

上尾市立図書館新築工事

構造計算書

昭和55年3月

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§ 1. 一般事項

- 1) 名称 上尾市立図書館.
- 2) 所在地 埼玉県上尾市.
- 3) 用途 図書館.
- 4) 構造概要 鉄筋コンクリート造 地下1階、地上2階.
- 5) 増築予定
- 6) 敷地、隣地建物の特殊性
- 7) 地質、基礎工法
- 8) 準拠 建築基準法、同施行令、日本建築学会各種計算規準
- 9) 積雪荷重 最深積雪量 0.3 (m) 単位荷重 60 ($\text{kg}/\text{m}^2 \cdot \text{cm}$)
- 10) 風圧力 $P = C \cdot q$ $q = 60\sqrt{h}$ (kg/m^2) 地域による低減率 0.
- 11) 地震力 $K = 0.2$ 地域による低減率 0. 地盤による低減率 0.
- 12) 地下水位 G. L. - 2.79 (m)

13) 設計概要.

- a) 本建家は、市立図書館であり、地下に図書庫及設備機械室、1階ホール、2階図書閲覧室である。
- b) 基礎は地質調査の結果、杭打ち地業とする。
- c) 2階閲覧室積載荷重は、 m^2 あたり、 $200 \text{ kg}/\text{m}^2$ であるが、床版に關してのみ、 $500 \text{ kg}/\text{m}^2$ とし設計した。
- d) 地階書庫は書架荷重 $1.20 \text{ t}/\text{m}^2$ とし設計する。

) 使用材料、許容応力度等

コンクリート、鉄筋の許容応力度 (kg/cm^2)

		長 期 (L. T)		短 期 (S. T)		備 考
		f_c	f_s	f_c	f_s	
普通 コン クリート	$F_c=180$	60	6	120	9	※ $\times 0.9$ は1.2種軽量コ ンクリートの場合のみ
	$F_c=210$	70	7	140	10.5	
	$F_c=225$	75	7.25	150	10.87	
	$F_c=$					
軽量 コン クリート (1又は2種)	$F_c=210$ (種 $\rho =$)	70	6.52	140	9.78	
	$F_c=$ (種 $\rho =$)					
鉄 筋		f_c, f_t	wf_t	f_c, f_t	wf_t	※()間はD29以上の 場合
	SR24	1,600	1,600	2,400	2,400	
	SD30	2,000	2,000	3,000	3,000	
	SD35	2,200 (※2,000)	2,000	3,500	3,000	

鉄筋のコンクリートに対する許容附着応力度 (kg/cm^2)

		長 期 (L. T)		短 期 (S. T)		備 考
		上 ば 筋	そ の 他	上 ば 筋	そ の 他	
丸 鋼		$\leq (\frac{4}{100}F_c \text{ かつ } 9)$	$\leq (\frac{6}{100}F_c \text{ かつ } 13.5)$	$(L.T) \times 1.5$	$(L.T) \times 1.5$	
	$F_c=180$	7.2	10.8	10.8	16.2	
	$F_c=210$	8.4	12.6	12.6	18.9	
	$F_c=225$	9	13.5	13.5	20.2	
異 形 丸 鋼	$F_c=$					
		$\leq \frac{1}{15}F_c \text{ かつ } (9 + \frac{2}{75}F_c)$	$\leq \frac{1}{10}F_c \text{ かつ } (13.5 + \frac{2}{25}F_c)$	$(L.T) \times 1.5$	$(L.T) \times 1.5$	
	$F_c=180$	12	18	18	27	
	$F_c=210$	14	21	21	31.5	
	$F_c=225$	15	22.5	22.5	33.7	
	$F_c=$					

構造用鋼材のF値

(t/cm^2)

鋼材種別	厚 さ t (mm)	t ≤ 40	40 < t	備 考
SS41,SSC41,STK41		2.4	2.2	
SM50,STK50		3.3	3.0	

鉄骨許容応力度

(kg/cm^2)

		長 期 (L. T)		短 期 (S. T)		備 考
		f_t	f_s	f_t	f_s	
SS41,SSC41,STK41		$\frac{1}{1.5}F$	$\frac{1}{1.5\sqrt{3}}F$	$(L.T) \times 1.5$	$(L.T) \times 1.5$	t ≤ 40mm
		1,600	900	2,400	1,350	
SM50,STK50		2,200	1,270	3,300	1,900	

鉄骨のコンクリートに対する許容附着応力度

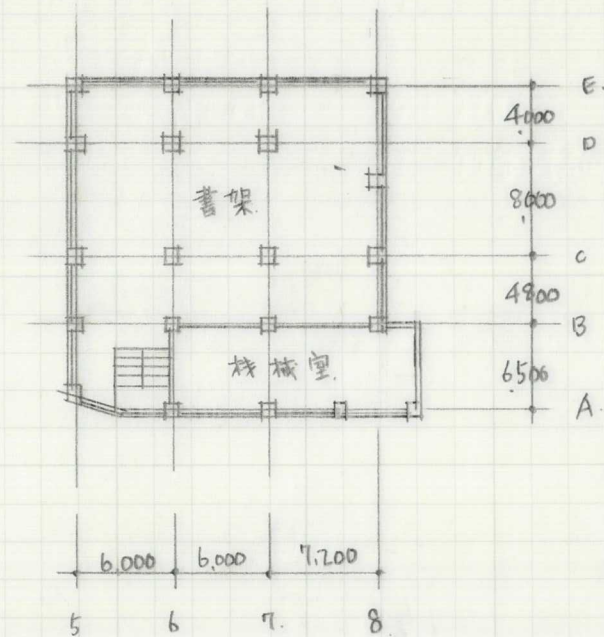
(kg/cm^2)

		長 期 (L. T)	短 期 (S. T)	備 考
形 鋼 鋼 板		$\leq (\frac{2}{100}F_c \text{ かつ } 4.5)$	$(L.T) \times 1.5$	
	$F_c=180$	3.6	5.4	
	$F_c=210$	4.2	6.3	
	$F_c=225$	4.5	6.7	
$F_c=$				

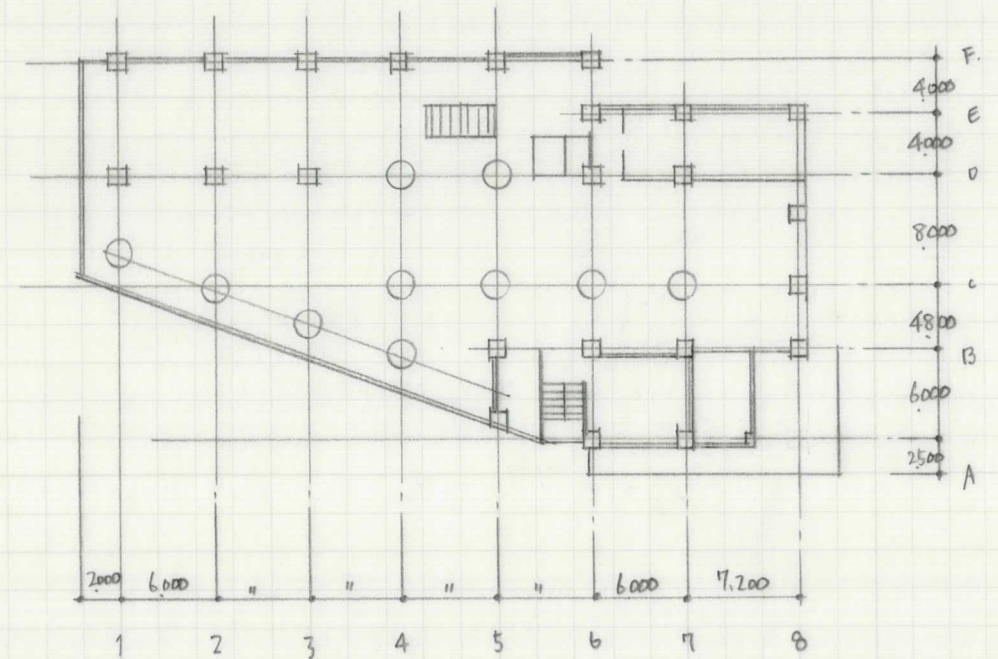
基礎の許容耐力

		長 期 (L. T)	短 期 (S. T)	備 考
基 礎	杭 杭 φ=400	48.0 t/ea	96.0 t/ea	セメントミルク工法
	地耐力	t/m ²	t/m ²	

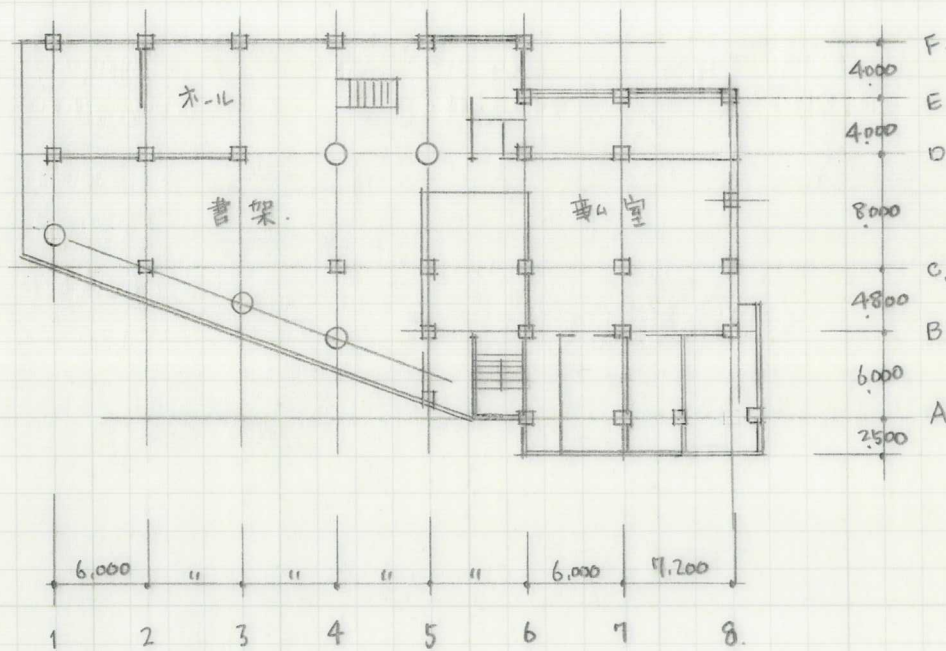
BF.



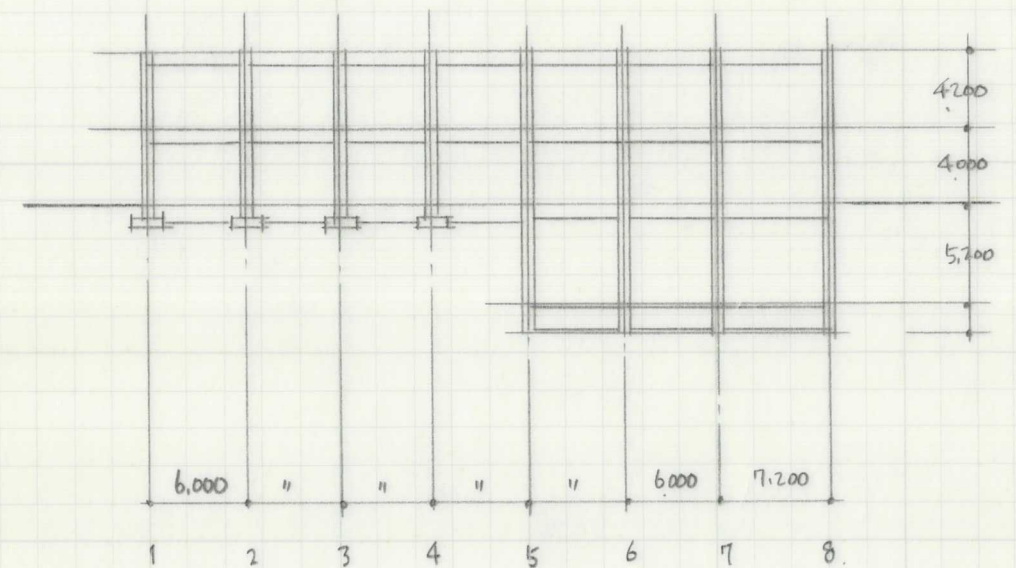
2F.



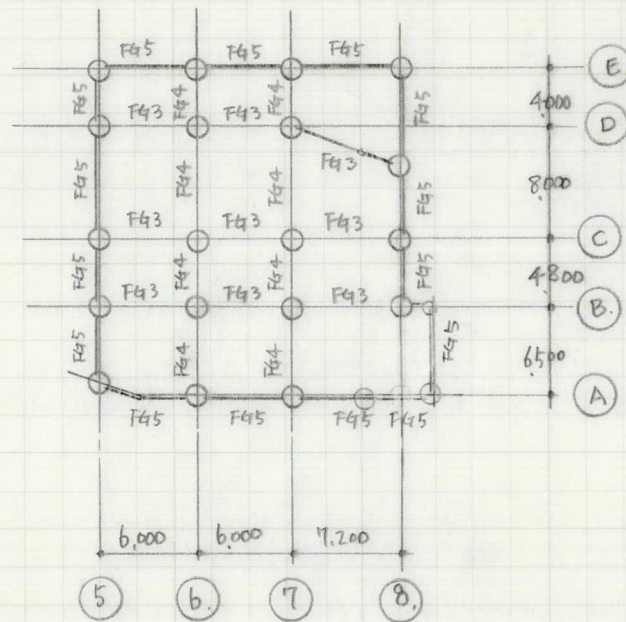
1F.



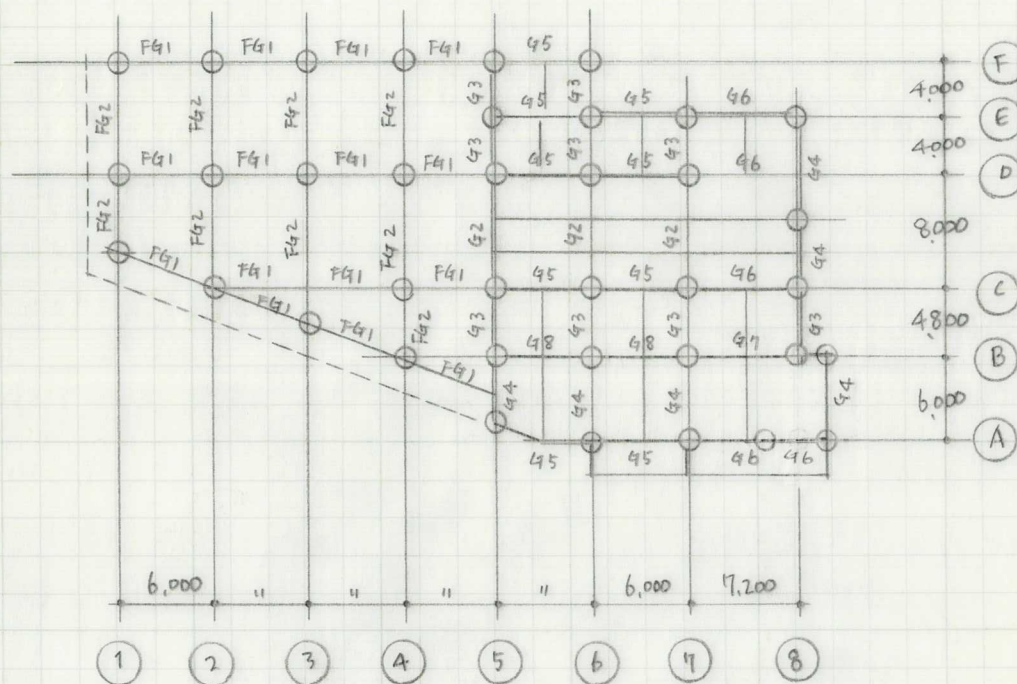
断面.



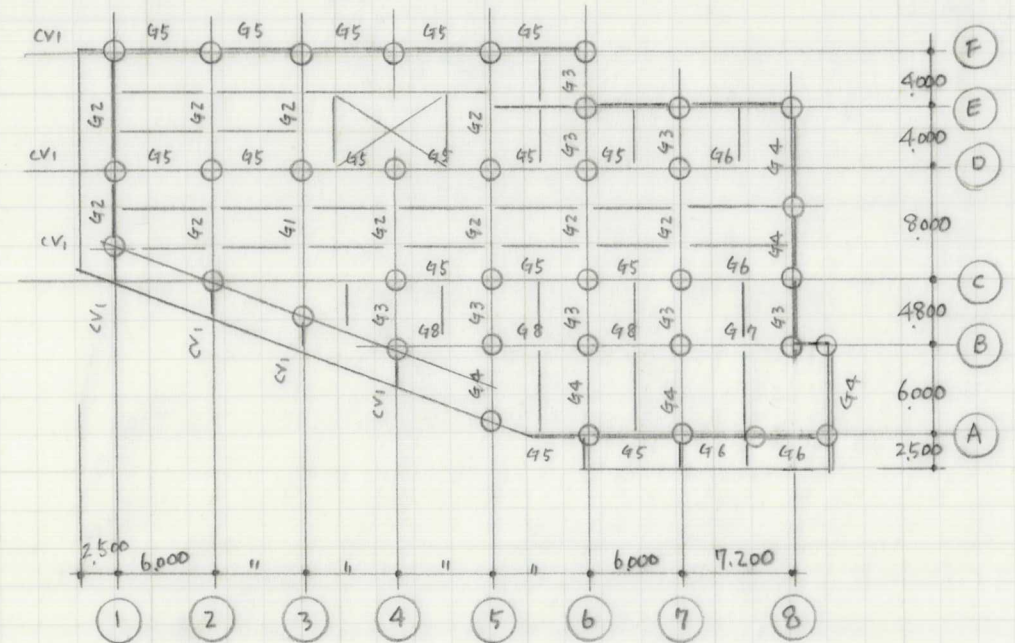
基礎伏図



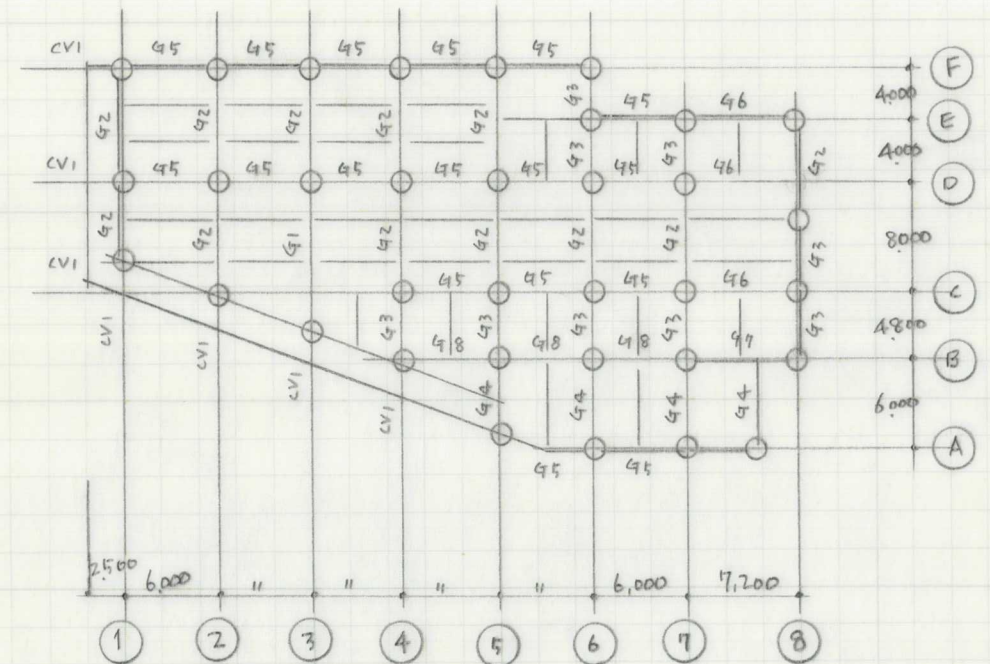
1階床伏図



2階床伏図



屋根伏図



32. 仮定荷重.

2.1 屋根.

豆砂利コンクリート仕上.	$8 \times 23 = 185$	}	560 kg/m^2
防水P.	15		
タテモルタル.	$2 \times 20 = 40$		
RCスラブ	$12 \times 24 = 290$		
天井	30		

2.2 ZFL.

モルタル	$30 \times 20 = 60$	}	380 kg/m^2
RCスラブ	$12 \times 24 = 290$		
天井	30		

2.3 ZFL 機械室. (屋根.)

モルタル	$30 \times 20 = 60$	}	680 kg/m^2
シムコンクリート	$10 \times 23 = 230$		
RCスラブ	$15 \times 24 = 360$		
天井	30		

2.4 便所.

モルタル	$30 \times 20 = 60$	}	580 kg/m^2
シムコンクリート	$8 \times 23 = 185$		
防水P.	15		
RCスラブ	$12 \times 24 = 290$		
天井	30		

2.5 車庫.

モルタル	$30 \times 20 = 60$	}	450 kg/m^2
RCスラブ	$15 \times 24 = 360$		
天井	30		

2.6 階段.

モルタル	$30 \times 20 = 60$	}	580 kg/m^2
RCスラブ	$20 \times 24 = 480$		
天井	40		

2.7 地階書庫.

モルタル	$30 \times 20 = 60$	}	420 kg/m^2
RCスラブ	$15 \times 24 = 360$		

2.8 柱、梁自重.

大梁	40×100	$W = 40 \times 88 \times 24 = 850 \text{ kg/m}$
	40×80	$W = 40 \times 68 \times 24 = 650 \text{ "}$
	35×70	$W = 35 \times 58 \times 24 = 500 \text{ "}$

小梁	30×50	$W = 30 \times 38 \times 24 = 280 \text{ "}$
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柱	60×60	$W = 64 \times 64 \times 24 = 1000 \text{ "}$
	70Φ	$W = 37^2 \times 3.14 \times 24 = 1100 \text{ "}$
	70×70	$W = 74 \times 74 \times 24 = 1300 \text{ "}$

2.9 壁自重.

コンクリート壁.

W30.	$W = 30 \times 24 = 720 \text{ kg/m}^2$
W18.	$W = 18 \times 24 + 100 = 530 \text{ "}$
W15.	$W = 15 \times 24 + 100 = 460 \text{ "}$
W12.	$W = 12 \times 24 + 100 = 380 \text{ "}$

ブロック壁.

CB10.	$W = 10 \times 16 + 100 = 260 \text{ "}$
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2.10 機械荷重.

2階屋根	空調機械	10^+
	7-11-7-7-7	10^+
地階.	機械	20^+

2.11 設計用荷重表.

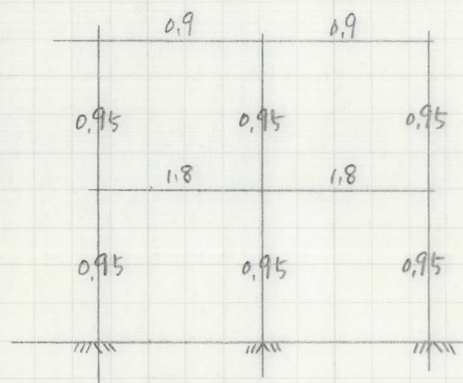
單位: kg/m^2

No	Load.	床版	ラタン	地震
屋根	D.L	560	560	560
	L.L	90	60	30
	T.L	650	610	590
ZFL 一般	D.L	380	380	380
	L.L	500	200	120
	T.L	880	580	500
ZFL 機械室 (地階)	D.L	680	680	680
	L.L	500	400	300
	T.L	1180	1080	980
便所	D.L	580	580	580
	L.L	180	130	60
	T.L	760	710	640
車庫	D.L	450	450	450
	L.L	550	400	200
	T.L	1000	850	650
階段	D.L	580	580	580
	L.L	300	180	80
	T.L	880	760	660
書庫 (地階)	D.L	420	420	420
	L.L	1200	1600	600
	T.L	1620	1420	1020
IFL 一般	D.L	380	380	380
	L.L	400	200	120
	T.L	780	580	500

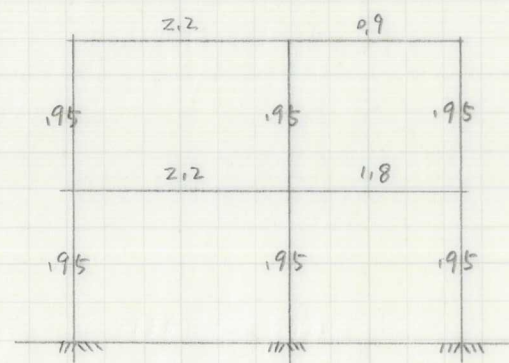
2.3 開口比

No	形状	b	D	ϕ	I _o	I	Q	K	R
RG1		40	100	2.0	320	640	10.5	62.0	2.2
RG2	"	35	70	2.0	100	200	8.0	25.0	0.9
ZG2	"	40	80	2.0	180	390	8.0	49.0	1.8
RG3	"	35	60	2.0	65	130	4.8	27.0	1.0
ZG3	"	40	65	2.0	90	180	4.8	37.0	1.3
RG4	"	35	60	2.0	65	130	6.5	20.0	0.7
ZG4	"	40	65	2.0	90	180	6.5	27.5	1.0
RG5	"	35	60	2.0	65	130	6.0	22.0	0.8
ZG5	"	40	65	2.0	90	180	6.0	30.0	1.1
RG6	"	35	65	2.0	80	160	7.2	22.0	0.8
ZG6	"	40	70	2.0	120	240	7.2	33.0	1.20
RG7	"	35	65	2.0	65	130	7.2	18.0	0.65
ZG7	"	40	70	2.0	120	240	7.2	33.0	1.10
2C1		60	60	1.0	110	110	4.2	26.0	0.95
1C1	"	60	60	1.0	110	110	4.0	27.5	1.0
BC1	"	70	70	1.0	200	200	5.2	38.0	1.4
2C2		70^ϕ	70	1.0	110	110	4.2	26.0	0.95
1C2	"	70^ϕ	70	1.0	110	110	4.2	26.0	0.95

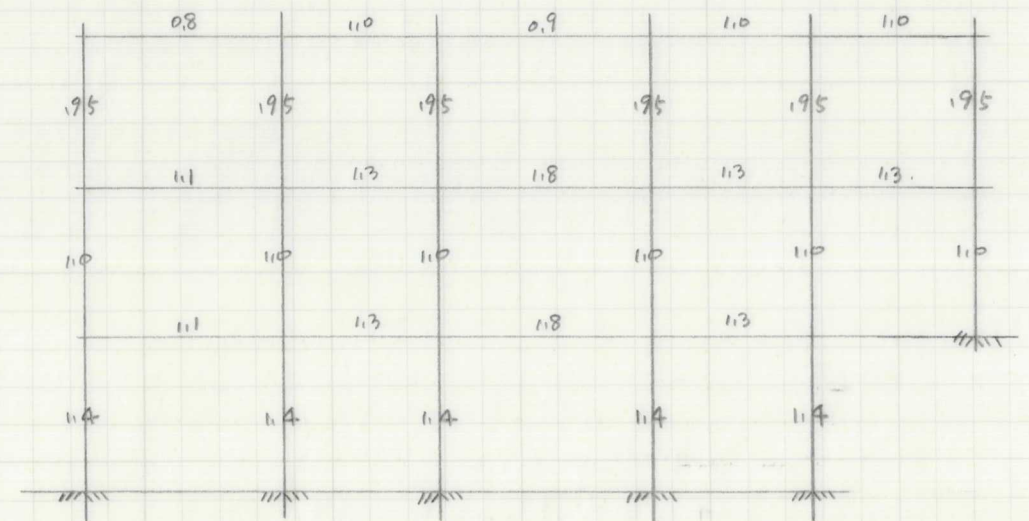
1.2 通のラ-+v.



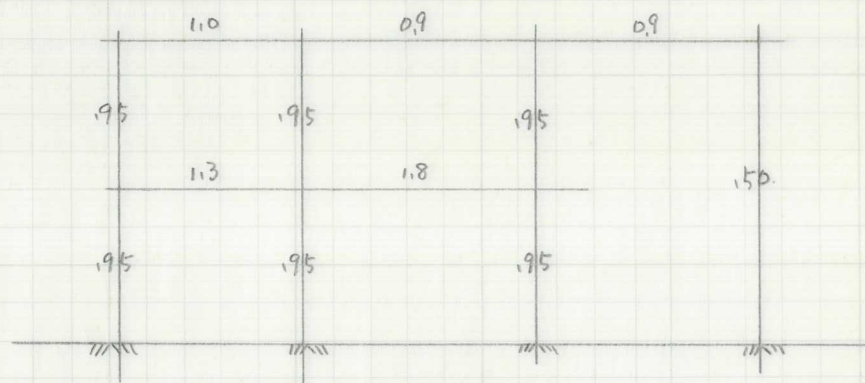
3 通のラ-+v.



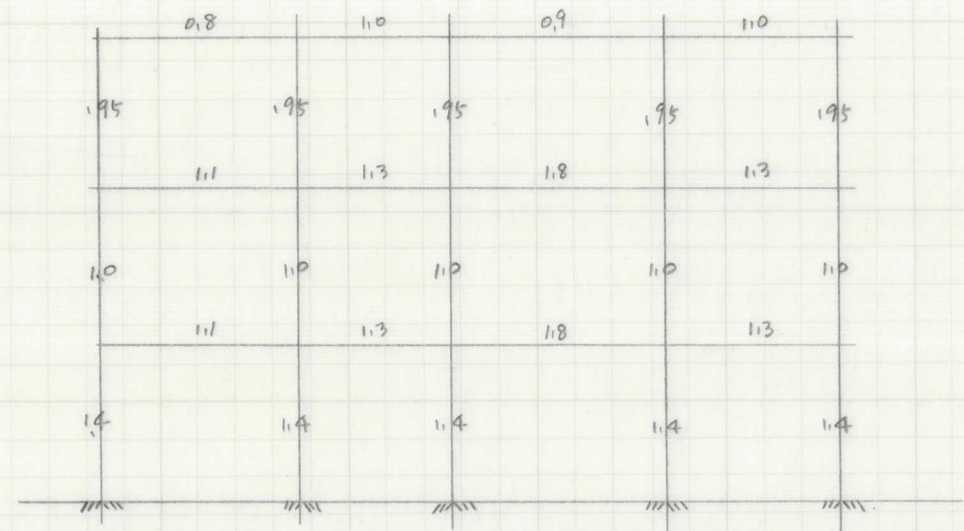
6 通のラ-+v.



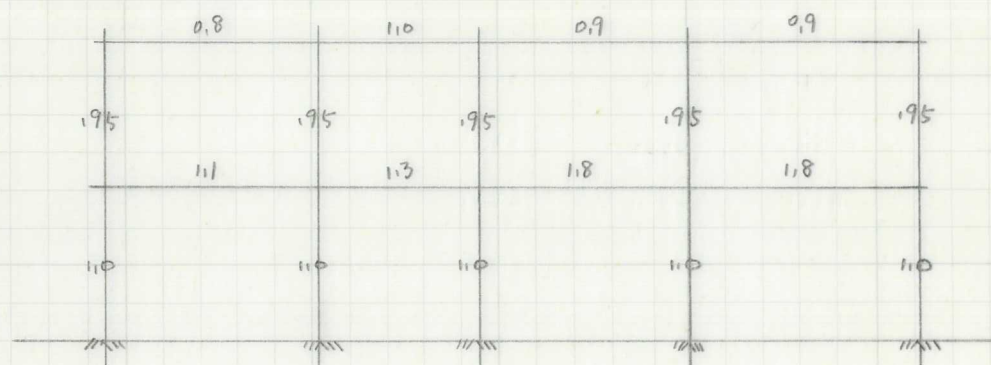
4 通のラ-+v.



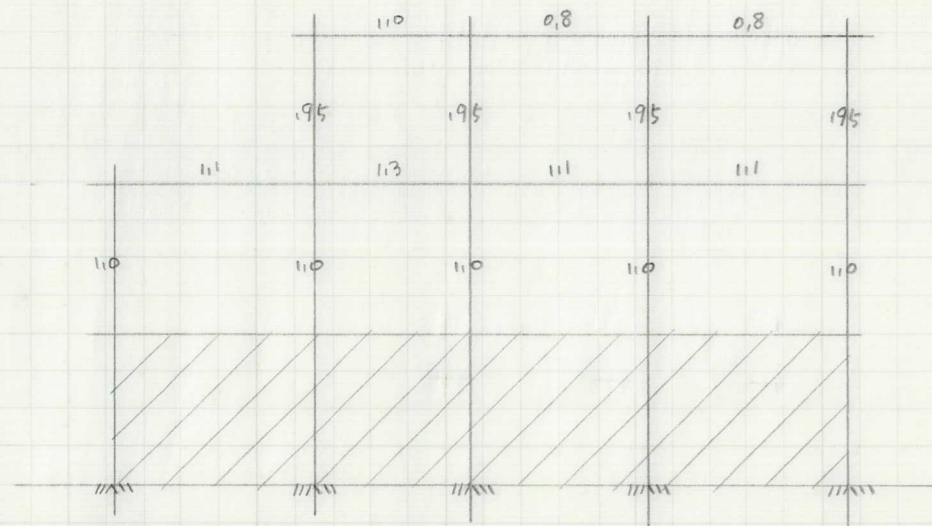
7 通のラ-+v.



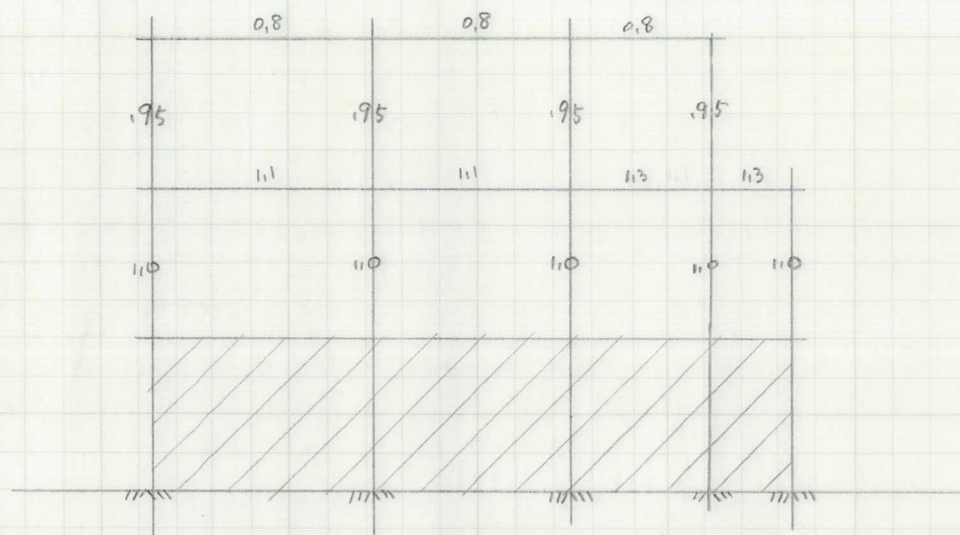
5 通のラ-+v.



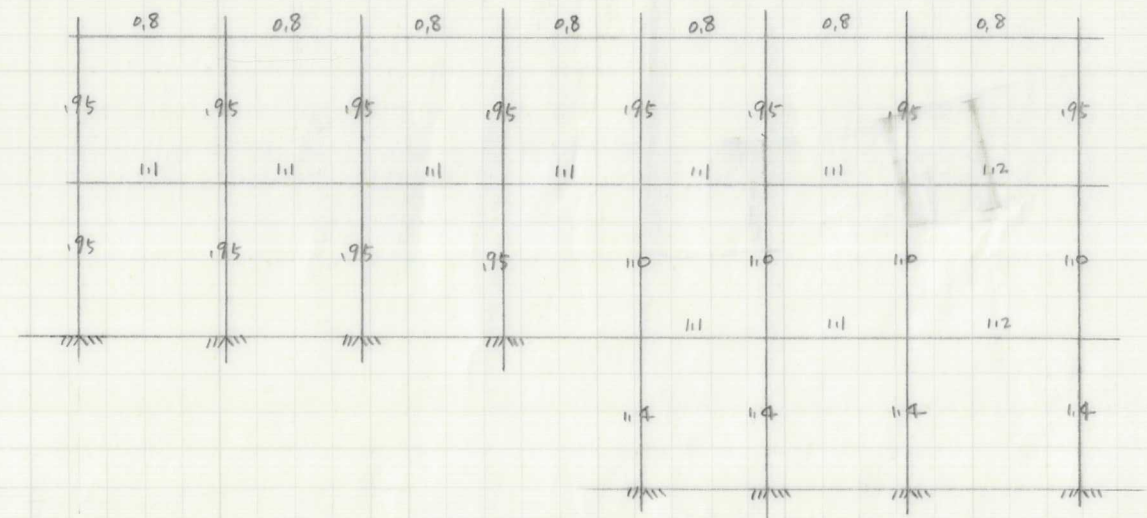
8. 通りラーテン



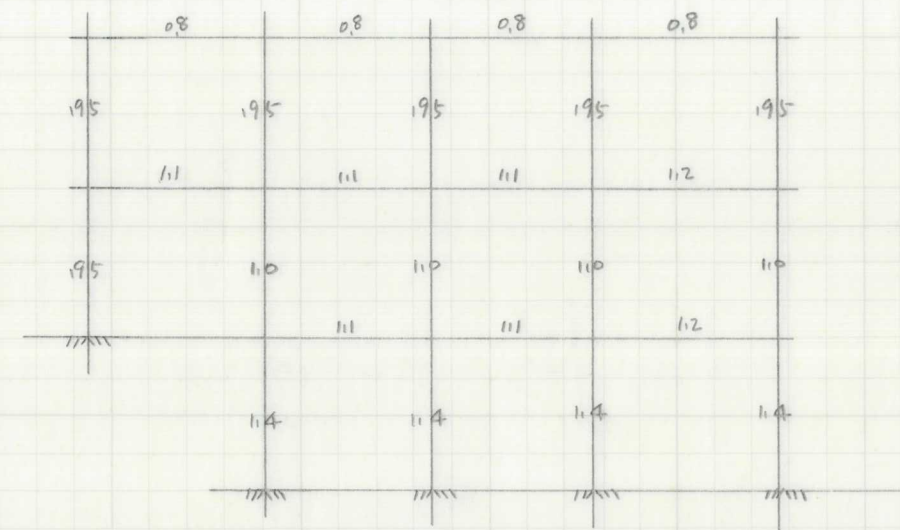
A 通りラーテン



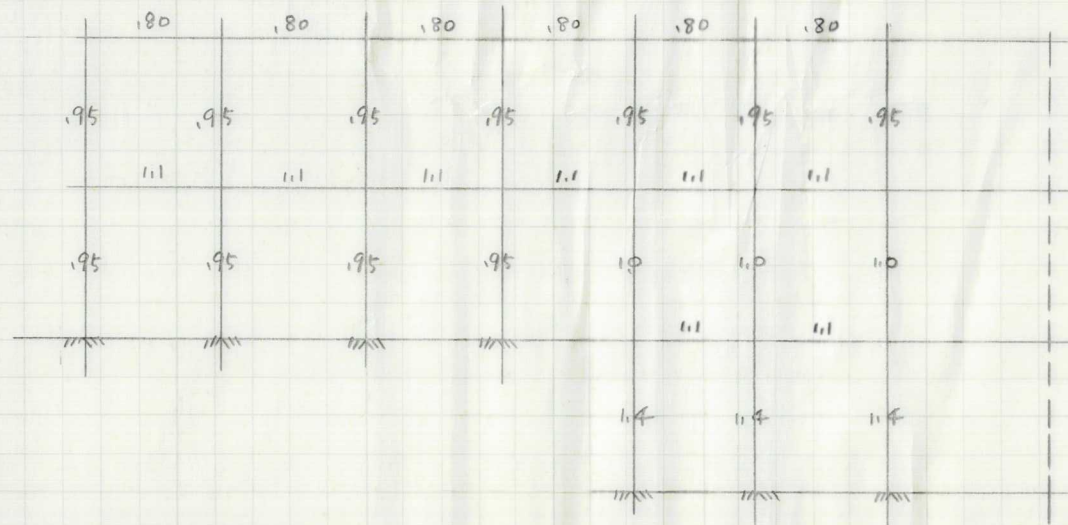
B 通りラーテン



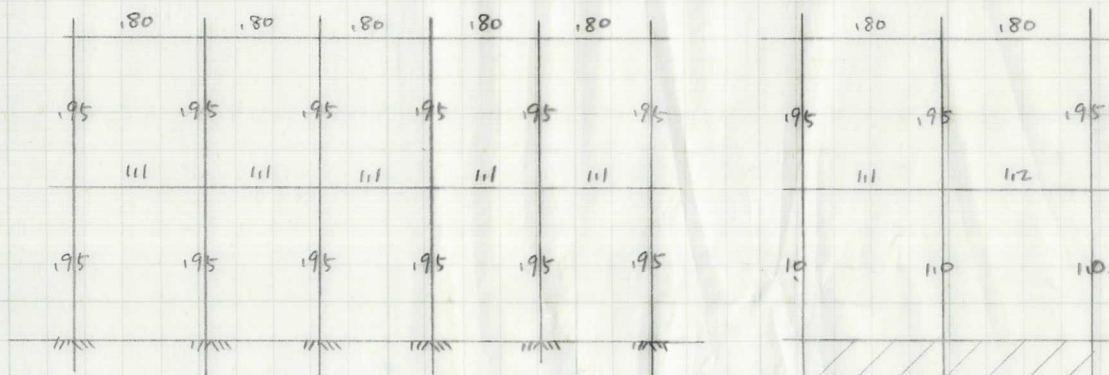
C 通りラーテン



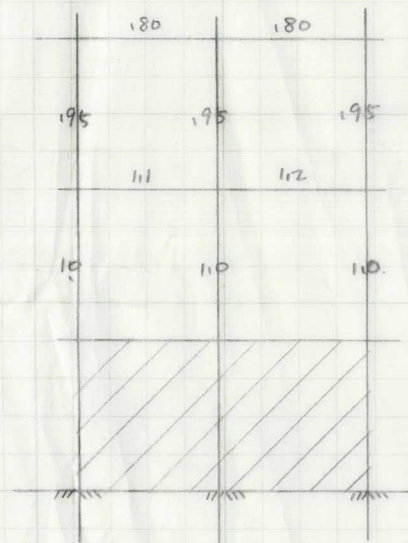
D 通リラーテン



F 通リラーテン

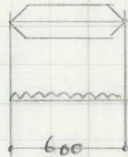
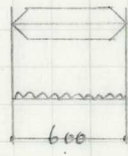
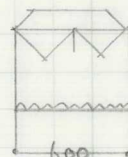
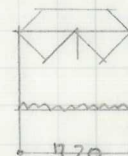


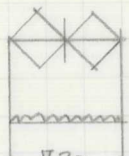
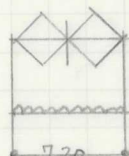
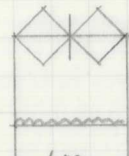
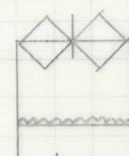
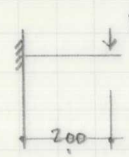
E 通リラーテン



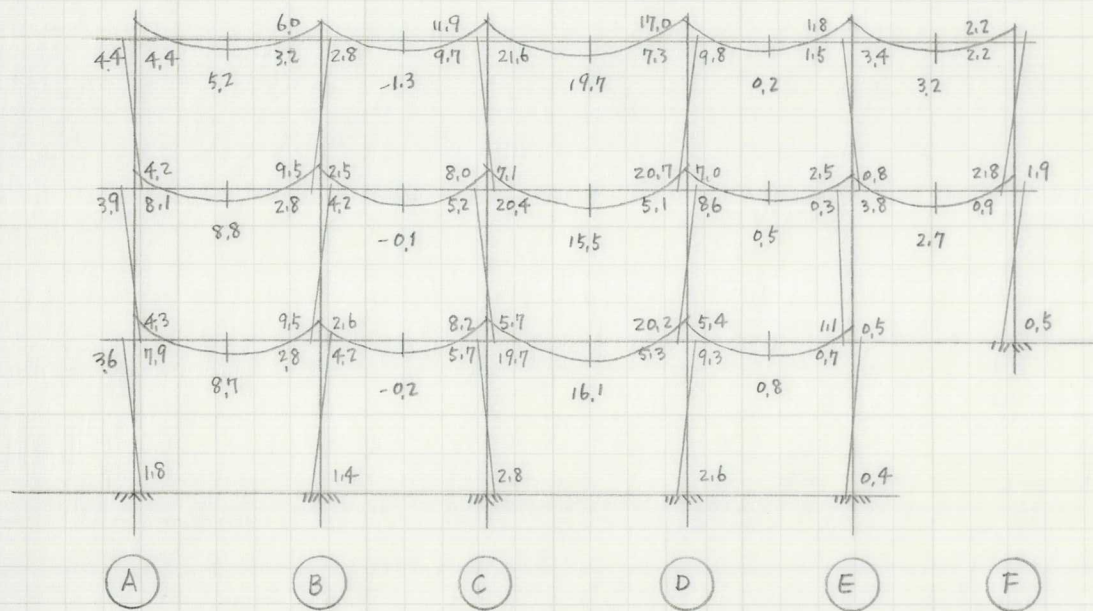
§ 4. 荷重項の算定.

No	Loading	C	M ₀	Q.
RG1	$lx=3.0 \quad ly=10.0 \quad \lambda=3.3$ $W=1.61$ $P=1.61 \times 2.5 \times 3.0 = 4.7^+$ $\text{小梁 } P=1.28 \times 6.0 = 1.17^+$ $\text{大梁 } W=1.85$	17.0	25.0	10.0
		20.0	32.0	10.0
		8.0	12.0	5.0
		45.0	69.0	25.0
2G1	$lx=3.0 \quad ly=10.0 \quad \lambda=3.3$ $W=1.58$ $P=1.58 \times 2.5 \times 3.0 = 4.3$ $\text{小梁 } P=1.28 \times 6.0 = 1.17$ $\text{大梁 } W=1.85$	15.0	23.0	9.0
		18.5	30.0	9.2
		8.0	12.0	5.0
		41.5	65.0	23.2
RG2	$lx=2.7 \quad ly=6.0 \quad \lambda=2.2$ $W=1.61$ $\text{小梁 } P=1.28 \times 6.0 = 1.17$ $\text{大梁 } W=1.50$	20.0	30.0	11.0
		3.0	5.0	1.7
		2.7	4.0	2.0
		25.7	39.0	14.0
2G2	$lx=2.7 \quad ly=6.0 \quad \lambda=2.2$ $W=1.58$ $\text{小梁 } P=1.28 \times 6.0 = 1.17$ $\text{大梁 } W=1.50$	18.0	27.0	10.0
		3.0	5.0	1.7
		2.7	4.0	2.0
		23.7	36.0	13.7
RG3	$lx=3.0 \quad ly=4.8 \quad \lambda=1.6$ $W=1.61$ $\text{大梁 } W=1.50$	3.0	4.5	3.0
		1.0	1.5	1.0
		4.0	6.0	4.0
2G3	$lx=3.0 \quad ly=4.8 \quad \lambda=1.6$ $W=1.58$ $\text{大梁 } W=1.50$	3.0	4.5	3.0
		1.0	1.5	1.0
		4.0	6.0	4.0

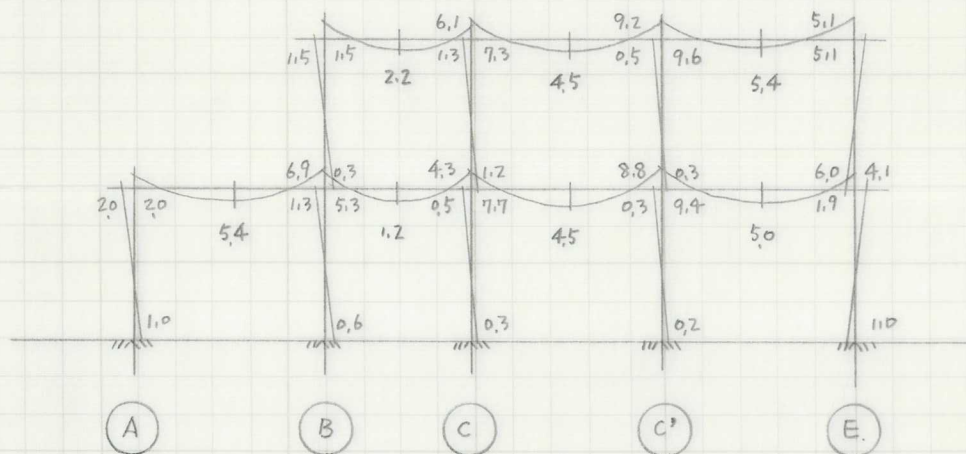
No	Loading	C	M ₀	Q
RG4	 $lx=3.0 \quad ly=6.0 \quad \lambda=2.0$ $W=1.61$ 大梁 $w=1.50$	5.0	7.5	4.5
		1.5	2.3	1.5
		6.5	9.8	6.0
ZG4	 $lx=3.0 \quad ly=6.0 \quad \lambda=2.0$ $W=1.08$ 大梁 $w=1.50$	8.6	13.0	8.0
		1.5	2.3	1.5
		10.1	15.3	9.5
RG5	 $lx=2.7 \quad ly=6.0 \quad \lambda=2.2$ $lx=3.0 \quad ly=4.8 \quad \lambda=1.6$ 小梁 $p=1.28 \times 2.4 = 0.7 \quad w=1.61$ 大梁 $W=1.50$	2.4	3.6	2.2
		3.8	5.8	3.0
		0.5	1.0	0.4
ZG5	 $lx=2.7 \quad ly=6.0 \quad \lambda=2.2$ $lx=3.0 \quad ly=4.8 \quad \lambda=1.6$ 小梁 $p=1.28 \times 2.4 = 0.7 \quad w=1.58$ 大梁 $W=1.50$	1.5	2.3	1.5
		8.2	12.7	7.1
		7.6	11.8	6.6
RG6	 $lx=2.7 \quad ly=7.2 \quad \lambda=2.6$ $lx=3.6 \quad ly=4.8 \quad \lambda=1.3$ 小梁 $p=1.28 \times 2.4 = 0.7 \quad w=1.61$ 大梁 $W=1.50$	3.2	5.2	3.0
		5.7	8.7	3.6
		0.6	1.2	0.4
ZG6	 $lx=2.7 \quad ly=7.2 \quad \lambda=2.6$ $lx=3.6 \quad ly=4.8 \quad \lambda=1.3$ 小梁 $p=1.28 \times 2.4 = 0.7 \quad w=1.58$ 大梁 $W=1.50$	2.2	3.3	2.0
		11.7	18.4	9.0
		10.7	17.3	8.4

No	Loading	C	M ₀	Q
RG7	 $lx=3.6 \quad ly=4.8 \quad \lambda=1.3$ $lx=3.6 \quad ly=6.0 \quad \lambda=1.7$ 小梁 $p=1.28 \times 5.4 = 1.6 \quad w=1.61$ 大梁 $W=1.50$	5.5	9.2	3.7
		7.0	12.0	4.3
		1.5	3.0	0.8
ZG7	 $lx=3.6 \quad ly=4.8 \quad \lambda=1.3$ $lx=3.6 \quad ly=6.0 \quad \lambda=1.7$ 小梁 $p=1.6 \quad w=1.08$ 大梁 $W=1.50$	2.3	3.4	1.6
		16.3	27.6	10.4
		23.8	41.4	15.7
RG8	 $lx=3.0 \quad ly=4.8 \quad \lambda=1.6$ $lx=3.0 \quad ly=6.0 \quad \lambda=2.0$ 小梁 $p=1.6 \quad w=1.61$ 大梁 $W=1.50$	3.7	7.0	3.1
		4.8	13.0	4.0
		1.2	2.4	0.8
ZG8	 $lx=3.0 \quad ly=4.8 \quad \lambda=1.6$ $lx=3.0 \quad ly=6.0 \quad \lambda=2.0$ 小梁 $p=1.6 \quad w=1.08$ 大梁 $W=1.50$	1.5	2.3	1.5
		11.2	24.7	9.4
		16.9	36.7	14.5
RCV1	 $q_1 = 1.46 \times 1.1 \times 6.0 = 3.0$ $梁 = 1.28 \times 6.0 = 1.7$ $床 = 1.61 \times 1.0 \times 6.0 = 3.6$ $\Sigma p = 8.3^+$	17.0		8.3
		17.0		8.3
ZCV1	 $q_1 = 1.46 \times 1.5 \times 6.0 = 4.5$ $梁 = 1.28 \times 6.0 = 1.7$ $床 = 1.58 \times 1.0 \times 6.0 = 3.2$ $\Sigma p = 9.4^+$	19.0		9.4
		19.0		9.4

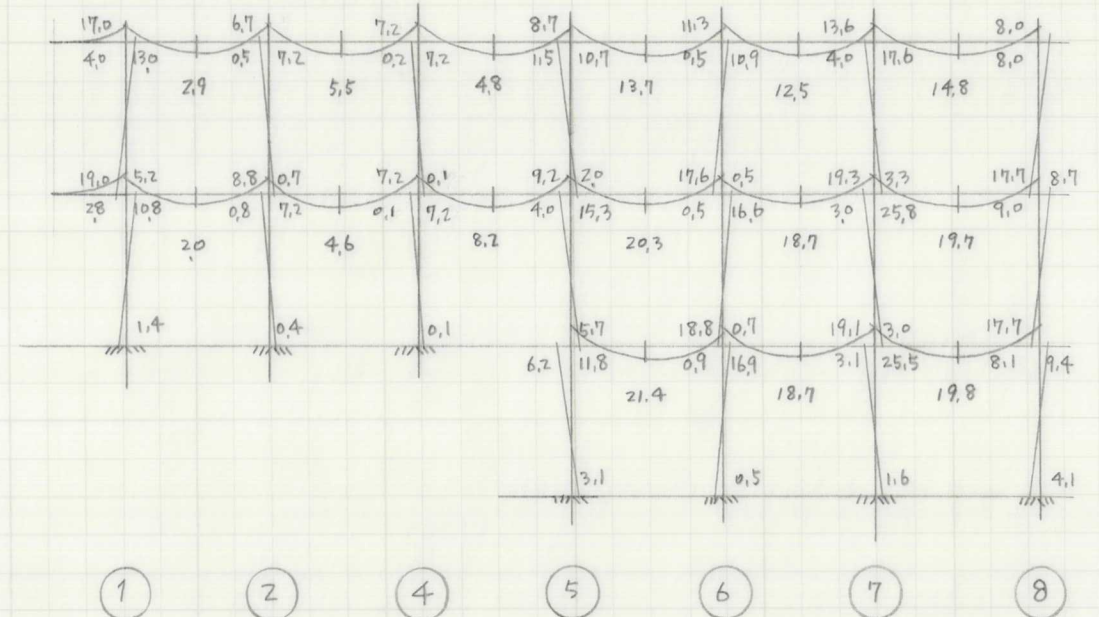
6 通 リラ-タン



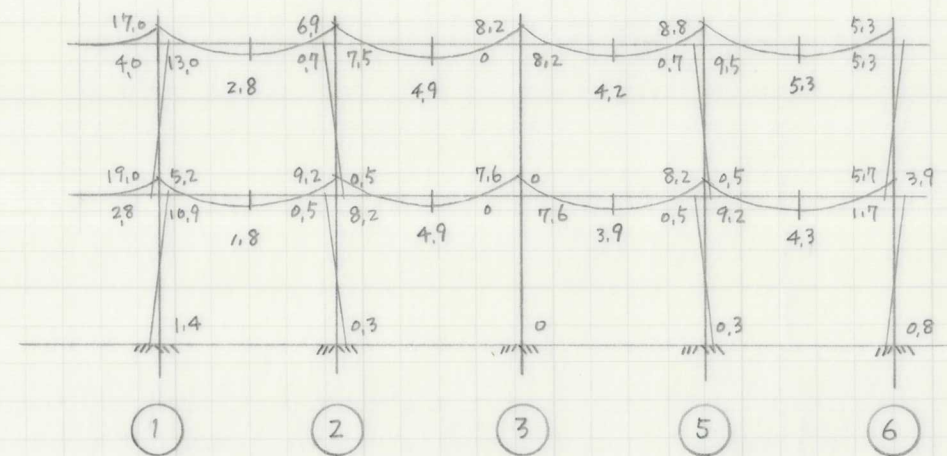
8 通 リラ-タン



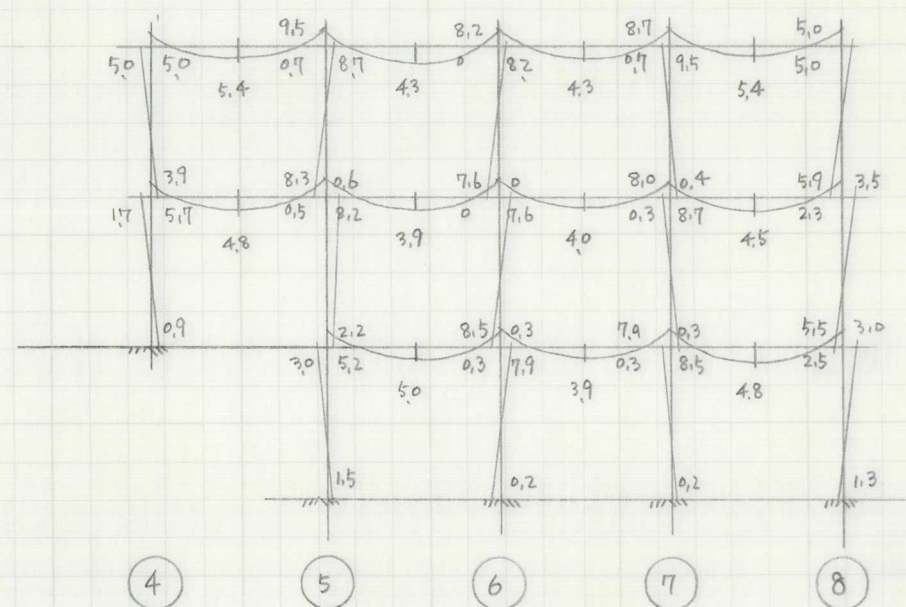
B 通 リラ-タン



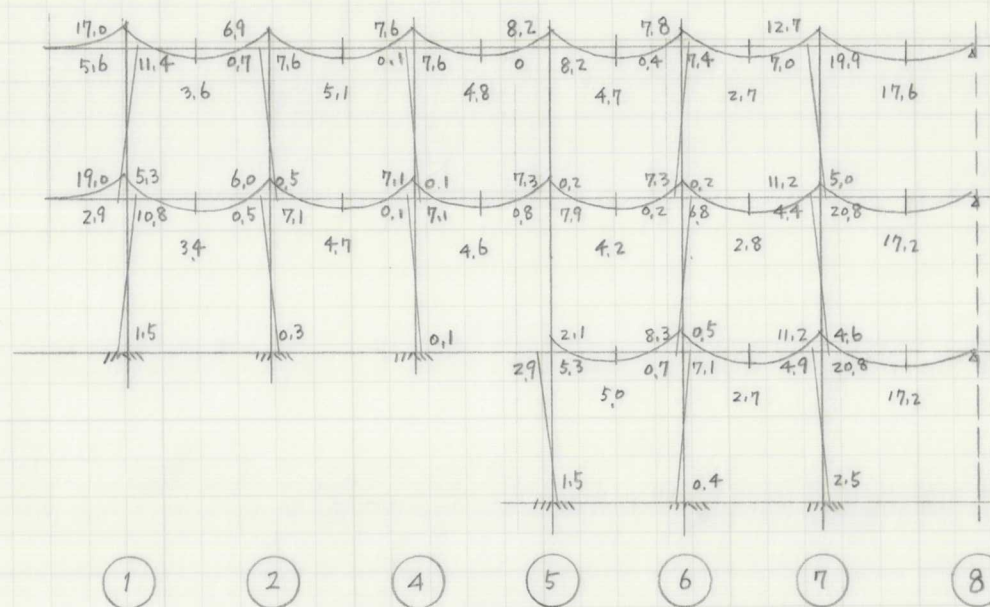
F 通 リラ-タン



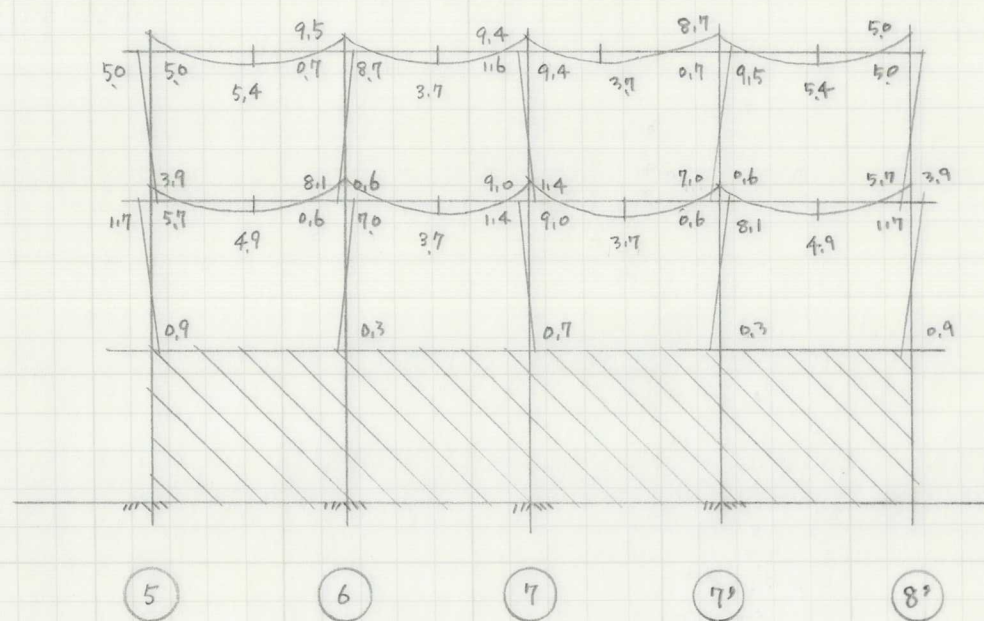
C 通りラタン



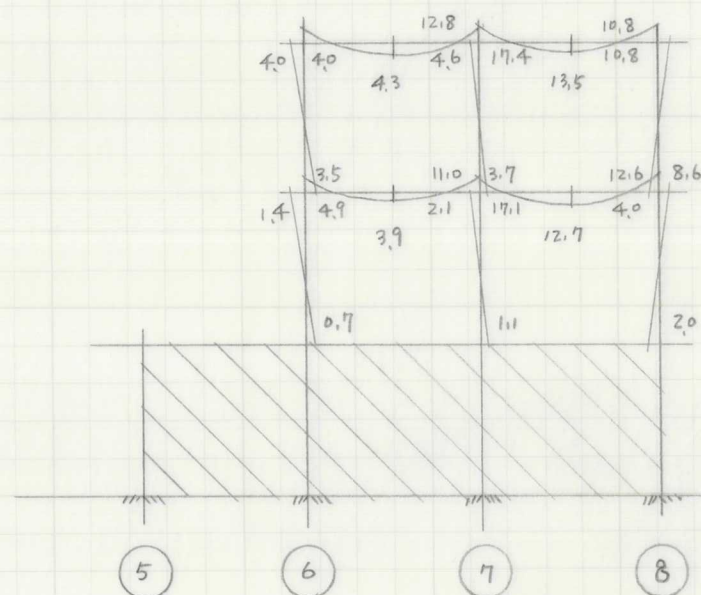
D 通りラタン



A 通りラタン



E 通りラタン



多6. 耐震設計.

6.1 建物重量及剪断力.

FL		Loading	W	K	KW	ΣKW
2FL	床版.	$8.0 \times 33.0 \times 0.59 = 156.0$				
	"	$4.3 \times 13.5 \times 0.59 = 34.0$				
	"	$8.0 \times 46.0 \times 0.59 = 215.0$				
	"	$4.8 \times 37.5 \times 0.59 = 110.0$				
	"	$6.8 \times 23.0 \times 0.59 = 95.0$				
	1階ハット	$0.6 \times 150.0 \times 0.72 = 65.0$ 67.5				
	大梁.	$10.0 \times 0.85 = 8.5$				
	"	$43.0 \times 3.0 \times 0.50 = 65.0$				
	"	$30.0 \times 2.0 \times 0.50 = 30.0$				
	"	$20.0 \times 8.0 \times 0.50 = 80.0$ 183.5				
	小梁.	$30.0 \times 2.0 \times 0.28 = 17.0$				
	"	$40.0 \times 2.0 \times 0.28 = 23.0$				
	"	$4.0 \times 9.0 \times 0.28 = 10.0$				
	"	$6.0 \times 2.0 \times 0.28 = 4.0$				
	"	$45.0 \times 0.28 = 13.0$ 67.0				
	柱.	$2.1 \times 34.0 \times 1.10 = 80.0$ 80.0				
	カハ.	$1.6 \times 135.0 \times 0.46 = 99.0$				
	"	$1.6 \times 30.0 \times 0.38 = 18.0$				
	"	$1.6 \times 20.0 \times 0.53 = 18.0$				
	"	$1.6 \times 10.0 \times 0.26 = 4.0$ 139.				
	予力.	30.0	1174.5	0.2	235.0	235.0
1FL	床版.	$8.0 \times 33.0 \times 0.5 = 132.0$				
	"	$4.3 \times 13.5 \times 0.66 = 38.3$				
	"	$8.0 \times 46.0 \times 0.6 = 220.0$				
	"	$4.8 \times 37.5 \times 0.6 = 108.0$				
	"	$6.8 \times 23.0 \times 0.98 = 153.0$				
	"	$2.0 \times 16.0 \times 0.98 = 31.0$ 682.3				
	1階ハット	$1.1 \times 16.0 \times 0.53 = 9.3$ 9.3				

FL		Loading	W	K	KW	ΣKW
	大梁.	$10.0 \times 0.85 = 8.5$				
	"	$43.0 \times 3.0 \times 0.65 = 84.0$				
	"	$30.0 \times 2.0 \times 0.65 = 39.0$				
	"	$20.0 \times 8.0 \times 0.65 = 104.0$				
	"	$10.0 \times 0.65 = 6.5$ 242.				
	小梁.	$30.0 \times 2.0 \times 0.28 = 17.0$				
	"	$40.0 \times 2.0 \times 0.28 = 23.0$				
	"	$4.0 \times 9.0 \times 0.28 = 10.0$				
	"	$6.0 \times 2.0 \times 0.28 = 4.0$				
	"	$45.0 \times 0.28 = 13.0$				
	"	$16.0 \times 0.28 = 5.0$ 72.0				
	柱.	$4.1 \times 35.0 \times 1.1 = 157.8$				
	2F.					
	カハ.	$3.5 \times 95.0 \times 0.46 = 153.0$				
	"	$2.1 \times 30.0 \times 0.38 = 24.0$				
	"	$2.1 \times 20.0 \times 0.53 = 23.0$				
	"	$2.1 \times 10.0 \times 0.26 = 5.0$ 205.				
	1F.					
	"	$1.5 \times 60.0 \times 0.38 = 34.0$				
	"	$1.5 \times 20.0 \times 0.53 = 16.0$				
	"	$1.5 \times 20.0 \times 0.26 = 8.0$ 58.0				
	予力.	30.0				
			1456.4	0.2	292.0	527.0
BFL	床版.	$7.5 \times 20.0 \times 0.65 = 97.5$				
	"	$11.0 \times 20.0 \times 0.50 = 110.0$				
	"	$6.5 \times 20.0 \times 0.66 = 86.0$				
	"	$2.0 \times 6.5 \times 0.66 = 9.0$ 302.5				
	大梁.	$20.0 \times 5.0 \times 0.65 = 65.0$				
	"	$20.0 \times 4.0 \times 0.65 = 52.0$				
	"	$20.0 \times 0.65 = 13.0$ 130.				

FL		Loading	W	K	KW	ΣKW.
木梁		$4.0 \times 3.0 \times 0.28 = 4.0$				
"		$20.0 \times 20 \times 0.28 = 11.2$				
"		$4.0 \times 20 \times 0.28 = 4.0$				
"		$6.5 \times 40 \times 0.28 = 7.3$				
		26.5				
柱		$21.0 \times 20 \times 1.1 = 46.2$				
		$21.0 \times 21.7 \times 1.3 = 73.8$				
		120.0				
1FL						
カハ		$2.0 \times 500 \times 0.46 = 46.0$				
"		$210 \times 350 \times 0.38 = 27.0$				
"		$20 \times 200 \times 0.53 = 21.0$				
"		$20 \times 200 \times 0.26 = 10.5$				
		104.5				
8FL						
カハ		$20 \times 800 \times 0.85 = 136.0$				
"		$20 \times 800 \times 0.26 = 42.0$				
"		$20 \times 400 \times 0.46 = 37.0$				
"		$20 \times 200 \times 0.53 = 21.0$				
		236.	919.5	0.2	184.0	
1FL計		$527.0 \times 2/3 = 351.0^+$			184.0	535.0

6.2 分布係数.

1.2 通りラタン

	.90	.90	
.95	$\bar{K} = 1.4$ $a = .41$ $b = .38$ $d = .70$ $\gamma = .40$	$\bar{K} = 2.8$ $a = .57$ $b = .54$ $d = .10$ $\gamma = .45$	.95
	1.8	1.8	
.95	$\bar{K} = 1.9$ $a = .61$ $b = .58$ $d = .90$ $\gamma = .55$	$\bar{K} = 3.8$ $a = .74$ $b = .70$ $d = .11$ $\gamma = .55$	.95

3 通りラタン

	2.2	.90	
.95	$\bar{K} = 2.3$ $a = .53$ $b = .50$ $d = .90$ $\gamma = .45$	$\bar{K} = 3.7$ $a = .64$ $b = .60$ $d = .11$ $\gamma = .45$	.95
	2.2	1.8	
.95	$\bar{K} = 2.3$ $a = .65$ $b = .61$ $d = .10$ $\gamma = .55$	$\bar{K} = 4.2$ $a = .75$ $b = .70$ $d = .11$ $\gamma = .55$	.95

4 通りラタン

	1.0	.90	.90	
.95	$\bar{K} = 1.2$ $a = .37$ $b = .36$ $d = .70$ $\gamma = .40$	$\bar{K} = 2.6$ $a = .56$ $b = .53$ $d = .10$ $\gamma = .45$	$\bar{K} = 1.9$ $a = .50$ $b = .46$ $d = .80$ $\gamma = .40$	.95
	1.3	1.8	.50	
.95	$\bar{K} = 1.4$ $a = .56$ $b = .53$ $d = .80$ $\gamma = .60$	$\bar{K} = 3.2$ $a = .70$ $b = .67$ $d = .11$ $\gamma = .55$	$\bar{K} = 1.9$ $a = .61$ $b = .58$ $d = .90$ $\gamma = .60$	.95

5 通りラタン

	.80	1.0	.90	.90	
.95	$\bar{K} = 1.0$ $a = .33$ $b = .31$ $d = .60$ $\gamma = .35$	$\bar{K} = 2.2$ $a = .53$ $b = .50$ $d = .90$ $\gamma = .40$	$\bar{K} = 2.6$ $a = .57$ $b = .54$ $d = .10$ $\gamma = .45$	$\bar{K} = 2.8$ $a = .57$ $b = .54$ $d = .10$ $\gamma = .45$	.95
	1.1	1.3	1.8	1.8	
.95	$\bar{K} = 1.1$ $a = .51$ $b = .51$ $d = .80$ $\gamma = .60$	$\bar{K} = 2.4$ $a = .66$ $b = .66$ $d = .11$ $\gamma = .55$	$\bar{K} = 3.1$ $a = .73$ $b = .73$ $d = .11$ $\gamma = .55$	$\bar{K} = 3.6$ $a = .73$ $b = .73$ $d = .11$ $\gamma = .55$	.95

6 通のラテン

	.80	1.10	1.90	1.10	1.10				
.95	$\bar{R}=1.0$ $a=.133$ $D=.131$ $D=.160$ $y=.135$	.95	2.2 .53 .56 .90 .40	.95	2.6 .57 .54 .10 .45	.95	2.4 .55 .52 .10 .45	.95	1.2 .37 .36 .60 .35
	1.1	1.3	1.8	1.3	1.3				
1.10	$\bar{R}=1.1$ $a=.135$ $D=.135$ $D=.160$ $y=.145$	1.10	2.4 .55 .55 .90 .45	1.10	3.1 .61 .61 .10 .50	1.10	3.1 .61 .61 .10 .50	1.10	1.4 .56 .56 .90 .60
	1.1	1.3	1.8	1.3	1.3				
1.14	$\bar{R}=1.99$ $a=.146$ $D=.164$ $D=.170$ $y=.165$	1.14	1.7 .60 .84 .90 .55	1.14	2.2 .65 .91 .10 .55	1.14	2.2 .65 .91 .10 .55	1.14	1.93 .49 .69 .175 .60

7 通のラテン

	.80	1.10	1.90	1.10					
.95	$\bar{R}=1.0$ $A=.133$ $D=.131$ $D=.160$ $y=.135$	.95	2.12 .53 .50 .90 .40	.95	2.6 .57 .54 .10 .45	.95	2.6 .57 .54 .10 .45	.95	1.2 .37 .36 .60 .35
	1.1	1.3	1.8	1.3					
1.10	$\bar{R}=1.1$ $A=.135$ $D=.135$ $D=.160$ $y=.145$	1.10	2.4 .55 .55 .90 .45	1.10	3.1 .61 .61 .10 .50	1.10	3.1 .61 .61 .10 .50	1.10	1.3 .39 .39 .60 .45
	1.1	1.3	1.8	1.3					
1.14	$\bar{R}=1.94$ $A=.146$ $D=.164$ $D=.170$ $y=.165$	1.14	1.17 .60 .84 .90 .55	1.14	2.12 .65 .91 .10 .55	1.14	2.12 .65 .91 .10 .55	1.14	1.93 .49 .69 .175 .60

8 通のラテン

		1.10		1.80		1.80	
		1.7 .48 .46 .80 .40	.95	2.2 .53 .50 .90 .40	.95	2.0 .50 .48 .90 .40	.95
	1.95						1.10 .33 .31 .60 .40
		1.1	1.3	1.1		1.1	
1.10	$\bar{R} = 1.1$ $a = .51$ $D' = .51$ $D = .80$ $y = .60$	1.10	2.4 .66 .66 .11 .55	1.10	2.2 .64 .64 .10 .55	1.10	1.1 .51 .51 .80 .60

A 通のラテン

	.80	.80	.80						
.95	$\bar{R}=1.10$ $a=.133$ $D=.131$ $D=.170$ $y=.40$	.95	2.0 .50 .48 .10 .45	.95	2.1 .51 .48 .10 .45	.95	1.8 .47 .45 .90 .45		
	1.1	1.1	1.3	1.3					
1.10	$\bar{R}=1.1$ $a=.51$ $D=.51$ $D=.90$ $y=.60$	1.10	2.2 .64 .64 .12 .55	1.10	2.4 .66 .66 .12 .55	1.10	2.6 .68 .68 .12 .55	1.10	1.3 .54 .54 .10 .60
	1.1	1.1	1.3	1.3					

B 通りラートン

	180	180	180	180	180	180	
195	$\bar{R}=110$ $q=.33$ $D=.131$ $D=.170$ $Y=.40$	195	210 .50 .48 110 .45	195	210 .50 .48 110 .45	195	210 .50 .48 110 .45
	111	111	111	111	111	112	1106 135 133 170 140
195	$\bar{R}=1116$ $q=.53$ $D=.150$ $D=.190$ $Y=.60$	195	213 .66 .63 112 .55	110	212 .52 .52 110 .45	110	213 .53 .53 110 .45
			111	111	112		112 138 138 170 145
			179 .46 165 180 160	14	157 .58 181 110 155	14	164 .59 183 110 155
							186 48 169 180 160

D 通りラートン

	180	180	180	180	180																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
195	$D=.170$ $Y=.40$	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110 .45	195	110

C 通りラートン

	180	180	180	180		
195	$\bar{R} = 110$ $q = 133$ $D = 131$ $D = 170$ $Y = 140$	195	210 150 148 110 145	195	210 150 148 110 145	
	111	111	111	112	1106 135 133 170 140	
195	$\bar{R} = 1116$ $q = 153$ $D = 150$ $D = 190$ $Y = 160$	110	212 152 152 110 145	110	212 152 152 110 145	
		111	111	112	112 138 138 170 145	
		179 146 165 180 160	14	157 158 181 110 155	14	164 159 183 110 155
						186 148 169 180 160

F 通りラートン

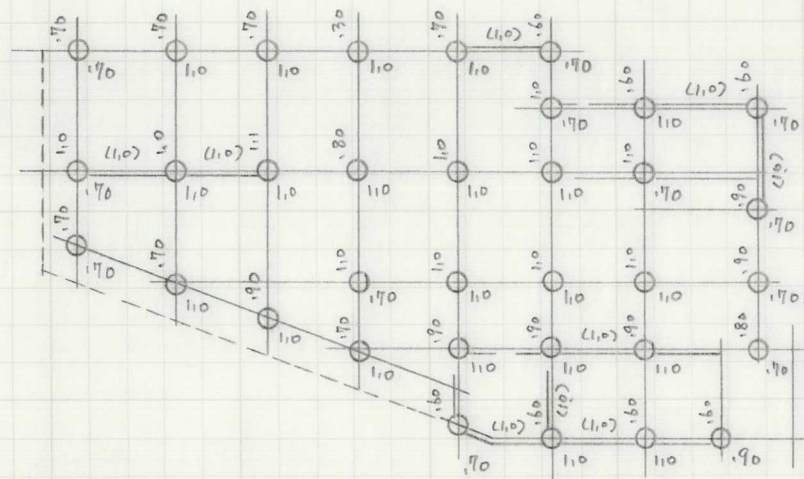
	180	180	
195	$D=.170$ $Y=.40$	195	110 .45
	111	111	170 140
195	$D=.190$ $Y=.60$	195	112 .55
			190 160

E 通りラートン

	180	180	
195	$D=.170$ $Y=.40$	195	110 .45
	111	112	170 140
110	$D=.190$ $Y=.60$	110	112 .55
			190 160

6.3 分布係数表.

2FL.



6.4

3.4

9.1

4.4

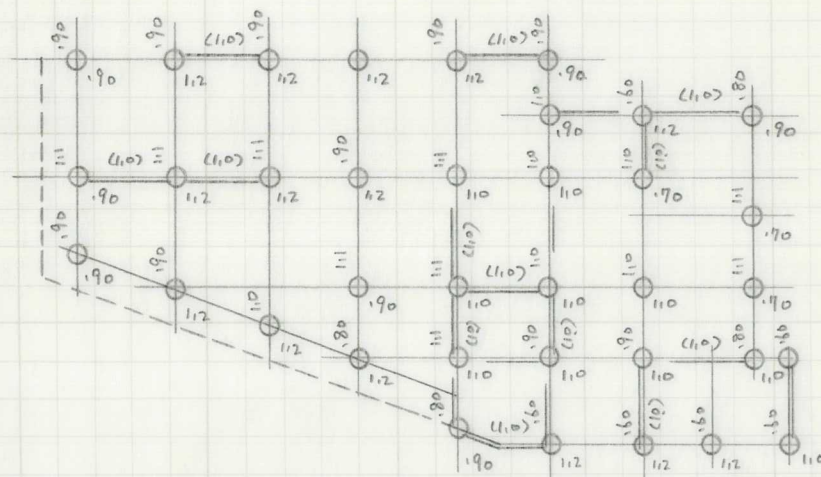
8.4

5.6

$$\sum DX = 37.30$$

$$\sum DY = 29.50$$

1FL



8.6

4.0

9.4

5.6

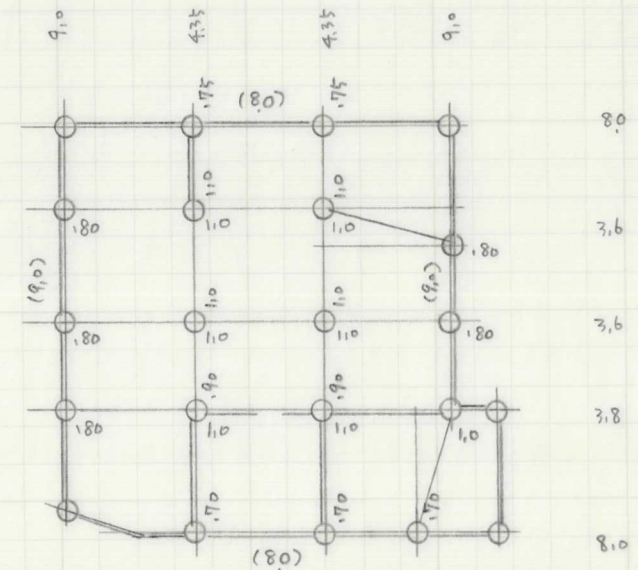
9.5

6.5

$$\sum DX = 44.1$$

$$\sum DY = 34.7 \quad (11.6)$$

BFL



$$\sum DX = 27.00$$

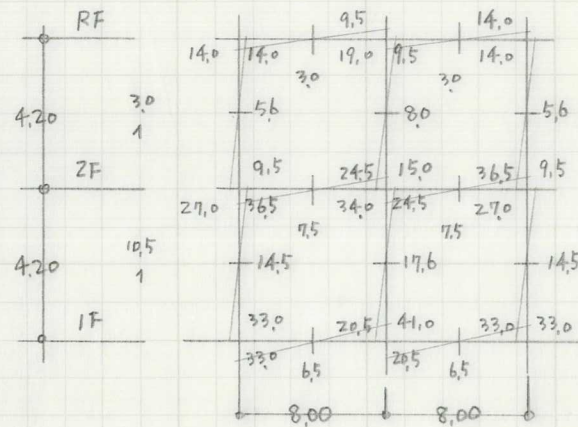
$$\sum DY = 26.70$$

6.4 Unit Shear.

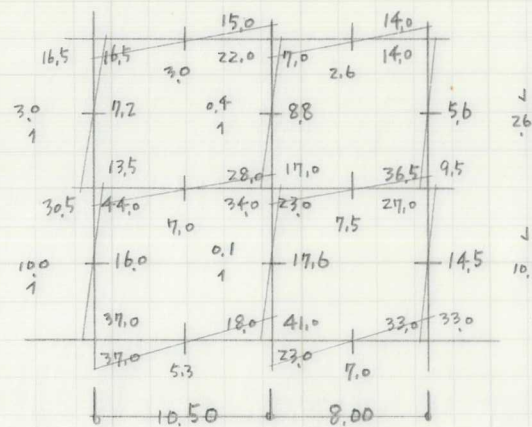
FL	$\sum KW$	DX	DY	QX	QY
ZF	235.0	37.3	29.5	7.0	8.0
1F	527.0	44.1	34.7	13.0	16.0
BF	535.0	27.0	26.7	20.0	20.0

6.5 水平時ラーテンカ.

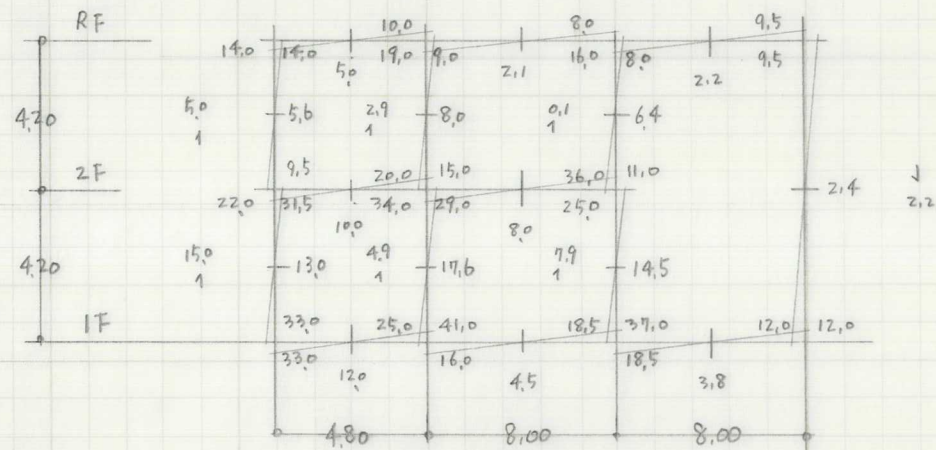
1.2 通のラーテン



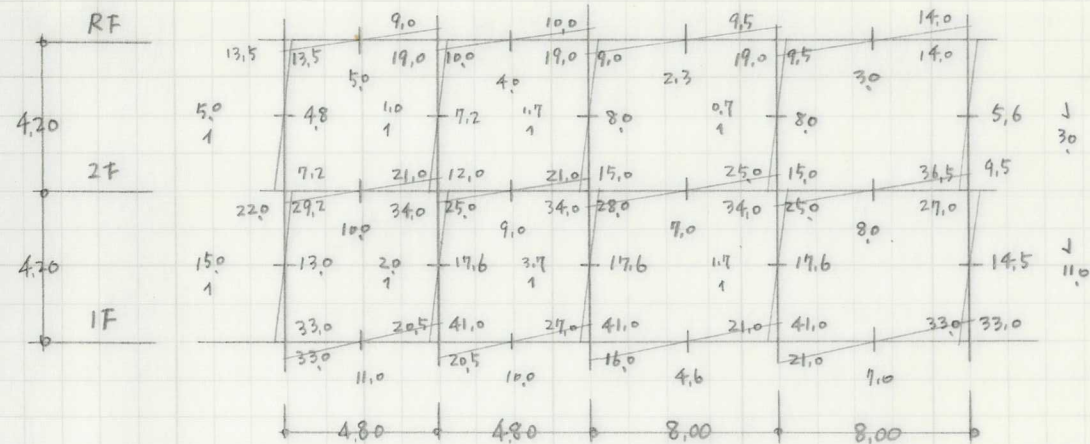
3 通のラーテン



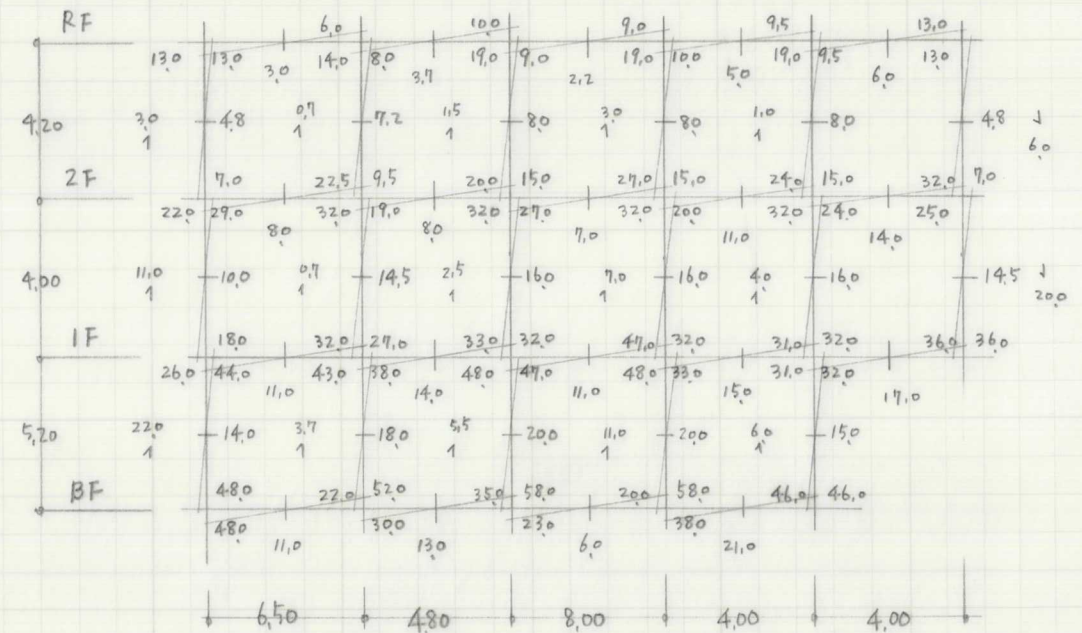
4 通のラーテン



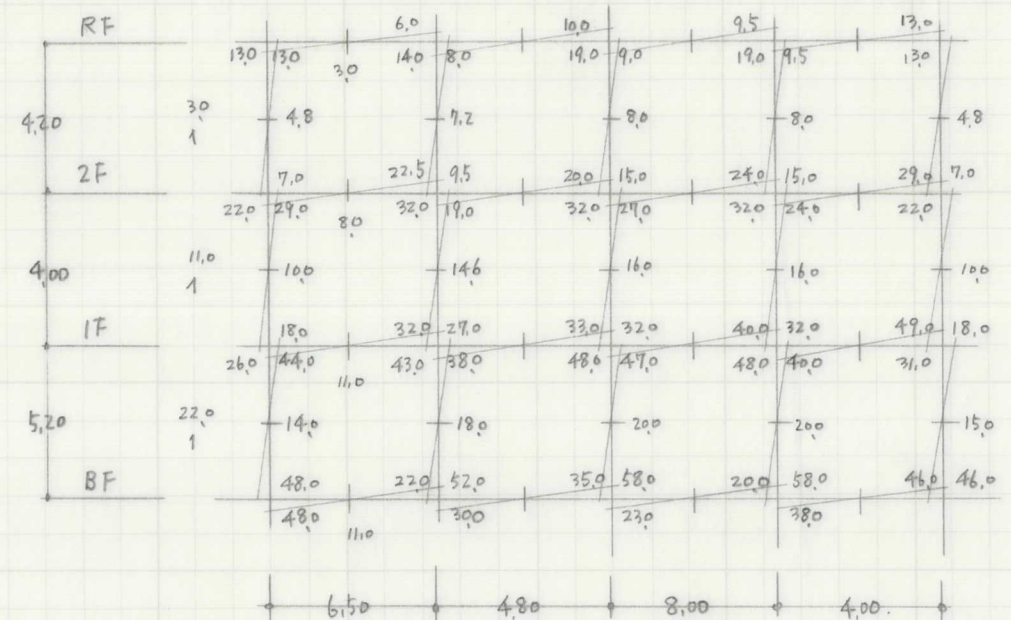
5 通のラーテン



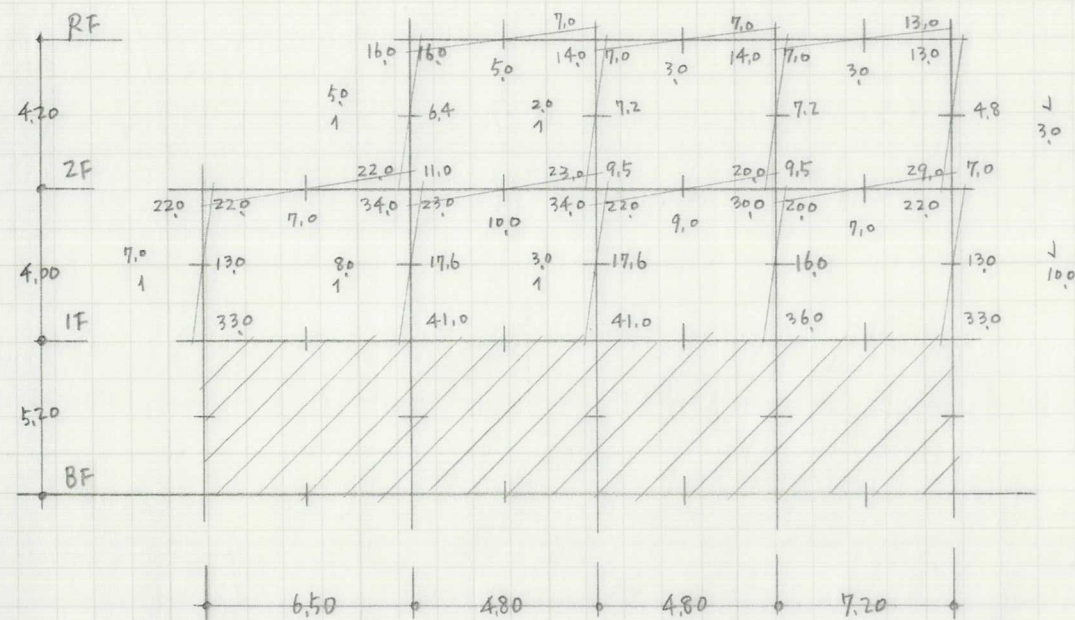
6 通のラーテン



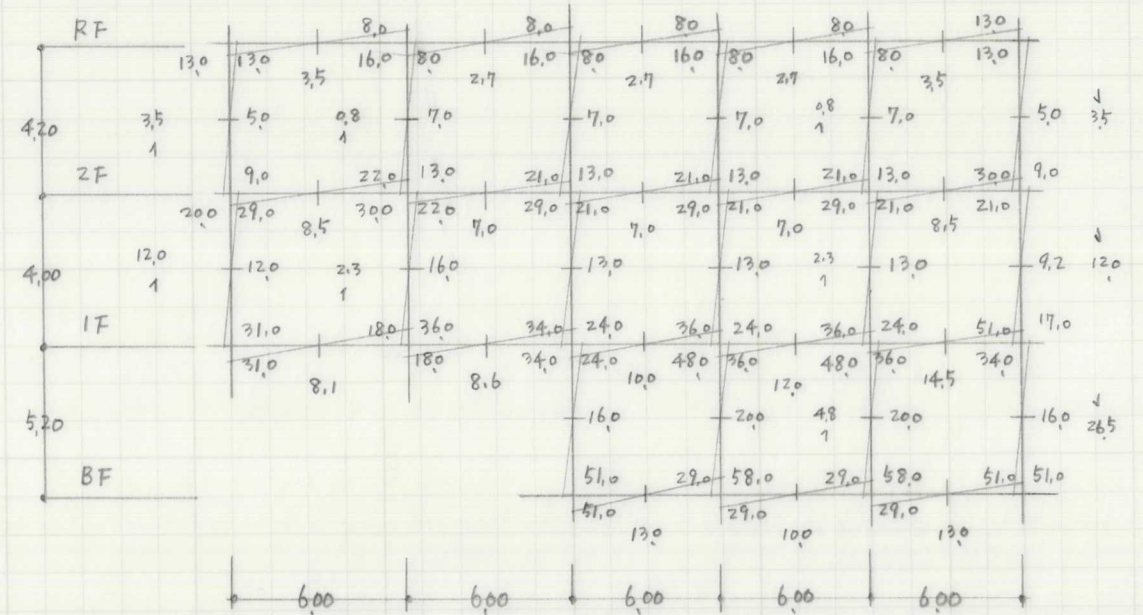
7 通のラーテン



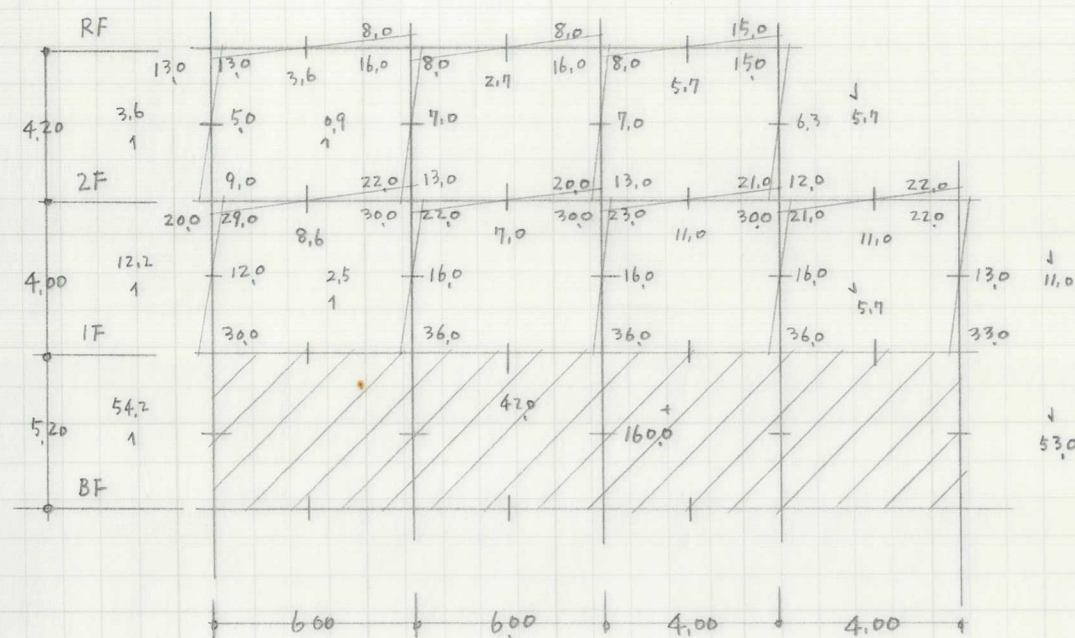
B 通リカーテン



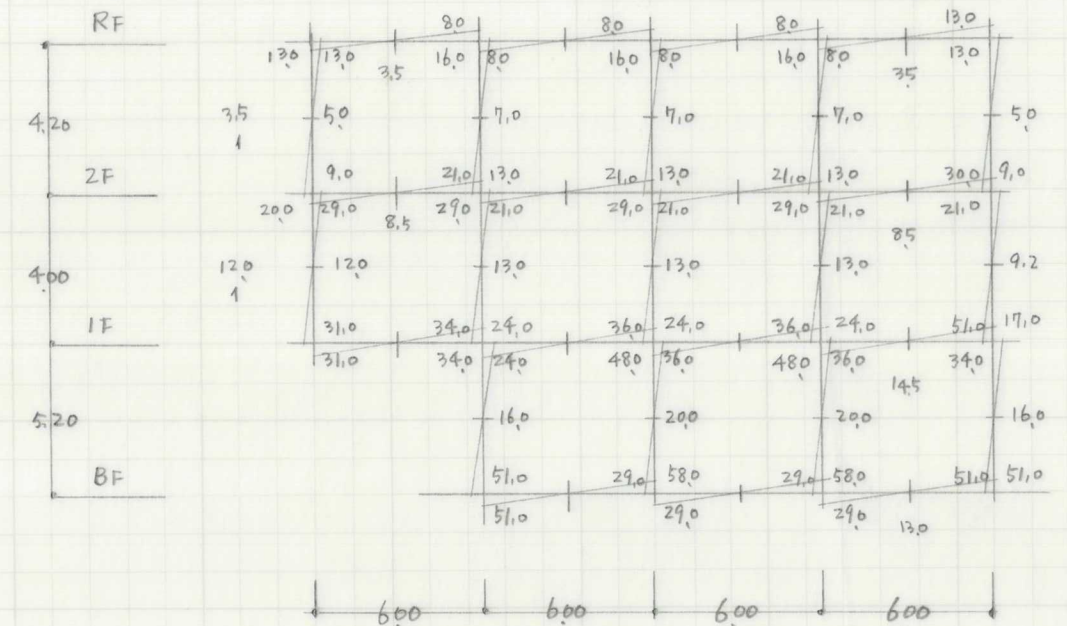
B 通リカーテン



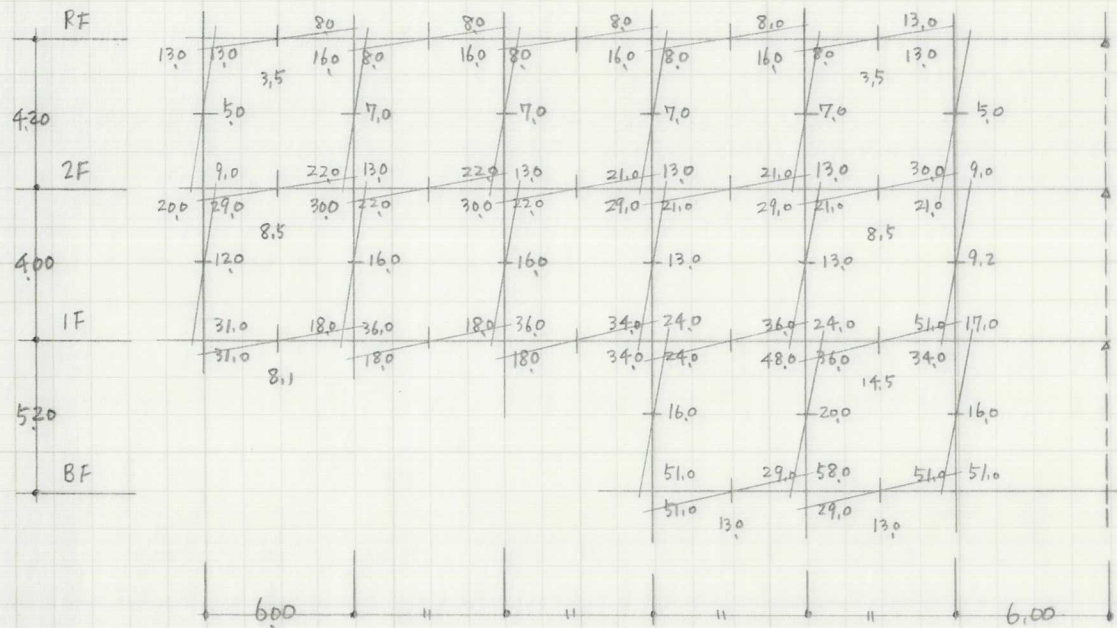
A 通リカーテン



C 通リカーテン

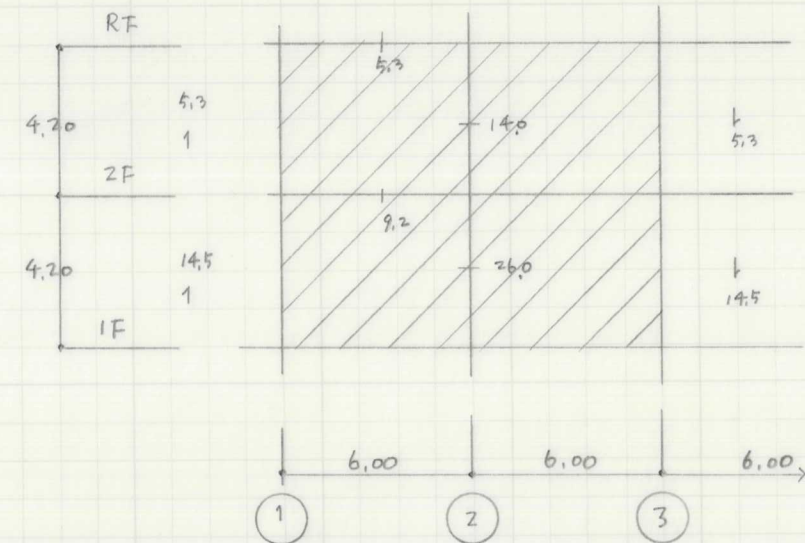


D 通りラタン

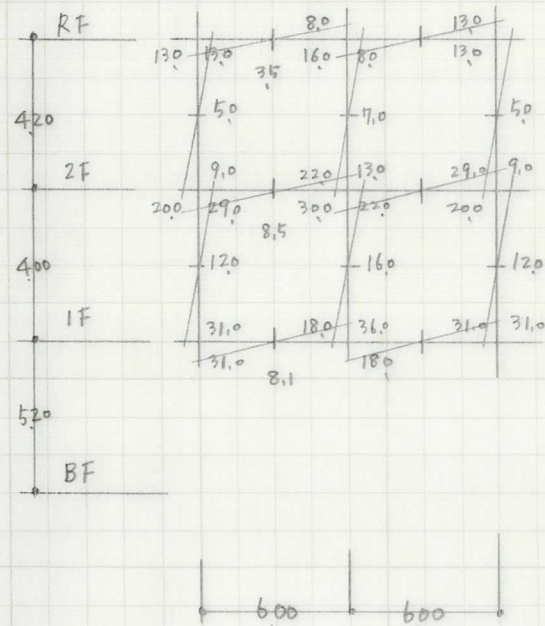


耐震壁広力.

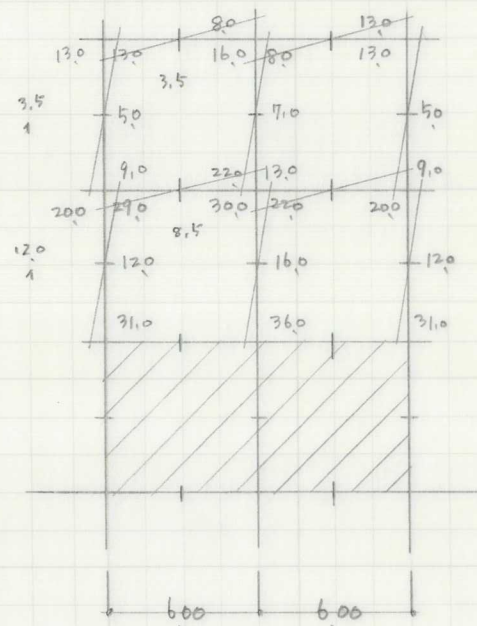
D 通りラタン



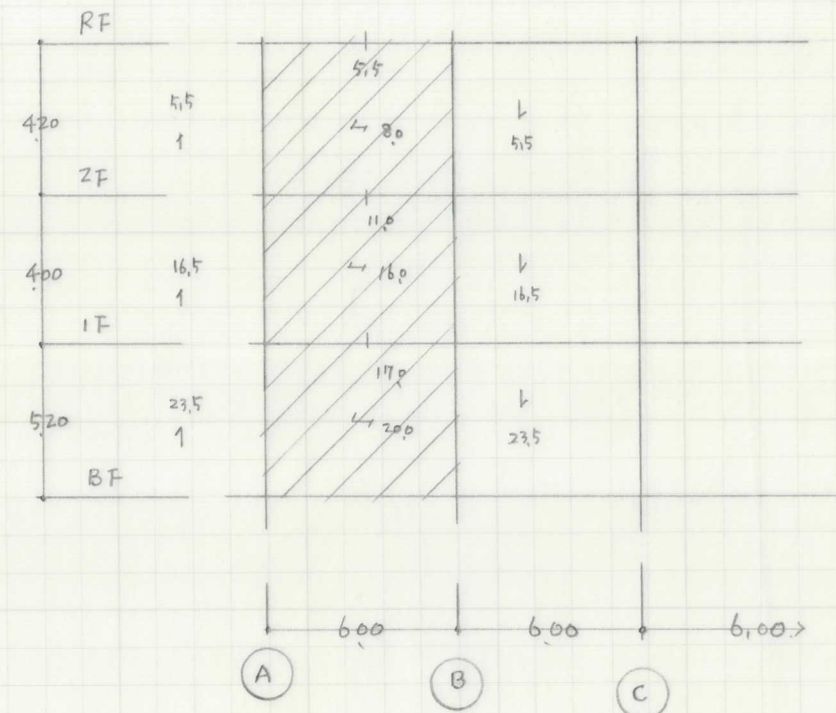
F 通りラタン



E 通りラタン



6 通りラタン



多柱設計

No	FL		Loading	P	ΣP
C1柱	ZFL	床版 1070×1700 梁 小梁 柱 カハ	$5.5 \times 6.0 \times .61 = 20.0$ $11.5 \times 0.6 \times .72 = 5.0$ $10.0 \times .50 = 5.0$ $11.5 \times .28 = 3.3$ $4.2 \times 1.1 = 4.6$ $11.5 \times 3.0 \times .46 = 16.0$	53.9	53.9
	IFL	床版 梁 小梁 柱 カハ	$5.5 \times 6.0 \times .58 = 19.0$ $10.0 \times .65 = 6.5$ $11.5 \times .28 = 3.3$ $4.2 \times 1.1 = 4.6$ $11.5 \times 3.0 \times .46 = 16.0$	49.4	103.3
D1柱	ZFL	床版 1070×1700 梁 小梁 柱 カハ	$6.5 \times 6.0 \times .61 = 24.0$ $6.5 \times 0.6 \times .72 = 3.0$ $12.5 \times .50 = 6.2$ $12.5 \times .28 = 3.6$ $4.2 \times 1.1 = 4.6$ $3.5 \times 11.5 \times .46 = 18.5$	59.9	59.9
	IFL	床版 梁 小梁 柱 カハ	$6.5 \times 6.0 \times .58 = 23.5$ $12.5 \times .65 = 8.0$ $12.5 \times .28 = 3.6$ $4.2 \times 1.1 = 4.6$ $3.5 \times 11.5 \times .46 = 18.5$	58.2	118.1
F1柱	ZFL	床版 1070×1700 梁 小梁 柱 カハ	$4.3 \times 6.0 \times .61 = 16.0$ $10.0 \times 0.6 \times .72 = 4.3$ $8.0 \times .50 = 4.0$ $8.0 \times .28 = 2.3$ $4.2 \times 1.1 = 4.6$ $3.5 \times 8.0 \times .46 = 13.5$	44.7	44.7

No	FL		Loading	P	ΣP
	IFL	床版 梁 小梁 柱 カハ	$4.3 \times 6.0 \times .58 = 15.5$ $8.0 \times .65 = 5.3$ $8.0 \times .28 = 2.3$ $4.2 \times 1.1 = 4.6$ $3.5 \times 8.0 \times .46 = 13.5$	41.2	85.9
C2柱	ZFL	床版 1070×1700 梁 小梁 柱 カハ	$7.0 \times 6.0 \times .61 = 26.0$ $7.0 \times 1.60 \times .72 = 3.0$ $13.0 \times .50 = 6.5$ $12.0 \times .28 = 3.5$ $4.2 \times 1.1 = 4.6$ $3.5 \times 6.0 \times .46 = 10.0$	53.6	53.6
	IFL	床版 梁 小梁 柱 カハ	$7.0 \times 6.0 \times .58 = 24.0$ $13.0 \times .65 = 8.5$ $12.0 \times .28 = 3.5$ $4.2 \times 1.1 = 4.6$ $3.5 \times 6.0 \times .46 = 10.0$	50.6	104.2
D2柱 D4 "	ZFL	床版 梁 小梁 柱 カハ	$8.0 \times 6.0 \times .61 = 30.0$ $14.0 \times .50 = 7.0$ $12.0 \times .28 = 3.5$ $4.2 \times 1.1 = 4.6$ $3.5 \times 6.0 \times .46 = 10.0$	55.1	55.1
	IFL	床版 梁 小梁 柱 カハ	$8.0 \times 6.0 \times .58 = 28.0$ $14.0 \times .65 = 9.2$ $12.0 \times .28 = 3.5$ $4.2 \times 1.1 = 4.6$ $3.5 \times 6.0 \times .46 = 10.0$	55.3	110.4

No	FL		Loading	P	ΣP
F2 柱	2FL	床版	$4.3 \times 6.0 \times .61 = 16.0$	40.0	40.0
F3 "		109 ¹⁰ 梁	$6.0 \times 1.60 \times .172 = 2.7$		
F4 "		梁	$10.0 \times .50 = 5.0$		
F5 "		入梁	$6.0 \times .28 = 1.7$		
		柱	$4.2 \times 1.1 = 4.6$		
		カハ	$3.5 \times 6.0 \times .46 = 10.0$		
	1FL	床版	$4.3 \times 6.0 \times .58 = 16.0$	42.8	82.8
		梁	$10.0 \times .65 = 6.5$		
		入梁	$6.0 \times .28 = 1.7$		
		柱	$4.2 \times 1.1 = 4.6$		
		カハ	$3.5 \times 9.0 \times .46 = 14.0$		
B ₂ 柱	2FL	床版	$6.0 \times 8.5 \times .61 = 31.1$	64.9	64.9
		109 ¹⁰ 梁	$7.0 \times 1.60 \times .172 = 3.0$		
		梁	$14.0 \times .85 = 12.0$		
		入梁	$15.0 \times .28 = 4.2$		
		柱	$4.2 \times 1.1 = 4.6$		
		カハ	$6.0 \times 3.5 \times .46 = 10.0$		
	1FL	床版	$6.0 \times 8.5 \times .58 = 30.0$	63.8	128.7
		梁	$14.0 \times .85 = 12.0$		
		入梁	$15.0 \times .28 = 4.2$		
		柱	$4.2 \times 1.1 = 4.6$		
		カハ	$8.0 \times 3.5 \times .46 = 13.0$		
D3 柱	2FL	床版	$9.0 \times 6.0 \times .61 = 33.0$	73.0	73.0
		梁	$15.0 \times .85 = 12.8$		
		入梁	$15.0 \times .28 = 4.2$		
		柱	$4.2 \times 1.1 = 4.6$		
		カハ	$8.0 \times 3.5 \times .46 = 13.0$		
		"	$4.0 \times 3.5 \times .38 = 5.4$		

No	FL		Loading	P	ΣP
	1FL	床版	$9.0 \times 6.0 \times .58 = 31.3$	58.3	131.3
		梁	$15.0 \times .85 = 12.8$		
		入梁	$15.0 \times .28 = 4.2$		
		柱	$4.2 \times 1.1 = 4.6$		
		カハ	$3.5 \times 4.0 \times .46 = 5.4$		
B4 柱	2FL	床版	$6.0 \times 5.5 \times .61 = 20.0$	45.9	45.9
		109 ¹⁰ 梁	$7.0 \times 1.60 \times .172 = 3.0$		
		梁	$11.0 \times .50 = 5.5$		
		入梁	$10.0 \times .28 = 2.8$		
		柱	$4.2 \times 1.1 = 4.6$		
		カハ	$6.0 \times 3.5 \times .46 = 10.0$		
	1FL	床版	$6.0 \times 5.5 \times .58 = 19.0$	52.9	98.8
		梁	$11.0 \times .65 = 7.2$		
		入梁	$10.0 \times .28 = 2.8$		
		柱	$4.2 \times 1.1 = 4.6$		
		カハ	$3.5 \times 12.0 \times .46 = 19.3$		
C4 柱	2FL	床版	$6.5 \times 6.0 \times .61 = 23.8$	41.8	41.8
		梁	$12.0 \times .50 = 6.0$		
		入梁	$9.0 \times .28 = 2.6$		
		柱	$4.2 \times 1.1 = 4.6$		
		カハ	$3.5 \times 3.0 \times .46 = 4.8$		
	1FL	床版	$6.5 \times 6.0 \times .58 = 22.6$	42.4	84.2
		梁	$12.0 \times .65 = 7.8$		
		入梁	$9.0 \times .28 = 2.6$		
		柱	$4.2 \times 1.1 = 4.6$		
		カハ	$3.5 \times 3.0 \times .46 = 4.8$		

No	FL		Loading	P	ΣP
A'5柱	ZFL	床版 1700×1100 梁 小梁 柱 カハ	$6.0 \times 3.0 \times .61 = 11.0$ $6.0 \times .60 \times .172 = 2.6$ $9.0 \times .50 = 4.5$ $3.0 \times .28 = 0.9$ $4.2 \times .11 = 4.6$ $3.5 \times 12.0 \times .46 = 19.3$	42.9	42.9
	IFL	床版 梁 小梁 柱 カハ	$6.0 \times 3.0 \times .58 = 10.5$ $9.0 \times .65 = 5.9$ $3.0 \times .28 = 0.9$ $4.2 \times .11 = 4.6$ $3.5 \times 12.0 \times .46 = 19.3$	41.2	84.1
	BFL	床版 床版 梁 小梁 柱 カハ "	$3.0 \times 3.0 \times .58 = 5.0$ $6.0 \times 3.0 \times .58 = 10.5$ $9.0 \times .65 = 5.9$ $3.0 \times .28 = 0.9$ $5.2 \times .13 = 6.8$ $5.5 \times 4.5 \times .172 = 17.8$ $5.5 \times 4.5 \times .26 = 6.5$	53.4	137.5
B5柱	ZFL	床版 梁 小梁 柱 カハ	$6.0 \times 5.0 \times .61 = 18.3$ $11.0 \times .50 = 5.5$ $6.0 \times .28 = 1.8$ $4.2 \times .11 = 4.6$ $3.5 \times 9.0 \times .46 = 14.5$	44.7	44.7
	IFL	床版 梁 小梁 柱 カハ	$6.0 \times 5.0 \times .58 = 17.4$ $11.0 \times .65 = 7.2$ $6.0 \times .28 = 1.8$ $4.2 \times .11 = 4.6$ $3.5 \times 12.0 \times .46 = 19.3$	50.3	95.0
	BFL	床版 床版 梁	$3.0 \times 3.0 \times .58 = 5.0$ $6.0 \times 5.0 \times .58 = 17.4$ $11.0 \times .65 = 7.2$		

No	FL		Loading	P	ΣP
		小梁 柱 カハ " "	$6.0 \times .28 = 1.8$ $5.2 \times .13 = 6.8$ $5.0 \times 4.5 \times .172 = 17.8$ $5.0 \times 4.5 \times .26 = 6.5$ $5.0 \times 6.0 \times .46 = 13.8$	76.3	171.3
C5柱	ZFL	床版 梁 小梁 柱 カハ	$6.0 \times 6.5 \times .61 = 23.8$ $12.0 \times .50 = 6.0$ $10.0 \times .28 = 2.8$ $4.2 \times .11 = 4.6$ $3.5 \times 3.0 \times .38 = 4.0$	41.2	41.2
	IFL	床版 梁 小梁 柱 カハ	$6.0 \times 6.5 \times .58 = 22.7$ $12.0 \times .65 = 7.8$ $10.0 \times .28 = 2.8$ $4.2 \times .11 = 4.6$ $3.5 \times 13.0 \times .46 = 21.0$	58.9	100.1
	BFL	床版 梁 小梁 柱 カハ "	$6.0 \times 6.5 \times .58 = 22.7$ $12.0 \times .65 = 7.8$ $10.0 \times .28 = 2.8$ $5.2 \times .13 = 6.8$ $6.0 \times 4.5 \times .172 = 19.5$ $6.0 \times 4.5 \times .26 = 7.0$	66.6	166.7
D5柱	ZFL	床版 梁 小梁 柱 カハ	$8.0 \times 6.0 \times .61 = 30.0$ $14.0 \times .50 = 7.0$ $12.0 \times .28 = 3.4$ $4.2 \times .11 = 4.6$ $3.5 \times 4.0 \times .46 = 6.5$	51.5	51.5
	IFL	床版 梁 小梁	$8.0 \times 6.0 \times .58 = 28.0$ $14.0 \times .65 = 9.1$ $12.0 \times .28 = 3.4$	40.5	

No	FL		Loading	P	ΣP.
		柱 カハ	4.2 x 111 = 4.6 3.5 x 11.0 x .46 = 17.7	62.8	62.8
	BFL	床版 床版 梁 小梁 柱 カハ "	3.0 x 3.0 x .58 = 5.0 6.0 x 6.0 x .58 = 21.0 120 x .65 = 7.8 120 x .28 = 3.4 5.2 x 113 = 6.8 6.0 x 4.5 x .72 = 19.5 6.0 x 4.5 x .26 = 7.0	70.5	133.3
E5柱	BFL	床版 床版 梁 小梁 柱 カハ "	3.0 x 3.0 x .58 = 5.0 6.0 x 6.0 x .58 = 21.0 120 x .65 = 7.8 120 x .28 = 3.4 5.2 x 113 = 6.8 5.0 x 4.5 x .72 = 16.2 5.0 x 4.5 x .26 = 5.9	66.1	66.1
A6柱	2FL	床版 102mm x 梁 小梁 柱 カハ	3.6 x 6.0 x 161 = 13.2 6.0 x 6 x .72 = 2.6 9.0 x .50 = 4.5 3.0 x .28 = 0.9 4.2 x 111 = 4.6 3.5 x 120 x .46 = 19.3	45.1	45.1
	1FL	床版 梁 小梁 柱 カハ	3.6 x 6.0 x 1.08 = 23.3 9.0 x .65 = 5.8 3.0 x .28 = 0.9 4.2 x 111 = 4.6 3.5 x 120 x .53 = 22.3	56.9	102.0
	BFL	床版 床版 梁 小梁 柱	3.0 x 3.0 x .58 = 5.0 3.6 x 6.0 x .76 = 16.4 9.0 x .65 = 5.8 3.0 x .28 = 0.9 5.2 x 113 = 6.8	34.9	

No	FL		Loading	P	ΣP.
		カハ "	6.0 x 4.5 x .72 = 19.5 10.0 x 4.5 x .26 = 11.7	66.1	168.1
B6柱 B7"	2FL	床版 梁 小梁 柱 カハ	5.7 x 6.0 x 161 = 20.9 120 x .50 = 6.0 6.0 x .28 = 1.8 4.2 x 111 = 4.6 120 x 3.5 x .46 = 19.3	52.6	52.6
	1FL	床版 梁 小梁 柱 カハ	5.7 x 6.0 x 1.08 = 36.0 120 x .65 = 7.8 6.0 x .28 = 1.8 4.2 x 111 = 4.6 150 x 3.5 x .53 = 27.0	47.2	129.8
	BFL	床版 床版 梁 小梁 柱 カハ	3.0 x 3.0 x .58 = 3.0 5.7 x 6.0 x .76 = 26.0 120 x .65 = 7.8 6.0 x .28 = 1.8 5.2 x 113 = 6.8 4.5 x 9.0 x .46 = 18.6	66.0	195.8
C6柱 C7柱	2FL	床版 梁 小梁 柱 カハ	6.0 x 6.8 x 161 = 25.0 120 x .50 = 6.0 120 x .28 = 3.4 4.2 x 111 = 4.6 3.5 x 30 x .46 = 4.9	43.9	43.9
	1FL	床版 梁 小梁 柱 カハ	6.0 x 6.8 x .58 = 23.7 120 x .50 = 6.0 120 x .28 = 3.4 4.2 x 111 = 4.6 3.5 x 80 x .46 = 12.9	50.6	94.5
	BFL	床版 梁 小梁 柱	6.0 x 6.8 x .58 = 23.7 120 x .50 = 6.0 120 x .28 = 3.4 5.2 x 113 = 6.8	39.2	133.7

NO	FL		Loading	P	ΣP
D6 柱 D7 "	ZFL	床版 梁 小梁 柱 カハ	$6.0 \times 6.0 \times .61 = 22.0$ $12.0 \times .50 = 6.0$ $9.0 \times .28 = 2.7$ $4.2 \times 1.1 = 4.6$ $11.0 \times 3.5 \times .46 = 17.5$	52.8	52.8
	IFL	床版 梁 小梁 柱 カハ	$6.0 \times 6.0 \times .171 = 25.0$ $12.0 \times .65 = 7.8$ $9.0 \times .28 = 2.7$ $4.2 \times 1.1 = 4.6$ $11.0 \times 3.5 \times .46 = 17.5$		
	BFL	床版 床版 梁 小梁 柱 カハ	$3.0 \times 3.0 \times .58 = 5.1$ $6.0 \times 6.0 \times .171 = 25.0$ $12.0 \times .65 = 7.8$ $9.0 \times .28 = 2.7$ $5.2 \times 1.3 = 6.8$ $4.5 \times 8.0 \times .46 = 15.6$		
F6 柱	ZFL	床版 107mm 梁 小梁 柱 カハ	$2.5 \times 3.5 \times .61 = 5.3$ $6.0 \times .60 \times .72 = 2.6$ $6.0 \times .50 = 3.0$ $3.0 \times .28 = 0.9$ $4.2 \times 1.1 = 4.6$ $3.5 \times 4.0 \times .46 = 6.5$	22.9	22.9
	IFL	床版 梁 小梁 柱 カハ	$2.5 \times 3.5 \times .58 = 5.1$ $6.0 \times .65 = 4.0$ $3.0 \times .28 = 0.9$ $4.2 \times 1.1 = 4.6$ $3.5 \times 4.0 \times .46 = 6.5$		
A7 柱	ZFL	床版 107mm 梁 小梁	$5.3 \times 3.6 \times .61 = 12.0$ $5.3 \times .60 \times .72 = 2.4$ $8.0 \times .50 = 4.0$ $3.0 \times .28 = 0.9$	19.3	

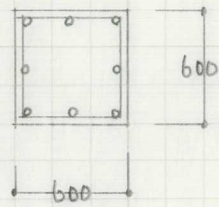
NO	FL		Loading	P	ΣP
		柱 カハ	$4.2 \times 1.1 = 4.6$ $3.5 \times 9.0 \times .46 = 15.0$	38.9	38.9
	IFL	床版 梁 小梁 柱 カハ	$5.3 \times 5.5 \times 1.08 = 32.0$ $10.0 \times .65 = 6.5$ $6.0 \times .28 = 1.8$ $4.2 \times 1.1 = 4.6$ $10.0 \times 3.5 \times .46 = 16.0$		
	BFL	床版 梁 小梁 柱 カハ "	$5.3 \times 3.6 \times .58 = 12.0$ $10.0 \times .65 = 6.5$ $6.0 \times .28 = 1.8$ $5.2 \times 1.3 = 6.8$ $5.3 \times 4.5 \times .72 = 17.0$ $5.3 \times 4.5 \times .26 = 6.2$		
E7 柱 E6 "	ZFL	床版 107mm 梁 小梁 柱 カハ	$2.5 \times 6.0 \times .61 = 9.3$ $6.0 \times .60 \times .72 = 2.6$ $8.0 \times .50 = 4.0$ $3.0 \times .28 = 0.9$ $4.2 \times 1.1 = 4.6$ $3.5 \times 6.0 \times .46 = 10.0$	31.4	31.4
	IFL	床版 梁 小梁 柱 カハ	$2.5 \times 6.0 \times .71 = 11.0$ $8.0 \times .65 = 5.3$ $3.0 \times .28 = 0.9$ $4.2 \times 1.1 = 4.6$ $3.5 \times 8.0 \times .46 = 13.0$		
	BFL	床版 床版 梁 小梁 柱 カハ "	$3.0 \times 3.0 \times .58 = 5.0$ $2.5 \times 6.0 \times .71 = 11.0$ $8.0 \times .65 = 5.3$ $3.0 \times .28 = 0.9$ $5.2 \times 1.3 = 6.8$ $6.0 \times 4.5 \times .72 = 19.0$ $6.0 \times 4.5 \times .28 = 8.0$		
				46.0	123.7

No	FL		Loading	P	ΣP
A7' 柱	ZFL	床板 桁架 梁 小梁 柱 カハ	$110 \times 410 \times 161 = 2.4$ $510 \times 160 \times 172 = 2.2$ $510 \times 150 = 2.5$ $310 \times 128 = 0.9$ $42 \times 111 = 4.6$ $210 \times 315 \times 46 = 3.2$	15.8	15.8
	IFL	床板 桁架 梁 小梁 柱 カハ	$45 \times 510 \times 108 = 23.5$ $110 \times 510 \times 46 = 2.4$ $710 \times 165 = 4.6$ $710 \times 128 = 2.1$ $42 \times 111 = 4.6$ $610 \times 315 \times 46 = 10.0$	47.2	63.0
	BFL	床板 梁 小梁 柱 カハ	$45 \times 510 \times 1108 = 23.5$ $710 \times 165 = 4.6$ $310 \times 128 = 0.9$ $52 \times 113 = 6.8$ $45 \times 45 \times 172 = 15.0$ $45 \times 45 \times 126 = 5.3$	56.1	119.1
A9 柱	IFL	床板 桁架 梁 小梁 柱 カハ	$310 \times 510 \times 1108 = 16.0$ $110 \times 810 \times 46 = 3.6$ $80 \times 165 = 5.3$ $80 \times 128 = 2.4$ $42 \times 111 = 4.6$ $610 \times 315 \times 46 = 9.5$	41.4	41.4
	BFL	床板 梁 小梁 柱 カハ	$310 \times 510 \times 1108 = 16.0$ $80 \times 165 = 5.3$ $80 \times 128 = 2.4$ $52 \times 113 = 6.8$ $610 \times 45 \times 172 = 21.0$ $610 \times 45 \times 126 = 7.0$	58.5	58.5
B8 柱	ZFL	床板 桁架 梁	$315 \times 610 \times 161 = 13.0$ $610 \times 160 \times 172 = 2.7$ $610 \times 150 = 3.0$		

No	FL		Loading	P	ΣP
		小梁 柱 カハ	$610 \times 128 = 1.8$ $42 \times 111 = 4.6$ $610 \times 315 \times 46 = 10.0$	35.1	35.1
	IFL	床板 桁架 梁 小梁 柱 カハ	$45 \times 610 \times 1108 = 29.0$ $110 \times 610 \times 46 = 2.7$ $910 \times 165 = 6.0$ $910 \times 128 = 1.8$ $42 \times 111 = 4.6$ $810 \times 315 \times 46 = 13.0$	57.1	92.2
	BFL	床板 梁 小梁 柱 カハ	$45 \times 610 \times 1108 = 29.0$ $910 \times 165 = 6.0$ $910 \times 128 = 2.7$ $52 \times 113 = 6.8$ $52 \times 610 \times 172 = 22.0$ $52 \times 610 \times 46 = 14.0$	80.5	172.7
D'8 柱 C8 "	ZFL	床板 桁架 梁 小梁 柱 カハ	$615 \times 315 \times 161 = 14.0$ $615 \times 160 \times 172 = 2.8$ $910 \times 150 = 4.5$ $610 \times 128 = 1.8$ $42 \times 111 = 4.6$ $610 \times 315 \times 46 = 9.5$	37.2	37.2
	IFL	床板 梁 小梁 柱 カハ	$615 \times 315 \times 158 = 13.0$ $910 \times 165 = 6.0$ $610 \times 128 = 1.8$ $42 \times 111 = 4.6$ $610 \times 315 \times 46 = 10.0$	35.4	72.6
	BFL	床板 梁 小梁 柱 カハ	$615 \times 315 \times 158 = 13.0$ $910 \times 165 = 6.0$ $610 \times 128 = 1.8$ $52 \times 113 = 6.8$ $610 \times 45 \times 172 = 19.0$ $610 \times 45 \times 46 = 12.0$	58.6	131.2

柱の断面設計 ($\alpha = P/bd$, $\beta = M/bd^2$ 表示.)

2D3



主筋 8-D22.

$$Pf = 73.0$$

$$Mf = 6.1 \quad Me = 22.0 > 28.1$$

$$Mf = 0.7 \quad Me = 16.0 > 16.7$$

$$\alpha = 21.0 \quad \beta = 13.0$$

$$pt = 0.2 \quad at = 7.2 \quad 2-D22$$

$$\alpha = 21.0 \quad \beta = 8.0$$

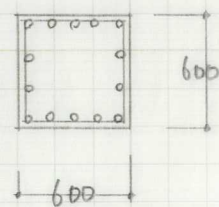
$$pt = 0.$$

$$Qe' = 8.8 \times 2 = 17.6$$

$$fsbj = 10.5 \times 60 \times 47 = 30.0 > 17.6$$

$$\text{Hoop } D10 - \text{ } \phi 100.$$

1D3



主筋 14-D22.

$$Pf = 131.3$$

$$Mf = 1.3 \quad Me = 41.0 > 42.3$$

$$Mf = 0.3 \quad Me = 36.0 > 36.3$$

$$\alpha = 37.0 \quad \beta = 18.0$$

$$pt = 0.5 \quad at = 18.0 \quad 5-D22.$$

$$\alpha = 37.0 \quad \beta = 17.0$$

$$pt = 0.4 \quad at = 15.0 \quad 4-D22.$$

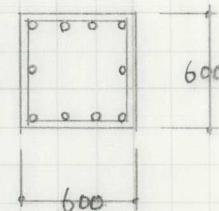
$$Qe' = 17.6 \times 2 = 35.2^+$$

$$fsbj = 30.0 \quad \Delta Q = 5.2 \quad \Delta Q/bj = 1.8 \quad pw = 0.32$$

$$X = 2 \times 127 / 0.0032 \times 60 = 14.0$$

$$\text{Hoop } D13 - \text{ } \phi 100.$$

2F3



主筋 10-D22

$$Pf = 40.0 \quad Pe = 2.6$$

$$Mf = 13.2 \quad Me = 14.0 > 27.2$$

$$Mf = 0.7 \quad Me = 16.0 > 16.7$$

$$\alpha = 12.0 \quad \beta = 13.0$$

$$pt = 0.4 \quad at = 15.0 \quad 4-D22.$$

$$\alpha = 11.0 \quad \beta = 8.0$$

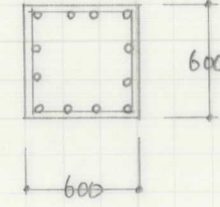
$$pt = 0.2 \quad at = 7.2 \quad 2-D22.$$

$$Qe' = 7.0 \times 2 = 14.0$$

$$fsbj = 30.0 > 14.0$$

$$\text{Hoop } D10 - \text{ } \phi 100.$$

1F3



主筋 12-D22.

$$Pf = 82.8 \quad Pe = 10.1$$

$$Mf = 1.8 \quad Me = 33.0 > 34.8$$

$$Mf = 0.3 \quad Me = 36.0 > 36.3$$

$$\alpha = 26.0 \quad \beta = 17.0$$

$$pt = 0.4 \quad at = 15.0 \quad 4-D22.$$

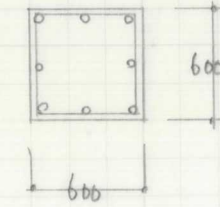
$$\alpha = 23.0 \quad \beta = 17.0$$

$$pt = 0.4 \quad at = 15.0 \quad 4-D22.$$

$$Qe' = 16.0 \times 2 = 32.0$$

$$\text{Hoop } D13 - \text{ } \phi 100.$$

2D1



主筋 8-D22

$$Pf = 59.9$$

$$Mf = 0 \quad Me = 19.0 > 19.0$$

$$Pe = 3.5$$

$$Mf = 5.6 \quad Me = 13.0 > 18.6$$

$$\alpha = 17.0 \quad \beta = 9.0$$

$$pt = 0.1 \quad at = 3.6 \quad 2-D22$$

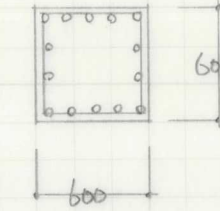
$$\alpha = 18.0 \quad \beta = 9.0$$

$$pt = 0.1 \quad at = 3.6 \quad 2-D22.$$

$$Qe' = 8.0 \times 2 = 16.0$$

$$\text{Hoop } D10 - \text{ } \phi 100$$

1D1



主筋 14-D22

$$Pf = 118.1$$

$$Mf = 0 \quad Me = 41.0$$

$$Pe = 12.0$$

$$Mf = 1.5 \quad Me = 31.0 > 32.5$$

$$\alpha = 32.0 \quad \beta = 18.0$$

$$pt = 0.5 \quad at = 18.0 \quad 5-D22$$

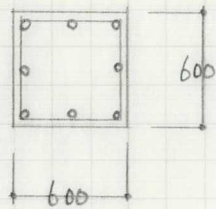
$$\alpha = 36.0 \quad \beta = 15.0$$

$$pt = 0.3 \quad at = 11.0 \quad 3-D22$$

$$Qe' = 17.6 \times 2 = 35.2$$

$$\text{Hoop } D13 - \text{ } \phi 100$$

2B6



主筋 8-D22.

$$P_f = 52.6 \quad P_e = 0.7$$

$$M_f = 3.2$$

$$M_e = 19.0 > 22.2$$

$$M_f = 0.5$$

$$M_e = 16.0 > 16.5$$

$$\alpha = 15.0 \quad \beta = 11.0$$

$$14.5$$

$$p_t = 0.2 \quad a_t = 7.2 \quad 2-D22$$

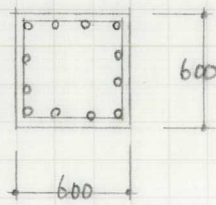
$$\alpha = 15.0 \quad \beta = 8.0$$

$$p_t = 0.1 \quad a_t = 3.6 \quad 2-D22$$

$$Q_e = 80 \times 2 = 16.0$$

$$\text{Hoop } D10 - @ 100.$$

1B6



主筋 12-D22

$$P_f = 129.8 \quad P_e = 0.7$$

$$M_f = 2.8$$

$$M_e = 32.0 > 34.8$$

$$M_f = 0.5$$

$$M_e = 29.0 > 29.5$$

$$\alpha = 36.0 \quad \beta = 16.0$$

$$p_t = 0.3 \quad a_t = 11.0 \quad 3-D22$$

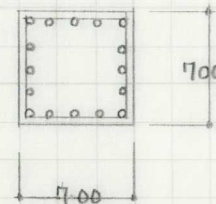
$$\alpha = 36.0 \quad \beta = 14.0$$

$$p_t = 0.2 \quad a_t = 7.2 \quad 2-D22$$

$$Q_e' = 16.0 \times 2 = 32.0$$

$$\text{Hoop } D13 - @ 100.$$

8B6



主筋 16-D25

$$P_f = 190.8 \quad P_e = 3.7$$

$$M_f = 1.4$$

$$M_e = 52.0 > 53.4$$

$$M_f = 0.5$$

$$M_e = 58.0 > 58.5$$

$$\alpha = 39.0 \quad \beta = 16.0$$

$$p_t = 0.3 \quad a_t = 15.0 \quad 4-D25$$

$$\alpha = 39.0 \quad \beta = 17.0$$

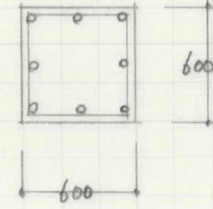
$$p_t = 0.4 \quad a_t = 20.0 \quad 5-D25$$

$$Q_e' = 20 \times 2 = 40.0$$

$$f_{sbj} = 10.5 \times 70 \times 57 = 47.0$$

$$\text{Hoop } D13 - @ 100.$$

2A6



主筋 8-D22

$$P_f = 45.1 \quad P_e = 3.0$$

$$M_f = 4.4$$

$$M_e = 13.0 > 17.4$$

$$M_f = 0.7$$

$$M_e = 16.0 > 16.7$$

$$\alpha = 13.0 \quad \beta = 8.0$$

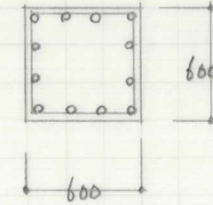
$$11.0$$

$$p_t = 0.2 \quad a_t = 7.2 \quad 2-D22$$

$$\alpha = 12.0 \quad \beta = 8.0$$

$$p_t = 0.2 \quad a_t = 7.2 \quad 2-D22$$

1A6



主筋 12-D22

$$P_f = 102.0 \quad P_e = 11.0$$

$$M_f = 3.9$$

$$M_e = 22.0 > 25.9$$

$$M_f = 0.6$$

$$M_e = 30.0 > 30.6$$

$$\alpha = 31.0 \quad \beta = 12.0$$

$$25.0$$

$$p_t = 0.2 \quad a_t = 7.2 \quad 2-D22$$

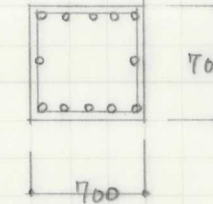
$$\alpha = 28.0 \quad \beta = 14.0$$

$$p_t = 0.2 \quad a_t = 7.2 \quad 2-D22$$

$$Q_e' = 16.0 \times 2 = 32.0$$

$$\text{Hoop } D13 - @ 100.$$

8A6



主筋 16-D25

$$P_f = 163.1 \quad P_e = 22.0$$

$$M_f = 1.8$$

$$M_e = 48.0 > 49.8$$

$$M_f = 0$$

$$M_e = 0$$

$$\alpha = 38.0 \quad \beta = 15.0$$

$$29.0$$

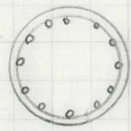
$$p_t = 0.3 \quad a_t = 15.0 \quad 4-D25$$

$$Q_e = 14.0 \times 2 = 28.0$$

$$f_{sbj} = 47.0 > 28.0$$

$$\text{Hoop } D13 - @ 100.$$

2B'3



700

主筋 12-D22.

$$P_f = 64.9 \quad P_e = 3.0$$

$$\begin{aligned} M_f &= 13.1 \\ M_e &= 16.5 > 29.6 \end{aligned}$$

$$\begin{aligned} \alpha &= 14.0 \quad \beta = 9.0 \\ p_t &= 1.0 \quad a_t = 40.0 \\ \therefore &11-D22. \end{aligned}$$

$$Q_e = 7.2 \times 2 = 14.4^+$$

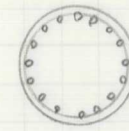
$$f_{sbj} = 10.5 \times 3.14 \times 35^2 = 39.0^+$$

$$\text{Hoop } \phi 10 - @ 100.$$

$$\begin{aligned} M_f &= 0.5 \\ M_e &= 16.0 > 16.5 \end{aligned}$$

$$\begin{aligned} \alpha &= 14.0 \quad \beta = 5.0 \\ p_t &= 0. \end{aligned}$$

1D4



700

主筋 16-D25

$$P_f = 110.4 \quad P_e = 7.9$$

$$\begin{aligned} M_f &= 3.2 \\ M_e &= 37.0 > 40.2 \end{aligned}$$

$$\begin{aligned} \alpha &= 23.0 \quad \beta = 11.5 \\ p_t &= 1.8 \quad a_t = 72.0 \\ \therefore &15-D25. \end{aligned}$$

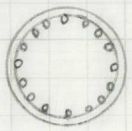
$$Q_e' = 16.0 \times 2 = 32.0$$

$$\text{Hoop } \phi 13 - @ 100.$$

$$\begin{aligned} M_f &= 0.1 \\ M_e &= 36.0 > 36.1 \end{aligned}$$

$$\begin{aligned} \alpha &= 22.0 \quad \beta = 10.5 \\ p_t &= 1.4 \quad a_t = 57.0 \\ \therefore &13-D25. \end{aligned}$$

1B'3



700

主筋 16-D25.

$$P_f = 128.7 \quad P_e = 10.0$$

$$\begin{aligned} M_f &= 2.6 \\ M_e &= 37.0 > 39.6 \end{aligned}$$

$$\begin{aligned} \alpha &= 29.0 \quad \beta = 11.5 \\ 24.0 \\ p_t &= 1.8 \quad a_t = 72.0 \\ \therefore &15-D25 \end{aligned}$$

$$Q_e = 16.0 \times 2 = 32.0^+$$

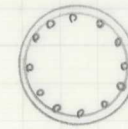
$$f_{sbj} = 39.0^+$$

$$\text{Hoop } \phi 13 - @ 100.$$

$$\begin{aligned} M_f &= 0.4 \\ M_e &= 36.0 > 36.4 \end{aligned}$$

$$\begin{aligned} \alpha &= 27.0 \quad \beta = 10.5 \\ p_t &= 1.4 \quad a_t = 57.0 \\ \therefore &13-D25 \end{aligned}$$

2C6



700

主筋 12-D22.

$$P_f = 43.9 \quad P_e = 1.5$$

$$\begin{aligned} M_f &= 9.7 \\ M_e &= 19.0 > 28.7 \end{aligned}$$

$$\begin{aligned} \alpha &= 9.0 \quad \beta = 8.5 \\ p_t &= 1.0 \quad a_t = 40.0 \\ \therefore &11-D22. \end{aligned}$$

$$\begin{aligned} M_f &= 0 \\ M_e &= 16.0 > 16.0 \end{aligned}$$

左 左

2D4



700

主筋 12-D22

$$P_f = 55.1$$

$$\begin{aligned} M_f &= 0.4 \\ M_e &= 16.0 > 16.4 \end{aligned}$$

$$\begin{aligned} \alpha &= 12.0 \quad \beta = 5.0 \\ p_t &= 0.2 \quad a_t = 10.0 \\ \therefore &4-D22. \end{aligned}$$

$$Q_e = 7.0 \times 2 = 14.0$$

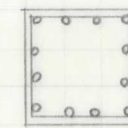
$$f_{sbj} = 39.0 > 14.0$$

$$\text{Hoop } \phi 10 - @ 100.$$

$$\begin{aligned} M_f &= 0.1 \\ M_e &= 16.0 > 16.1 \end{aligned}$$

$$\begin{aligned} \alpha &= 12.0 \quad \beta = 5.0 \\ p_t &= 0.2 \quad a_t = 10.0 \\ \therefore &4-D22. \end{aligned}$$

1C6



600

600

$$P_f = 94.5 \quad P_e = 2.5$$

$$\begin{aligned} M_f &= 5.2 \\ M_e &= 32.0 > 37.2 \end{aligned}$$

$$\begin{aligned} \alpha &= 27.0 \quad \beta = 17.0 \\ p_t &= 0.4 \quad a_t = 15.0 \\ \therefore &4-D22. \end{aligned}$$

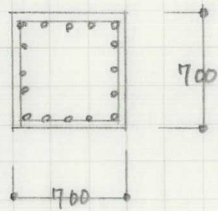
$$Q_e' = 16.0 \times 2 = 32.0$$

$$\text{Hoop } \phi 13 - @ 100$$

$$\begin{aligned} M_f &= 0 \\ M_e &= 29.0 > 29.0 \end{aligned}$$

左 左

BC6



主筋 16-D25

$$Pf = 133.7$$

$$1 \quad Mf = 0.4 \\ Me = 58.0 > 58.4$$

$$\alpha = 27.0 \quad \beta = 17.0 \\ pt = 0.4 \quad at = 20.0 \\ \therefore 5-D25$$

$$Qe' = 20 \times 2 = 40.0^t \\ fsbj = 47.0 > 40.0$$

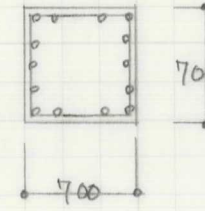
Hoop D13-@100

$$Pe = 11.0$$

$$\hookrightarrow Mf = 2.8 \\ Me = 58.0 > 60.8$$

$$\alpha = 30.0 \quad \beta = 17.5 \\ 24.0 \quad at = 20.0 \\ pt = 0.4 \quad \therefore 5-D25$$

BC8



主筋 14-D25

$$Pf = 131.2$$

$$1 \quad Mf = 0. \\ Me = 58.0$$

$$\alpha = 28.0 \quad \beta = 17.0 \\ pt = 0.4 \quad at = 20.0 \\ \therefore 4-D25$$

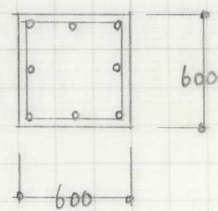
$$Qe' = 20 \times 2 = 40.0^t \\ fsbj = 47.0^t > 40.0^t$$

Hoop D13-@100

$$\hookrightarrow Mf = 1.3 \\ Me = 58.0$$

全 无

ZC8



主筋 8-D22

$$Pf = 37.2$$

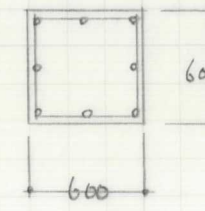
$$1 \quad Mf = 1.3 \\ Me = 19.0 > 20.3$$

$$\alpha = 11.0 \quad \beta = 10.0 \\ pt = 0.3 \quad at = 11.0 \\ \therefore 3-D22$$

$$\hookrightarrow Mf = 5.0 \\ Me = 16.0 > 21.0$$

$$\alpha = 11.0 \quad \beta = 10.0 \\ pt = 0.3 \quad at = 11.0 \\ \therefore 3-D22$$

ZF6



主筋 8-D22

$$Pf = 22.9 \quad Pe = 6.0$$

$$1 \quad Mf = 2.2 \\ Me = 13.0 > 15.2$$

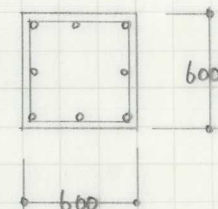
$$\alpha = 8.0 \quad \beta = 7.0 \\ 5.0 \quad at = 7.2 \\ pt = 0.2 \quad \therefore 2-D22$$

$$Pe = 3.5$$

$$\hookrightarrow Mf = 5.3 \\ Me = 13.0 > 18.3$$

$$\alpha = 7.0 \quad \beta = 9.0 \\ 6.0 \quad at = 11.0 \\ pt = 0.3 \quad \therefore 3-D22$$

IC8



主筋 8-D22

$$Pf = 72.6$$

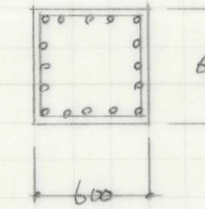
$$1 \quad Mf = 0.3 \\ Me = 32.0 > 32.3$$

$$\alpha = 20.0 \quad \beta = 14.0 \\ pt = 0.3 \quad at = 11.0 \\ \therefore 3-D22$$

$$\hookrightarrow Mf = 2.3 \\ Me = 29.0 > 31.3$$

全 无

IF6



主筋 16-D22

$$Pf = 44.0 \quad Pe = 20.0$$

$$1 \quad Mf = 0.5 \\ Me = 36.0 > 36.5$$

$$\alpha = 17.0 \quad \beta = 16.0 \\ 6.5 \quad at = 18.0 \\ pt = 0.5 \quad \therefore 5-D22$$

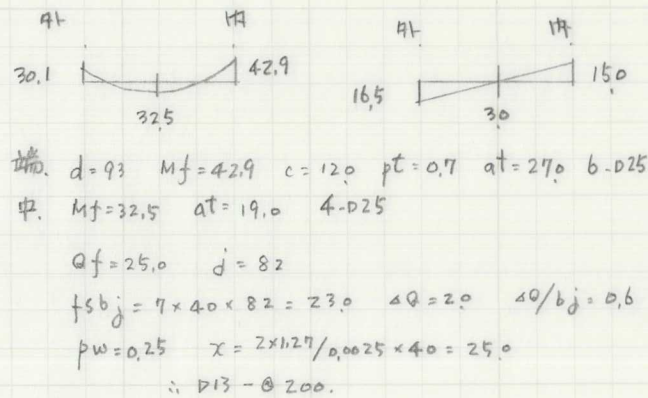
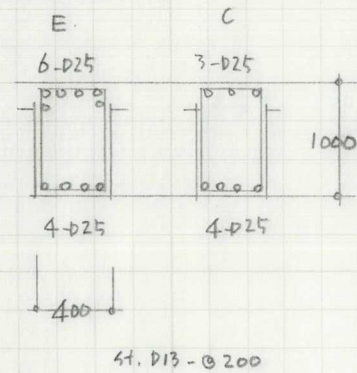
$$Pe = 12.0$$

$$\hookrightarrow Mf = 0.8 \\ Me = 31.0 > 31.8$$

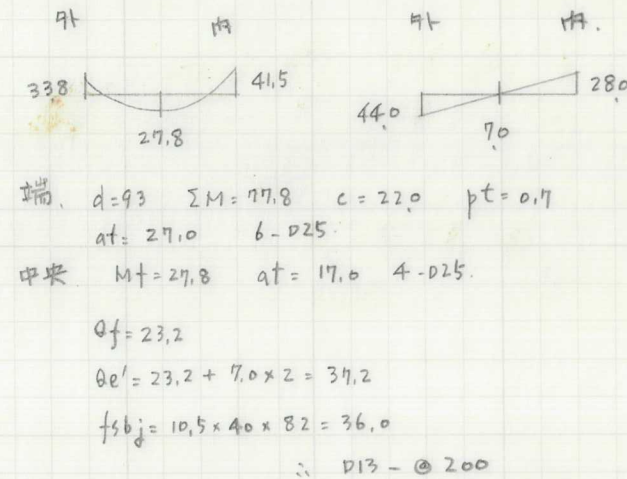
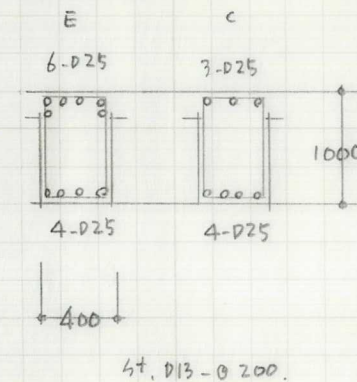
$$\alpha = 16.0 \quad \beta = 15.0 \\ 9.0 \quad at = 18.0 \\ pt = 0.5 \quad \therefore 5-D22$$

88. 大梁設計.

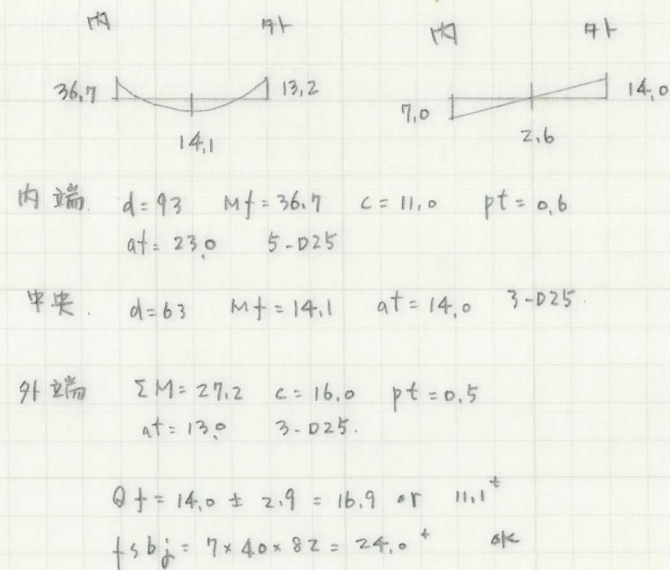
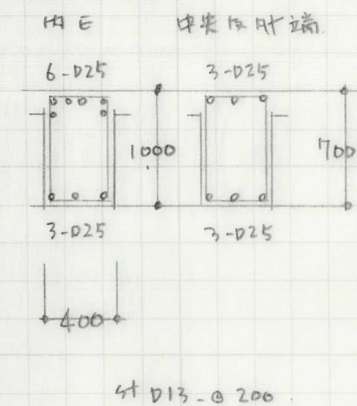
RG1



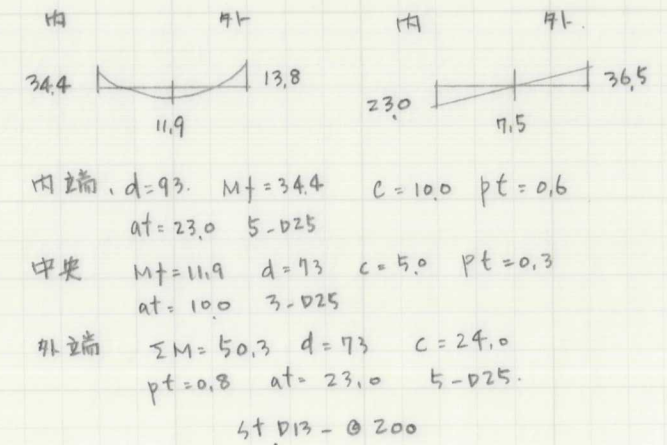
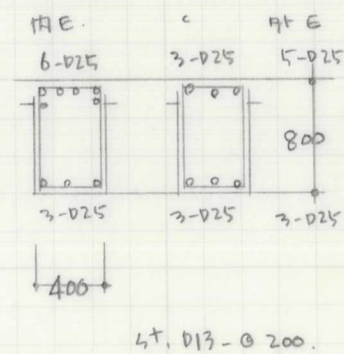
2G1



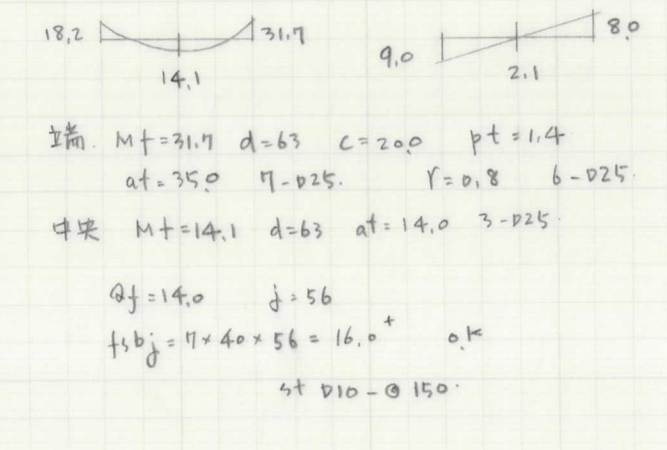
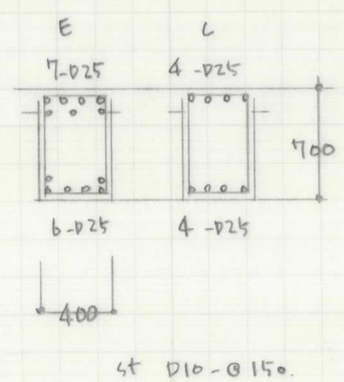
RG2A



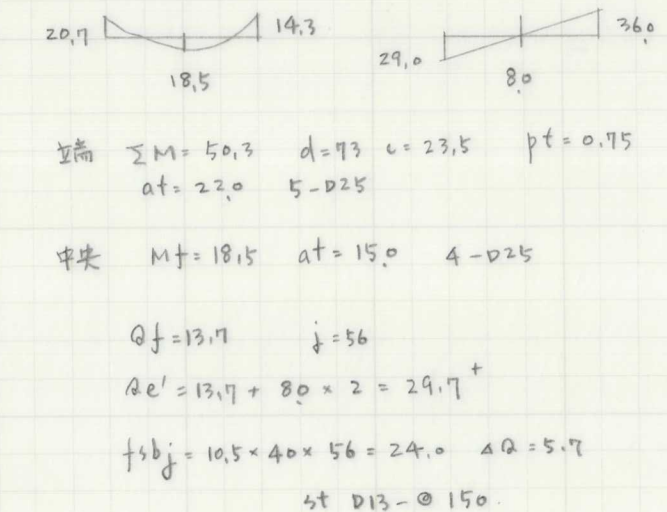
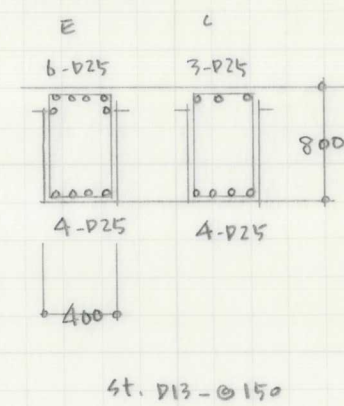
2G2A

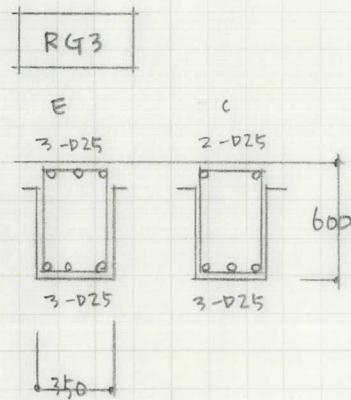


RG2

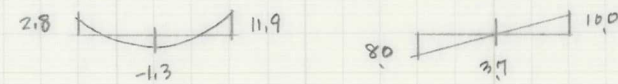


2G2





st D10-@150



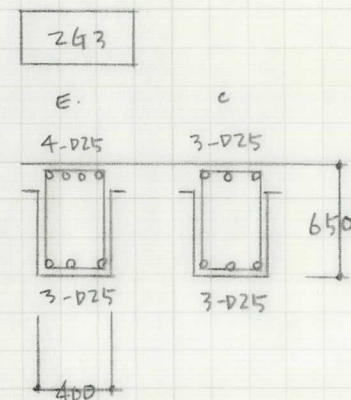
端. $\Sigma M = 21.9$ $d = 53$ $c = 22.0$ $pt = 0.7$
 $at = 13.0$ 4-D22 又 3-D25.

中央 $M_f = 1.3$ 2-D22.

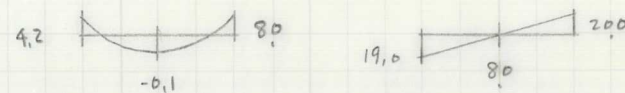
$Q_f = 4.0$ $j = 47$.

$Qe' = 4.0 + 3.7 \times 2 = 11.4$

$f_s b_j = 10.5 \times 35 \times 47 = 17.0^+$ O.K.



st, D10-@150



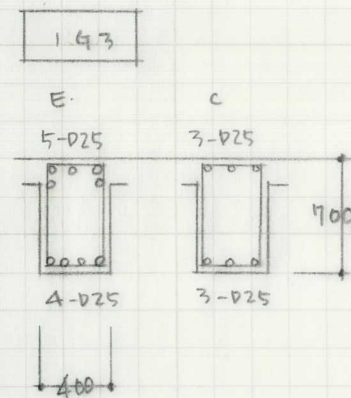
端. $\Sigma M = 28.0$ $d = 58$ $c = 21.0$ $pt = 0.7$
 $at = 16.0$ 4-D25

中央 $M_f = 0.1$ 2-D25

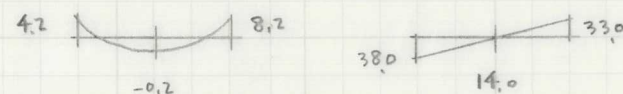
$Q_f = 4.0$ $j = 51$.

$Qe' = 4.0 + 8.0 \times 2 = 20.0^+$

$f_s b_j = 10.5 \times 40 \times 51 = 22.0^+$ O.K.



st, D13-@150



端. $\Sigma M = 42.2$ $d = 63$ $c = 25.0$ $pt = 0.8$
 $at = 21.0$ 5-D25.

中央 $M_f = 0.2$ 2-D25

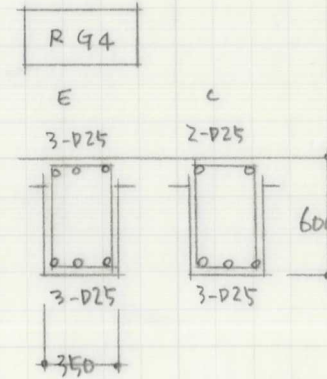
$Qe' = 4.0 + 14.0 \times 2 = 32.0^+$

$f_s b_j = 10.5 \times 40 \times 56 = 24.0^+$ $\Delta Q = 8.0$

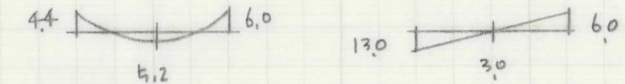
$\Delta Q/b_j = 3.5$ $pw = 0.42$

$\chi = 2 \times 1.27 / 0.0042 \times 40 = 15.0$

st, D13-@150.



st D10-@150.



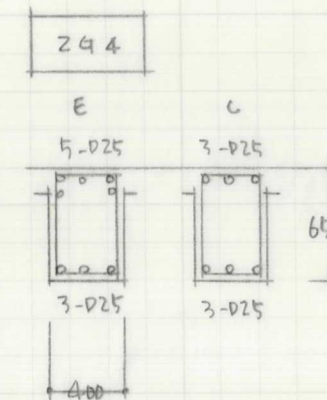
端. $\Sigma M = 17.4$ $d = 53$ $c = 19.0$ $pt = 0.6$
 $at = 11.0$ 3-D25.

中央 $M_f = 5.2$ $at = 6.0$ 2-D25

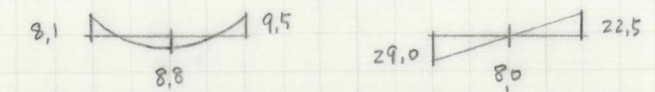
$Q_f = 6.0$

$Qe' = 6.0 + 3.0 \times 2 = 12.0^+$

$f_s b_j = 17.0^+$



st D13-@200



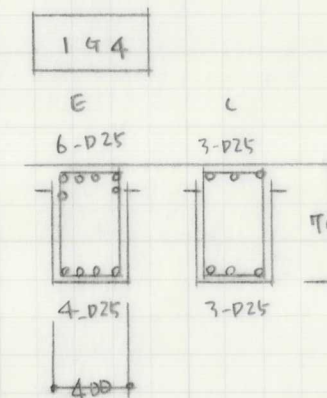
端. $\Sigma M = 37.1$ $d = 58$ $c = 28.0$ $pt = 0.9$
 $at = 21.0$ 5-D25.

中央 $M_f = 8.8$ $at = 9.0$ 2-D25

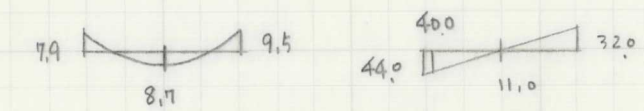
$Q_f = 9.5$

$Qe' = 9.5 + 8.0 \times 2 = 25.5$

$f_s b_j = 22.0$ $\Delta Q = 3.5$ D13-@200



st D13-@150

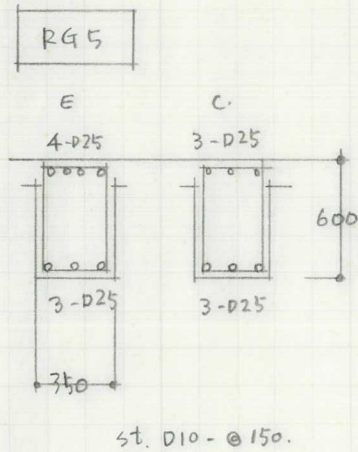


端. $\Sigma M = 47.9$ $d = 63$ $c = 30.0$ $pt = 0.95$
 $at = 25.0$ 5-D25

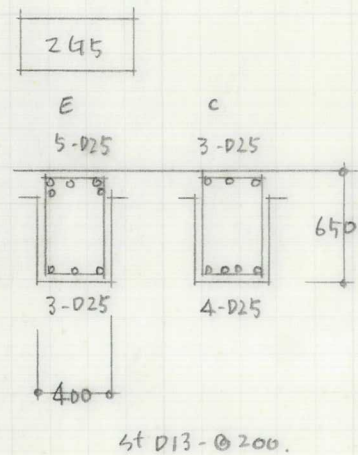
中央 $M_f = 8.7$ $at = 9.0$ 2-D25

$Qe' = 9.5 + 11.0 \times 2 = 31.5$

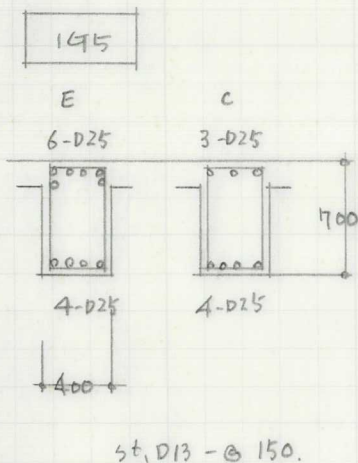
$f_s b_j = 24.0$ $\Delta Q = 7.5$ D13-@150



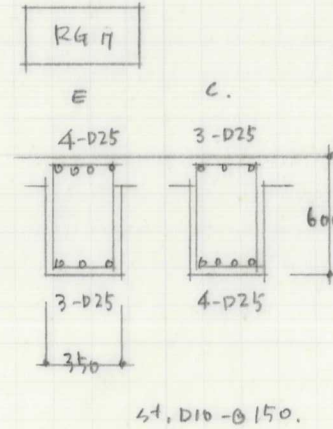
端. $\Sigma M = 23.9$ $d = 53$ $c = 24.0$ $pt = 0.8$
 $at = 15.0$ 4-D25
 中央. $M_f = 12.5$ $at = 15.0$ 3-D25.
 $Q_f = 7.1$
 $Q_e' = 7.1 + 3.5 \times 2 = 14.1$
 $f_{sbj} = 17.0^+ > 14.1^+$ OK
 st. D10 - @ 150.



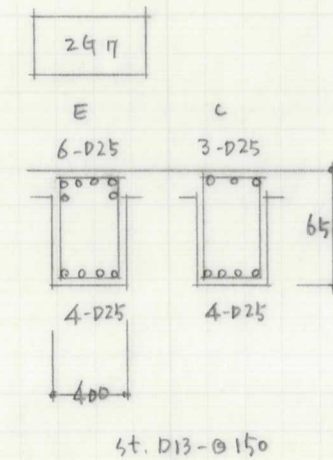
端. $\Sigma M = 45.6$ $d = 58$ $c = 32.0$ $pt = 1.0$
 $at = 24.0$ 5-D25.
 中央. $M_f = 18.7$ $at = 19.0$ 4-D25.
 $Q_f = 6.6$
 $Q_e' = 6.6 + 8.5 \times 2 = 23.6$
 $f_{sbj} = 22.0$ $\Delta Q = 1.6$ D13 - @ 200.



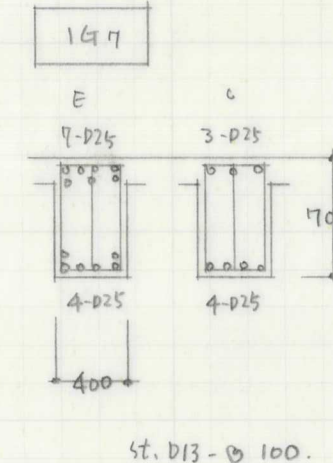
端. $\Sigma M = 55.1$ $d = 63$ $c = 34.0$ $pt = 1.1$
 $at = 28.0$ 6-D25.
 中央. $M_f = 18.7$ $at = 17.0$ 4-D25.
 $Q_f = 6.6$
 $Q_e' = 6.6 + 12.0 \times 2 = 30.6$
 $f_{sbj} = 24.0$ $\Delta Q = 6.6$ D13 - @ 150.



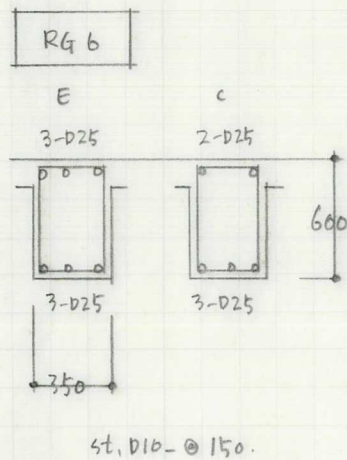
端. $\Sigma M = 25.6$ $d = 53$ $c = 25.0$ $pt = 0.85$
 $at = 16.0$ 4-D25
 中央. $M_f = 14.8$ $at = 16.0$ 4-D25.
 $Q_f = 10.4$
 $Q_e' = 10.4 + 3.5 \times 2 = 17.4^+$
 $f_{sbj} = 17.0^+$
 st. D10 - @ 150.



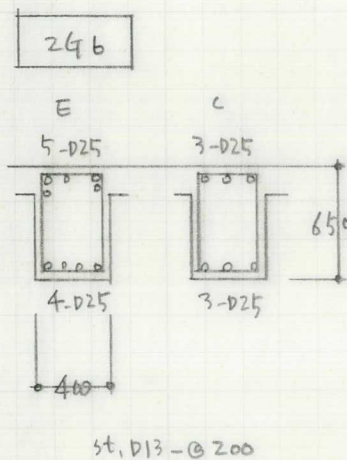
端. $\Sigma M = 47.7$ $d = 58$ $c = 34.0$ $pt = 1.1$
 $at = 26.0$ 6-D25
 中央. $M_f = 19.7$ $at = 20.0$ 4-D25.
 $Q_f = 15.7$
 $Q_e' = 15.7 + 8.5 \times 2 = 32.7$
 $f_{sbj} = 22.0$ $\Delta Q = 10.7$ D13 - @ 150.



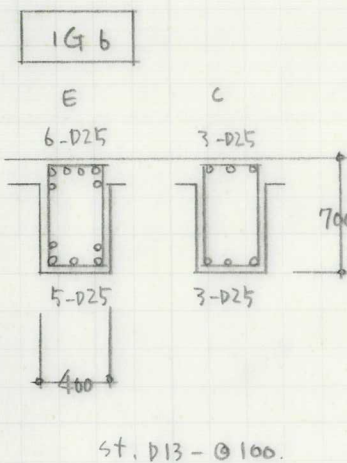
端. $\Sigma M = 63.7$ $d = 63$ $c = 40.0$ $pt = 1.4$
 $at = 35.0$ 7-D25 $r = 0.8$ 6-D25.
 中央. $M_f = 19.8$ $at = 17.5$ 4-D25.
 $Q_f = 15.7$
 $Q_e' = 15.7 + 14.5 \times 2 = 44.7$
 $f_{sbj} = 24.0$ $\Delta Q = 20.7$ $\Delta Q / b_j = 9.0$
 $pw = 0.8$ $\chi = 3 \times 127 / (0.008 \times 40) = 11.0$
 st. D13 - @ 100



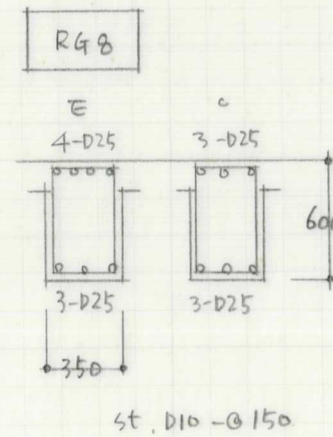
9.5 5.4 5.0 8.0 3.5 13.0
 端 $\Sigma M = 18.0$ $d = 53$ $c = 18.0$ $pt = 0.6$
 $at = 11.0$ $3-D25$
 中央 $M_f = 5.4$ $at = 6.0$ $2-D25$
 $Q_f = 9.0$
 $Q_{e'} = 9.0 + 3.5 \times 2 = 16.0$
 $f_{sbj} = 17.0^+$ $st D10 - @ 150$



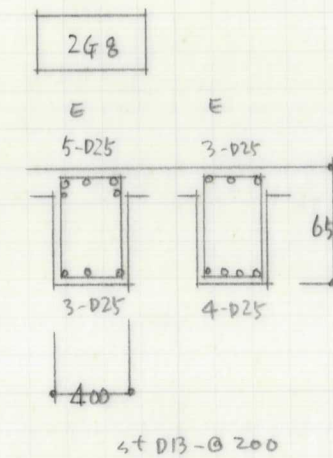
8.7 4.5 5.9 21.0 8.5 30.0
 端 $\Sigma M = 35.9$ $d = 58$ $c = 27.0$ $pt = 0.9$
 $at = 21.0$ $5-D25$
 中央 $M_f = 4.5$ $at = 5.0$ $2-D25$
 $Q_f = 8.4$
 $Q_{e'} = 8.4 + 8.5 \times 2 = 25.4$
 $f_{sbj} = 22.0$ $\Delta Q = 3.4$ $D13 - @ 200$



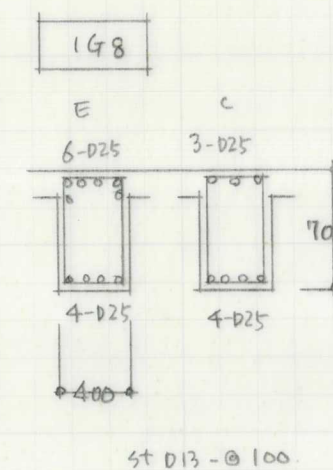
8.5 4.8 5.5 36.0 14.5 46.0 51.0
 端 $\Sigma M = 51.5$ $d = 63$ $c = 32.0$ $pt = 1.05$
 $at = 27.0$ $6-D25$
 中央 $M_f = 4.8$ $2-D25$
 $Q_f = 8.4$
 $Q_{e'} = 8.4 + 14.5 \times 2 = 39.4$
 $f_{sbj} = 24.0$ $\Delta Q = 13.4$ $\Delta Q/bj = 5.6$
 $pw = 0.55$ $\chi = 2 \times 1.27 / 0.0055 \times 40 = 12.0$
 $st. D13 - @ 100$



10.9 12.5 13.6 8.0 2.7 8.0
 端 $\Sigma M = 21.6$ $d = 53$ $c = 23.0$ $pt = 0.8$
 $at = 15.0$ $4-D25$
 中央 $M_f = 12.5$ $at = 15.0$ $3-D25$
 $Q_f = 9.4$
 $Q_{e'} = 9.4 + 2.7 \times 2 = 14.8^+$
 $f_{sbj} = 17.0^+$ $st D10 - @ 150$



16.6 18.7 19.3 21.0 7.0 21.0
 端 $\Sigma M = 40.3$ $d = 58$ $c = 30.0$ $pt = 0.95$
 $at = 22.0$ $5-D25$
 中央 $M_f = 18.7$ $at = 19.0$ $4-D25$
 $Q_f = 14.5$
 $Q_{e'} = 14.5 + 7.0 \times 2 = 28.5$
 $f_{sbj} = 22.6$ $\Delta Q = 6.0$ $st D13 - @ 200$



16.9 18.7 19.1 36.0 12.0 36.0
 端 $\Sigma M = 55.1$ $d = 63$ $c = 34.0$ $pt = 1.1$
 $at = 28.0$ $6-D25$
 中央 $M_f = 18.7$ $at = 17.0$ $4-D25$
 $Q_f = 14.5$
 $Q_{e'} = 14.5 + 12.0 \times 2 = 38.5$
 $f_{sbj} = 24.0$ $\Delta Q = 14.5$ $\Delta Q/bj = 6.5$
 $pw = 0.6$ $\chi = 2 \times 1.27 / 0.006 \times 40 = 10$
 $st D13 - @ 100$

§9. 基礎の設計.

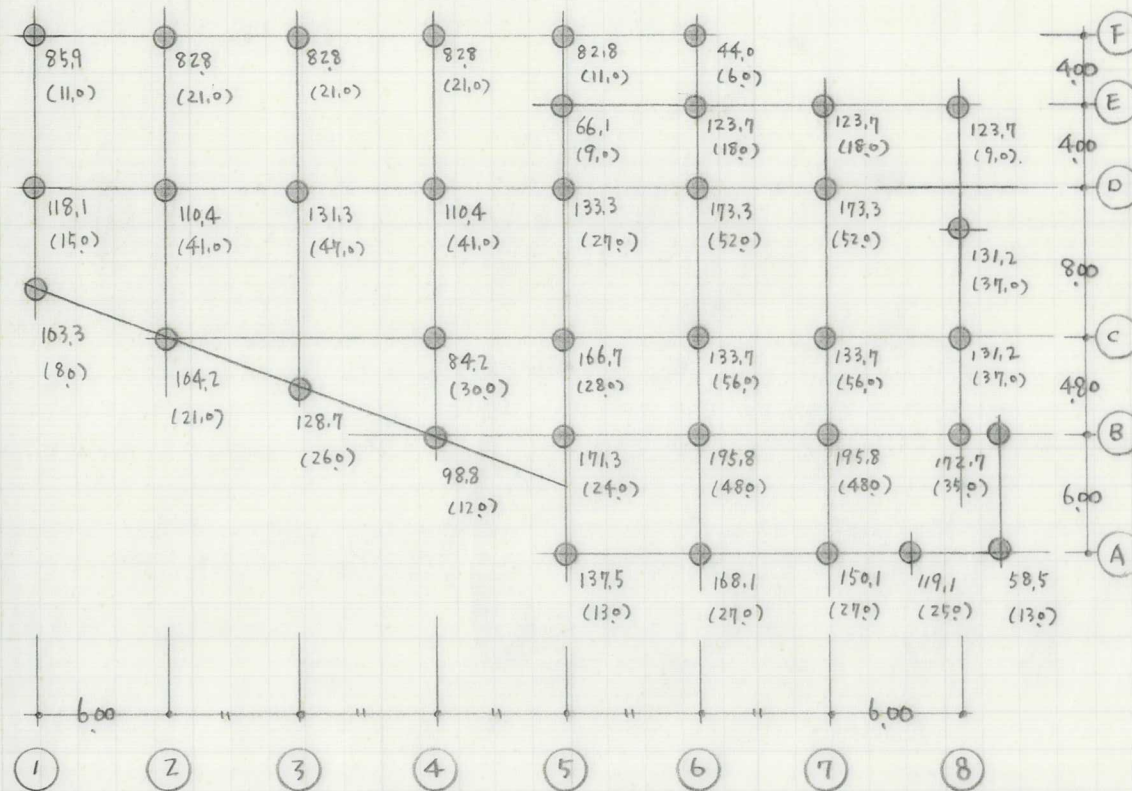
杭, AC1104L, 400 ϕ $L=13.00$ m N 値 36 (先端 N 値).

$$R_q = \frac{1}{3} \times [20 \times 36 \times 0.126 + (\frac{N_s \cdot L_s}{5} + \frac{N_c}{2} L_c)] = 48.0 \text{ t/本}$$

但し $N_s = 26$ $L_s = 8$ m $N_c = 5$ $L_c = 6$ m上記の如く, AC1104L 径 400 ϕ $L=13.0$ m 埋込み杭とする.

軸力表

() 内は IFL 床荷重及 BFL 床荷重を示す.

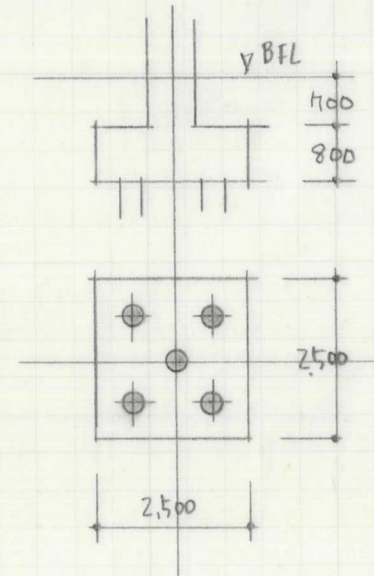
1階床荷重 $W = 580 \text{ kg/m}^2$ 地中梁自重 $W = 40 \times 1.20 \times 2.4 / 4.00 = 300$ $> 880 \text{ kg/m}^2$ 地階床荷重 $W = 1420 \text{ kg/m}^2$ 地中梁自重 $W = 40 \times 1.20 \times 2.4 / 4.00 = 300$ $> 1,720 \text{ kg/m}^2$

基礎断面.

$$R_q = 48.0 \text{ t/本} \quad \text{基の自重 } W = 1.0 \times 1.0 \times 1.5 \times 20 = 3.0 \text{ t/本}$$

$$R_q' = 48.0 - 3.0 = 45.0 \text{ t/本}$$

FZ 地階基礎.



$$P_f = 173.3 + 52.0 = 225.3 \text{ t}$$

$$n = 225.3 / 45 = 5 \text{ 本}$$

$$Q = 225.3 / 5 = 45.0 \text{ t/本}$$

$$Q = 45.0$$

$$M = 45.0 \times 0.75 = 34.0 \text{ t-m}$$

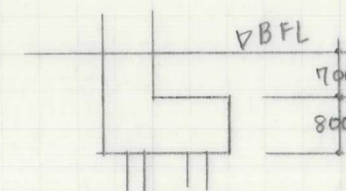
$$D = 80 \quad d = 70 \quad j = 60$$

$$a_t = 34.0 / (1.75 \times 0.7) = 28.0 \quad 14-D19 \text{ 9等}$$

$$\Sigma \phi = 45000 / (14 \times 60) = 55.0 \quad 14-D19 \text{ ''}$$

$$Z_s = 7 \times 250 \times 60 = 105.0 \text{ t-k}$$

FZ A 地階基礎.



$$P_f = 168.1 + 27.0 = 195.1 \text{ t}$$

$$n = 195.1 / 45 = 5 \text{ 本}$$

$$Q = 195.1 / 5 = 39.0 \text{ t/本}$$

$$Q = 39.0 \text{ t}$$

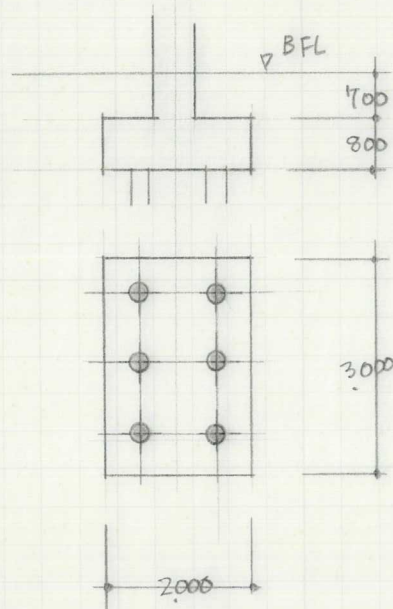
$$M = 39.0 \times 0.375 = 14.0 \text{ t-m}$$

$$D = 80 \quad d = 70 \quad j = 60$$

$$a_t = 12.0 \quad D16-\phi 200$$

$$\rightarrow \text{方向 } D13-\phi 200$$

F1.



$$P_f = 195.8 + 48.0 = 243.8^+$$

$$\eta = 243.8 / 45 = 6 \text{ 本}$$

$$\sigma = 243.8 / 6 = 41.0^+ \text{ 本}$$

$$Q = 41.0 \times 2 = 82.0^+$$

$$M = 82.0 \times 0.75 = 63.0^+ \text{ tm}$$

$$D = 90 \quad d = 80 \quad j = 70$$

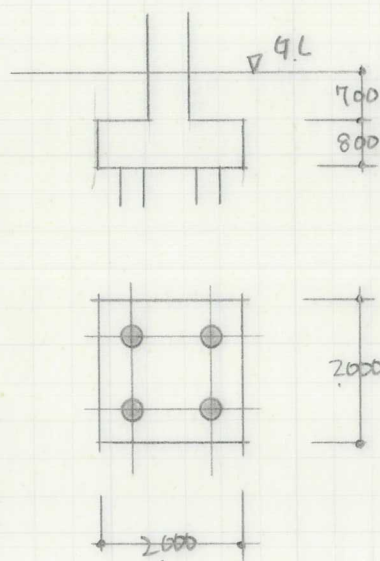
$$a^+ = 63.0 / 1.75 \times 0.8 = 45.0 \quad 14-D22$$

$$\Sigma \phi = 82.000 / 14 \times 70 = 80.0 \quad 14-D22$$

$$\hookrightarrow \text{方向} \quad D16 - @ 200$$

$$\text{他} = \text{diagonal} \quad 3-D13 + \text{文字}$$

F3



$$P_f = 131.3 + 47.0 = 178.3^+$$

$$\eta = 178.3 / 45 = 4 \text{ 本}$$

$$\sigma = 178.3 / 4 = 45.0^+ \text{ 本}$$

$$Q = 45.0^+$$

$$M = 45.0 \times 0.375 = 17.0^+ \text{ tm}$$

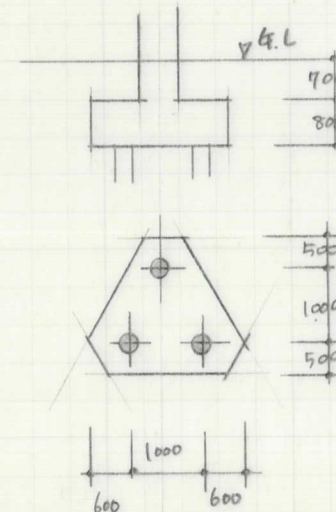
$$D = 80 \quad d = 70 \quad j = 60$$

$$a^+ = 17.0 / 1.75 \times 0.7 = 14.0 \quad 12-D16$$

$$\Sigma \phi = 45.000 / 14 \times 60 = 55.0 \quad 12-D16$$

$$\text{他} = \text{diagonal} \quad 3-D13 + \text{文字}$$

F4



$$P_f = 118.1 + 15.0 = 133.1^+$$

$$\eta = 133.1 / 45 = 3 \text{ 本}$$

$$\sigma = 133.1 / 3 = 44.0^+ \text{ 本}$$

$$Q = 44.0^+$$

$$M = 44.0 \times 0.6 = 26.0^+ \text{ tm}$$

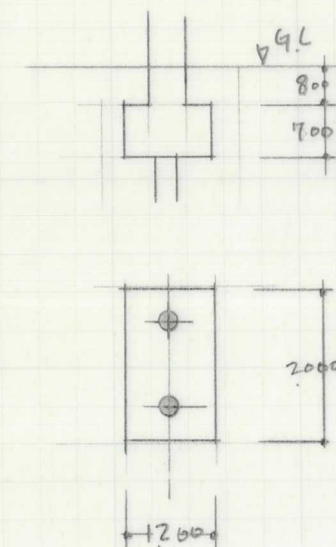
$$D = 80 \quad d = 70 \quad j = 60$$

$$a^+ = 26.0 / 1.75 \times 0.7 = 21.0 \quad 7-D19$$

$$\Sigma \phi = 44.000 / 14 \times 60 = 53.0 \quad 7-D19$$

$$\Sigma \phi = 7 \times 15.0 \times 60 = 64.0^+ > 44.0^+$$

F5



$$P_f = 44.0 + 6.0 = 50.0^+$$

$$\eta = 50.0 / 45 = 2 \text{ 本}$$

$$\sigma = 50.0 / 2 = 25.0^+ \text{ 本}$$

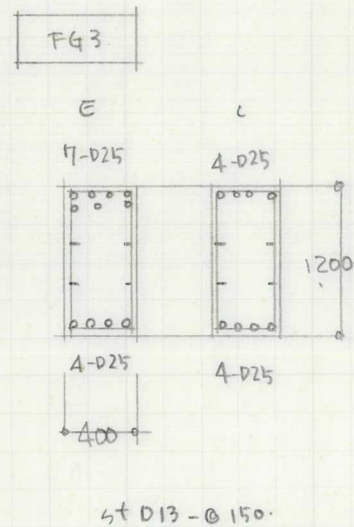
$$Q = 25.0$$

$$M = 25.0 \times 0.7 = 18.0^+ \text{ tm}$$

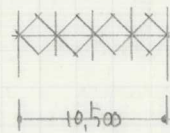
$$D = 70 \quad d = 60 \quad j = 50$$

$$a^+ = 17.0 \quad 9-D16$$

$$\Sigma \phi = 37.0 \quad 9-D16$$



F43.



$$l_x = 30 \quad l_y = 100 \quad \lambda = 3.3$$

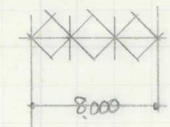
$$W = 880 / 61 = 1.5 \text{ 倍}$$

$$C = 53.0^{+m}$$

$$M = 82.0^{+m}$$

$$Q = 30.0^{+}$$

F44



$$l_x = 27 \quad l_y = 6.0 \quad \lambda = 2.2$$

$$C = 30.0^{+m}$$

$$M = 45.0^{+m}$$

$$Q = 16.5^{+}$$

連続 Beam 2 2.

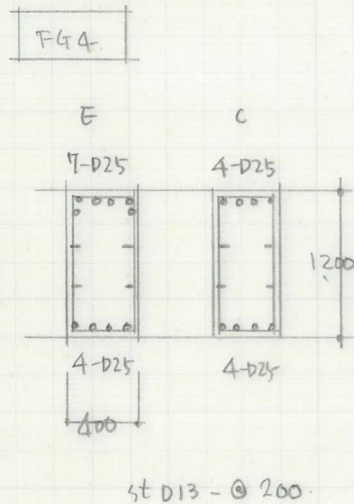
F43

$$M_c = 50.0$$

F44

$$M_c = 13.0$$

	1.43	1.57	
-53.0	+53.0	-30.0	+30.0
+53.0	-10.0	-13.0	-30.0
-5.0	+26.0	-15.0	-6.5
+5.0	-5.0	-6.0	+6.5
0	64.0	64.0	0

F43, 外端, $M_e = 37.0^{+m}$

$$D = 1.20 \quad d = 110 \quad at = 12.0 \quad 3-D25$$

$$\text{内端, } M_f = 64.0 \quad at = 34.0 \quad 7-D25$$

$$\text{中央, } M_f = 50.0 \quad at = 17.0 \quad 4-D25$$

F44, 外端, $M_e = 33.0^{+m}$

$$D = 1.12 \quad d = 111 \quad at = 11.0 \quad 3-D25$$

$$\text{内端, } M_f = 64.0 \quad at = 34.0 \quad 7-D25$$

$$\text{中央, } M_f = 13.0 \quad at = 7.0 \quad 3-D25$$

$$f_s b_j = 7 \times 40 \times 95 = 26.0 \quad \Delta \theta = 10.4$$

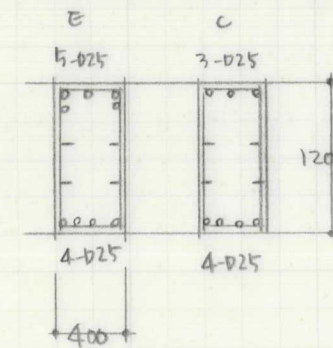
$$\Delta \theta / b_j = 2.7 \quad p_w = 0.36$$

$$\chi = 2 \times 127 / 0.0036 \times 40 = 17.0$$

$$D13 - @ 150.$$

F45

鉛直時.



5t D10 - @ 150.

$$C = 30.0^{+m} \quad M_0 = 45.0^{+m} \quad Q = 16.5^{+}$$

$$\text{内端, } M_f = 45.0^{+m} \quad M_e = 20.5^{+m} \quad \Sigma M = 65.5^{+m}$$

$$D = 1.20 \quad d = 111 \quad at = 22.0 \quad 5-D25$$

$$\text{外端, } M_e = 33.0^{+m}$$

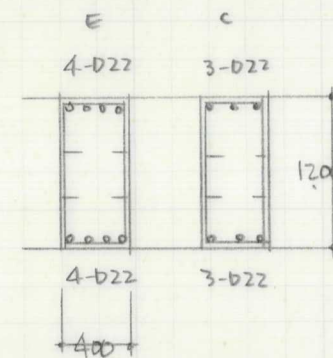
$$d = 111 \quad at = 11.0 \quad 3-D25$$

$$\text{中央, } M_{cut} = 45.0 - 45.0/2 = 22.5$$

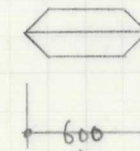
$$at = 13.0 \quad 3-D25$$

F46

鉛直時.



5t D10 - @ 150



$$l_x = 30 \quad l_y = 6.0 \quad \lambda = 2.0$$

$$C = 8.0^{+m}$$

$$M_0 = 12.0^{+m}$$

$$Q = 7.0^{+}$$

$$\text{立端, } M_f = 1.12 C = 1.12 \times 8.0 = 9.0^{+m}$$

$$M_e = 31.0$$

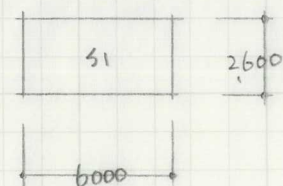
$$D = 1.12 \quad d = 111 \quad at = 31.0 / 2.9 \times 111 = 10.0$$

$$\therefore 3-D22$$

§10. 雜部設計

10.1 床版設計

S1 (1階)



$$lx=2.6 \quad ly=6.0 \quad \lambda=2.3 \quad W=0.78 \frac{t}{m^2}$$

$$Wlx^2=5.3 \quad Wly^2=2.0$$

$$Mx1 = 0.081 \times 5.3 = 0.43 \frac{tm}{m}$$

$$Mx2 = 0.054 \times 5.3 = 0.30 \frac{tm}{m}$$

$$My1 = 0.042 \times 5.3 = 0.21 \frac{tm}{m}$$

$$My2 = 0.028 \times 5.3 = 0.14 \frac{tm}{m}$$

$$Qx = 0.51 \times 2.0 = 1.0 \frac{t}{m}$$

$$Qy = 0.46 \times 2.0 = 0.92 \frac{t}{m}$$

$$D=12 \quad d=9 \quad j=8$$

$$\text{短辺方向 端 } at = 0.43 / 1.75 \times 0.09 = 2.8$$

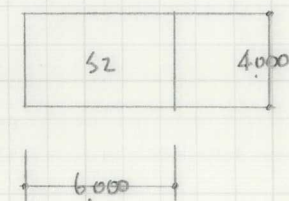
$$\text{中央 } at = 0.30 / 1.75 \times 0.09 = 1.9 \quad D10 - \phi 200$$

$$\text{長辺方向 端 } at = 1.3 \quad \text{中央 } at = 0.9$$

$$D10 - \phi 250$$

$$\Sigma \phi = 100000 / 14 \times 8 = 10.0 \quad D10 - \phi 200$$

S2 (屋根)



$$lx=4.0 \quad ly=6.0 \quad \lambda=1.5 \quad W=0.65 \frac{t}{m^2}$$

$$Wlx^2=10.6 \quad Wly^2=2.7$$

$$Mx1 = 0.07 \times 10.6 = 0.76 \frac{tm}{m}$$

$$Mx2 = 0.046 \times 10.6 = 0.51 \frac{tm}{m}$$

$$My1 = 0.042 \times 10.6 = 0.46 \frac{tm}{m}$$

$$My2 = 0.028 \times 10.6 = 0.31 \frac{tm}{m}$$

$$Qx = 0.51 \times 2.7 = 1.4 \frac{t}{m}$$

$$Qy = 0.46 \times 2.7 = 1.3 \frac{t}{m}$$

$$D=12 \quad d=9 \quad j=8$$

$$\text{短辺方向 端 } at = 0.76 / 1.75 \times 0.09 = 5.0$$

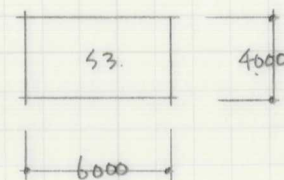
$$\text{中央 } at = 3.20 \quad D10, D13 - \phi 200$$

$$\text{長辺方向 端 } at = 0.46 / 1.75 \times 0.09 = 3.0$$

$$\text{中央 } at = 2.1 \quad D10, D13 - \phi 250$$

$$\Sigma \phi = 140000 / 14 \times 8 = 12.5 \quad D10 - D13 - \phi 200$$

S3



$$lx=4.0 \quad ly=6.0 \quad \lambda=1.5 \quad W=1.18 \frac{t}{m^2}$$

$$Wlx^2=19.0 \quad Wly^2=4.7$$

$$Mx1 = 0.07 \times 19.0 = 1.35 \frac{tm}{m}$$

$$Mx2 = 0.046 \times 19.0 = 0.9 \frac{tm}{m}$$

$$My1 = 0.042 \times 19.0 = 0.8 \frac{tm}{m}$$

$$My2 = 0.028 \times 19.0 = 0.53 \frac{tm}{m}$$

$$Qx = 0.51 \times 4.7 = 2.4 \frac{t}{m}$$

$$Qy = 0.46 \times 4.7 = 2.1 \frac{t}{m}$$

$$D=12 \quad d=9 \quad j=8$$

$$\text{短辺方向 端 } at = 1.35 / 1.75 \times 0.09 = 8.5$$

$$\text{中央 } at = 6.0 \quad D13 - \phi 150$$

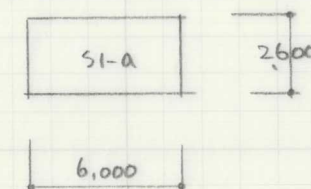
$$\text{長辺方向 端 } at = 0.8 / 1.75 \times 0.09 = 5.1$$

$$\text{中央 } at = 3.6 \quad D13 - \phi 200$$

$$\Sigma \phi = 240000 / 14 \times 8 = 22.0 \quad D13 - \phi 150$$

$$\Sigma \phi = 210000 / 14 \times 8 = 19.0 \quad D13 - \phi 200$$

S1-a (2階)



$$lx=2.6 \quad ly=6.0 \quad \lambda=2.3 \quad W=0.88 \frac{t}{m^2}$$

$$Wlx^2=6.0 \quad Wly^2=2.3$$

$$Mx1 = 0.081 \times 6.0 = 0.5 \frac{tm}{m}$$

$$Mx2 = 0.054 \times 6.0 = 0.34 \frac{tm}{m}$$

$$My1 = 0.042 \times 6.0 = 0.25 \frac{tm}{m}$$

$$My2 = 0.028 \times 6.0 = 0.17 \frac{tm}{m}$$

$$Qx = 0.51 \times 2.3 = 1.2 \frac{t}{m}$$

$$Qy = 0.46 \times 2.3 = 1.1 \frac{t}{m}$$

$$D=12 \quad d=9 \quad j=8$$

短辺方向

$$\text{端 } at = 0.5 / 1.75 \times 0.09 = 3.0 \quad D10 - \phi 200$$

$$\text{中央 } at = 2.2 \quad D10 - \phi 200$$

長辺方向

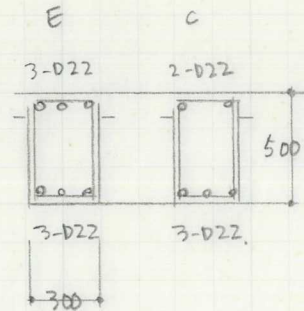
$$\text{端 } at = 0.25 / 1.75 \times 0.09 = 1.5$$

$$D10 - \phi 250$$

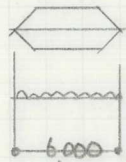
10.2 不梁の設計.

B1

一般小梁.



st, D10-@200



$$W = 1.61 \text{ t/m}^2$$

$$l_x = 3.0 \quad l_y = 6.0 \quad \lambda = 2.0$$

$$c = 6.5 \text{ tm}$$

$$M_0 = 9.8 \text{ tm}$$

$$Q = 6.0 \text{ t}$$

$$\text{主筋 } 1.2c = 1.2 \times 6.5 = 8.0 \text{ tm}$$

$$D=50 \quad d=45 \quad at=10.5 \quad 3-D22.$$

$$\text{中央 } M = 0.8 M_0 = 0.8 \times 9.8 = 8.0 \text{ tm}$$

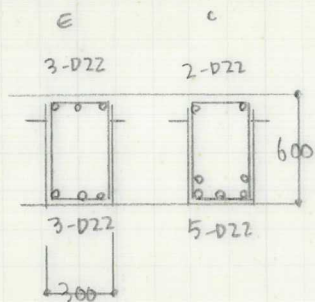
$$at=10.5 \quad 3-D22.$$

$$fsbj = 7 \times 30 \times 40 = 8.0 \text{ t} > 6.0 \text{ t}$$

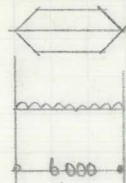
$$st, D10 - @ 200$$

B2

便所床小梁.



st, D10-@200.



$$W = 1.71 \text{ t/m}^2$$

$$l_x = 3.0 \quad l_y = 6.0 \quad \lambda = 2.0$$

$$c = 7.6 \text{ tm}$$

$$M_0 = 11.5 \text{ tm}$$

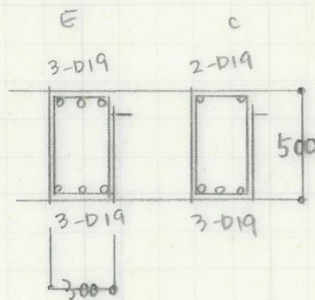
$$Q = 7.2 \text{ t}$$

$$\text{中央 } M_0 = 11.5 \quad d=55$$

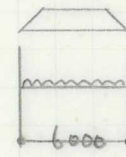
$$at=12.0 \quad 4-D22.$$

B3

4IL11'- 矢小梁.



st, D10-@200.



$$W = 1.61 \text{ t/m}^2$$

$$c = 3.25 \text{ tm}$$

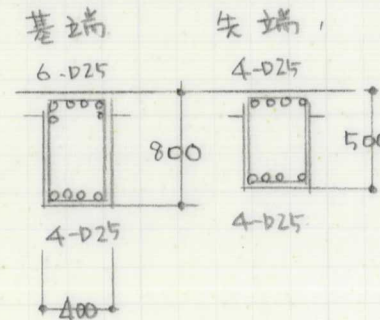
$$M_0 = 4.9 \text{ tm}$$

$$Q = 3.0 \text{ t}$$

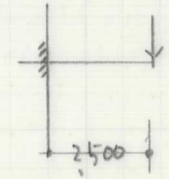
$$\text{中央 } M = 4.9 \quad at=6.5$$

$$3-D19$$

CV1



st, D13-@200



$$11'' = .46 \times 30 \times 6.0 = 8.2$$

$$\text{梁} = 1.28 \times 6.0 = 1.17$$

$$\text{床} = 1.58 \times 1.3 \times 6.0 = 4.5$$

$$\Sigma P = 14.5 \text{ t}$$

$$M = 14.5 \times 2.5 = 36.0 \text{ tm} \quad Q = 14.5 \text{ t}$$

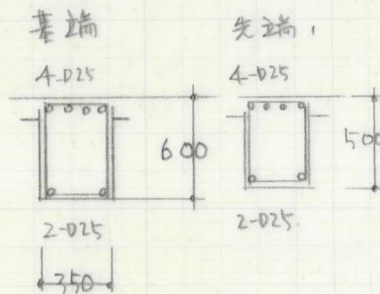
$$D=80 \quad d=73 \quad j=65$$

$$at = 36.0 / 1.175 \times 0.73 = 30.0 \quad 6-D25$$

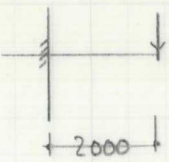
$$fsbj = 7 \times 40 \times 65 = 18.5 > 14.5 \text{ t}$$

st, D13-@200

CV2



st, D10-@200



$$11'' = .46 \times 20 \times 4.5 = 4.0$$

$$\text{梁} = 1.28 \times 4.5 = 1.3$$

$$\text{床} = 1.0 \times 4.5 \times 6.1 = 2.7$$

$$\Sigma P = 8.0 \text{ t}$$

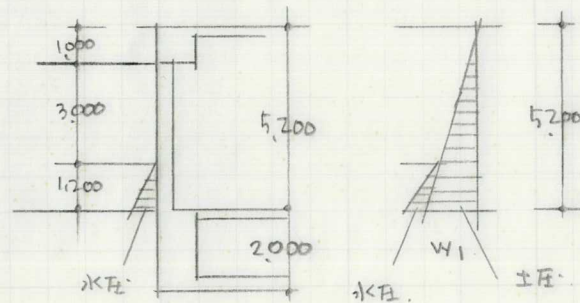
$$M = 8.0 \times 2.0 = 16.0 \text{ tm}$$

$$D=60 \quad d=53 \quad j=47$$

$$at = 16.0 / 1.175 \times 0.53 = 17.0 \quad 4-D25$$

又 6-D22.

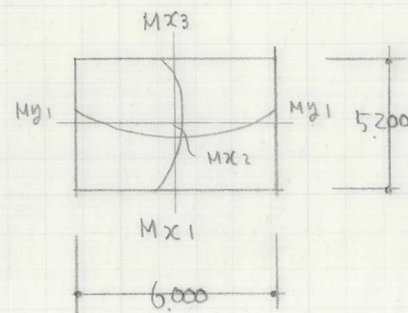
10.3 地下外壁の設計



土圧係数, $c=0.5$
 土自重, $w=1.8$
 水圧 GL-3000 x 1'2 (常水面)

$$W_1 = 0.5 \times 1.8 \times 5.2 = 4.6 \text{ } ^{+}/\text{m}^2 > 5.8 \text{ } ^{+}/\text{m}^2$$

$$\text{水圧} = 1.2$$



$$lx=5.2 \quad ly=6.0 \quad \lambda=1.2$$

$$W=5.8 \text{ } ^{+}/\text{m}^2 \quad Wlx^2=150.0 \quad Wlx=30.0$$

$$Mx1 = 0.04 \times 150.0 = 6.0 \text{ } ^{+}\text{m}$$

$$Mx2 = 0.015 \times 150.0 = 2.3 \text{ } ^{+}\text{m}$$

$$Mx3 = 0.025 \times 150.0 = 3.7 \text{ } ^{+}\text{m}$$

$$My1 = 0.025 \times 150.0 = 3.8 \text{ } ^{+}\text{m}$$

$$My2 = 0.01 \times 150.0 = 1.5 \text{ } ^{+}\text{m}$$

$$Qx1 = 0.35 \times 30.0 = 10.5 \text{ } ^{+}$$

$$Qy1 = 0.25 \times 30.0 = 7.8 \text{ } ^{+}$$

47筋 下端

$$D=35 \quad d=30.0 \quad M=6.0 \quad at=11.5 \quad D16-\textcircled{150}$$

37筋, $M=2.9 \text{ } ^{+}\text{m}$ $at=5.60 \quad D13-\textcircled{200}$

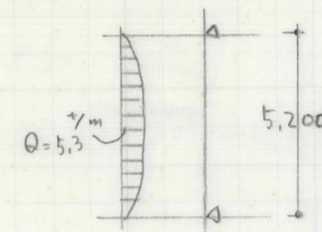
$$\Sigma\phi = 10500 / 21 \times 25 = 20.0 \quad D16-\textcircled{150} \text{ OK}$$

47筋 上端

$$D=35 \quad d=30.0 \quad M=3.7 \quad at=7.0 \quad D13-\textcircled{150}$$

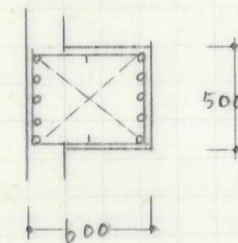
10.4 地下外壁受ける柱

地下外壁断面力 $Q=7.8 \text{ } ^{+}/\text{m}$



$$M_0 = 7.8 \times 5.2^2 / 8 = 25.0 \text{ } ^{+}\text{m}$$

$$Q = 7.8 \times 5.2 / 2 = 21.0$$



$$D=60 \quad d=55 \quad j=50$$

$$at = 25.0 / 1.75 \times 0.55 = 25.0 \quad 5-D25$$

$$\Sigma\phi = 21000 / 21 \times 50 = 20.0 \quad 5-D25 \text{ OK}$$

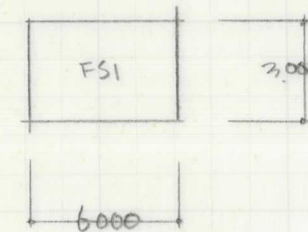
$$fsbj = 7 \times 50 \times 50 = 18.0 \text{ } ^{+} \text{ OK}$$

$$\therefore \text{Hoop } D13-\textcircled{100}$$

10.5 底版の設計

水圧 $W=3.0 \text{ } ^{+}/\text{m}^2$

FSI



$$lx=2.6 \quad ly=5.4 \quad \lambda=2.1$$

$$Wlx = 3.0 \times 2.6^2 = 20.0 \quad Wlx = 7.6$$

$$Mx1 = 0.08 \times 20.0 = 1.6$$

$$Mx2 = 0.053 \times 20.0 = 1.1$$

$$My1 = 0.042 \times 4 = 0.82$$

$$My2 = 0.028 \times 4 = 0.56$$

$$Qx = 0.51 \times 7.6 = 3.8$$

$$Qy = 0.46 \times 4 = 3.5$$

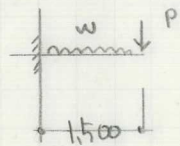
$$\text{端 } D=50 \quad d=45 \quad \text{中央 } D=25 \quad d=20$$

$$\text{中央 } at = 1.1 / 1.75 \times 0.20 = 3.2 \quad D13-\textcircled{200}$$

$$\Sigma\phi = 3800 / 14 \times 40 = 7.00 \quad D13-\textcircled{200}$$

$$47筋 \text{ } D13-\textcircled{200} \text{ 47筋とす}$$

10.6 階段の設計.

(A) カ=4エレン-2'2, $W=0.88 \text{ t/m}^2$ 

$$P = 0.46 \times 1.11 = 0.5^+$$

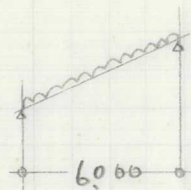
$$M = 0.88 \times 1.5^2 / 2 + 0.5 \times 1.5 = 1.175^{\text{tm}}$$

$$Q = 0.88 \times 1.5 + 0.5 = 1.8^+$$

$$D=21 \quad d=18 \quad j=15$$

$$at = 1.175 / 1.175 \times 0.18 = 5.30 \quad 5-D13$$

1段だけ、2-D13とする

(B) 階段 斜板、2'2, $W=0.88 \text{ t/m}^2$ 

$$M_0 = 0.88 \times 6.00^2 / 8 = 3.70^{\text{tm}}$$

$$Q = 0.88 \times 6.00 / 2 = 2.50^+$$

$$D=18 \quad d=15 \quad j=12$$

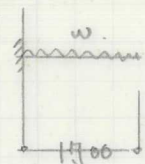
$$at = 3.70 / 1.175 \times 0.15 = 14.0 \quad D13-\phi 80$$

$$\Sigma \phi = 2.500 / 14 \times 12 = 15.0 \quad D13-\phi 80$$

(C) 屋外階段

カ=4エレン-2'2

$$W=0.88 \text{ t/m}^2$$



$$M = 0.88 \times 1.17^2 / 2 = 1.130^{\text{tm}}$$

$$Q = 0.88 \times 1.17 = 1.050^+$$

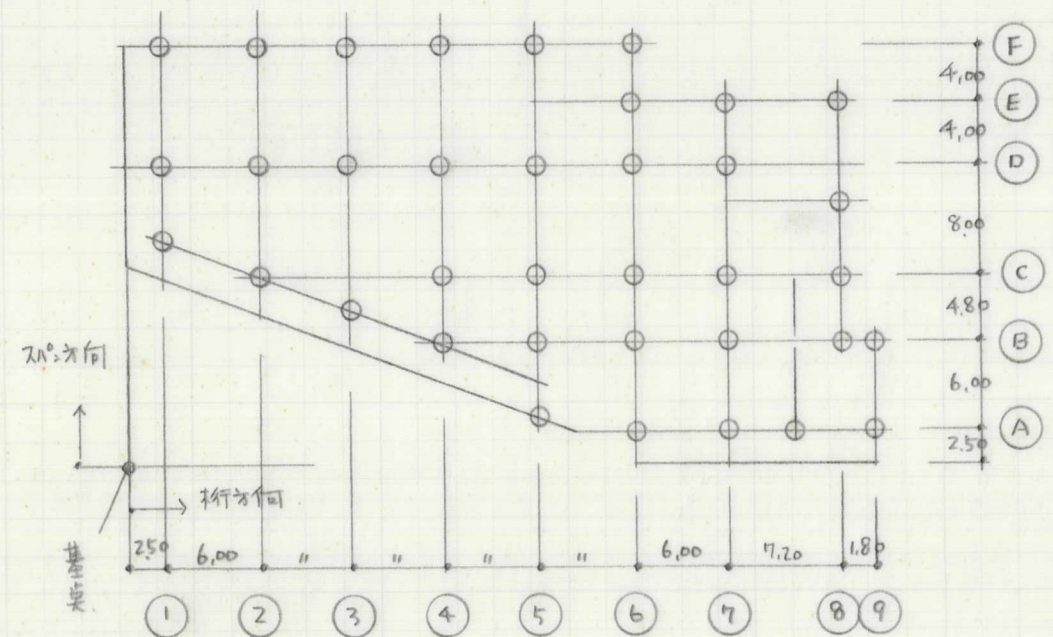
$$D=21 \quad d=18 \quad j=15$$

$$at = 1.13 / 1.175 \times 0.18 = 4.3$$

1段だけ、2-D13とする

11. 耐震診断

1.2 階平面は共通.

柱断面、1般 60×60
丸柱 170φ

地階は地下外壁が十分にマシな故 negとする.

耐震模計表.

	模計方向	はし向方向		は行方向	
	階	1	2	1	2
剛重比等価算定表.	ΣA_c	131000	121200	131000	121200
	ΣA_w	72900	89100	81600	35400
	$3.5 \Sigma A_w$	255000	311850	285600	123900
	$\Sigma A_w'$	24000	12000	24000	27600
	$\Sigma A_c + 3.5 \Sigma A_w + \Sigma A_w'$	410000	445050	440600	272700
	w	1456.4	1174.5	1456.4	1174.5
	W	2630.9	1174.5	2630.9	1174.5
	r	155.9	378.9	167.5	232.3
	N	2	1	2	1
	$N - 1/N$	0.5	0	0.5	0
	$R = \frac{1}{r} \cdot \frac{N-1}{N}$	1.22	0	0.7	0
	判定	○	○	○	○
偏心率算定表.	$\Sigma A_c c$	2103000	2058000	3428000	3263000
	$\Sigma A_w w$	1602000	1521000	3682000	1486000
	$3.5 \Sigma A_w w$	5607000	5324000	10787000	5201000
	$\Sigma A_w' w'$	312000	144000	450000	216000
	$\Sigma A_c c + 3.5 \Sigma A_w w + \Sigma A_w' w'$	8022000	7526000	14665000	8680000
	ΣA_c	131000	121200	131000	121200
	ΣA_w	72900	89100	81600	35400
	$3.5 \Sigma A_w$	255000	311850	285600	123900
	$\Sigma A_w'$	24000	12000	24000	27600
	$\Sigma A_c + 3.5 \Sigma A_w + \Sigma A_w'$	410000	445050	440600	272700
	I_G	19.6	16.9	33.3	31.9
	I_J	14.65	14.65	28.0	28.0
	L	29.3	29.3	47.5	47.5
	$e = \frac{I_G - I_J}{L}$	0.15	0.08	0.11	0.08
	判定	○	○	○	○

2階.
(梁間) $\Sigma A_c = 60 \times 60 \times 23 = 82800$
 $= 70 \Phi \times 10 = 38400 > 121200$

$$\Sigma A_w = 15 \times 540 \times 11 = 89100 \times 3.5 = 311850.$$

$$\Sigma A_w' = 12 \times 1000 = 12000.$$

2階
(柱) $\Sigma A_c = 60 \times 60 \times 23 = 82800$
 $= 70 \Phi \times 10 = 38400 > 121200$

$$\Sigma A_w = 18 \times 1000 = 18000$$

$$= 15 \times 760 = 11400.$$

$$= 15 \times 400 = 6000 > 35400 \times 3.5 = 123900$$

$$\Sigma A_w' = 12 \times 600 = 7200$$

$$= 18 \times 800 = 14400 > 27600$$

$$= 15 \times 400 = 6000$$

1階
(梁間) $\Sigma A_c = 60 \times 60 \times 30 = 108000$
 $= 70 \Phi \times 6 = 23000 > 131000$

$$\Sigma A_w = 15 \times 540 \times 9 = 72900 \times 3.5 = 255000$$

$$\Sigma A_w' = 12 \times 2000 = 24000$$

1階
(柱) $\Sigma A_c = 108000 + 23000 = 131000$
 $\Sigma A_w = 15 \times 4000 = 60000$
 $= 18 \times 800 = 14400 > 81600 \times 3.5 = 285600$
 $= 12 \times 600 = 7200$

$$\Sigma A_w' = 12 \times 2000 = 24000$$

偏心率. $\Sigma A_c | c = 60 \times 60 \times 6 \times 29.30 = 632000$
 $= 60 \times 60 \times 3 \times 25.30 = 273000$
 $= 3600 \times 8 \times 21.30 = 613400 > 2058000$
 $= 3600 \times 7 \times 13.30 = 335000$
 $= 3600 \times 6 \times 8.50 = 183000$
 $= 3600 \times 3 \times 2.00 = 21600$

$$\Sigma A_w | c = 15 \times 540 \times 1 \times 29.3 = 237000$$

$$= 15 \times 540 \times 2 \times 25.3 = 409000$$

$$= 15 \times 540 \times 4 \times 21.3 = 690000 > 1521600 \times 3.5 = 5324000.$$

$$= 15 \times 540 \times 2 \times 8.5 = 137000$$

$$= 15 \times 540 \times 3 \times 2.0 = 48600$$

$$\Sigma Aw'lc = 12 \times 1000 \times 21.30 = 255000.$$

2階.
(木行)

$$\begin{aligned}\Sigma Aclc &= 3600 \times 5 \times 45.70 = 822000 \\ &= 3600 \times 5 \times 38.50 = 693000 \\ &= 3600 \times 6 \times 32.50 = 702000 \\ &= 3600 \times 5 \times 26.50 = 477000 \\ &= 3600 \times 4 \times 20.50 = 295000 \\ &= 3600 \times 3 \times 14.50 = 156000 \\ &= 3600 \times 3 \times 8.50 = 91000 \\ &= 3600 \times 3 \times 2.50 = 27000\end{aligned}$$

3263,000

$$\begin{aligned}\Sigma Awlw &= 15 \times 760 \times 45.70 = 520000 \\ &= 15 \times 700 \times 38.50 = 404000 \\ &= 18 \times 600 \times 32.50 = 351000 \\ &= 15 \times 400 \times 26.50 = 159000 \\ &= 12 \times 300 \times 14.50 = 52000\end{aligned}$$

1486,000 × 3.5 =
= 5201,000

1階
(梁間)

$$\begin{aligned}\Sigma Aclc &= 3600 \times 6 \times 29.30 = 632,000 \\ &= 3600 \times 3 \times 25.30 = 273,000 \\ &= 3600 \times 8 \times 21.30 = 613,400 \\ &= 3600 \times 7 \times 13.30 = 335,000 \\ &= 3600 \times 7 \times 8.50 = 214,000 \\ &= 3600 \times 5 \times 2.00 = 36,000\end{aligned}$$

2103,400

$$\begin{aligned}\Sigma Awlc &= 15 \times 10.8 \times 29.3 = 474,000 \\ &= 15 \times 12.0 \times 25.3 = 455,000 \\ &= 15 \times 12.0 \times 21.3 = 383,000 \\ &= 15 \times 6.0 \times 13.3 = 119,000 \\ &= 15 \times 12.0 \times 8.5 = 153,000 \\ &= 15 \times 6.0 \times 2.0 = 18,000\end{aligned}$$

1602,000 × 3.5 =
= 5607,000

1階
(木行)

$$\begin{aligned}\Sigma Aclc &= 3600 \times 6 \times 45.70 = 987,000 \\ &= 3600 \times 5 \times 38.50 = 693,000 \\ &= 3600 \times 6 \times 32.50 = 702,000 \\ &= 3600 \times 5 \times 26.50 = 477,000 \\ &= 3600 \times 4 \times 20.50 = 295,000 \\ &= 3600 \times 3 \times 14.50 = 156,000 \\ &= 3600 \times 3 \times 8.50 = 91,000 \\ &= 3600 \times 3 \times 2.50 = 27,000\end{aligned}$$

3428,000

1階

$$\begin{aligned}\Sigma Awlw &= 15 \times 700 \times 47.50 = 498,000 \\ &= 15 \times 600 \times 43.50 = 391,000 \\ &= 15 \times 1000 \times 39.50 = 592,000 \\ &= 15 \times 1700 \times 33.50 = 854,000 \\ &= 15 \times 1500 \times 29.50 = 618,000 \\ &= 15 \times 200 \times 24.50 = 64,000 \\ &= 15 \times 300 \times 14.50 = 65,000\end{aligned}$$

3082,000 × 3.5 =
= 10787,000

2階

(梁間) $\Sigma Aw'lw' = 12 \times 600 \times 20.00 = 144,000$

(木行) $\Sigma Aw'lw' = 18 \times 400 \times 30.0 = 216,000$

1階

(梁間) $\Sigma Aw'lw = 12 \times 600 \times 20.0 = 144,000$
 $= 12 \times 1000 \times 14.0 = 168,000$ $> 312,000$

(木行) $\Sigma Aw'lw = 15 \times 1500 \times 20.0 = 450,000$

※ 耐震検討の結果、剛重比蓄化率及偏心率共に規定内である故、安全である。