# HÖÔÌNG DAĨN SÖÛDUÏNG *Staad/Pro* Baìng hình aînh



# TOING QUAN VEICHÖÔNG TRÌNH STAAD/PRO

STAAD/PRO lagphiein bain keátieip cuia phain meim STAAD-III. STAAD/PRO lagsain phain phain meim hang ñaiu trong lainh vớic phain tích vagthieit keákeit caú cuia haing Research Engineers (My).

Trong bai toain phain tích vao thieit keá keát caíu, veà cô bain STAAD/PRO khoing khaic STAAD III. Caíu truic dööli eiu vao caic böôic phain tích cuia hai chöông trìnhhoan toan nhö nhau, nhöng caich toáchöic chöông trình vao thao taic nhaip dööli eiu cuia STAAD/PRO theo tö duy hoan toan khaic.

Bain thain chööng trình STAAD/PRO va/STAAD III ñeù la/nhöing chööng trình ñoàsoa do ñoùñeàlam chuinhöing phain meim nav ñoi hoi mot quaùtrình nghiein coù va/hoc taip coing phu. Qua thöc teánghiein coù va/giaing daiy chöông trình STAAD-III chuing toi nhain thaiy, neù cung cap cho ngöôi môi bat ñaù hoc mot giaio trình ñaiy ñuùta ma veà chöông trình, sei lam ngöôi hoc gaip rat nhieù khoù khain. Ñei giuip ngöôi hoc nhanh choing nam bat ñöôc chöông trình va/söù dung coù hieù quaùtrong coing vieic chuing toi biein soain cuoin giaio trình "Höôing dain söù dung STAAD/PRO baing hình ainh". Sau khi ñai coù kiein thöic va/kyīnaing nhat ñinh veà chôông trình thì ngöôi hoc coù theisoù dung caic cuoin saich baing tieing Anh ñi kem phain meim STAAD?/Pro hay tham khaio theim cuoin "Höôing dain söù dung STAAD-III" do Trung Taim Tin hoc Xaiy Döng- Boi Xaiy Döng biein soan, cuoin saich nav seigiuip ban tra coù va/tìm hieù chi tiet hôn veàchôông trình.

Ñeåsöùdung chöông trình navy, ngöôi hoic phai lankyūsö keit caiu, söùdung töông ñoi thanh thaio Microsoft Windows.

STAAD/PRO chaiy hoan toan trong moi trööng tögWindows 95/98/NT do ñoù chöông trình noi hoi moi cau hình phain còing maiy tính töông noi mainh.

Caíu hình maiy tính toi thieiu ñeichaiy chöông trình la

- Maiy tính caùnhain Pentium toic ñoi/90MHz hoaic cao hôn
- Card man hình van man hình coùñoiphan giai toibi thieiu 800x600 vôi 256 mau (tot nhat lan 1024x768 vôi 16 bit mau)
- 16 Mb RAM (tot nhat las> 32Mb)
- Olicoing con troing >50 Mb

# CHÖÔNG 1 CHÖÔNG TRÌNH LAM VIEÏC CUÍA STAAD/PRO

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Ele	£ø!	View	Tools Select Beametry Degmands /	Analyze Mode Window Help				
	-	1	26 X R = 4 E E	8360		🛃 🗇 🛏 🖣	ð 🔣 ? 🔛	
ø	3	20	000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<u>R</u> RRRRR			<u></u>	129 <b>8</b> 0
Dao	-	8	Strl - Whale Structure				🗰 Sti 1 - Job Inlo	_ (C ×
	July Doutyn UL, Analyzia Print 20 Gargeau 28 Garranty 14 Senag	GOT B-	Ϋ́.«				Job       Job       Job No       Pad       Ref       File       File	
Farit	HD, DH	His F1			Color Structure Drily	Madeling Mode		Input Units Rip-It

#### I. Toåchöic main hình cuia STAAD/PRO:

Man hình lann vieic cuia STAAD/PRO bao goim 5 thanh phain chính.

#### 1. Thanh trình ñôn – Menu bar:

Thanh trình ñôn naim phía trein ñanh main hình, thanh trình ñôn cho pheip goil caic chöic naing chui yeu cuia chöông trình.

#### 2. Thanh coing cui – Toolbar:

Thanh coing cui Toolbar naim ngay phía döôi thanh trình ñôn cho pheip goi caic leinh thöông dung cuia STAAD/PRO. Bain coitheitoichöic lai thanh coing cui theo yùcuia bain.

#### 3. Cöù soùchính – Main Windows:

Cöta soáchính lasvung man hình roing nhatiñeátheáhiein sô ñoáket catu vascaic ket quai

#### 4. Trang ñieù khien – Page Control:

Trang ñieù khiein bao goim caic theùnaim ôùrìa bein trai main hình. Coùhai hang theùbao goim caic trang chuùvai/caic trang thoùcaip. Moi trang chuùcho pheip goi caic trang thoùcaip

thuoic noù Moi trang thöùcap lai cung cap moi taic vuï ñaic bieit. Chuùyùraing caich toichöic caic trang töstrein xuoing döôi moi caich logic theo coing vieic cuia bain.

# 5. Vung döölieü – Data Area:

Phain bein phai man hình goi lanvung döilietu. Vung döilietu bao goim caic hoip ñoi thoai (dialog box), caic baing (table), caic oiliet kei(list box)... xuat hietn tuny thuoic vano coing vietc ñang tietn hanh cuia bain. Ví duikhi bain choin *Geometry/Beam* trein trang ñietu khietn (Page Control) thì vung döilietu bao goim baing toia ñoinuit, baing liet keiphain toi

# II. Caic daing (Mode) Iaim vieic cuia chöông trình:

STAAD/PRO cung cap cho ban moit so phoông thờic hoạt ñoing. Caic phoông thờic nay nöôc goi toirtrình nôn Mode trein thanh trình nôn Menu bar.



Daíu kieim tra (check mark) ôù muic nano cha ra muic ñoù ñang ñöôic choin.

# Modeling:

Cho pheip bain nhaip sô ñoùhình hoic, khai baio tai troing, liein keit... Daing modeling luoin luoin laidaing maic rình cuia chöông trình.

# Post processing:

Theithiein caic keit quaiphain tích, tính toain, thieit laip baio caio, caic coing cui truy vain tra hoi (Query).

# Piping:

Cho pheip sô ñoùhình hoi: ADLPIPE xuat hiein cung sô ñoùket catu trong mot tröông ñoù hoia cuta STAAD/PRO.

# Page control:

Löä chon Page control ñeibai/tai trang ñieù khien Page control.

# CHÖÔNG 2

# CAÌC TRANG ÑIEÌU KHIEÌN (PAGE CONTROL) CUÌA STAAD/PRO

# 1. Setup | Job Page:

Cung cap thoing tin chung veiket cau bao goim: doing moitai coing vieit, mai soi coing vieit, mai soi coing vieit, tein ngööi thöc hiein, tein ngööi kieim tra...

🔜 Str1 - Job Info	_ 🗆 🗵
Job	1
Client	ŕ
Job No.	,
Part	ŕ
Ref	
File	
Filename :	
Directory :	
Date / Time :	
File size : More	
Engineer Checker Approved	
Name	
Date 18-Sep-00	
Comment	
	ſ

#### 2. Geometry | Beam Page

Khi bain choin trang nay, choing trình seicung cap 2 baing ñieù khiein. Baing nui vao baing phain toù Caic baing nay cho pheip bain taio vao soia ñoi sô ñoi hình hoic hay caic phain toù thanh.

📰 Examp21.std - Nodes 📃 🗖 🗙							
Node	X in	Y in	Z in				
1	0.000	0.000	0.000				
2	0.000	120.000	0.000				
3	0.000	240.000	0.000				
4	180.000	240.000	0.000				
5	180.000	120.000	0.000				
6	180.000	0.000	0.000				
7							

💼 Exa	Examp21.std - Beams								
Beam	liode A	Node B	Prop A	Material	Seta	Length	F		
1	1	2	1		0.0	120.000	1		
2	2	3	1		0.0	120.000	1		
3	3	4	1		0.0	180.000	1		
4	4	5	1		0.0	120.000	1		
5	5	6	1		0.0	120.000	1		
8	1	5	1		0.0	216.333			
7	2	6	1		0.0	216.333	1		
8	2	4	1		0.0	216.333	1		
9	3	5	1		0.0	216.333	18		
10	2	5	1		0.0	180.000			
11	3	4			0.0	180.000	1		
12									

# 3. Geometry | Property Page:

General | Property Page dung ñeitaio vansöia ñoi ñaic tröng loai vai lieiu cho cauphain töù thanh vanphain toùtaim.

🚮 Properties	- Whole Struc	ture 🔀				
Section Beta Angle						
Ref Section Material						
1 W12X26						
🔽 Highlight A	ssigned Geomet	ſy				
<u>V</u> alues	<u>D</u> atabase	Define				
<u>M</u> aterials	<u>T</u> hickness	User Table				
-Assignment M	1ethod					
O Assign To	Selected Beam	s				
🔿 Assign To	⊻iew					
💿 Use <u>C</u> urso	or To Assign					
C Assign To <u>E</u> dit List						
Assign Close						

# TheiSection

TheiSection solduing ñeåñinh nghía ñaic tröng mait cait phain töl beidany phain tölvangain chuing cho caic phain tölthanh van phain töltaím. Yinghía caic muic trein theiSection:

• Values

Nuit leinh Values cho hiein baing lieit keitat caicaic ñaic tröng mait cat ñaiñööic ñinh nghía.

III Examp21.std - Section Properties								
Prop Name	Ax in2	D	Bf	TT in	Tw	lz in4	ly in4	tx in4
1 1/1 2/26	7.650	12.220	6.490	0.380	0.230	204.000	17.300	0.285

#### • Database

Nuit leinh Database dung ñei löia choin baing tiet diein theo caic tietu chuain cuia moit soá nöôic. Ñaiu tietn bain phati choin tein nöôic tieto ñoibain choin loail tiet diein.

American Steel Table				×	
Channel MC C W Shape M Sha	hannel ipe	Angle S Shape	Tube HP Shape	Pipe B Shape	
Select Beam		Type S	pecification		
₩4×13         ₩5×16         ₩5×19         ₩6×9         ₩6×12         ₩6×15         ₩6×16         ₩6×20         ₩6×25         ₩8×13         ₩8×15	<ul> <li>ST (Single Section from Table)</li> <li>T (Tee Section Cut from Beam)</li> <li>CM (Composite Section) CT (Concrete Thickness)</li> <li>In FC (Composite Strength)</li> <li>In FC (Composite Strength)</li> <li>In FC (Top Cover Plate)</li> </ul>				
View Table View Table Steel	C TB ( WP Th I	(Top & Botto (Cover Plate (Cover Plate	m Cover Plate) e Width) 0 : Thickness) 0	in in	
		Add	Close	Assign	

Baing choin trein lai goim nhieiu thei moi theilaimoit dang tiet diein. Trein moi theicoimoit hoip liet keitiet diein, ngööi söidung phai choin soi hieiu mait cat cain dung.

• Define

Nuit leinh nany cho pheip taio caic ñaic trong tiet diein theo yùngöôi soùduing, coùtheàlantiet diein tron (circle), choinnait (Rectangle)...

Prismatic Property
Circle Rectangle Tee Trapezoidal General Taper Assign Profile
YD: 0 in YD: 0 in Material Concrete
Add Close Assign

• Materials

Nut leinh Material dung ñeixem tein caic loai vat lieiu varcaic ñaic tröng cuia chuing nhö modul ñan hoit, heisoa Poissson, troing lööing rieing, heisoa giain nôi vì nhiet alpha...

## TheiBecta Angle

Ñình nghía tham soá Becta vagain cho caic phain töi

#### 3. General | Specification Page:

Trang nay dung ñeåkhai baio caic trööng höip ñaic bieti cuia nuit, cuia phain töü thanh, phain töütaim.

🔀 Specifications - Whole Structure 🛛 🕨	<					
Specification						
MEMBER TENSION						
MEMBER TENSION						
F Dishibaha Assistant Constants						
I Highlight Assigned Geometry						
<u>N</u> ode <u>B</u> eam <u>P</u> late						
Toggle Specification						
Assignment Method	1					
C Assign To Selected Beams						
C Assign To ⊻iew						
Use Cursor To Assign						
C Assign To <u>E</u> dit List						
1						
<u>A</u> ssign <b>Close</b>						

# 4. General | Support Page:

Dung ñeàñònh nghía caic ñieiu kiein biein vargain chuing lein hoisó keit caíu.



🚮 Sup	pports - Whole Structure	×							
Ref	Description								
S1	No support	$\overline{\mathbf{X}}$							
S2	Support 2	4							
S3	Support 3	4							
1									
	Edit Add								
_ Assi	gnment Method								
04	Assign To <u>S</u> elected Nodes								
	Assign To <u>V</u> iew								
® l	Use Cursor To Assign								
	C Assign To <u>E</u> dit List								
	Assign Close								

• Edit

Nut leinh Edit söldung ñeixem, söla soálieiu veliein ket not ñat.

• Add

Khi nut naty ñöôic choin, hoip thoai Creat Support seihiein ra cho pheip khai baio caic liein ket noi ñat.

Create Support					X
Multilinear S Fixed	pring	Four Pinned	dation 	Fixed But	l
Restraint					
	E EX		Ем	×	
	E PY		E M	N'	
	FZ FZ		Шм	z	
	Creat	le	Cancel	Assign	5

# 5. General | Load Page:

Söldung trang nav ñelnnh nghía tai trong cho ket cau.

Khi trang nay ñöôc choin, mot côta sothiein ra yeu catu bain choin tein tröông hôip tau catu khai bait hoac tao theim mot tröông hôip tau nöta.

×
<b>•</b>
Cancel

# 6. Trang Design:

Trang Design goàn caic trang thöicap Steel, Concrete Timber, Aluminum, Footing dung ñeithiet keicau kien Theip, Beitoing, Goi Moing. Caic bööic thiet keicaic cau kien Theip, Bei Toing, Goi Moing tööng töi nhau. Ví dui khi choin trang thöicap Concrete moit hoip thoai hien ra nhö sau:

Hoip lieit kei/Current Code cho pheip choin tieiu chuain thieit kei/



• Nuit leinh Select Parameters

Nuit leinh nany dung ñeillöia choin caic thoing soicain thieit kei Sau khi ain nuit leinh nany, coia soilloia choin thoing soithiein ra.

Parameter Selection	×
Available Parameters	Selected Parameters
Cmz - Cm value in local Z-axis:	Beam - Beam parameter:
Dff - "Deflection length"/maximum allowable	Cb - Cb value as used in section 1.5 of Aisc:
Dj1 - Starting node of member for deflection I	Cmy - Cm value in local Y-axis:
Dj2 - Ending node of member for deflection le	
Dmax - Maximum allowable depth:	
Dmin - Minimum required depth:	
Fyld - Yield strength of steel:	
Ky - K value in local Y-axis, usually minor axis	
Kz - K value in local Z-axis, usually major axis	< <
Lu - Length in local Y axis for slenderness va	
Highlight desired parameters in the Available list	and use the > button to transfer them to the Selected list.
OK	Cancel
Drina - Maximum allowable depth: Drin - Minimum required depth: Fyld - Yield strength of steel: Ky - K value in local Y-axis, usually minor axis Kz - K value in local Y-axis, usually major axis L u - Length in local Y axis for slenderness va Highlight desired parameters in the Available list - OK	Image: state of the state o

Available Parameters lancaic thoing solicousain.

Selected Parameters lascaic thoing solicain löa choin ñeithieit kei (ngöôi söliduing phai töi quyet ñình choin nhöing thoing solicain thieit).

• Nut leinh Define Parameters

Nuit leinh nany cho pheip ngöôi dung khai baio caic giaù trì cuia caic thoing soá ñao ñöôic löia choin ôi böôic trein.

# CHÖÔNG III CAÌC LEÌNH TREÌN THANH TRÌNH ÑÔN - MENU BAR

# I. Trình ñôn File:

New	Ctrl+N	
<u>0</u> реп	Ctrl+O	
<u>C</u> lose		
View	•	•
Job Information		
Report Setup		
Printer Setup		
Print	•	•
Print Pre <u>v</u> iew Report		
Export Report	•	•
Import		
<u>E</u> xport		
Remove From Input	)	
<u>S</u> ave	Ctrl+S	
Save <u>A</u> s		
Run External Program		
<u>1</u> Examp21.std		
<u>2</u> Examp16.std		
E <u>x</u> it		

#### New

Söldung leinh nav neibat nau mot ket cau mot. Mot hop thoai seixuat hiein nhö sau:

Nev	New File Setup - Step 1: Specify Type and Title					
	- Structure Type					
	Space	🔿 Plane	C Floor	O Truss		
	Title (Optional)					
					_	
			< <u>B</u> ack <u>N</u> ext >	Cancel		

## *StrutureType*

Khai baìo ket caíu laøkhoing gian (space), phaíng (plane), ket caíu khoing coùtai troing ngang hoaic khoing coùtai troing gaiy ra chuuyein vì ngang (floor), ket caíu gian (truss).

#### Title

landong töra ñeringöön dung coitheinhaip van hay khoing.

Tiep theo lagmot hop thoai khai bab ñôn vì xuat hien, cho phep khia bab ñôn vì löc, ñôn vì dai söidung trong ket cau.

Ne <del>w</del> File Setu	p - Step 2: Specify l	Jnits			×		
Length Un	its	F	orce Units				
C Inch	C Decimeter		D Pound	C Newton			
O Foot	<ul> <li>Meter</li> </ul>	'	C KiloPound C DecaNewton				
O Millim	eter 🔘 Kilometer		C Kilogram 💽 KiloNewton				
C Centi	meter	(	C Metric Ton	C MegaNewton			
					_		
	[	< <u>B</u> ac	k <u>N</u> ex	t> Cancel			

Sau caic bööic trein, moit thoing baio seixuat hiein cho biet nhöing thoing tin ban ñaiu veiket caiu, choin Finish ñeiket thuic.

#### Open

Söudung leinh nay ñeimoùmoit file ket cau couphain môuroing lau.STD.

#### Close

Ñoing lai moit file keit caíu ñang môu Bain nein löu tröithoing tin cain thain trööic khi löa choin leinh naiy.

#### View

Leinh nay goim caic leinh thoucaip Input file – xem file doilieiu ñaiu vaio, Error File – xem noi dung file thoing baio loi, Output File – xem file keit quai

#### Job Information

Soldung leinh nany ñeitain/hiein hoip thoail thoing tin veitcoing vieit (job information) lein man hình.

#### Report Setup

Leinh navy seiquyet ninh nhöing thoing tin cain xuat ra.

#### **Printer Setup**

Cair ñait maiy in

## Print

Löra choin caic loaii file cain in.

#### Print Preview Report

Xem tröôic noi dung seiñöôic in trein man hình.

#### Import Nhaip döölleiu töönhöing ñinh daing khaic, ví dui nhö töö.DXF

#### Export

Xuat döölieiu ra caic loaii ñinh daing khaic nhö .DXF, VRML...

#### Save

Cat döilieiu veiket catu hiein hanh lein ñta.

# Save As

Cat vôi tein file dain khaic.

# Exit

Ket thuic choong trình STAAD/PRO

# II. Trình ñôn Edit:

Cung cap caic coing cui soain thaio nhö sao cheip (copy), cat (cut), dain (paste)...

#### III. Trình ñôn View:

Trình ñôn View goàn caic leinh ñieù khiein man hình.



# IV. Trình ñôn Tool:

Trình ñôn Tool cung cap nhöng coing cui trôi giuip khaic nhau, nhö kieim tra nuit "moicoi" (orphan joint), thay ñoi nôn vì söiduing, maiy tính cainhain vanhieiu thöikhaic.



# Check Multiple Structure

Kieim tra caic keit caiu rôir raic. rong moithinh hiein hanh

#### **Remove Duplicate Nodes**

Leinh nany xoia boù nhôing nuit coù toia ño à trung nhau. Tein nuit van tein phain toù sau ñoù seo ño ôic ñ leiu chanh toi ño ing.

#### Orphan Nodes

Xoia boinhöing nuit "moicoi" (nhöing nuit khoing gain vôit keit caiu)

#### Calculator

Cung cap mot maiy tính cainhain cho ngöôi soiduing.

#### Unit convert

Chuyein ñoi döilieiu töinein no nay sang heiñôn vò khaic.

#### Dimension

Theåhiein kích thöôic keit caíu.

# Set current Unit

Thiet lap nôn vò dat vatiôn vò löc hiet hanh.

## V. Trình ñôn Select:

Trình ñôn Select cung cap cho ngöôi söùdung caic coing cui khaic löia choin keit caiu bao goim choin phain töùthanh, choin phain töùtaim, choin nuit. Caic leinh cuia trình ñôn Select nhö hình vei



# Nodes Cursor

Leinh nay dung ñeichoin nuit cuia keit caiu. Ñeichoin nuit cuia keit caiu chuing ta coùtheikích chuoit lein nuit cain choin, keit hôip phím Control trong khi choin hoaic coùtheichoin baing moit coia soibao quanh nhöing nuit cain choin.

#### **Beams Cursor**

Dung leinh nay ñeichoin caic phain toithanh trein man hình ñoihoia. Caich ñôn giain nhat lag dung chuot kích vao phain toicain choin. Ñeichoin nhieù phain toicain ket hôip vôi phím Control trong khi choin. Cuing coitheichoin phain toibaing soia soi

#### Plates Cursor

Leinh Plates Cursor dung ñei choin phain töi taím/voi Caich choin phain töi taím/voi cuing töinhö caich choin nui vaiphain töithanh.

#### Solids Cursor

Dung ñeálöa choin phain töúkhoi (solid).

#### Plates and Solids Cursor

Leinh navy cho pheip ngöôi soùdung choin ñoing thôi cauphain toùtaim vauphain toùkhoi.

#### **Geometry Cursor**

Löra choin leinh nany khi chuing ta cain löra choin cainuit, phain töithanh van phain töitaim cuia keit caiu.

#### Range

Löa choin tat caicaic caíu kiein cuia ket caíu theo vung.

#### By Group

Löia choin tat caúcaic caíu kiein cuia ket caíu theo nhoim.

#### Beams at Nodes

Löra choin nay dung ñeichoin tat caicaic phain toithanh ñööic not van nut ñööic chæra.

🛃 Choos	e Node		×
Node:	<b>_</b>	E Select Automically	
	Select Beams	<u>C</u> lose	

Caic leinh Select All Nodes, Select All Beams, Select All Plates, Select All Solid, Select All Geometry cho pheip choin tait caicaic nuit, tait caicaic phain töithanh, phain töi taim, phain töinoit vantoan boicaic thanh phain cuia keit caiu.

# By List

Leinh löia choin caic thanh phain cuia keit caiu theo danh saich.

By Specification	By Specification	All Supports
Leinh nay dung ñeichoin nuit vascaic phain töi	döä theo tính cha <b>t</b> cu <b>i</b> a	All Releases
chuing. Hình veisau ñaiy cha ra caic leinh thöica	p trong le <b>i</b> nh naiy.	All Trusses - 🛞-
		All Cables T
		All Offsets
		All Inactive Beams
		All Failed Beams

- All Supports: Choin tat caicaic nuit langoi töia cuia ket caiu.
- Property Name: Löa choin caic phain töitheo ñaic tröng cuia chuing.
- All Releases: Choin tat caúcaic phain töúcula ket caú coùgiaú phoing liein ket.
- All Trusses: Choin tat caúcaic phain töúdain cuia ket caú.
- All Cables: Choin tat caúcaic phain töúcaip cuia ket caú.
- All Offsets: Choin tat caúcaic phain töúcoùkhai baio offset.
- All Inactive Beam: Choin tat caûcaic phain töùthanh ñaūñöôic khai baio Inactive.

# VI. Trình ñôn Geometry:

Trình ñôn Geometry cho pheip ngöôi soùdung tao sô ñoùhình hoic cuia kei cau bang caich theim hoaic soain thaio nuit, phain toùthanh, phain toùtaim, phain toùkhoi. Sau ñaiy sei giai thích moit souchoic naing chính trein thanh trình ñôn.

<u>N</u> odes – <del>()</del> –
Sn <u>a</u> p/Grid Node
Add Beam Add Plate Add Solid
Translational Regeat <u>C</u> ircular Repeat
Move <u>R</u> otate <u>M</u> irror
Break All Renumber Split Beam Move Origin
Run Structure Wizard

# Nodes

Sau khi löa chon leinh navy chöông trình seicho hiein moit baing toa ñoinuit cho pheip nhaip theim cuing nhö thay ñoi toa ñoinuit cuia keit caíu.

🛄 Exa	mp11.std - N	odes	
Node	X ft	Y ft	Z ft
1	0.000	0.000	0.000
2	20.000	0.000	0.000
3	0.000	10.000	0.000
4	20.000	10.000	0.000
5	0.000	20.000	0.000
6	20.000	20.000	0.000
7			

# Snap/Grid Node

Leinh nany soliduing ñeithieit laip heilööti van ñieim bat dính phuic vui cho vieit taio nuit van phain tolicula keit catu. Leinh nany goim caic leinh tholicaip Beam, Plate, Solid.

• Beam

Leinh Beam thieit laip heilööi van ieim bat dính neitaio phain touthanh van uit moit caich toi noing doia trein caic nieim lööi van ieim caic nieim bat dính (snap point).

Plane • X-Y • X-Z • Y-Z	Angle of Plane* C X-X C Y-Y 0 C Z-Z	
<u>O</u> rigin (ft)		
×	Y Z	
0 0	0	
- <u>C</u> onstruction Lines	Spacing	
Left Right	ft Skew*	
×0 🖨 10	1 0	
Y0 📮 10	1 0	
Snap to existing	nodes too 🛛 🔓	

#### • Plane

Xaic ñình mait phaing cuia löôi. Moi di chuyein cuia chuoit ñeiu trein mait phaing naiy.

• Angle Plane

Quay mait phaing löôi quanh caic truic theo goic cha ñinh.

• Origin

Khai baio ñieim goác cuia löôi theo heitoia ñoitoing theivaanôn vì hiein hannh.

• Construction Lines

Ñình nghía ñöông bao döôi-trai vastrein-phai cuia ñöông löôi, khoaing caich löôi vasgoic nghieing.

• Snap to existing nodes too

Bat dính vano caic ñieim löôi ñañtoin tai.

Caic leinh thoùcaip Plate, Solid hoait ñoing toông toi.

#### Insert Node

Chen nut vao phan töithanh ñaicoù Phan töithanh khi ñoùbì chia ra lam nhieù ñoan. Ten nut vao ten ñoan phan töitöi ñong ñööc gan. Sau khi chon lenh nay, hop hoi thoai sau xuat hien.

Insert Nodes into Beam 6	×
Beam length = 20 ft	ОК
5 <mark></mark> 6	Cancel
New Insertion Point Insertion Points:	
Distance: 0 ft	<u>R</u> emove
Proportion: 0	
Add <u>N</u> ew Point	
Add <u>M</u> id Point	
n = 2 Add n Points	

#### • New Insertion Point

Bain phai ñöa vano moti trong hai giaùtrò Distance hoaic Proportion. Giaùtrò Distance lan khoaing caich tính tönnut ñaiu phain töùtôi nut cain chen, Proportion lantyùsoikhoaing caich tönnut ñaiu tôi ñieim cain chen/chieiu dai phain töù Sau khi nhaip moti trong hai giaùtrò nany ain nut Add New Point ñeitheim nut.

# • Add Mid Point

Chia phain töüthanh hai ñoain baing nhau.

• Add n Points

Chenn n ñieim caich ñeiu nhau vano phain töi

*Remove*

Xoba nunt trong hopp lieat keâ

# Add Beam

Gain caic phain töithanh vano sô ñoikeit caiu.

# Add Plate

Leinh nay coùhai leinh thoùcaip lao Trangular vao Quadrilateral ñeitheim phain toùtam giaic vao phain toùchoinn hai.

# Add Solid

Theim caic phain tölkhoi.

# **Translational Repeat**

Leinh nay cho pheip bain sao cheip moit phain cuing nhö toan boi ket cau theo hööing thaing, coutheisao cheip thanh moit hay nhieù bain. Chuù yù ñei leinh nay couhieiu löic bain phail choin nhöing thanh phain cuia ket cau cain copy tröôic sau ñoù môil vano leinh. Sau khi choin leinh, hoip thoail sau seixuat hiein.



# Global Direction

Löa choin höôing copy cuia keit caíu theo moit trong 3 höôing cuia heitoia ñoitoing thei

• No. of Steps

Soálöông bain copy.

• Default Step Spacing

Khoaing caich giöia caic böôic copy.

• Link Steps/Open Base

Tời ñoảng noá caic böôic copy baing caic phain tời thanh, neáu khoảng muoán noá caic nuit döôi chain moàng thì choin nuit Open Base.

#### Move

Leinh dìch chuyein nuit/phain töùthanh cuia keit caíu. Chuì yì phail choin nuit hay phain töù tröôic khi choin leinh.

# Rotate

Cho pheip sao cheip/dìch chuyein keit caiu quanh moit truic bait kyø

# Mirror

Cho pheip sao cheip/dìch chuyein ket caíu ñoi xòing qua mot mat phaing.

#### Renumber

Söùdung leinh navy khi muoin khai baio laii tein nuit hoaitein phain töù

#### Split Beam

Chia cat phain töùthanh thanh nhieiu phain töù Söùduing leinh nany tööng töinhö leinh Insert Node.

# VII. Trình ñôn Commands:

Trình ñôn Commands chöia haiu heit caic leinh chính cuia chöông trình, bao goim caic leinh khai baio veàñaic tröng phain tói vait lieiu, ñieiu kiein blein, tai trong...

# Member Property

Khai baio ñaic tröng phain töithanh. Leinh nay bao goim nhieiu leinh thöicaip.



• Steel Table

Löa tiet diein tösbaing theip. Ngöösi söiduing phati choin baing theip töstietu chuain cuta catc nöötc khatc nhau, sau ñoùchoin loati hình daing theip vascatc thoing sosicatin thiet.

# • Aluminum Table

Löa tiet diein törbaing tiet diein nhoim. Ñaù tien ngöôi söidung phai chon tieu chuain cuia moit soinöòic, sau ñoùchoin loai hình daing varcaic thoing soicain thiet. Khaic vôi baing tiet diein theip hình, baing tiet diein nhoim cung caip cho bain rat nhieù hình daing khaic nhau.

Aluminum Table						2
American Standard I Be AA Standard Channel American Standard Cha Unequal Leg Angle	eam Chanr nnel	IBeam hel Army/N EqualAng Squa	Ar lavy I gle are Er	rmy/Navy Channel Square nd Unequ	Tee Spec End Eo al Legu	Tee ial Channel qual Angle Angle
Square Tube Re	ectang	jular Tube	ļ	Round Tu	be	Pipe
AA Standard Beam		H Beam		Army	/Navy	l Beam
Select Beam		Тура	Spe	cification		
13×1.64       ▲         13×2.03       ↓         14×2.31       ↓         15×3.70       ↓         16×4.03       ↓         16×4.69       ↓         17×5.80       ↓         18×6.18       ↓         18×6.18       ↓         19×8.36       ▼		T (Single Se (Tee Sectio M (Composit T (Concrete C (Composite C (Top Cove C (Bottom Co	ction n Cut e Sec Thick Stre s Stre r Plat	from Tabl (from Bea ction) (ness) (ne	e) m)	ft Kip/ft2
View Table Material Steel	от v	B (Top & Bol VP (Cover Pl H (Cover Pla	itom ( ate W ite Th	Cover Plai /idth) hickness)	ie) O O	ft ft
		Add		Close		Assign

• Primastic

Khai bab cab loai tiet dien nhö: tron (Circular), chöinhat (Rectangle), chöiT (Tee), tiet dien hình thang (Trapezoida), tiet dien bat ky@(General).

Prismatic Property
Circle Rectangle Tee Trapezoidal General Taper Assign Profile YD: Te Material Concrete
Add Close Assign

Khi muoán khai baio dang tiet diein gì, bain phai choin theimang tein loai tiet diein ñoùsau ñoùkhai baio caic kích thöôic vaacaic thoing soáñööic cha ra trein hình vei Ví dui: muoán khai baio tiet diein tron, ñaiu tiein choin thei:Circle tieip theo nhaip ñöôing kính tiet diein (YD) vaa choin loai vat lieiu (Material).

# Element Property

Khai baio ñaic tröng phain tölltaim, bao goim hai leinh thölicaip Thickness val/Clear Above Commands. Leinh Thickness khai baio chielu day phain tölltaim (phain tölltaim collthelicol) chielu day khoing ñelu nhau ôlicaic goic cula phain töl), leinh Clear Above Commands dung ñelixola thuoic tính phain tölltaim ñööc khai baio baing leinh Thickness.

# Material Constant

Khai baio caic haing soávait lieiu. Leinh nany bao goim nhieiu thöù caip. Caic leinh thöù caip Density, Elasticity, Poisson<sup>o</sup>s Ratio Alpha lain löôit dung ñeitkhai baio caic troing löôing rieing, Modul ñan hoit, heisoi Poisson, heisoigiain nôivì nhieit.

Caic haing soánany coùtheáñöðic choin tör caic loail vait lieiu ñatiñöðic ñinh nghía hoaic ngöði sölduing gotvano glautri khaic.

Material Constant - Density	×
Material Constant	
C Aluminum	
C Concrete	
C Steel	
Enter Value kip/ft3	
Assign	
To View C To Selection	
OK Cancel	

#### Geometric Constants

Khai baio caic haing soásô ñoù hình hoic cuia ket caíu, bao goim khai baio tham soágoic beta (Beta Angle), tham soanieim phui cuia phain touthanh (Member Reference Point), tham soáñieim phuïcuia phain töùtaim (Plate Reference Point).



# **Support Specification**

Khai baìo caìc liein keit ñat cuia coing trình.

Co <u>m</u> mands Analyze <u>M</u> ode	Create Support		×
Support Specifications	Multilinear Spring Fixed	Foundation	Inclined Fixed But
	Restraint	MX MX	:
	₩ FY	MX III	
	IM FZ	I™ MZ	
25/42	Crea	ate Cancel	Assign

- *Fixed* Khai baòo lieàn keta ngaam
  - Pinned

Khai baio goi coáñinh

• Fixed But

Khai bab liein ket bat kyø Ngöôi söldung phai töi quyet ñinh giai phoing nhöing thanh phain liein ket cung nhö töi ñinh nghia nhöing thanh phain liein ket ñan hoi.

• Inclined

Leinh navy dung ñeikhai baio liein keit nghieing. Khai baio liein keit nghieing cuing tööng töi nhö khai baio liein keit bait kyø (Fixed But), nhöng ôù ñaiy ngöôif söù dung phai khai baio theim ñieim phui (reference point) ñeithieit laip heitruic cuia liein keit nghieing.

• Foundation

Create Support			X
Fixed	Pinned	l l'	Fixed But
Multilinear Spring	Found	Jation	Inclined
Foundation			
● Footing L: 0	ft	- W:  0	ft
C Elastic Mat			
Direction			
Θ×	ΟY	C C	)z
Subgrade			
Subgrade: 0		 kip/ft2/	/ft
Cre	ate	Cancel	Assign

Khai baio söi ket hôip lann vieit cuia nein ñan hoi vôi ket caíu.

• Footing

Neú ngöði söldung muon töl xaic ñinh diein ainh höðing döði töng goli ñan holi, khi ñoù phali khai baio diein tích moing (LxW).

• Elastic Mat

Chöông trình töi ñoing xaic ñinh diein ainh höôing.

- Direction Khai bab hööng lien ket ñan hoi.
  - Subgrade

Khai baìo heisoánein.

# Member Specifications/Plate Element Specifications

Khai baìo caìc phain töiñaic bieit cuia keit caiu.

# Loading

Khai baio caic loaii tai troing taic duing lein ket caiu.

Commands Analyze Mode	
Loading - 🐼 🗸	Define Load 🔶 🕨
	Primary Load 🛛 🛞
	Load Commands 🛛 🕩
	Load Combination
	Load List

# Primary Load

Khai baio mot tröông hôp tai trong môi.

Set Active Primary Load Case			×
Select Existing Primary Load Case	1: DEAD	AND LIVE LOADS	-
Create New Primary Load Case			
Number 5			
Title			
ОК		Cancel	

Select Existing Primary Load Case: Choin tröông hốp tai trong ñaiton tai Create New Primary Load Case: Choin moi tröông hốp tai trong môi

# Load commands

Leinh nayy ñeả nình nghia vay khai baio caic loai tai trong cho ket caiu. Load Commands bao goim caic leinh thoucaip sau:

• Load commands | Selfweight

Khai baio tai trong bain thain. Ngöôi söùdung phai nhaip vano heisoátrong löc theo moit trong caic phöông cuia heitruic toia ñoi

Commands			
Define Load 🔹 🕨			
Primary Load			
Load Commands – 🛞	Selfweight	····	
Load Combination	Joint		
Load List	Member	•	
	Element	Calforniakt Land	V
			ᅳ
		Direction	1
		CX OY CZ	
		Factor -1	
		Assian Close	

• Load commands | Joint

Khai baìo caìc taí troing ñait tai caìc nuit cuia keit caíu.

ŀ	lode Lo	ads				×
	Node	Support Dis	placement			
	Fx	0	kip	Мx	0	kipft
	<b>F</b>	0	1.:-	ы.	0	1.5-0
	Fy	lo.	кір	му	lo.	KIPR
	Fz	0	, kip	Mz	0	kipft
			Add		Close 1	Assian
		_	1.33		0.000	- assign

#### Node

Khai baio caic löic taip trung va@moimen taip trung tail caic nuit.

# Fix End

Khai baio tai trong fix-end cuia phain töithanh, noi cuing gioing nhö tai trong nuit nhöng nööc theiniein trong toia noi noi noi ong cuia phain töithanh.

#### Support Displacement

Khai baìo caìc chuyein vì cöôing böìc goi töä.

• Load commands | Member

Khai baio caic tai trong trein phain töithanh. Leinh Member goim caic leinh thöicaip

• Uniform Force

Khai baio tai trong phain boitrein phain töithanh.



#### **Uniform Moment**

Khai baio momen phain boátrein phain töithanh.

#### **Concentrated Force**

Khai baìo löic taip trung trein phain töù

Beam Loads				×
Linear Varying Floor With Y Range Uniform Force   Unifor	Trapezoidal Floor With Z Range m Moment Concentra	Hydrostatic PrevPost Str ted Force Cor	Area ess Fixed En contrated Moni	nd   ent
	P D	kip dī [	0 H	
	Direction	42	n 0	
	с×	C GK	C PX	
	CY	€ GY	C PY	
	CZ	C 62	C P2	
	5.44	Church	Autor	1

.

## **Concentrated Moment**

Khai baio momen taip trung trein phain töüthanh

# Linear Varying

Khai baio tai trong phain boátuyein tính hoaic tam giaic trein phain töi



# Trapezoidal

Khai baio tai trong phain boidaing hình thang.

eam Loads			
Floor With Y Range	Floor With Z Range	Pre-Post Str	ess Field End
Uniform Force Uniform Linear Varying	Moment Concentra Trapezoidal	Red Force Co Hydrostatic	ncentrated Moment Area
	Force		
	wi	kip/lt d1	D R
w1 1 2	W20	kip/tt d2	D R
ALL A	Direction		
1 a	CX	C DX	C RK
L	CY	G GY	C PY
	C Z	C 6Z	C FZ
		_	
	Add	Close	Anim

# • Load commands | Element

Element lagleinh khai baio caic loaii tai troing trein phain töütaim. Leinh nagy cuing goim caic leinh thöùcaip.

#### • Pressure

Khai baio aip löic phain boiñeiu trein phain töi

• Trapezoidal

Khai baio aip löic phain boátuyein tính trein phain töù

# Load Combination

Khai baio caic to thôip tai troing



Sau khi choin leinh, bain phaií ñinh nghía caic toithóip tai troing thoing qua hoip thoail sau:

Define Combinations			×
Primary Load Cases	[	Load Combinations	ок
Eactor: 1		5: WIND FROM RIGHT	Cancel
Combine Algebraically		SRSS Factor 1	
1: DEAD AND LIVE LOADS	$ \rightarrow 1 $	2:(1.000000) SEISMIC LOADING	New
			<u>R</u> ename
			<u>D</u> elete
	<		
		· · · · ·	
Use the > button to transfer selected primary load cases to the combination.		Use the < button to remove selected primary load cases from the combination	
Use >> to transfer all.		Use << to remove all.	

An nuit New ñeátaio moit toáhôip tai troing môil. Choin tein trööng hôip tai cain toáhôip ôitoá Primary Load Cases, goi vano heäsoátoáhôip (Factor), an nuit > ñeá ñöa vano toáhôip hiein thôir, choin kieiu toáhôip ñail soá (Combine Algebraically), toáhôip cain baic hai cuia toáng caic bình phöông (SRSS) hoaic caúhai kieiu trong cung moit toáhôip.

#### Analysis

Leinh navy dung ñeixaic ñinh kieiu phain tích vavket quatiñöa ra.

Co <u>m</u> mands	
	Perform Analysis
Analysis – 🛞 – 🖡	P-Delta Analysis
	Non-Linear Analysis
	Change – 🛞 –
	Clear Above Commands

STAAD/PRO coùmoit soákieiu phain tích nhö phain tích tuyein tính, phain tích bait hai P-Delta, Phain tích bait hai phi tuyein Non-Linear. Tuy thuoit keit caiu mangöði söldung phail quyeit ñinh kieiu phain tích cho phunhôip.

# **Post-Analysis Print**

Leinh trình ñôn nay yeù caù chöông trình in ra caic keit quaûphain tích trong teip tin keit quaû(.ANL).

Co <u>m</u> mands	Post-Analysis Print 🛛 🛞	🕞 Analysis Results
	¥	Element Forces.
		Solid Stresses
		Member Forces
		Member Stresses
		Mode Shapes
		Section Forces
		Joint Displacements
		Section Displacements
		Support Reactions
		Force Envelope
		Maximum Force Envelope
		Clear Above Commands

• Analysis Result

Löra choin nany seōin ra caic giai trì cuia caic böôic phain tích keit caiu bao goim: chuyein vì nuit, phain löic goi töra...

• Member Forces

In ra noi löc phain töi nhö löc doc (AXIAL), löc cat theo phöông Y, Z (SHEAR-Y, SHEAR-Z), momen theo caic phöông.

Member Stresses

In öìng suat phain töù

• Section Displacement

Leinh navy seitính toain vavin ra chuyein vò tai caic mait cat cuia phain toùthanh.

• Support Reaction

Söùdung leinh nay khi cain in phain löic goi töia.

• Force Envelope/Maximum Force Envelope

Leinh nay ñeilin bieiu ñoibao noi löc cuia phain touthanh.

#### VIII. Trình ñôn Analyze:

Trình ñôn Analyze bao goim moit leinh duy nhait Run Analysis.

Analyze Run Analysis... 🛞

Yeù caù chöông trình tien hanh caic böôic phain tích van tính toain. Sau khi chaiy chöông trình hoip thoail STAAD Analysis and Design xuat hiein thoing baio tình traing cuia quaù trình phain tích.





VÍ DUÏMINH HOÏA

- Taí trong phain boiñeù giaitrò 500 Kg/m trein toan phain toidaim soi2
- Taí trong taip trung tai nuit theo phöông ngang coùgiaùtrò 2000Kg tai nuit 2

# <u>Caic böôic tiein hainh</u>

Töøthör: ñôn File choin New

New	File Setup - Step	o 1: Specify Type	e and Title		×
Γ	Structure Type	Ci Plana	C Elect	C Trues	
	ie space			11033	
Γ	Title (Optional)				
	Ket cau khung ph	ang mot tang mot nl	nip	_	
					_
		<	Back <u>N</u> ex	t > Cancel	

Choin *Plane (ket cau khung phaing):* Tai où Title gootöa ñeùcho bai toain "Ket cau khung phaing mot taing, mot nhòp", dong töa ñeùnay laotuy choin.

New File Setup - S	tep 2: Specify (	Units	\$		×
Length Units			Force Units	<u> </u>	]
C Inch	O Decimeter		O Pound		
C Foot	• Meter		KiloPound	<ul> <li>DecaNewton</li> </ul>	
O Millimeter	C Kilometer		💿 Kilogram	C KiloNewton	
C Centimeter			C Metric Ton	C MegaNewton	
		<	<u>B</u> ack <u>N</u> ext	> Cancel	

Kích chuoit vano nuit Next hoip thoaii sau xuat hiein

Tai oànôn vò chieù dai (Length Units) chon Meter Tai oànôn vò löc (Force Units) chon Kilogam Kích chuot vao nut Next hop thoai sau xuat hien

New File Setup - Finish	×
Structure Type: SPACE FRAME	
Title: Ket cau khung phang mot tang n	not nhip
Default Length Unit: Meter	Default Force Unit: Kilogram
	Finish Cancel

Choin Finish

Trein thanh trình ñôn, goi leinh Geometry-Snap/Grid Node-Beam Choin mait phaing löôi XY trein còia soidöilleiu.



Snap Node/Beam	×					
- <u>P</u> lane	Angle of Plane*					
• X-Y	⊙ x-x					
C x-z	• Y-Y 0					
O Y-Z	O Z-Z					
_ <u>O</u> rigin (m)						
×	r z					
0	0					
<u>Construction Lines</u>	Spacing					
Left Right	m Skew*					
×0 🖨 10	1 0					
Y 0 🐳 10 🗧	1 0					
Snap to existing nodes too						
<u>S</u> nap Node/Bea	m Close					

Choin Front View trein thanh coing cui Rotage



Dung chuot kích van caic mat löði theo thöitöi tönnut 1 ñein nut 4, caic phain tölthanh khi noinööc ñainh sottöi noing.

Chuìyì Neíu trein sô ñoàcuia ban khoing hiein tein nuit, tein phain töiban haiy laim nhö sau: Choin nuit *Symbols and Lables* trein thanh coing cui *Structure*.



Tiep ñoùñainh daú vao Node Number ñeihiein tein nuit, Beam Number ñeihiein tein phain töi

Diagrams		×
Force Limits Structure	Animation	Design Results Scales Labels
Nodes ✓ <u>N</u> ode Numbers ✓ Node <u>P</u> oints ✓ S <u>upports</u> ✓ <u>D</u> imension	Properties C <u>R</u> eferences C <u>S</u> ections C N <u>o</u> ne	General ☐ Load <u>V</u> alues ☑ A <u>x</u> es ☐ <u>M</u> aterial
Beams Beam Numbers Beam Orientation Beam Spec Releases	Plates Plate Numbers Plate Orientation	Solids Solid Numbers
	ОК	Cancel Apply

Böôic tiep theo seikhai baio ñaic tröng phain töù

Ñeåkhai baio phain töùcoai, ta choin phain töùcoai baing caich: Select | Beams Cursor



Dung chuot choin hai phain töicot (ket hôip vôi phím Ctronl) Töøtrình ñôn *Commands* goi leinh Member *Property/Primasmatic* 



Cöna son khai bano ñaic tröng phan töixuant hien:

Prismatic Property
Circle Rectangle Tee Trapezoidal General Taper Assign Profile
YD: 0.3 m
Concrete
Add Close Assign

Choin thei/Circle, goi/YD=0.3, sau ñoùaín nuit Assign

Lam tööng töi ñoi vôi phan töidam: chon phan töidam,... roi chon thei Rectangle

Prismatic Property
Circle Rectangle Tee Trapezoidal General Taper Assign Profile UPU UPU UPU UPU UPU UPU UPU UPU UPU UPU
Add Close Assign

GoiYD=0.4, ZD=0.25 sau ñoùań Assign.

Neåkhai baio liein keti noai ñati ta choin nuit 1 vaø4 baing caich: goil leinh Select / Nodes Cursor,

Dung chuoa kích van nut 1 van4 (ket hôp phím Ctrl)



Goi leinh Commands / Support Specification / Fixed

Create Support			×
Muhimear Spin Fixed	Pinned	tion	Inclined But
Restaint			
되	FK	₩ MX	
F	FY	E MY	
F	FZ	₩ MZ	
		1	
L	Create	Cancel	Assign

# Aín nuit *Assign* Ñeåkhai baio taí troing ta choin leinh *Commands | Loading | Primary Load*

Commands	Loading	Define Load 🔒 👔 🕨
	Loading	 Primary Load – 🛞–
		Load Commands 🖢 🕨
		Load Combination
		Load List

Luic nay maiy seiyelu calu khai baio tröông hôp tali hiein thôi

Set Active Primary Load Case			×
O Select Existing Primary Load Case			
Create New Primary Load Case			
Number 1			
Title			
OK Ca	incel		
Choin nuit OK Taii vung döölleiu veàtaii troing (Data Area) choin <i>Member</i> ñeåkhai baio taii troing phain töù	Loads - Wi	hole Structure ation	Plate.
	Selfweight	Temp	Wind
	<u>S</u> eismic	Spectr <u>u</u> m	Time <u>H</u> istory
	<u>R</u> epeat	<u>S</u> ummary	Combine
	New Primary	Remove	Moving
	C Toggle Load	d ethod	
	C Assign To C Assign To Use <u>C</u> urson C Assign To Assign To	Selected Beams View To Assign Edit List	Close

Goõgiautro W1=50	) (vì ta <b>i</b>	troïna	coùphöôna	naöôïc	chieù truïc	Y)
0009.44.00			00.p00g			• •

Beam Loads 🛛 🔀							
Linear Varying	Trapezoi or With 1	idal   Z Bange	Hydrostatio Pre/Post 9	c   Ai Strace   Fiv	rea		
Uniform Force Uniform Mo	orm Force Uniform Moment Concentrated Force Concentrated Momer						
	Forc	e		. [0	-		
		500	a 1	- 10	- m		
	l wil	-500	kg/m d	2] <sup>0</sup>	- m		
			a	30	m		
	Γ	Direction-					
l í		С×	O GX	O PX			
		ΟY	🖲 GY	O PY			
		ΟZ	O GZ	O PZ			
		Add	Close	e A	ssign		

Nhain nuit Add

Tieip ñoùain nuit Assign trein hoip thoail Loads-Whole Structure. Kích chuoit vano phain töù daim.

Ñeåkhai baio tali troing nuit ta lanm nhö sau:

Kích chuołi vano nuti *Nodal* trein hoip thoaii *Loads-Whole Structure* 

Node Lo	ads				×
Node	Support	Displaceme	nt]		
		_		_	
Fx	2000	kg	Mx 0	kgm	
Fy	0	kg	My 0	kgm	
Fz	0	kg	Mz 0	kgm	
		Add	Close	Assig	

# GoõFx=2000, aín nuit Add

Tieip ñoùain nuit Assign trein hoip thoaii *Loads-Whole Struture*. Kích chuoit vaio nuit 2. Tieip ñoùgoil leinh phain tích keit caiu *Commands | Analysis | Perform Analysis* 

	Analusis		Perform Analysis 🛛 🛞 🚽		
	-indijele	- Y	P-Delta Analysis		
			Non-Linear Analysis		
			Change		
			Clear Above Commands		
Choin A	lo Print				
		Perform An	alysis 🔀		
		L L	Print Option		
			<ul> <li>No Print</li> </ul>		
			🔿 Load Data		
			C Statics Check		
			C Statics Load		
			C Mode Shapes		
			C Both		
			C AI		
		0	Cancel		

Ñeain keat quainoai loic phain toitrong file keat quaita goil leanh: *Commands | Post-Analysis Print | Member Forces.* 

Goii leinh chaiy choông trình Analyze / Run Analysis ta seicoù keit quainoit loic

MEMBER 1	LOAD 1	JT 1 2	AXIAL -578.52 578.52	SHEAR-Y 1000.96 -1000.96	SHEAR-Z 0.00 0.00	TORSION 0.00 0.00	MOM-Y 0.00 0.00	MOM-Z 2688.78 2316.03
2	1	2 3	999.00 -999.00	-578.52 578.52	0.00 0.00	0.00 0.00	0.00 0.00	-2316.03 -2312.15
3	1	3 4	578.52 -578.52	999.04 -999.04	0.00 0.00	0.00 0.00	0.00 0.00	2312.15 2683.04