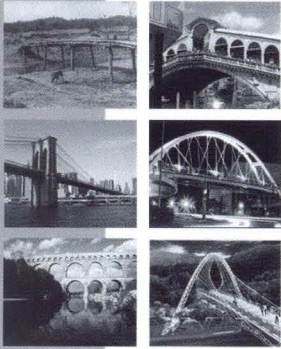


THE SOFT STRUCTURE OF VISION

INTENTION

육교에 하중이 재하되었을 때 실제 구조부재들은 하중을 어떻게 효과적으로 분산시키며 이 분산시킨 힘들은 결국 어디로 모이고 각각의 부재는 어떤 현상이 발생하는지 알아보고 구조해석 프로그램 마이다스를 이용하여 구조해석을 하여 이들의 상관관계를 알아 본다.

CONCEPT



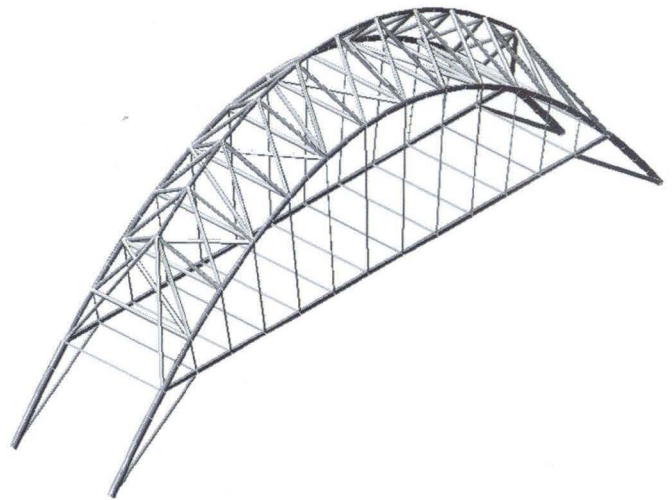
SYNOPSIS

위 치 : 충남 논산시
공사명 : 신개념 육교 건축
구 조 : 철골 구조

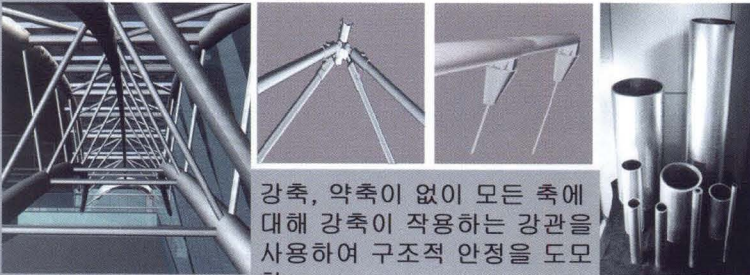
딱딱한 직선의 요소만을 사용하기보다는 부드러운 곡선을 함께 사용함으로써 시각적인 부담감을 덜어준다.

기능에 충실하고, 안정적인 구조로, 미적 요소까지 포함한다.

PERSPECTIVE



CONSTRUCTION MATERIAL



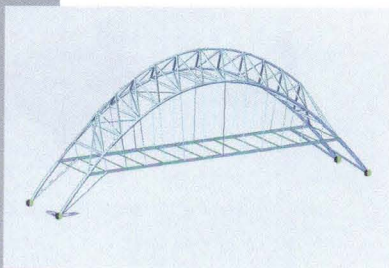
강축, 약축이 없이 모든 축에 대해 강축이 작용하는 강관을 사용하여 구조적 안정을 도모함.

LOAD CONNECTION

- Dead Load : 0.93 t/m²
- Live Load : 0.625 t/m²
- Wind Load(Korea arch2000)
풍력계수 : 0.8
기본풍속 : 35 m/sec
- Earthquake Load(Korea arch2000)
지역계수 : Area1(0.11)
중요도계수 : 1.2
반응 수정 계수 : 3.5
동적계수 : 0.3594

MIDAS-GEN ANALYSIS

REACTION



반력검토

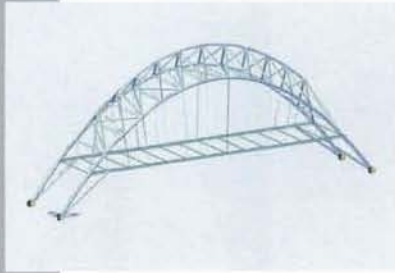
Node	Load	FX (tonf)	FY (tonf)	FZ (tonf)
1	gLCB1	19.25144	0.020355	21.29337
35	gLCB1	-19.2467	0.019573	21.31262
76	gLCB1	19.24674	-0.01957	21.31262
110	gLCB1	-19.2514	-0.02036	21.29337
SUMMATION OF REACTION FORCES PRINTOUT				
	Load	FX (tonf)	FY (tonf)	FZ (tonf)
	gLCB1	0	0	85.21198
반력 : 85.2198				

LOAD COMBINATIONS

No	Name	Active	Type	Description
1	gLCB1	Active	Add	D + L
2	gLCB2	Active	Add	(D + L + wx)/1.5
3	gLCB3	Active	Add	(D + L + wy)/1.5
4	gLCB4	Active	Add	(D + L + wx)/1.5
5	gLCB5	Active	Add	(D + L + wy)/1.5
6	gLCB6	Active	Add	(D + wx)/1.5
7	gLCB7	Active	Add	(D + wy)/1.5
8	gLCB8	Active	Add	(D - wx)/1.5
9	gLCB9	Active	Add	(D - wy)/1.5
10	gLCB10	Active	Add	(D + L + ex)/1.5
11	gLCB11	Active	Add	(D + L + ey)/1.5
12	gLCB12	Active	Add	(D + L - ex)/1.5
13	gLCB13	Active	Add	(D + L - ey)/1.5
14	gLCB14	Active	Add	(D + ex)/1.5
15	gLCB15	Active	Add	(D + ey)/1.5
16	gLCB16	Active	Add	(D - ex)/1.5
17	gLCB17	Active	Add	(D - ey)/1.5
18	STL ENV	Active	Envelope	Steel Strength Envelope

MIDAS-GEN ANALYSIS

REACTION



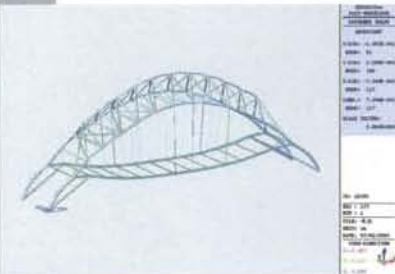
반력검토

Node	Load	FX (ton)	FY (ton)	FZ (ton)
1	gLCB1	19.25144	0.020355	21.29337
95	gLCB1	-19.2467	0.019573	21.31262
76	gLCB1	19.24674	-0.01957	21.31262
110	gLCB1	-19.2514	-0.02036	21.29337
SUMMATION OF REACTION FORCES PRINTOUT				
	Load	FX (ton)	FY (ton)	FZ (ton)
	gLCB1	0	0	85.21188
반력 : 85.2198				

LOAD COMBINATIONS

No	Name	Active	Type	Description
1	gLCB1	Active	Add	D + L
2	gLCB2	Active	Add	(D + L + w ₀)/1.5
3	gLCB3	Active	Add	(D + L + w ₀)/1.5
4	gLCB4	Active	Add	(D + L - w ₀)/1.5
5	gLCB5	Active	Add	(D + L - w ₀)/1.5
6	gLCB6	Active	Add	(D + w ₀)/1.5
7	gLCB7	Active	Add	(D + w ₀)/1.5
8	gLCB8	Active	Add	(D - w ₀)/1.5
9	gLCB9	Active	Add	(D - w ₀)/1.5
10	gLCB10	Active	Add	(D + L + e ₀)/1.5
11	gLCB11	Active	Add	(D + L - e ₀)/1.5
12	gLCB12	Active	Add	(D + L - e ₀)/1.5
13	gLCB13	Active	Add	(D + L - e ₀)/1.5
14	gLCB14	Active	Add	(D + e ₀)/1.5
15	gLCB15	Active	Add	(D + e ₀)/1.5
16	gLCB16	Active	Add	(D - e ₀)/1.5
17	gLCB17	Active	Add	(D - e ₀)/1.5
18	STL ENV	Active	Envelope	Steel Strength Envelope

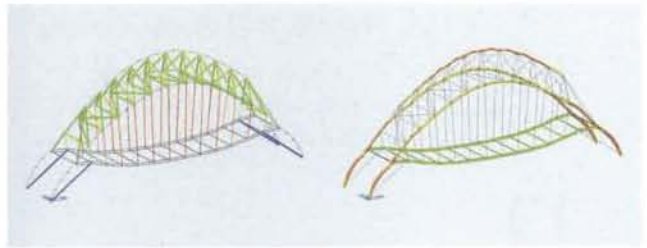
DEFORMED SHAPE



러진 형태

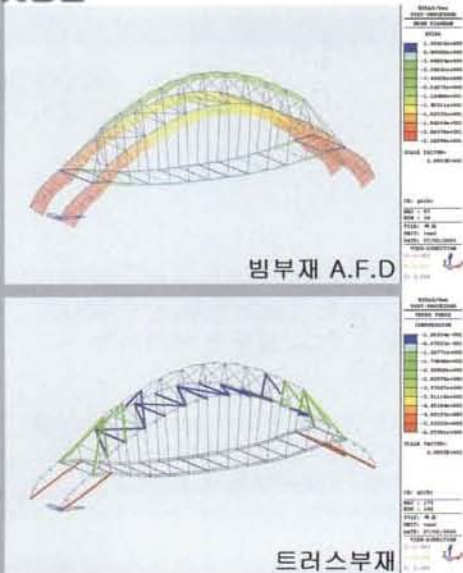
X-DIR= -1.453E-001
NODE= 61
Y-DIR= 5.268E-002
NODE= 105
Z-DIR= -7.244E-001
NODE= 117
COOR.= 7.244E-001
NODE= 117
SCALE FACTOR= 2.085E+002
차장 허용값이 L/300 => OK!

STRESS



부재별 응력

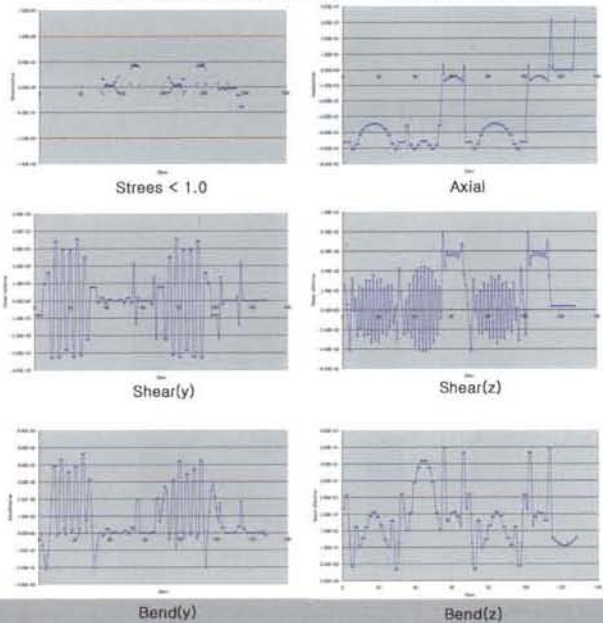
FORCE



빔부재 A.F.D

트러스부재

트러스 부재의 안전성 검토 및 각 빔부재의 응 그래프



Strees < 1.0

Axial

Shear(y)

Shear(z)

Bend(y)

Bend(z)