

# BUILDING APPLICATION FORM.

WELLINGTON,

Date, *21<sup>st</sup> January* 190*7*

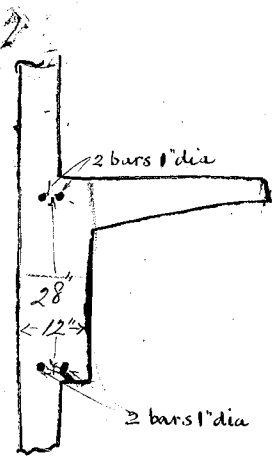
To the City Engineer,  
*Wellington.*

Sir,

I hereby apply for permission to *erect a Departmental Store*  
in *Johnston St* Street, Section *112 & 113*  
part of Town Acre..... for *Mess<sup>rs</sup> Kirkally & Stains*  
of *Wellington*..... according to Plans and Specifications  
deposited herewith at the estimated cost of *£12,800*

Yours faithfully, *Ferro Concrete Co. of Australasia*  
*per Owen F. Thomas.* *Ap<sup>o</sup> Auckland*  
Postal Address: *Ap<sup>o</sup> Tho<sup>s</sup> Ferruhull & Son*  
*Architects*  
*Wellington*

(1)  
Ferro Concrete Coy of Australasia



Front beam AB carrying roof.

Span 180" Total load 32168 lbs.

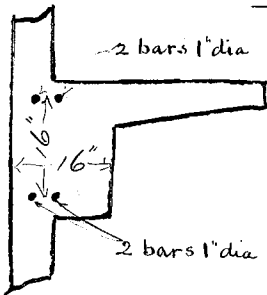
Moment 579024 ins.lbs.

Steel 2 bars 1" diam. Top.

Do Bottom.

$\frac{1}{2}$ " shear bars, spaced each side of C.L.

50", 21", 3".



Front beam AB carrying 3rd floor.

Span 180" Total load 21690 lbs.

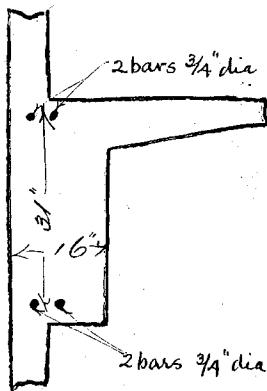
Moment 390420 ins.lbs.

Steel 2 bars 1" diam. Top.

Do Bottom.

$\frac{1}{2}$ " shear bars, spaced each side of C.L.

42", 8", 8", 5", 5", 5".



Beam AB carrying 2nd. floor.

Span 180" Total load 22028 lbs.

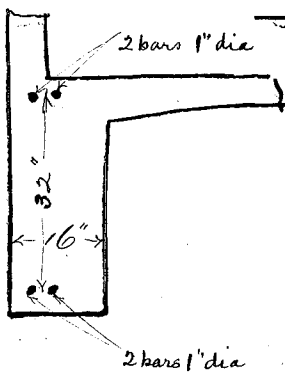
Moment 396504 ins.lbs.

Steel 2 bars  $\frac{3}{4}$ " diam. Top.

Do Bottom.

$\frac{1}{2}$ " shear bars, spaced each side of C.L.

50", 21", 3".



Beam AB carrying 1st floor.

Span 180" Total load 42616 lbs.

Moment 767088 ins.lbs.

Steel 2 bars 1" diam. Top.

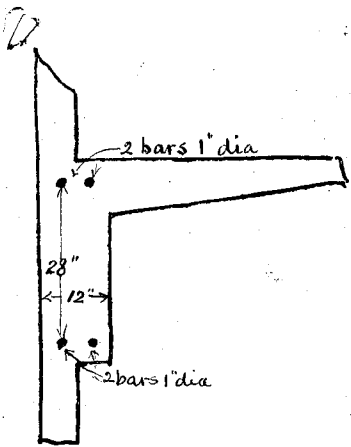
Do Bottom.

$\frac{1}{2}$ " shear bars, spaced each side of C.L.

50", 21", 3".



(2)



Beam BC carrying roof.

Span 197" Total load 37707 lbs.

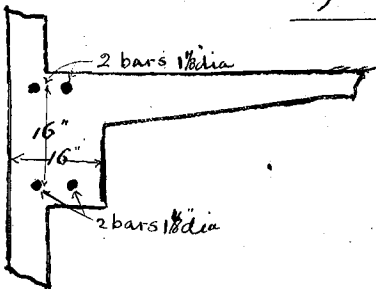
Moment 742828 ins.lbs.

Steel 2 bars 1" diam. Top.

Do Bottom.

$\frac{1}{2}$ " shear bars, spaced each side of C.L.

1 on C.L., 47", 24".



Beam BC carrying 3rd floor.

Span 197" Total load 25227 lbs.

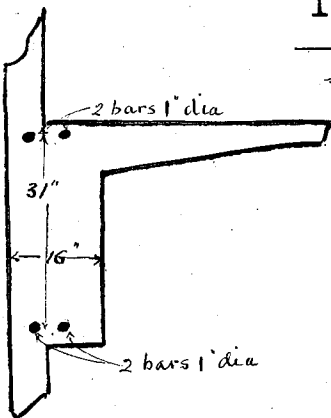
Moment 496972 ins.lbs.

Steel 2 bars  $1\frac{1}{2}$ " diam. Top.

Do Bottom.

$\frac{1}{2}$ " shear bars, spaced each side of C.L.

1 on C.L., 47", 24".



Beam BC carrying 2nd. floor.

Span 197" Total load 28957 lbs.

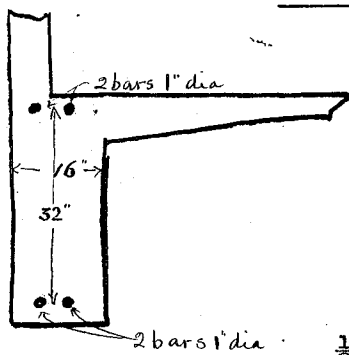
Moment 570453 ins.lbs.

Steel 2 bars 1" diam. Top.

Do Bottom.

$\frac{1}{2}$ " shear bars, spaced each side of C.L.

1 on C.L., 47", 24".



Beam BC carrying 1st. floor.

Span 197" Total load 50412 lbs.

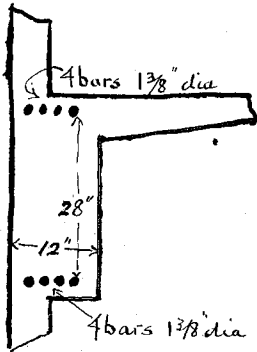
Moment 993116 ins.lbs.

Steel 2 bars 1" diam. Top.

Do Bottom.

$\frac{1}{2}$ " shear bars, spaced each side of C.L.

24", 32", 26".



Beam CD carrying Roof.

Span 384" Total load 7160 lbs.

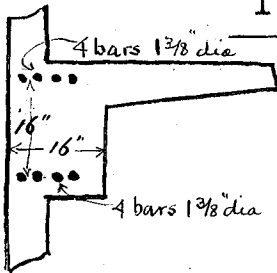
Moment 2752432 ins.lbs. 2,484,397

Steel 4 bars 1 3/8" diam. Top.

Do Bottom.

1/2" shear bars, spaced each side of C.L.

1 on C.L., 53", 25", 20", 18", 16", 14", 14".



Beam CD carrying 3rd floor.

Span 3384" Load 45850

Col. Load 15880

Total Load 61730 lbs.

Moment 2370432 ins.lbs. 2,301,773

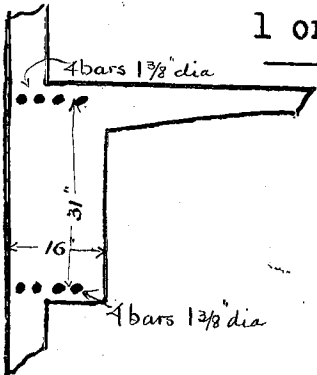
Steel 4 bars 1 3/8" diam. Top.

Do Bottom.

The Column load is considered as double the concentrated load.

1/2" shear bars, spaced each side of C.L.

1 on C.L., 83", 30", 20", 18", 16".



Beam CD carrying 2nd. floor.

Span 384" Total Load 62880 lbs.

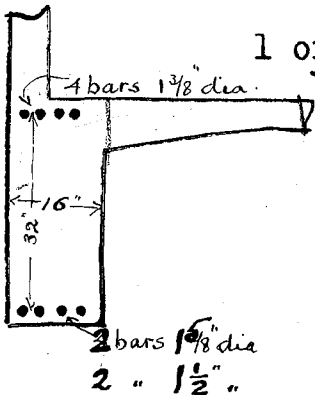
Moment 2414592 ins.lbs. = 2,454,917

Steel 4 bars 1 1/2" diam. Top.

Do Bottom.

1/2" bars, spaced each side of C.L.

1 on C.L., 61", 40", 20", 18", 16", 14".



Beam CD carrying 1st. floor.

Span 384" Total load 50000

Column 18000

68000 lbs.

Moment 2611200 ins.lbs.

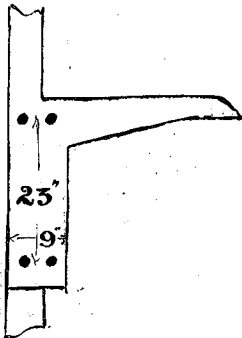
Steel 4 bars 1 1/2" diam. Top.

Do Bottom.

1/2" shear bars, spaced each side of C.L.

1 on C.L., 70", 40", 20", 18", 16", 14".

M. 3,620,561 with floors



Beam BG.

Span 204". Total load 84600 lbs.

Moment 1725840" lbs

Steel 2 bars 1 3/4" dia. Top.

ditto Bottom.

3/4" shear bars, spaced each side of C.L.

33", 10", 8", 7 1/2", 7 1/2", 6", 5", 5", 5".



Beam AE.

Span 204". Total load 29240 lbs.

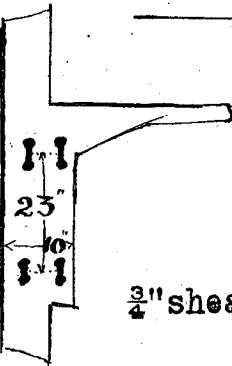
Moment 596496" lbs.

Steel 2 bars 1 1/8" dia. Top.

ditto Bottom.

3/4" shear bars, spaced each side of C.L.

33", 16", 12", 9", 6", 6"



Beams KN, MR, & DJ.

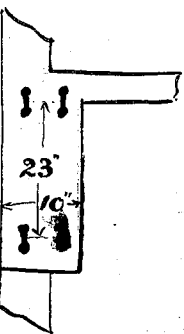
Span 252". Total load 166740 lbs.

Steel 2,70 lbs rails Top

ditto Bottom

3/4" shear bars, spaced each side of Centre Line

43", 14", 12", 10", 10", 6", 6", 4", 4"



Beams NZ, OZ & QS.

Span 300". Total load 132773 lbs.

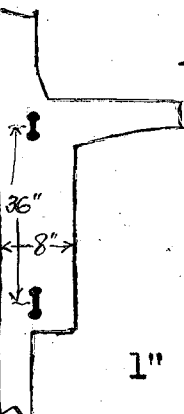
Moment 3983190" lbs.

Steel 2,70 lbs rails Top.

ditto Bottom.

3/4" shear bars, spaced each side of C.L.

43", 14", 12", 10", 10", 6", 6", 4", 4"



Beams NZ & OZ in water tower.

Span 300" Total load 122161

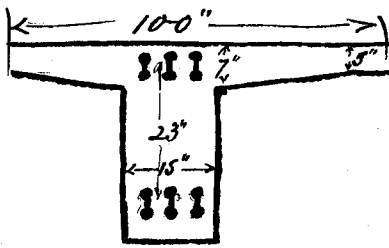
Moment 3664824 ins.lbs.

Steel One 70 lbs rail. Top & Bottom.

1" shear bars, spaced each side of C.L.

36", 20", 16", 9", 9", 9", 9", 6", 6", 6", 6", 6", 4"

$M = 8,110,080$  inch Pounds



Beam HL.

Span 300"

Total load 266038 lbs.

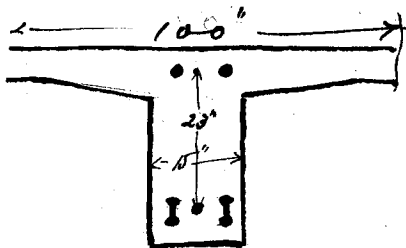
Moment 7981140 ins.lbs.

Steel. Top 3 56lb. rails.

Bottom 3 70lb. rails.

Shear bars 1" diam. spaced as below on each truss.

C.L. 37", 20", 15", 9", 8", 8", 7", 7", 7", 5", 5", 4", 4", 4".



Beam LP.

Span 262"

Total load 209000 lbs.

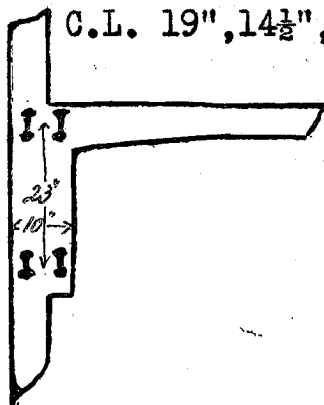
Moment 5475800 ins.lbs.

Steel. Top 2 bars 1 1/8"

Bottom 2 70lb. rails & 1 bar 1 1/8" diam.

Shear bars 3/4" diam. on each truss.

C.L. 19", 14 1/2", 12 1/2", 10 1/2", 8 1/2", 6", 6", 5", 5", 5", 4", 4", 4", 3", 3",



Beam EK.

Span 336"

Total load 189952 lbs.

Moment 6382387 ins.lbs.

Steel. Top 2 70lb. rails.

Bottom do

Shear bars 1" diam. spaced each side of C.L.

C.L. 28", 14", 12", 10", 10", 9", 9", 8", 8", 7", 7", 6", 6", 5", 5", 4", 4", 4".

Beam JM.

Span 300". Total load 193956lbs.

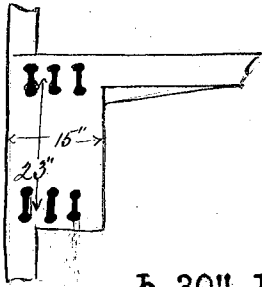
Moment <sup>4900000</sup> 5818680 ins.lbs.

Steel. Top <sup>2,70lb</sup> 3-56 lb. rails.

Bottom do. do

Shear  $\frac{3}{4}$ " diam. on each truss spaced.

E 30", 12", 6", 6", 5 $\frac{1}{2}$ ", 5 $\frac{1}{2}$ ", 5", 5", 5", 4", 4", 4", 3", 3",  
( 3", 3", 3", 3".



Beam GE.

Span 192" Total load 28616 lbs.

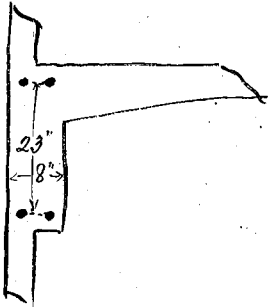
Moment 549427 ins.lbs.

Steel. Top 2 bars 1 $\frac{3}{8}$ " diam.

Bottom do

Shear bars  $\frac{1}{2}$ " diam. on each truss spaced.

E 73", 12", 10".



Secondary beam supporting tank. NZ 60Z

Span 168" Total load 38584 lbs.

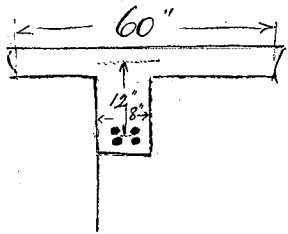
Moment 648211 ins.lbs.

Steel. 4 bars 1" diam. in form of truss.

Shear bars  $\frac{1}{2}$ " diam. on each truss.

C.L. 30", 12", 6", 5", 5", 4", 4", 3", 3", 3", 3", 2", 2".

M = 640,000



Beam CH.

,Span 262"

Total load 161493 lbs.

Moment 4,111,126 ins.lbs. 4,231,116

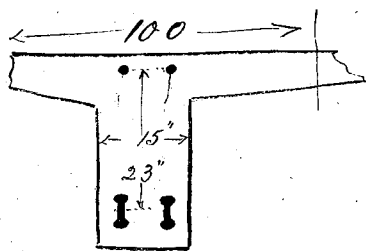
Steel. Top 2 bars 1 $\frac{1}{8}$ "

Bottom 2 70lb. rails.

Shear bars  $\frac{3}{4}$ " diam. spaced each side of C.L.

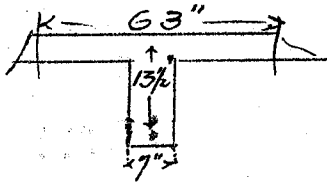
C.L. 43", 14", 12", 10", 10", 6", 6", 4", 4",

M = 5,140,833



Secondary beams QS & SW.

Span 16



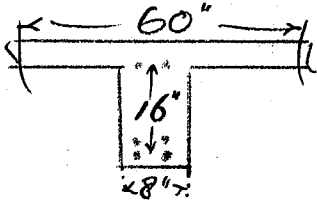
Load 25559 lbs.

Moment 40896 ft.lbs.

Two bars  $1\frac{1}{8}$ " diam. in truss.

Spacing of shear bars  $\frac{5}{8}$ " diam. from C.L.

$49\frac{1}{2}$ ", 8", 7", 6", 6", 4", 4", 4"



Beam SW.

Span 15 ft.

Load 66228 lbs.

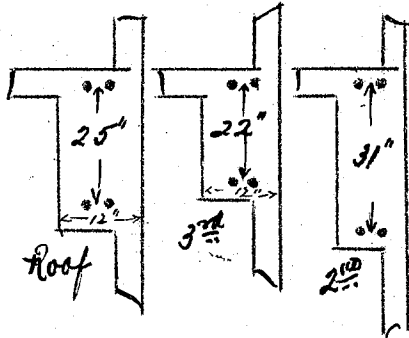
Moment 99342 ft.lbs.

Steel. 4 bars  $1\frac{1}{8}$ " diam. Bottom.

2 bars  $\frac{1}{2}$ " diam. Top.

$\frac{3}{4}$ " shear bars on each truss.

C.L. 50", 16", 10", 8", 6", 5", 5", 5".



Beam PQ. Roof, 3rd, & 2nd floor.

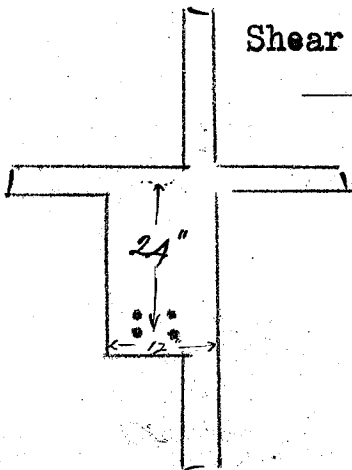
Span 16 ft.

Load 75618.

Moment 121000 ft.lbs.

Steel. 2 bars  $1\frac{3}{4}$ " diam. in top & bottom.

Shear bars  $\frac{3}{4}$ " diam. C.L. 43", 13", 9", 7", 7", 6".



P.Q. 1st floor.

Span 16 ft.

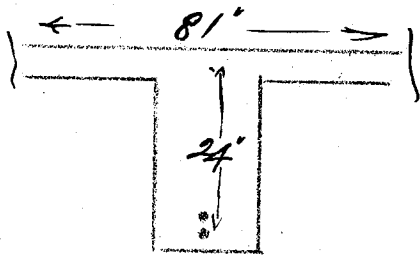
Load 81382 lbs.

Moment 140212 ft.lbs.

Steel 2 bars  $1\frac{1}{2}$ " diam.

2 bars  $1\frac{3}{4}$ " diam.

Shear bars  $\frac{5}{8}$ " diam. C.L. 33", 14", 12", 10", 8", 8".



Beam QR on all floors.

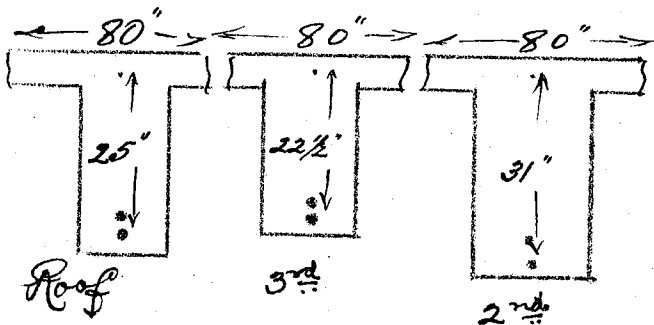
Span 15'6".

Load 48328 lbs.

Moment 74909 ft.lbs.

Steel. 2 bars in truss  $\frac{7}{8}$ " diam.

Shear bars  $\frac{5}{8}$ " diam. C.L.36



Beam NO. Roof, 3rd, & 2nd floor.

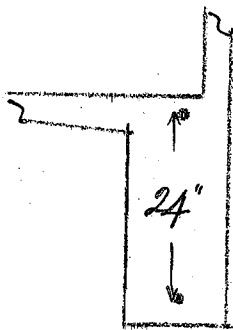
Span 12'3".

Load 40805 lbs.

Moment 51007 ft.lbs.

Steel 2  $\frac{7}{8}$ " bars in truss.

Shear bars  $\frac{5}{8}$ " diam. C.L. 16", 14", 12", 8", 6", 4", 2",



Beam NO 1st floor.

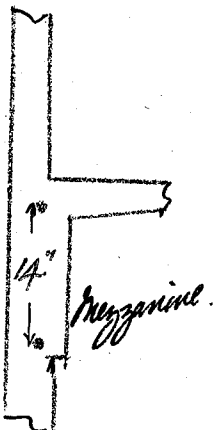
Span 12'6".

Load 17684 lbs.

Moment 22106 ft.lbs.

Steel. 1 bar 1" diam. Top & Bottom.

Shear bars  $\frac{1}{2}$ " diam. one on C.L., 52", 18".



Beam NO. Mezzanine floor.

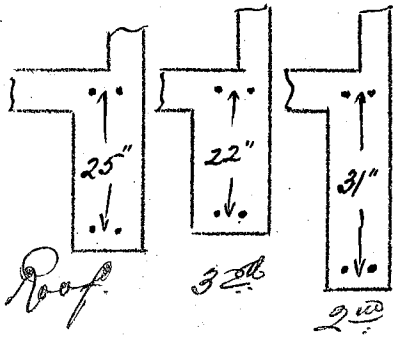
Span 12'3".

Load 10744 lbs.

Moment 13430 ft.lbs.

Steel 1 bar 1" diam. in Top

do in Bottom.



Beam OP. Roof, 3rd, & 2nd floor.  
Span 19 ft.

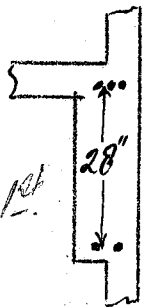
Load 31536 lbs.

Moment 59918 ft.lbs.

Steel. 2 bars  $1\frac{1}{8}$ " diam. Top & Bottom.

Shear bars  $\frac{1}{2}$ " diam. (C.L.)

1 on C.L., 60 $\frac{1}{2}$ ", 30", 15".



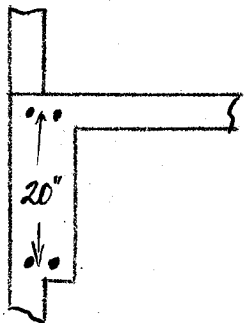
Beam OP. 1st floor.

Steel. 3 bars 1" diam. Top.

2 do Bottom.

Shear bars on each truss, spaced from C.L.

C.L. 60 $\frac{1}{2}$ ", 30", 15".



Beam SX.

Span 11 ft. 6 ins.

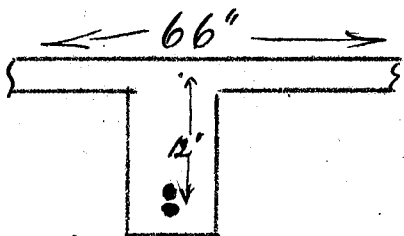
Load 19045 lbs.

Moment 22901 ft.lbs.

Steel 2 bars  $\frac{3}{4}$ " Top & Bottom.

Shear bars  $\frac{1}{2}$ " diam.

1 on C.L., 39", 28".



Secondary beams between SW & X<sub>1</sub>X<sub>2</sub>

Span 11 ft. 6 ins.

Load 16744 lbs

Moment 19255 ft.lbs.

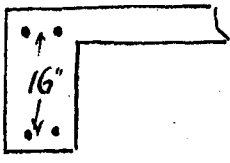
Shear bars  $\frac{3}{4}$ ".

C.L. 36", 5", 5", 4", 4", 4", 3", 3", 3", 3".

Steel 2 bars 1" diam.



2  
X1 X2



Beam X<sub>1</sub>X<sub>2</sub>

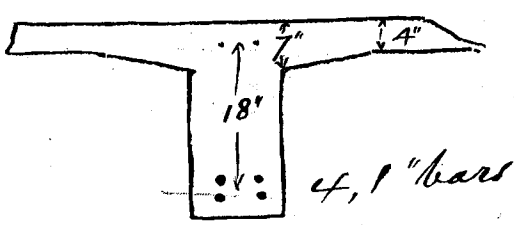
Span 16 ft.

Load 30904

Moment 58446

Steel. 2 bars 1" diam. Top & Bottom.

Shear bars 1/2" diam. 1 on C.L., 64", 9", 8", 7", 6".



Beams BG, CH.

Span 16'6".

Load 41465 lbs.

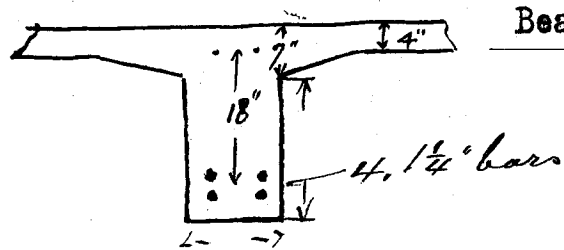
Moment 68005 ft.lbs.

816060 inch lbs

Steel. 4 bars 1" diam.

Shear bars 1/2" diam. 1 on C.L., 43", 36", 18".

(stress in steel = 23,300 lb)  $M^a = 566,400$



Beam F-HL.

Span 258".

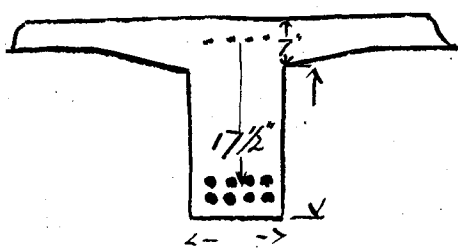
Load 53905 lbs.

Moment 114932 ft.lbs. = 1,379,184 inch lbs

Steel 4 bars 1 1/4" diam.

Shear bars 5/8" diam. C.L. 58", 24", 14", 12", 10", 8".

(stress in steel = 23200 lb)  $M^R = 959400$  inch lbs



J  
Beam HL-6M.

Span 32'

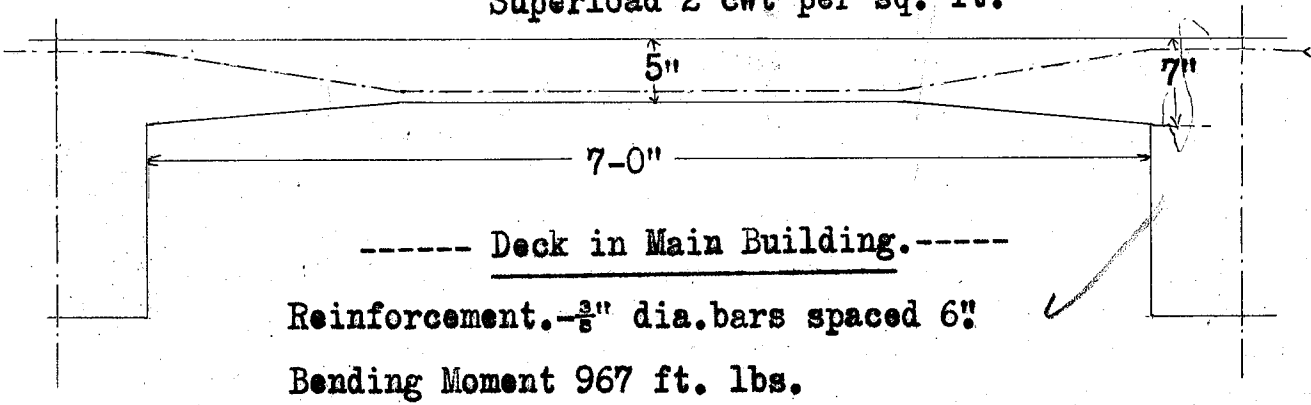
Load 88532 lbs.

Moment 283302 ft.lbs.

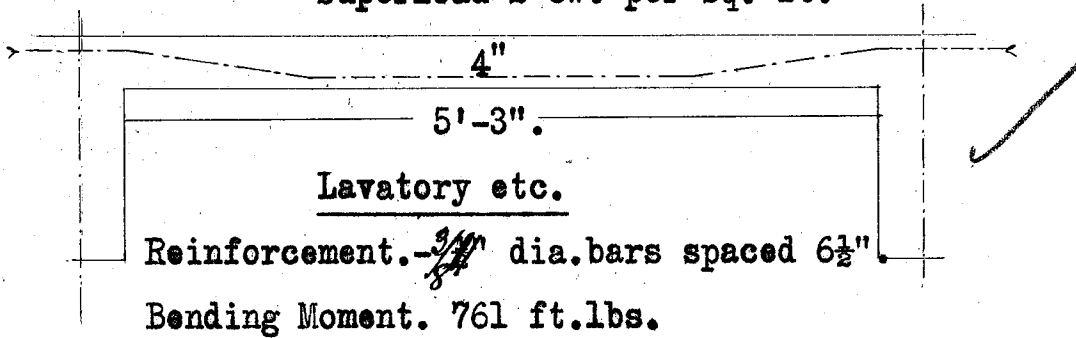
Steel. 4 bars 1" diam. Top.

4 bars 1 1/8" diam. Bottom.  
do 1 1/2" do

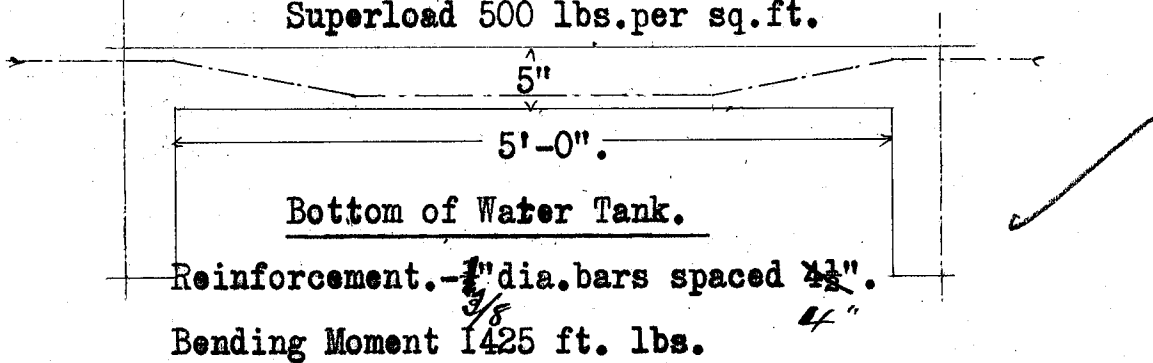
Superload 2 cwt per sq. ft.



Superload 2 cwt per sq. ft.



Superload 500 lbs. per sq. ft.



Owen P. Thomas

S P E C I F I C A T I O N

relating solely to the Ferro-Concrete portion  
of a building for  
Messrs. Kirkoaldie & Stains,  
W E L L I N G T O N .

---oOo---

Specification.

GENERAL: The building to consist of reinforced concrete foundations, piles, columns, girders, beams, floors and walls, as per the following specification.

LOADING: The loading to be 2 cwt. per square foot on all floors except lavatories, which are to carry  $1\frac{1}{2}$  cwt. per square foot.

DRAINAGE: The drainage of the building to conform to the City Council's Bye-Laws.

SIZE: The size of the building to be 111'0" x 64'0" more or less.

FOUNDATIONS: The foundations are to be piles with 14" x 14" Ferro-Concrete piles 20 feet long under all columns and piers. Each pile to be capable of safely resisting a load of 74 tons with a factor of safety of four.

COLUMNS: The columns supporting the first floor to be 24" x 24" reinforced with 8 bars and capable of safely resisting a load of 284 tons with a factor of safety of four.

The columns supporting the second floor to be 20" x 20" reinforced with 5 bars, and capable of resisting safely a load of 212 tons with a factor of safety of four.

The columns supporting the third floor are to be 16" x 16" reinforced with 4 bars, and capable of resisting safely a load of 140 tons, with a factor of safety of four.

RAW

The Columns supporting roof to be 14" x 14" reinforced with 4 bars, and capable of resisting safely a load of 69 tons with a factor of safety of four.

GIRDERS: The main girders in the building to be 12" wide by 30" deep, with spans ranging from 30'9" to 29'9" and all reinforced to safely carry a running load of  $32\frac{1}{2}$  cwt. per lineal foot, plus the dead weight of the structure.

BEAMS: The secondary beams are 5" x 9" with spans ranging from 15'3" to 12'6", and are reinforced to safely carry a running load of 12.6 cwt. per lineal foot, plus the dead weight of the structure.

DECKING: All decking to be 4" thick and reinforced to carry 2 cwt. per square foot.

WALLS: Basement walls to be 8" thick reinforced horizontally and vertically to withstand earth pressures.

All other walls to be 4" thick, reinforced horizontally and vertically.

MONOLITH: The building when finished to be a complete monolith.


STAIRS: The stairs to be of reinforced concrete and placed as shown in Architect's plans.

WINDOWS & DOORS: To be built to the sizes and in accordance with the Specification of the Architect.

MOULDINGS: All mouldings to be carried as shown on Architect's plans.

RENDERING: The outside of all walls to be finished quite smooth with a  $\frac{1}{4}$ " rendering of cement plaster, composed of one part of cement to two parts of clean sharp sand.

CONCRETE: Concrete for piles to consist of a mixture in the pro-



portion of 8 stone, 4 sand, 3 cement, and for the remainder of the structure to consist of a mixture in the proportion of 10 stone, 5 sand, and 3 cement, free from deleterious matter.

**CEMENT:** The cement to be of approved brand capable of exerting a tensile resistance to fracture of 400 lbs. to the square inch when gauged neat, after standing one day in air and six days in water, and to be subject to boiling tests.


**BONDING:** The bonding of all work to be thoroughly carried out, the end of steel bars being hooked or fish-tailed, or to be otherwise suitably connected to adjacent work.

Where work is cut or broken away to admit of binding other work, the joints are to be thoroughly good, and the broken parts flushed up and trowelled smooth, and the whole washed over with a mixture of neat cement.

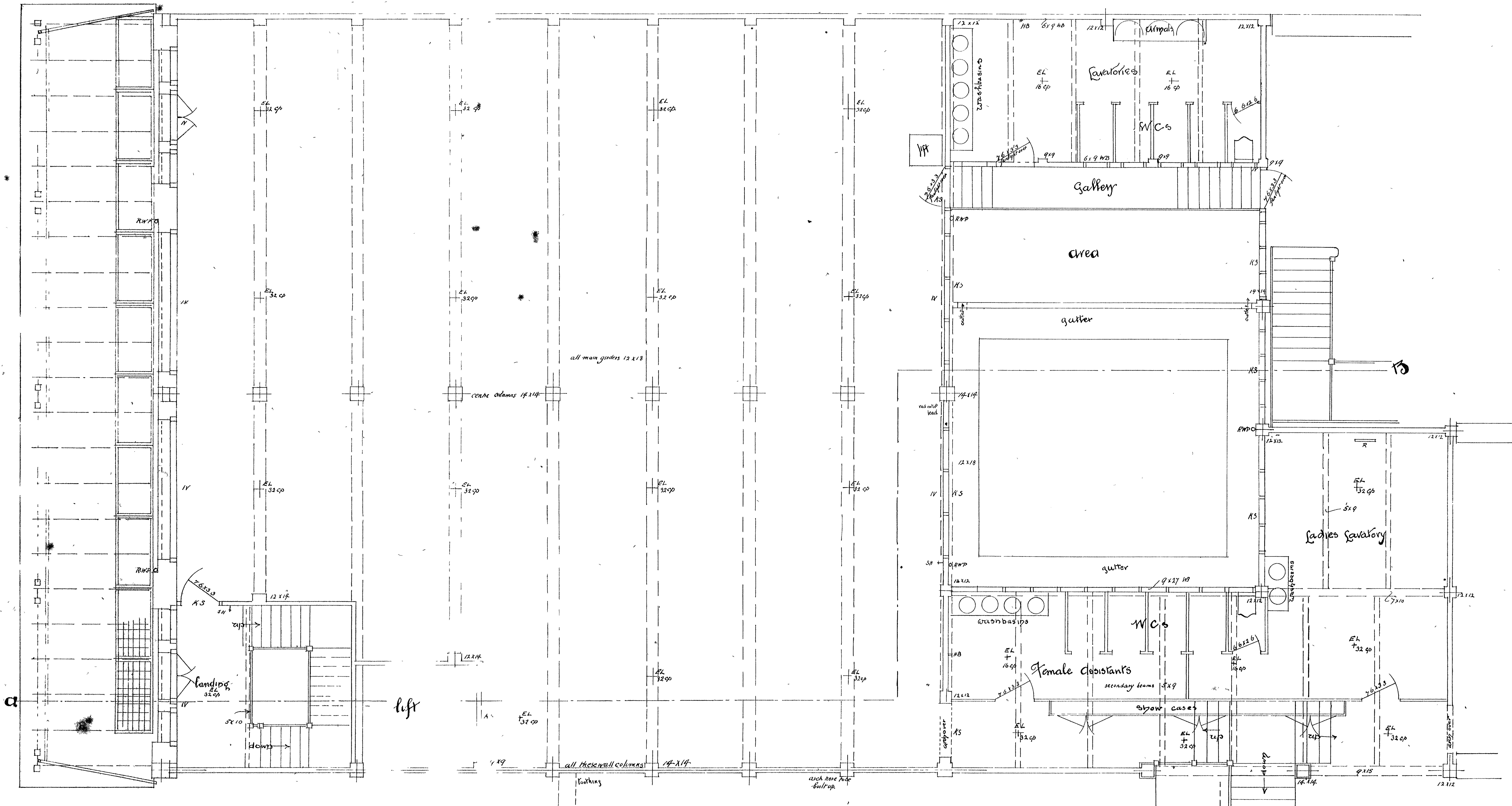
**STEEL:** The steel used to be of an approved brand capable of exerting a tensile resistance to fracture of 28/32 tons per square inch, with 20% elongation in an 8" length. The factor of safety to be four times the working load.

**WORKMANSHIP:** The workmanship of all branches to be the best of their respective kinds.

**TIME FOR COMPLETION:** The whole of the work to be completed within the space of eleven calendar months from the date of signing of the Contract, but the Contractors will not hold themselves responsible for delay due to strikes, loss of material in transit, or the Act of God, but they will make all reasonable effort to carry out the Contract within the specified time.



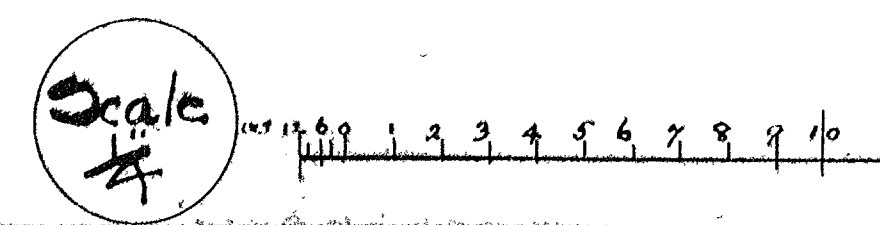
Chief Engineer.

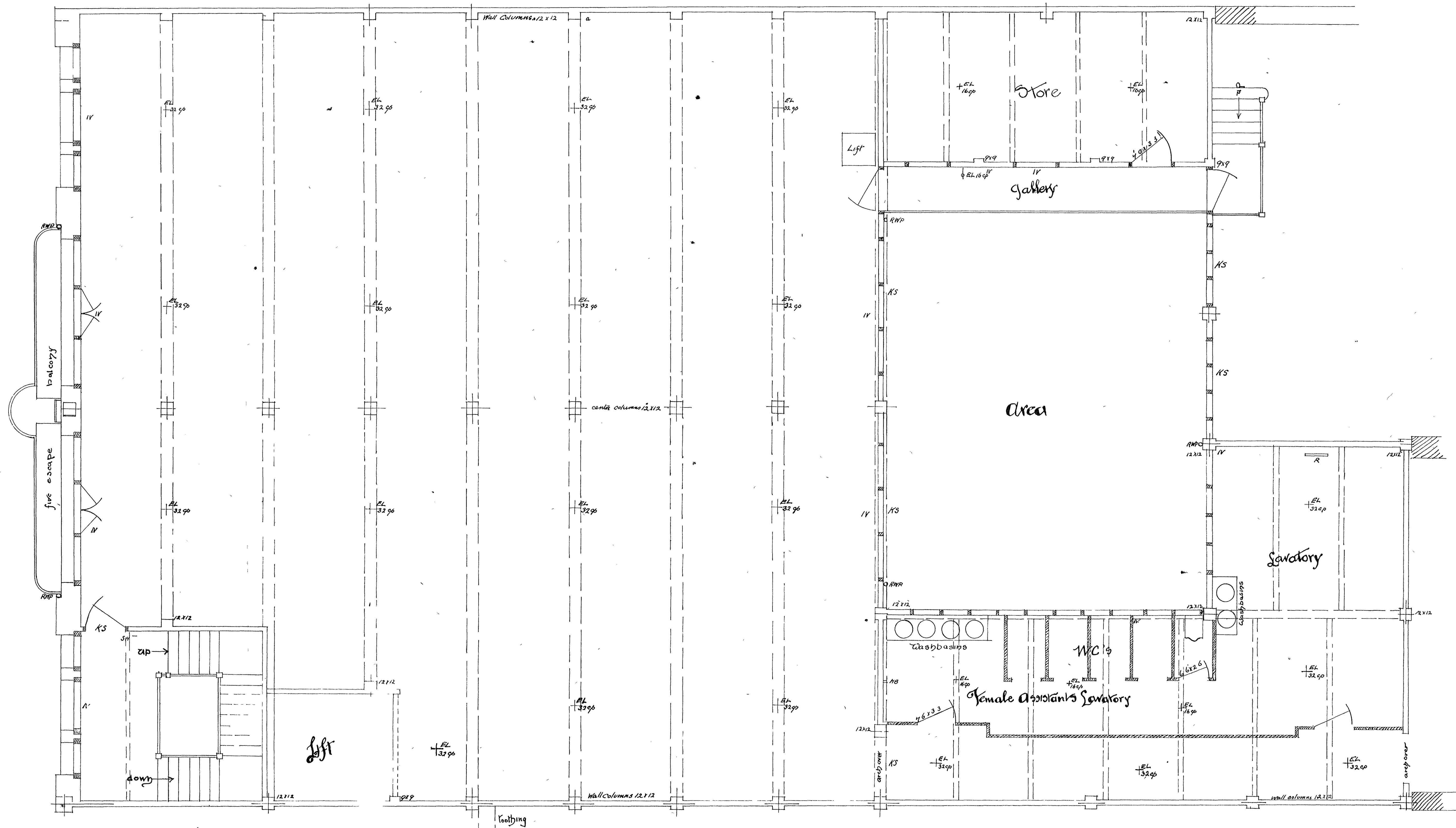


1<sup>st</sup> floor Plan

# Messrs Kirkealdie & Stains Building.

THOS TURNBULL & SON FRIBA  
ARCHITECTS  
Wellington New Zealand





2<sup>nd</sup> floor Plan

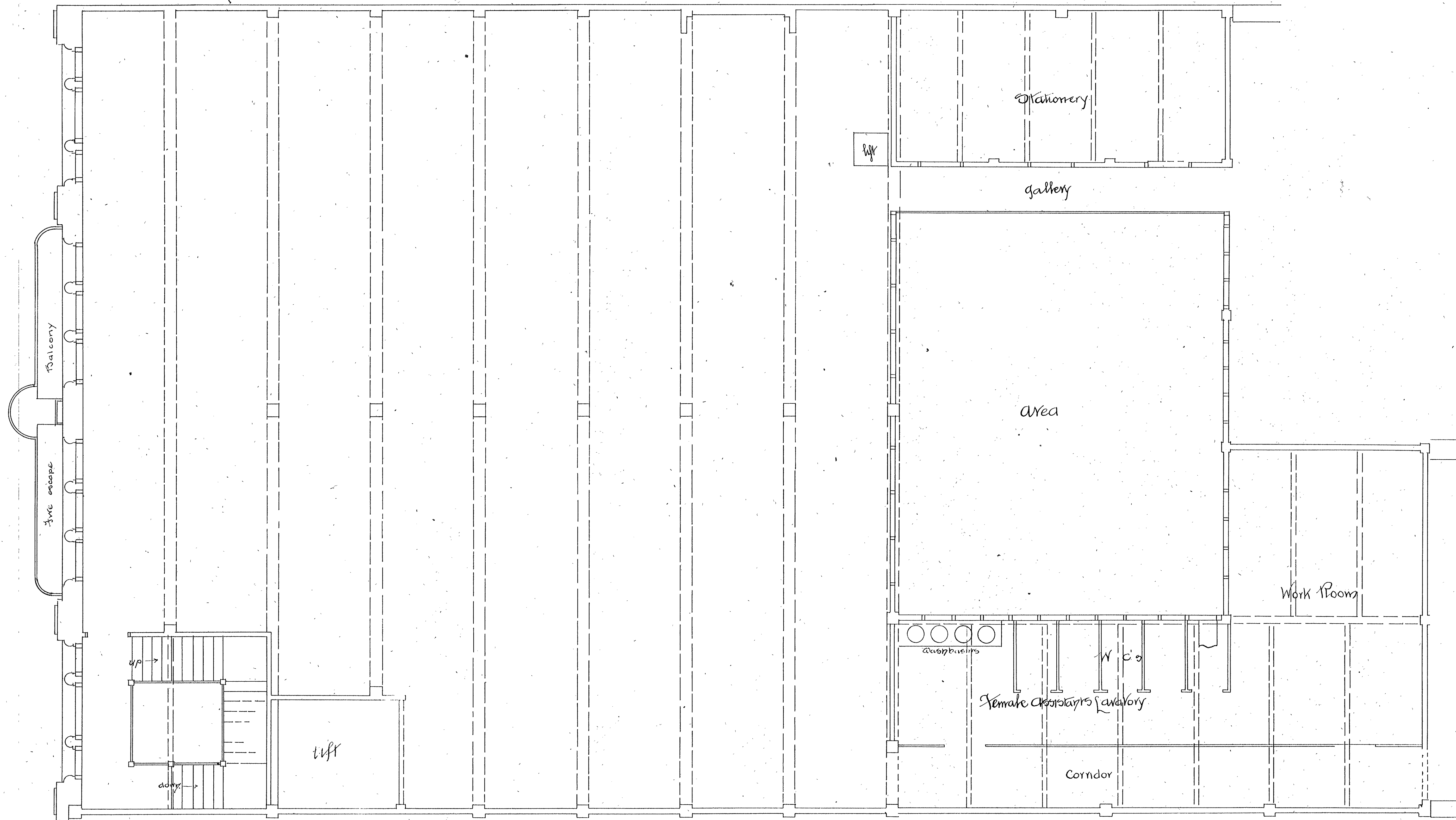
# Messrs Kirkealdie & Stains Building.

THOS TURNBULL & SONS FRIBA  
Wellington N.Z. Architects

Scale  
4





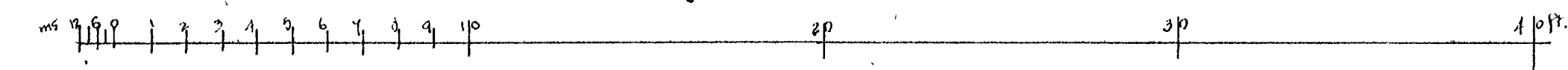


— 3<sup>rd</sup> floor Plan —

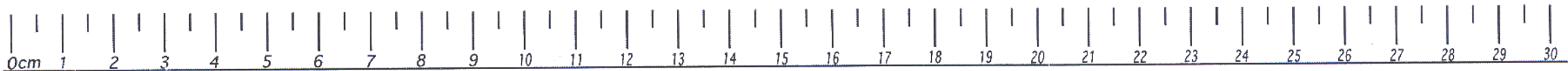
# Messrs Kirkealdie & Stains Building.

Thos Turnbull & Son FRIBA  
Architects

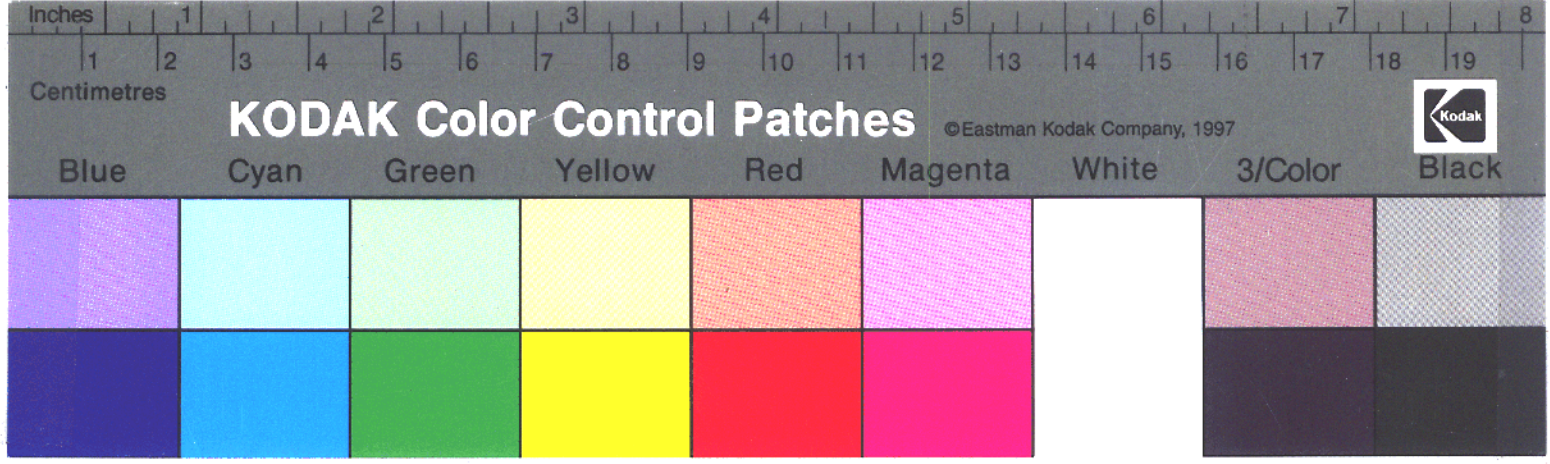
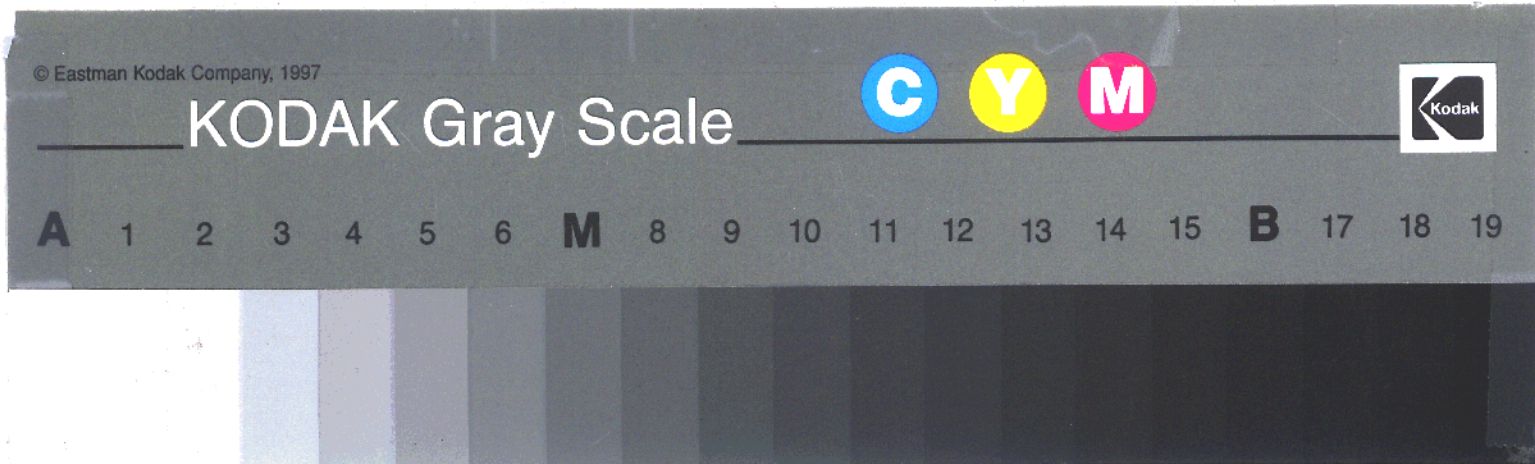
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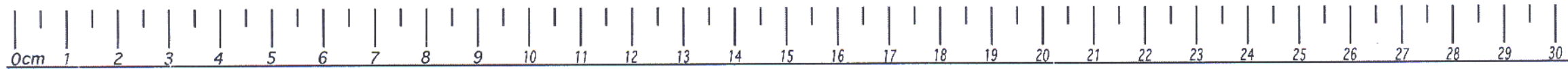




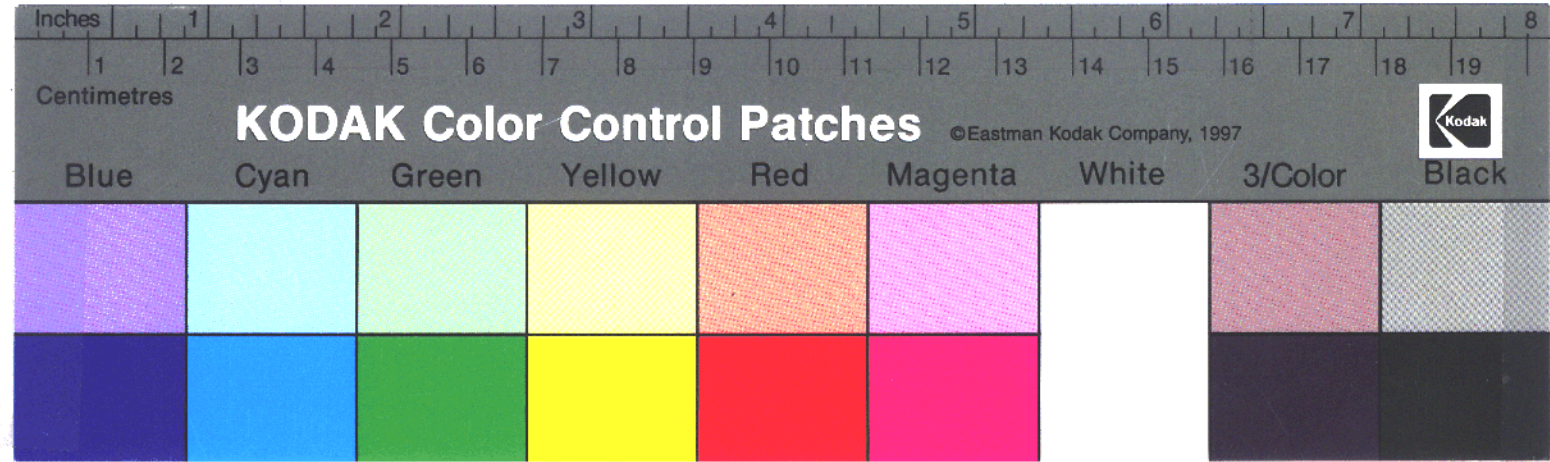
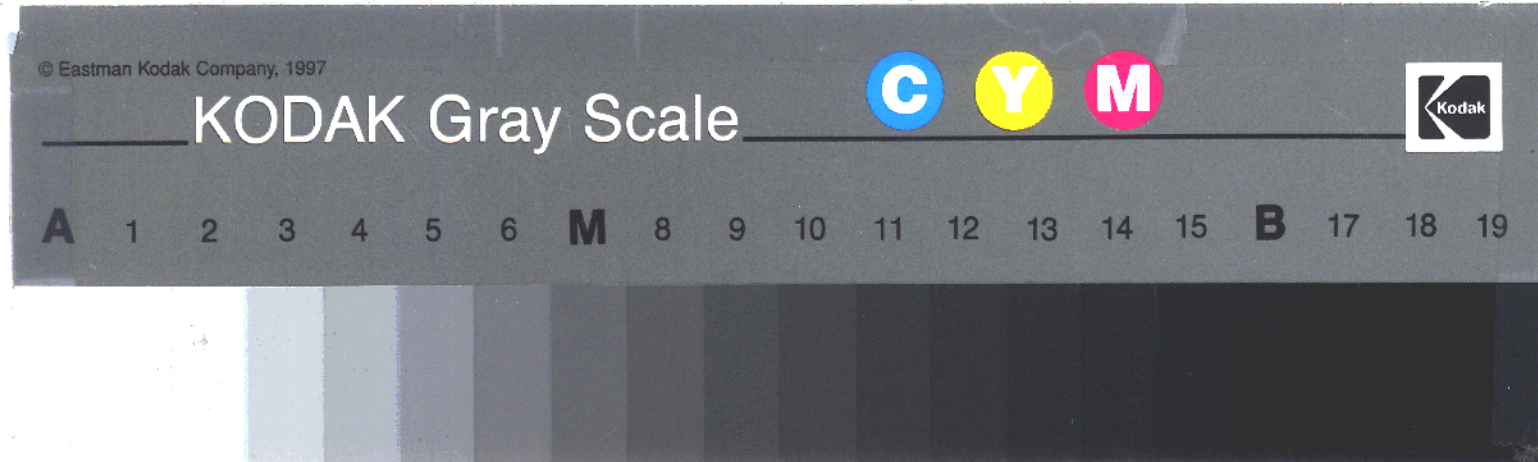
DESKTOP IMAGING LTD  
Quality Imaging Technology



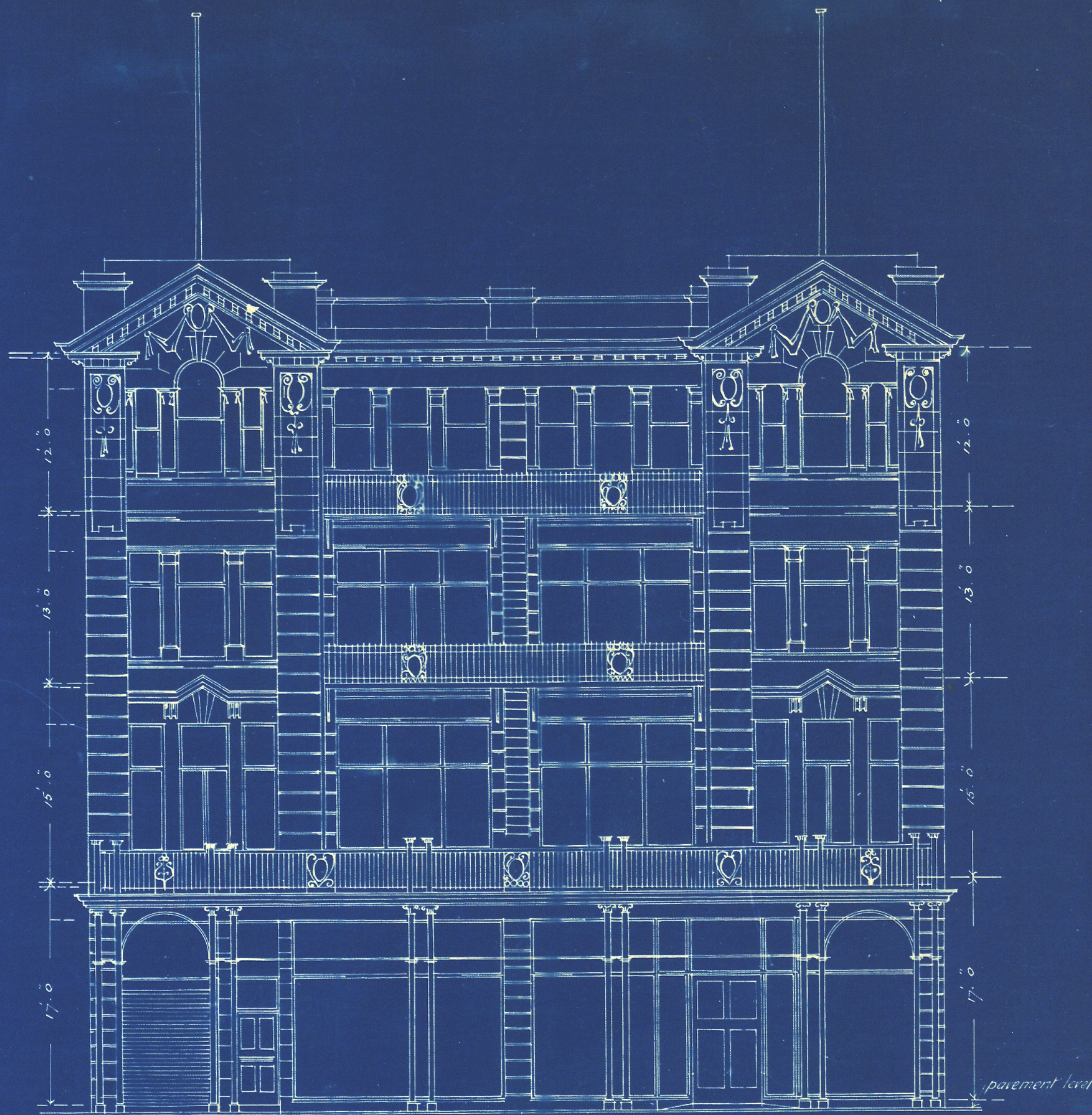




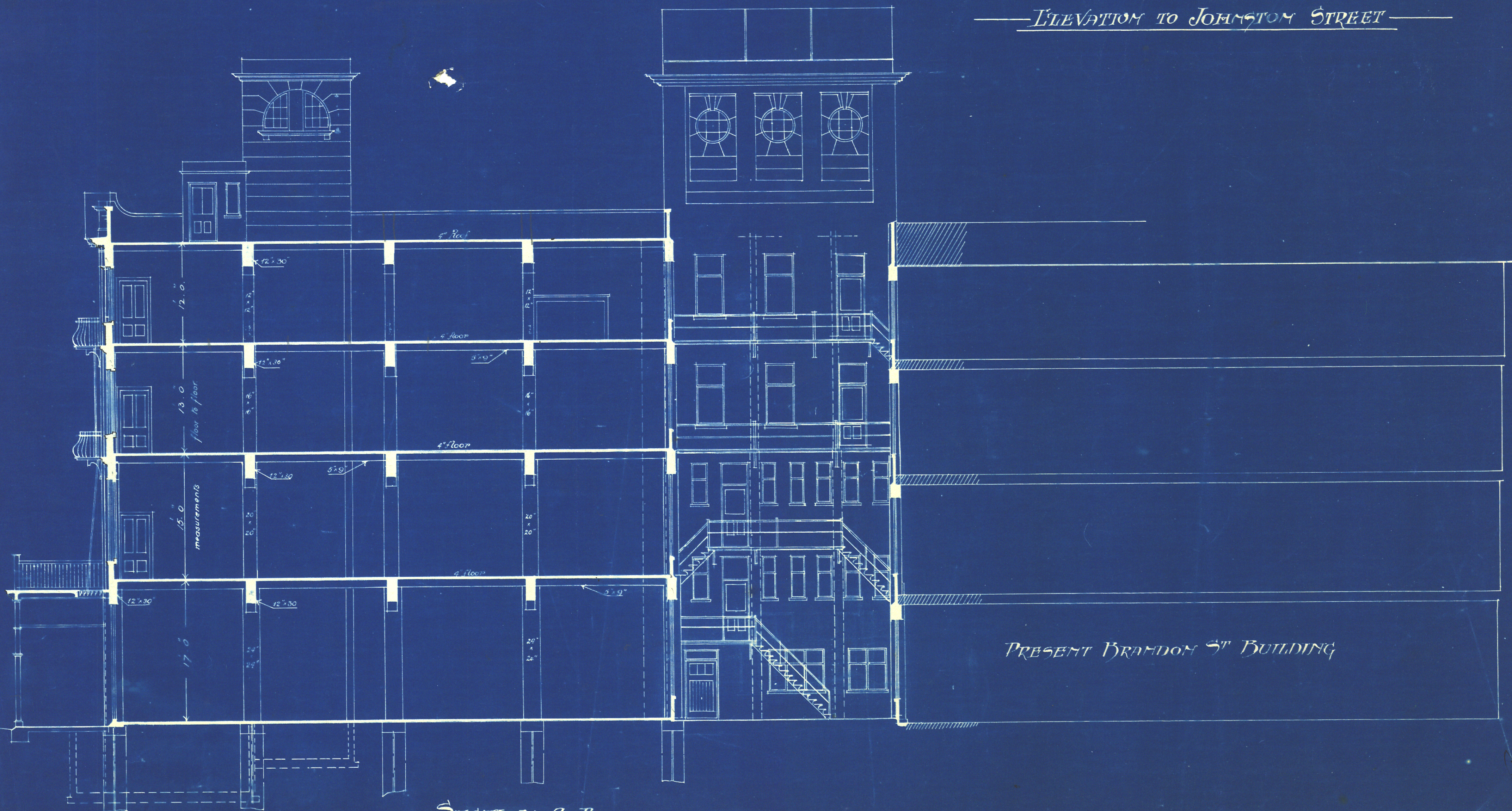
DESKTOP IMAGING LTD  
Quality Imaging Technology







ELEVATION TO JOHNSTON STREET

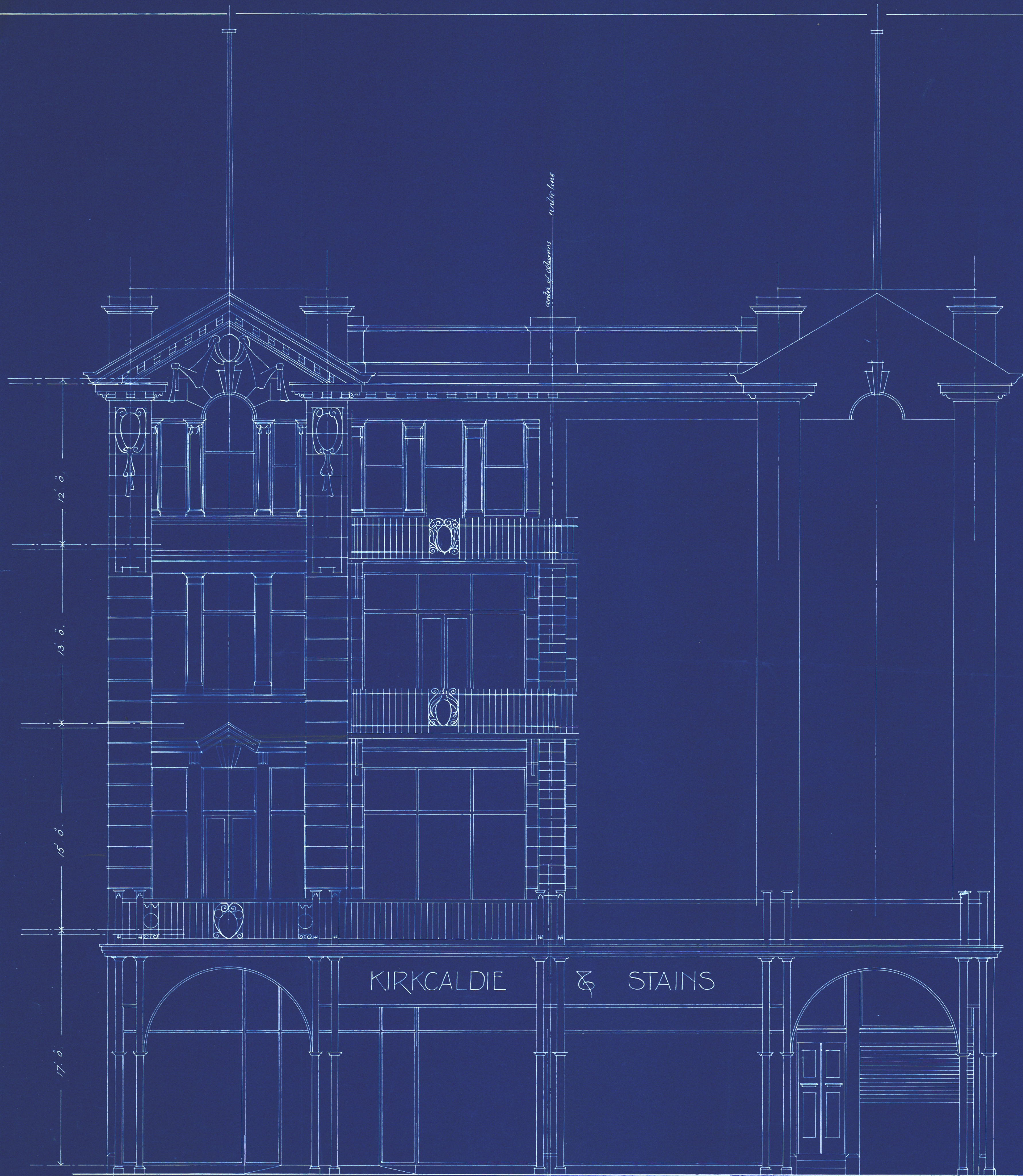


SECTION A. B.

PRESENT BRANDON ST. BUILDING

M. J. G. S.  
Chief Architect





Elevation to Johnson Street.

# Messrs Kirkealdie & Stains Building.

N.B.—These Plans are the property of the Fern Concrete Company of Australasia, Limited, and are to be used for no other purpose whatsoever than that intended, and are submitted on the understanding that they are private and confidential.

Drawing No 6  
Sheet No 47  
Date 13. 5. 07. Ab.







Section on line A to B.

Messis Kirkealdie & Stains Building

Scale  
1/4"

12 0

13 0

15 0

17 0

12 0

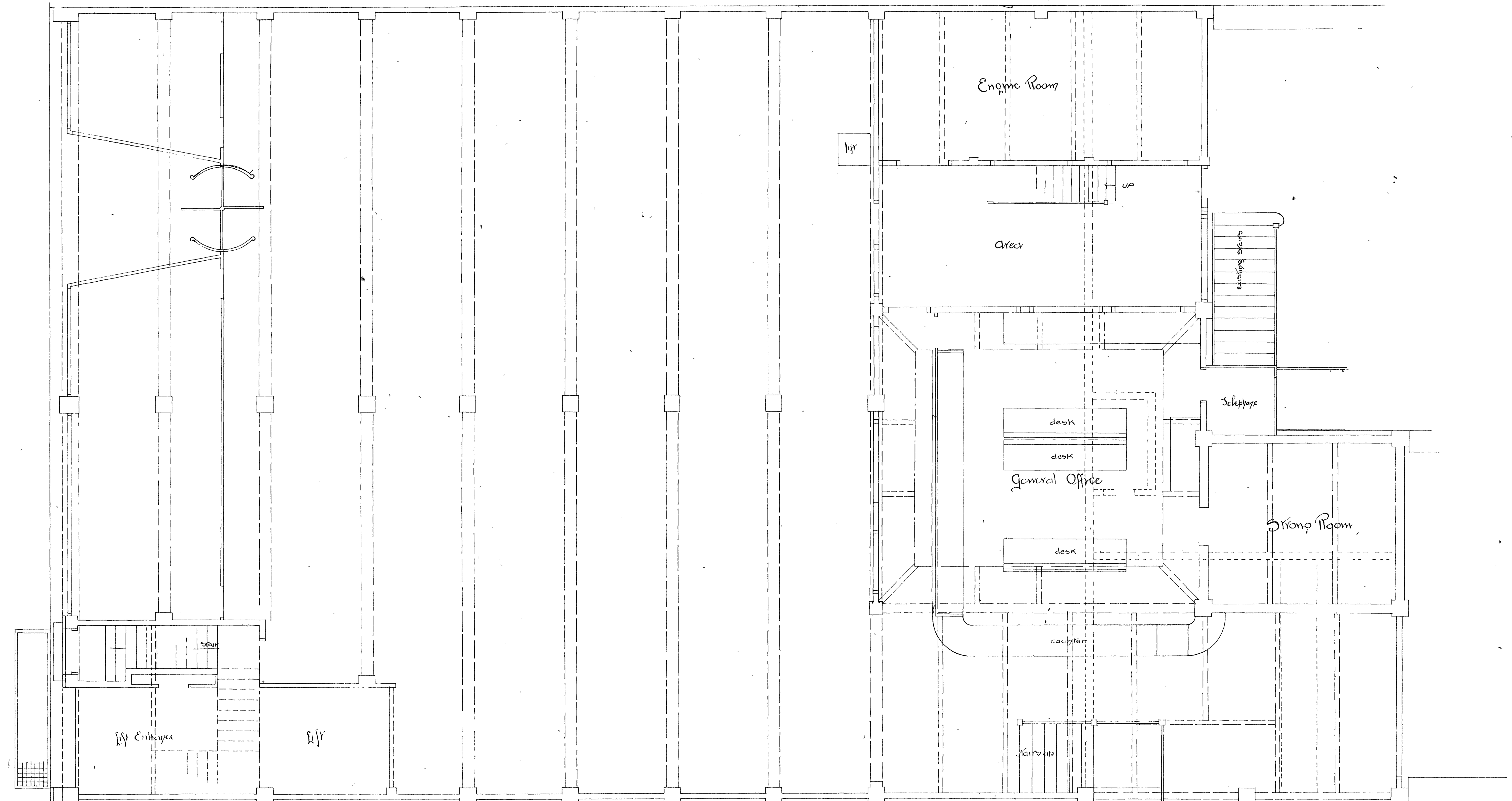
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4

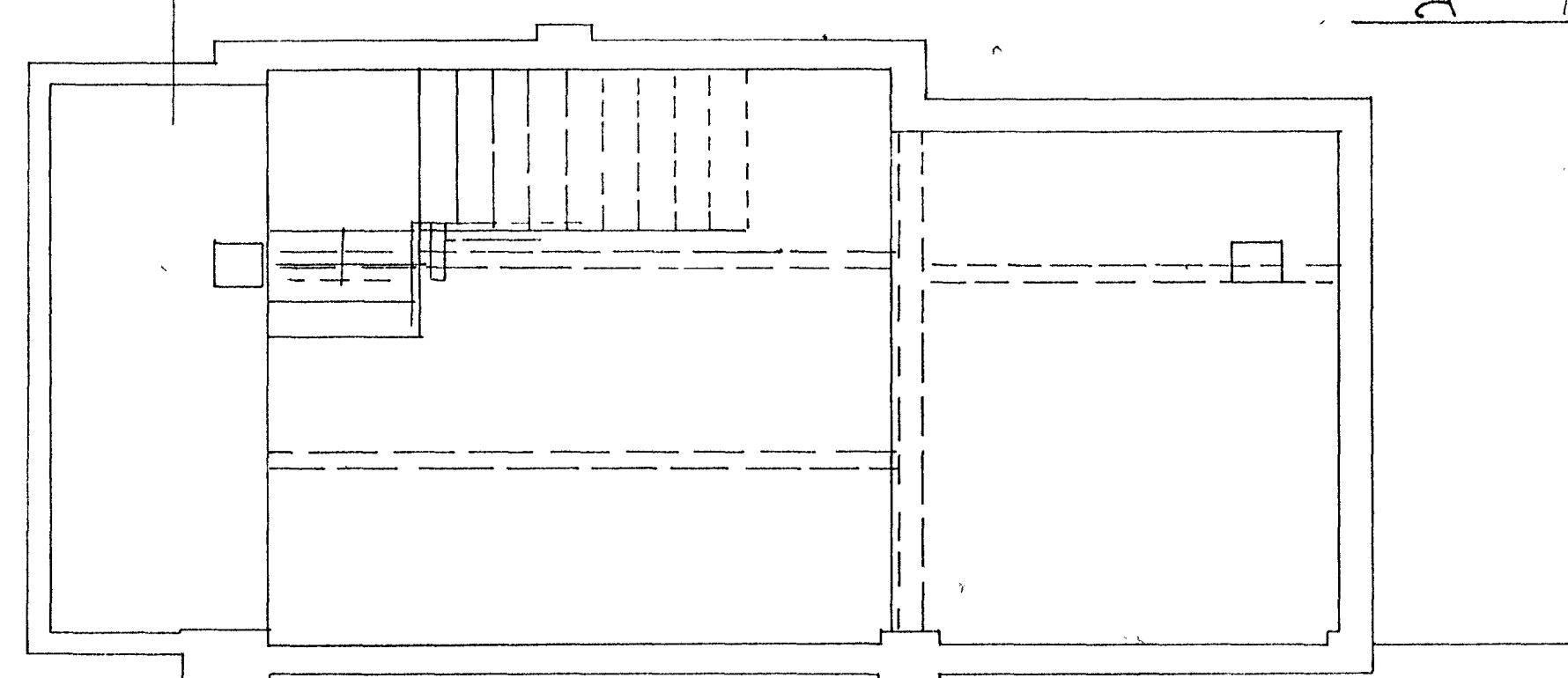
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mezzanine floor

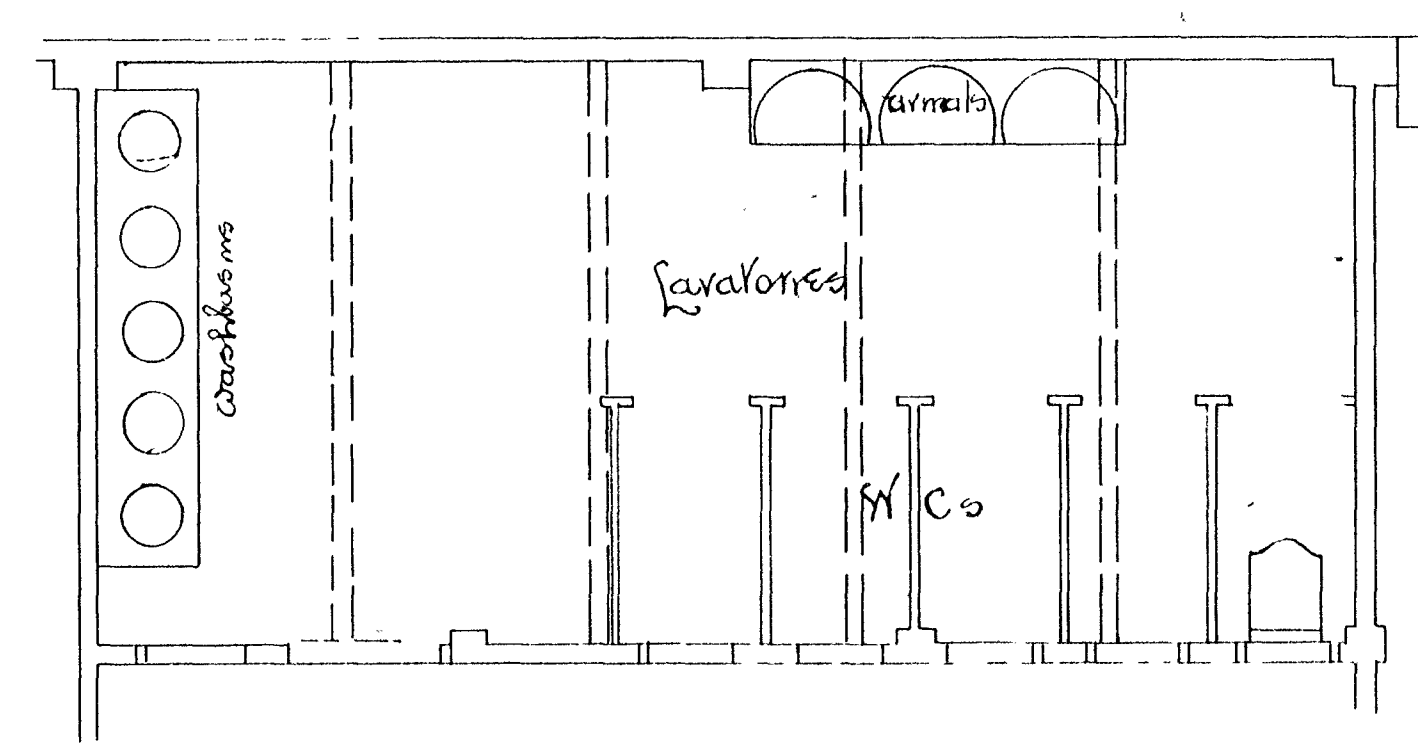
6 3



Ground Plan



Basement Plan



Mezzanine Plan

—Thos Turnbull & Son F.R.I.B.A.—  
—Architects—

Scale  
1/4"

# Messrs Knealdie & Stains Building.