	0.75	10	0.45
20	D+C+.75Lr+.45W3^	Yes	Y	1	1	2	1	3	0.75	11	0.45
21	D+C+.75Lr+.45W3v	Yes	Y	1	1	2	1	3	0.75	12	0.45
22	D+C+.75Lr+.45W4^	Yes	Y	1	1	2	1	3	0.75	13	0.45
23	D+C+.75Lr+.45W4v	Yes	Y	1	1	2	1	3	0.75	14	0.45
24	D+C+.75Lr+.45WMIN>	Yes	Y	1	1	2	1	3	0.75	15	0.45
25	D+C+.75Lr+.45WMIN<	Yes	Y	1	1	2	1	3	0.75	16	0.45
26	D+C+.75Lr+.45WMIN^	Yes	Y	1	1	2	1	3	0.75	17	0.45
27	D+C+.75S+.45W1>	Yes	Y	1	1	2	1	4	0.75	7	0.45
28	D+C+.75S+.45W1<	Yes	Y	1	1	2	1	4	0.75	8	0.45
29	D+C+.75S+.45W2>	Yes	Y	1	1	2	1	4	0.75	9	0.45
30	D+C+.75S+.45W2<	Yes	Y	1	1	2	1	4	0.75	10	0.45
31	D+C+.75S+.45W3^	Yes	Y	1	1	2	1	4	0.75	11	0.45
32	D+C+.75S+.45W3v	Yes	Y	1	1	2	1	4	0.75	12	0.45
33	D+C+.75S+.45W4^	Yes	Y	1	1	2	1	4	0.75	13	0.45
34	D+C+.75S+.45W4v	Yes	Y	1	1	2	1	4	0.75	14	0.45
35	D+C+.75S+.45WMIN>	Yes	Y	1	1	2	1	4	0.75	15	0.45
36	D+C+.75S+.45WMIN<	Yes	Y	1	1	2	1	4	0.75	16	0.45
37	D+C+.75S+.45WMIN^	Yes	Y	1	1	2	1	4	0.75	17	0.45
38	0.6D+0.3C+0.6W1>	Yes	Y	1	0.6	2	0.3	7	0.6		
39	0.6D+0.3C+0.6W1<	Yes	Y	1	0.6	2	0.3	8	0.6		
40	0.6D+0.3C+0.6W2>	Yes	Y	1	0.6	2	0.3	9	0.6		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
41	0.6D+0.3C+0.6W2<	Yes	Y	1	0.6	2	0.3	10	0.6		
42	0.6D+0.3C+0.6W3^	Yes	Y	1	0.6	2	0.3	11	0.6		
43	0.6D+0.3C+0.6W3v	Yes	Y	1	0.6	2	0.3	12	0.6		
44	0.6D+0.3C+0.6W4^	Yes	Y	1	0.6	2	0.3	13	0.6		
45	0.6D+0.3C+0.6W4v	Yes	Y	1	0.6	2	0.3	14	0.6		
46	0.6D+0.3C+0.6WMIN>	Yes	Y	1	0.6	2	0.3	15	0.6		
47	0.6D+0.3C+0.6WMIN<	Yes	Y	1	0.6	2	0.3	16	0.6		
48	0.6D+0.3C+0.6WMIN^	Yes	Y	1	0.6	2	0.3	17	0.6		


Code Check (Env)
No Calc
> 1.0
.90-1.0
.75-.90
.50-.75
0.-.50
0.19
0.38
0.60
0.47
0.50
0.31
0.49
0.78
0.23
0.23
0.49
0.78
0.29
0.47
0.43
0.60
0.38
0.19
Y
Z
X
Member Code Checks Displayed (Enveloped)
Envelope Only Solution
4th Dimension Design
AK
41-6 N ENDWALL
SK-37
41-6 ENDWALL.r3d

Company : 4th Dimension Design
Designer : AK
Job Number :
Model Name : 41-6 N ENDWALL

Checked By : JN

Envelope AISC 14th (360-10): ASD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	M29	BKT-10GA-10GAGUS	0.384	0	17	0.023	0	y	25	21.535	34.461	0.344	3.463	1.068	H1-1b
2	M16	HAT4X16GA	0.596	0	17	0.035	0	y	25	14.518	21.347	1.213	1.861	1.588	H1-1b
3	M5	HAT4X16GA	0.425	4.002	44	0.107	4.554	z	15	14.105	21.347	1.213	1.861	2.143	H1-1b
4	M18	HAT4X16GA	0.293	0	44	0.038	0	y	44	14.105	21.347	1.213	1.861	2.693	H1-1b
5	M1	HAT4X16GA	0.494	3.295	26	0.135	4.53	z	15	14.124	21.347	1.213	1.861	1.66	H1-1b
6	M2	HAT4X16GA	0.228	0	15	0.02	4.635	y	44	14.036	21.347	1.213	1.861	1.199	H1-1b
7	M24	BKT-10GA-10GAGUS	0.384	0	16	0.023	0	y	24	21.535	34.461	0.344	3.463	1.068	H1-1b
8	M15	HAT4X16GA	0.596	0	16	0.035	0	y	24	14.518	21.347	1.213	1.861	1.588	H1-1b
9	M32	HAT4X16GA	0.467	4.002	45	0.107	4.554	z	15	14.105	21.347	1.213	1.861	2.143	H1-1b
10	M31	HAT4X16GA	0.308	0	45	0.038	0	y	45	14.105	21.347	1.213	1.861	2.693	H1-1b
11	M30	HAT4X16GA	0.494	3.295	26	0.135	4.53	z	15	14.124	21.347	1.213	1.861	1.66	H1-1b
12	M6	HAT4X16GA	0.228	0	15	0.02	4.635	y	45	14.036	21.347	1.213	1.861	1.199	H1-1b
13	M8	HSS4X4X11-GA	0.187	10	17	0.052	9.091	y	19	40.46	66.913	7.085	7.085	2.42	H1-1b
14	M33	HSS4X4X11-GA	0.187	10	16	0.052	9.091	y	18	40.46	66.913	7.085	7.085	2.42	H1-1b
15	M25	HSS4X4X13GA	0.502	8.202	9	0.038	0	z	15	18.087	49.089	4.602	4.602	1.399	H1-1b
16	M26	HSS4X4X13GA	0.777	8.785	15	0.056	0	z	15	11.556	49.089	4.602	4.602	1.326	H1-1b
17	M27	HSS4X4X13GA	0.777	8.785	15	0.056	0	z	15	11.556	49.089	4.602	4.602	1.326	H1-1b
18	M28	HSS4X4X13GA	0.47	8.343	9	0.038	0	z	15	18.087	49.089	4.602	4.602	1.41	H1-1b

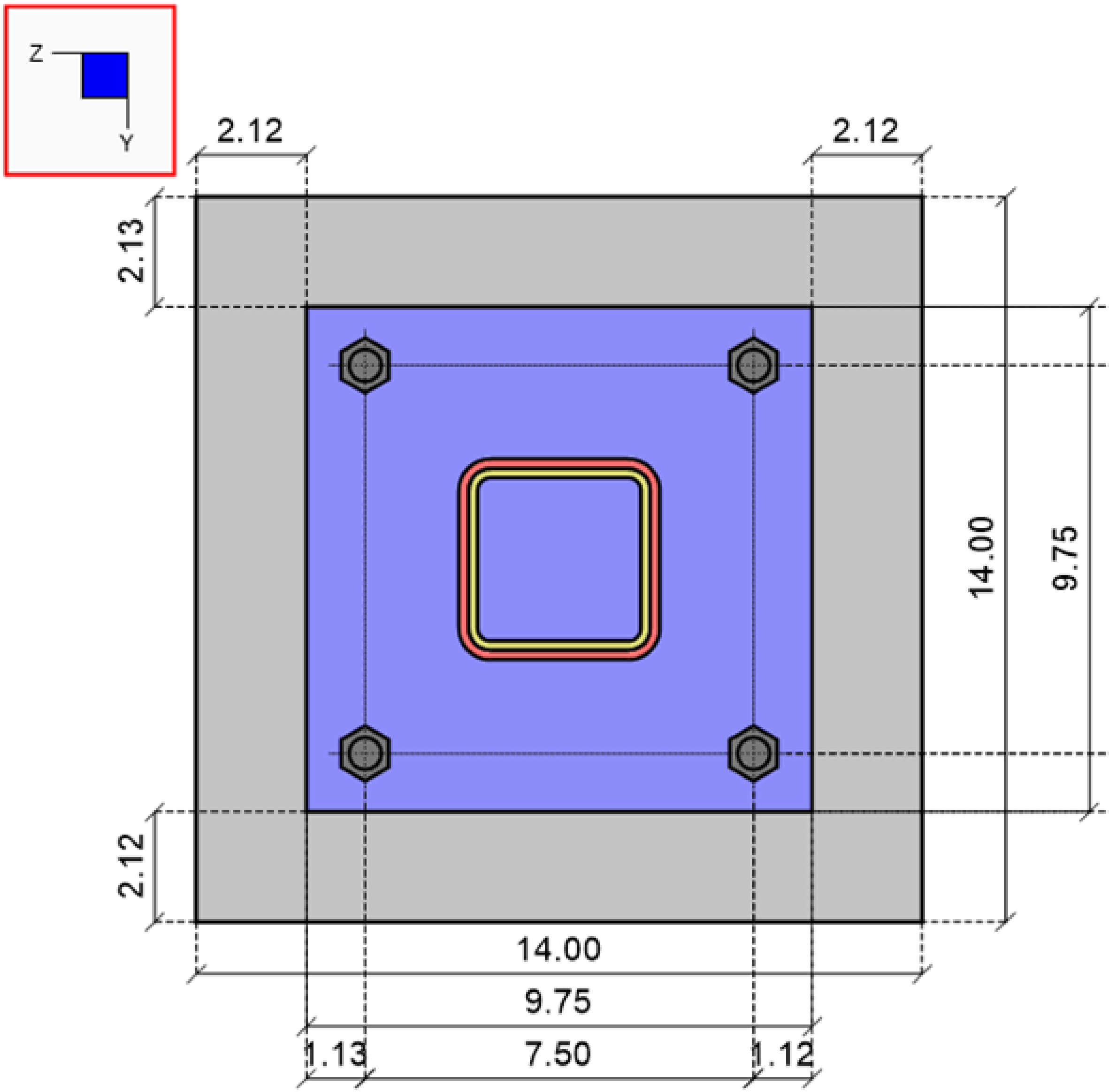
RISA Connection version 15.0.2

03.25.2025

MAX GRAVITY: 2D Views Report

Single Column Base Plate Connection

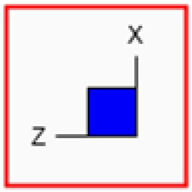
Top view

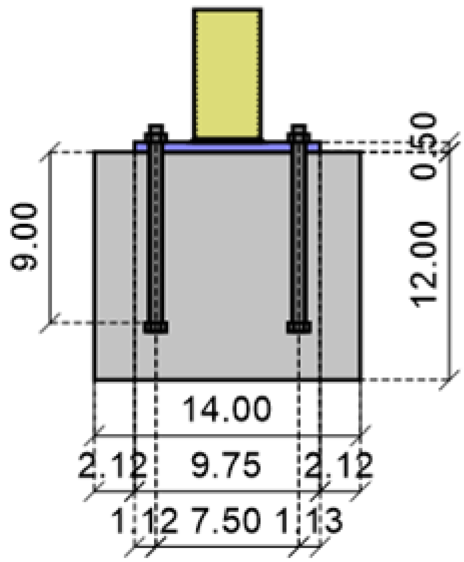


continued on next page...

MAX GRAVITY: 2D Views Report (continued):

Side view

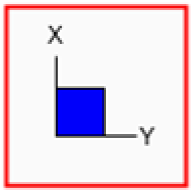


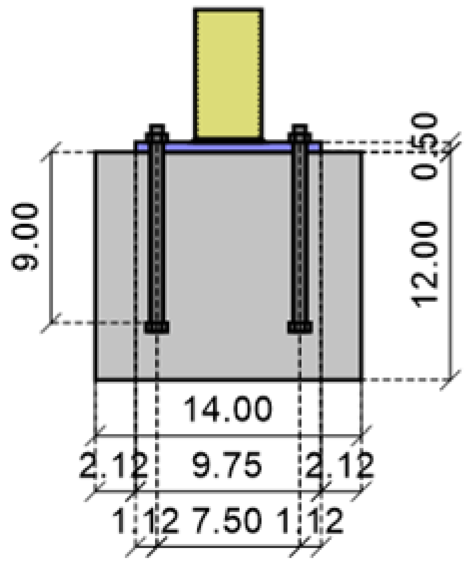


continued on next page...

MAX GRAVITY: 2D Views Report (continued):

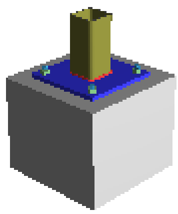
Left view





MAX GRAVITY: Summary Report

Single Column Base Plate Connection



Material Properties:				
Column	HSS3.5X3.5X3	A500 Gr.B Rect	F_y = 46.00 ksi	F_u = 58.00 ksi
Base Plate	P0.50x9.75x9.75	A36	F_y = 36.00 ksi	F_u = 58.00 ksi

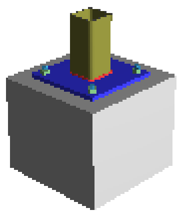
Input Data:		
Axial	5.60 kips	*Axial load on the column*
Strong Axis Shear	1.00 kips	*Shear load on the column that causes strong axis bending*
Weak Axis Shear	1.60 kips	*Shear load on the column that causes weak axis bending*
Strong Axis Moment	0.00 kips-ft	*Column moment about the strong axis*
Weak Axis Moment	0.00 kips-ft	*Column moment about the weak axis*

Connection	Required	Max Unity Check	Result
Column/Base Plate connection	Anchor Bolt Shear	**0.24**	**PASS**

ASD

MAX GRAVITY: Base Plate Report

Single Column Base Plate Connection



Material Properties:				
Column	HSS3.5X3.5X3	A500 Gr.B Rect	F_y = 46.00 ksi	F_u = 58.00 ksi
Base Plate	P0.50x9.75x9.75	A36	F_y = 36.00 ksi	F_u = 58.00 ksi

Input Data:		
Axial	5.60 kips	*Axial load on the column*
Strong Axis Shear	1.00 kips	*Shear load on the column that causes strong axis bending*
Weak Axis Shear	1.60 kips	*Shear load on the column that causes weak axis bending*
Strong Axis Moment	0.00 kips-ft	*Column moment about the strong axis*
Weak Axis Moment	0.00 kips-ft	*Column moment about the weak axis*

Note: Unless specified, all code references are from AISC 360-10

Limit State	Required	Available	Unity Check	Result
Geometry Restrictions				**PASS**
Check Min Bolt Spacing	**Pass**	*Condition: S_{min} >= (2+2/3)d_{bolt} (J3.3)*		
S_{min}	7.50 in	*Min bolt spacing*		
d_{bolt}	0.62 in	*Anchor bolt diameter*		
Check Min Edge Distance	**Pass**	*Condition: min(e_z , e_y) >= ED_{allow} (J3.4)*		
e_y	1.12 in	*Min edge distance y*		
e_z	1.12 in	*Min edge distance z*		
ED_{allow}	0.88 in	*Minimum allowed edge distance*		
Check Max Edge Distance	**Pass**	*Condition: Condition: max(d_z , d_y) <= min(6.00 in, 12*t) (J3.5)*		
d_y	1.12 in	*Max edge distance y*		
d_z	1.12 in	*Max edge distance z*		
ED_{allow}	6.00 in	*Maximum allowed edge distance*		
t	0.50 in	*Thickness of base plate*		
Check Anchor Bolt Encroachment on Column	**Pass**			
Concrete Bearing	0.06 ksi	1.59 ksi	**0.04**	**PASS**
R_n = 0.85 * f'_c * α		**Ω = 2.31**	(ACI 318-19 (22) Table 22.8.3.2)	
f'_c	3.00 ksi	*Concrete compressive strength*		
P_u	5.60 kips	*Axial load on the column*		
N	9.75 in	*Plate length*		
B	9.75 in	*Plate width*		
A_1	95.06 in^2	*Plate area = B*N*		
L	14.00 in	*Concrete support length*		
W	14.00 in	*Concrete support width*		
L'	14.00 in	*Effective concrete support length*		
W'	14.00 in	*Effective concrete support width*		
A_2	196.00 in^2	*Effective concrete support area = L' * W'*		
α	1.44	*Bearing stress increase factor = min(2, (A_2 / A_1)$^{0.5}$)*		
R_n / Ω	1.59 ksi	*Allowable bearing stress*		

continued on next page...

MAX GRAVITY: Base Plate Report (continued):

Limit State	Required	Available	Unity Check	Result
f_p	0.06 ksi	*Required bearing stress = P_u / A_1*		
Plate Flexural Yielding(Compression)	0.03 kips-ft/in	0.11 kips-ft/in	**0.23**	**PASS**
$M_n = F_y * t_p^2 / 4$		**Ω = 1.67**	(AISC DG1 (3.3.13))	
F_y	36.00 ksi	*Minimum yield strength of base plate*		
t_p	0.50 in	*Thickness of base plate*		
M_n/Ω	0.11 kips-ft/in	*Base plate bending capacity per unit width*		
N	9.75 in	*Base plate length*		
B	9.75 in	*Base plate width*		
d	3.50 in	*Column depth*		
b	3.50 in	*Column width*		
m	3.21 in	*m = (N - 0.95*d)/2 (per AISC DG1, sect. 3.1.3)*		
n	3.21 in	*n = (B - 0.95*b)/2 (per AISC DG1, sect. 3.1.3)*		
l	3.21 in	*Critical cantilever dimension l = MAX(m, n)*		
f_p	0.06 ksi	*Required bearing stress (see 'Concrete Bearing' check)*		
M_{pl}	0.03 kips-ft/in	*Required bending moment per unit width, $M_{pl}=f_p * l^2 / 2$ (per AISC DG1, sect. 3.1.2)*		
Anchor Bolt Shear	1.89 kips	8.01 kips	**0.24**	**PASS**
$R_n = F_{nv} * A_b * N_{bolt}$		**Ω = 2.00**	(J3-1)	
V_{uy}	1.00 kips	*Strong axis shear*		
V_{uz}	1.60 kips	*Weak axis shear*		
$V_u = (V_{uy}^2 + V_{uz}^2)^{0.5}$	1.89 kips	*Resultant shear force*		
F_{nv}	26.10 ksi	*Shear stress N type*		
A_b	0.31 in^2	*Area of bolt*		
N_{bolt}	2	*Number of bolts (per AISC DG1, Section 3.5.3)*		
R_n/Ω	8.01 kips	*Bolt shear rupture strength*		
Anchor Bolt Bearing on Base Plate	1.89 kips	8.01 kips	**0.24**	**PASS**
$R_n = N_{bolt} * \min(1.2*L_c*t_p*F_u, 2.4*d_b*t_p*F_u, R_{n\text{-}bolt})$		**Ω = 2.00**	(J3-6a)	
V_u	1.89 kips	*Resultant shear force, see 'Anchor Bolt Shear' check*		
N_{bolt}	2	*Number of bolts (per AISC DG1, Section 3.5.3)*		
Θ	32.01 degrees	*Angle between the resultant shear force and z-axis*		
e_y	1.12 in	*Edge distance y*		
e_z	1.12 in	*Edge distance z*		
d_c	0.34 in	*Distance from center of bolt to the edge of hole*		
L_c	0.98 in	*Minimum clear distance for the weakest bolt, $L_c = \min(e_y / \lvert\sin(\Theta)\rvert, e_z / \lvert\cos(\Theta)\rvert) - d_c$*		
t_p	0.50 in	*Thickness of base plate*		
d_b	0.62 in	*Bolt diameter*		
F_u	58.00 ksi	*Minimum tensile stress of material*		
$R_{n\text{-}bolt}$	8.01 kips	*Bolt shear strength, $R_{n\text{-}bolt}=F_{nv}*A_{bolt}$*		
F_{nv}	26.10 ksi	*Nominal shear stress of bolt*		
A_{bolt}	0.31 in^2	*Area of bolt*		
Rn/Ω	8.01 kips	*Bolt bearing strength*		
Column Weld Limitations				**PASS**
Weld Min Size			(J2.2b)	
Check Weld Min Size	**Pass**			
D	0.19 in	*Weld size*		
D_{min}	0.12 in	*Min size allowed per Table J2.4*		

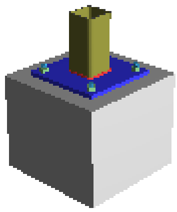
continued on next page...

MAX GRAVITY: Base Plate Report (continued):

Limit State	Required	Available	Unity Check	Result
t_{min}	0.17 in	*Controlling member thickness*		
Column Flange Weld Strength	0.29 kips/in	2.78 kips/in	**0.10**	**PASS**
$Rn/\Omega = C_1 * \alpha * 0.928 * D_{16}$				
Single Fillet				
$0.928 = 0.6 * F_{E70} * 2^{0.5}/2 * 1/16 / \Omega$, Ω=2.00 (AISC 14th Eqn 8-2b)				
C_1	1.00	*Electrode strength coefficient (AISC 14th table 8-3)*		
t	0.17 in	*Base material thickness (column)*		
α	1.00	*Base material proration factor (re-arrangement of AISC 14th Eqn 9-2)*		
D_{16}	3.00	*Weld fillet size in sixteenths of an inch*		
r_u	0.29 kips/in	*Required strength of the weld for in-plane force*		
r_0	-0.00 kips/in	*Required strength of the weld for out-of-plane force (tensile)*		
r_{3d}	0.29 kips/in	*Resultant force $r_{3d} = (r_u^2 + r_0^2)^{0.5}$*		
Rn/Ω	2.78 kips/in	*Weld strength*		
Column Web Weld Strength	0.18 kips/in	2.78 kips/in	**0.06**	**PASS**
$Rn/\Omega = C_1 * \alpha * 0.928 * D_{16}$				
Single Fillet				
$0.928 = 0.6 * F_{E70} * 2^{0.5}/2 * 1/16 / \Omega$, Ω=2.00 (AISC 14th Eqn 8-2b)				
C_1	1.00	*Electrode strength coefficient (AISC 14th table 8-3)*		
t	0.17 in	*Base material thickness (column)*		
α	1.00	*Base material proration factor (re-arrangement of AISC 14th Eqn 9-2)*		
D_{16}	3.00	*Weld fillet size in sixteenths of an inch*		
r_u	0.18 kips/in	*Required strength of the weld for in-plane force*		
r_0	-0.00 kips/in	*Required strength of the weld for out-of-plane force (tensile)*		
r_{3d}	0.18 kips/in	*Resultant force $r_{3d} = (r_u^2 + r_0^2)^{0.5}$*		
Rn/Ω	2.78 kips/in	*Weld strength*		

MAX GRAVITY: Anchorage Design Report

Single Column Base Plate Connection



Material Properties:

Column	HSS3.5X3.5X3	A500 Gr.B Rect	F_y = 46.00 ksi	F_u = 58.00 ksi
Base Plate	P0.50x9.75x9.75	A36	F_y = 36.00 ksi	F_u = 58.00 ksi

Input Data:

Axial	5.60 kips	*Axial load on the column*
Strong Axis Shear	1.00 kips	*Shear load on the column that causes strong axis bending*
Weak Axis Shear	1.60 kips	*Shear load on the column that causes weak axis bending*
Strong Axis Moment	0.00 kips-ft	*Column moment about the strong axis*
Weak Axis Moment	0.00 kips-ft	*Column moment about the weak axis*

Note: Unless specified, all code references are from ACI 318-19 (22)

Limit State	Required	Available	Unity Check	Result
Anchorage design is toggled off in the Connection Properties.				**No Calc**

MAX GRAVITY: Members Report

Single Column Base Plate Connection

Column	***HSS3.5X3.5X3***	
Material		
Name	A500 Gr.B Rect	*Material name*
F_y	46.00 ksi	*Minimum yield stress of material*
F_u	58.00 ksi	*Minimum tensile stress of material*
E	29000.00 ksi	*Modulus of elasticity*
Member Properties		
d	3.50 in	*Depth*
b	3.50 in	*Width*
a	2.24 in^2	*Area*
t_{des}	0.17 in	*Wall Thickness*
Base Plate	***P0.50x9.75x9.75***	
Material		
Name	A36	*Material name*
F_y	36.00 ksi	*Minimum yield stress of material*
F_u	58.00 ksi	*Minimum tensile stress of material*
E	29000.00 ksi	*Modulus of elasticity*
Member Properties		
L	9.75 in	*Length*
W	9.75 in	*Width*
t	0.50 in	*Thickness*
μ	0.55	*Static Friction Coefficient*
Hole		
Hole type	Standard	
D_x	0.69 in	*Hole width*
D_y	0.69 in	*Hole height*
R	2	*Number of rows of holes*
C	2	*Number of holes per row*
R_s	7.50 in	*Row Spacing*
C_s	7.50 in	*Column Spacing*
Concrete Support	***C14.00x14.00x12.00***	

MAX GRAVITY: Connection Properties Report

Single Column Base Plate Connection

Connection	
Connection Title	MAX GRAVITY
Connection Type	Single Column Base Plate Connection
Anchorage	
Anchorage Type	Cast-in-place
Perform Anchorage Calc	No
Connection Category	
Bolt Layout	Four
Plate Washers	No
Loading (ASD)	
Axial	5.60 kips
Strong Axis Shear	1.00 kips
Weak Axis Shear	1.60 kips
Strong Axis Moment	0.00 kips-ft
Weak Axis Moment	0.00 kips-ft
Components	
Column Section	HSS3.5X3.5X3
Material	A500 Gr.B Rect
Fy	46.00 ksi
Fu	58.00 ksi
E	29000.00 ksi
Lib	aiscdb32
A	2.24 in^2
D	3.50 in
B	3.50 in
Tdes	0.17 in
Base Plate	P0.50x9.75x9.75
Material	A36
Fy	36.00 ksi
Fu	58.00 ksi
E	29000.00 ksi
Length	9.75 in
Width	9.75 in
Thickness	0.50 in
Static Friction Coefficient	0.55 Coeff
Hole Type	STD
Concrete Support	C14.00x14.00x12.00
Length	14.00 in
Width	14.00 in
Thickness	12.00 in
Compressive Strength (f'c)	3.00 ksi
Concrete Weight	Normal Weight
Cracked Concrete	Yes
Edge Reinforcement	None or < no. 4 bar
Anchor Bolts	5/8" F1554 Gr.36-N
Material	F1554 Gr.36-N
Head Type	Hex Bolt
Torque Type	Untorqued Anchor
Diameter, in.	5/8"
Embedment depth	9.00 in
Bolt Spacing y	7.50 in
Bolt Spacing z	7.50 in
Column Weld	E70
Type	Fillet
Fillet Size	3.00 Sixteenths

continued on next page...

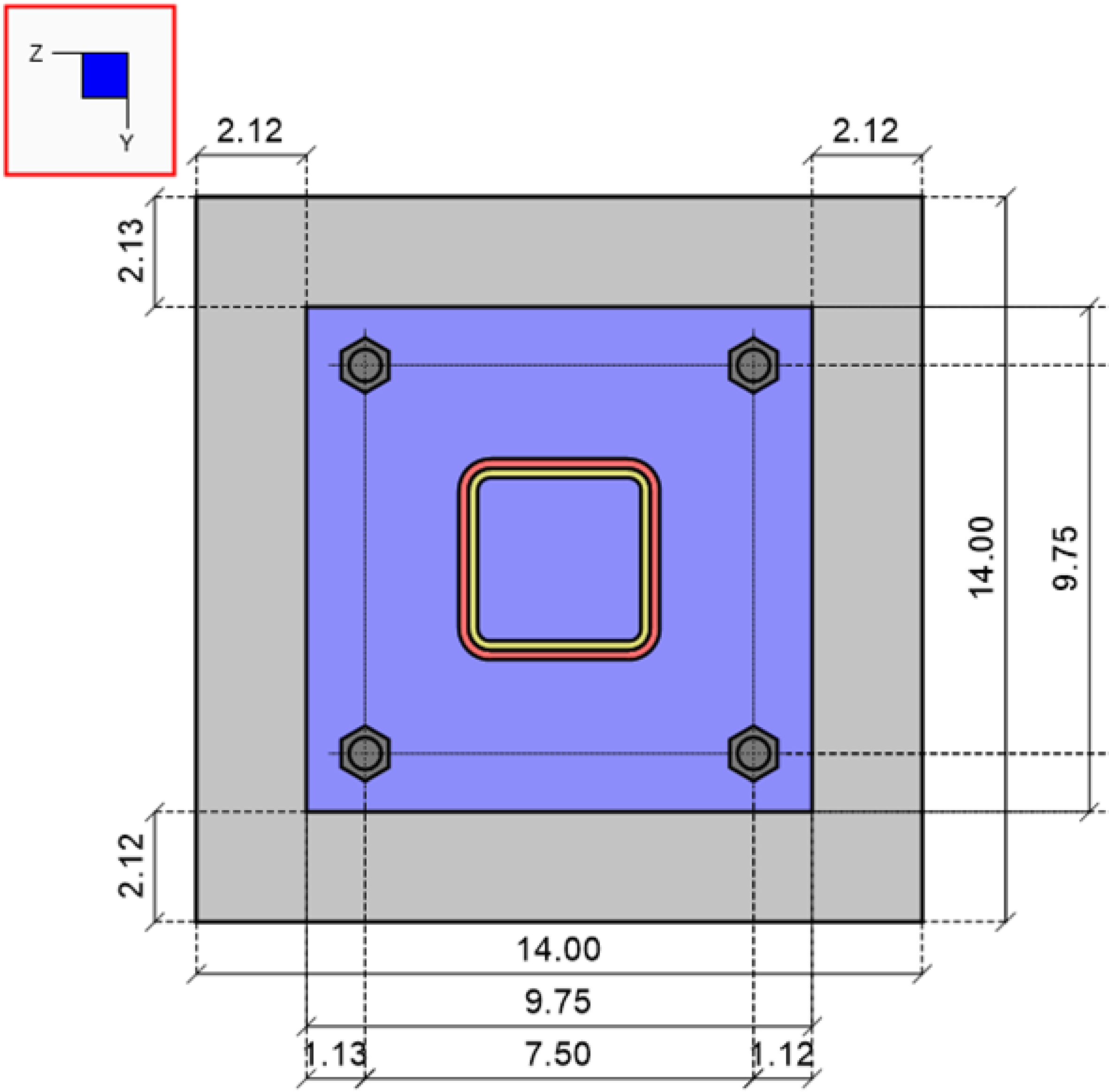
MAX GRAVITY: Connection Properties Report (continued):

Fw	70.00 ksi
Assembly	
Edge Distance y	1.13 in
Edge Distance z	1.13 in
Edge Distance +y	2.13 in
Edge Distance -y	2.13 in
Edge Distance +z	2.13 in
Edge Distance -z	2.13 in

MAX UPLIFT: 2D Views Report

Single Column Base Plate Connection

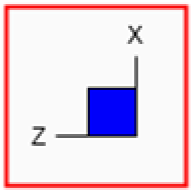
Top view

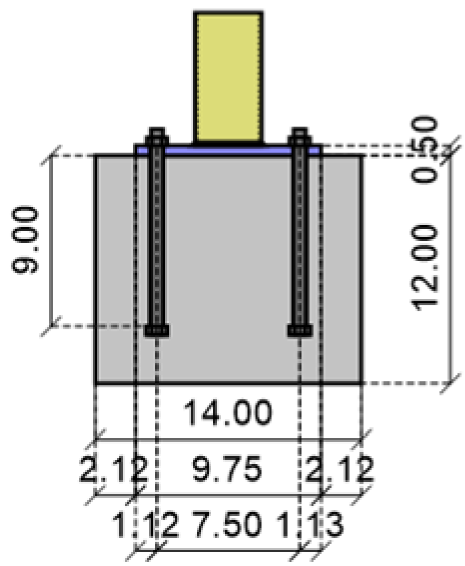


continued on next page...

MAX UPLIFT: 2D Views Report (continued):

Side view

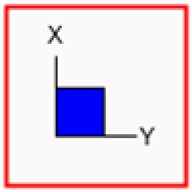


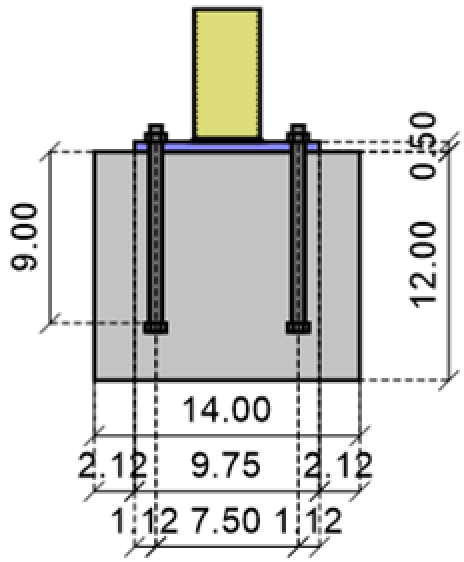


continued on next page...

MAX UPLIFT: 2D Views Report (continued):

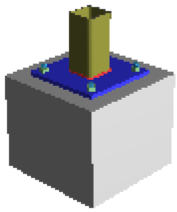
Left view





MAX UPLIFT: Summary Report

Single Column Base Plate Connection



Material Properties:				
Column	HSS3.5X3.5X3	A500 Gr.B Rect	F_y = 46.00 ksi	F_u = 58.00 ksi
Base Plate	P0.50x9.75x9.75	A36	F_y = 36.00 ksi	F_u = 58.00 ksi

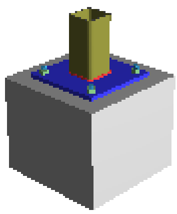
Input Data:		
Axial	-2.50 kips	*Axial load on the column*
Strong Axis Shear	1.00 kips	*Shear load on the column that causes strong axis bending*
Weak Axis Shear	1.60 kips	*Shear load on the column that causes weak axis bending*
Strong Axis Moment	0.00 kips-ft	*Column moment about the strong axis*
Weak Axis Moment	0.00 kips-ft	*Column moment about the weak axis*

Connection	Required	Max Unity Check	Result
Column/Base Plate connection	Plate Flexural Yielding(Tension)	**0.30**	**PASS**

ASD

MAX UPLIFT: Base Plate Report

Single Column Base Plate Connection



Material Properties:				
Column	HSS3.5X3.5X3	A500 Gr.B Rect	F_y = 46.00 ksi	F_u = 58.00 ksi
Base Plate	P0.50x9.75x9.75	A36	F_y = 36.00 ksi	F_u = 58.00 ksi

Input Data:		
Axial	-2.50 kips	*Axial load on the column*
Strong Axis Shear	1.00 kips	*Shear load on the column that causes strong axis bending*
Weak Axis Shear	1.60 kips	*Shear load on the column that causes weak axis bending*
Strong Axis Moment	0.00 kips-ft	*Column moment about the strong axis*
Weak Axis Moment	0.00 kips-ft	*Column moment about the weak axis*

Note: Unless specified, all code references are from AISC 360-10

Limit State	Required	Available	Unity Check	Result
Geometry Restrictions				**PASS**
Check Min Bolt Spacing	**Pass**	*Condition: S_{min} >= (2+2/3)d_{bolt} (J3.3)*		
S_{min}	7.50 in	*Min bolt spacing*		
d_{bolt}	0.62 in	*Anchor bolt diameter*		
Check Min Edge Distance	**Pass**	*Condition: min(e_z , e_y) >= ED_{allow} (J3.4)*		
e_y	1.12 in	*Min edge distance y*		
e_z	1.12 in	*Min edge distance z*		
ED_{allow}	0.88 in	*Minimum allowed edge distance*		
Check Max Edge Distance	**Pass**	*Condition: Condition: max(d_z , d_y) <= min(6.00 in, 12*t) (J3.5)*		
d_y	1.12 in	*Max edge distance y*		
d_z	1.12 in	*Max edge distance z*		
ED_{allow}	6.00 in	*Maximum allowed edge distance*		
t	0.50 in	*Thickness of base plate*		
Check Anchor Bolt Encroachment on Column	**Pass**			
Plate Flexural Yielding(Tension)	0.11 kips-ft	0.36 kips-ft	**0.30**	**PASS**
$M_n = b_e*F_y*t_p^2 / 4$		**Ω = 1.67**	(AISC DG1 (3.3.13))	
b_e	3.21 in	*Effective width of plate section (corner bolt)*		
F_y	36.00 ksi	*Minimum yield strength of base plate*		
t_p	0.50 in	*Thickness of base plate*		
$M_n/Ω$	0.36 kips-ft	*Base plate bending strength*		
T	0.62 kips	*Tension force in anchor bolt*		
x	2.09 in	*Moment arm for anchor bolt*		
M_{pl}	0.11 kips-ft	*Bending moment caused by tension at bolt, M_{pl}=T*x*		
Anchor Bolt Tension	0.62 kips	6.67 kips	**0.09**	**PASS**
$R_n = F_{nt} * A_b$		**Ω = 2.00**	(J3-2)	
Prying effects are ignored				
Check User Note Limit:	**Pass**	**Condition: (f_{rt}/F_{nt} ≤ 0.3) or (f_{rv}/F_{nv} ≤ 0.3)**		

continued on next page...

MAX UPLIFT: Base Plate Report (continued):

Limit State	Required	Available	Unity Check	Result
f_{rt}	2.04 ksi	*Required tensile stress, $f_{rt} = T_{bolt} / A_b$*		
F_{nt}	43.50 ksi	*Available tensile stress, per Table J3.2*		
f_{rv}	3.07 ksi	*Required shear stress: $f_{rv} = (V_u / N_{bolt}) / A_b$*		
F_{nv}	26.10 ksi	*Available shear stress, per Table J3.2*		
Because $f_{rt}/F_{nt} \le 0.3$ and $f_{rv}/F_{nv} \le 0.3$, effects of combined tension and shear stress need not be investigated				
T_{bolt}	0.62 kips	*Tension at bolts*		
V_u	1.89 kips	*Resultant shear force, see 'Anchor Bolt Shear' check*		
N_{bolt}	2	*Number of bolts (DG-1, Section 3.5.3)*		
A_b	0.31 in^2	*Bolt cross sectional area*		
R_n/Ω	6.67 kips	*Bolt tensile strength*		
Anchor Bolt Shear	1.89 kips	8.01 kips	**0.24**	**PASS**
$R_n = F_{nv} * A_b * N_{bolt}$		**Ω = 2.00**	(J3-1)	
V_{uy}	1.00 kips	*Strong axis shear*		
V_{uz}	1.60 kips	*Weak axis shear*		
$V_u = (V_{uy}^2 + V_{uz}^2)^{0.5}$	1.89 kips	*Resultant shear force*		
F_{nv}	26.10 ksi	*Shear stress N type*		
A_b	0.31 in^2	*Area of bolt*		
N_{bolt}	2	*Number of bolts (per AISC DG1, Section 3.5.3)*		
R_n/Ω	8.01 kips	*Bolt shear rupture strength*		
Anchor Bolt Bearing on Base Plate	1.89 kips	8.01 kips	**0.24**	**PASS**
$R_n = N_{bolt} * \min(1.2*L_c*t_p*F_u, 2.4*d_b*t_p*F_u, R_{n\text{-}bolt})$		**Ω = 2.00**	(J3-6a)	
V_u	1.89 kips	*Resultant shear force, see 'Anchor Bolt Shear' check*		
N_{bolt}	2	*Number of bolts (per AISC DG1, Section 3.5.3)*		
Θ	32.01 degrees	*Angle between the resultant shear force and z-axis*		
e_y	1.12 in	*Edge distance y*		
e_z	1.12 in	*Edge distance z*		
d_c	0.34 in	*Distance from center of bolt to the edge of hole*		
L_c	0.98 in	*Minimum clear distance for the weakest bolt, $L_c = \min(e_y / \lvert\sin(\Theta)\rvert, e_z / \lvert\cos(\Theta)\rvert) - d_c$*		
t_p	0.50 in	*Thickness of base plate*		
d_b	0.62 in	*Bolt diameter*		
F_u	58.00 ksi	*Minimum tensile stress of material*		
$R_{n\text{-}bolt}$	8.01 kips	*Bolt shear strength, $R_{n\text{-}bolt}=F_{nv}*A_{bolt}$*		
F_{nv}	26.10 ksi	*Nominal shear stress of bolt*		
A_{bolt}	0.31 in^2	*Area of bolt*		
Rn/Ω	8.01 kips	*Bolt bearing strength*		
Column Weld Limitations				**PASS**
Weld Min Size			(J2.2b)	
Check Weld Min Size	**Pass**			
D	0.19 in	*Weld size*		
D_{min}	0.12 in	*Min size allowed per Table J2.4*		
t_{min}	0.17 in	*Controlling member thickness*		

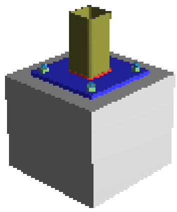
continued on next page...

MAX UPLIFT: Base Plate Report (continued):

Limit State	Required	Available	Unity Check	Result
Column Flange Weld Strength	0.36 kips/in	2.78 kips/in	**0.13**	**PASS**
$Rn/\Omega = C_1 * \alpha * 0.928 * D_{16}$				
Single Fillet				
$0.928 = 0.6 * F_{E70} * 2^{0.5}/2 * 1/16 / \Omega$, Ω=2.00 (AISC 14th Eqn 8-2b)				
C_1	1.00	*Electrode strength coefficient (AISC 14th table 8-3)*		
t	0.17 in	*Base material thickness (column)*		
α	1.00	*Base material proration factor (re-arrangement of AISC 14th Eqn 9-2)*		
D_{16}	3.00	*Weld fillet size in sixteenths of an inch*		
r_u	0.29 kips/in	*Required strength of the weld for in-plane force*		
r_0	-0.22 kips/in	*Required strength of the weld for out-of-plane force (tensile)*		
r_{3d}	0.36 kips/in	*Resultant force $r_{3d} = (r_u^2 + r_0^2)^{0.5}$*		
Rn/Ω	2.78 kips/in	*Weld strength*		
Column Web Weld Strength	0.29 kips/in	2.78 kips/in	**0.10**	**PASS**
$Rn/\Omega = C_1 * \alpha * 0.928 * D_{16}$				
Single Fillet				
$0.928 = 0.6 * F_{E70} * 2^{0.5}/2 * 1/16 / \Omega$, Ω=2.00 (AISC 14th Eqn 8-2b)				
C_1	1.00	*Electrode strength coefficient (AISC 14th table 8-3)*		
t	0.17 in	*Base material thickness (column)*		
α	1.00	*Base material proration factor (re-arrangement of AISC 14th Eqn 9-2)*		
D_{16}	3.00	*Weld fillet size in sixteenths of an inch*		
r_u	0.18 kips/in	*Required strength of the weld for in-plane force*		
r_0	-0.22 kips/in	*Required strength of the weld for out-of-plane force (tensile)*		
r_{3d}	0.29 kips/in	*Resultant force $r_{3d} = (r_u^2 + r_0^2)^{0.5}$*		
Rn/Ω	2.78 kips/in	*Weld strength*		

MAX UPLIFT: Anchorage Design Report

Single Column Base Plate Connection



Material Properties:

Column	HSS3.5X3.5X3	A500 Gr.B Rect	F_y = 46.00 ksi	F_u = 58.00 ksi
Base Plate	P0.50x9.75x9.75	A36	F_y = 36.00 ksi	F_u = 58.00 ksi

Input Data:

Axial	-2.50 kips	*Axial load on the column*
Strong Axis Shear	1.00 kips	*Shear load on the column that causes strong axis bending*
Weak Axis Shear	1.60 kips	*Shear load on the column that causes weak axis bending*
Strong Axis Moment	0.00 kips-ft	*Column moment about the strong axis*
Weak Axis Moment	0.00 kips-ft	*Column moment about the weak axis*

Note: Unless specified, all code references are from ACI 318-19 (22)

Limit State	Required	Available	Unity Check	Result
Anchorage design is toggled off in the Connection Properties.				**No Calc**

MAX UPLIFT: Members Report

Single Column Base Plate Connection

Column	***HSS3.5X3.5X3***	
Material		
Name	A500 Gr.B Rect	*Material name*
F_y	46.00 ksi	*Minimum yield stress of material*
F_u	58.00 ksi	*Minimum tensile stress of material*
E	29000.00 ksi	*Modulus of elasticity*
Member Properties		
d	3.50 in	*Depth*
b	3.50 in	*Width*
a	2.24 in^2	*Area*
t_{des}	0.17 in	*Wall Thickness*
Base Plate	***P0.50x9.75x9.75***	
Material		
Name	A36	*Material name*
F_y	36.00 ksi	*Minimum yield stress of material*
F_u	58.00 ksi	*Minimum tensile stress of material*
E	29000.00 ksi	*Modulus of elasticity*
Member Properties		
L	9.75 in	*Length*
W	9.75 in	*Width*
t	0.50 in	*Thickness*
μ	0.55	*Static Friction Coefficient*
Hole		
Hole type	Standard	
D_x	0.69 in	*Hole width*
D_y	0.69 in	*Hole height*
R	2	*Number of rows of holes*
C	2	*Number of holes per row*
R_s	7.50 in	*Row Spacing*
C_s	7.50 in	*Column Spacing*
Concrete Support	***C14.00x14.00x12.00***	

MAX UPLIFT: Connection Properties Report

Single Column Base Plate Connection

Connection	
Connection Title	MAX UPLIFT
Connection Type	Single Column Base Plate Connection
Anchorage	
Anchorage Type	Cast-in-place
Perform Anchorage Calc	No
Connection Category	
Bolt Layout	Four
Plate Washers	No
Loading (ASD)	
Axial	-2.50 kips
Strong Axis Shear	1.00 kips
Weak Axis Shear	1.60 kips
Strong Axis Moment	0.00 kips-ft
Weak Axis Moment	0.00 kips-ft
Components	
Column Section	HSS3.5X3.5X3
Material	A500 Gr.B Rect
Fy	46.00 ksi
Fu	58.00 ksi
E	29000.00 ksi
Lib	aiscdb32
A	2.24 in^2
D	3.50 in
B	3.50 in
Tdes	0.17 in
Base Plate	P0.50x9.75x9.75
Material	A36
Fy	36.00 ksi
Fu	58.00 ksi
E	29000.00 ksi
Length	9.75 in
Width	9.75 in
Thickness	0.50 in
Static Friction Coefficient	0.55 Coeff
Hole Type	STD
Concrete Support	C14.00x14.00x12.00
Length	14.00 in
Width	14.00 in
Thickness	12.00 in
Compressive Strength (f'c)	3.00 ksi
Concrete Weight	Normal Weight
Cracked Concrete	Yes
Edge Reinforcement	None or < no. 4 bar
Anchor Bolts	5/8" F1554 Gr.36-N
Material	F1554 Gr.36-N
Head Type	Hex Bolt
Torque Type	Untorqued Anchor
Diameter, in.	5/8"
Embedment depth	9.00 in
Bolt Spacing y	7.50 in
Bolt Spacing z	7.50 in
Column Weld	E70
Type	Fillet
Fillet Size	3.00 Sixteenths

continued on next page...

MAX UPLIFT: Connection Properties Report (continued):

Fw	70.00 ksi
Assembly	
Edge Distance y	1.13 in
Edge Distance z	1.13 in
Edge Distance +y	2.13 in
Edge Distance -y	2.13 in
Edge Distance +z	2.13 in
Edge Distance -z	2.13 in