

構 造 計 算 書

PROJECT : 태양광 설비 설치공사

2010년 7월

서울특별시 동부푸른도시사업소

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1. 일 반 사 항

1. 概 要

- 1) 프 로젝트 : 어린이대공원 태양광설비 60kW용 신축공사
(5kW * 3), (15kW * 1), (30kW *1)
- 2) 건물의 용도 : 공공시설
- 3) 구조의 형식 : 지상 ; 철골구조
기초 ; 독립기초

2. 適 用 規 定

- 1) 건축구조설계기준(2005, 건설교통부)
- 2) 건축물의 구조기준 등에 관한 규칙
- 3) BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
(ACI 318-02)
- 4) 강구조계산 기준 및 해설 (대한건축학회)

3. 材 料 의 性 能

- 1) 콘크리트 : $f_{ck} = 21 \text{ MPa}$ (210 kgf/cm^2)
- 2) 철 근 : $f_y = 400 \text{ MPa}$ (4000 kgf/cm^2)
- 3) 강 재 : SS400 $F_y = 240 \text{ MPa}$ (2400 kgf/cm^2)
- 4) 긴 결 재 : 고장력볼트(F10T M20)

4. 地 下 水 處 理 및 土 質 條 件

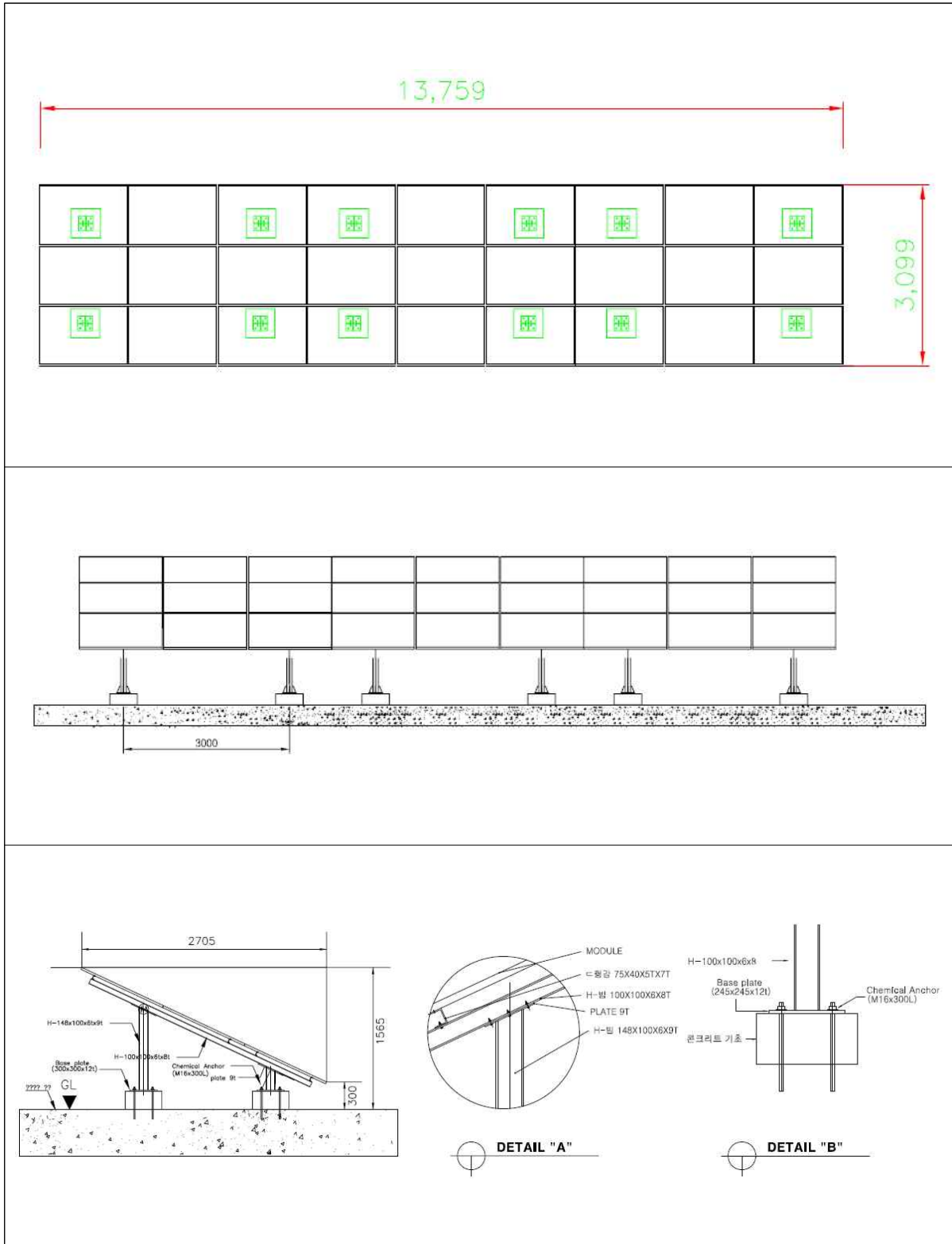
- 1) 허용지내력 : $f_e = 10 \text{ tf/m}^2$ (가정치 - 현장조사 필요)
- 2) 설계지하수위 : 고려하지 않음

5. 特 記 事 項

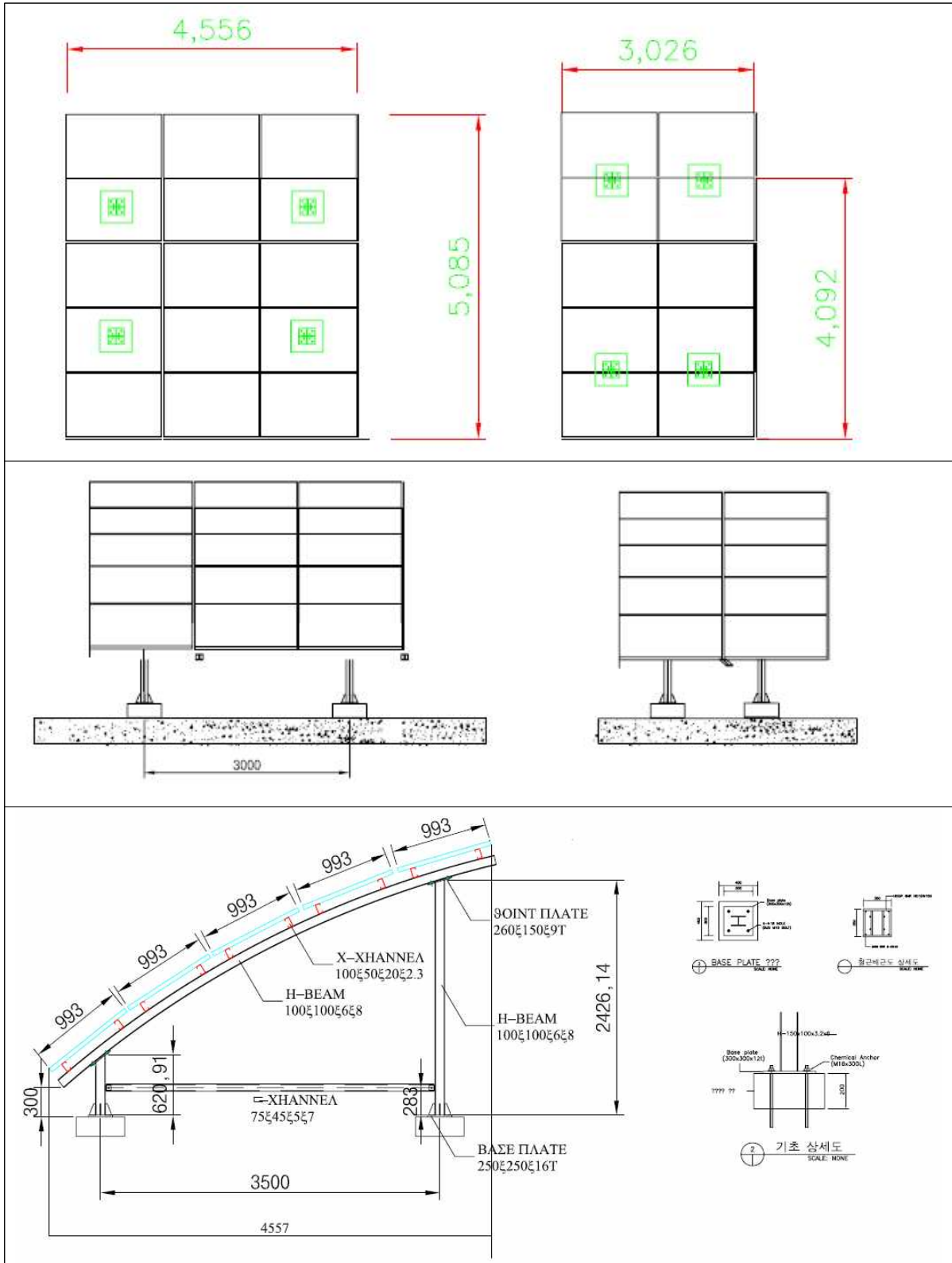
- 1) 현장 및 시공 여건등 제반 사항이 본 계산에 적용된 사항과 상이할 경우에는 구조 기술자와 협의하여 구조변경 필요 여부를 판단한 후 시공을 계속하여야 한다.

2. 구조평면도

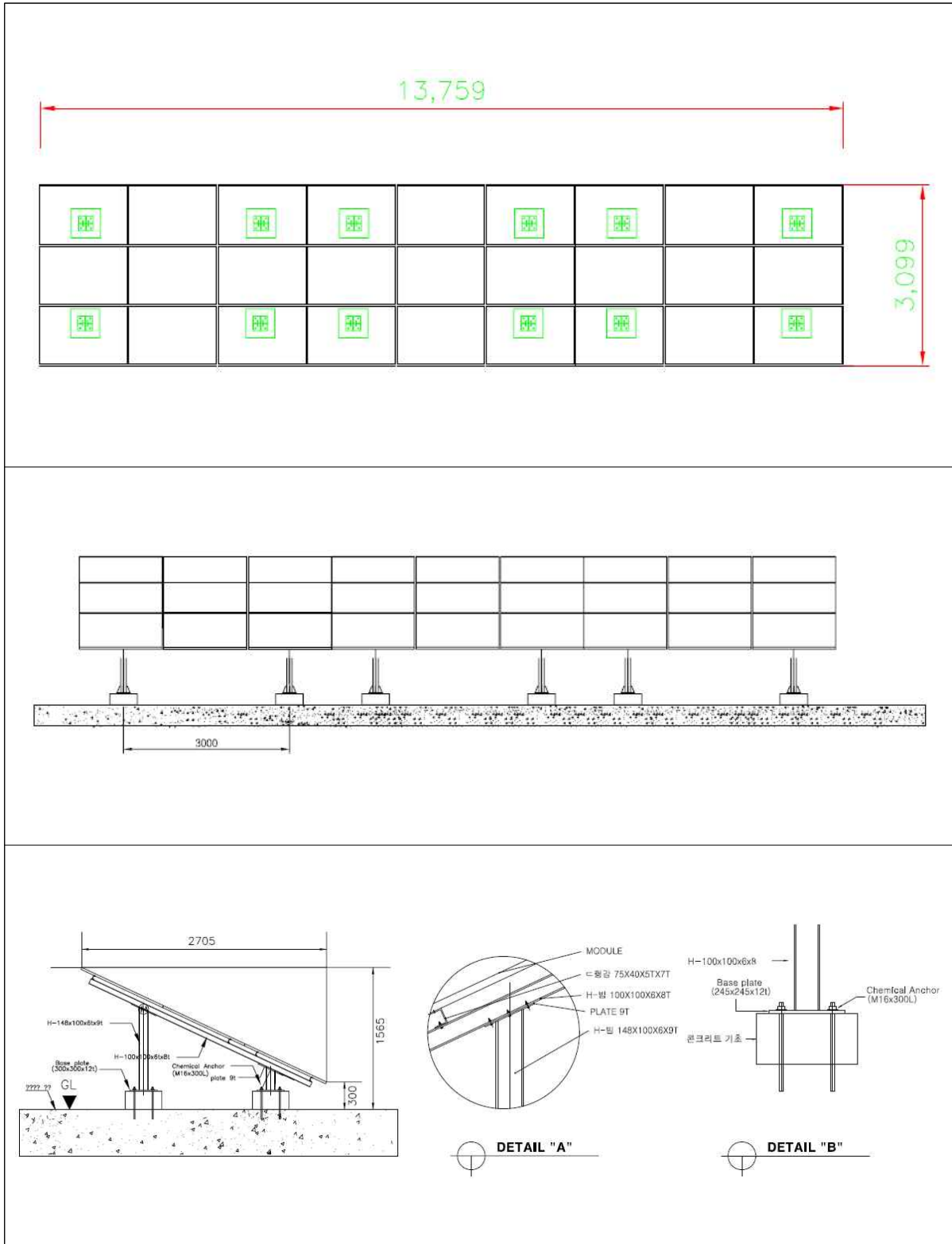
1. 복합화장실 5kW



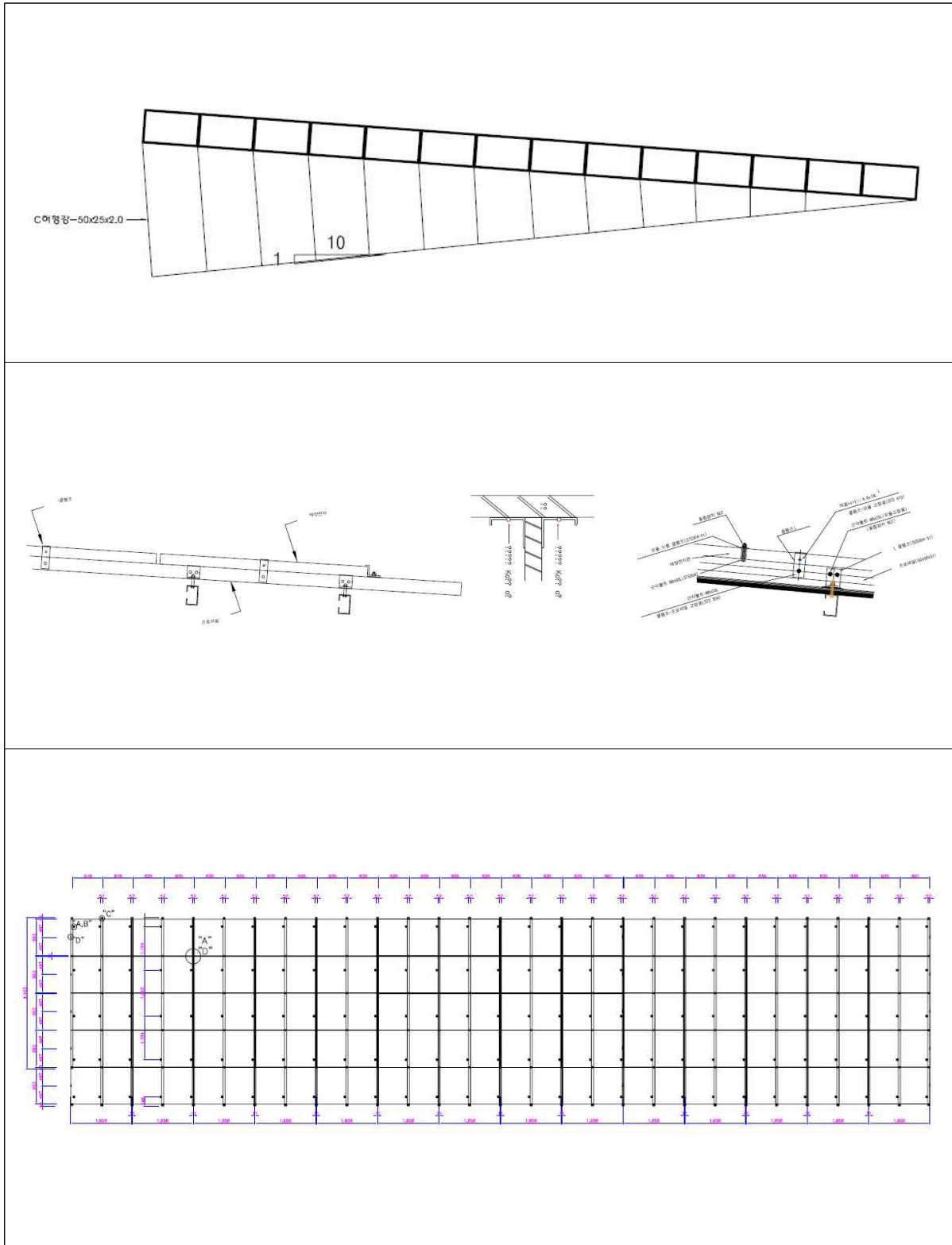
2. 숲속의 무대 5kW



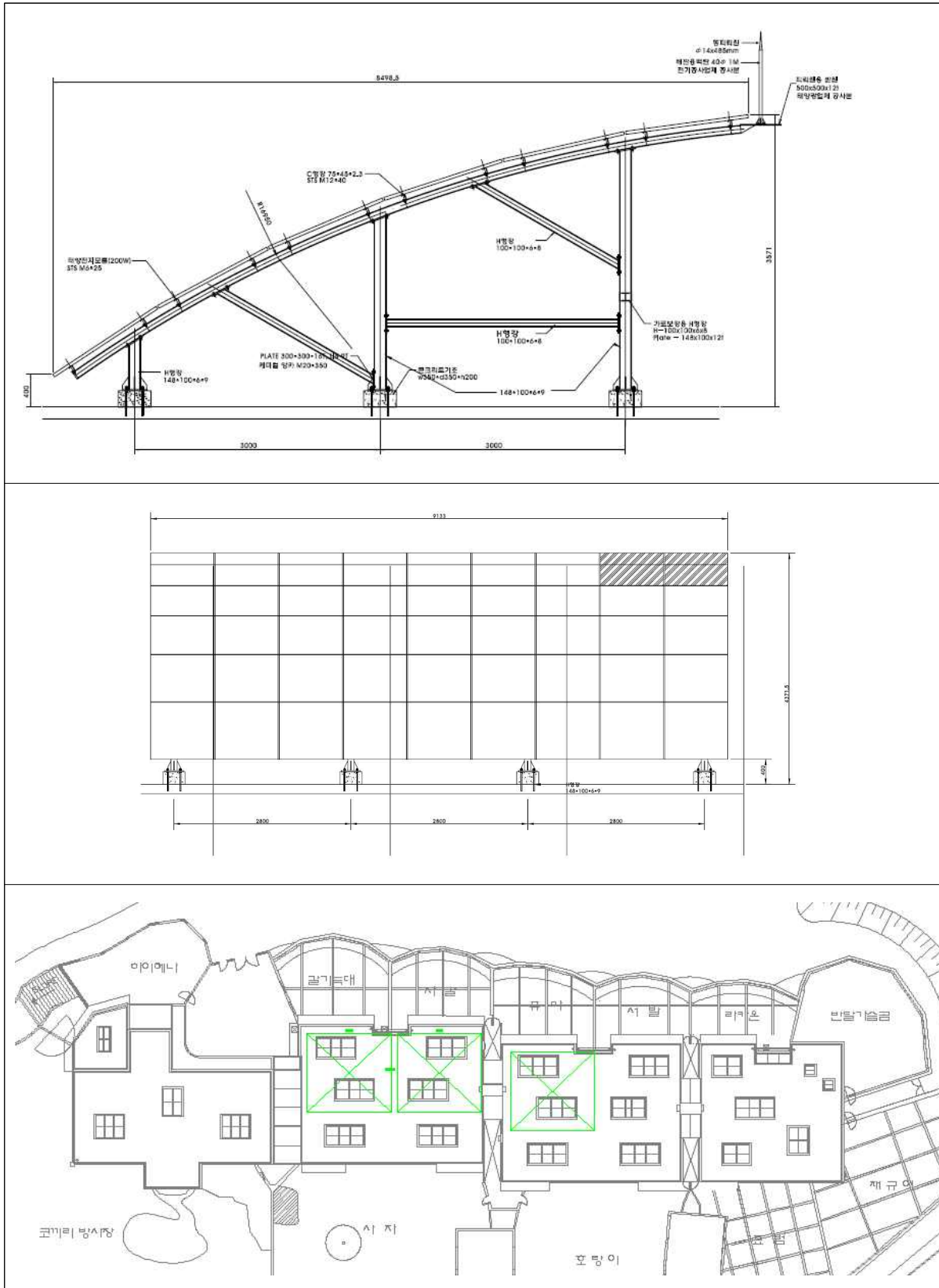
3. 축구장 화장실 5kW



4. 방이동 청사15kW



5. 동물사 30kW (10kW x 3)



3. 설 계 하 중

1. 어린이대공원 동물사 30kW

Module weight	20 kg
20kg x 150	3 TON
구조물 중량	5 TON
총 중량	8 TON

태양광 전지	40 kgf/m ²
철골 자중	160 kgf/m ²

Dead Load	200 kgf/m ²
Live Load (Snow load)	100 kgf/m ²

2. 어린이대공원 복합화장실 5kW

Module weight	20 kg
20kg x 24	480 kg
구조물 중량	1.1 TON
총 중량	1.6 TON

태양광 전지	6.7 kgf/m ²
철골 자중	26.7 kgf/m ²

Dead Load	33.3 kgf/m ²
Live Load (Snow load)	16.7 kgf/m ²

3. 어린이대공원 숲속의무대 화장실 5kW

Module weight	20 kg
20kg x 24	480 kg

구조물 중량	1.1 TON
총 중량	1.6 TON

태양광 전지	6.7 kgf/m ²
철골 자중	26.7 kgf/m ²

Dead Load	33.3 kgf/m ²
Live Load (Snow load)	16.7 kgf/m ²

4. 어린이대공원 축구장 화장실 5kW

Module weight	20 kg
20kg x 24	480 kg
구조물 중량	1.6 TON
총 중량	2.1 TON

태양광 전지	6.7 kgf/m ²
철골 자중	26.7 kgf/m ²

Dead Load	33.3 kgf/m ²
Live Load (Snow load)	16.7 kgf/m ²

5. 방이동 복합청사 15kW

Module weight	22 kg
22kg x 65	1.5 TON
구조물 중량	1 TON
총 중량	2.5 TON

태양광 전지	20 kgf/m ²
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철골 자중	80 kgf/m ²
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Dead Load	100 kgf/m ²
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Live Load (Snow load)	50 kgf/m ²
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[건설교통부 고시] 건축구조설계기준에 의거하여 산정한
어린이대공원 태양광발전시스템 풍하중 산정

0305.3 지붕골조 설계용 풍하중

$$W_r = p_r A$$

여기서 p_r : 지붕골조 설계용 설계풍력

A : 유효 수압면적

0305.3.2.3 독립편지붕인 경우 설계풍력(p_r)

$$p_r = q_h G_f C_f$$

여기서 q_h : 지붕면의 평균높이 h 에 대한 설계속도압

G_f : 구조골조 및 지붕골조 설계용 가스트 영향계수

C_f : 풍력계수

0305.6 설계속도압

$$q_z = \frac{1}{2} \rho V_z^2$$

$$q_h = \frac{1}{2} \rho V_h^2$$

여기서 ρ : 공기밀도

V_h : 설계지역의 지표면에서 지붕면 평균높이 h 에 대한 설계풍속

V_z : 설계지역의 지표면으로부터 임의높이 Z 에 대한 설계풍속

$$V_z = V_0 K_{zr} K_{zt} I_w$$

여기서 V_0 : 기본풍속

K_{zr} : 풍속의 고도계수

K_{zt} : 지형에 의한 풍속할증계수

I_w : 건축물의 중요도 계수

0305.7 구조골조 및 지붕골조 설계용 가스트 영향계수

<표 0305.7.2.1> 구조골조 설계용 가스트 영향계수(G_f)

노풍도 구분	가스트 영향계수 (G_f)
A	2.5
B	2.2
C	1.9
D	1.8

0305.8.7 광고판의 풍력계수

<표 0305.8.7> 광고판의 풍력계수(C_f)

지표면 설치 광고판		하부개방 광고판	
광고판 높이 폭비(h_s/b)	C_f	광고판 장변단변비(m/n)	C_f
≤3	1.2	≤6	1.2
5	1.3	10	1.3
8	1.4	16	1.4
10	1.5	20	1.5
20	1.75	40	1.75
30	1.85	60	1.85
≥40	2.0	≥80	2.0

0305.8.8 개방형 광고판과 래티스 구조물의 풍력계수

<표 0305.8.8> 개방형 광고판 및 래티스 구조물의 풍력계수(C_f)

ψ	C_f		
	면으로 구성된 부재	원형부재	
		$d\sqrt{q_z} \leq 1.7$	$d\sqrt{q_z} > 1.7$
0.1 미만	2.0	1.2	0.8
0.1~0.29	1.8	1.3	0.9
0.3~0.7	1.6	1.5	1.1

여기서 ψ : 구조물의 총실률(유효수압면적/외곽전면적)

d : 원형부재의 지름, m

q_z : 지표면에서 임의높이 Z에 대한 설계속도압

1. 기본풍속 V_0 (지역별) :

서울시 고척동의 법적 설계기본풍속 : 30 (m/sec)

2. 노풍도 구분에 따른 풍속의 고도분포계수 K_{zr} :

노풍도 B(중층건축물이 산재해 있는 지역)를 고려하여 산정

$$K_{zr} = 0.81$$

3. 지형에 의한 풍속 할증계수 K_{zt} :

$$K_{zt} = 1.0$$

4. 중요도 계수 I_w :

$I_w = 0.81$ (가설건축물, 농가건축물, 소규모 창고 중 가설건축물)

5. 가스트영향계수 G_f :

$$G_f = 2.2 \text{ (노풍도 B)}$$

6. 풍력계수 C_f :

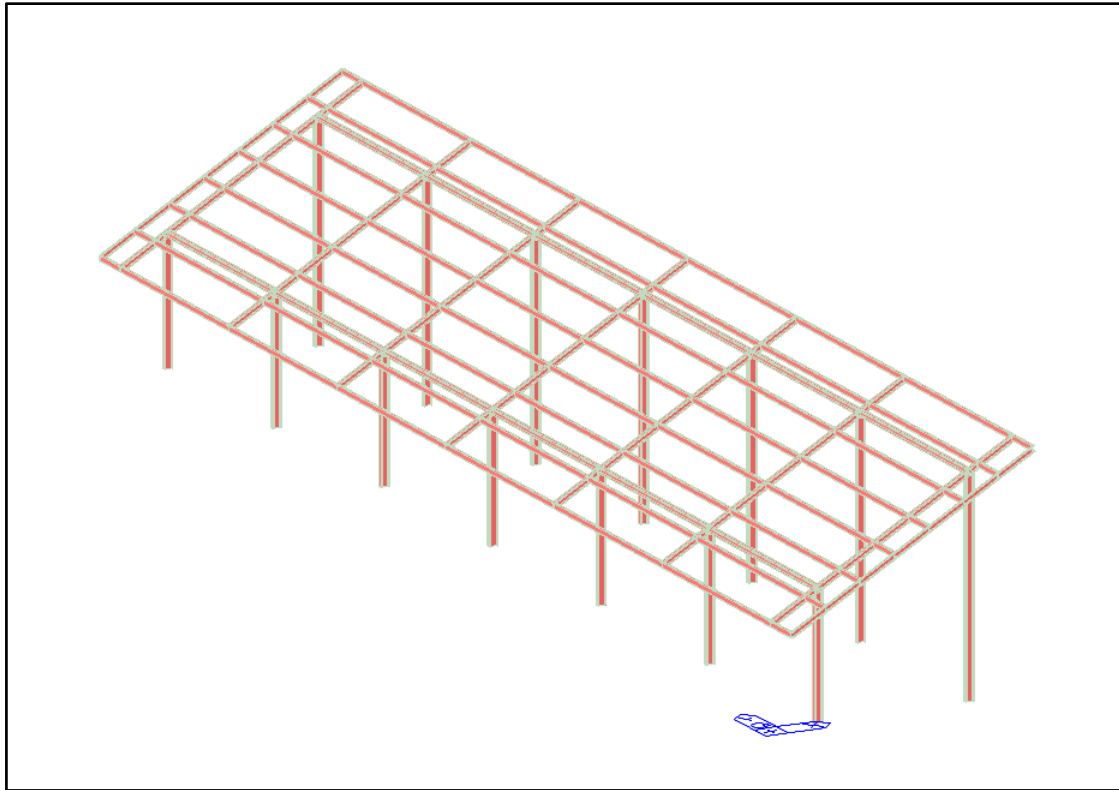
$$C_f = 1.25$$

5. 풍하중 산정 (어린이 대공원)

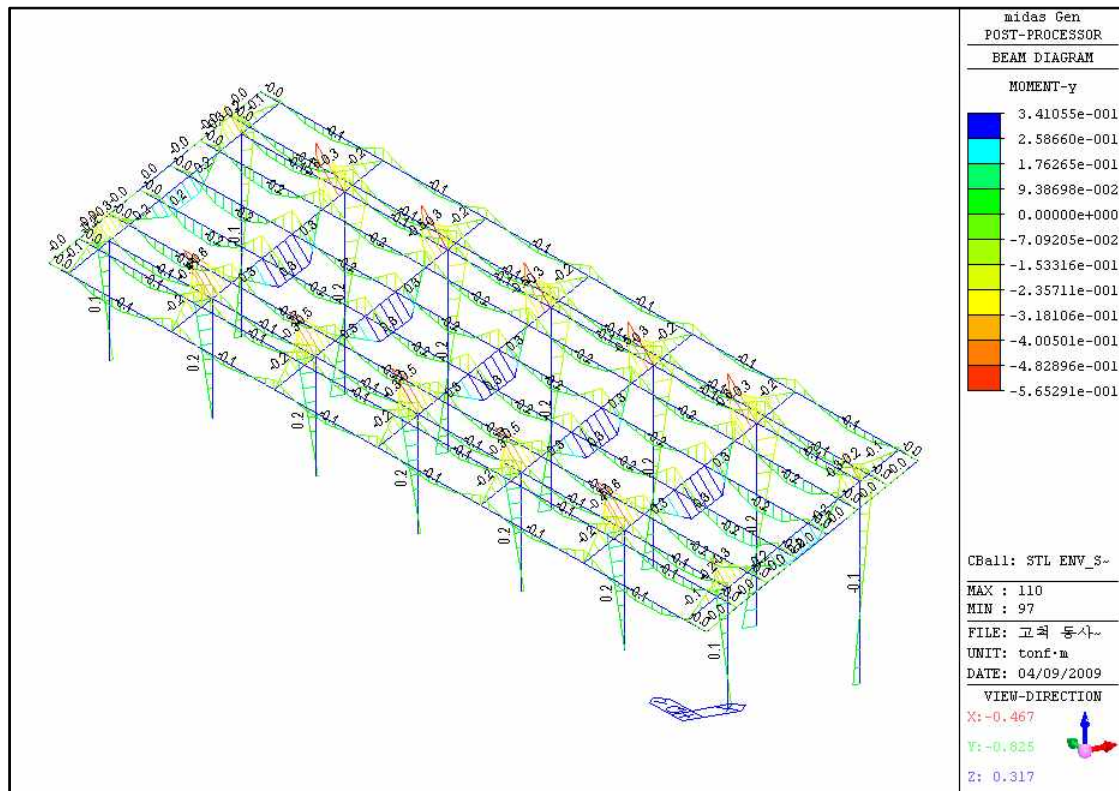
어린이 대공원 태양광발전 시스템에 적용된 설계 풍하중은

$$W_r = 0.5 \times 1.25 \times (30 \times 0.81 \times 1.0 \times 0.81)^2 \times 2.2 \times 1.25 \times A = 665.88 AN/m^2$$

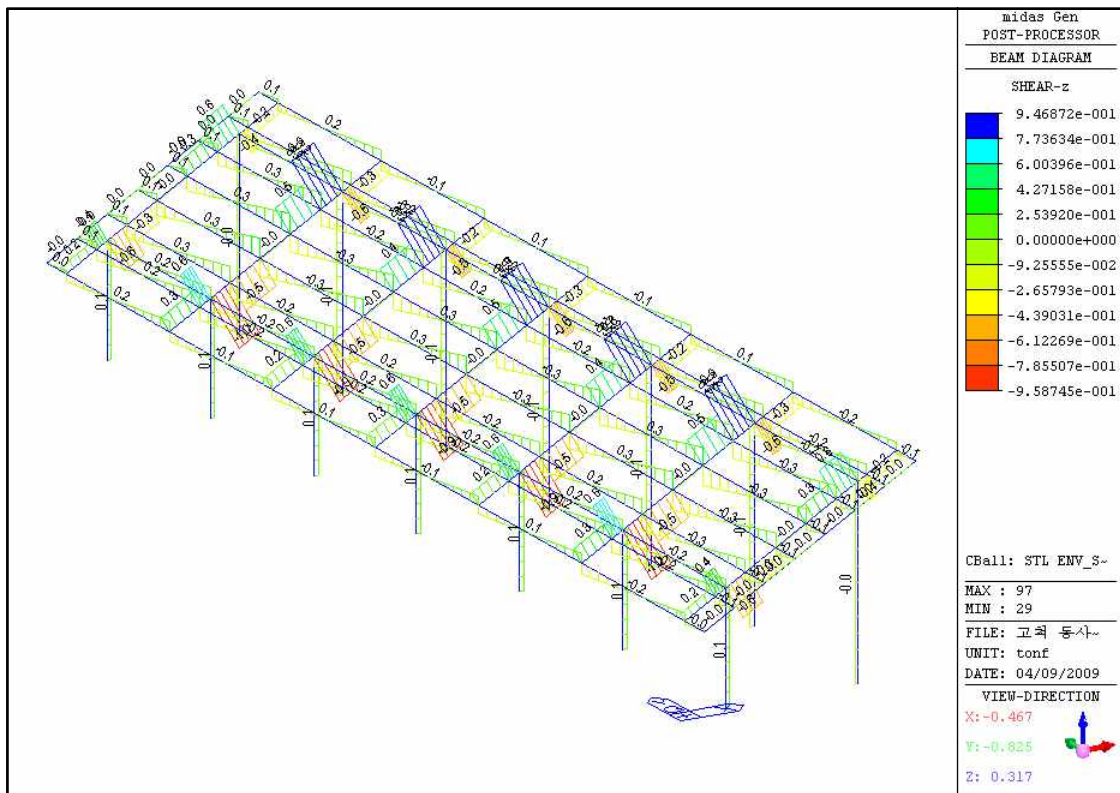
4. 구조해석 및 부재설계



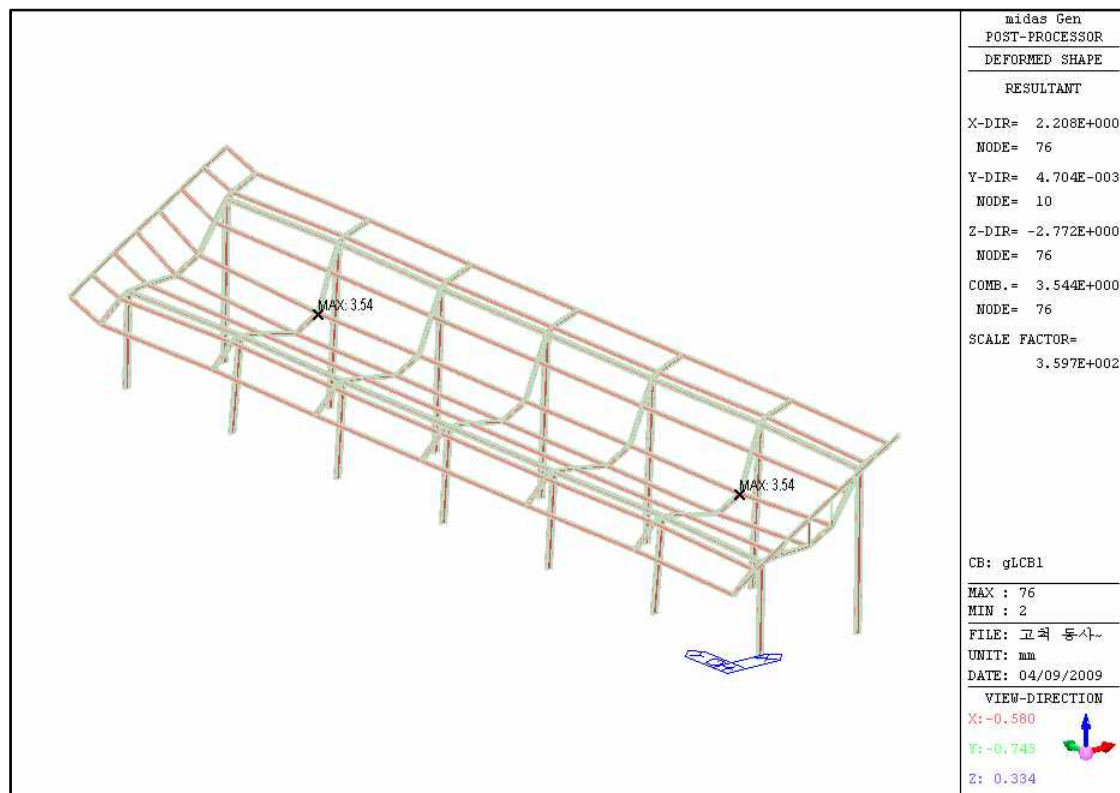
[그림 1] 전체모델링



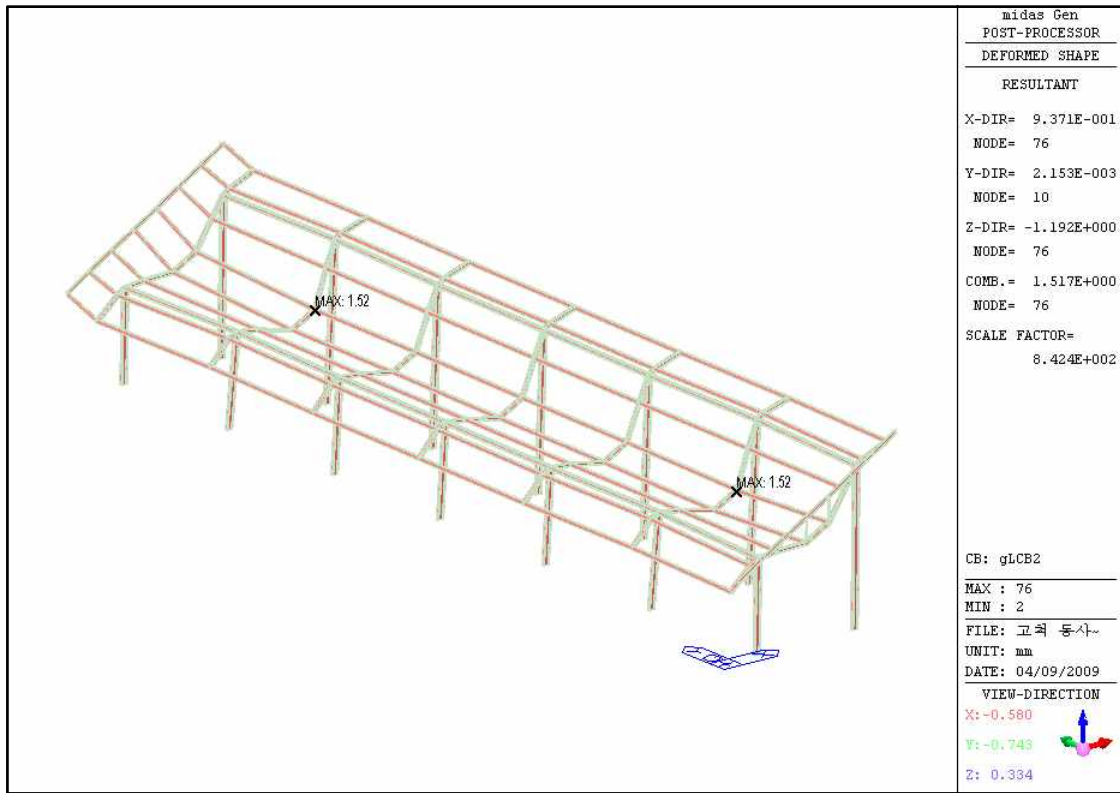
[그림 2] 모멘트도



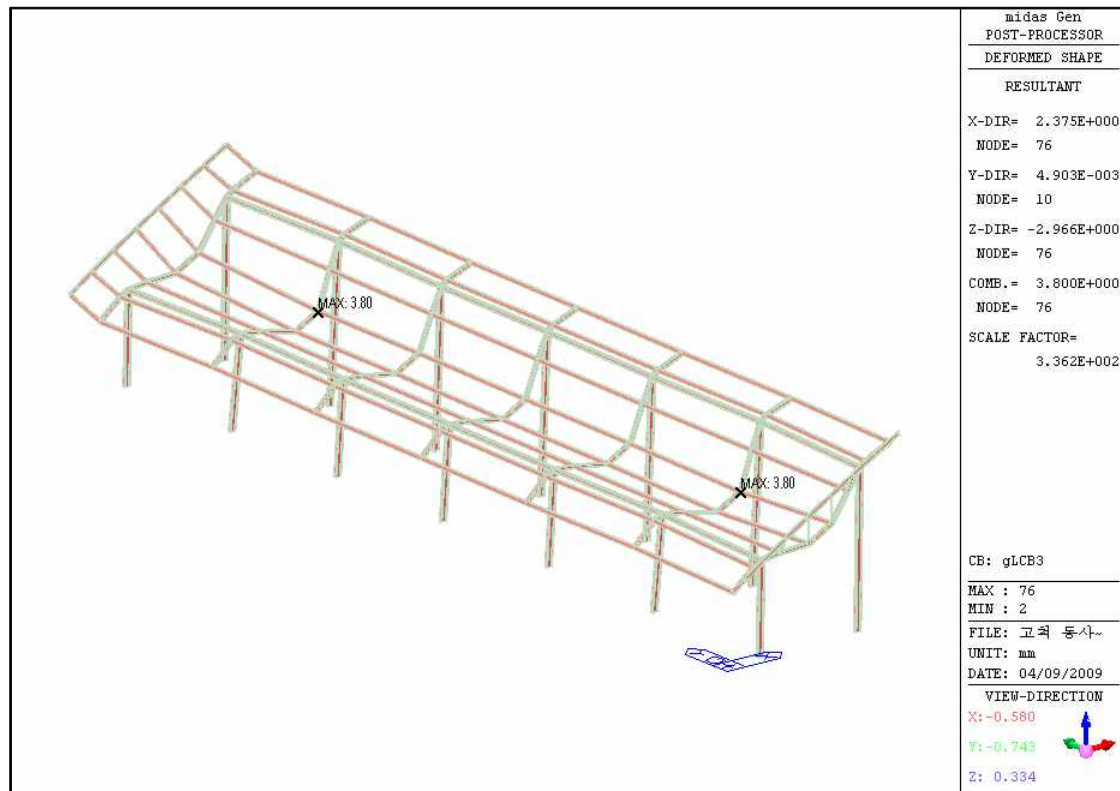
[그림 3] 전단력도



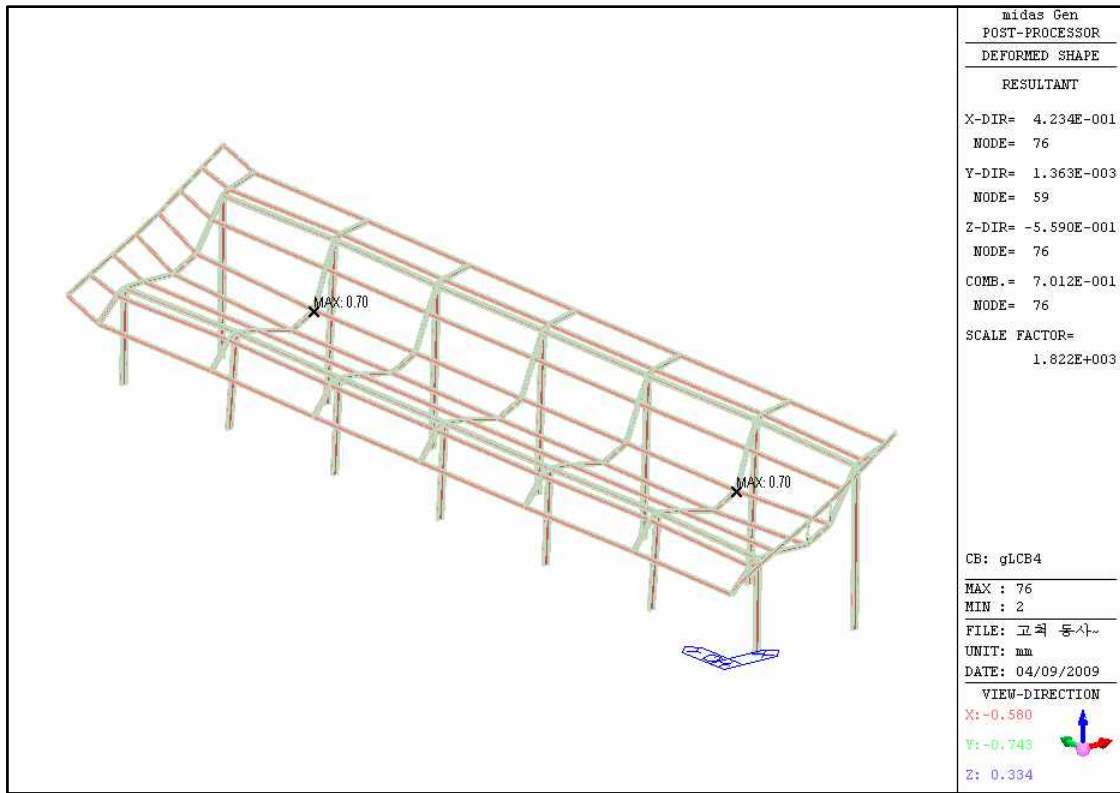
[그림 4] 처짐-1



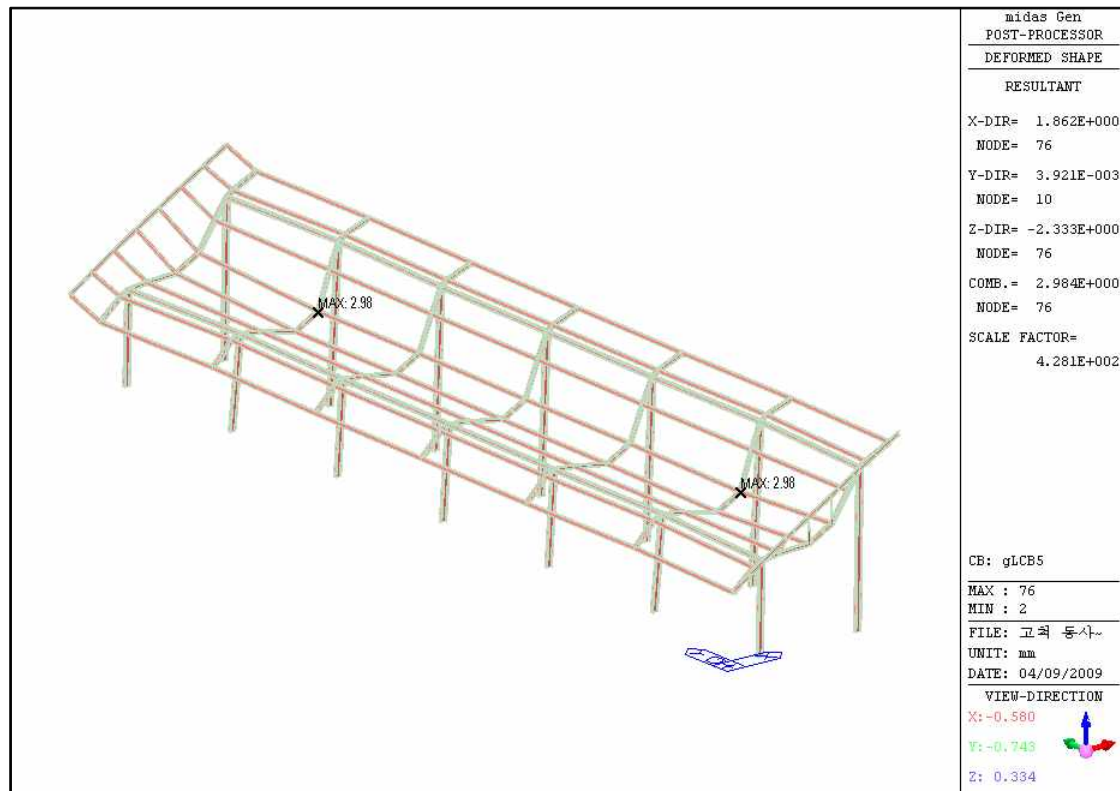
[그림 5] 처짐-2



[그림 6] 처짐-3



[그림 7] 처짐-4



[그림 8] 처짐-5

MIDAS(Modeling, Integrated Design & Analysis Software) midas Gen - Design & checking system for windows	
Steel Member Applicable Code Checking Based On KSSC-ASD03, AIK-LSD97, AIK-ASD83, AIK-CFSD98, KSCC-ASD96, AISC-LRFD2K, AISC-LRFD93, AISC-ASD89, AISI-CFSD86, GB50017-03, GBJ17-88, BS5950-90, Eurocode3:05, Eurocode3, CSA-S16-01, AIJ-ASD02, IS:800-1984, TWN-ASD90, TWN-LSD90 (c) 1989-2007	
MIDAS Information Technology Co.,Ltd. (MIDAS IT) MIDAS IT Design Development Team	
HomePage : www.MidasUser.com Tel : 82-31-789-2000, Fax : 82-31-789-2100	
midas Gen Version 741	

*. DEFINITION OF LOAD COMBINATIONS WITH SCALING UP FACTORS.

LCB	C	Loadcase Name(Factor) + Loadcase Name(Factor) + Loadcase Name(Factor)
1	1	dI(1.000) + I1(1.000)
2	1	dI(0.750) + I1(0.750) + wx(0.750)
3	1	dI(0.750) + I1(0.750) + wx(-0.750)
4	1	dI(0.750) + wx(0.750)
5	1	dI(0.750) + wx(-0.750)

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

MEMB CHK	SECT COM	Section SHR Material	Fy	LCB	Len Pa	Ly My	Lz Mz	Lb Cb	Ky Kz	Cmy Cmz	fa Fa	fby FBy	fbz FBz	
1 OK	0.19	2 H 148x100x6/9 SS400	0.02447	3	2405.04 -1.2870	2405.04 117.753	2405.04 43.3032	2405.04	1.00	1.00	0.85	0.0005	0.0009	0.0014
2 OK	0.25	2 H 148x100x6/9 SS400	0.02447	3	4079.35 -1.1817	4079.35 -123.79	4079.35 31.0693	4079.35	1.00	1.00	0.85	0.0004	0.0009	0.0010
3 OK	0.10	3 H 100x100x6/8 SS400	0.02447	3	765.857 0.09137	765.857 -112.14	765.857 4.29129	765.857	1.00	1.00	1.00	0.0000	0.0015	0.0002
4 OK	0.29	3 H 100x100x6/8 SS400	0.02447	3	496.022 -0.4010	496.022 -334.68	496.022 -4.5480	496.022	1.00	1.00	1.00	0.0002	0.0044	0.0002
5 OK	0.17	3 H 100x100x6/8 SS400	0.02447	3	210.819 -0.2236	210.819 -196.39	210.819 -2.5386	210.819	1.00	1.00	1.00	0.0001	0.0026	0.0001
6 OK	0.19	2 H 148x100x6/9 SS400	0.02447	3	2405.04 -2.2012	2405.04 173.262	2405.04 -8.1841	2405.04	1.00	1.00	0.85	0.0008	0.0013	0.0003
7 OK	0.34	2 H 148x100x6/9 SS400	0.02447	3	4079.35 -2.0748	4079.35 -229.15	4079.35 -6.4378	4079.35	1.00	1.00	0.85	0.0008	0.0017	0.0002
8 OK	0.18	3 H 100x100x6/8 SS400	0.02447	3	765.857 0.15875	765.857 -209.66	765.857 -0.4008	765.857	1.00	1.00	1.00	0.0001	0.0027	0.0000
9 OK	0.47	3 H 100x100x6/8 SS400	0.02447	3	496.022 -0.6412	496.022 -551.91	496.022 0.07093	496.022	1.00	1.00	1.00	0.0003	0.0072	0.0000
10		3 H 100x100x6/8			210.819	210.819	210.819	210.819	1.00	1.00	1.00	0.0002	0.0044	0.0001

OK	0.29	0.10	SS400	0.02447	3	-0.3474	-336.11	1.34384	1.00	1.00	1.00	0.0144	0.0162	0.0184
	11	2	H 148x100x6/9			2405.04	2405.04	2405.04	2405.04	1.00	0.85	0.0007	0.0012	0.0000
OK	0.17	0.01	SS400	0.02447	3	-1.9946	168.498	1.30667	1.00	1.00	0.85	0.0090	0.0147	0.0184
	12	2	H 148x100x6/9			4079.35	4079.35	4079.35	4079.35	1.00	0.85	0.0007	0.0015	0.0000
OK	0.29	0.01	SS400	0.02447	3	-1.8588	-200.65	1.18167	1.00	1.00	0.85	0.0037	0.0126	0.0184
	13	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0024	0.0000
OK	0.15	0.04	SS400	0.02447	3	0.14169	-184.15	0.30324	1.00	1.00	1.00	0.0147	0.0162	0.0184
	14	3	H 100x100x6/8			496.022	496.022	496.022	496.022	1.00	1.00	0.0003	0.0066	0.0000
OK	0.43	0.15	SS400	0.02447	3	-0.5933	-503.55	-0.9536	1.00	1.00	1.00	0.0140	0.0162	0.0184

midas Gen - Steel Code Checking

[KSSC-ASD03]

Version 741

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

MEMB	SECT	Section	Fy	LCB	Len	Ly	Lz	Lb	Ky	Cmy	fa	fby	fbz	
CHK	COM	SHR Material			Pa	My	Mz	Cb	Kz	cmz	Fa	FBy	FBz	
OK	0.25	0.09	SS400	0.02447	3	210.819	210.819	210.819	210.819	1.00	1.00	0.0001	0.0039	0.0000
	15	3	H 100x100x6/8			210.819	210.819	210.819	210.819	1.00	1.00	0.0001	0.0039	0.0000
OK	0.17	0.01	SS400	0.02447	3	-0.3151	-299.40	-0.7639	1.00	1.00	0.0144	0.0162	0.0184	
	16	2	H 148x100x6/9			2405.04	2405.04	2405.04	2405.04	1.00	0.85	0.0008	0.0012	0.0000
OK	0.30	0.01	SS400	0.02447	3	-2.0526	169.080	0.00000	1.00	1.00	0.85	0.0090	0.0147	0.0147
	17	2	H 148x100x6/9			4079.35	4079.35	4079.35	4079.35	1.00	0.85	0.0007	0.0015	0.0000
OK	0.16	0.04	SS400	0.02447	3	-1.9173	-206.30	0.00000	1.00	1.00	0.85	0.0037	0.0126	0.0147
	18	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0025	0.0000
OK	0.44	0.15	SS400	0.02447	3	0.14701	-192.04	0.00000	1.00	1.00	1.00	0.0147	0.0162	0.0147
	19	3	H 100x100x6/8			496.022	496.022	496.022	496.022	1.00	1.00	0.0003	0.0068	0.0000
OK	0.26	0.10	SS400	0.02447	3	-0.6064	-517.72	0.00000	1.00	1.00	1.00	0.0140	0.0162	0.0147
	20	3	H 100x100x6/8			210.819	210.819	210.819	210.819	1.00	1.00	0.0001	0.0040	0.0000
OK	0.17	0.01	SS400	0.02447	3	-0.3249	-310.12	0.00000	1.00	1.00	0.0144	0.0162	0.0147	
	21	2	H 148x100x6/9			2405.04	2405.04	2405.04	2405.04	1.00	0.85	0.0007	0.0012	0.0000
OK	0.29	0.01	SS400	0.02447	3	-1.9946	168.498	-1.3070	1.00	1.00	0.85	0.0090	0.0147	0.0184
	22	2	H 148x100x6/9			4079.35	4079.35	4079.35	4079.35	1.00	0.85	0.0007	0.0015	0.0000
OK	0.15	0.04	SS400	0.02447	3	-1.8588	-200.65	-1.1818	1.00	1.00	0.85	0.0037	0.0126	0.0184
	23	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0024	0.0000
OK	0.43	0.15	SS400	0.02447	3	0.14169	-184.15	-0.3032	1.00	1.00	1.00	0.0147	0.0162	0.0184
	24	3	H 100x100x6/8			496.022	496.022	496.022	496.022	1.00	1.00	0.0003	0.0066	0.0000
OK	0.25	0.09	SS400	0.02447	3	-0.5933	-503.55	0.95362	1.00	1.00	1.00	0.0140	0.0162	0.0184
	25	3	H 100x100x6/8			210.819	210.819	210.819	210.819	1.00	1.00	0.0001	0.0039	0.0000
OK	0.19	0.01	SS400	0.02447	3	-0.3151	-299.40	0.76386	1.00	1.00	0.0144	0.0162	0.0184	
	26	2	H 148x100x6/9			2405.04	2405.04	2405.04	2405.04	1.00	0.85	0.0008	0.0013	0.0003
OK	0.34	0.01	SS400	0.02447	3	-2.2012	173.262	8.18373	1.00	1.00	0.85	0.0090	0.0147	0.0184
	27	2	H 148x100x6/9			4079.35	4079.35	4079.35	4079.35	1.00	0.85	0.0008	0.0017	0.0002
OK	0.18	0.05	SS400	0.02447	3	-2.0748	-229.15	6.43763	1.00	1.00	0.85	0.0037	0.0126	0.0184
	28	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0027	0.0000
OK	0.18	0.05	SS400	0.02447	3	0.15875	-209.66	0.40075	1.00	1.00	1.00	0.0147	0.0162	0.0184

midas Gen - Steel Code Checking

[KSSC-ASD03]

Version 741

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

MEMB	SECT	Section	Len	Ly	Lz	Lb	Ky	Cmy	fa	fby	fbz
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CHK	COM	SHR	Material	Fy	LCB	Pa	My	Mz	Cb	Kz	Cmz	Fa	FBy	FBz
OK	29	0.47	3 H 100x100x6/8 SS400	0.02447	3	496.022 -0.6412	496.022 -551.91	496.022 -0.0709	496.022	1.00	1.00	0.0003	0.0072	0.0000
OK	30	0.29	3 H 100x100x6/8 SS400	0.02447	3	210.819 -0.3474	210.819 -336.11	210.819 -1.3438	210.819	1.00	1.00	0.0002	0.0044	0.0001
OK	31	0.19	2 H 148x100x6/9 SS400	0.02447	3	2405.04 -1.2870	2405.04 117.753	2405.04 -43.304	2405.04	1.00	0.85	0.0005	0.0009	0.0014
OK	32	0.25	2 H 148x100x6/9 SS400	0.02447	3	4079.35 -1.1817	4079.35 -123.79	4079.35 -31.069	4079.35	1.00	0.85	0.0004	0.0009	0.0010
OK	33	0.10	3 H 100x100x6/8 SS400	0.02447	3	765.857 0.09137	765.857 -112.14	765.857 -4.2913	765.857	1.00	1.00	0.0000	0.0015	0.0002
OK	34	0.29	3 H 100x100x6/8 SS400	0.02447	3	496.022 -0.4010	496.022 -334.68	496.022 4.54802	496.022	1.00	1.00	0.0002	0.0044	0.0002
OK	35	0.17	3 H 100x100x6/8 SS400	0.02447	3	210.819 -0.2236	210.819 -196.39	210.819 2.53859	210.819	1.00	1.00	0.0001	0.0026	0.0001
OK	36	0.11	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0212	4000.00 -120.58	4000.00 -1.9551	4000.00	1.00	1.00	0.0000	0.0016	0.0001
OK	37	0.10	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0097	4000.00 -112.50	4000.00 -0.2425	4000.00	1.00	1.00	0.0000	0.0015	0.0000
OK	38	0.09	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0108	4000.00 -102.37	4000.00 -0.3146	4000.00	1.00	1.00	0.0000	0.0013	0.0000
OK	39	0.09	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0108	4000.00 -102.37	4000.00 -0.3146	4000.00	1.00	1.00	0.0000	0.0013	0.0000
OK	40	0.10	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0097	4000.00 -112.50	4000.00 -0.2425	4000.00	1.00	1.00	0.0000	0.0015	0.0000
OK	41	0.11	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0212	4000.00 -120.58	4000.00 -1.9551	4000.00	1.00	1.00	0.0000	0.0016	0.0001
OK	42	0.11	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0025	4000.00 -122.54	4000.00 -1.6643	4000.00	1.00	1.00	0.0000	0.0016	0.0001

midas Gen - Steel Code Checking

[KSSC-ASD03]

Version 741

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

CHK	MEMB	SECT	Section	Fy	LCB	Len	Ly	Lz	Lb	Ky	Cmy	fa	fby	fbz
COM	SHR	Material				Pa	My	Mz	Cb	Kz	Cmz	Fa	FBy	FBz
OK	43	0.10	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0081	4000.00 -115.94	4000.00 0.47566	4000.00	1.00	1.00	0.0000	0.0015	0.0000
OK	44	0.09	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0065	4000.00 -102.82	4000.00 -0.2330	4000.00	1.00	1.00	0.0000	0.0013	0.0000
OK	45	0.09	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0065	4000.00 -102.82	4000.00 -0.2330	4000.00	1.00	1.00	0.0000	0.0013	0.0000
OK	46	0.10	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0081	4000.00 -115.94	4000.00 0.47567	4000.00	1.00	1.00	0.0000	0.0015	0.0000
OK	47	0.11	3 H 100x100x6/8 SS400	0.02447	3	4000.00 -0.0025	4000.00 -122.54	4000.00 -1.6643	4000.00	1.00	1.00	0.0000	0.0016	0.0001
OK	48	0.38	5 C 100x50x5/7.5 SS400	0.02447	3	4000.00 0.00921	4000.00 -112.96	4000.00 0.38874	4000.00	1.00	1.00	0.0000	0.0030	0.0000
OK	49	0.38	5 C 100x50x5/7.5 SS400	0.02447	3	4000.00 0.00768	4000.00 -112.58	4000.00 1.05380	4000.00	1.00	1.00	0.0000	0.0030	0.0001
OK	50	0.32	5 C 100x50x5/7.5 SS400	0.02447	3	4000.00 0.00862	4000.00 -95.927	4000.00 0.09304	4000.00	1.00	1.00	0.0000	0.0025	0.0000

OK	51	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0025	0.0000		
	0.32	0.03	SS400	0.02447	3	0.00862	-95.927	0.09303	1.00	1.00	1.00	0.0147	0.0079	0.0147
OK	52	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0030	0.0001		
	0.38	0.03	SS400	0.02447	3	0.00768	-112.58	1.05381	1.00	1.00	1.00	0.0147	0.0079	0.0147
OK	53	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0030	0.0000		
	0.38	0.03	SS400	0.02447	3	0.00921	-112.96	0.38874	1.00	1.00	1.00	0.0147	0.0079	0.0147
OK*	54	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0029	0.0000		
	0.38	0.03	SS400	0.02447	3	-0.0108	-111.17	0.26925	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK*	55	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0029	0.0001		
	0.38	0.03	SS400	0.02447	3	-0.0096	-110.82	0.88438	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK*	56	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0025	0.0000		
	0.32	0.03	SS400	0.02447	3	-0.0108	-95.473	0.06102	1.00	1.00	1.00	0.0016	0.0079	0.0147

midas Gen - Steel Code Checking [KSSC-ASD03] Version 741

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

CHK	MEMB	SECT	Section	Fy	LCB	Len	Ly	Lz	Lb	Ky	Cmy	fa	fbz	fbz
	COM	SHR	Material			Pa	My	Mz	Cb	Kz	Cmz	Fa	FBy	FBz
OK*	57	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0025	0.0000	
	0.32	0.03	SS400	0.02447	3	-0.0108	-95.473	0.06102	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK*	58	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0029	0.0001	
	0.38	0.03	SS400	0.02447	3	-0.0096	-110.82	0.88439	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK*	59	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0029	0.0000	
	0.38	0.03	SS400	0.02447	3	-0.0108	-111.17	0.26924	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK	60	5 C	100x50x5/7.5	750.000	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0005	0.0000	
	0.04	0.01	SS400	0.02447	3	0.00151	-20.221	-0.3194	1.00	1.00	1.00	0.0147	0.0147	0.0147
OK	61	5 C	100x50x5/7.5	750.000	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0004	0.0001	
	0.04	0.01	SS400	0.02447	3	-0.0023	-16.902	-0.9423	1.00	1.00	1.00	0.0126	0.0147	0.0147
OK	62	5 C	100x50x5/7.5	750.000	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0005	0.0000	
	0.04	0.01	SS400	0.02447	3	0.00151	-20.221	-0.3194	1.00	1.00	1.00	0.0147	0.0147	0.0147
OK	63	5 C	100x50x5/7.5	750.000	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0004	0.0001	
	0.04	0.01	SS400	0.02447	3	-0.0023	-16.902	-0.9423	1.00	1.00	1.00	0.0126	0.0147	0.0147
OK	64	5 C	100x50x5/7.5	765.857	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0000	0.0001	
	0.01	0.00	SS400	0.02447	3	-0.0011	-1.6307	0.46903	1.00	1.00	1.00	0.0125	0.0147	0.0147
OK	65	5 C	100x50x5/7.5	765.857	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0000	0.0001	
	0.01	0.00	SS400	0.02447	3	-0.0011	-1.6307	-0.4690	1.00	1.00	1.00	0.0125	0.0147	0.0147
OK	66	5 C	100x50x5/7.5	750.000	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0011	0.0001	
	0.08	0.02	SS400	0.02447	3	-0.0002	-40.041	1.03621	1.00	1.00	1.00	0.0126	0.0147	0.0147
OK*	67	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0036	0.0000	
	0.46	0.04	SS400	0.02447	3	-0.0144	-136.09	0.38247	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK*	68	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0036	0.0001	
	0.46	0.04	SS400	0.02447	3	-0.0053	-135.06	1.01369	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK*	69	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0032	0.0000	
	0.40	0.04	SS400	0.02447	3	-0.0079	-119.17	0.10208	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK*	70	5 C	100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0032	0.0000	
	0.40	0.04	SS400	0.02447	3	-0.0079	-119.17	0.10208	1.00	1.00	1.00	0.0016	0.0079	0.0147

midas Gen - Steel Code Checking [KSSC-ASD03] Version 741

*.PROJECT :

*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

CHK	MEMB COM	SECT SHR	Section Material	Fy	LCB	Len Pa	Ly My	Lz Mz	Lb Cb	Ky Kz	Cmy Cmz	fa Fa	fb FBy	fbz FBz
OK*	71	5 C	100x50x5/7.5 SS400	0.02447	3	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0036	0.0001
	0.46	0.04				-0.0053	-135.06	1.01370	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK*	72	5 C	100x50x5/7.5 SS400	0.02447	3	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0036	0.0000
	0.46	0.04				-0.0144	-136.09	0.38246	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK	73	5 C	100x50x5/7.5 SS400	0.02447	3	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0011	0.0001
	0.08	0.02				-0.0002	-40.041	1.03623	1.00	1.00	1.00	0.0126	0.0147	0.0147
OK	74	5 C	100x50x5/7.5 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0001
	0.01	0.00				-0.0020	-3.7087	0.49927	1.00	1.00	1.00	0.0125	0.0147	0.0147
OK	75	3 H	100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0015	0.0002
	0.11	0.03				-0.0931	-116.35	4.54075	1.00	1.00	1.00	0.0136	0.0162	0.0184
OK	76	3 H	100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0027	0.0000
	0.17	0.05				-0.1579	-208.29	-0.2228	1.00	1.00	1.00	0.0136	0.0162	0.0184
OK	77	3 H	100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0024	0.0000
	0.16	0.04				-0.1421	-184.84	0.45656	1.00	1.00	1.00	0.0136	0.0162	0.0184
OK	78	3 H	100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0025	0.0000
	0.16	0.04				-0.1467	-191.58	0.00000	1.00	1.00	1.00	0.0136	0.0162	0.0147
OK	79	3 H	100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0024	0.0000
	0.16	0.04				-0.1421	-184.84	-0.4566	1.00	1.00	1.00	0.0136	0.0162	0.0184
OK	80	3 H	100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0027	0.0000
	0.17	0.05				-0.1579	-208.29	0.22280	1.00	1.00	1.00	0.0136	0.0162	0.0184
OK	81	3 H	100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0015	0.0002
	0.11	0.03				-0.0931	-116.35	-4.5408	1.00	1.00	1.00	0.0136	0.0162	0.0184
OK	82	5 C	100x50x5/7.5 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0001
	0.01	0.00				-0.0020	-3.7087	-0.4993	1.00	1.00	1.00	0.0125	0.0147	0.0147
OK	83	5 C	100x50x5/7.5 SS400	0.02447	3	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0012	0.0002
	0.10	0.02				-0.0007	-47.027	1.71723	1.00	1.00	1.00	0.0126	0.0147	0.0147
OK	84	5 C	100x50x5/7.5 SS400	0.02447	3	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0047	0.0001
	0.61	0.05				0.00170	-179.33	0.84865	1.00	1.00	1.00	0.0147	0.0079	0.0147

midas Gen - Steel Code Checking

[KSSC-ASD03]

Version 741

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

CHK	MEMB COM	SECT SHR	Section Material	Fy	LCB	Len Pa	Ly My	Lz Mz	Lb Cb	Ky Kz	Cmy Cmz	fa Fa	fb FBy	fbz FBz
OK*	85	5 C	100x50x5/7.5 SS400	0.02447	3	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0047	0.0002
	0.61	0.05				-0.0001	-178.68	1.46438	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK	86	5 C	100x50x5/7.5 SS400	0.02447	3	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0042	0.0000
	0.53	0.05				0.00106	-157.36	0.13646	1.00	1.00	1.00	0.0147	0.0079	0.0147
OK	87	5 C	100x50x5/7.5 SS400	0.02447	3	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0042	0.0000
	0.53	0.05				0.00106	-157.36	0.13645	1.00	1.00	1.00	0.0147	0.0079	0.0147
OK*	88	5 C	100x50x5/7.5 SS400	0.02447	3	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0047	0.0002
	0.61	0.05				-0.0001	-178.68	1.46439	1.00	1.00	1.00	0.0016	0.0079	0.0147
OK	89	5 C	100x50x5/7.5 SS400	0.02447	3	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0047	0.0001
	0.61	0.05				0.00170	-179.33	0.84864	1.00	1.00	1.00	0.0147	0.0079	0.0147
OK	90	5 C	100x50x5/7.5 SS400	0.02447	3	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0012	0.0002
	0.10	0.02				-0.0007	-47.027	1.71722	1.00	1.00	1.00	0.0126	0.0147	0.0147

OK	91	5 C	100x50x5/7.5	SS400	0.02447	3	0.00333	-3.3913	-0.2225	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0000	0.0000	0.0147	0.0147	0.0147
OK	92	3 H	100x100x6/8	SS400	0.02447	3	0.26040	-320.16	-4.6554	555.038	555.038	555.038	555.038	1.00	1.00	0.0001	0.0042	0.0002	0.0002	0.0147	0.0162	0.0184
OK	93	3 H	100x100x6/8	SS400	0.02447	3	0.44631	-565.29	0.60285	555.038	555.038	555.038	555.038	1.00	1.00	0.0002	0.0074	0.0000	0.0000	0.0147	0.0162	0.0184
OK	94	3 H	100x100x6/8	SS400	0.02447	3	0.39754	-500.05	-0.7450	555.038	555.038	555.038	555.038	1.00	1.00	0.0002	0.0065	0.0000	0.0000	0.0147	0.0162	0.0184
OK	95	3 H	100x100x6/8	SS400	0.02447	3	0.41050	-516.42	0.00000	555.038	555.038	555.038	555.038	1.00	1.00	0.0002	0.0067	0.0000	0.0000	0.0147	0.0162	0.0147
OK	96	3 H	100x100x6/8	SS400	0.02447	3	0.39754	-500.05	0.74498	555.038	555.038	555.038	555.038	1.00	1.00	0.0002	0.0065	0.0000	0.0000	0.0147	0.0162	0.0184
OK	97	3 H	100x100x6/8	SS400	0.02447	3	0.44631	-565.29	-0.6029	555.038	555.038	555.038	555.038	1.00	1.00	0.0002	0.0074	0.0000	0.0000	0.0147	0.0162	0.0184
OK	98	3 H	100x100x6/8	SS400	0.02447	3	0.26040	-320.16	4.65534	555.038	555.038	555.038	555.038	1.00	1.00	0.0001	0.0042	0.0002	0.0002	0.0147	0.0162	0.0184

midas Gen - Steel Code Checking

[KSSC-ASD03]

Version 741

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

CHK	MEMB	SECT	Section	Material	Fy	LCB	Len	Ly	Lz	Lb	Ky	Cmy	fa	fbz	fbz							
COM	SHR						Pa	My	Mz	Cb	Kz	Cmz	Fa	FBy	FBz							
OK	99	5 C	100x50x5/7.5	SS400	0.02447	3	0.00333	-3.3913	0.22246	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0000	0.0000	0.0147	0.0147	0.0147
OK	100	5 C	100x50x5/7.5	SS400	0.02447	3	0.00033	-35.919	0.59466	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0010	0.0001	0.0001	0.0147	0.0147	0.0147
OK*	101	5 C	100x50x5/7.5	SS400	0.02447	3	-0.0009	-207.35	1.24522	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0055	0.0002	0.0002	0.0016	0.0079	0.0147
OK	102	5 C	100x50x5/7.5	SS400	0.02447	3	0.00001	-206.86	1.86731	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0055	0.0002	0.0002	0.0147	0.0079	0.0147
OK	103	5 C	100x50x5/7.5	SS400	0.02447	3	0.00018	-180.39	0.12204	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0048	0.0000	0.0000	0.0147	0.0079	0.0147
OK	104	5 C	100x50x5/7.5	SS400	0.02447	3	0.00018	-180.39	0.12203	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0048	0.0000	0.0000	0.0147	0.0079	0.0147
OK	105	5 C	100x50x5/7.5	SS400	0.02447	3	0.00001	-206.86	1.86733	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0055	0.0002	0.0002	0.0147	0.0079	0.0147
OK*	106	5 C	100x50x5/7.5	SS400	0.02447	3	-0.0009	-207.35	1.24521	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0055	0.0002	0.0002	0.0016	0.0079	0.0147
OK	107	5 C	100x50x5/7.5	SS400	0.02447	3	0.00033	-35.919	0.59464	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0010	0.0001	0.0001	0.0147	0.0147	0.0147
OK	108	5 C	100x50x5/7.5	SS400	0.02447	1	0.00021	1.20693	-0.3592	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0000	0.0000	0.0000	0.0147	0.0147	0.0147
OK	109	3 H	100x100x6/8	SS400	0.02447	3	0.09462	194.909	6.09999	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0025	0.0002	0.0002	0.0147	0.0162	0.0184
OK	110	3 H	100x100x6/8	SS400	0.02447	3	0.18829	341.055	-0.2701	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0045	0.0000	0.0000	0.0147	0.0162	0.0184
OK	111	3 H	100x100x6/8	SS400	0.02447	3	0.16147	306.234	0.26172	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0040	0.0000	0.0000	0.0147	0.0162	0.0184
OK	112	3 H	100x100x6/8	SS400	0.02447	3	0.16808	315.018	0.00000	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0041	0.0000	0.0000	0.0147	0.0162	0.0147

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

MEMB CHK	SECT COM	Section SHR Material	Fy	LCB	Len Pa	Ly My	Lz Mz	Lb Cb	Ky Kz	Cmy Cmz	fa Fa	fbz FBy	fbz FBz	
OK	113	3 H 100x100x6/8 0.25 0.08 SS400	765.857	0.02447	3 0.16147	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0040	0.0000
						306.234	-0.2617	1.00	1.00	1.00	0.0147	0.0162	0.0184	
OK	114	3 H 100x100x6/8 0.28 0.09 SS400	765.857	0.02447	3 0.18829	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0045	0.0000
						341.055	0.27015	1.00	1.00	1.00	0.0147	0.0162	0.0184	
OK	115	3 H 100x100x6/8 0.17 0.05 SS400	765.857	0.02447	3 0.09462	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0025	0.0002
						194.909	-6.1000	1.00	1.00	1.00	0.0147	0.0162	0.0184	
OK	116	5 C 100x50x5/7.5 0.01 0.00 SS400	765.857	0.02447	1 0.00021	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0000	0.0000
						1.20693	0.35921	1.00	1.00	1.00	0.0147	0.0147	0.0147	
OK	117	5 C 100x50x5/7.5 0.08 0.02 SS400	750.000	0.02447	3 -0.0003	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0010	0.0001
						-38.068	0.75292	1.00	1.00	1.00	0.0126	0.0147	0.0147	
OK	118	5 C 100x50x5/7.5 0.70 0.06 SS400	4000.00	0.02447	3 0.00147	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0055	0.0002
						-206.80	1.20501	1.00	1.00	1.00	0.0147	0.0079	0.0147	
OK*	119	5 C 100x50x5/7.5 0.70 0.06 SS400	4000.00	0.02447	3 0.00064	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0055	0.0002
						-206.32	1.81523	1.00	1.00	1.00	0.0147	0.0079	0.0147	
OK*	120	5 C 100x50x5/7.5 0.60 0.05 SS400	4000.00	0.02447	3 0.00044	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0048	0.0000
						-180.30	0.11658	1.00	1.00	1.00	0.0147	0.0079	0.0147	
OK*	121	5 C 100x50x5/7.5 0.60 0.05 SS400	4000.00	0.02447	3 0.00044	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0048	0.0000
						-180.30	0.11657	1.00	1.00	1.00	0.0147	0.0079	0.0147	
OK*	122	5 C 100x50x5/7.5 0.70 0.06 SS400	4000.00	0.02447	3 0.00064	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0055	0.0002
						-206.32	1.81524	1.00	1.00	1.00	0.0147	0.0079	0.0147	
OK	123	5 C 100x50x5/7.5 0.70 0.06 SS400	4000.00	0.02447	3 0.00147	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0055	0.0002
						-206.80	1.20499	1.00	1.00	1.00	0.0147	0.0079	0.0147	
OK	124	5 C 100x50x5/7.5 0.08 0.02 SS400	750.000	0.02447	3 -0.0003	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0010	0.0001
						-38.068	0.75290	1.00	1.00	1.00	0.0126	0.0147	0.0147	
OK	125	5 C 100x50x5/7.5 0.01 0.00 SS400	765.857	0.02447	3 -0.0054	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0000
						-5.2915	0.23905	1.00	1.00	1.00	0.0125	0.0147	0.0147	
OK	126	3 H 100x100x6/8 0.17 0.00 SS400	765.857	0.02447	3 -0.0696	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0025	0.0002
						194.780	-6.2956	1.00	1.00	1.00	0.0136	0.0162	0.0184	

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

MEMB CHK	SECT COM	Section SHR Material	Fy	LCB	Len Pa	Ly My	Lz Mz	Lb Cb	Ky Kz	Cmy Cmz	fa Fa	fbz FBy	fbz FBz	
OK	127	3 H 100x100x6/8 0.28 0.00 SS400	765.857	0.02447	3 -0.1007	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0045	0.0000
						341.026	0.51141	1.00	1.00	1.00	0.0136	0.0162	0.0184	
OK	128	3 H 100x100x6/8 0.25 0.00 SS400	765.857	0.02447	3 -0.1003	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0040	0.0000
						306.242	-0.2037	1.00	1.00	1.00	0.0136	0.0162	0.0184	
OK	129	3 H 100x100x6/8 0.26 0.00 SS400	765.857	0.02447	3 -0.1007	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0041	0.0000
						315.016	0.00000	1.00	1.00	1.00	0.0136	0.0162	0.0147	
OK	130	3 H 100x100x6/8 0.25 0.00 SS400	765.857	0.02447	3 -0.1003	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0040	0.0000
						306.242	0.20373	1.00	1.00	1.00	0.0136	0.0162	0.0184	
	131	3 H 100x100x6/8	765.857			765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0045	0.0000

OK	0.28	0.00	SS400	0.02447	3	-0.1007	341.026	-0.5114	1.00	1.00	1.00	0.0136	0.0162	0.0184
	132	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0025	0.0002
OK	0.17	0.00	SS400	0.02447	3	-0.0696	194.780	6.29555	1.00	1.00	1.00	0.0136	0.0162	0.0184
	133	5	C 100x50x5/7.5			765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0000
OK	0.01	0.00	SS400	0.02447	3	-0.0054	-5.2915	-0.2391	1.00	1.00	1.00	0.0125	0.0147	0.0147
	134	5	C 100x50x5/7.5			750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0012	0.0002
OK	0.10	0.02	SS400	0.02447	3	0.00065	-46.025	1.70025	1.00	1.00	1.00	0.0147	0.0147	0.0147
	135	5	C 100x50x5/7.5			4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0045	0.0001
OK*	0.58	0.05	SS400	0.02447	3	-0.0044	-171.51	0.77904	1.00	1.00	1.00	0.0016	0.0079	0.0147
	136	5	C 100x50x5/7.5			4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0045	0.0002
OK*	0.58	0.05	SS400	0.02447	3	-0.0037	-170.85	1.32695	1.00	1.00	1.00	0.0016	0.0079	0.0147
	137	5	C 100x50x5/7.5			4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0040	0.0000
OK*	0.51	0.05	SS400	0.02447	3	-0.0056	-150.67	0.12502	1.00	1.00	1.00	0.0016	0.0079	0.0147
	138	5	C 100x50x5/7.5			4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0040	0.0000
OK*	0.51	0.05	SS400	0.02447	3	-0.0056	-150.67	0.12501	1.00	1.00	1.00	0.0016	0.0079	0.0147
	139	5	C 100x50x5/7.5			4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0045	0.0002
OK*	0.58	0.05	SS400	0.02447	3	-0.0037	-170.85	1.32696	1.00	1.00	1.00	0.0016	0.0079	0.0147
	140	5	C 100x50x5/7.5			4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0045	0.0001
OK*	0.58	0.05	SS400	0.02447	3	-0.0044	-171.51	0.77902	1.00	1.00	1.00	0.0016	0.0079	0.0147

midas Gen - Steel Code Checking

[KSSC-ASD03]

Version 741

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

CHK	MEMB COM	SECT SHR	Section Material	Fy	LCB	Len Pa	Ly My	Lz Mz	Lb Cb	Ky Kz	Cmy Cmz	fa Fa	fby FBy	fbz FBz
OK	0.10	0.02	5 C 100x50x5/7.5 SS400	0.02447	3	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0012	0.0002
	141	5	C 100x50x5/7.5			750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0012	0.0002
OK	0.01	0.00	5 C 100x50x5/7.5 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0001
	142	5	C 100x50x5/7.5			765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0001
OK	0.17	0.05	3 H 100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0024	0.0002
	143	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0024	0.0002
OK	0.28	0.09	3 H 100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0002	0.0043	0.0000
	144	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0002	0.0038	0.0000
OK	0.25	0.08	3 H 100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0002	0.0039	0.0000
	145	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0002	0.0038	0.0000
OK	0.26	0.08	3 H 100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0002	0.0039	0.0000
	146	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0002	0.0038	0.0000
OK	0.25	0.08	3 H 100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0002	0.0038	0.0000
	147	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0002	0.0043	0.0000
OK	0.28	0.09	3 H 100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0002	0.0043	0.0000
	148	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0002	0.0043	0.0000
OK	0.17	0.05	3 H 100x100x6/8 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0024	0.0002
	149	3	H 100x100x6/8			765.857	765.857	765.857	765.857	1.00	1.00	0.0001	0.0024	0.0002
OK	0.01	0.00	5 C 100x50x5/7.5 SS400	0.02447	3	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0001
	150	5	C 100x50x5/7.5			750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0012	0.0001
OK	0.09	0.02	5 C 100x50x5/7.5 SS400	0.02447	3	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0012	0.0001
	151	5	C 100x50x5/7.5			4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0038	0.0001
OK	0.48	0.04	5 C 100x50x5/7.5 SS400	0.02447	3	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0038	0.0001
	152	5	C 100x50x5/7.5			4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0038	0.0001
OK*	0.49	0.04	5 C 100x50x5/7.5 SS400	0.02447	3	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0016	0.0079	0.0147

154	5 C 100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0033	0.0000
OK*	0.42 0.04 SS400 0.02447	3	-0.0008	-125.87	0.11954	1.00	1.00	1.00	0.0016	0.0079 0.0147

midas Gen - Steel Code Checking [KSSC-ASD03] Version 741

*.PROJECT :
*.UNIT SYSTEM : tonf, mm

[KSSC-ASD03] CODE CHECKING SUMMARY SHEET --- SELECTED MEMBERS IN ANALYSIS MODEL.

MEMB	SECT	Section	Fy	Len	Ly	Lz	Lb	Ky	Cmy	fa	fb	fbz
CHK	COM	SHR Material	Fy	LCB Pa	My	Mz	Cb	Kz	Cmz	Fa	FBy	FBz
155	5 C 100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0033	0.0000		
OK*	0.42 0.04 SS400 0.02447	3	-0.0008	-125.87	0.11953	1.00	1.00	1.00	0.0016	0.0079 0.0147		
156	5 C 100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0038	0.0001		
OK*	0.49 0.04 SS400 0.02447	3	-0.0027	-142.33	1.08677	1.00	1.00	1.00	0.0016	0.0079 0.0147		
157	5 C 100x50x5/7.5	4000.00	4000.00	4000.00	4000.00	1.00	1.00	0.0000	0.0038	0.0001		
OK	0.48 0.04 SS400 0.02447	3	0.00341	-143.34	0.41921	1.00	1.00	1.00	0.0147	0.0079 0.0147		
158	5 C 100x50x5/7.5	750.000	750.000	750.000	750.000	1.00	1.00	0.0000	0.0012	0.0001		
OK	0.09 0.02 SS400 0.02447	3	0.00101	-45.322	1.11789	1.00	1.00	1.00	0.0147	0.0147 0.0147		
159	5 C 100x50x5/7.5	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0001		
OK	0.02 0.00 SS400 0.02447	3	0.00219	-4.9289	-0.7626	1.00	1.00	1.00	0.0147	0.0147 0.0147		
160	3 H 100x100x6/8	269.835	269.835	269.835	269.835	1.00	1.00	0.0001	0.0028	0.0000		
OK	0.18 0.07 SS400 0.02447	3	0.23067	-216.97	-0.3637	1.00	1.00	1.00	0.0147	0.0162 0.0184		
161	3 H 100x100x6/8	269.835	269.835	269.835	269.835	1.00	1.00	0.0002	0.0049	0.0001		
OK	0.32 0.11 SS400 0.02447	3	0.35875	-378.59	1.37644	1.00	1.00	1.00	0.0147	0.0162 0.0184		
162	3 H 100x100x6/8	269.835	269.835	269.835	269.835	1.00	1.00	0.0001	0.0044	0.0000		
OK	0.28 0.10 SS400 0.02447	3	0.32462	-335.06	-0.5799	1.00	1.00	1.00	0.0147	0.0162 0.0184		
163	3 H 100x100x6/8	269.835	269.835	269.835	269.835	1.00	1.00	0.0002	0.0046	0.0000		
OK	0.29 0.10 SS400 0.02447	3	0.33544	-348.63	0.00000	1.00	1.00	1.00	0.0147	0.0162 0.0147		
164	3 H 100x100x6/8	269.835	269.835	269.835	269.835	1.00	1.00	0.0001	0.0044	0.0000		
OK	0.28 0.10 SS400 0.02447	3	0.32462	-335.06	0.57989	1.00	1.00	1.00	0.0147	0.0162 0.0184		
165	3 H 100x100x6/8	269.835	269.835	269.835	269.835	1.00	1.00	0.0002	0.0049	0.0001		
OK	0.32 0.11 SS400 0.02447	3	0.35875	-378.59	-1.3764	1.00	1.00	1.00	0.0147	0.0162 0.0184		
166	3 H 100x100x6/8	269.835	269.835	269.835	269.835	1.00	1.00	0.0001	0.0028	0.0000		
OK	0.18 0.07 SS400 0.02447	3	0.23067	-216.97	0.36376	1.00	1.00	1.00	0.0147	0.0162 0.0184		
167	5 C 100x50x5/7.5	765.857	765.857	765.857	765.857	1.00	1.00	0.0000	0.0001	0.0001		
OK	0.02 0.00 SS400 0.02447	3	0.00219	-4.9289	0.76257	1.00	1.00	1.00	0.0147	0.0147 0.0147		

5. 기 초 설 계

	Company	.	Project Name	
	Designer	.	File Name	

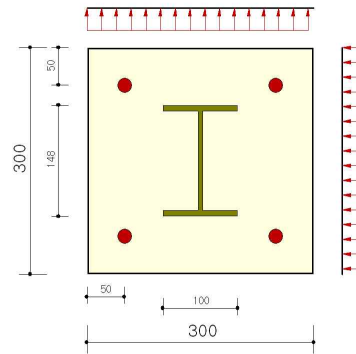
1. Design Conditions

(1). Design Code and Materials

- Base Plate Type : 1
- Design Code : AIK-ASD83
- Steel : SS400 ($F_y = 2400 \text{ kgf/cm}^2$)
- Concrete : $F_c = 210 \text{ kgf/cm}^2$
- Anchor Bolt : SS400

(2). Section Dimension

- Column Size (Designated) : H-148x100x6x9
- Base Plate Size : $D_p \times B_p \times t_p = 300 \times 300 \times 12 \text{ mm}$
- Anchor Bolt : $N_{ab}-D_{ab} = 4 - \Phi 20$
- Bolt Location : $d_x, d_y = 50, 50 \text{ mm}$



(3). Force and Moment

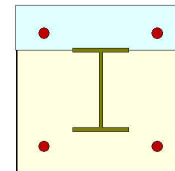
$P_s = 2.20 \text{ tf}$
 $M_x = 0.00, \quad M_y = 0.00 \text{ tf-m}$
 $V_x = 0.00, \quad V_y = 0.00 \text{ tf}$

2. Check the Bearing Stress of Base Plate

$f_{p(MAX)} = P_s/A_p + M_x/Z_x + M_y/Z_y = 0.00 \text{ tf/cm}^2$
 $f_{p(MIN)} = P_s/A_p - M_x/Z_x - M_y/Z_y = 0.00 \text{ tf/cm}^2 \text{ ----> Compression}$
 $F_p = 0.6 \cdot F_c = 0.13 \text{ tf/cm}^2$
 $\text{Ratio} = f_p/F_p = 0.02 < 1.0 \text{ O.K.}$

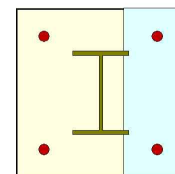
3. Check the Base Plate with Compression (CASE-1)

$f_p = 0.00 \text{ tf/cm}^2$
 $m = (D_p - 0.95 \cdot H)/2 = 7.97 \text{ cm}$
 $M_{bp} = f_p \cdot m^2/2 = 0.08 \text{ tf-cm}$
 $Z_{bp} = t_p^3/6 = 0.24 \text{ cm}^3$
 $f_b = M_{bp}/Z_{bp} = 0.32 \text{ tf/cm}^2$
 $F_b = F_y/1.3 = 1.85 \text{ tf/cm}^2$
 $\text{Ratio} = f_b/F_b = 0.18 < 1.0 \text{ O.K.}$



4. Check the Base Plate with Compression (CASE-1)

$f_p = 0.00 \text{ tf/cm}^2$
 $n = (B_p - 0.8 \cdot B)/2 = 11.00 \text{ cm}$
 $M_{bp} = f_p \cdot n^2/2 = 0.15 \text{ tf-cm}$
 $Z_{bp} = t_p^3/6 = 0.24 \text{ cm}^3$
 $f_b = M_{bp}/Z_{bp} = 0.62 \text{ tf/cm}^2$
 $F_b = F_y/1.3 = 1.85 \text{ tf/cm}^2$
 $\text{Ratio} = f_b/F_b = 0.33 < 1.0 \text{ O.K.}$



5. Check the Shear Stress of Anchor Bolt

$V_{xy} = \sqrt{V_x^2 + V_y^2} = 0.00 \text{ tf}$
 $V_a = 0.4 \cdot P_s = 0.88 \text{ tf}$
 $V_{xy} < V_a \text{ ----> O.K.}$