

# Appendix L

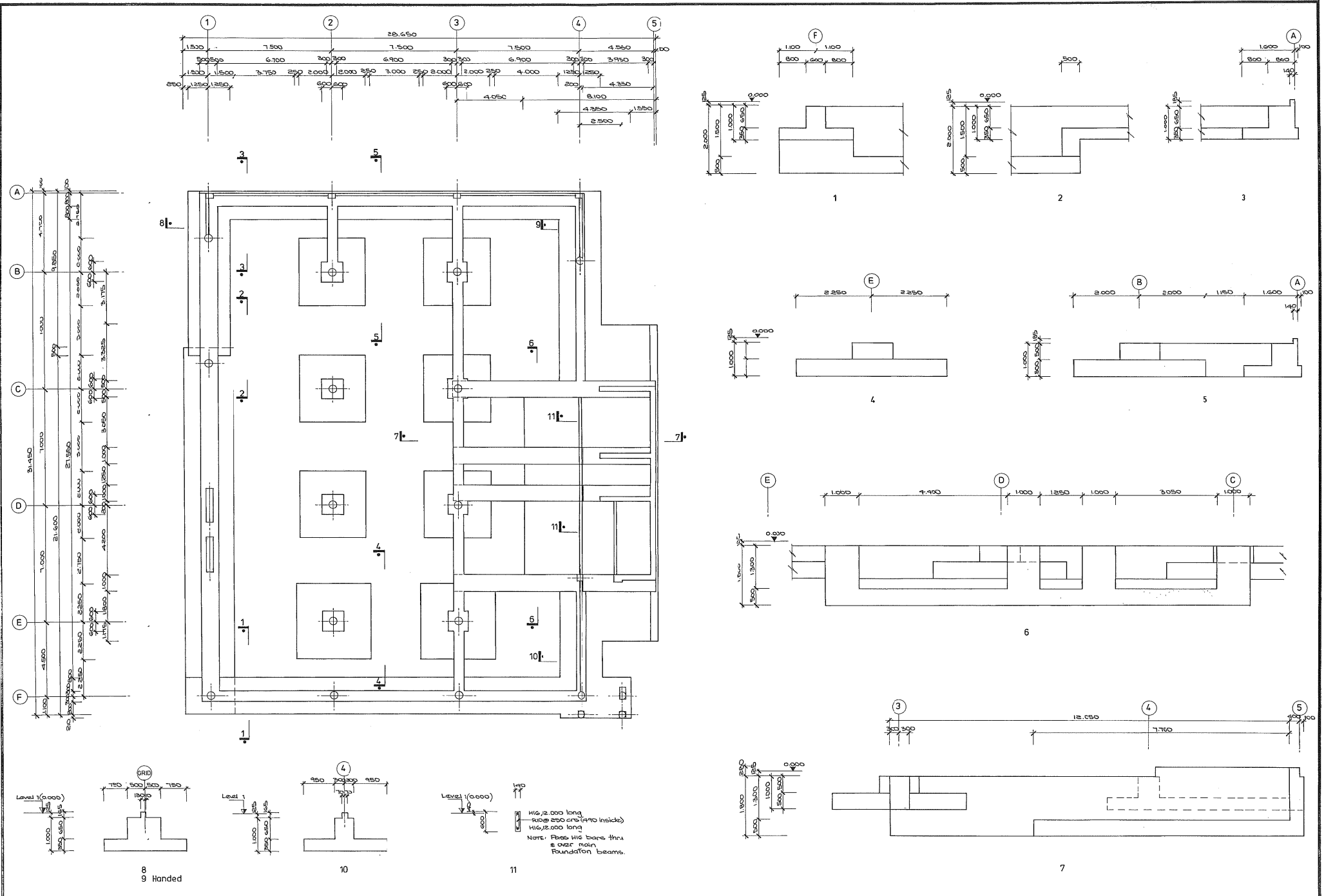
## Structural Drawings

CTV Building  
249 Madras Street  
Christchurch

CTV BUILDING

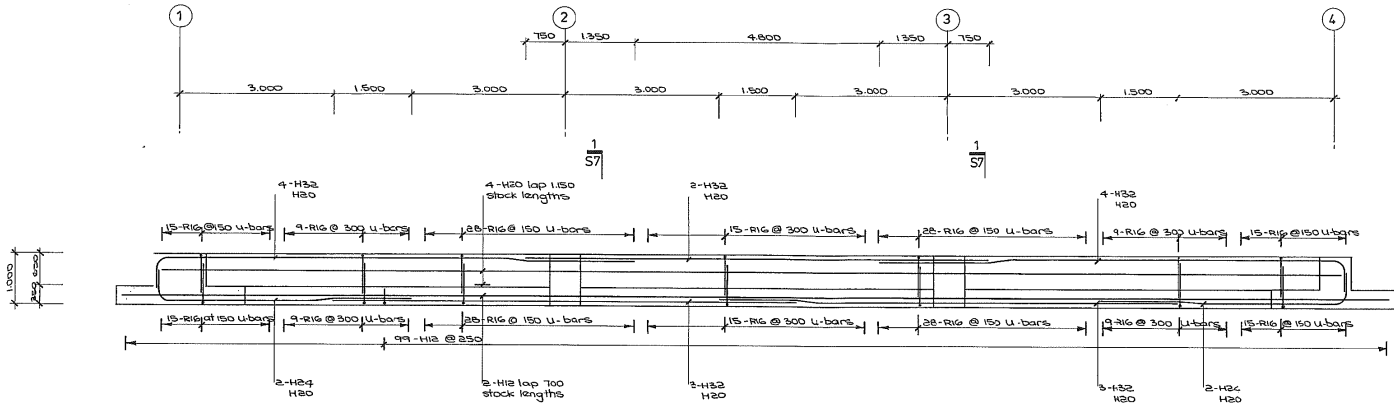
CTV BUILDING COLLAPSE INVESTIGATION  
FOR DEPARTMENT OF BUILDING AND HOUSING



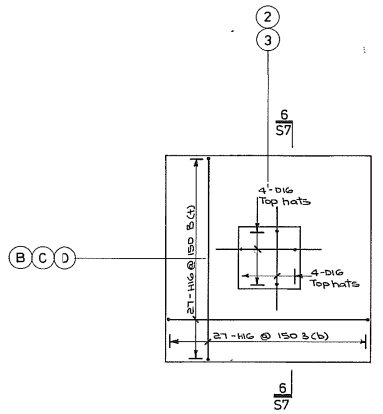


APPROVED	DATE	SCALE	FOUNDATION LAYOUT	SHEET	FILE
	AUG 1988	1:100 1:50		S2	

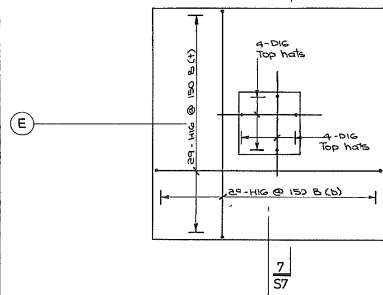
Note  
 Allow to cast into foundations  
 all starters for columns & walls  
 shown on Dwg's 513-514 and  
 backwork starters on Dwg 511.



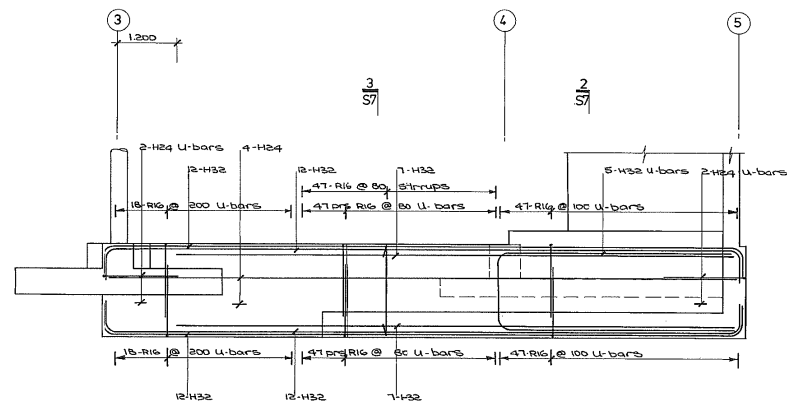
FOUNDATION BEAM LINE A



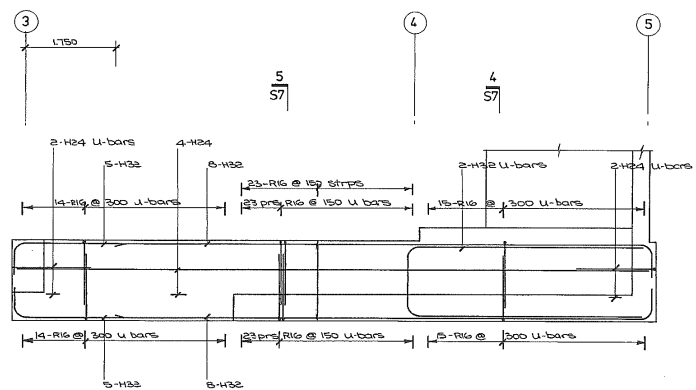
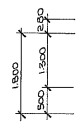
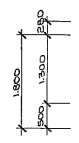
FOUNDATION PAD A



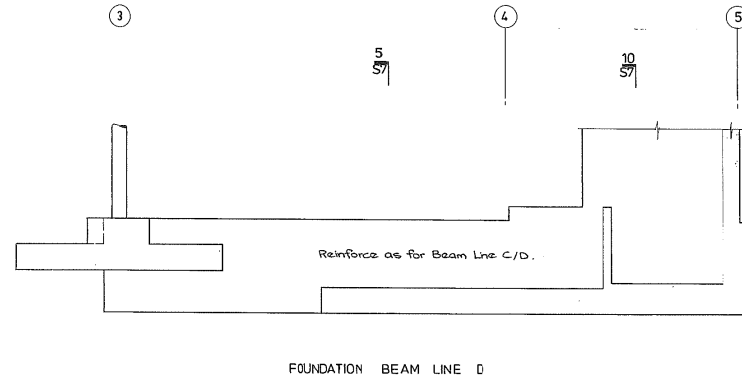
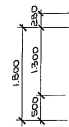
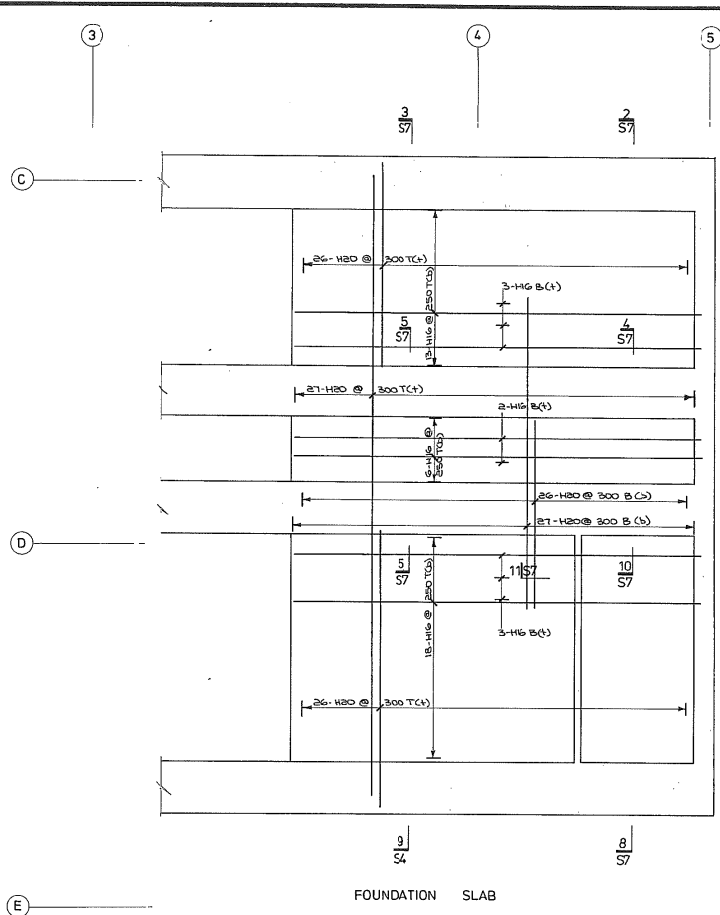
FOUNDATION PAD B



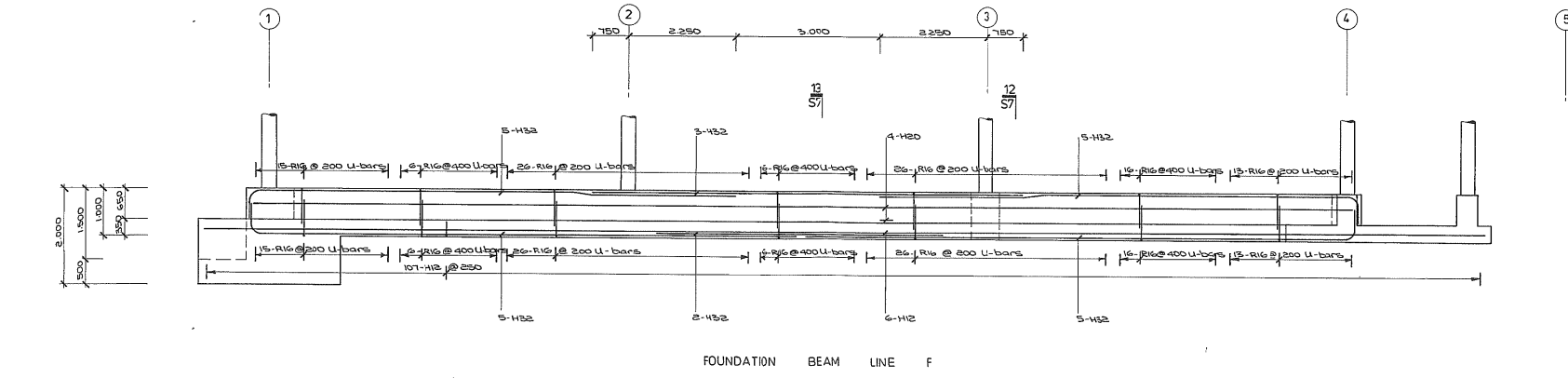
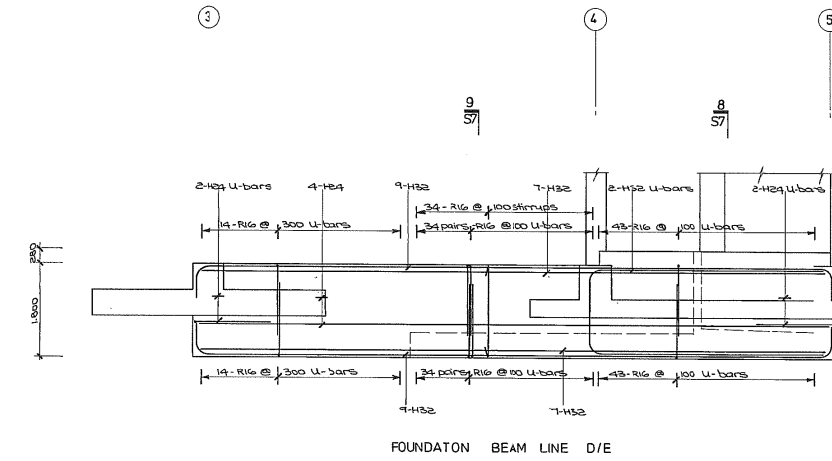
FOUNDATION BEAM LINE C



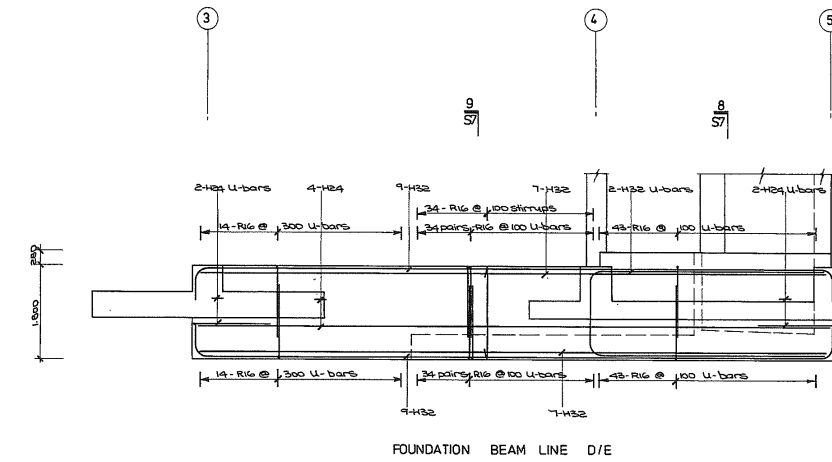
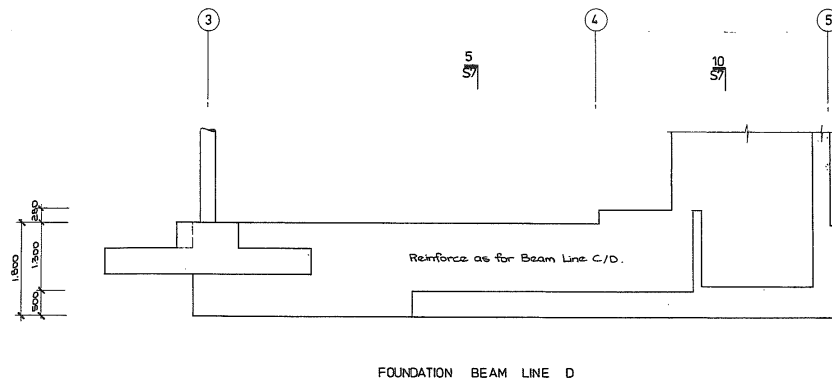
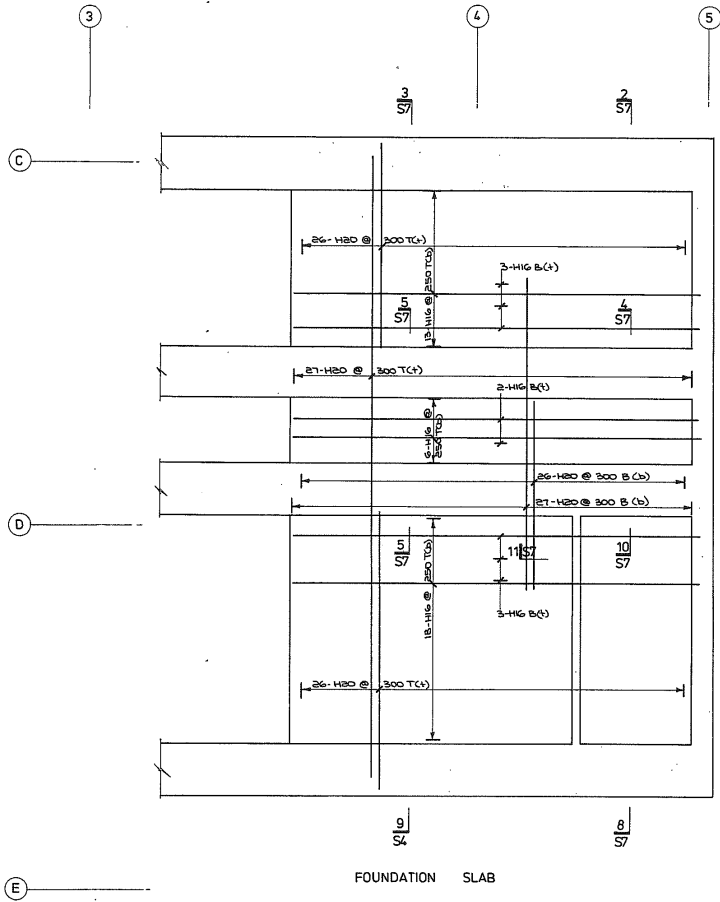
FOUNDATION BEAM LINE C'D



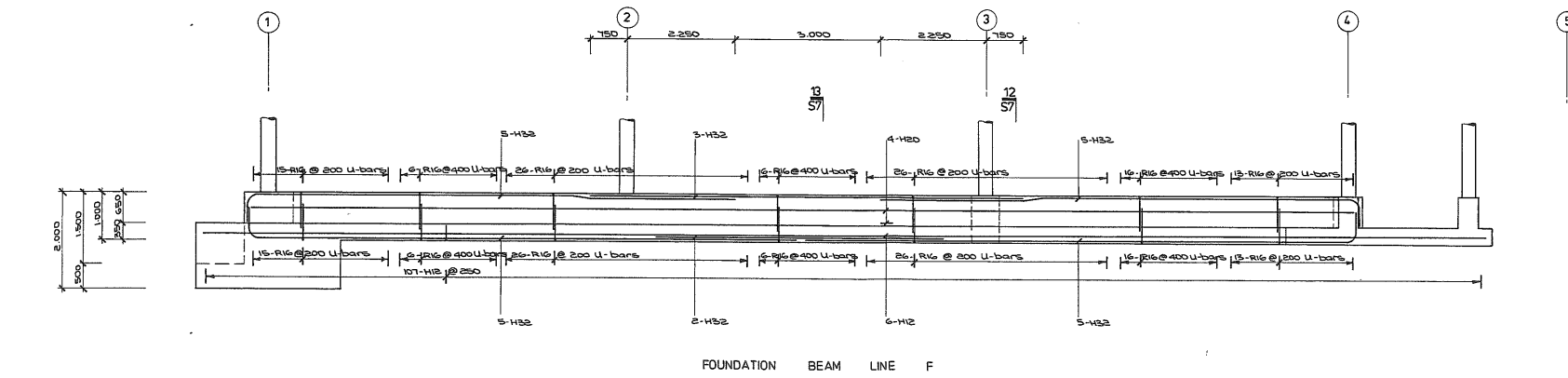
Note  
 Allow to cast into foundations  
 all starters for columns & walls  
 about on Dwg 610 - 100 and  
 blockwork starters on Dwg 611.



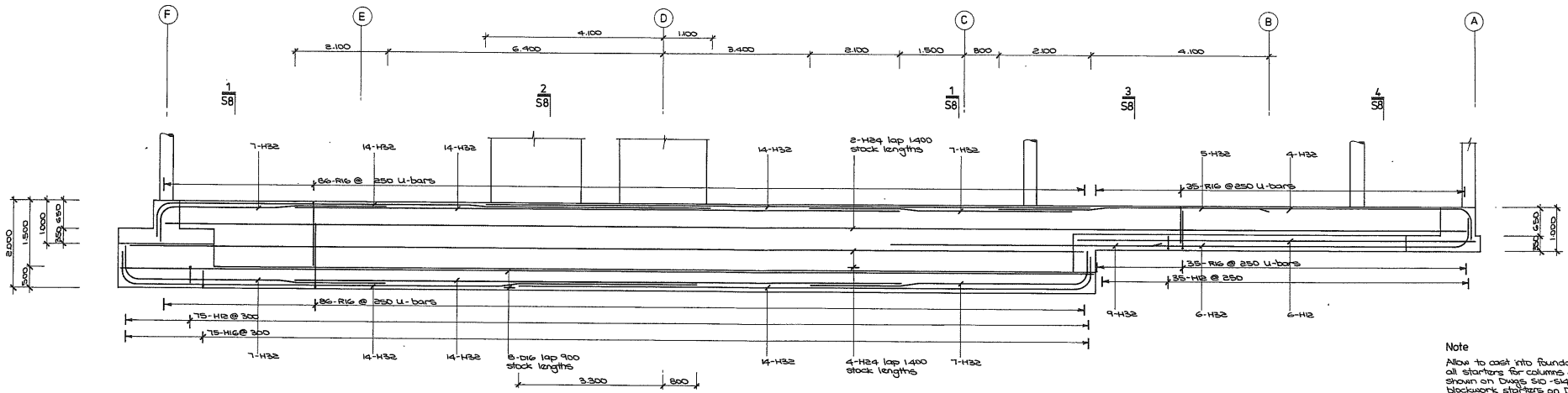
APPROVED	DATE	SCALE	SHEET	FILE
	AUG 1985	1:50	FOUNDATION REINFORCING	S4



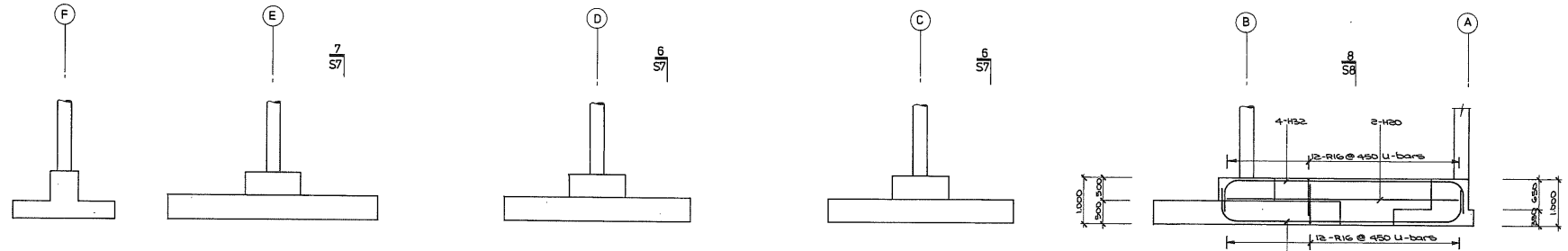
Note  
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 all starters for columns & walls  
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APPROVED	DATE	SCALE	SHEET	FILE
	AUG 1986	1:50	FOUNDATION REINFORCING	S4

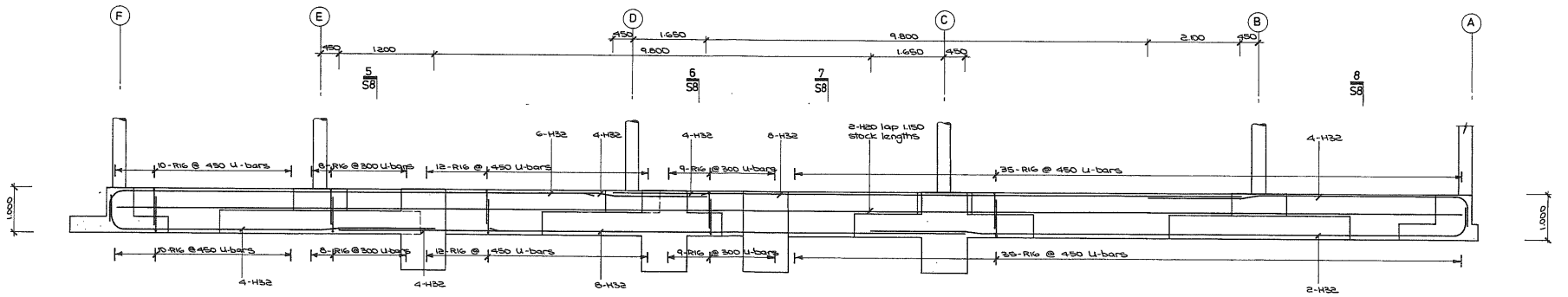


FOUNDATION BEAM LINE 1

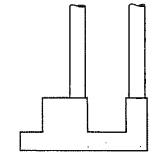
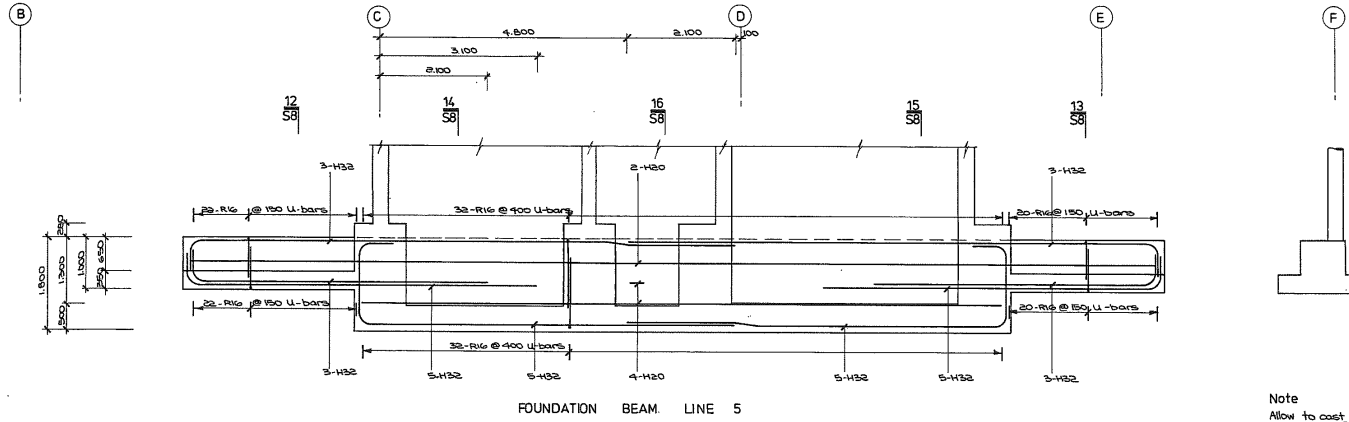
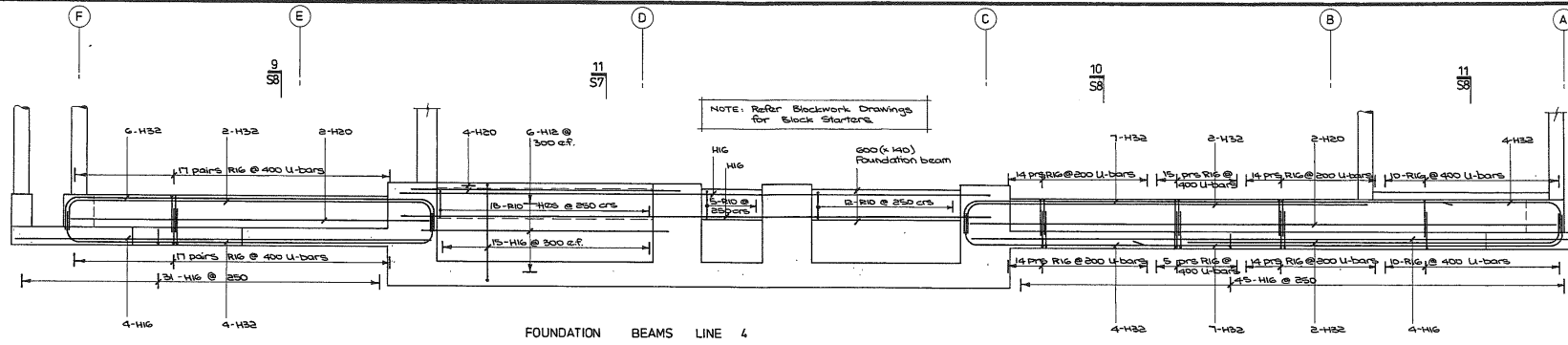


FOUNDATIONS LINE 2

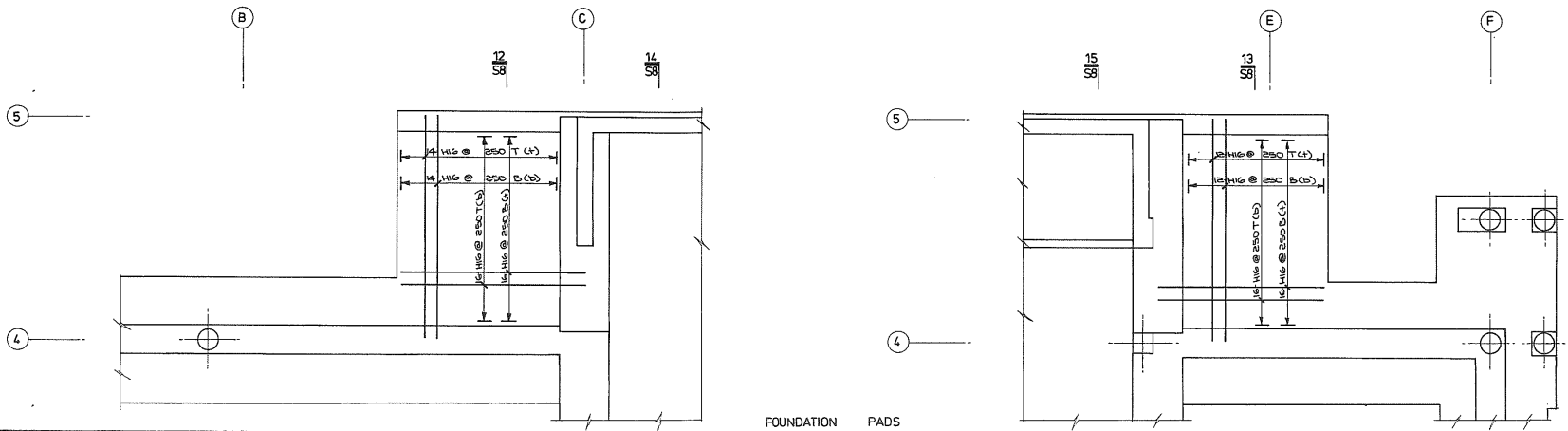
FOUNDATION BEAM LINE 2



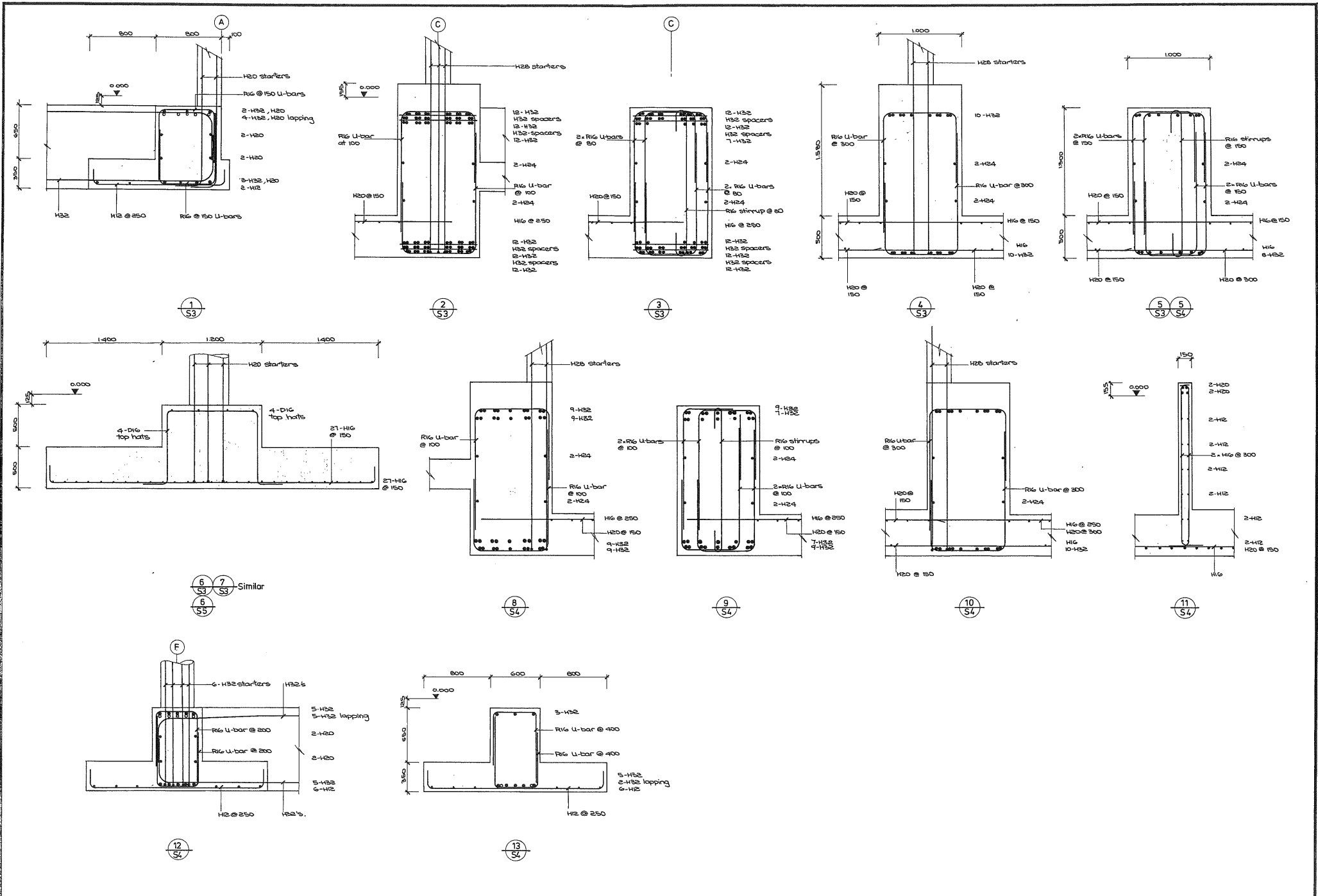
FOUNDATION BEAM LINE 3



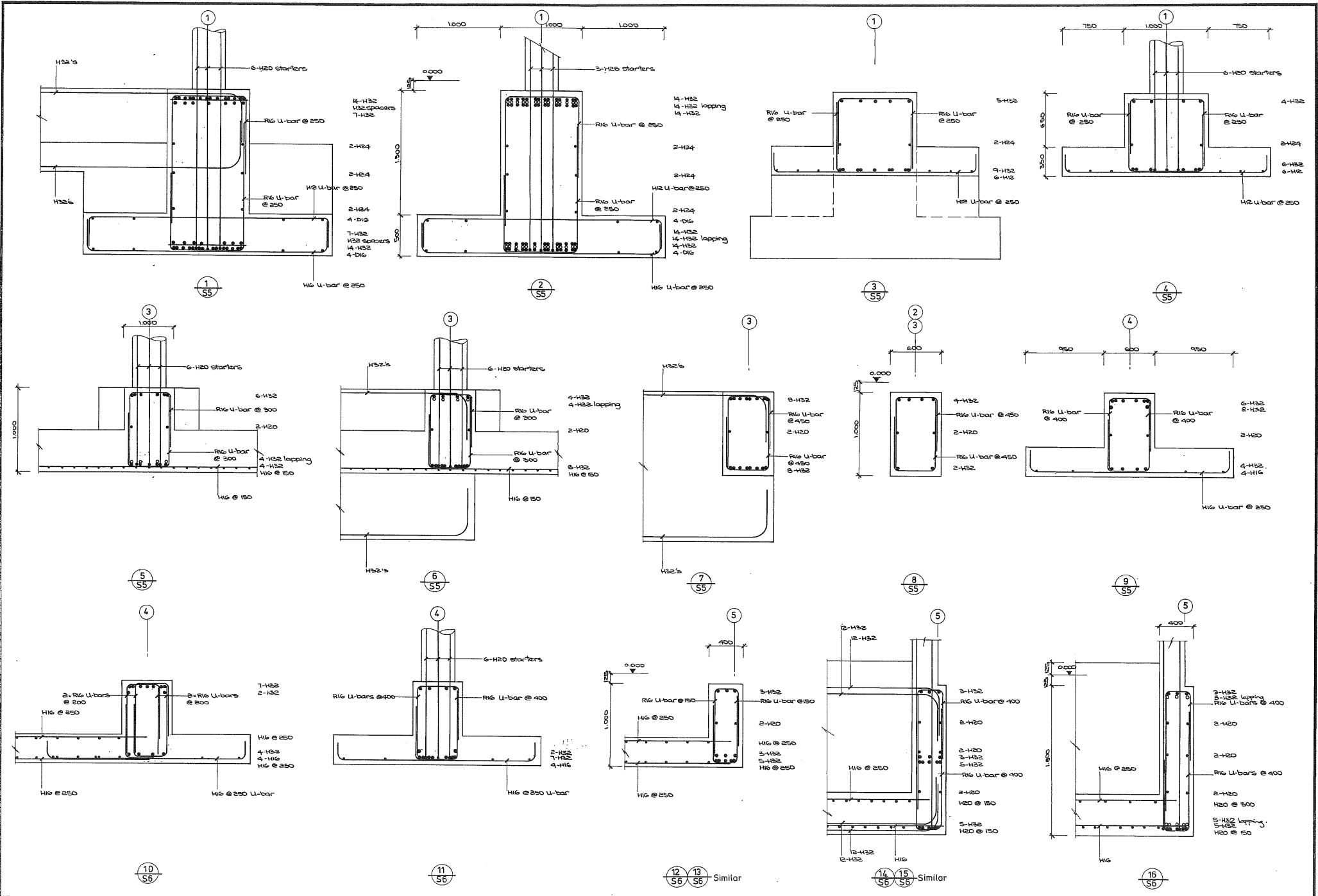
Note  
 Allow to cast into foundations  
 all starters for columns & walls  
 shown on Dwg. 510-514 and  
 blockwork starters on Dwg. 517.

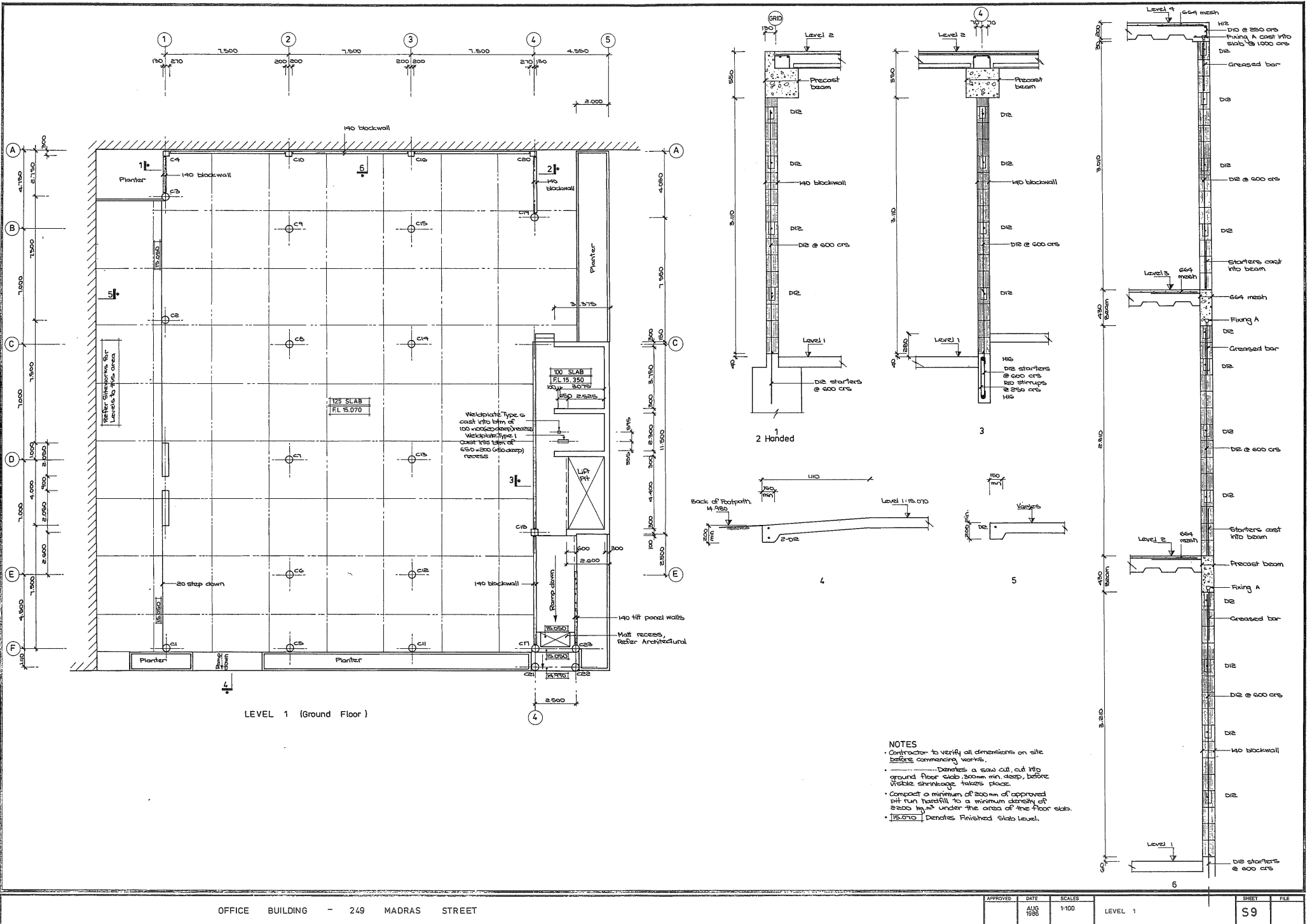


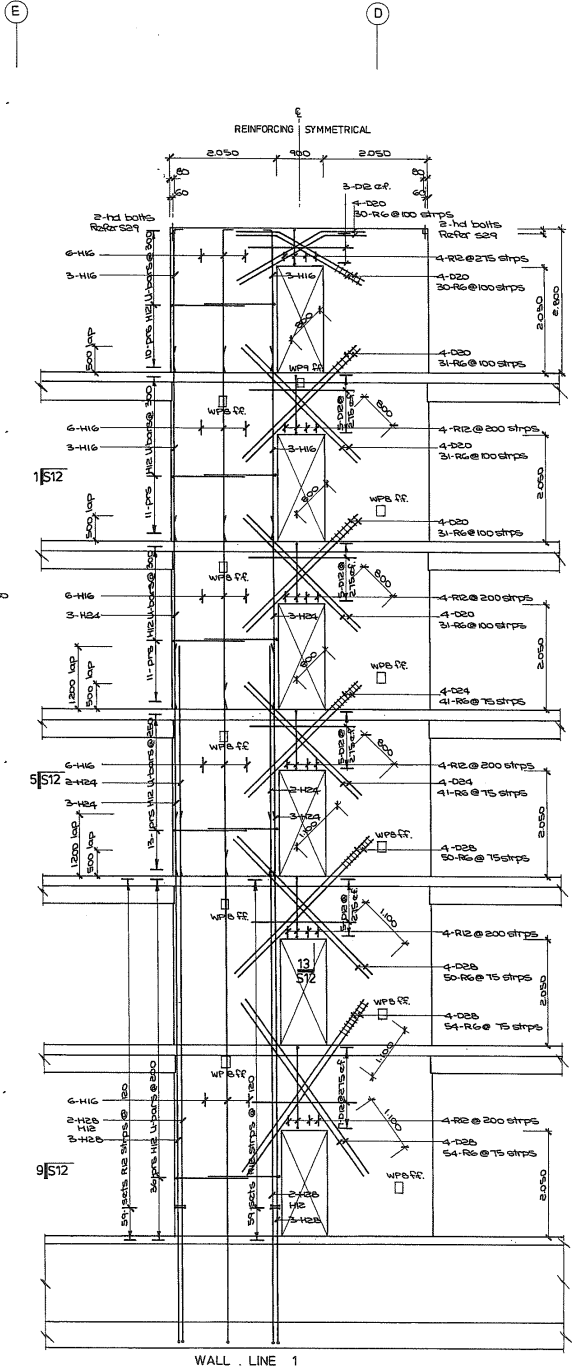
APPROVED	DATE	SCALE	FOUNDATION REINFORCING	SHEET	FILE
	AUG 1988	1:50		S6	



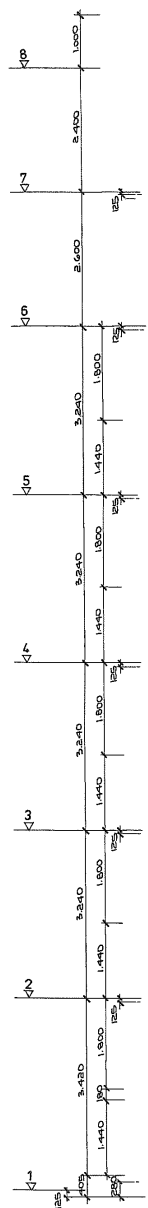




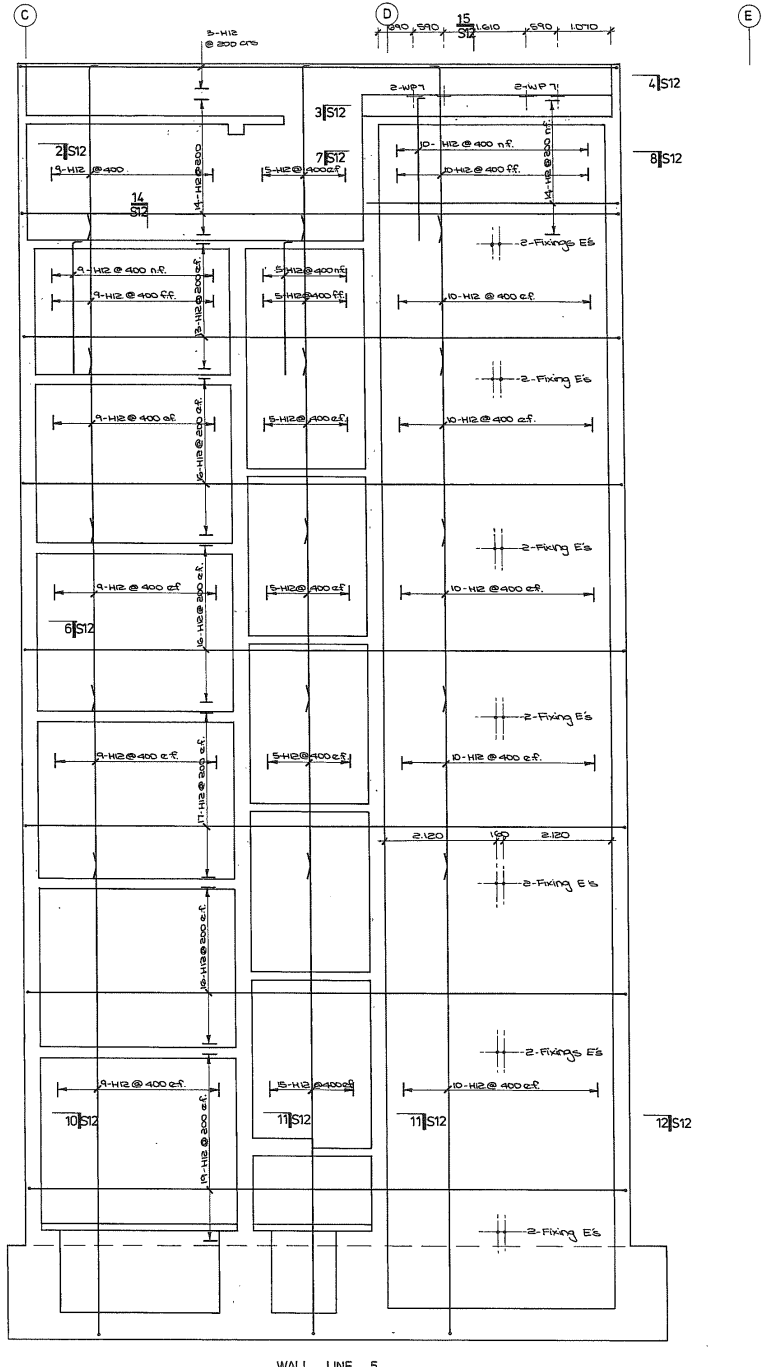




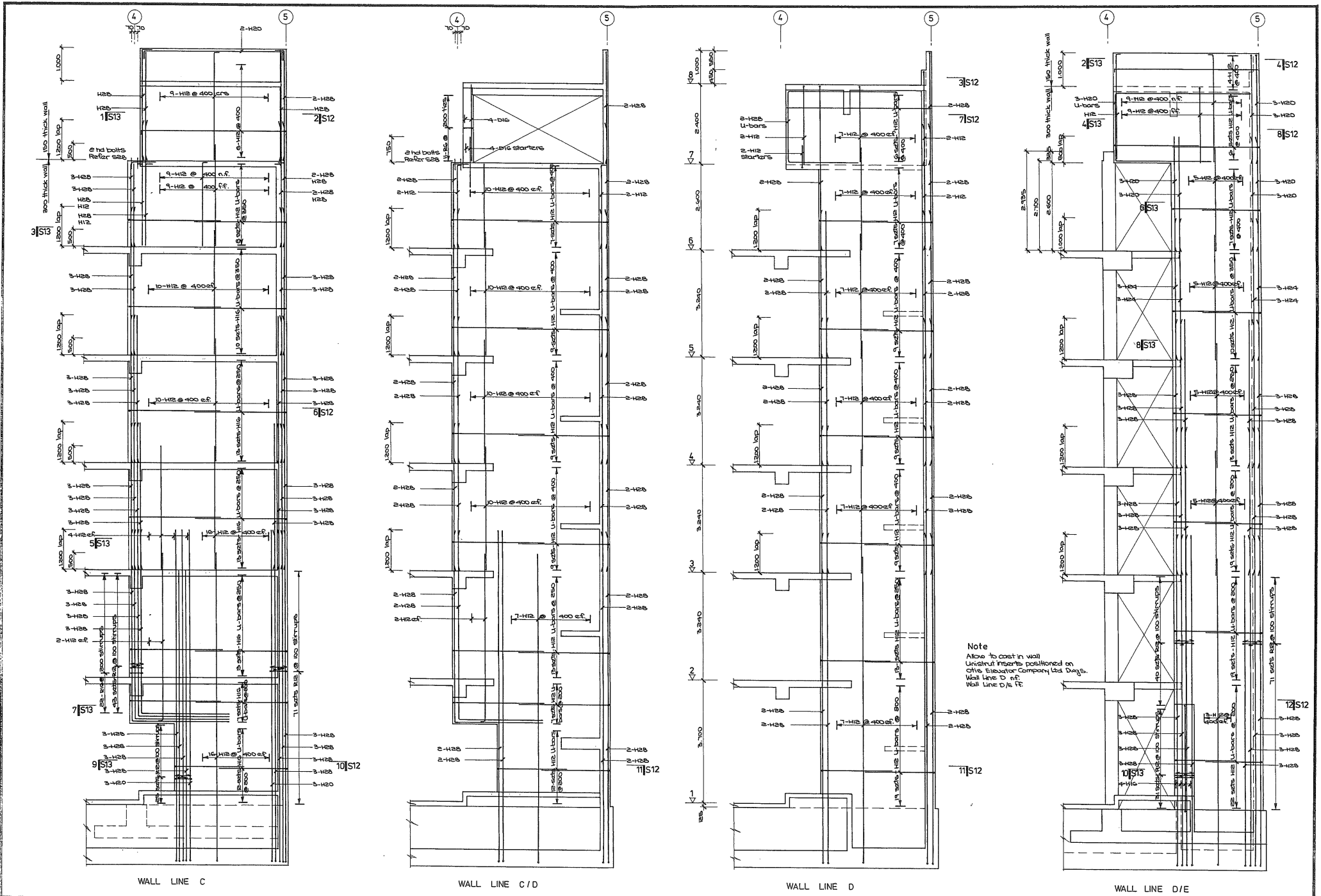
WALL LINE 1



Note  
Allow to cast into wall  
insert inserts positioned  
on site ELEVATOR COMPANY Ltd. Dwg.



WALL LINE 5



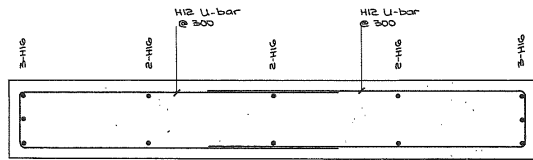
WALL LINE C

WALL LINE C/D

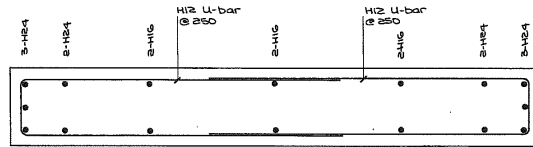
WALL LINE D

WALL LINE D/E

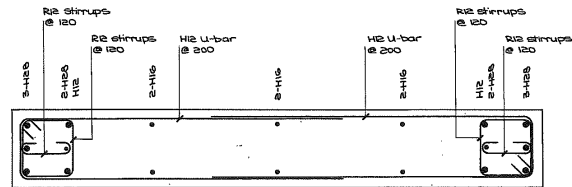
APPROVED	DATE	SCALE	SHEET	FILE
	AUG 1986	1:50	WALL REINFORCING LINES C - E	S11



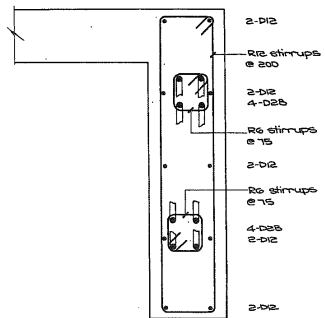
1 WALL LINE 1



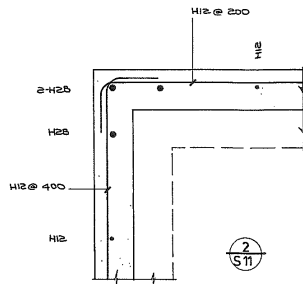
5 WALL LINE 1



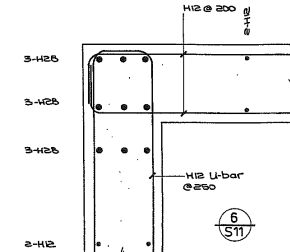
9 WALL LINE 1



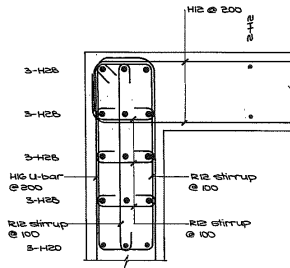
13 WALL LINE 1



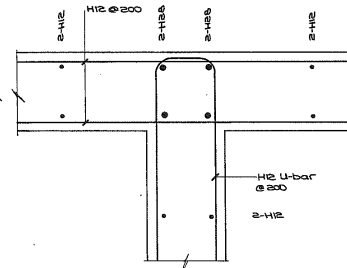
2 S11



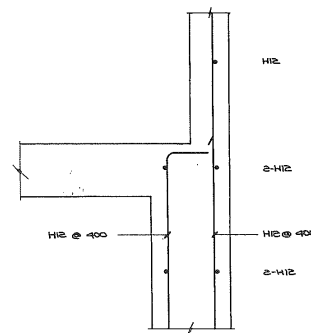
6 S11



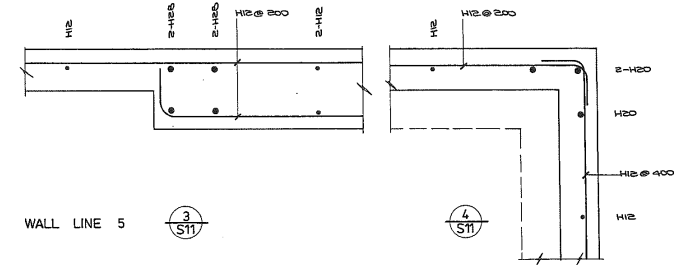
10 S11



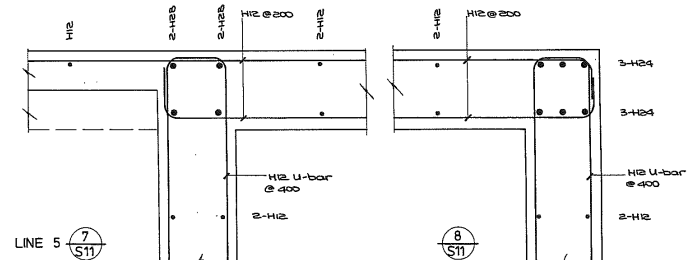
11 S11



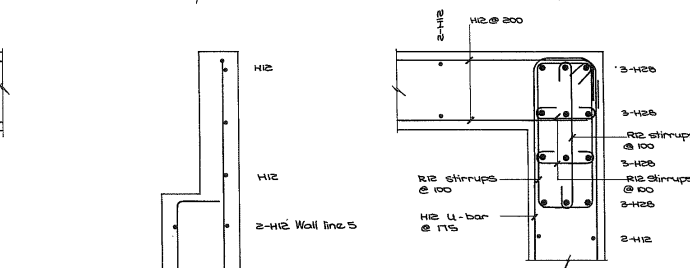
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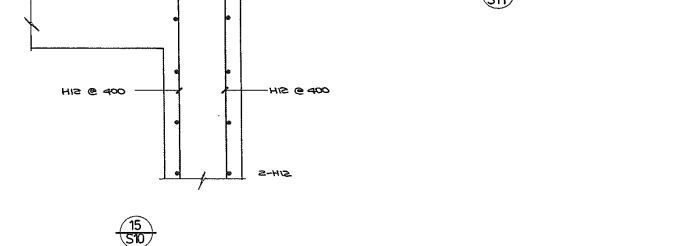
3 S11



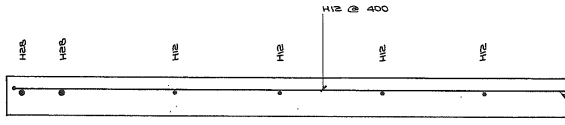
7 S11



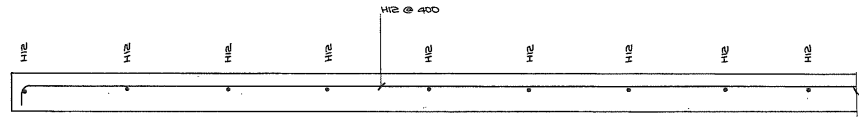
12 S11



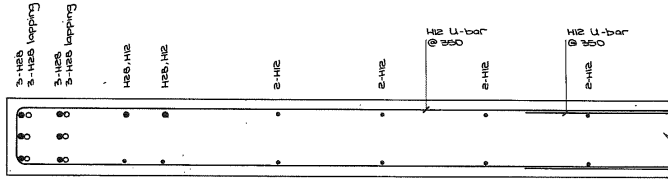
15 S10



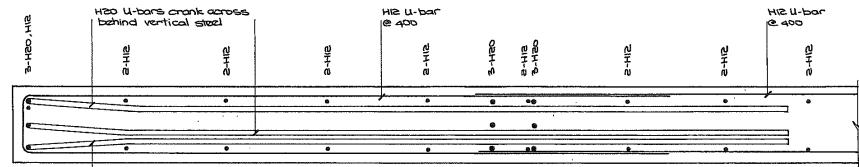
1  
S11



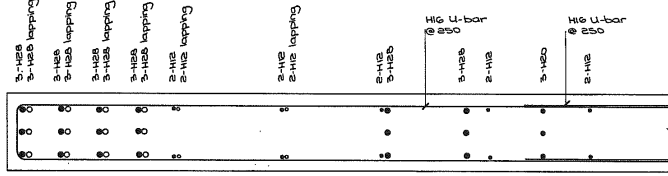
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S11



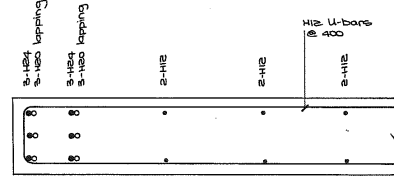
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S11



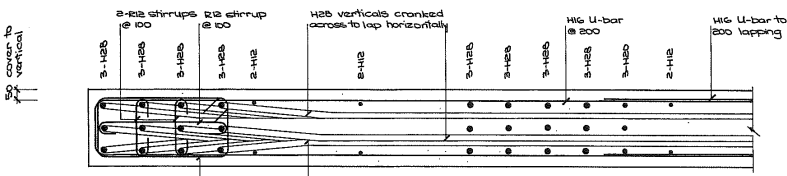
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S11



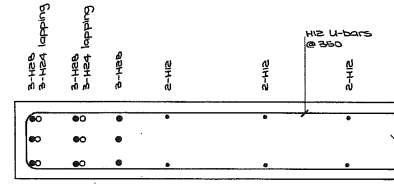
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S11



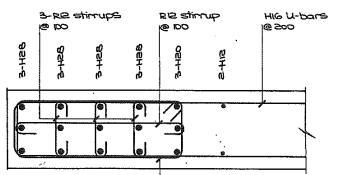
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S11



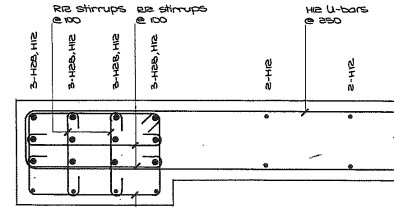
7  
S11



8  
S11



9  
S11



10  
S11

50 cover to vertical

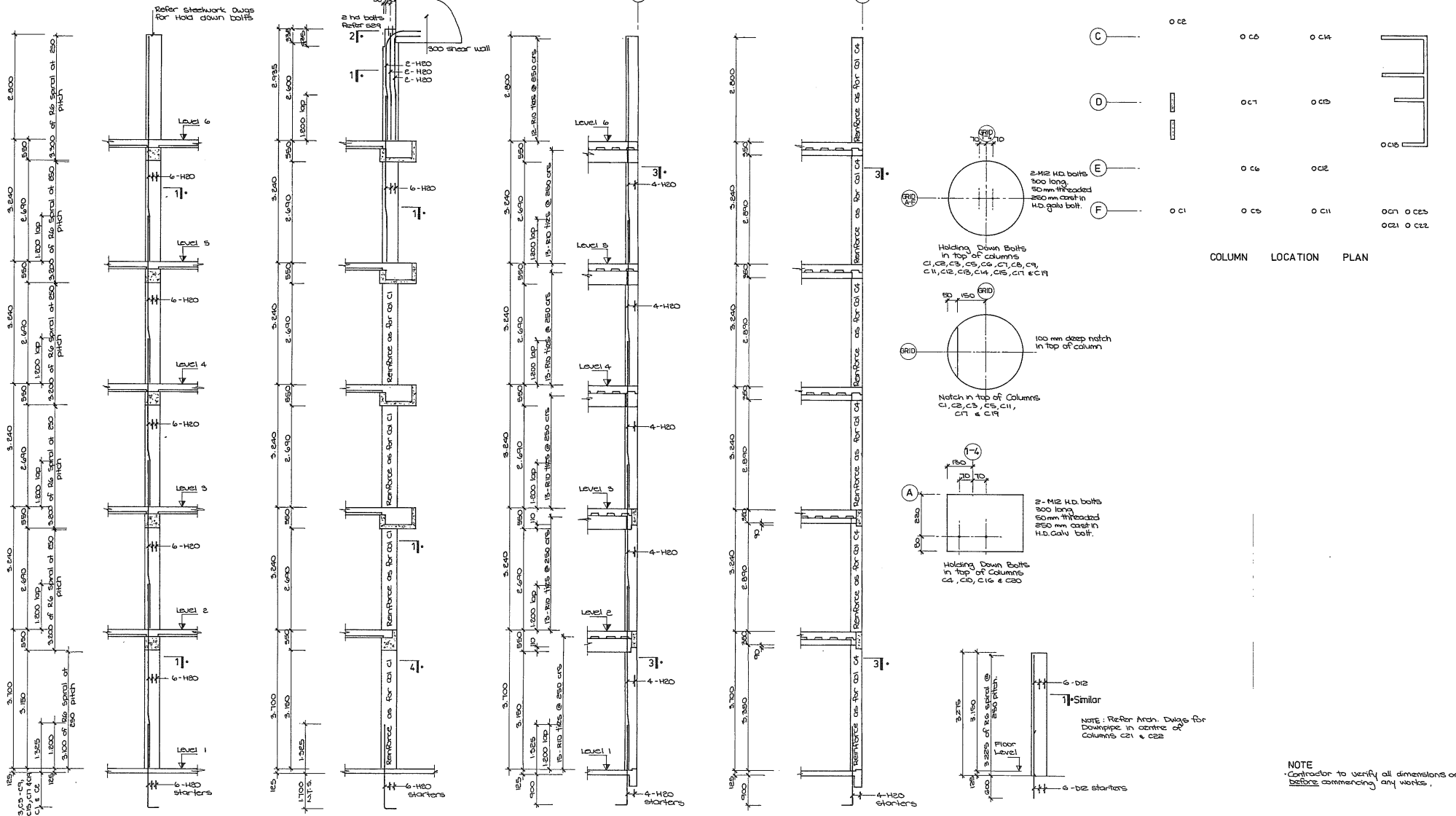
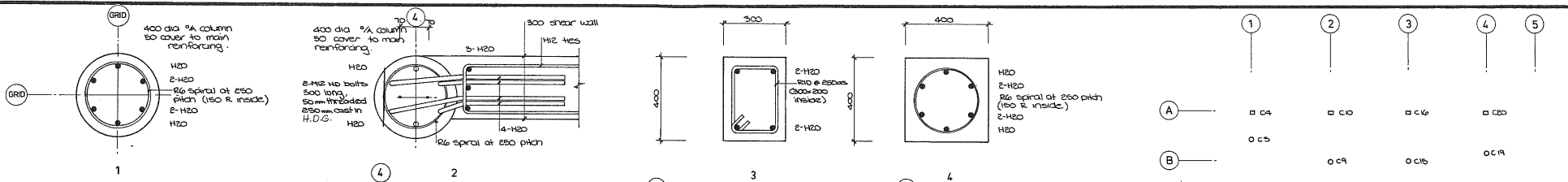
50 cover to vertical

50 cover to vertical

50 cover to vertical

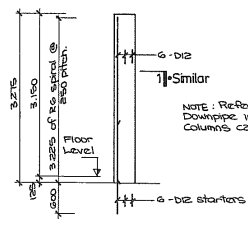
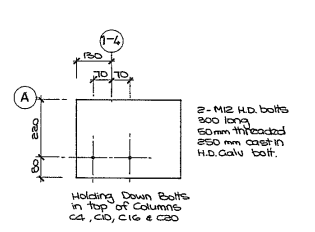
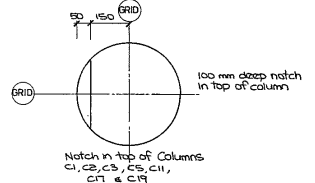
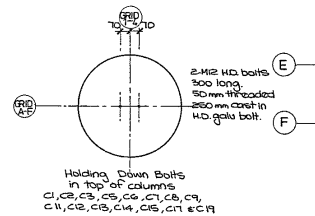
APPROVED	DATE	SCALES	WALL REINFORCING DETAILS	SHEET	FILE
	AUG 1986	1:10		S13	





1	2	3	4	5
A	C10	C16	C23	
B	C9	C15	C19	
C	C8	C14		
D	C7	C5		
E	C6	C12		
F	C1	C11	C17, C23 C21, C22	

COLUMN LOCATION PLAN



NOTE: Refer Arch. Drawg For Downpipe in centre of columns C21 & C22

NOTE: Contractor to verify all dimensions on site before commencing any works.

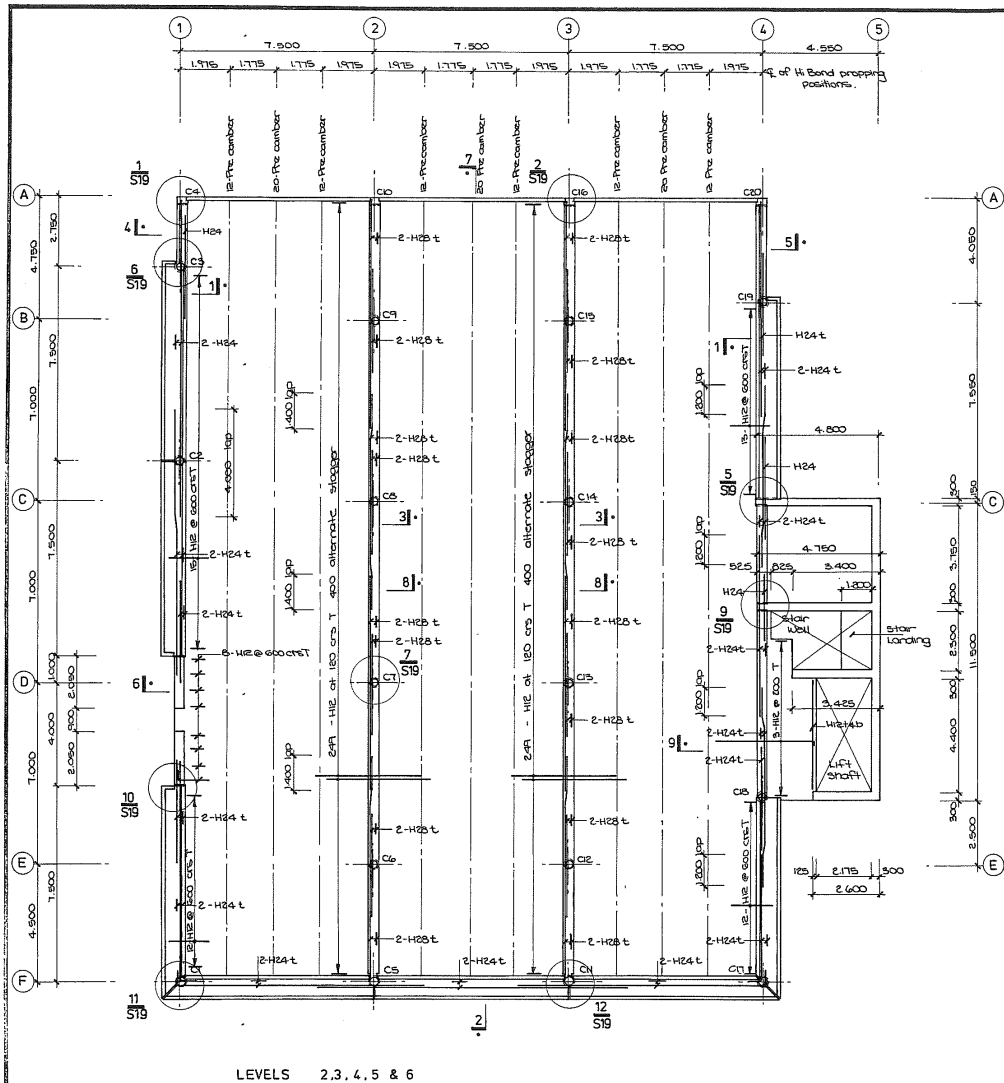
COLUMNS C1, C2, C3, C5, C6, C7, C8, C9, C11, C12, C13, C14, C15, C17 & C19

COLUMN C18

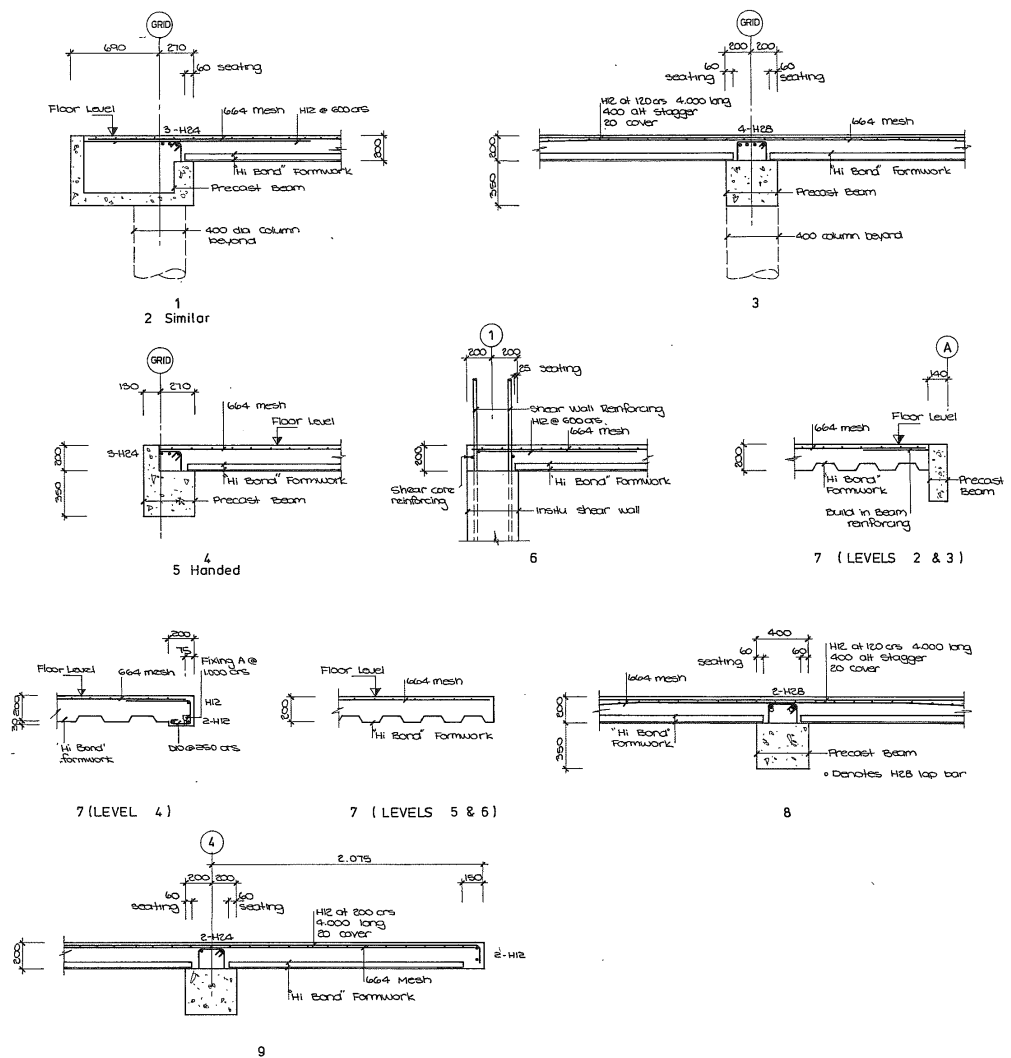
COLUMNS C4 & C20

COLUMNS C10 & C16

COLUMNS C21, C22 & C23



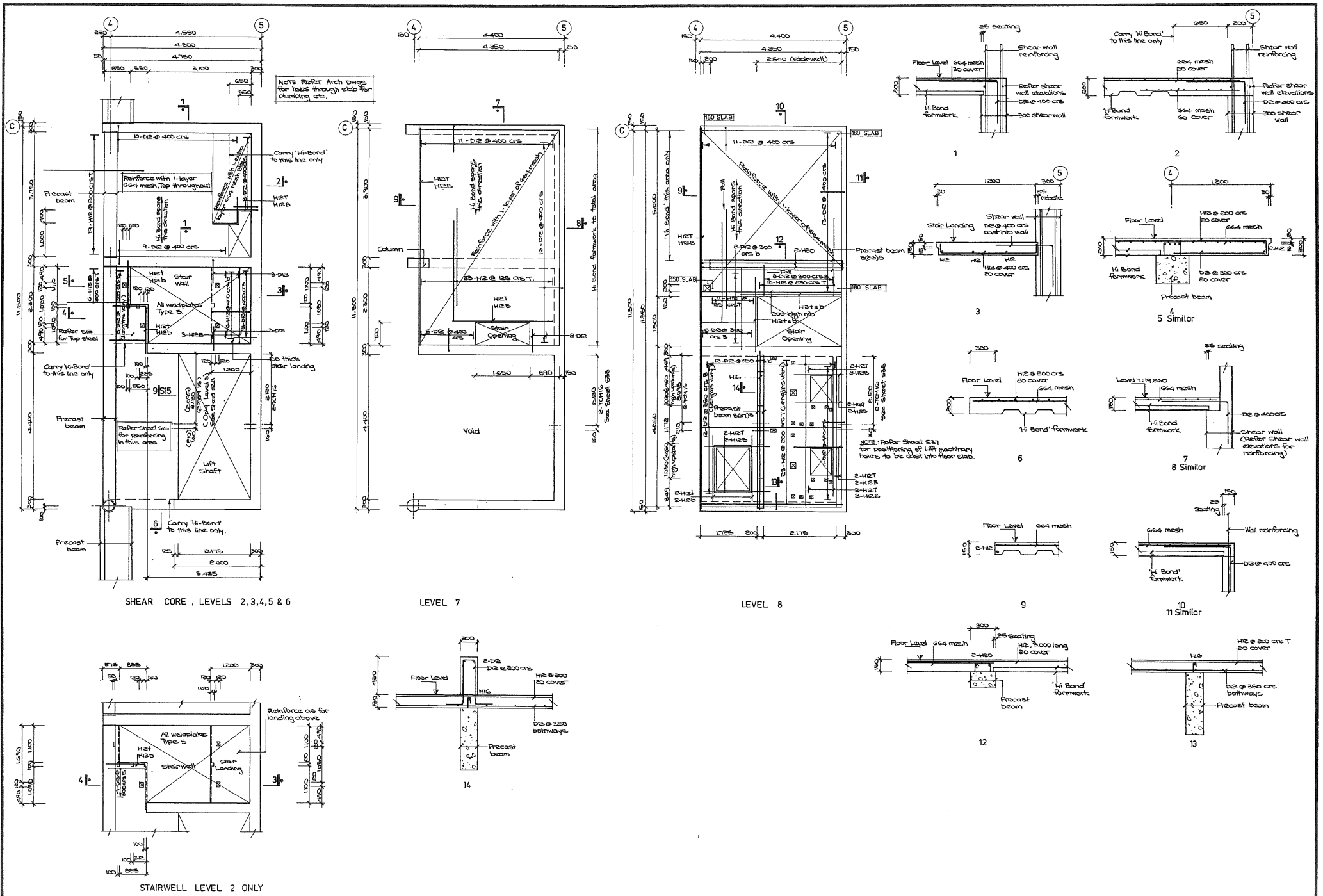
LEVELS 2, 3, 4, 5 & 6



- NOTES:
- Contractor to verify all dimensions on site before commencing work.
  - Reinforce slab with 1 layer of 664 mesh throughout, 50 mm top cover.
  - Refer sheet S16 for shear core floor slab & stair landing.
  - T Denotes top bar with 30 mm top cover
  - + Denotes top bar with 30 mm top cover
  - B Denotes bottom bar with 30 mm bottom cover
  - o Denotes bottom bar with 48 mm bottom cover.
  - Refer to Spandrel sheet for location of fixing B's to be cast into topping slab to accept Spandrel panels.
  - 664 mesh should be dropped down to 20mm above Hi Bond formwork at mid span.

APPROVED	DATE	SCALE	SHEET	FILE
	AUG 1986	1 : 100 1 : 10	LEVELS 2 - 6	S 15





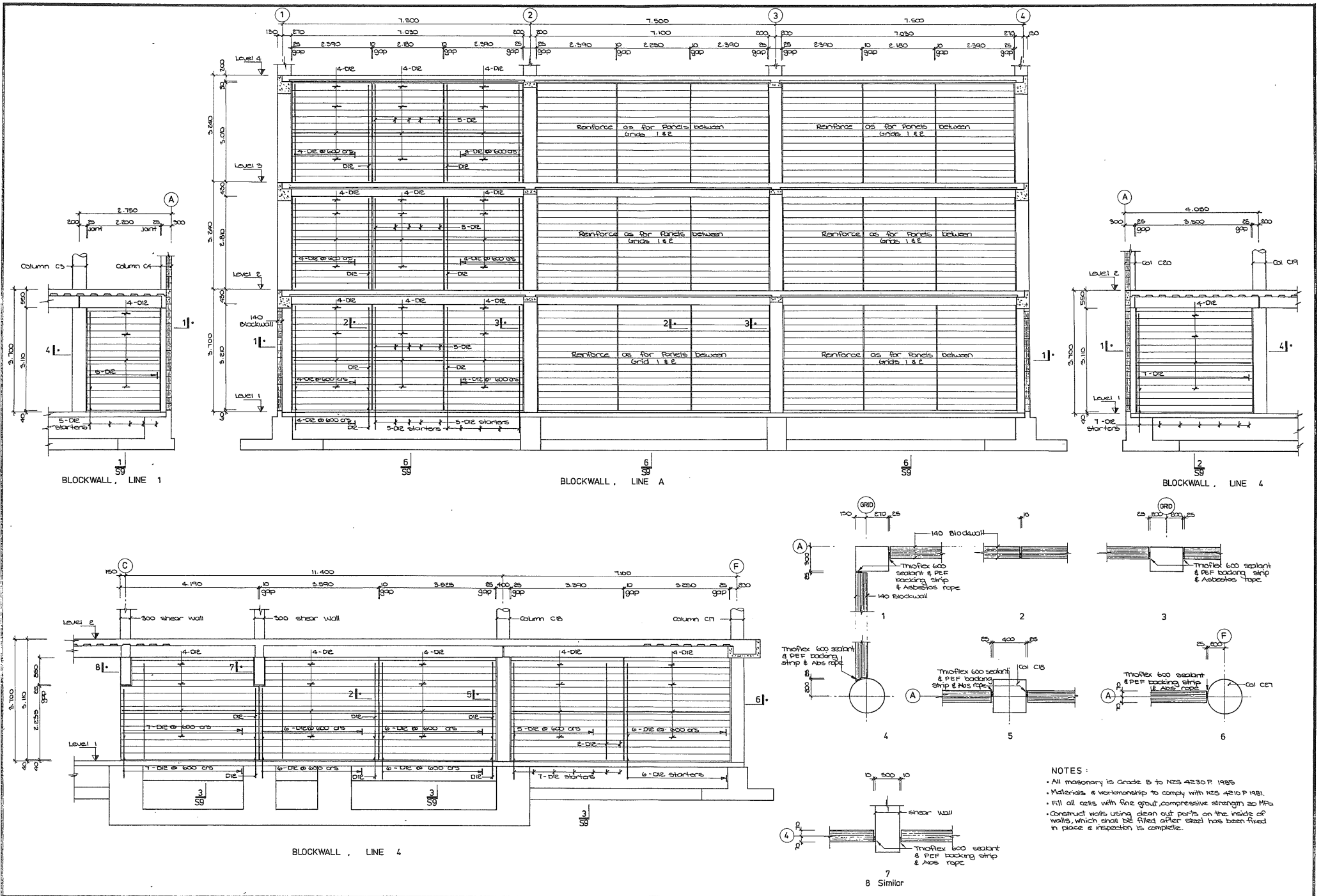
SHEAR CORE, LEVELS 2,3,4,5 & 6

LEVEL 7

LEVEL 8

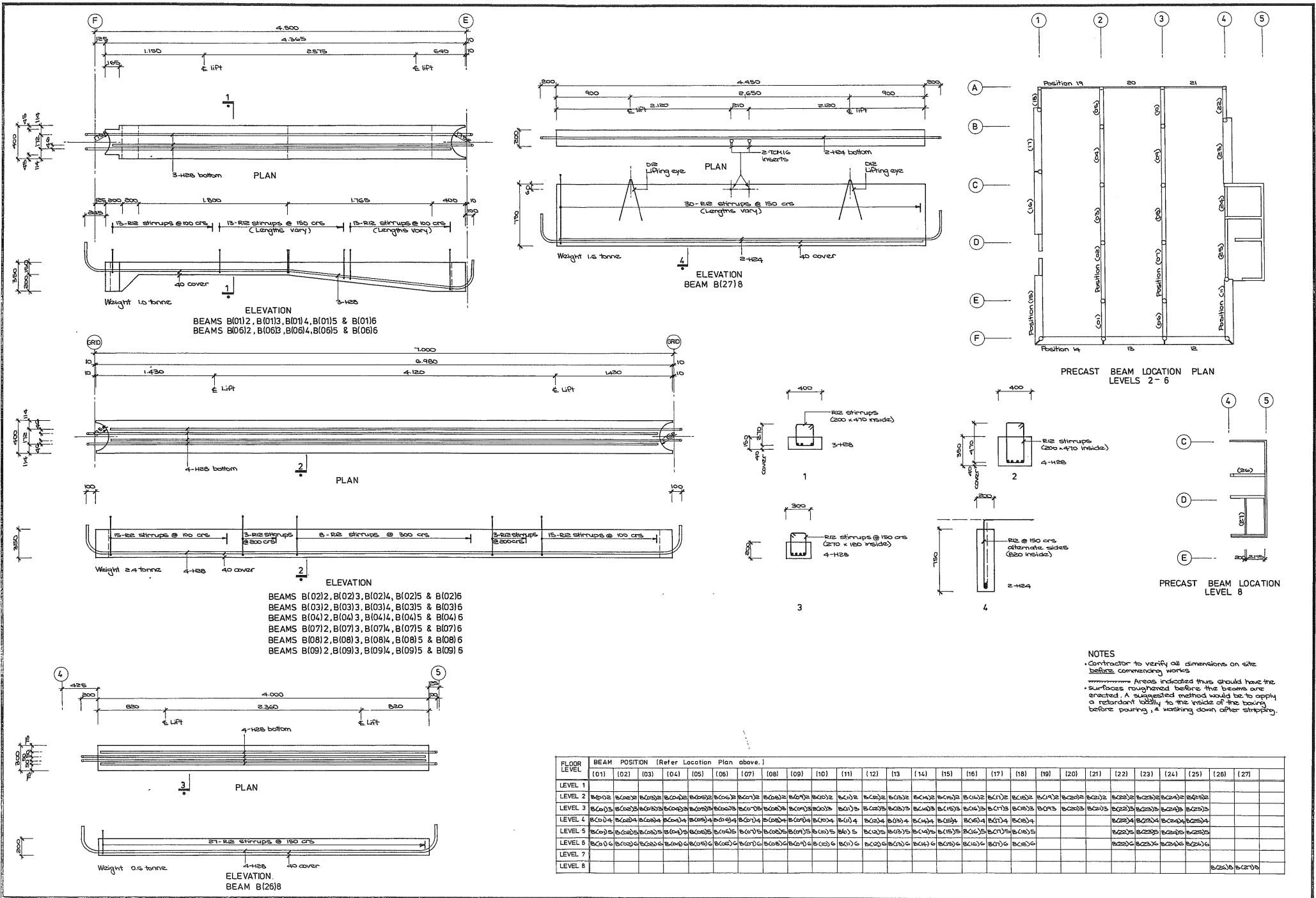
STAIRWELL LEVEL 2 ONLY

APPROVED	DATE	SCALE	SHEAR CORE FLOORS	SHEET	FILE
	AUG 1986	1:50 1:20	SHEAR CORE FLOORS LEVELS 2 - 8	S16	



- NOTES:
- All masonry is Grade B to NZS 4230 P 1985
  - Materials & workmanship to comply with NZS 4210 P 1981
  - Fill all cells with fine grout, compressive strength as MPA
  - Construct walls using clean out ports on the inside of walls, which shall be filled after steel has been fixed in place & inspection is complete.

APPROVED	DATE	SCALE	TITLE	SHEET	FILE
	AUG 1986	1:50 1:20	BLOCKWORK	S17	

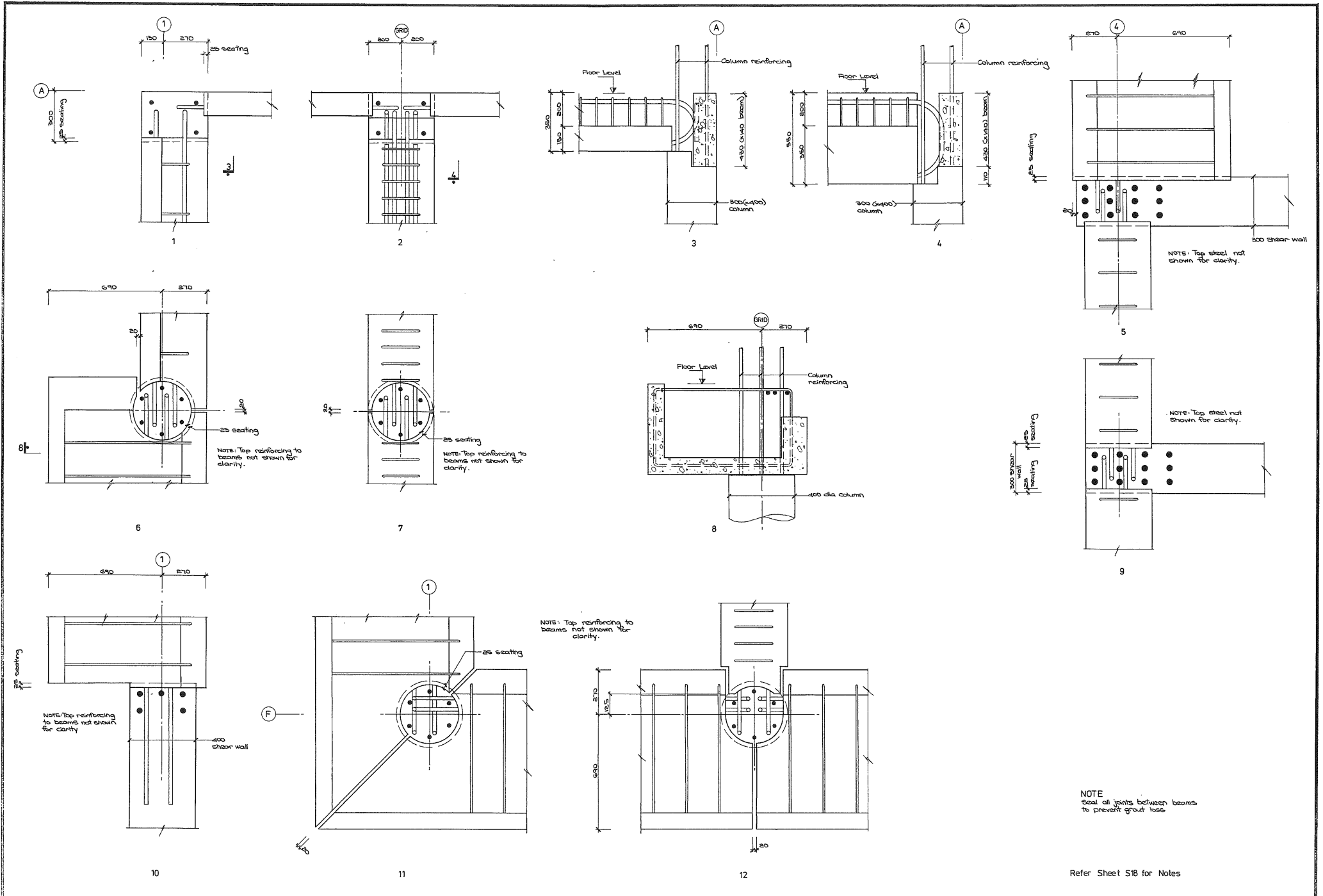


ELEVATION  
 BEAMS B(01)2, B(01)3, B(01)4, B(01)5 & B(01)6  
 BEAMS B(0)2, B(0)3, B(0)4, B(0)5 & B(0)6

BEAMS B(02)2, B(02)3, B(02)4, B(02)5 & B(02)6  
 BEAMS B(03)2, B(03)3, B(03)4, B(03)5 & B(03)6  
 BEAMS B(04)2, B(04)3, B(04)4, B(04)5 & B(04)6  
 BEAMS B(07)2, B(07)3, B(07)4, B(07)5 & B(07)6  
 BEAMS B(08)2, B(08)3, B(08)4, B(08)5 & B(08)6  
 BEAMS B(09)2, B(09)3, B(09)4, B(09)5 & B(09)6

**NOTES**  
 • Contractor to verify all dimensions on site before commencing works  
 • Areas indicated thus should have the surfaces roughened before the beams are erected. A suggested method would be to apply a retardant lather to the inside of the boxing before pouring, & washing down after stripping.

FLOOR LEVEL	BEAM POSITION (Refer Location Plan above.)																											
	(01)	(02)	(03)	(04)	(05)	(06)	(07)	(08)	(09)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	
LEVEL 1																												
LEVEL 2	B(02)2	B(02)3	B(02)4	B(02)5	B(02)6	B(03)2	B(03)3	B(03)4	B(03)5	B(03)6	B(04)2	B(04)3	B(04)4	B(04)5	B(04)6	B(07)2	B(07)3	B(07)4	B(07)5	B(07)6	B(08)2	B(08)3	B(08)4	B(08)5	B(08)6	B(09)2	B(09)3	
LEVEL 3	B(03)2	B(03)3	B(03)4	B(03)5	B(03)6	B(04)2	B(04)3	B(04)4	B(04)5	B(04)6	B(07)2	B(07)3	B(07)4	B(07)5	B(07)6	B(08)2	B(08)3	B(08)4	B(08)5	B(08)6	B(09)2	B(09)3	B(09)4	B(09)5	B(09)6			
LEVEL 4	B(04)2	B(04)3	B(04)4	B(04)5	B(04)6	B(07)2	B(07)3	B(07)4	B(07)5	B(07)6	B(08)2	B(08)3	B(08)4	B(08)5	B(08)6	B(09)2	B(09)3	B(09)4	B(09)5	B(09)6								
LEVEL 5	B(07)2	B(07)3	B(07)4	B(07)5	B(07)6	B(08)2	B(08)3	B(08)4	B(08)5	B(08)6	B(09)2	B(09)3	B(09)4	B(09)5	B(09)6													
LEVEL 6	B(08)2	B(08)3	B(08)4	B(08)5	B(08)6	B(09)2	B(09)3	B(09)4	B(09)5	B(09)6																		
LEVEL 7																												
LEVEL 8																											B(26)8	B(27)8



NOTE: Top steel not shown for clarity.

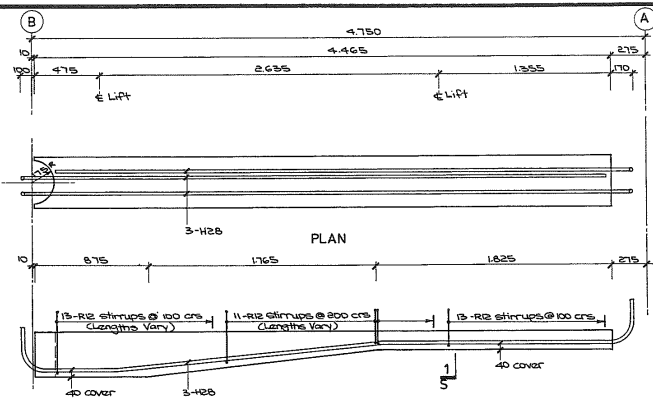
NOTE: Top steel not shown for clarity.

NOTE: Top reinforcing to beams not shown for clarity.

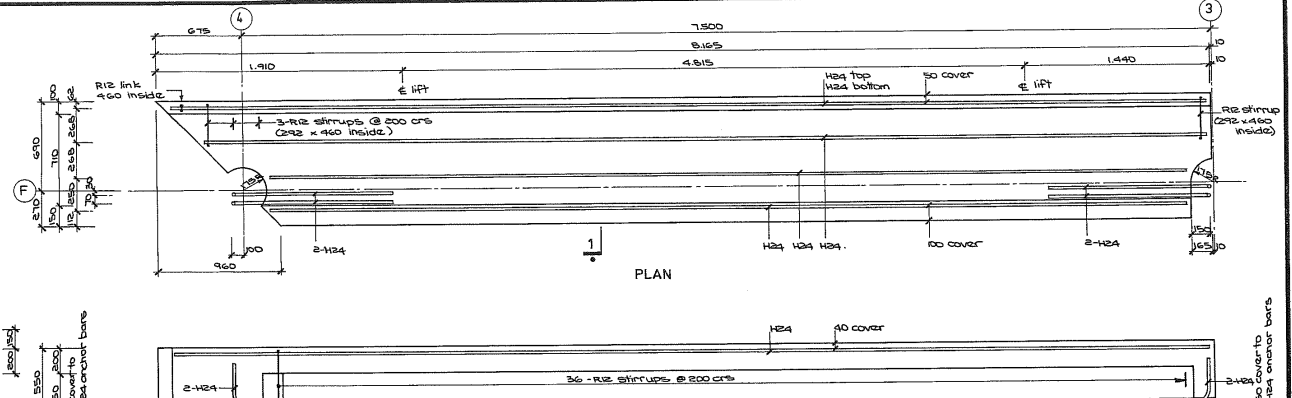
NOTE: Seal all joints between beams to prevent grout loss.

Refer Sheet S18 for Notes

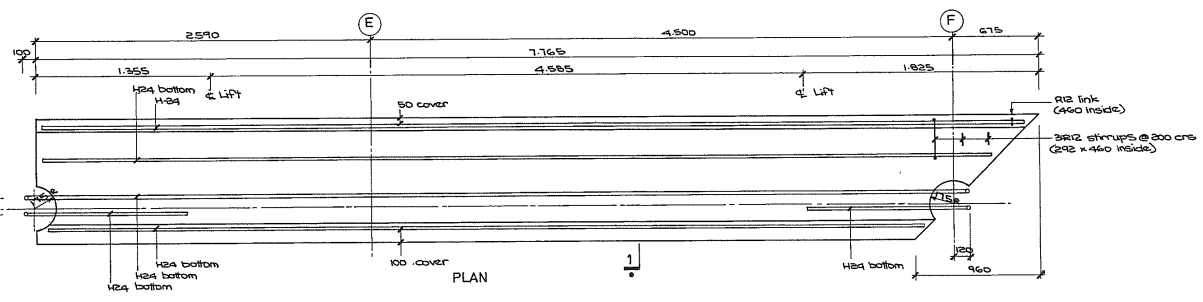
APPROVED	DATE	SCALE	SHEET	FILE
	AUG 1986	1:10	BEAM / COLUMN JOINTS	S19



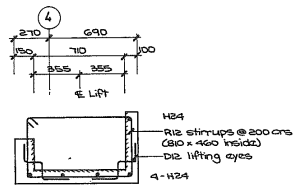
Weight 10 tonne  
 BEAMS B(05)2, B(05)3, B(05)4, B(05)5 & B(05)6  
 BEAMS B(10)2, B(10)3, B(10)4, B(10)5 & B(10)6



Weight 33 tonne  
 BEAMS B(12)2, B(12)3, B(12)4, B(12)5 & B(12)6  
 B(14)3, B(14)4, B(14)5 & B(14)6 Handed



Weight 32 tonne  
 BEAMS B(11)2, B(11)3, B(11)4, B(11)5 & B(11)6

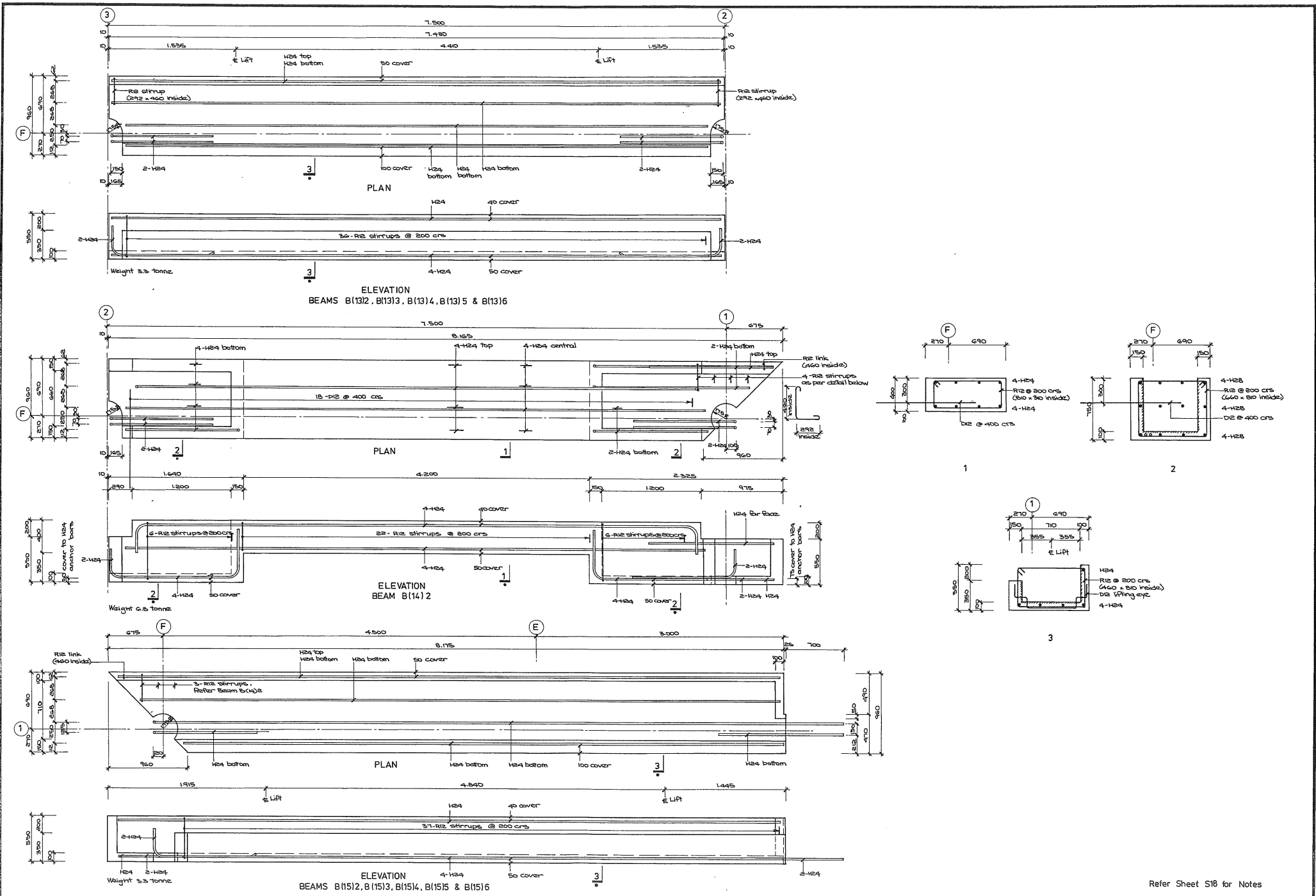


1

Refer Sheet S18 for Notes.

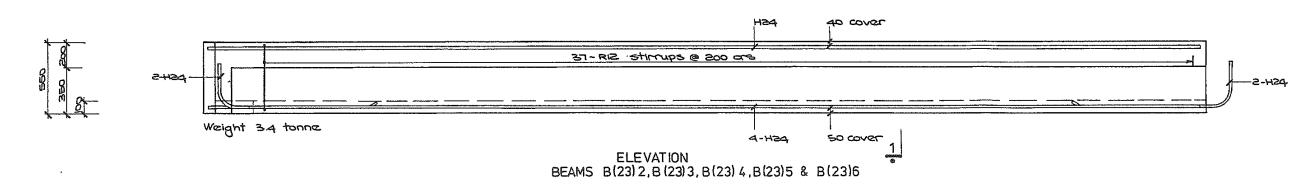
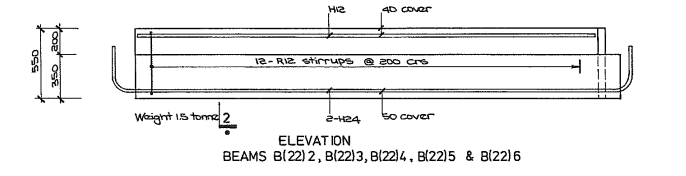
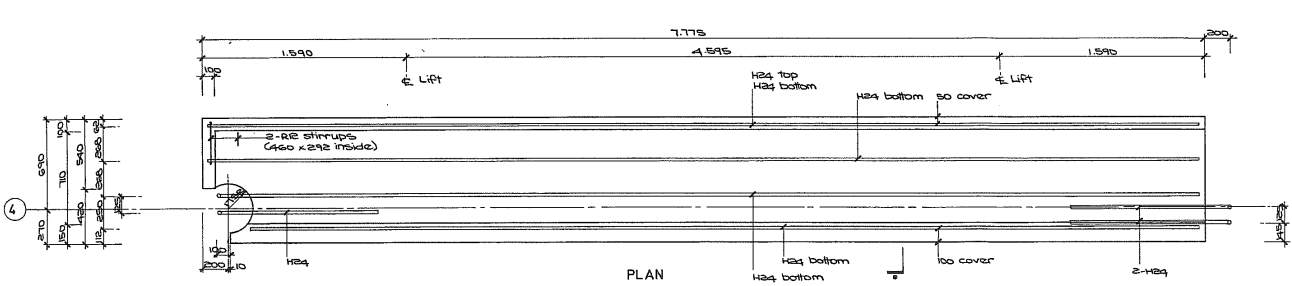
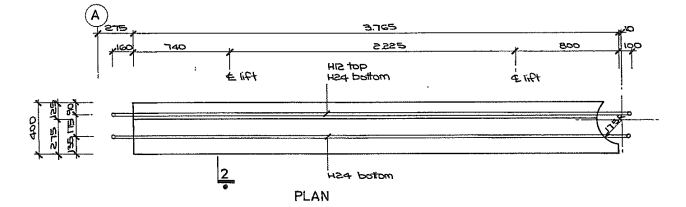
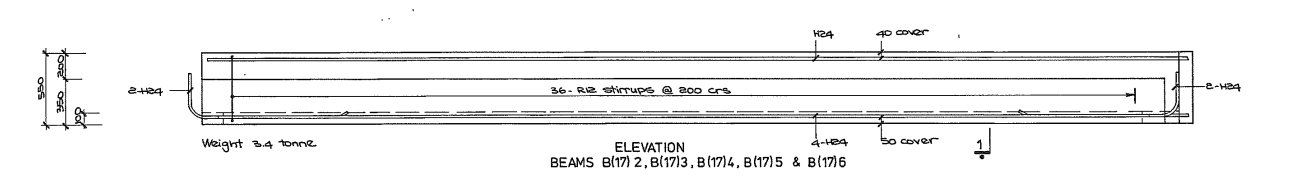
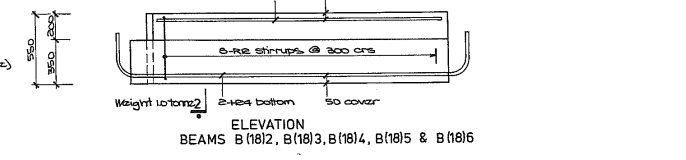
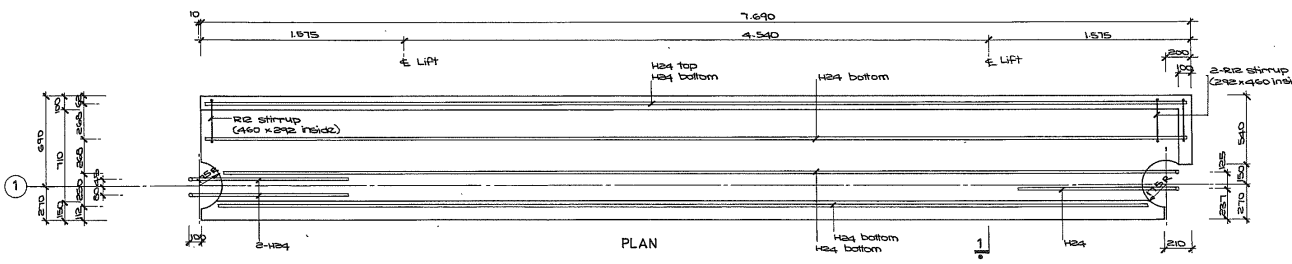
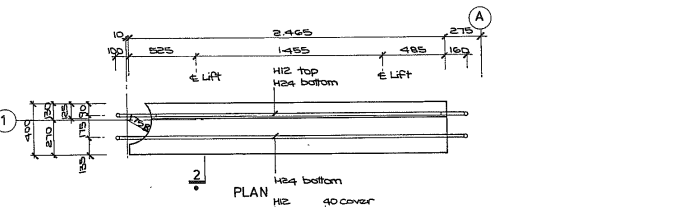
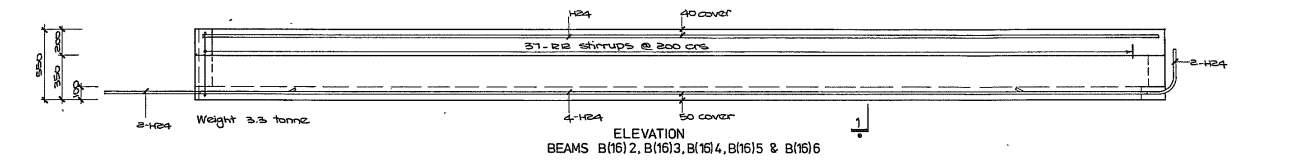
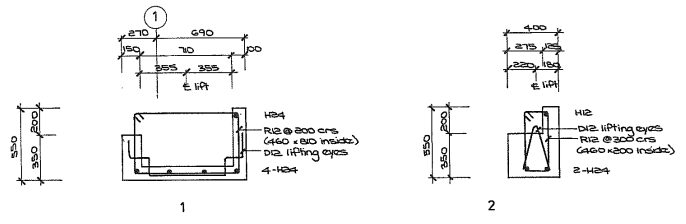
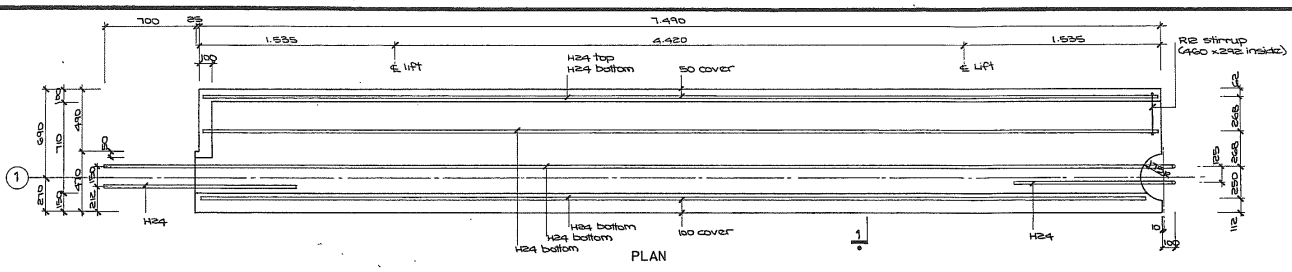
APPROVED	DATE	SCALE	SHEET	FILE
	AUG 1986	1:20	PRECAST FLOOR BEAMS	S20





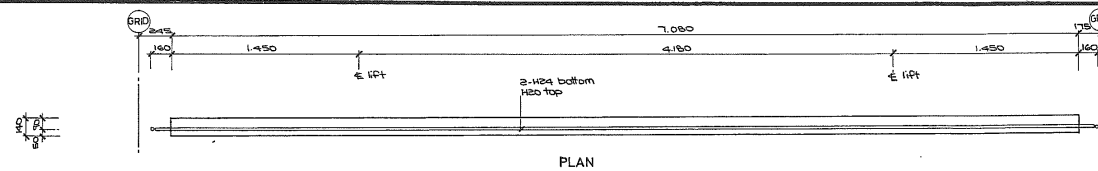
Refer Sheet S18 for Notes

APPROVED	DATE	SCALES	SHEET	FILE
	AUG 1986	1:20	PRECAST FLOOR BEAMS	S21

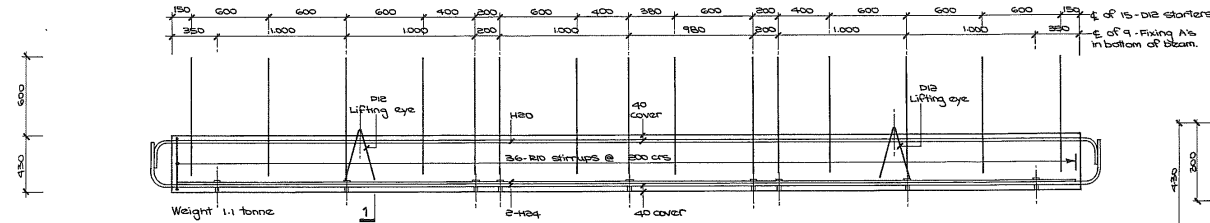


Refer Sheet S18 for Notes.

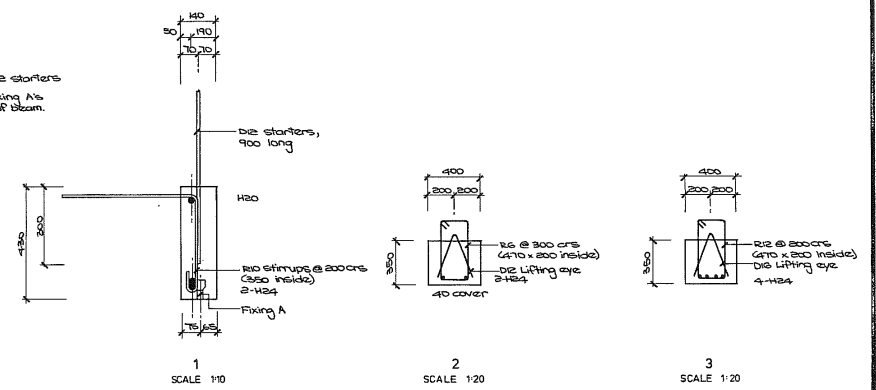
APPROVED	DATE	SCALE	SHEET	FILE
	AUG 1986	1:20	PRECAST FLOOR BEAMS	S22



PLAN



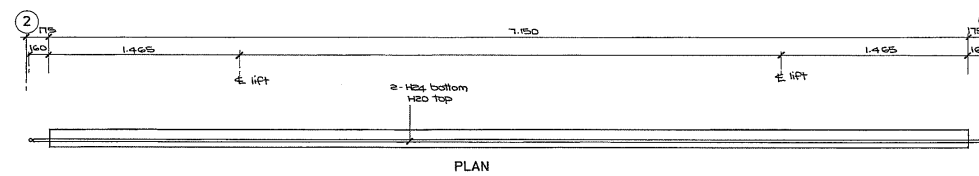
ELEVATION  
BEAMS B(19)2 & B(19)3  
BEAMS B(21)2 & B(21)3



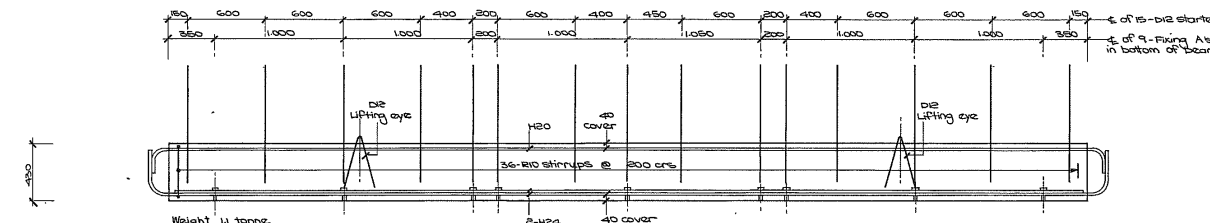
1 SCALE 1/10

2 SCALE 1/20

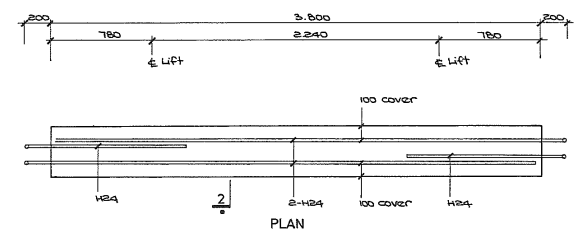
3 SCALE 1/20



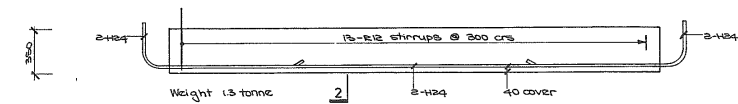
PLAN



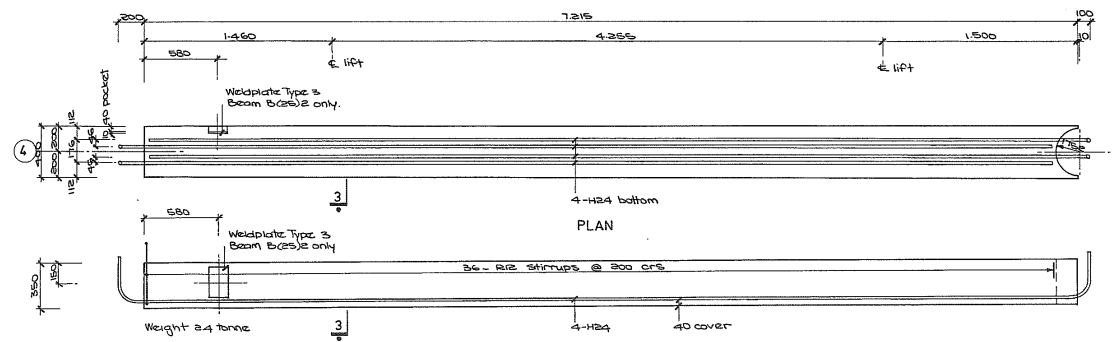
ELEVATION  
BEAMS B(20)2 & B(20)3



PLAN



ELEVATION  
BEAMS B(24)2, B(24)3, B(24)4, B(24)5 & B(24)6



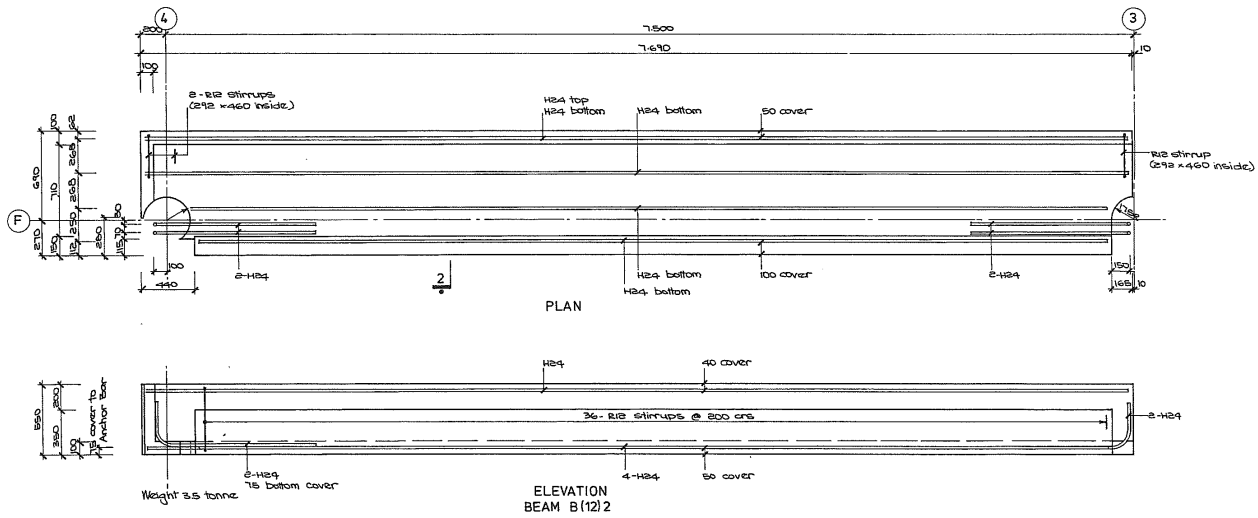
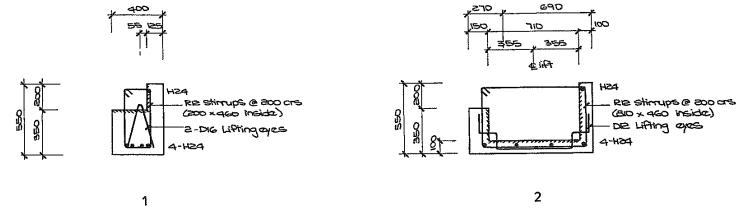
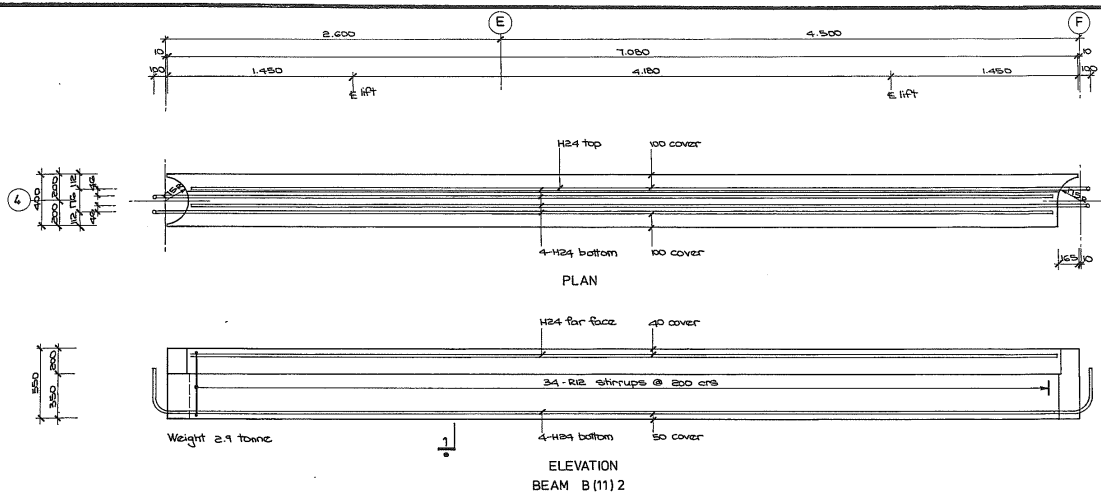
PLAN

ELEVATION  
BEAMS B(25)2, B(25)3, B(25)4, B(25)5 & B(25)6

Refer Sheet S18 for Notes

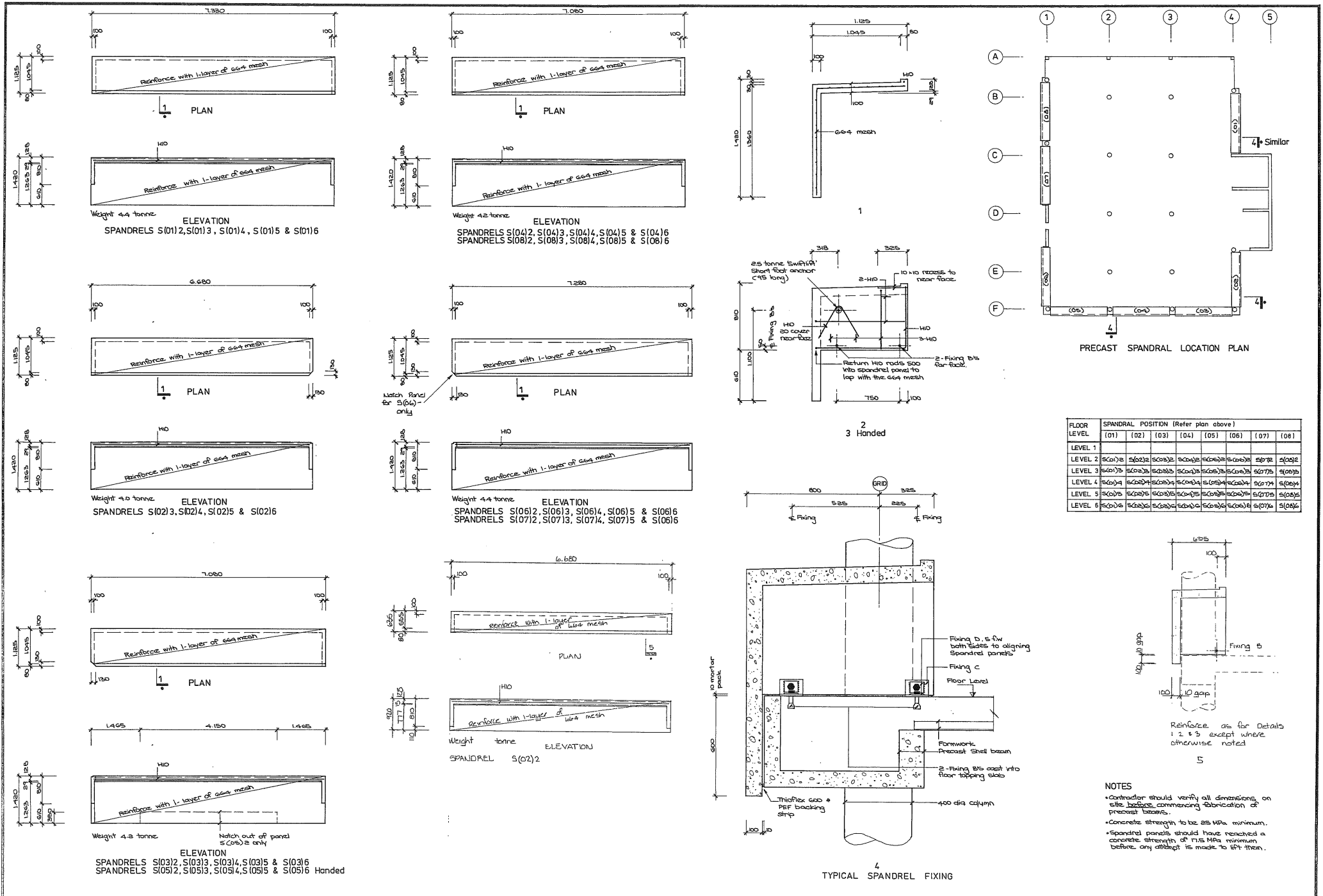
APPROVED	DATE	SCALES	SHEET	FILE
	AUG 1986	1-20 1-10	PRECAST FLOOR BEAMS	S23



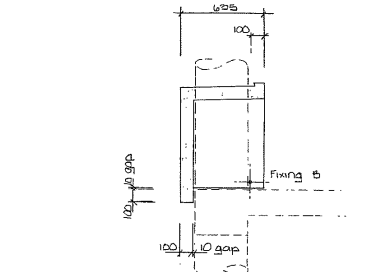


Refer Sheet S18 for Notes

APPROVED	DATE	SCALE	SHEET	FILE
	AUG 1986	1:20	PRECAST FLOOR BEAMS	S24

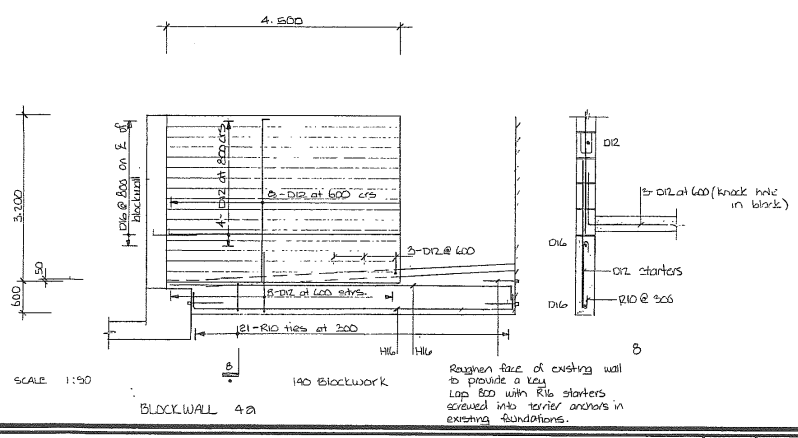
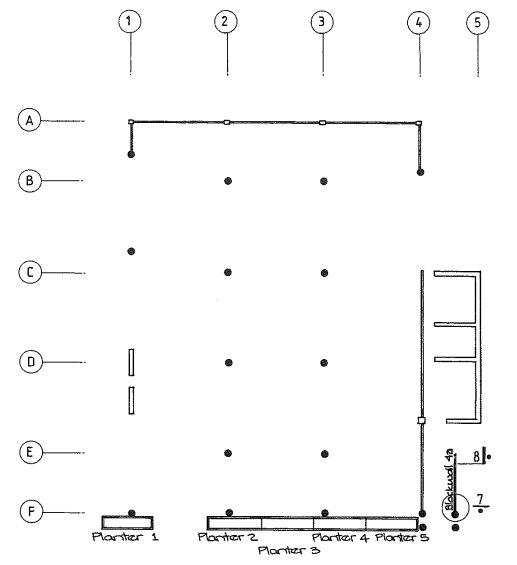
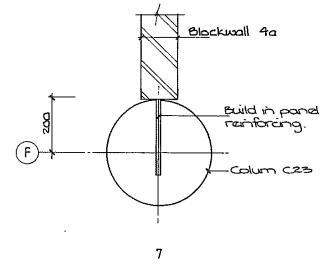
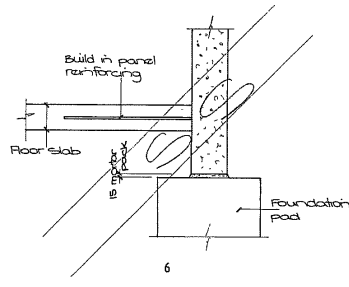
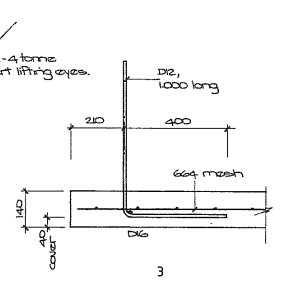
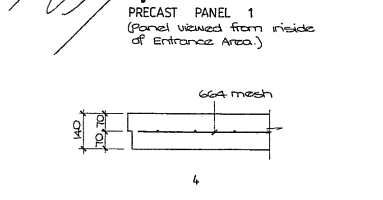
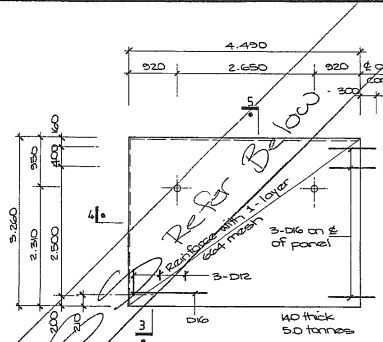
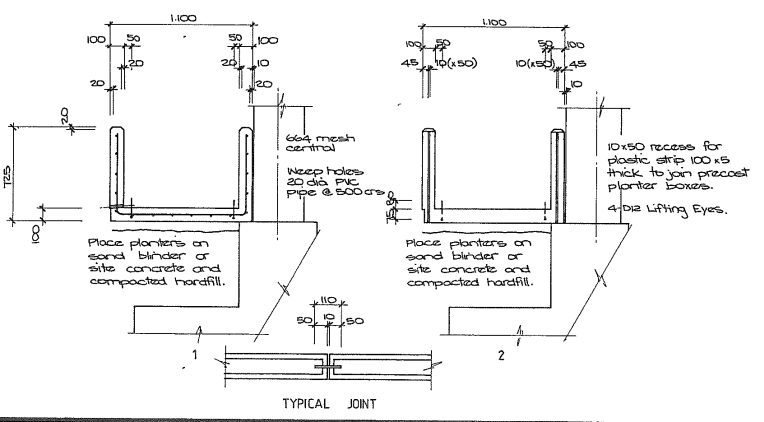
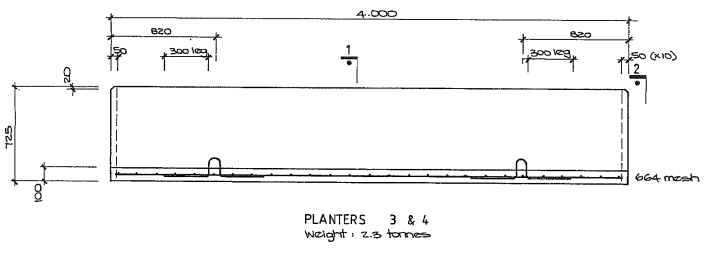
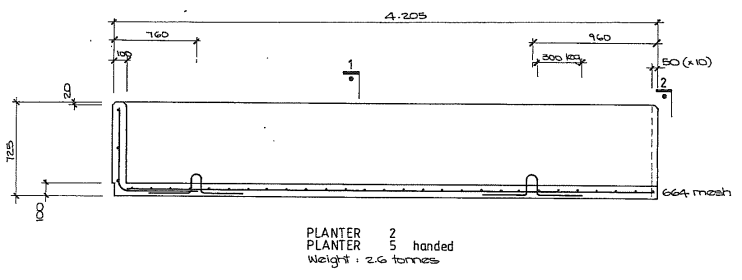
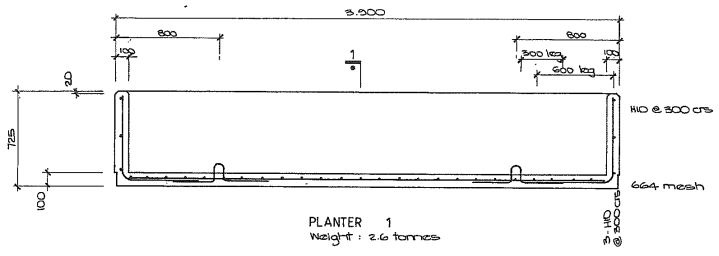


FLOOR LEVEL	SPANDREL POSITION (Refer plan above)							
	(01)	(02)	(03)	(04)	(05)	(06)	(07)	(08)
LEVEL 1								
LEVEL 2	S(01)2	S(02)2	S(03)2	S(04)2	S(05)2	S(06)2	S(07)2	S(08)2
LEVEL 3	S(01)3	S(02)3	S(03)3	S(04)3	S(05)3	S(06)3	S(07)3	S(08)3
LEVEL 4	S(01)4	S(02)4	S(03)4	S(04)4	S(05)4	S(06)4	S(07)4	S(08)4
LEVEL 5	S(01)5	S(02)5	S(03)5	S(04)5	S(05)5	S(06)5	S(07)5	S(08)5
LEVEL 6	S(01)6	S(02)6	S(03)6	S(04)6	S(05)6	S(06)6	S(07)6	S(08)6

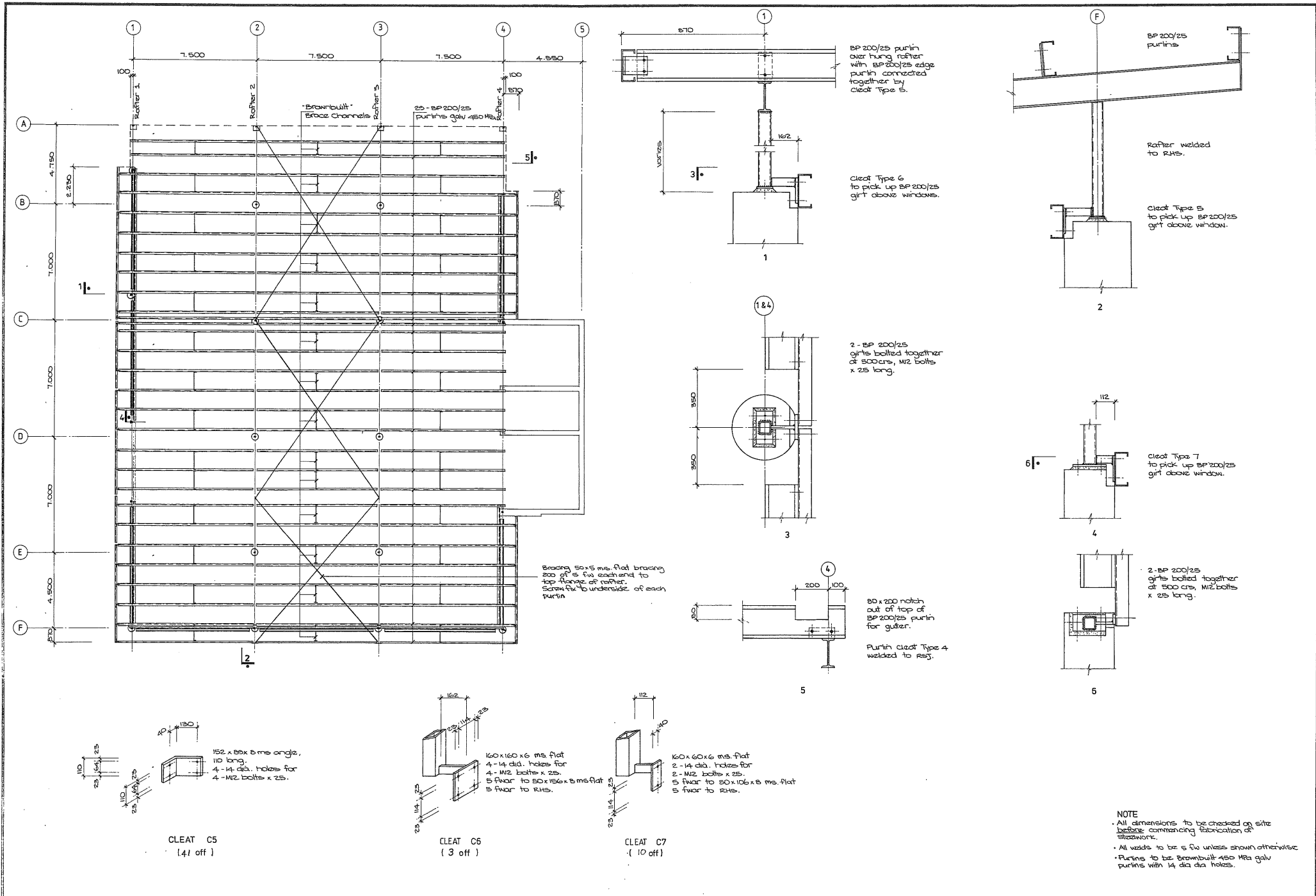


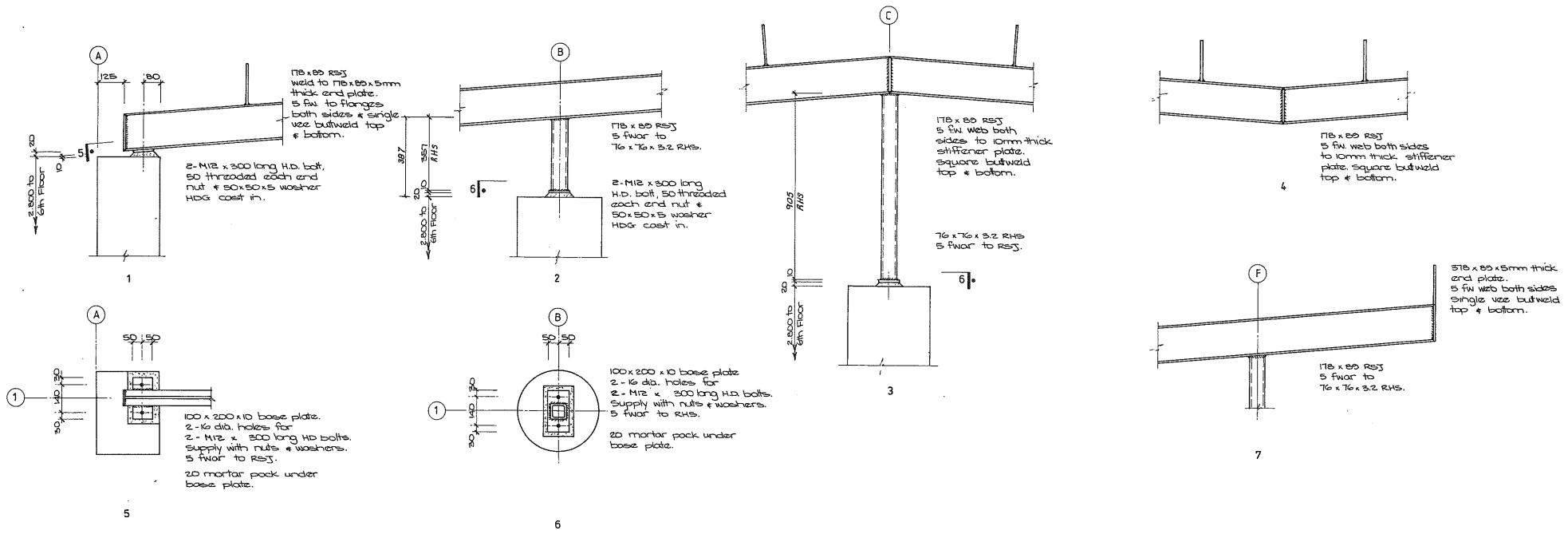
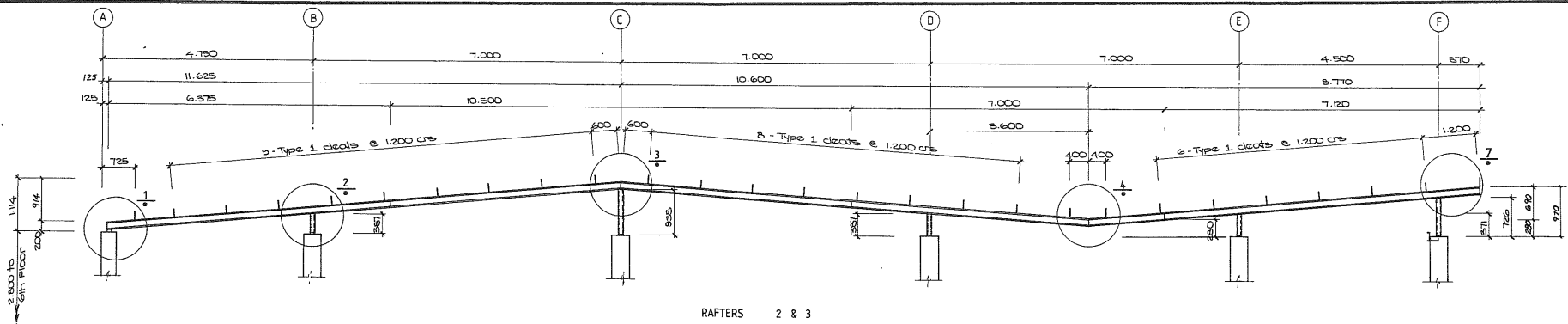
**NOTES**

- Contractor should verify all dimensions on site before commencing fabrication of precast beams.
- Concrete strength to be 25 MPa minimum.
- Spandrel panels should have reached a concrete strength of 17.5 MPa minimum before any attempt is made to lift them.

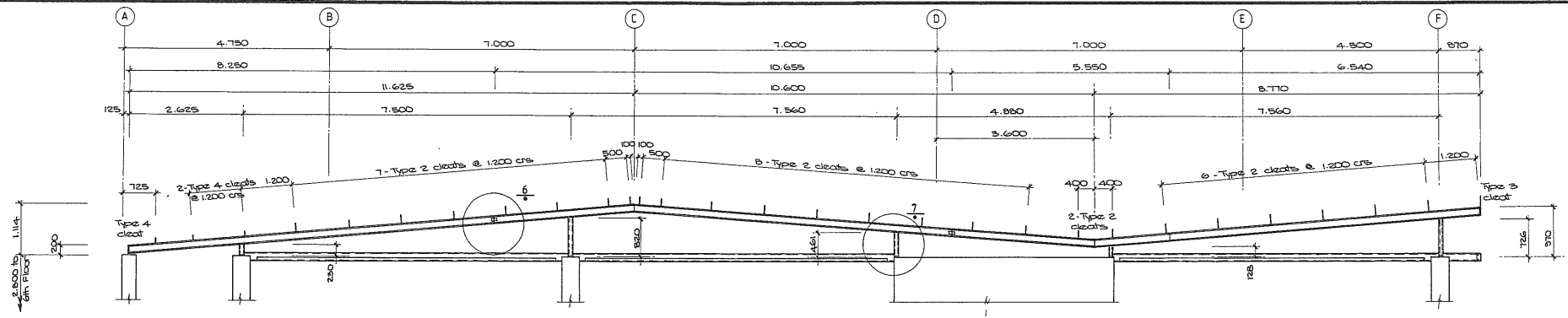


Realign face of existing wall to provide a key. Lap 800 with R16 starters screwed into tower anchors in existing foundations.



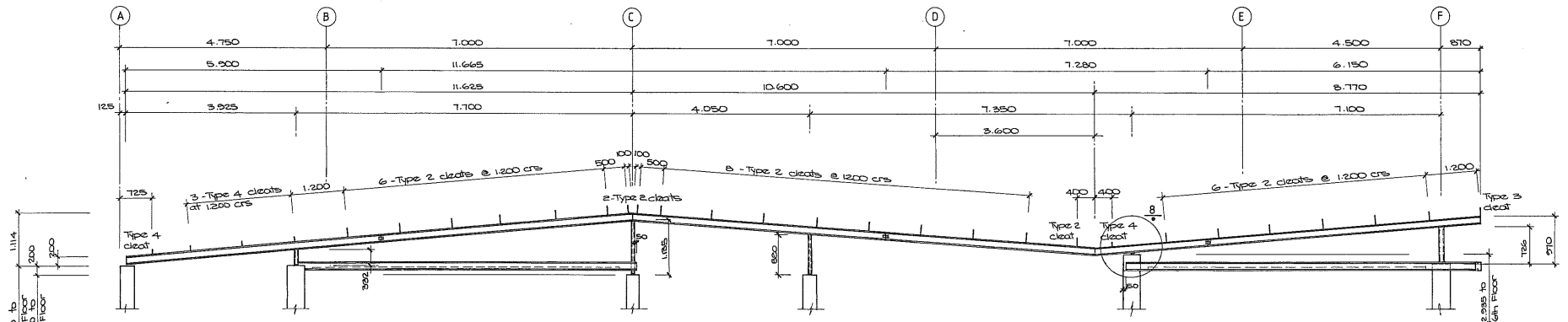


**NOTE**  
 All dimensions to be checked on site before commencing fabrication of steelwork.

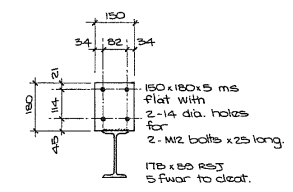
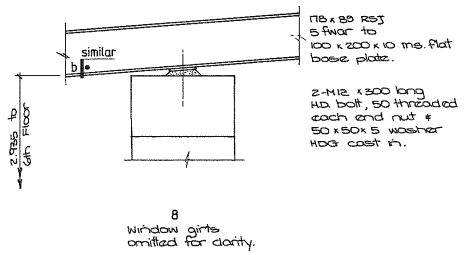
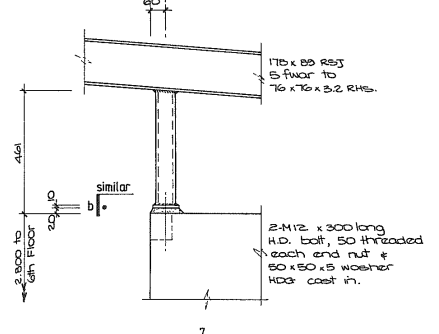
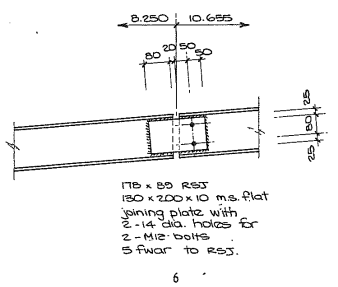


RAFTER 1

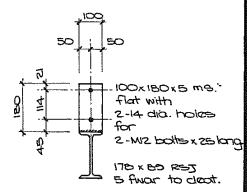
NOTE  
Check all dimensions on site  
before commencing fabrication  
of steelwork.



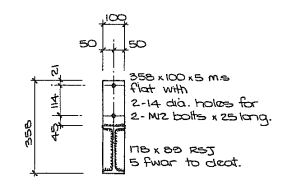
RAFTER 4



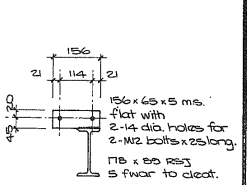
PURLIN CLEAT TYPE 1



PURLIN CLEAT TYPE 2

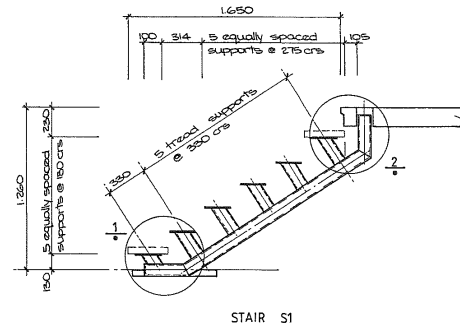
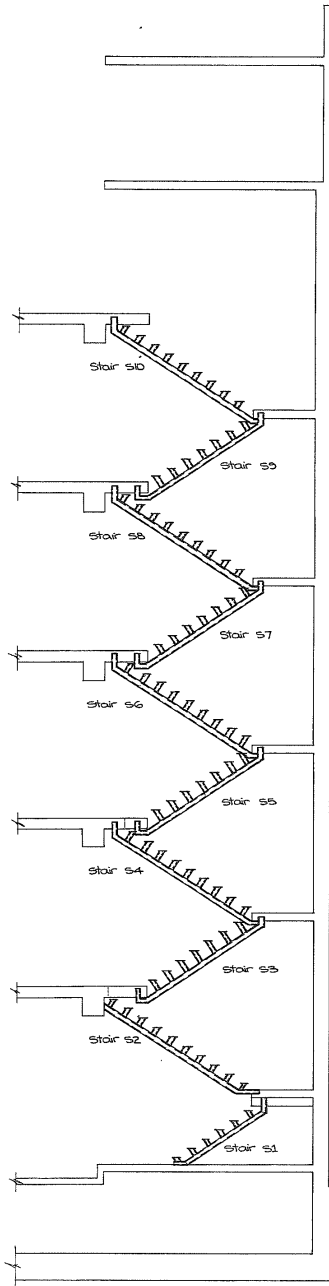


PURLIN CLEAT TYPE 3

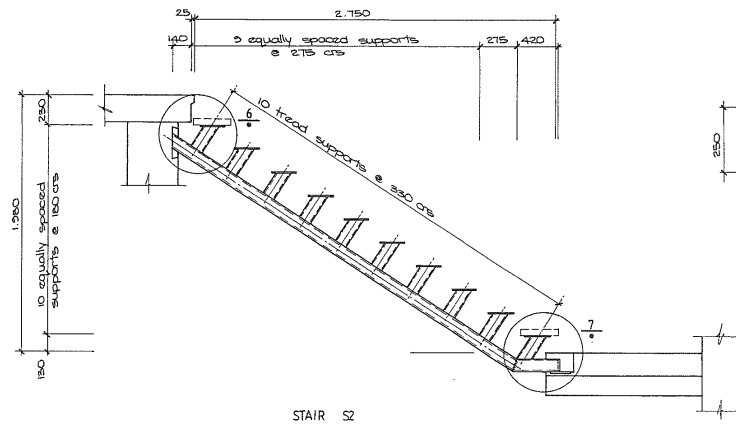


PURLIN CLEAT TYPE 4

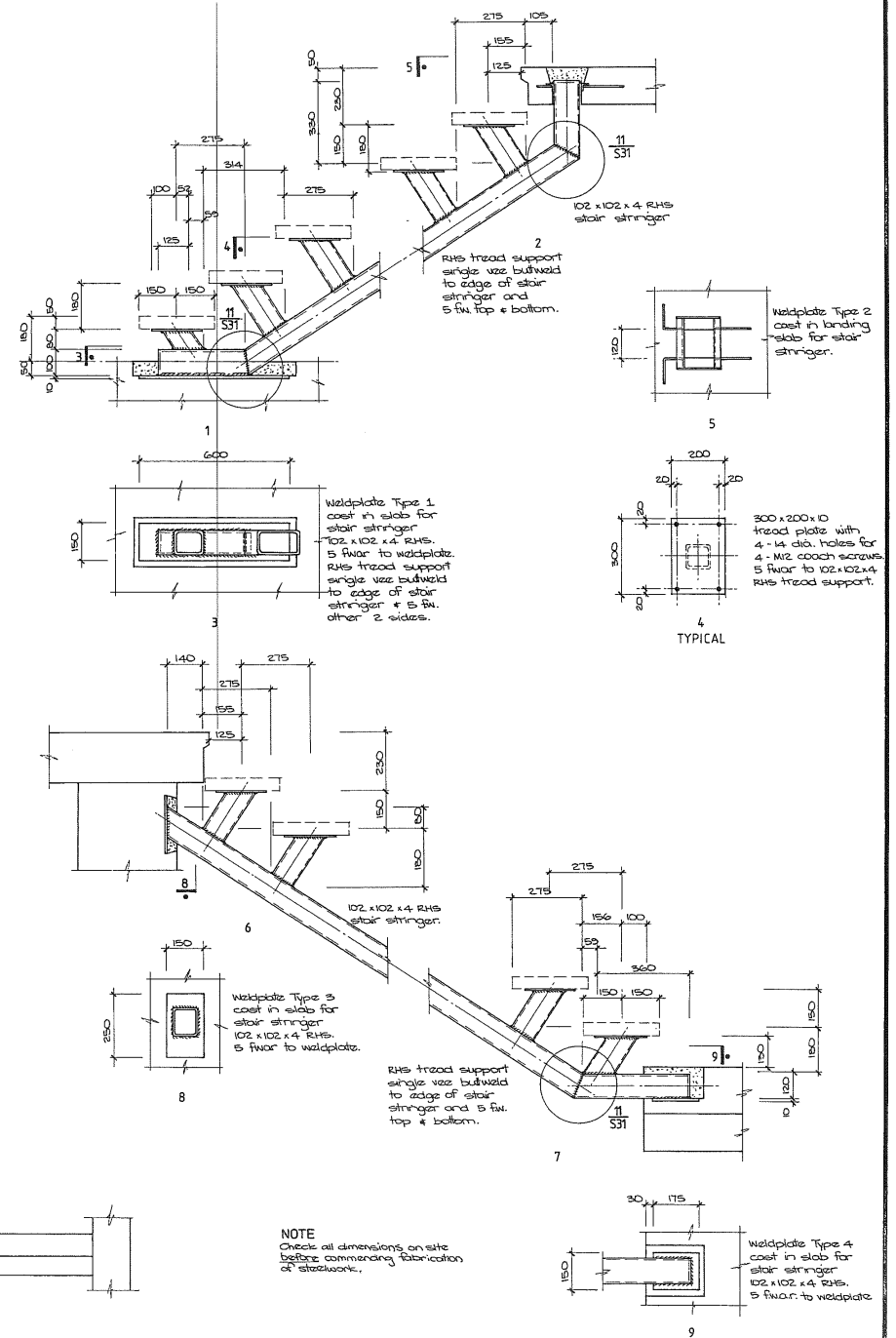


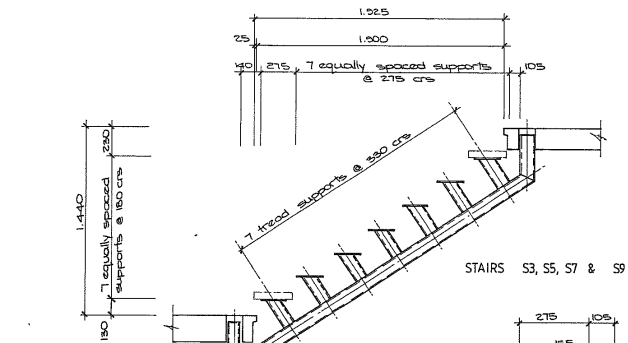


STAIR S1

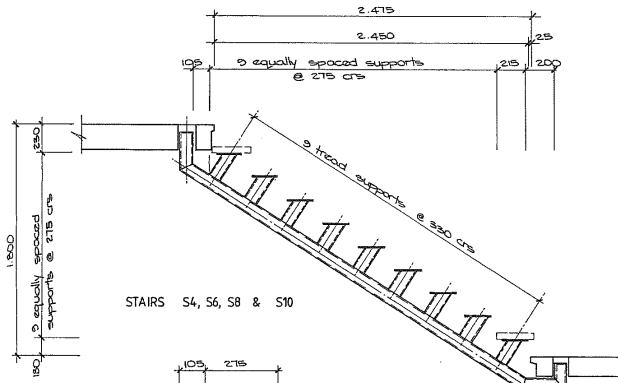


STAIR S2

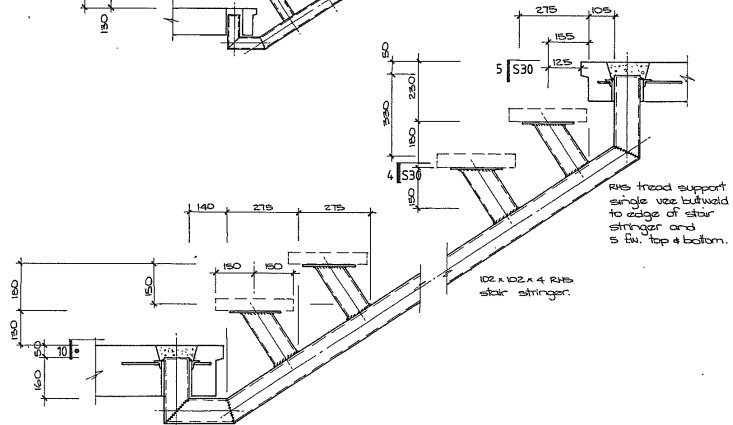




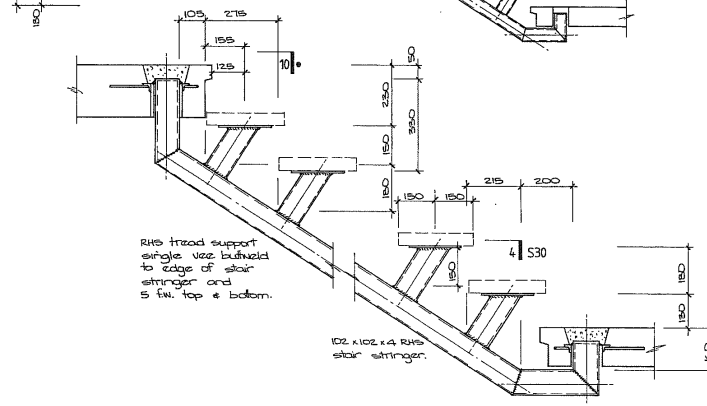
STAIRS S3, S5, S7 & S9



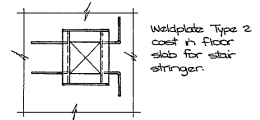
STAIRS S4, S6, S8 & S10



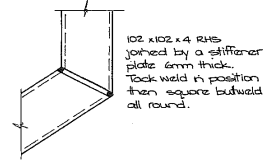
RHS tread support single vee butt weld to edge of stair stringer and 5 fw. top & bottom.



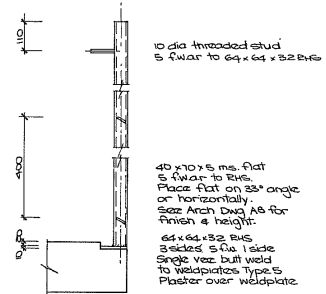
RHS tread support single vee butt weld to edge of stair stringer and 5 fw. top & bottom.



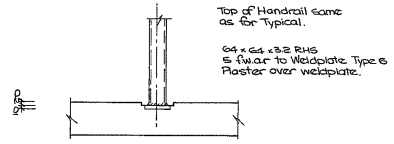
10



11



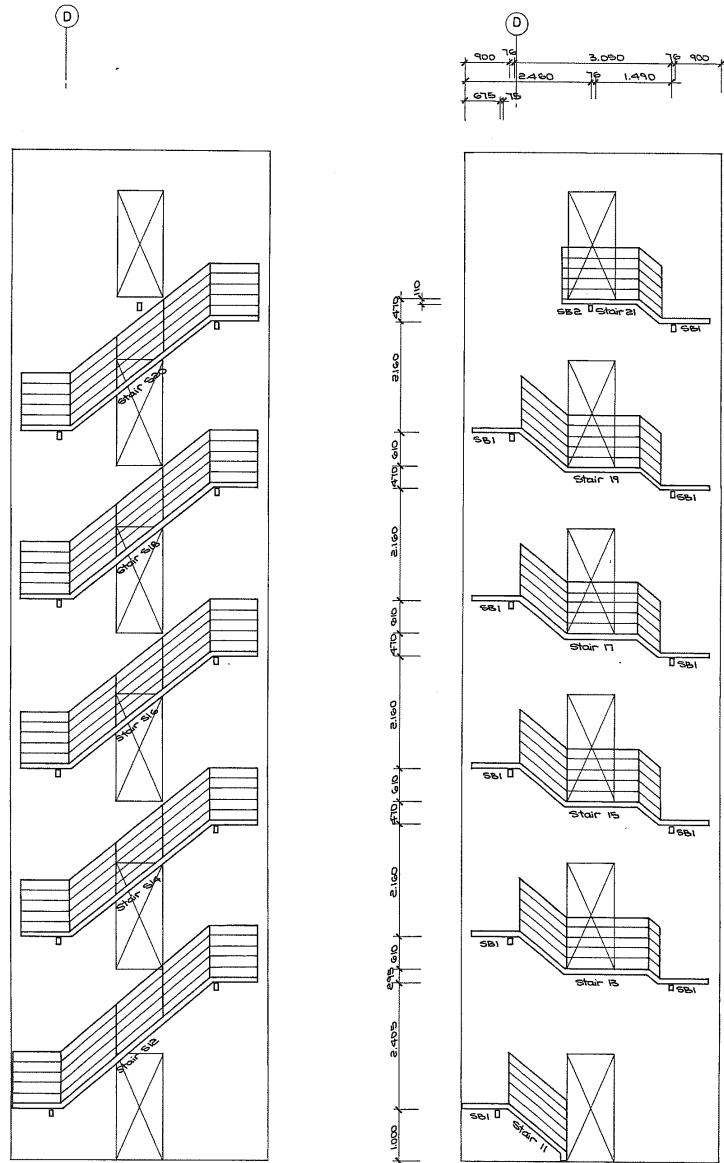
TYPICAL HANDRAIL at Landings & Slab



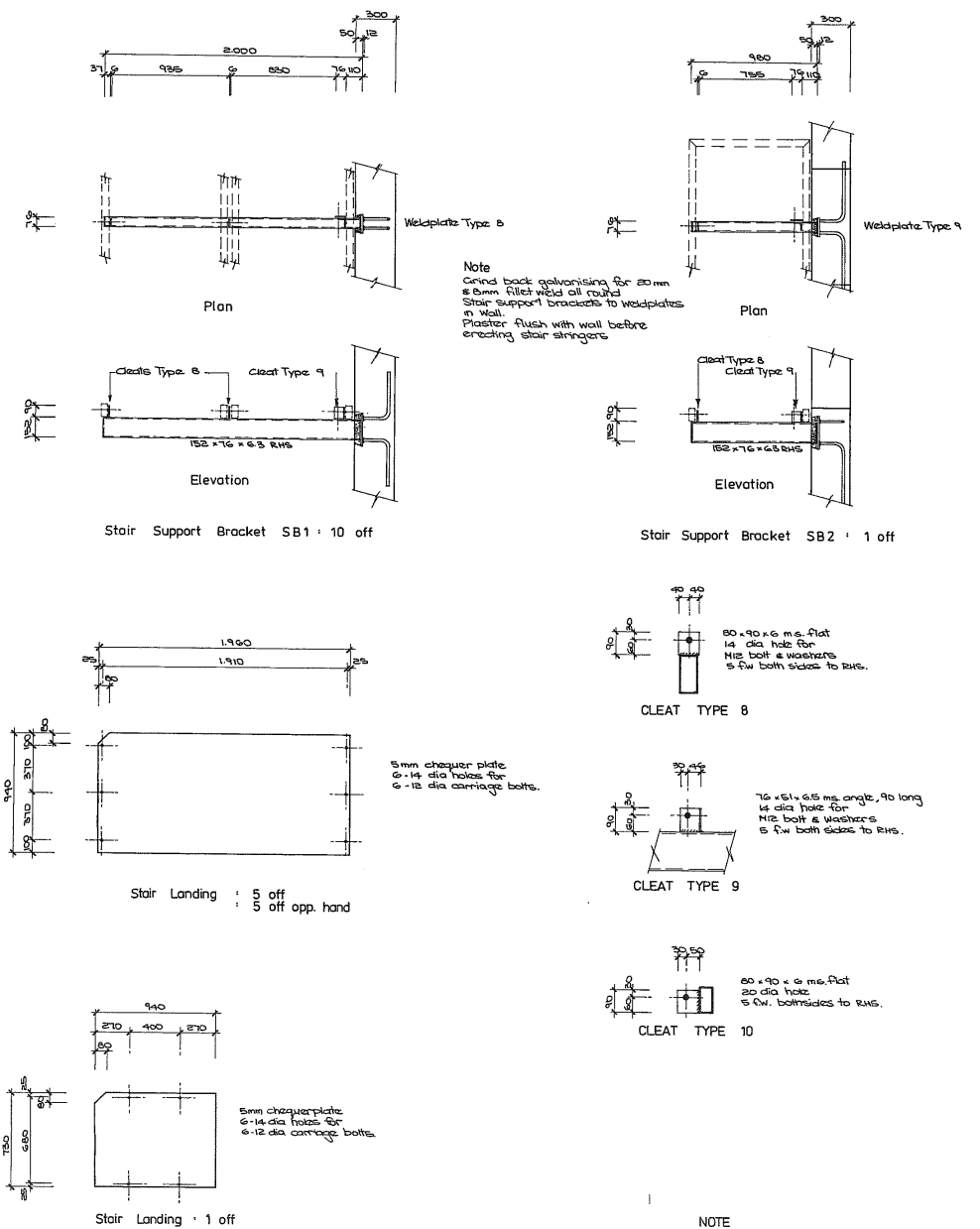
GROUND FLOOR HANDRAIL ONLY

APPROVED	DATE	SCALE	INTERNAL STAIR LAYOUT	SHEET	FILE
	AUGUST 1986	1:5	STAIRS S3 to S10	S31	

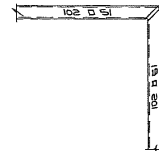
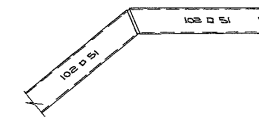
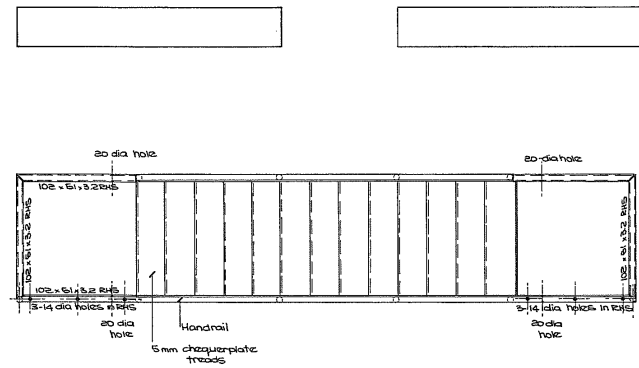
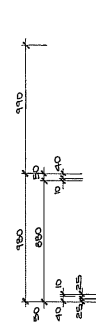
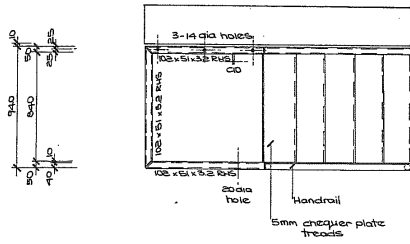




ELEVATIONS of STAIRS S11 - S21 on WALL LINE 1

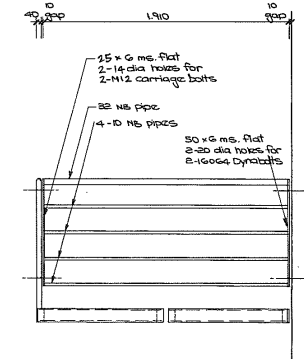
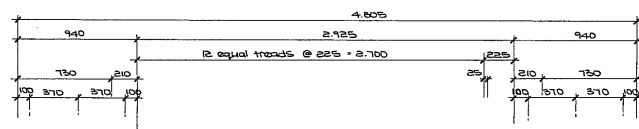


Notes:  
All RHS sections between stiffener plates must have a 20 dia vent hole in underside before fabricated units are H.D.C.

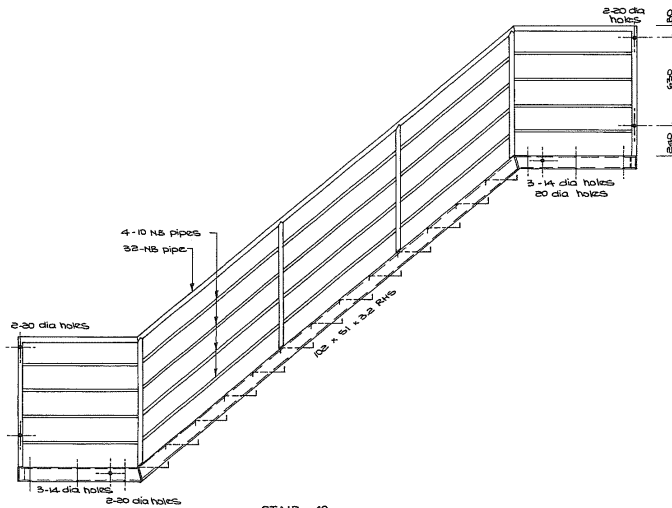
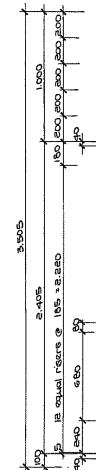
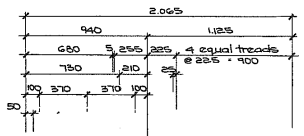


102 x 51 RHS members joined by stiffener plate 6mm thick tack weld in position. Square butt weld all round joint.

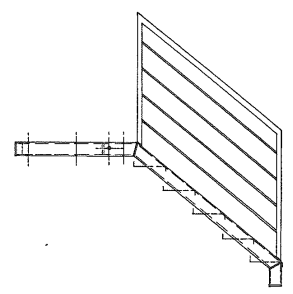
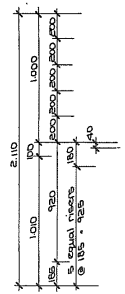
TYPICAL RHS JOINTS



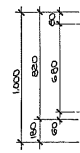
LANDING END HANDRAIL (10 off)



STAIR 12



STAIR S11



15 x 6 ms. flat  
2-14 dia holes for  
2-M12 carriage bolts  
22 NB pipe  
4-10 NB pipes  
50 x 6 ms. flat  
2-20 dia holes for  
2-10004 Dynaballs

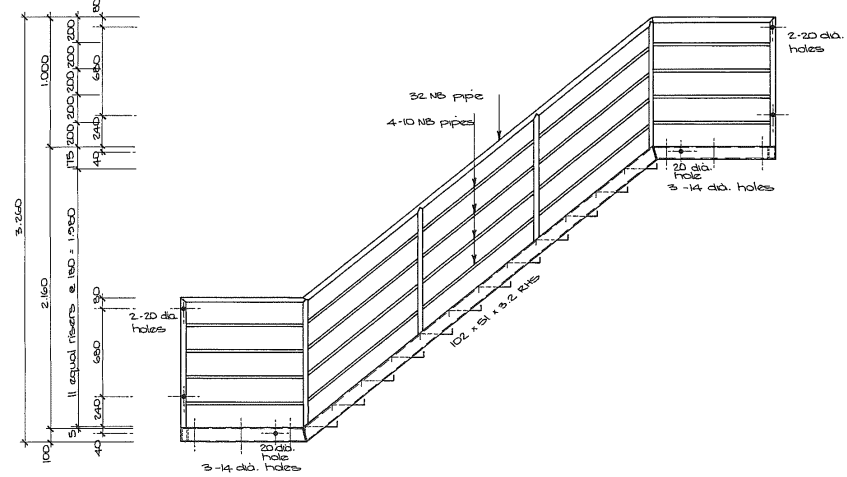
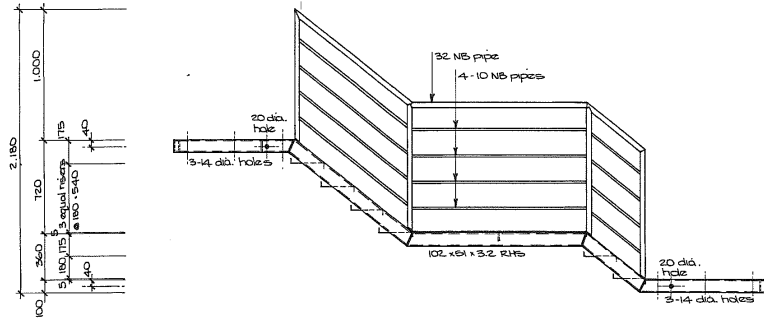
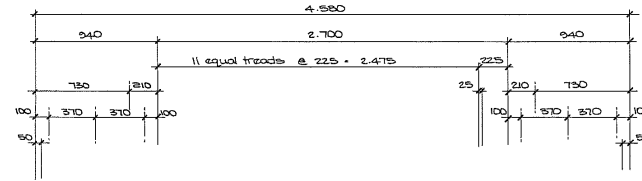
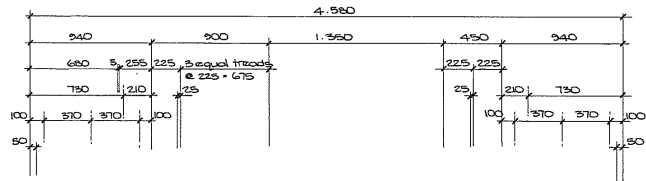
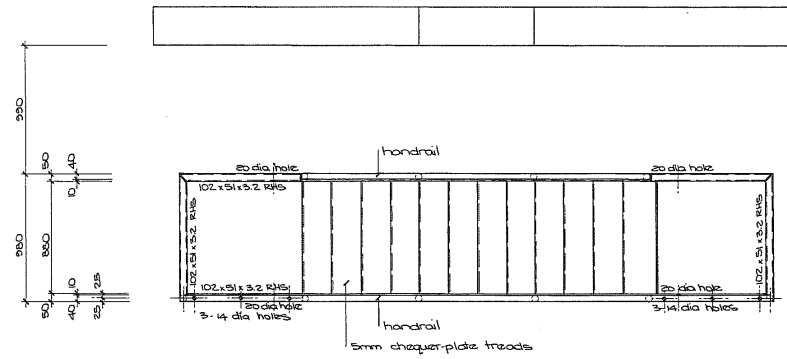
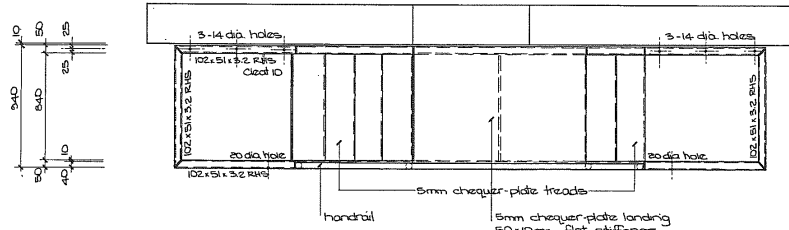


5mm chequerplate 840 long 130 off  
5 ft both sides of plate 141 off  
to ends

STAIR TREADS

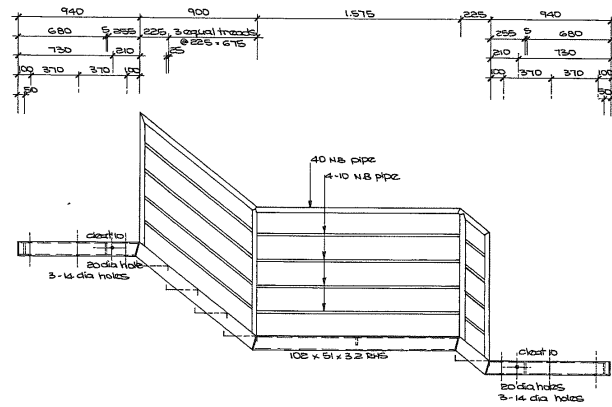
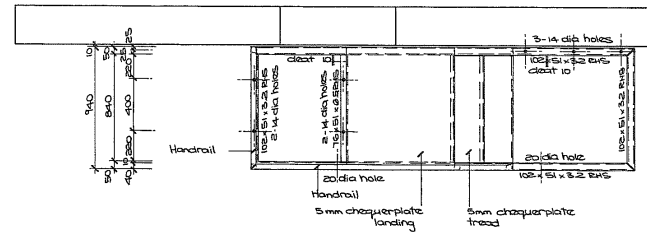
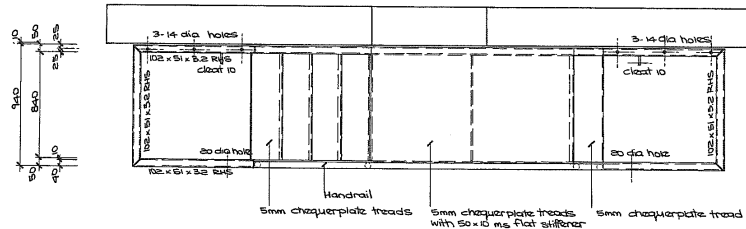
NOTE  
Check all dimensions on site before commencing fabrication of steelwork.

APPROVED	DATE	SCALE	SHEET	FILE
	AUG 1986	1:20 1:10	STAIR S11 & S12	S33

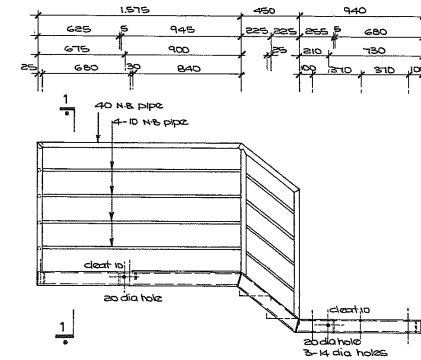


STAIR S15, S17 & S19

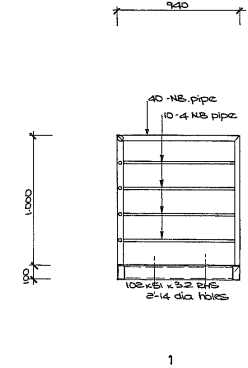
STAIR S14, S16, S18 & S20

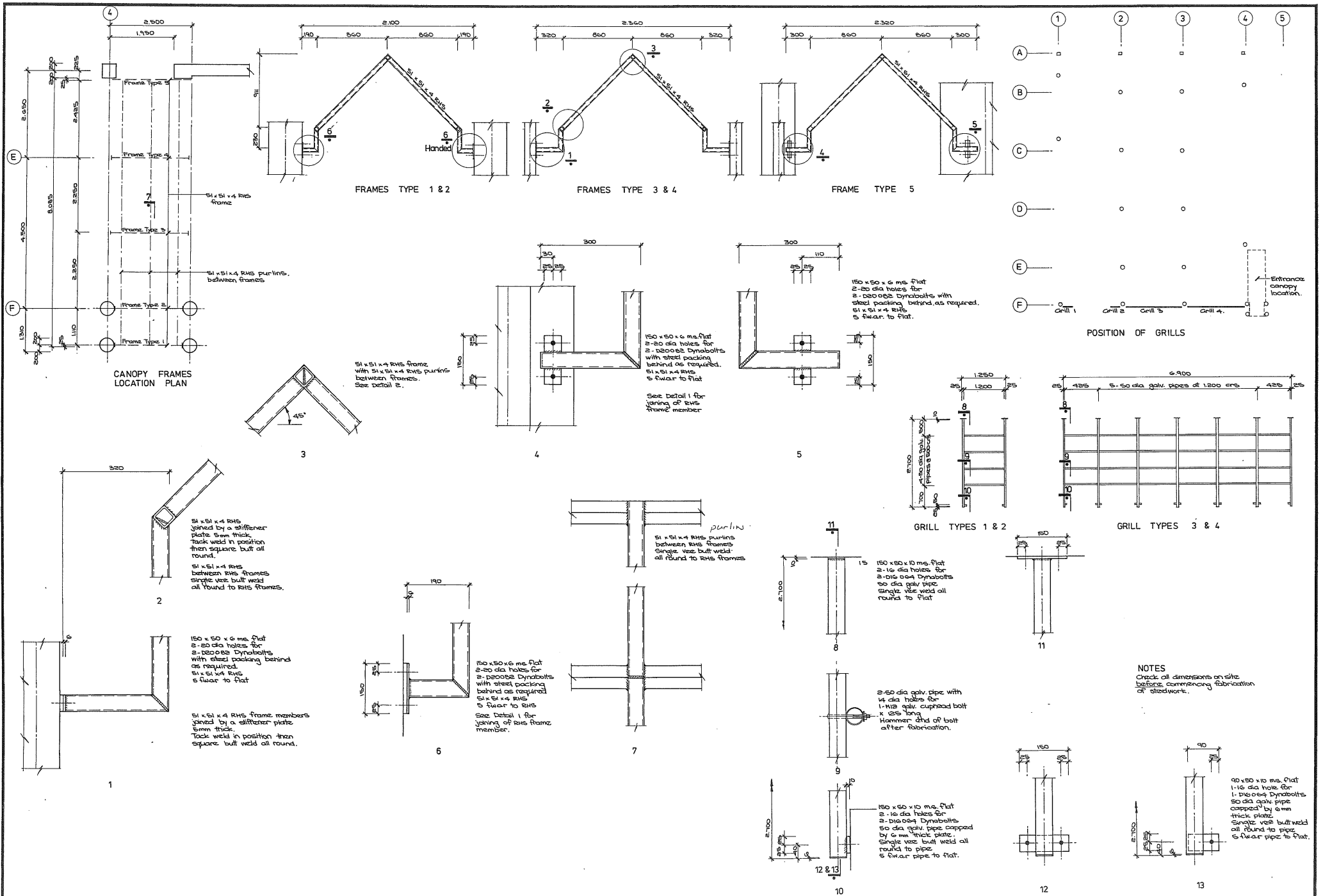


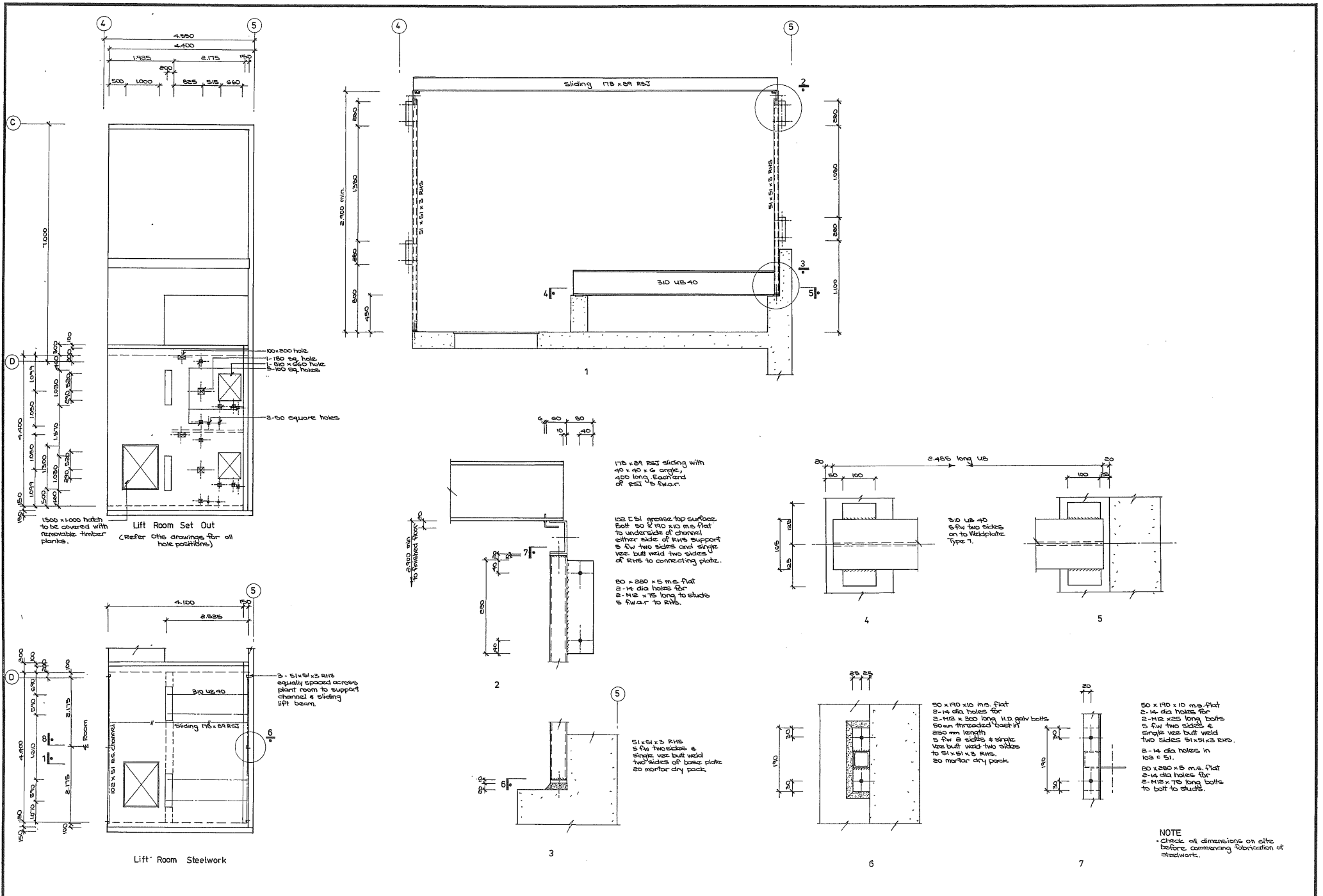
STAIR S13



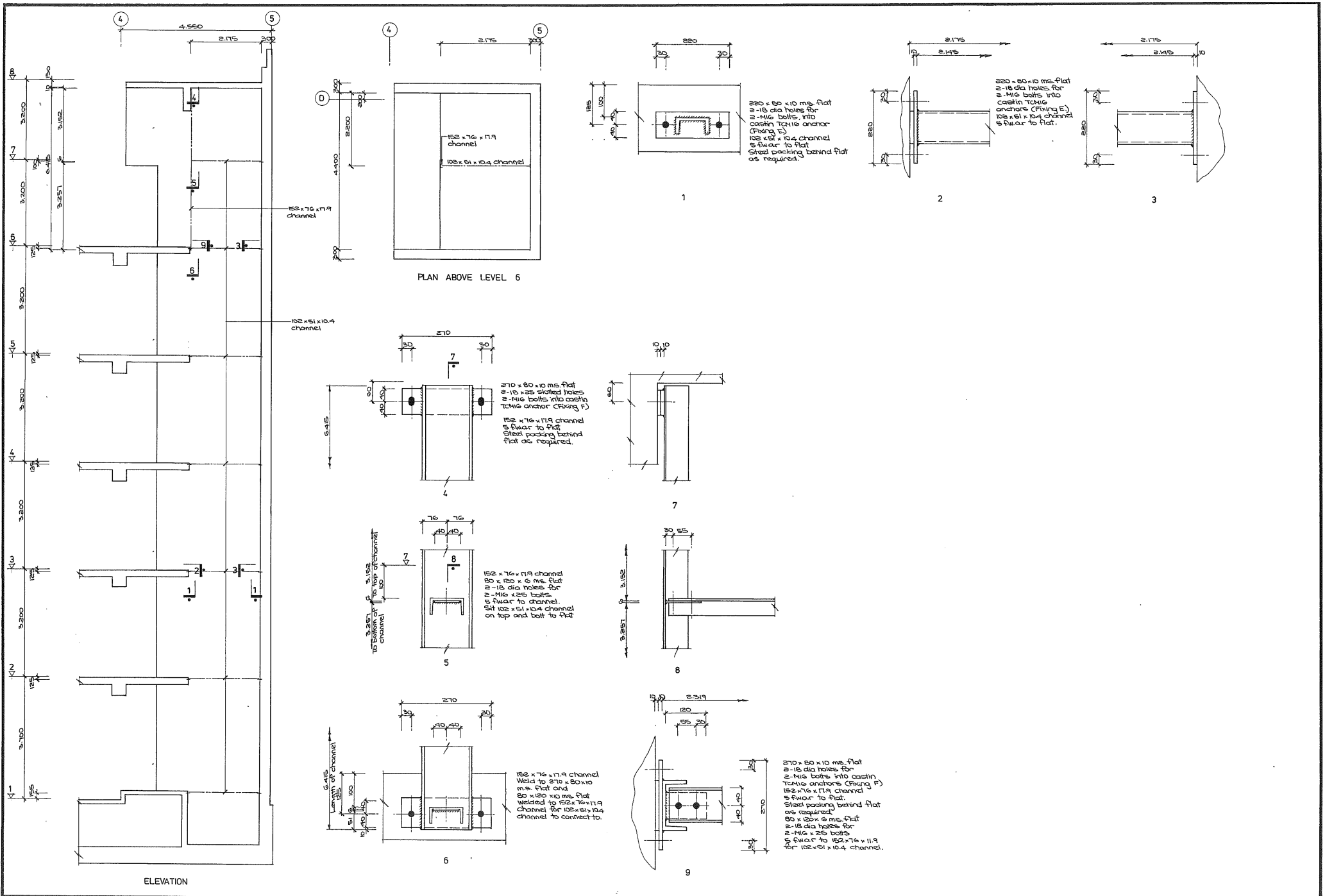
STAIR S21



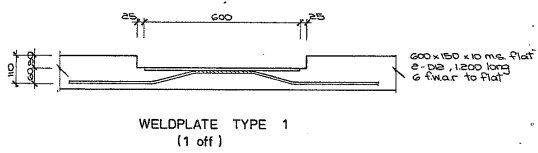




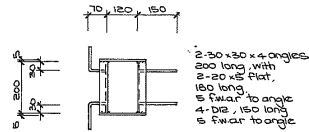
APPROVED	DATE	SCALE	SHEET	FILE
	AUG 1986	1:50 1:20 1:10 1:5	LIFT MACHINE STEELWORK	S37



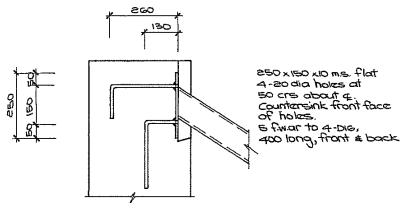




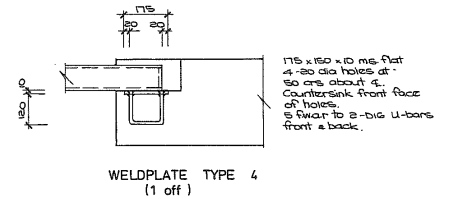
WELDPLATE TYPE 1  
(1 off)



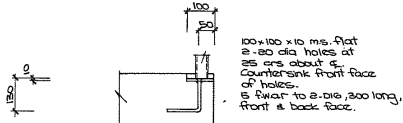
WELDPLATE TYPE 2  
(17 off)



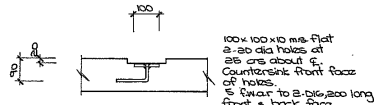
WELDPLATE TYPE 3  
(1 off)



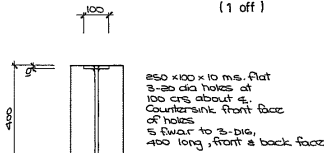
WELDPLATE TYPE 4  
(1 off)



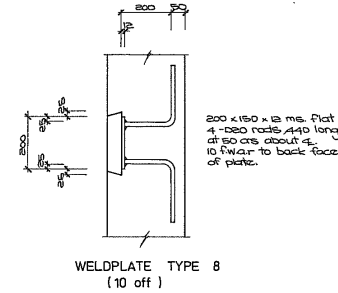
WELDPLATE TYPE 5  
(20 off)



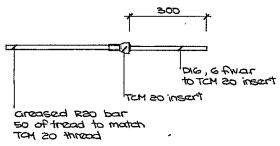
WELDPLATE TYPE 6  
(1 off)



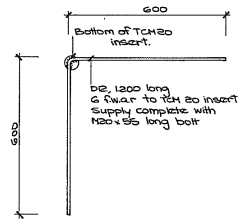
WELDPLATE TYPE 7  
(8 off)



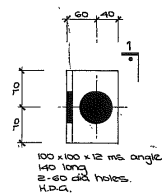
WELDPLATE TYPE 8  
(10 off)



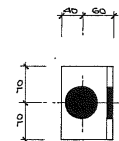
FIXING A  
(54 off)



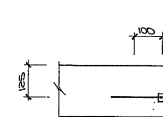
FIXING B  
(232 off)



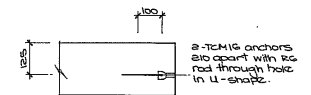
FIXING C  
(115 off)



FIXING D  
(232 off)



FIXING E  
(12 off)



FIXING F  
(2 off)

NOTES

- All reinforcing bands to be hot bent
- The welding of dissimilar metals, eg. reinforcing bars to TCM 20 inserts, will require appropriate rods & method.