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GENERAL CONDITIONS OF TENDER.

1. Tenders to be addressed to the Architects.

Tenders must be in the hands of Messrs. Gray Young, Morton & Young not later than noon on Monday 2nd February, 1931.

2. Tenders to be marked on the outside of envelope "Tender for new Carillon Tower and Hall of Memories, Wellington."

3. The Board of Trustees of the National Art Gallery and Dominion Museum does not bind itself to accept the lowest or any tender. Telegraphic tenders will not be accepted.

4. The work is to be carried out in accordance with the General Conditions of Contract agreed to by the New Zealand Institute of Architects and the New Zealand Federated Builders.

The Contractor will be called upon to sign the contract form, copy of which is attached hereto.

5. The Schedule of Quantities has been measured according to the Scottish Mode of Measurement adapted to suit New Zealand requirements. It shall be priced in detail, extended and added to show how the Contractor's estimate has been arrived at. Priced Schedules are to be lodged under separate sealed cover, along with Contractor's tender. The Priced Schedule of the unsuccessful tenderers will be returned with the sealed covers unbroken. Any tender lodged unaccompanied by the Priced Schedule fully priced in detail will be treated as informal.

The pricing, extensions and additions of the successful Contractor's Schedule will be checked by the Quantity Surveyor and any errors or inconsistencies in such pricing, extensions or additions will be adjusted with the Contractor by the Quantity Surveyor, but no error of any

of any description found will entitle either contracting party to this agreement to alter the amount of the Contractor's original tender. Such adjustment must be made prior to or immediately after the signing of the contract, but in no case will any payment on account of the works be made until such adjustment has been completed.

6. Contractors are requested to submit separate tenders for
 - (a) The Carillon Tower complete with future entrance into Hall of Memories built up in brickwork.
 - (b) The Carillon Tower, together with and including the Hall of Memories, all as shown on drawings.The Owners reserve and are hereby granted the right to refuse or accept either tender (a) or tender(b).
7. In the event of any contractor who receives a Schedule of Quantities not tendering for the work, the Schedule is to be immediately returned to the Architects.
8. The Contractor is requested to make a personal inspection of the plans and to visit the site of the proposed building and satisfy himself about all matters relating to the nature of the site, the means of access thereto, the rights and interests which may be interfered with by the execution and construction of the works and all other matters referred to in the plans and drawings, specification, and schedule of quantities, which may influence the Contractor in submitting his tender.
9. A deposit of £2:2:0 will be required upon application by any Contractor for plans and specifications. This deposit will be refunded to Contractor upon the return by him to the Architects of all plans, specifications and schedule of quantities loaned to him for purposes of tendering.

PRELIMINARY & GENERAL.

(Applicable to all Trades)

SITE:

The building is to be erected in Buckle Street,
Wellington.

OUTLINE:

The Building is to be of Monolithic structure of
reinforced concrete.

The external finish generally is to be in stone
and plaster and the whole is to be executed in
strict accordance with the Architects' plans and
detail drawings in every particular.

DRAWINGS:

It is to be clearly understood that the drawings
are to be considered solely as instruments of
service, are to be used for this building only,
are the property of the Architects, and are to be
carefully preserved and returned to them at com-
pletion of the work set forth therein.

DETAIL DRAWINGS:

Detail or other drawings supplied to the Contractor
during the course of the contract shall not be
taken as authority for extra work unless accompanied
by a written order to that effect. Should any
detail supplied be deemed by the Contractor to in-
volve work beyond that contracted for, the Contractor
shall at once notify his objection to the Architects
and shall not proceed with the work until ordered in
writing to do so. All details shall be applied for

by the Contractor, and shall be received by him before the work to be so detailed is begun.

INCLUDED SUMS:

All included sums are nett. The disposal of all included sums shall be wholly under the control of the Architects who shall be at liberty to employ anyone they select to execute the work for which these sums are provided and to deduct such sums, either in whole or in part, from the amount of the tender. The Contractor is to allow in his tender for his profit upon these sums.

GIVE NOTICES & PAY FEES:

The Contractor or sub-contractor, as the case may be, shall give any or all notices to the City Authorities and pay all fees in connection therewith. In no case will the owners be liable for payment of any fees whatsoever.

COMPLETED WORK:

In this specification and also on the drawings and in the schedule of quantities each and every class, item, detail, or particular of work indicated, described or implied, shall unless distinctly and otherwise set forth, mean the providing, furnishing and finishing of the same complete in every detail, with the including all appurtenances.

ORIGIN OF MATERIALS:

The Contractor is to produce vouchers proving materials to be genuine and as hereinafter described, should he be called upon to do so by the Architects.

SUB-CONTRACTOR:

Before any sub-contract is let, the name of the proposed sub-contractor is to be submitted to the Architects for approval.

RIGHT OF OCCUPATION:

The owners reserve and are hereby granted the free right of occupation and they also reserve and are hereby granted the right to delegate the fitting up of portions completed under the terms of the contract to such persons as they may choose without placing themselves or their delegates under any obligation to the Contractor and without prejudicing the further completion of the contract, provided that such right of occupation or delegation does not obstruct the Contractor or interfere with the completion of the building. No compensation shall be claimed by the Contractor for such occupancy or delegation.

HOARDINGS:

Erect and maintain temporary timber hoardings to Buckle Street all in strict accordance with the City By-laws, hoardings to be the property of the owners.

Provide for the proper lighting up of hoardings and for protecting footpath during carting operations to the satisfaction of the City Authorities.

TEMPORARY ACCOMMODATION:

Erect temporary timber offices (2) for Contractor and Clerk of Works each with wood floor, door with lock and key, window, and desk fitted with drawers with locks and keys complete. Remove at completion. Install in Contractor's office a telephone for convenience of those in authority. Erect necessary tool house and cement sheds and remove at completion.

TESTING:

Provide for any testing of the various materials to be used in the construction of the building as may be

required by the Architects or their representatives. Allow the sum of £15 (Fifteen pounds) for this, to be deducted in full or expended as directed by the Architects.

INSURANCE:

Insure all workmen employed for the several trades during the carrying out of the work as provided for in the General Conditions of Contract. Insure the buildings as provided for in the General Conditions of Contract.

BY-LAWS:

The whole of the works are to be carried out in strict accordance with the By-laws of the Wellington City Council.

REMOVAL OF INFERIOR MATERIALS:

Any materials which may be rejected by the Architects to be immediately removed from the site.

WORKMEN'S LATRINES:

The Contractor shall provide and erect in position directed by the Architects, and in accordance with the City By-laws and to the approval of the Architects, suitable latrines for the convenience of the Contractor's workmen. The Contractor shall keep the latrines in good repair, and clean out thoroughly every day, and shall connect up all W.C's, and urinals to the city drainage. Upon completion of the contract the Contractor shall remove such latrines from the site, grub up all drains, and make good all works disturbed.

CONTINGENCY FUND:

The Contractor shall include the sum of Four Hundred Pounds (£400) as a contingency fund, the whole or any portion of this amount not expended, to be deducted from the contract sum.

SCAFFOLDING & GENERAL:

Provide erect and maintain all scaffolding, (such scaffolding to be to the satisfaction of the Scaffold Inspector) workmen's temporary lavatories, instal temporary water supply, do all necessary carting, pay all carriages and cartages and provide for personal and foreman's supervision and everything else necessary to complete the work according to the Architects' plans and specifications within the stipulated time.

AT COMPLETION:

At completion the contractor shall remove all rubbish caused by the operations from every trade, as may be necessary during the progress of the works and at completion. All floors to be left broom clean, all glass left clean inside and out, paint and putty marks removed, and any cracked or broken glass replaced.

The whole premises shall be left clean and fit for immediate use.

EXCAVATOR.

For the purpose of this Contract, the depths and levels of foundations shown on the Drawings are deemed to be correct, but in execution levels may be varied as required by the Architects; the variation from the drawings being measured and their cost added or deducted from the contract price, as the case may be, at the schedule rate.

ORDER OF PROCEDURE:

The excavations shall be proceeded with in such manner as the Architects may direct.

INSTRUCTIONS:

The Architects shall have full power and authority to issue such instructions as to the order or proceeding or carrying out the work as they may deem necessary for the guidance of the Contractor, and the Contractor shall be bound by such instructions of the Architects, or any person or persons authorised by the Architects to give instructions.

NOTIFY ARCHITECTS:

The building is to report to the Architect when excavations are ready to receive concrete footings, and obtain their opinion that it is in order to proceed with the work, any extra work to be measured and agreed. Any concrete or other work put in before this has been done will have to be removed.

MAINTAIN EXCAVATIONS:

Secure and maintain the sides of all excavations and keep same clear of water and fallen material; provide and maintain shoring, sheeting, planking and strutting, also pumping and baling as required, and remove plant when no longer required.

MAINTAIN ROADS:

Provide and maintain all footpaths and roadways necessary for the proper execution of the works; all such work being approved before being put in hand.

CLEAR AWAY:

All rubbish arising from the works, and all superfluous earth not required for the fulfilment of this contract or by the owners, to be carted away clear of the site.

OLD CESSPOOLS, DRAINS, ETC.:

Empty and cleanse all old cesspools and wells, and grub up all old drains found on the site; cart away all impregnated material, soil, or faecal matter, and fill in with hard, dry material well rammed.

ANTIQUITIES:

Any ancient carvings, relics of antiquity, coins or other curiosities, which may be discovered or excavated by the Contractor or his workmen, are to become the property of the owners, and are to be delivered up to them.

DIMENSIONS:

Dimensions for excavator have been taken net and perpendicular, no allowance having been made for any increase in bulk after the earth has been excavated, or for sloping sides. The widths of the trenches have been taken on either side from outside to outside of the concrete.

KEEP DRY:

No more ground is to be removed than is absolutely necessary, and all foundations at the lowest level of any part of them shall at all times be kept perfectly free from water.

PUMPING:

The Contractor shall provide all necessary pumps and tackle, and do all pumping and bailing necessary to keep the excavations dry and free from water or other liquid.

PROTECTION:

The Contractor shall provide all necessary boards or coverings, and lay same to protect the trenches or excavations from the effect of frost or inclement weather if so required by the Architects.

EXCAVATION TOO DEEP:

In the event of the Contractor excavating below the proper level necessary to execute the work in accordance with the drawings, he shall fill up the part so excavated with concrete at his own expense, the concrete to be made as specified for foundations.

RAM BOTTOMS:

Well ram the bottoms of all excavations for foundations and drains.

FILLING IN:

The Contractor shall not fill in over any work until it has been approved by the Architects or their representatives. The earth shall then be brought back from the place where it was temporarily deposited, and the trenches or other excavations shall be filled up to the height of the original surface with earth, in layers of not more than 9" in thickness. Each layer shall be carefully rammed until it is completely consolidated.

ROCK FILLING BEHIND CONCRETE WALLS:

(See details). Provide behind each concrete retaining wall from base up to under side of paving or up to natural grade level, 6" thickness coarse rocks tightly packed into position.

REINFORCED CONCRETE.

SCOPE OF THIS SPECIFICATION:

Wherever applicable this Specification shall be taken to apply to concrete covering structural steel work and to all concrete work, whether reinforced or not.

DRAWINGS:

All the detail working drawings and schedule of reinforcements relative to the reinforced concrete work and necessary for its proper execution will be supplied by the Architects.

PROTECTION OF MATERIALS:

The Contractor shall provide sheds, racks, bins, and other storage accommodation for properly protecting all materials and goods brought on to the site for use in the works.

OPENING UP FOR INSPECTION:

The Architects shall be entitled to have any part of the work opened out or cut away for inspection. The cost thereof and of making good shall be borne by the Contractor if the work is found to be defective; otherwise by the Owner.

LEAVE ALL COMPLETE:

All work shall be left complete and in orderly condition to the satisfaction of the Architects.

STEPS AND PAVING, ETC. TO FORECOURT:

Construct concrete steps to Forecourt as detailed. Lay 3" finished thickness of well rolled and consolidated coarse broken rock over all portions of grade to be covered by concrete steps and paving to Forecourt. Blind rock with fine screenings and well roll to a perfectly even surface.

Concrete steps to have a minimum thickness of 4" carefully set to grades and levels shown. Treads of steps to have slight outward fall as directed. Reinforce steps with $\frac{1}{2}$ " dia. rods spaced at 12" c.c. both ways.

Pre-cast paving slabs to be $2\frac{1}{2}$ " fin. thickness of approved stock manufacture with fine smooth surface and arrised edges.

Set paving blocks to landings on $1\frac{1}{2}$ " bed fine grained sand in perfect alignment and plane. Joints to be $\frac{1}{2}$ " wide filled with mortar and raked out to a depth of $\frac{1}{4}$ " for pointing.

Treads to steps to be paved with 2" thick pre-cast concrete slabs set with $\frac{1}{2}$ " wide joints on $\frac{3}{4}$ " thick Portland cement bed. Rake out joints as specified above for paving slabs to landings.

NOTE: See under "Plasterer" for plaster finish to risers. Paving, etc., adjacent to concrete retaining walls is not connected thereto. Joint to be as specified for typical jointing.

Form surface gutters at foot of steps where shown of size to accommodate 7" x 4" semi-circular metal drains provided for under "Smith & Founder". Bed drains in Portland cement mortar to give fall of 1" in 10'0" to point of outlet.

SETTING OUT, FOREMAN, PLANT, WATCHMAN:

The Contractor is to set out the works and provide everything necessary for that purpose, and is to make good at his own expense all errors caused by his negligence or bad workmanship. The Contractor is to allow for keeping a competent foreman constantly on the works during all working hours.

The Contractor is to provide all materials, labour, tools, plant, scaffolding, tackle, ladders, watchman, lighting, etc. for the proper and complete execution of the work.

NOTE:

Where the inside faces of mullions pass the side of beams at 7th floor level they are to be separated therefrom by a thickness of stout building paper to ensure total disconnection.

FORMATION OF ENTASIS:

The entasis to the shaft of the Carillon Tower is to be formed in the rough concrete so that by the final application of not more or less than $\frac{3}{8}$ " thickness of plaster, the true profile in accordance with the plans and any further instructions, will result. On no account must the form of the entasis be obtained by varying the thickness of plaster work.

WATERPROOFING OF CONCRETE FLOORS:

See under "Asphalter" for this waterproofing.

CEMENT.

QUALITY OF CEMENT:

The cement shall be New Zealand Portland and shall be obtained only from approved manufacturers and shall conform in every respect with the British Standard Specification for Portland Cement; quick-setting cement shall be used where specified.

STORAGE:

The cement shall be delivered ready for immediate use and may be used direct from the bag. The bags of cement shall be kept in a perfectly waterproof and reasonably airtight shed, the floor of which is raised from the ground. The cement shall be used, as far as possible, in the order in which it has been stored.

The cement shall be stored on the site in such a manner as to permit of easy access for proper inspection and identification by the Architects. Where cement delivered upon the site is to be used within 48 hours it may be stored on a floor raised at least 12in. from the ground if it be covered with rainproof tarpaulins.

SAND:

QUALITY OF SAND:

The sand shall be clean and gritty and composed of hard siliceous grains or other materials approved by the Architects. It shall be free from clay and any animal, vegetable bituminous or other deleterious matter. Unless initially clean all sand shall be thoroughly cleaned by washing in flowing water.

SIZE:

All sand shall pass through a mesh 3/16 of an inch square measure in the clear. Sand shall not be used if it contains more than 10% of fine grains that pass a seventy-six mesh sieve as used for cement testing unless the proportion of cement be increased to the satisfaction of the Architects.

COARSE MATERIAL:

KIND:

The coarse material shall consist of broken blue stone, to be approved by the Architects.

SIZE:

The coarse material for foundations shall be of such size as will pass through a mesh 1 $\frac{1}{2}$ " square, measured in the clear and the coarse material for all concrete elsewhere shall be of such a size as will pass

through a mesh $\frac{3}{8}$ " square measured in the clear, and be retained on a $3/16$ " mesh measured in the clear, and shall vary in size as much as possible within these limits.

WATER.

CLEANLINESS:

The water used for mixing cement grout, mortar and concrete is to be provided by the Contractor, and shall be free from earthy, vegetable or organic matter, acids and alkaline substances in solution or suspension. No sea or brackish water shall be used.

CONCRETE PROPORTIONS AND MIXING.

PROPORTIONS:

All concrete shall be composed of 1 part cement to 2 parts of sand to 4 parts of coarse aggregate, the proportions being measured by volume. The Concrete shall attain an ultimate compressive strength of not less than 2000lbs. 28 days after mixing.

MEASURING CEMENT:

Such methods shall be used for measuring the cement and coarse material as shall enable the proportions of the materials to be readily checked. The methods proposed to be used shall be submitted to the Architects before the work commences and approved by them in writing.

MIXING:

The concrete shall be mixed until it is of even colour and even and regular consistency throughout. All mixing shall be done by a machine of a design approved by the Architects. The capacity and number of mixing-

machines provided by the Contractor shall be such as to suit the requirements, in order that all concrete shall be used when freshly made so as to prevent loss of strength by premature setting. Special attention shall be devoted to this point in warm weather, when the setting of cement is considerably accelerated. Care shall be taken not to use any concrete showing signs of initial setting. The method adopted for measuring the water must be to the Architects' approval and such as will enable a complete control of the amount used. The concrete shall be discharged from a mixer on to a watertight platform or floor, or into a receptacle.

CONSISTENCY OF CONCRETE:

For reinforced concrete the quantity of water added to the other constituents shall be sufficient to allow of a plastic mixture being made and tamped into all parts of the mould and between the reinforcing members. Great care should be exercised that there is no excess of water and the Architects' directions in this respect must be strictly adhered to.

AFTER POURING CONCRETE:

Care shall be taken after concrete is placed in position to keep the concrete damp for several days, by the use of wet sacks or other suitable means.

WATERPROOFING:

Where specified in schedule of quantities waterproof with hydrated lime in the proportion of 7½ lbs. of hydrated lime to 100lbs. of cement.

REINFORCEMENT.

MANUFACTURE:

Steel shall be of British manufacture.

KIND:

Bars used for reinforcement shall be of mild steel and shall comply with all the conditions and tests of the latest British Standard Specification for Steel for structural purposes.

STORAGE:

All steel shall be stored in an approved manner under tarpaulin sheets or other cover.

ENDS OF BARS:

The ends of all tension bars shall be bent into a U form as shewn on the drawings or otherwise anchored as directed by the Architects.

CLEANLINESS:

All metal for reinforcement shall be clean and free from all mill scale, dust and loose rust before depositing the concrete.

COATING:

All metal for reinforcement shall when placed in position be free from paint, oil, cement grout, or any other material.

DEFECTS:

Any material which develops weak spots, brittleness, cracks, or other imperfections will be rejected by the Architects and shall be removed from the works by the contractor immediately at his own cost.

WELDING:

No welding together of steel rods will be permitted.

BENDS:

Bends, cranks, and other labours on steel reinforcements shall be carefully formed, care being taken to keep bends out of winding. Otherwise all rods shall be truly straight.

PLACING:

The number, size, form and position of all steel mesh-work, bars, ties, links, stirrups, and other parts of the reinforcement shall be placed in exact accordance with the working drawings.

Nothing shall be allowed to interfere with the required disposition of the reinforcement, and the contractor shall make a particular point of seeing that all parts of the reinforcement are placed correctly in every respect and are temporarily fixed where necessary to prevent displacement before or during pouring or during the process of tamping and ramming the concrete in place.

BINDING WIRE:

Bars must be bound together with pliable iron wire where directed so that the reinforcement may not be displaced in the process of depositing the concrete. The wire used for binding shall be thoroughly annealed soft iron No. 16 S.W.G. and the binding shall be done tightly with proper pliers.

SPIRAL BINDING AROUND STRUCTURAL STEELWORK:

All structural steel beams and girders encased in concrete to be securely bound with No. 6 black iron wire at 4" pitch. Steps shall be taken to see that this binding is not displaced from its correct position while the concrete is being poured.

SPACERS AND CHAIRS:

Reinforced concrete spacers and chairs shall be built in between all longitudinal bars and the boarding to support the reinforcements at the proper distances from the forms. The concrete used for same shall be composed of one part of cement to two parts of sand. Provided that other approved methods may be adopted to effect the same purpose. In beams having 2 layers

of tensile reinforcement the top layer is to be separated from the bottom layer by short $\frac{3}{8}$ " diameter rods spaced about 5 feet apart.

FORMWORK.

APPROVAL:

The formwork shall be approved by the Architects before concreting is started, but the Contractor shall be responsible for its sufficiency.

MATERIAL & WORKMANSHIP:

All the formwork shall be adapted in every respect to the structure and to the required surface finish of the work. It shall be made of sound timber of sufficient thickness. The formwork shall be fixed in perfect alignment, level and plumb, (note entasis where shown on drawings) and securely braced so as to be able to withstand without displacement, vibration, or movement of any kind, the weight of construction and the movement of men, materials and plant.

JOINTS:

All joints shall be close enough to prevent undue leakage of liquid from the concrete.

REMOVAL:

The formwork shall be so arranged as to permit of easing and removal without jarring the concrete. Wedges and clamps shall be used wherever practicable, instead of nails.

ANGLE FILLETS:

The formwork shall be chamfered on the angles so as to form splayed fillets of at least 1 in. width on the re-entrant angles of the concrete.

SIDES OF BEAM BOXES:

All moulds for beams and allied members shall be designed and constructed so that the sides may be

removed without interference with the remainder of the formwork.

STRUTS AND SHORES:

The supporting struts shall be adjusted and fixed in position by suitable means. They shall be placed upon proper sole plates, and shall be so arranged that they may be lowered gently in the striking of the formwork.

COLUMN MOULDS:

All moulds for rectangular pillars shall be designed and constructed with one side open from bottom to top, and the open side shall be filled in as successive layers of concrete are placed and tamped into position.

PREVENTION OF ADHESION:

The inside of the moulds shall be treated with a coat of lime-wash, or other approved material, if so directed. In warm weather the inside of the moulds shall be wetted shortly before concreting is commenced.

REMOVAL OF FORMS AND FALSEWORK:

No forms or falsework shall be removed without the express sanction of the Architects.

FIRRULES:

Firrules shall be used for all work where temporary form bolts are required. The holes shall be large enough for the bolt to be removed easily.

EMERGENCY PROPS:

If it be intended that any portion of the structure shall be used for carrying heavy weights within a period of six weeks from its completion emergency props shall be left in for such time as the Architects may direct.

CONCRETING.

WORKMANSHIP:

All concreting shall be done as quickly and efficiently as possible, to the satisfaction of the Architects.

CONVEYANCE:

The concrete shall be conveyed to its place in such manner that there will be no separation of the different ingredients, or, in cases where such separation occurs inadvertently, concrete shall be re-mixed before putting in place.

PLACING IN POSITION:

All concrete shall be placed in its final position in the work as soon as possible after mixing. In no case must more than half an hour be allowed to elapse before this is done. The concrete must be sufficiently tamped round the steel reinforcement and into all parts of the formwork. Care shall be taken that the steel reinforcement is thoroughly surrounded by the concrete and that no voids or cavities are left. Care shall be taken that the reinforcing bars projecting from concrete which has recently been put into position are not shaken or disturbed.

RE-STARTING:

In re-starting work which has been stopped, the foreman shall personally supervise the making of the joint. Before depositing fresh concrete upon or against any concrete which has already hardened, the surface of the hardened concrete shall be hacked and roughened, thoroughly cleaned from all foreign matter, and well washed with clean water. Before the concreting is commenced, the hardened surface shall be given a light coat of oil.

shall be covered with mortar composed of 1 part of cement to 2 parts of sand not less than $\frac{1}{2}$ " thick. Special care shall be taken to ram the mortar and fresh concrete thoroughly upon and against the hardened concrete.

HOLES FOR BOLTS, ETC.:

Holes for bolts or for any other purpose shall be moulded during the work of concreting, in the position shown on the working drawings.

DEFECTIVE WORK:

Any defective concrete shall be cut out and the work re-constructed. No concrete thus cut out shall be re-used. The steel shall only be re-used by special permission.

SHOCK & VIBRATION:

Care shall be taken that as far as possible no ~~shock~~ or vibration shall reach the concrete during the process of setting.

FAIR FACES:

The faces of the concrete work shall be left sound and solid, free from voids or excrescences.

SURFACES TO BE PLASTERED:

Surfaces to be decorated in plaster or otherwise shall be left or made rough to form a key, if necessary.

FITTING AND ACCESSORIES.

FORM OPENINGS:

Openings ready to receive pipes, wires and other fittings shall be formed where shown or otherwise directed.

BUILDING IN:

Bolts, pipe hooks, hangers, and other connections and fittings shown on the drawings or as directed by the Architects shall, as far as practicable, be built in as the work proceeds.

CONCRETE GRILLE WORK IN CARILLON TOWER:

The concrete grille work in the Carillon Tower is to be formed of pre-cast units as shown on drawings. These panels are to be composed of approved fine aggregate and British white Portland cement in the proportion of four parts of aggregate to one of cement coloured all as specified for setting coat of external plaster. They are to be cast in steel moulds and to have a texture to approval of the Architects. Allow the sum of £5 for the manufacture of a sample or samples of the panels, for submission for the approval of the architects. Provision to be made for dowels as shown on drawings. Allow the sum of £60 to provide the moulds.

GRADING OF FLOOR & ROOF SLABS:

Grade concrete of 5th, 6th and 7th floors and those to balconies to outlets or as may be directed. Grade with coke breeze concrete on top of flat concrete roofs to give a fall of 1" in 10'0" or as may be directed to points of outlet. Form concrete kerbs around central openings as shown and eaves against all upstands throughout. Grade all platforms as shown or directed.

FINISH OF CONCRETE FLOORS:

All concrete steps in the Carillon Tower and the 1st, 2nd, 3rd and 4th floor slabs to be finished in one operation, dusted with 2 to 1 sand and cement, and trowelled smooth. Ground floor will not be finished. See under "Asphalter" for remainder of floors. Concrete steps to have slight outward fall as directed.

LEVELS OF CONCRETE FLOORS:

The whole of the floors to be set to levels shown on drawings or as directed. The Ground floor will finish 1½" below level of entrance threshold as indicated to allow for future paving.

STRUCTURAL STEEL.

R.B.J'S & GIRDERS: (5th and 7th floor levels and under roof)

STEEL:

All steel used shall be of British manufacture. It shall be mild steel made by the open hearth process, and shall comply in all particulars with the requirements of the current issue of the British Standard Specification for structural steel for bridges and general building constructions, Steel A, Specification No. 15.

All sizes are to be cut truly and full, and all rivet and bolt holes to be drilled, not punched. Rivet holes must not exceed the size of the cold rivet by more than $1/16"$ and holes must be perfectly concentric. Steel members to be riveted together shall have the meeting faces cleaned of rust, dust, grease and dirt and shall be painted one thick coat of Chamlead or other equal and approved liquid Red lead immediately before rivetting up.

The ends of all joists and girders shall have a seating of 6lbs. lead laid the full width and length of the portion bearing upon the concrete.

All joists, beams or girders must have their ends truly square where that is required, and joist flanges neatly cut away, or "coped" where necessary, and of the strict length shown upon the drawings in the case of members having end connections.

SETTING OUT:

The contractor must do all setting out for centre lines and must take care to ensure the various members forming the work, coming together in proper position. All bearing levels must be determined or checked by him.

BRICKLAYER.

SCOPE OF WORK:

Brickwork is confined to the walls of the bulk head on the 5th floor and the walls of the Clavier Chamber and Lavatory on the 6th Floor and two small walls in Hall of Memories, also 3" hollow terra-cotta tiles laid on concrete roof slabs of Hall of Memories.

GENERAL:

Build 4 $\frac{1}{2}$ " thick walls with approved common bricks.

Mortar to be composed of 4 parts sand, 1 $\frac{1}{2}$ parts hydraulic lime well mixed, beaten together and gauged with 1 part Portland Cement to four parts the above added immediately before use.

Lay in brick walls, at intervals of six courses Johnson's or other equal and approved 2" wide galv. metal bonding lapped at junctons and hooked at inter-sections.

Build in as directed all louvre and door frames and all metal and other fittings which require to be bedded, fully and strongly. Bed and point in 3 to 1 cement mortar all frames and point all flashings.

In the event of the Hall of Memories not being constructed at the same time as the Carillon Tower, the connecting opening shown from the base of the tower to the Hall of Memories is to be built up with 11 $\frac{1}{2}$ " hollow brick wall, laid in two 4 $\frac{1}{2}$ " thick walls with 2 $\frac{1}{2}$ " wide cavity.

This item to be included only in Tender (a).

METAL WINDOWS:

Provide the nett sum of £270 (Two hundred and seventy pounds), for the purchase and delivery of the whole of the metal windows, including Lavatory louvre and frame to lantern on summit of Tower. Take delivery of all windows, fix in position in accordance with

*Do not
forget
Clavier
Chamber
and
lavatory*

instructions and bed and point with approved mastic specially made for the purpose.

SMITH & FOUNDER.

REINFORCING STEEL:

See "Reinforced Concrete".

NOTE: Where copper, bronze or brass abut other metal all abutting surfaces to receive two coats of Bitumastic paint.

IRONWORK TO STONE JAMB/OF MAIN ENTRANCE:

(See details). Provide and fix to both sides of main entrance a 10'9" long x 4" x 1 $\frac{1}{2}$ " W.I. bar drilled to receive bolts which secure stone work. Fix lower ends of bars into cast iron shoes made for the purpose size 5" x 2 $\frac{1}{2}$ " x 3" deep with 6" x 3 $\frac{1}{2}$ " x $\frac{1}{2}$ " sole plate bedded in concrete floor. Secure upper ends of bars by 6" x $\frac{3}{4}$ " gunmetal rag bolts with nuts and washers complete. Secure stone jambs to W.I. straps with 12" x $\frac{1}{2}$ " gunmetal bolts. Similarly secure soffit stones of entrance with 6" x $\frac{3}{4}$ " gunmetal bolts with ornamental bronze nuts spaced in pairs at not more than 15" c.c.s.

HANDRAIL GUARDS:

Provide and fix where shown on the various floors heavy galvanised screwed W.I. pipe handrail balustrading composed of 1 $\frac{1}{2}$ " dia. top handrail and 1 $\frac{1}{2}$ " dia. intermediate guard rail all screwed to 1 $\frac{1}{2}$ " dia. pipe standards spaced as shown and set into concrete not less than 3". Assemble members together with all necessary flanged ends, screw junctions, angles, tees, reducing sockets, etc., required.

METAL STAIRS:

Provide and fix metal stairs in positions where shown in strict accordance with detail drawings and any further instructions. Ends of strings, standards

and bearers to be fish-tailed as directed, securely built into concrete and caulked with gaskin and run with molten lead.

HANDRAIL BALUSTRADE: (Ground to 2nd Floor and including landings and detached 1st. Floor landing opposite to stairs).

Provide and fix to approval handrail balustrade formed with $\frac{3}{8}$ " square bars, two to each tread, tenoned and rivetted at upper ends to $1\frac{1}{2}$ " x $\frac{1}{2}$ " continuous seating bar for wood handrail. Bar to be drilled for countersunk screw fixings of handrail at 15" c.c.s. Bed balusters at lower ends not less than 2" into concrete treads. Provide two newels formed with $1\frac{1}{2}$ " dia. rods with cast bases and caps made to detail. Bed newels 5" into concrete..

LADDERS:

Provide ladders from Ground Floor to 1st Floor detached landing, one on 5th Floor and from 6th to the 7th floors as indicated. Ladders to be formed with $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $1\frac{1}{2}$ " L. stringers and $1\frac{1}{2}$ " x $\frac{1}{2}$ " iron treads 15" long rivetted to strings. Strings to have fish tailed ends built securely into concrete and to have $1\frac{1}{2}$ " x $\frac{1}{2}$ " stays built into walls at 6'0" c.c.s., as directed.

BALCONY BALUSTRADES:

See detail drawings. Provide and fix to balconies W.I. balustrades as directed.

All top handrails to have rounded upper edges and to have fish tailed ends for building into walls. Lower sole rail of balustrades to be drilled for 6" x $\frac{1}{2}$ " rag bolts at not more than 18" c.c.s; these rag bolts and ends of handrails to be built into concrete and caulked with gaskin and run with molten lead. All W.I. members forming the balustrades to be properly dowelled, tenoned, rivetted, strapped or halved together and all abutting ends and surfaces to be cut

true and square in the most workmanlike manner.

All curved and decorated members to be wrought strictly to detail.

GRILLES TO WINDOWS:

(See detail drawings). Provide and fix externally to windows where shown ornamental W.I. grilles formed with 1" square bars shaped at top and bottom ends and built into stonework as shown. Screw fix to bars in four rows, moulded cast iron pieces spaced as indicated. Vertical bars to be twisted at intermediate points and the whole to be accurately constructed and fixed to detail. Where ends of rods are built into stonework they are to be caulked with gaskin and run or plugged with lead.

SURFACE DRAINS:

Surface drains to Forecourt to be Walter MacFarlane & Co's catalogue No.1 7" x 4" - Section F type complete with spigot stopends and cover-plates. Cover plates to be of the open grille type for the interception of surface stormwater.

EXTERNAL METAL LOUVRES AT TOP OF TOWER:

See details Sheet 6. Construct the metal louvres at top of Tower as shown with metal framing members of size figured accurately cut and wrought to shape and all securely riveted and bolted together. Ends of R.S.J's to be bedded not less than 4" into concrete. Cover the metal frames completely with 16 gauge sheet copper. Joints to be wetted and to be as inconspicuous as possible. Secure copper sheeting to frame by approved metal clips.

WEATHERBARS:

Set into sills of all exterior doors 2 $\frac{1}{2}$ " x $\frac{1}{2}$ " W.I. weatherbars set into sills to approval. (See "Carpenter" work).

M A S O N.

SEPARATE PRICES FOR ALTERNATE MATERIALS:

The contractor is requested to submit in his tender separate prices for the supply, working and fixing complete of the various kinds of stone as specified hereunder.

EXTENT OF WORK:

The stone will be employed externally only, and is confined, as indicated on the drawings, to the Hall of Memories, various portions of the facades of the Carillon Tower up to the 5th floor level and to portions of the balustrade walls and terraces forming the Forecourt.

ALTERNATE TYPES OF STONE PROPOSED TO BE USED:

The type of stone to be used will be finally selected from the following kinds:-

- A. Granite from the Moshau Granite Quarries, Coromandel.
- B. Portland Stone from the Portland Quarries, England.
- C. Putaruru Stone.

GRANITE: (Coromandel).

Finished Surfaces. All exposed surfaces shall be patent hammered work of the vertical type, 6 cuts to the inch for all work up to the top of the base work immediately below 1st floor level on the Carillon Tower and Hall of Memories and 8 cuts to the inch for all other work including stonework to Forecourt.

PORLAND STONE:

All exposed facework is to be finished with a finely rubbed surface.

PUTARURU STONE:

As specified above for Coromandel Granite.

GENERAL:

SAMPLES:

A sample of the kind of stone selected to be used, of size 6" x 6" x 6" finished on the faces in the manner above specified is to be furnished to the Architects and approved by them before the work is commenced. The approved sample will then be taken as the standard of material and workmanship required.

WORK STONE ON SITE:

All stone to be worked on the site unless permission is obtained from the Architects to work elsewhere.

MOULDINGS:

All mouldings to be true to profile, carefully membered, and arrises sharp so that when the work is set the mouldings will be in perfect alignment.

SILLS AND STEPS:

All door sills and steps to have a wash of $\frac{1}{4}$ " in the width of the step. Sills to be single length.

FITTING:

All stones to be fitted together dry before fixing in order to discover any irregularities. Each stone to be full size and depth shown and the back shall be even split to a straight surface at right angles to the bed and parallel to the face, with no projections on same over one-half inch.

INTERNAL ANGLES:

All internal angles to be worked in the solid, all unless otherwise specially mentioned, with the lesser returns not less than 3".

HEADS AND RETURNS:

No angle mitres will be allowed, all heads and returns to be full.

directed applied so as to enter all interstices and to cover properly.

GLAZIER.

GENERAL:

All glass to be of approved British manufacture and to be entirely free from bubbles, smoke, air holes, scratches, and other defects and to fit the rebates with due allowance for expansion, secured with approved metal grips and properly bedded and back puttied with quick setting putty.

WINDOWS:

Do all window glazing throughout in 21oz. clear glass.

DOORS:

Glaze doors No.4 with approved small pattern hammered white glass.

GLAZING LANTERN ON TOWER SUMMIT:

Glaze the four sides of the lantern on top of Tower with $\frac{1}{4}$ " clear plate glass set into frame with metal sprigs and putty.

BED, ETC.:

All stone shall be cut to rest upon its natural bed; the beds and vertical joints to be full dressed to even surfaces and bearings throughout. No hollow beds will be allowed.

JOINTS:

All joints shall be located exactly where shown on the drawings unless changed by special instruction by the Architects to whom any uncertainty in jointing is to be referred.

LINTOLS:

All lintols to be single span stones.

DRIPS:

All projecting members to be worked with proper drips to approval.

WINDOW SILLS:

All window sills to be single length.

REVEALS:

There shall be no vertical joints in reveals except where specially shown.

PERFORM ALL CUTTING:

Carefully perform all cutting and dowelling of holes for W.I. guards, railings, bars, anchors, metal window and door frames, water bars, rainwater pipes, chases for Plumber's flashings, etc., or required by other sub-contractors for the proper engagement of their work.

WEEP HOLES:

Work accurately all weep holes in jointing to walls wherever shown.

DOWELS:

Stone gappings to all walls and stone balustrade walls to Forecourt to be secured with $\frac{1}{2}$ " diameter copper dowels each 4" long properly run in lead, one to every superficial foot of bed and cap or balustrade.

In general facing work each piece of Ashlar shall have at least one anchor, and large pieces two anchors, all made of $1\frac{1}{4}$ " x $\frac{1}{4}$ " copper with ends corked to tail into concrete or stone and to finish an average length of 10".

SETTING:

Each stone shall have a Lewis hole or holes cut into it for the purpose of setting. Each stone and its bed shall be well wetted before setting.

Each stone shall be set on a full mortar bed furnishing a perfect and even bearing between the stones.

Each stone shall be dropped squarely into place with as little shifting as possible, tapped to a solid bed and so that the bearing cannot come on front edge of stone and set perfectly level. The mortar shall be kept back $\frac{1}{2}$ " from the face of the stone. Sills shall be carefully bedded at the ends only and after the building is completed the joints shall be filled and pointed. Unless run in lead all cramps and dowels to be run in 1 - 1 cement mortar.

All stonework forming jambs of entrance door to Carillon Tower to be set with dry joints. Bed joints between blocks shall be honed surfaces, perfectly plane and horizontal and at right angles to the face.

Each stone to be carefully drilled in two places 9" deep for receiving 12" x $\frac{1}{2}$ " gunmetal rag bolts. Bolts to be run in with molten lead.

The vertical junction of the stonework of the Hall of Memories with that of the Carillon Tower is also to be set dry.

MORTAR:

All mortar for setting shall be composed of 1 part Portland cement to two parts approved washed sand.

Any lime added to the cement mortar must be fresh burned and additional to the proportions of cement and sand given above.

PROTECTION:

Case up all projections and protect from damage until completion of contract.

DEFACEMENT:

Any defective stonework is to be removed on detection and replaced. No patching or concealing of defects with composition of any kind or by pieces will be permitted. On completion of the contract each and every piece of stone is to be sound and perfect.

CLEANING DOWN & POINTING:

At completion all exposed surfaces of the stonework are to be carefully cleaned down so as to entirely remove all dirt and mortar stains, and all joints are to be raked out to a depth of $\frac{3}{4}$ " and pointed with mortar composed of one part Atlas cement to one part approved sharp sand washed free of all impurities, the whole tinted to match the stone and drawn with a key. The use of acids will not be allowed in cleaning down.

CARVED WORK:

Allow in tender the nett sum of £300 for carved features. Execute all carving in a clean, workman-like and spirited manner, carefully preserving detail and alignment strictly in accordance with detail drawings.

ASPHALTER.

All asphalte used throughout to be pure natural Trinidad rock asphalte to be provided and laid by a specialist firm engaged wholly in the trade or business of asphalting and approved by the Architects.

All asphalte work to be laid in the most workmanlike manner and with smooth and even surfaces (where exposed) perfectly graded and free from trowel or roller marks. Externally pave flat roofs of Hall of Memories (upper and lower) and floors of Balconies with $\frac{3}{4}$ " thick asphalte laid in two thicknesses to break joint, laid to grades (with gutter channels where shown.) Take up walls and parapets at least 9" and turn the upper edge into raglets cut into concrete or stonework.

Internally pave the concrete portions of the 5th 6th and 7th floors with $\frac{3}{4}$ " thick asphalte laid all as above specified for external work. Similarly take asphalte up sides of kerbing and walls and finish into raglets. Put angle fillets to all upright internal angles and between vertical and horizontal surfaces. Finish against all upstands with rounded angle to a 2" radius.

ASPHALTE WATERPROOFING:

Pave the whole of the under slab of the Ground Floor with $\frac{3}{4}$ " thick asphalte laid in two thicknesses to break joint.

Externally cover the faces of all concrete walls which are below the finished grade with $\frac{3}{4}$ " thickness of Neuchatel Asphalte as shown on detail drawings, Sheets Nos. 7 and 9.

CARPENTER & JOINER.

PRELIMINARY:

The whole of the work shown and figured on the drawings and described in the specification is to be done in a workmanlike way and in the best and most approved manner.

Drawings are typical only and all corresponding work not specially detailed or described is to be done in a similar manner. Throughout this contract any work which in the opinion of the Architects or their representative is not in full accordance with this specification shall be removed and replaced and the expense of such replacement shall be undertaken by the Contractor.

All joinery whether detailed or otherwise is to be constructed according to the best known methods of joining woodwork, by mortice, tenon, dovetail, tongued and grooved mitres, etc.

All shifting beads, movable boards, etc., to be screwed with brass screws and cups.

Upon signing the contract, all mouldings, casings, etc. to be run and all joinery work put in hand immediately. Unless otherwise specified only seasoned heart of timber to be used, and all classes to be the best of their respective kinds, free from large or loose knots, shakes or other defects. Unless otherwise specified no framing timbers to be more than 18" centre to centre. All exposed timbers to be dressed; woodwork exposed to view to be hand dressed.

Cut for and wait on all other trades and provide and fix all necessary fixing blocks in Heart Totara (bevelled where required) for proper fixing of joinery or stopping of plaster. Where wall plugging is

required "Metalset" or similar approved wall plugs to be used.

FORMS, FALSEWORK, ETC.:

See "Concretor".

ROOF TO CARILLON TOWER:

(See details). All framing timbers to be Heart of Kauri. Sole plate to be 5" x 3" bedded on cement and secured to concrete by 9" x $\frac{3}{4}$ " dia. rag bolts spaced at 2" crs. Studs to be 5" x 2" spaced at 18" crs., and top plate 5" x 3". Plates to be halved at angles and intersections and all securely spiked together. Principal rafters to be 8" x 2" and jack rafters 4" x 2" fixed at 18" crs. and all properly birdsmouthed over plate and accurately cut to length.

Provide 8" x 3" central and vertical post spiked at base to 14" x 14" x 4" hardwood sole plate set in cement on concrete beam and secured thereto by two $\frac{3}{4}$ " dia. bolts. Radial strutting to be 4" x 3", one to each principal rafter.

Frame up for top lantern as indicated with 2" thick material and provide tenet in all shaped top and bottom kneelers spiked to tops of rafters and framing.

Provide all plates, packing pieces, etc., shown and securely spike or bolt all members together as required. Between lower studding cut in weathered sills out of 6" x 4" and sheet framing externally with 1" material, packed out at base to form plinth as shown. Prepare for metal coverings, see "Plumber". Construct apertures all round with jambs and heads of 1" thick material as indicated. Provide and fix copper netting behind all apertures.

SARKING:

Sheet the whole of the framing forming roof and base of lantern with 6" x 1" T. & G. dressed material. Accurately joint sarking at hips in true alignment and form all curved portions with narrow widths. Plant in all specially moulded members where indicated and mitre same at angles. Form dentil course with solid wood blocks and 3" x 2" bed piece all to detail. See under "Smith & Founder" for copper frames for lantern windows. Provide 2" dia. Ht. Totara rolls securely spiked to sarking as shown to take "Plumber's" work.

INTERIOR WOOD FLOORS IN CARILLON TOWER:

Provide at each floor level where shown wood framed floors with joists of M. Oregon.

Size of floor joints to be as follows:-

<u>Span.</u>	<u>Size.</u>	<u>Spacing.</u>
Up to 6'0"	6" x 2"	18" crs.
6'0" to 8'0"	8" x 2"	18" crs.
8'0" to 10'0"	10" x 2"	18" crs.

All joists to be gauged on to 4" x 3" plates, secured to sides of concrete beams by 9" x $\frac{1}{2}$ " dia. rag bolts spaced at 24" crs., and 4" x 2" plates where laid on concrete secured with 6" x $\frac{1}{2}$ " bolts. 10" x 2"

joists to have two intermediate rows of 2" x 2" herringbone strutting accurately cut between joists.

Wood floors at the 5th and 7th floor levels to be graded to throw off water all as described in Schedule of Quantities. Flooring to be 4" x $\frac{3}{8}$ " T. & G. Ht. Matai fixed in single lengths, closely cramped and double nailed on each joist.

Graded flooring to be covered by lead (see under "Plumber") is to have joints and exposed edges hand dressed to a perfectly plane and even surface.

Surface of all other floors to finish flush with finished surface of concrete floors.

At 5th floor level provide where shown two raised wood grille floors sll in Ht. Jarrah, formed with 4" x 3" sleeper plates bolted to steel girders 8" x 2" joists and 3" x 1 $\frac{1}{4}$ " decking spaced 1 $\frac{1}{2}$ " apart.

WOOD CEILING:

At 3rd floor level provide wood ceiling as indicated.

Joists to be 6" x 2" M. Oregon spaced 18" c/s. Line soffit of joists with 9" x $\frac{3}{4}$ " Ht. Kauri boards and cover joints with 2" x $\frac{3}{4}$ " battens. Finish around margins with 3" x 1" member and 3" x 1" moulded plate.

Sheet top of joists with 4" x $\frac{3}{4}$ " P.P.G. & V-jointed Ht. Kauri matchlining scribed to concrete at sides.

DOORS & DOOR FRAMES:

All doors and frames to be made from seasoned Ht. of Kauri strictly in accordance with detail drawings which will be supplied.

All frames in brick walls to have strong galv. hoop iron tees built into joints and $\frac{3}{8}$ " iron dowels to sills and to be pointed with 3 to 1 cement mortar. Remainder of frames to be fixed with sunk and palletted 6" x $\frac{1}{2}$ " rag bolts.

Generally, exterior door sills to have 2 $\frac{1}{2}$ " x $\frac{1}{2}$ " M.L. weather-bar fixed to detail. Rebate bottom of doors for water-bar.

MAIN ENTRANCE DOORS:

To be size 10'0" x 7'0" with inner and outer frames. The inner frame to be 2 $\frac{3}{4}$ " finished thickness and the outer frame 4" finished thickness all moulded to detail.

Meeting stiles to be grooved and beaded and grooved to receive moulded and tongued weather fillet. Each

leaf to be divided into four panels bolection moulded and raised both sides. Bottom rails of doors to be grooved to take metal track. Hang each leaf on McCabe's No.3 sliding door set complete with hangers, rollers, track and all appurtenances and leave in perfect working order at completion.

Provide to both sides of doors at stiles and head moulded architraves out of 6" x 4". These architraves to be made removable. See Schedule of Quantities.

DOOR NO. 2.:

To be size 7'0" x 3'0" x 1 $\frac{3}{4}$ " finished thickness in five panels. Panels to be bolection moulded and raised one side and flash moulded on other side. Hang on $\frac{1}{2}$ pairs 3 $\frac{1}{2}$ " loose pin solid bronze butts to 3" solid rebated frame $\frac{3}{4}$ " wider than wall thickness.

DOORS NO. 4.:

To be size 6'10" x 2'10" x 2" finished thickness in two panels. Lower panel to be 1 $\frac{1}{2}$ " fin. thickness, flush, bead and butt externally and square framed internally, Upper panel to be rebated for glazing and sub-divided diagonally by moulded and double rebated glazing bars out of 3" x 2". Hang door on $\frac{1}{2}$ pairs 4" solid bronze butts to solid rebated frame out of 4" x 3" and finish inside and out with planted mouldings out of 2" x 1 $\frac{1}{2}$ ".

DOORS NO. 5.:

To be size 6'10" x 2'10" x 1 $\frac{3}{4}$ " fin. thickness in four panels. Each panel 1 $\frac{1}{2}$ " fin. thickness, flush, bead and butt. Hang on butts as specified for Doors No.4 to 4" x 3" solid rebated frame. Finish round with 4" x 1" splayed architraves. Door to Lavatory to be similar, but size 6'6" x 2'6" x 1 $\frac{3}{4}$ ".

DOORS NO. 6.:

To be size 5'6" x 2'6" x 2" fin. thickness in ten panels. Each panel flush moulded and raised exten-

nally and square framed internally Hang on $1\frac{1}{2}$ "
pairs 4" bronze butts to 4" x 3" solid rebated frame.

DOOR HARDWARE:

Allow the nett sum of £18:0:0 (Eighteen pounds) for
the supply of all door locks and furniture, but not
including McCabe's overhead door track etc., spec-
ified for No.1 doors or butt hinges which shall be
supplied by the Contractor.

ADJUSTABLE WOOD LOUVRES: (Clavier Chamber).

Allow the nett sum of £30:0:0 (Thirty pounds) for
adjustable wood louvres including metal frame, louvres,
control gear and all appurtenances thereto. Take
delivery of these fittings and fit and fix into wood
frames strictly according to the Maker's instructions
and leave all in good working order at completion.
These fittings procurable from Mr. A. Pattison,
Richardson Road, Mt. Albert, Auckland.

WOOD FRAMES FOR ADJUSTABLE LOUVRES:

Provide Ht. Totara frames for patent adjustable louvres
formed with head and stiles cut of 4" x 3", sill
double weathered and throated out of 8" x 3" and
mullions out of 4" x 3".

ROOF TO BULKHEAD 5TH FLOOR & LAVATORY AT 6TH FLOOR:

Construct roof to bulk head and lavatory with 4" x 2"
Ht. Kauri framing. Plates to be secured to walls by
 $\frac{1}{2}$ " bolts at 24" c.s., and joists to be spaced not to
exceed 20" c.s. Cover joists with 6" x $\frac{3}{4}$ " T. & G.
flooring. Extend flooring over all exposed edges
2" and finish under projection with 6" x 1" barge.
Arris all edges and round off all angles to take
"Plumber's" finish.

P L U M B E R.

GENERAL:

All work included under this heading shall be subject to the "General Conditions" and "Preliminary and General" and the sub-contractors for this portion of the work is required to refer thereto.

The execution of the works is to be based on to highest principals of scientific plumbing and to be in strict accordance with the Local By-laws. The Contractor to obtain all permits and pay all fees.

MATERIALS:

All materials to be the best of their respective kinds and to be subject to approval. All unions between copper and other metals to be made with brass thimbles.

LEAD:

All lead is to be best English milled and laid perfectly smooth and even; the dressing to be done in a superior manner. Carefully avoid soldered joints or other rigid connections which would in any way hinder the free movement of the metal.

SPOUTING:

To roof of Carillon Tower provide 6" x 5" 19 gauge copper spouting shaped as shown with false bottom to give grade and keep level soffit. Support spouting at not more than 2' 6" cfs., on approved heavy copper brackets.

DOWNPPIPES:

Rainwater downpipes generally to be Walter MacFarlane's or equal and approved 3" dia. $\frac{1}{2}$ " thick cast iron, with lugs cast on and fixed with screws and Metlex plugs into the walls. All pipes to have the necessary bends, insets or offsets, branches, shoes and other

heavy cast iron fittings to provide a complete and efficient drainage system.

All internal R.W. pipes to have approved screwed inspection cap on 2" extension piece as directed above each floor or pavement level.

Rainwater pipes from upper roof of Hall of Memories to discharge into sumps in lower side roofs and are not to discharge thereon.

COWLS:

Provide and fix to the four lower balconies approved standard cast bronze cowls at head of R.W.PIs. To all other external points provide approved cowls or guards strongly formed with No.12 gauge copper crimped wire formed as a mesh with the wires not more than $\frac{3}{8}$ " apart. Guards to the sumps to be size of sump at base and brought to a dome shape at centre.

COPPER TACKING:

For the copper tacking of lead or other material, the tacks to be spaced not more than 1" apart and the joint to be bedded in white lead.

ROOF OF CARILLION TOWER:

Cover the upper portion of the Carillon Tower including top of lantern with 22 gauge copper sheeting dressed accurately to form and shapes indicated. Form 2" rolled joints to pitched portion of roof. Fix all portions securely into position by approved metal clips.

COPPER FLATS AT 3RD FLOOR:

Form the flats at 3rd floor with 22 gauge copper all ^{and soldered dots} as shown with welted side joints. The copper to be turned up $\frac{6}{4}$ " against all upstands. Secure at upstands with copper nails into wood fillets in wall.

Apron flash with 22 gauge copper 6" wide plugged and pointed

LEAD COVERED FLOORS:

Cover the raised wood floors at 5th and 7th floor levels with 1lb. lead laid as directed in sections. Carefully dress the lead over $2\frac{1}{2}$ " x 2" wood rolls, (undercut) the undercloak of lead to cover two thirds of the wood roll and fixed with copper tacks; the over-cloak to be dressed right round the roll to within 1" of platform level and secured with lead clips. Turn lead over nosing at edges and closely tack.

ROOF OF BULKHEAD & LAVATORY:

Sheet the entire roof of the bulk head at 5th Floor and Lavatory at 6th floor level, with 22 gauge copper having welted joints and with sides turned 4" up adjacent walls and down over nosings on exposed sides.

COPPER FLASHINGS:

Flash all copper flats as previously specified against upstands with 22 gauge copper overflashing secured with lead plugs 12" apart and at ends of sheets.

Flash heads and sills of wood frames to louvres in Clavier Chamber with 24 gauge copper fixed to detail.

Vertically flash the settlement joint between the Carillon Tower and Hall of Memories with 22 gauge copper at a distance 4" behind the back of the stonework. This flashing to be set in mastic in grooves and to be V-shaped and fixed to detail.

LEAD FLASHINGS:

Apron flash with 5lb. lead 7" wide the junctions of all flat roof coverings with walls, parapet walls and upstands generally. Turn flashings into raglets and secure with lead plugs at 12" centres and neatly point in cement.

Flash and overflash with 5lbs. lead all pipes, etc., which pierce the roof. Line the sumps with 6lbs lead. Extend lead up sides to full height and provide cover flashing of similar lead to extend down into sump at least 4" and up onto roof under asphalte not less than 12" all round. Dress lead well down into R.W. downpipe. Flash with 5lb. lead the junction of all floor wastes with asphalte to approval.

FLOOR WASTES:

Provide to each floor hereinbefore specified to be sealed with asphalte, two 3" dia. 14 gauge copper wastes at points directed. Cover each outlet with strong brass grating fixed to approval.

COLD WATER SUPPLY:

Lay on water from main in Buckle Street in $\frac{3}{4}$ " g.l.v. screwed wrought iron piping up to Lavatory in Clavier Chamber. Provide to supply pipe where directed inside of Tower a full bore best quality gunmetal control valve.

Run of piping in lower portions of Tower to be concealed and its position to be approved by the Architects before fixing is proceeded with.

Piping outside the limits of the building to be sunk 2 feet below the finished surface of roadways, foot paving, etc.

Take $\frac{1}{2}$ " branches to Lavatory basin, W.C. cistern and standpipe in Lavatory. The latter to be 2' 6" above floor. Also take $\frac{1}{2}$ " 16 gauge copper branch to wall fountain in Forecourt.

COCKS:

Provide to Lavatory basin, Methven's high pressure heavy N.P. gunmetal cock. Standpipe to be fitted

with $\frac{1}{2}$ " brass "Fiddian" tap with screwed ruff for hose connection. Supply pipe to W.C. cistern to have easy accessible brass top cock and to terminate in cistern with approved copper ball-cock. See above for control valve in main supply pipe. Provide where directed in branch to wall fountain a full bore gunmetal stop-cock.

W.C.:

Supply and fix approved W.C. pan to nett value of 40/-. Connect pan by $1\frac{1}{2}$ " lead pipe to approved 3 gallon C.I. flushing cistern, supported on iron brackets. Carry $\frac{1}{2}$ " lead pipe from cistern through brick wall as overflow. Fit cistern with strong galv. chain and porcelain handle.

Allow the nett sum of 25/- for W.C. seat.

LAVATORY BASIN:

Allow the nett sum of £3 (Three pounds) for approved Lavatory basin complete with heavy C.I. supporting brackets, plug and chain.

WASTES:

Connect W.C. pan in 4" heavy cast iron to drain and carry up terminal vent in cast iron to finish at top with No. 16 gauge galv. iron wire cowl. To Lavatory basin provide $1\frac{1}{2}$ " screwed galv. iron waste pipe complete with 6lbs. lead trap, cleaning eye, etc. This waste to deliver down into sealed gully trap in Ground Floor. Wastes from Wall Fountain to be 1" dia. 15 gauge copper to deliver into adjacent G.F. as indicated. Lead pipes to have long wiped joints with heavy ears wiped on and to be connected to iron piping with brass thimbles and unions. All work to be so arranged and to have cleaning eyes to enable all portions to be conveniently cleaned.

TOILET PAPER FIXTURES:

Allow the nett sum of 5/- for the purchase of a T.P. fixture. Fix holder where directed by screw fixing to rawl plugs.

E L E C T R I C I A N.

Include in tender the nett sum of £180;0;0 (One hundred and eighty pounds) for the complete installation of all electric lighting and heating throughout. The electrical work will be the subject of separate tendering. The tendering for the work and acceptance of any tender will be entirely at the discretion of the Architects who will advise the General Contractors of the firm appointed to do the work.

The electrical contractor will then be a subcontractor of the General Contractor who must allow for attendance upon that trade.

T I L E R.

Allow the nett sum of £3 per super yard for mosaic tiles for floor of reflection pool in Wall Fountain in Forecourt.

Take delivery of tiles and set to pattern, strictly in accordance with details, on Portland cement bed.

DRAINLAYER.

MATERIALS:

Earthenware Pipes & Fittings: Pipes to be best quality salt glazed earthenware socket pipes, well burned and glazed throughout, circular in section, smooth, straight true in bore, and free from cracks and flaws of every description. The whole of the gullies, traps, connections and other fittings to be of the standard mentioned for pipes and perfectly made for the purpose they serve and be complete with gratings.

Cast Iron Pipes and Fittings: Pipes to be $\frac{5}{16}$ " metal for 4" pipes and $\frac{1}{2}$ " metal for 6" pipes, Walter MacFarlane's manufacture jointed 6'0" length spigot and socket pipes, formed perfectly straight, with true and smooth bore and coated both sides with Angus Smith solution. No wasted lengths will be allowed. All fittings to be Walter MacFarlane's coated with Angus Smith solution. For cement, sand and aggregate see "Concretor".

MANHOLES & CESSPITS:

Construct manholes and cesspits with 6" concrete sole, 9" brick sides built in 3 - 1 cement mortar thick reinforced concrete cover bedded for and fitted with approved Walter MacFarlane's heavy cast iron cover and frame bedded in Oakum and red lead and made watertight.

Form all proper leads for pipes and dish up at sides to approval. Plaster inside walls with 3 - 1 cement mortar trowelled to a perfectly hard and smooth surface.

DEPTH OF PIPES BELOW GROUND LEVEL:

Excepting with the authority of the Architects no piping for water drainage to be less than 2ft. below the finished level of the ground, paving or floor.

EXCAVATIONS:

All excavations for drains to be carefully made and if the excavation is inadvertently taken deeper than necessary the bed is to be made good by tightly ramming approved material in shallow layers.

All trenches to be inspected by the Architects and no drain laying is to be commenced until their permission is given.

DRAINLAYING GENERALLY:

All main drains are to be commenced at the point of outfall, the necessary junctions for the branch drains to be inserted as the work proceeds until the mains are completed. The branch drains shall then be commenced at the point of their junction with the main drain. The whole of the drain pipes to be accurately laid true to alignment and falls and butted closely together at the joints. Any earth, cement, lead or other material is to be thoroughly cleared out of the pipes by drawing a closely fitting wad through them as the work proceeds. The Contractor to pay all fees with regard to connection with sewers.

DRAINLAYING, EARTHENWARE:

To be used only where not covered over by paving or other permanent material.

All earthenware pipes and fittings to be laid upon a 6" bed of concrete of a width equal to 1½ times the external diameter of the pipes. The pipes and fittings are then set and the joint made with gaskin and 2 - 1 sand and cement to which "Pudlo" has been added in the proportions of 1.b of Pudlo to

20lbs. of mortar; and finished with a bold collar of the same on the outside of the joint. Care is to be taken that any excess of cement on the interior of the pipe is neatly cleaned off as each joint is made. After the pipes are set the concrete bed is then continued vertically until it reaches a height mid-way up the pipe when it is to be neatly splayed off. In the case of gully traps etc., the concrete bed must be at least 6" greater than the diameter of the top of the gully and be carried above ground level and finished in 2 - 1 cement mortar with approved kerb and dishing to the grating.

DRAINLAYING, CAST IRON PIPES & FITTINGS:

To be used in all cases where drains are covered by paving or other similar permanent material. All pipes and fittings to be laid with joints caulked with tarred gaskin and run with molten lead.

FIELD TILE DRAINS:

Provide 4" dia. field tile drains where shown on Drainage Plan. These tiles to be set accurately to grade and to be spaced $\frac{1}{2}"$ apart on ends; cover joints with stout brown paper and fill in around and over pipes with 9" thickness of 1" broken stone or coarse gravel to approval.

INSPECTION:

No drains are to be filled in until the Architects have inspected same and given their written authority for the work to be carried out.

TESTING:

The Contractor is to allow for testing the drains at such times and in such manner as the City Authorities and the Architects may direct.

FILLING:

After the drains have been inspected and passed in

writing by the Architects they are to be filled in in layers not exceeding 4" thick and thoroughly consolidated by careful tamping.

SURPLUS SOIL:

All surplus soil to be removed from the site.

P L A S T E R E R.

GENERAL:

All work included under this heading shall be subject to the "General Conditions" and "Preliminary and General" and the sub-contractor for this portion of the work is required to refer thereto.

The Contractor for this part of the work shall carefully examine all parts of the work to be plastered and satisfy himself as to the fitness of all rough work for plastering and if there are any defects he shall so notify the Contractor and have such defects remedied before proceeding with his work. He shall provide all necessary labour and material and shall do all his work in the neatest and best manner and upon completion shall leave his work clean and perfect and to the satisfaction of the Architects.

After the work of other trades is finished he shall patch and make good all damaged portions of his work.

SCOPE OF WORK:

Plaster work is to be done externally only. There will not be any plaster internally except to jambs of window openings.

WATER:

To be clean and fresh.

SAND:

Sand to be clean, sharp, gritty, pit or fresh water sand, washed perfectly clean of all organic matter

and free from all impurities. No salt water sand to be used.

PORTLAND CEMENT:

Portland cement to be as previously specified in "Concreter" and "Bricklayer".

LIME:

Lime to be Te Kuiti or other approved pure hydraulic stone lime.

COLORCRETE CEMENT:

To be fresh and keen and to arrive on the work in unbroken packages. (Briscoe & Co.Ltd. Agents).

STAIN:

Stain to be best quality and approved mineral stain.

KEYING OF SURFACES:

All surfaces to receive any coat of plaster to be properly keyed.

MOULDINGS, ETC.:

Carefully form with metal moulds such bands, mouldings, sinkings, projections and such ornaments as are represented on the drawings, and form the requisite dubbing out beyond the thickness specified where required by the design.

Run drips to all lintols which are plastered.

Full size details will be given of all moulds, enrichments, etc., and profiles and projections must conform thereto in all respects. All mitres and returns are to be truly worked.

RENDERING COAT:

All cement surfaces to be washed with a good cement grout and the rendering coat applied before the wash has dried.

EXTERIOR WORK:

Rendering for exterior work to be comprised of one part Portland cement to 3 parts sand, with 10%

gwt

hydrated lime added and laid to finish $\frac{1}{2}$ " thick.

EXTERNAL IMITATION STONE SET:

All exterior plaster work, including walls in Forecourt, where shown or specified to be plaster finish to be rendered in cement rendering as above specified and set in a finishing coat composed of British while Portland cement mixed with sand and stone dust and staining matter to the architects' approval.

The work shall be jointed with imitation joints to the approval of the Architects.

It is intended that the colour in the different courses shall vary in tint within a small range of tints to be decided by the Architects.

The Contractor shall allow for making test mixtures and applying the same to some approved place in areas of not less than one square yard for the Architects' inspection and approval.

PARAPET WALLS:

All backs of parapet walls will be rendered as above and set with $\frac{1}{2}$ " coat composed of one part Portland cement to two parts sand.

JAMBS TO EXTERNAL WINDOW OPENINGS:

Render and set interior jambs, heads and sills to all exterior window openings as specified above for parapet walls. Round off back edges of plaster at intersection of wall surface.

PLASTER TO BRICKWORK AT BASE OF TOWER:

In the event of the Hall of Memories not being built at the same time as the Carillon Tower, the future opening connecting the two will be temporarily bricked up and plastered externally as specified above for "External Imitation Stone Set".

This item to be included only in Tender (a).

P A I N T E R.

All work included under this heading shall be subject to the "General Conditions" and "Preliminary and General" and the sub-contractor for this portion of the work is required to refer thereto.

MATERIALS:

All materials to be of English manufacture, the best of their respective kinds, to be approved and to be delivered in unbroken packages, bearing brand and maker's name complete.

Oil colours to be composed of the best brands of lead and pure linseed oil with no more than $\frac{1}{2}$ of driers, pigments to give the desired tints.

Any materials found to be not in accordance with this specification to be at once removed from the works.

STAIN:

To be "Cleartone" of colours to be selected.

VARNISH:

To be Mander's or other approved best quality pure copal varnish.

WORKMANSHIP:

All nail or other holes to be filled with putty, tinted to match wood and all knots to be carefully knotted.

Rub down between each coat to obtain a good surface.

All surfaces must be clean and perfectly dry before any paint is applied. Each coat of paint, is to be a different tint to the previous coat, and the whole of the paint is to be finished if practicable one coat over all surfaces before a further coat is applied.

The Contractor shall submit all tints to the Architects or their representative for their approval. All mixing of colours to be done at the building.

EXTERNAL PAINTING:

All external woodwork to be primed before being fixed. Paint all exposed woodwork in addition to priming coat, four oils as directed. Main Entrance doors to be painted four oils, to be stippled between each coat and to be finished with two coats of the best and approved white Copal carriage varnish applied without adulteration. All exposed ironwork, galvanised or otherwise, including windows, flashings, interiors of all gutters, etc., to be cleaned down and to receive two good coats Walter Carson and Sons Anti-Corrosion paint in colours as directed. (Guthrie Bowron & Co. Ltd., Agents).

INTERIOR WORK:

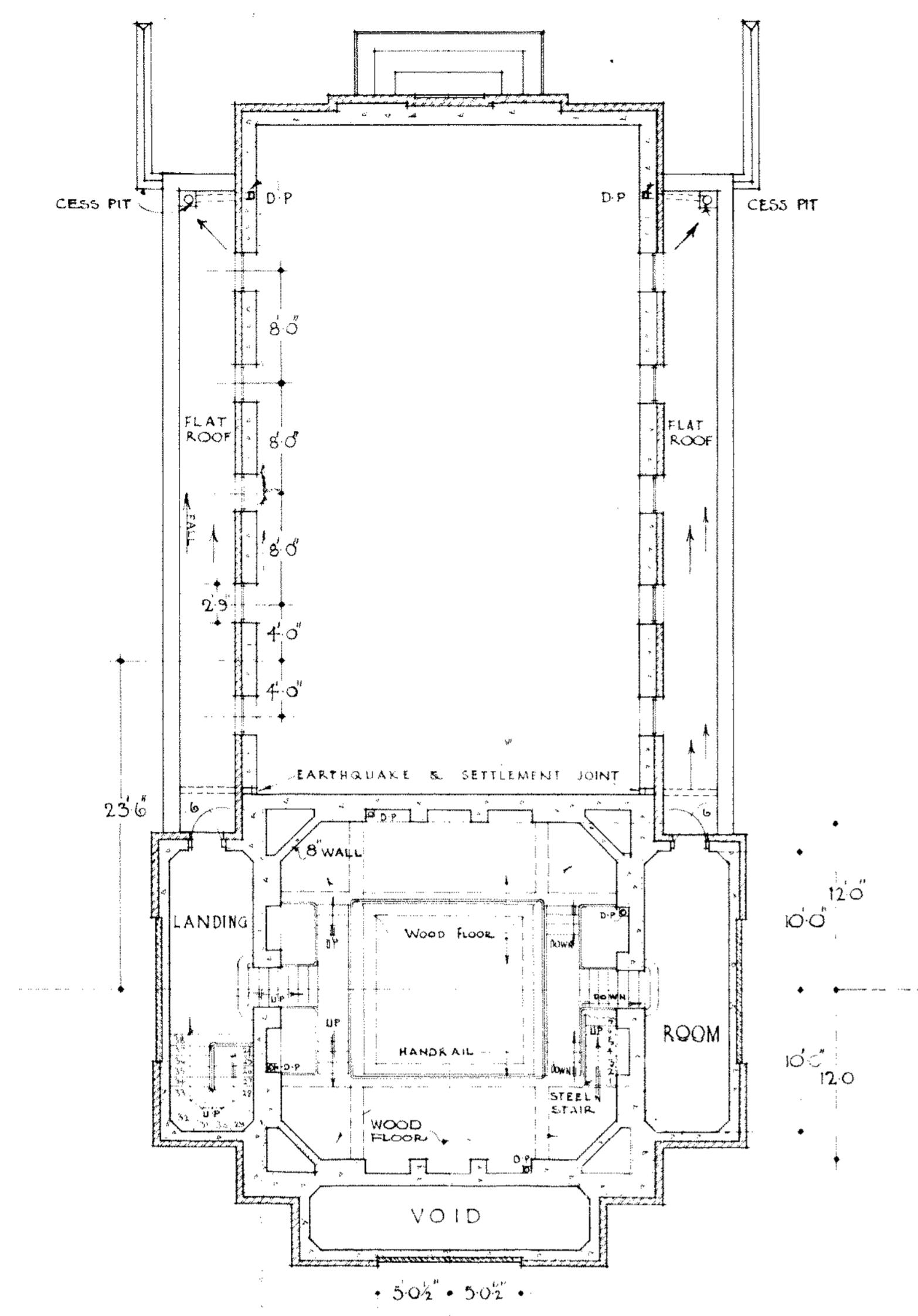
Paint all interior exposed ironwork including R.S.J's steel windows, stairs, balustrades, etc., two coats as specified for "External Painting".
Doors Nos. 1 and 2 to be prepared for natural finish and to be stained to approval with "Cleartone", stopped, filled with 1 coat shellac filler and finished with two coats "Mander's" best quality hard drying church varnish put on without adulteration and to finish with a high glossy surface. Carefully rub down first coat varnish with fine pumice in preparation for the final coat. Paint all other doors and their frames and the wood louvres in Clavier Chamber as specified above for "External Painting".

FRENCH POLISH:

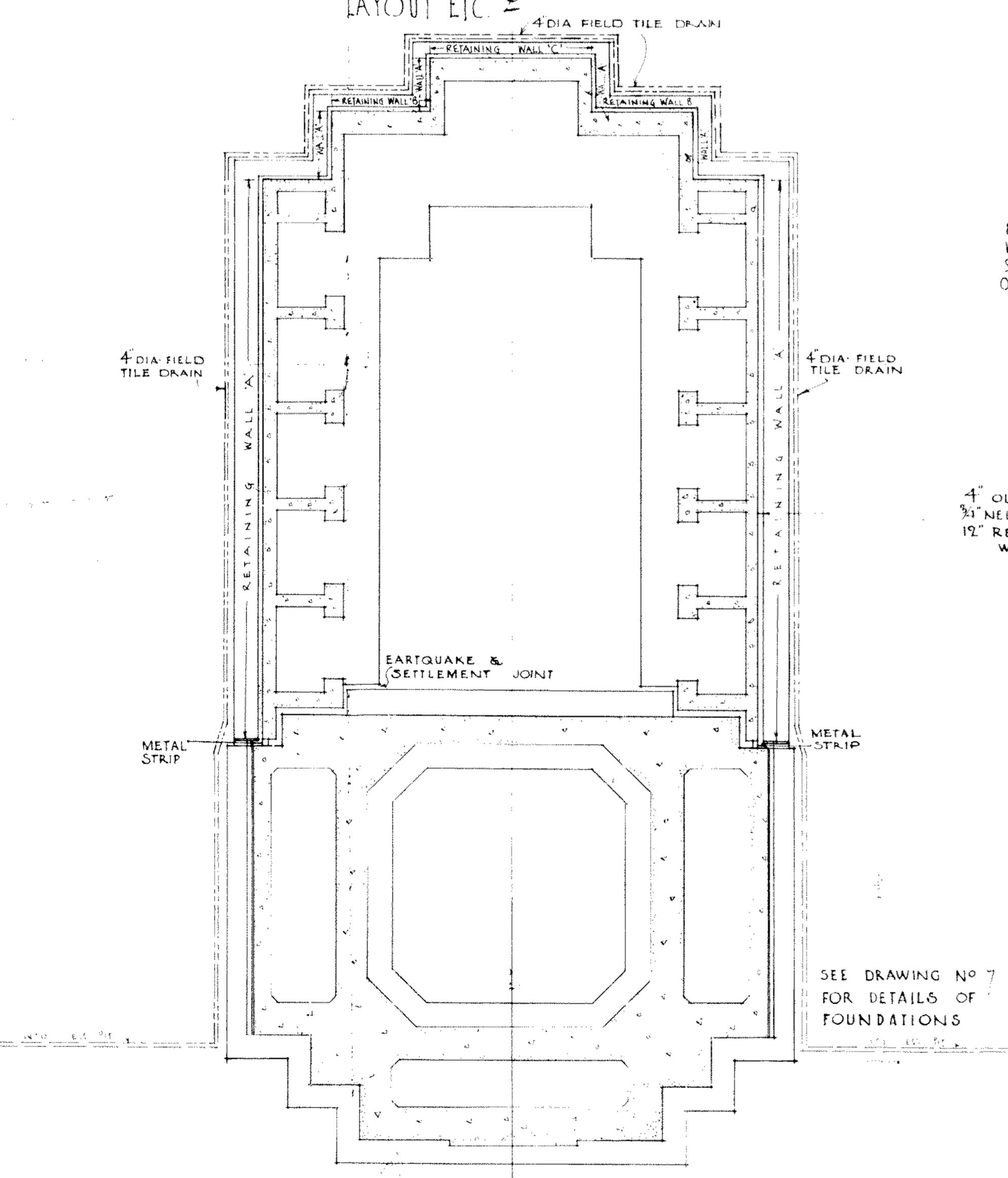
Stain, fill, body and French polish in the highest grade manner all wood handrailing to the stairs.

OIL BOUND LIMEWASH:

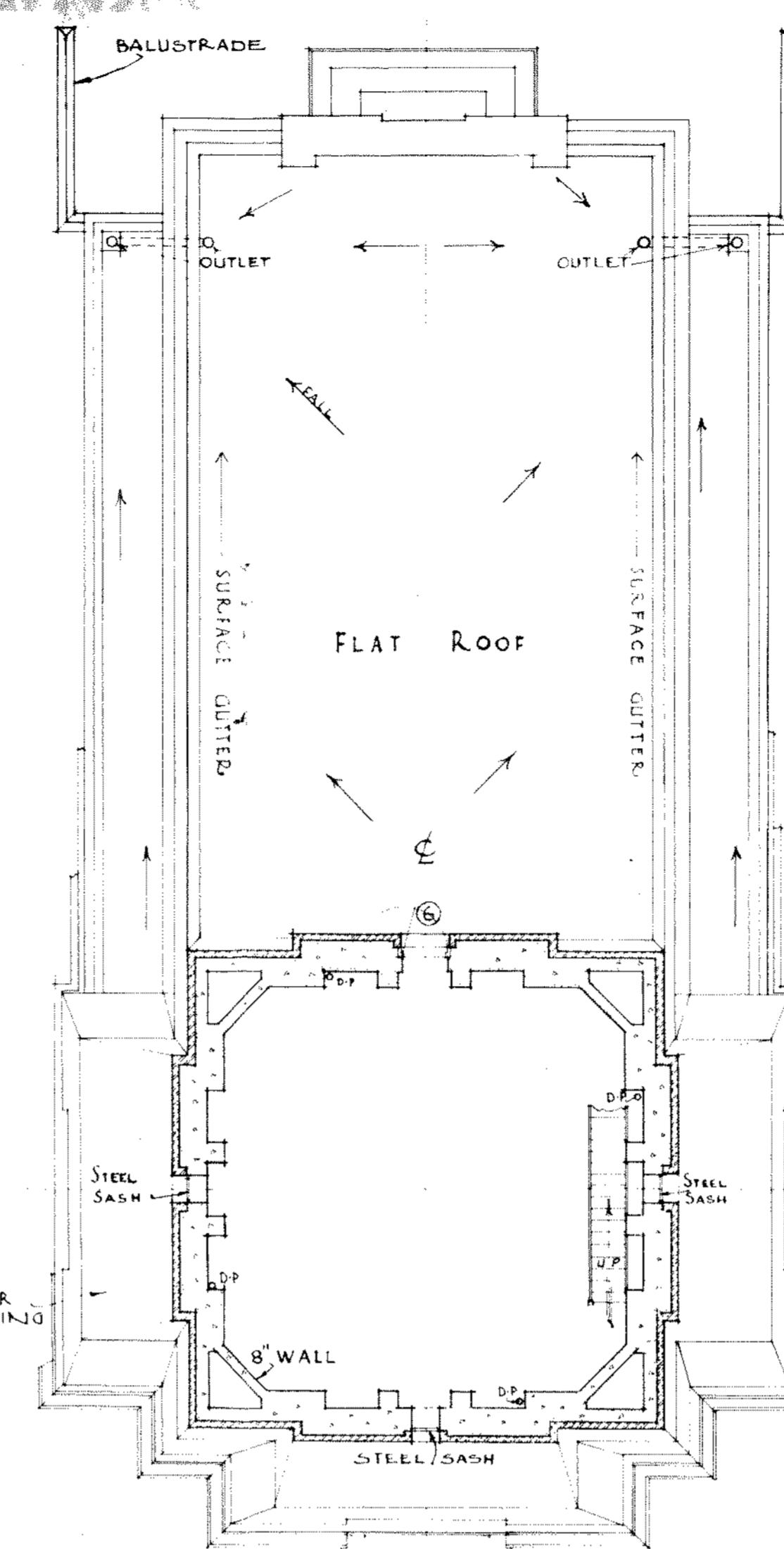
Spray the interior walls of the Clavier Chamber with two coats approved oil bound lime wash in tints as



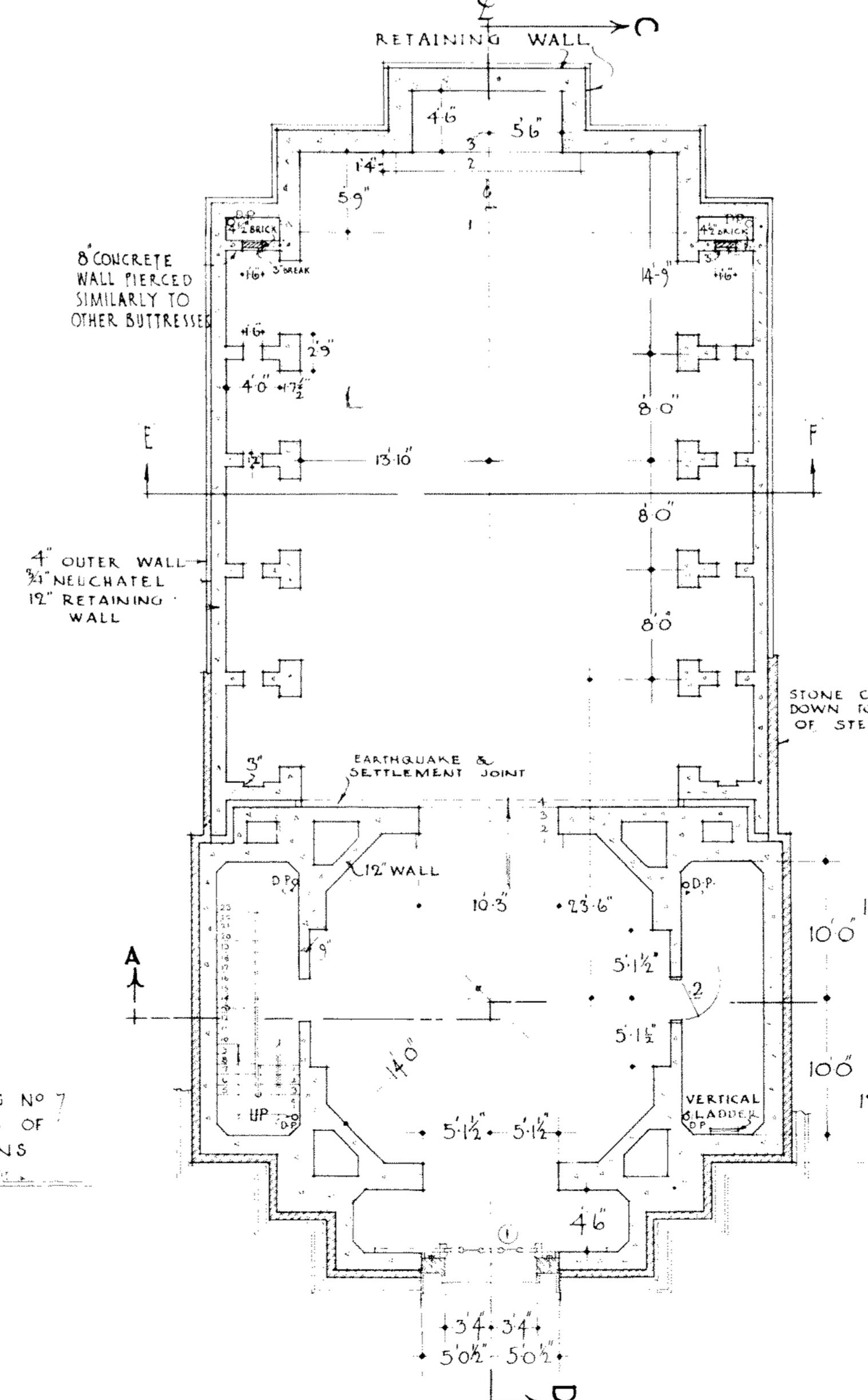
PLAN AT 2ND FLOOR
ALSO SHOWING 3RD FL BEAMS
LAYOUT ETC. ✓
4" DIA FIELD TILE DRAWS



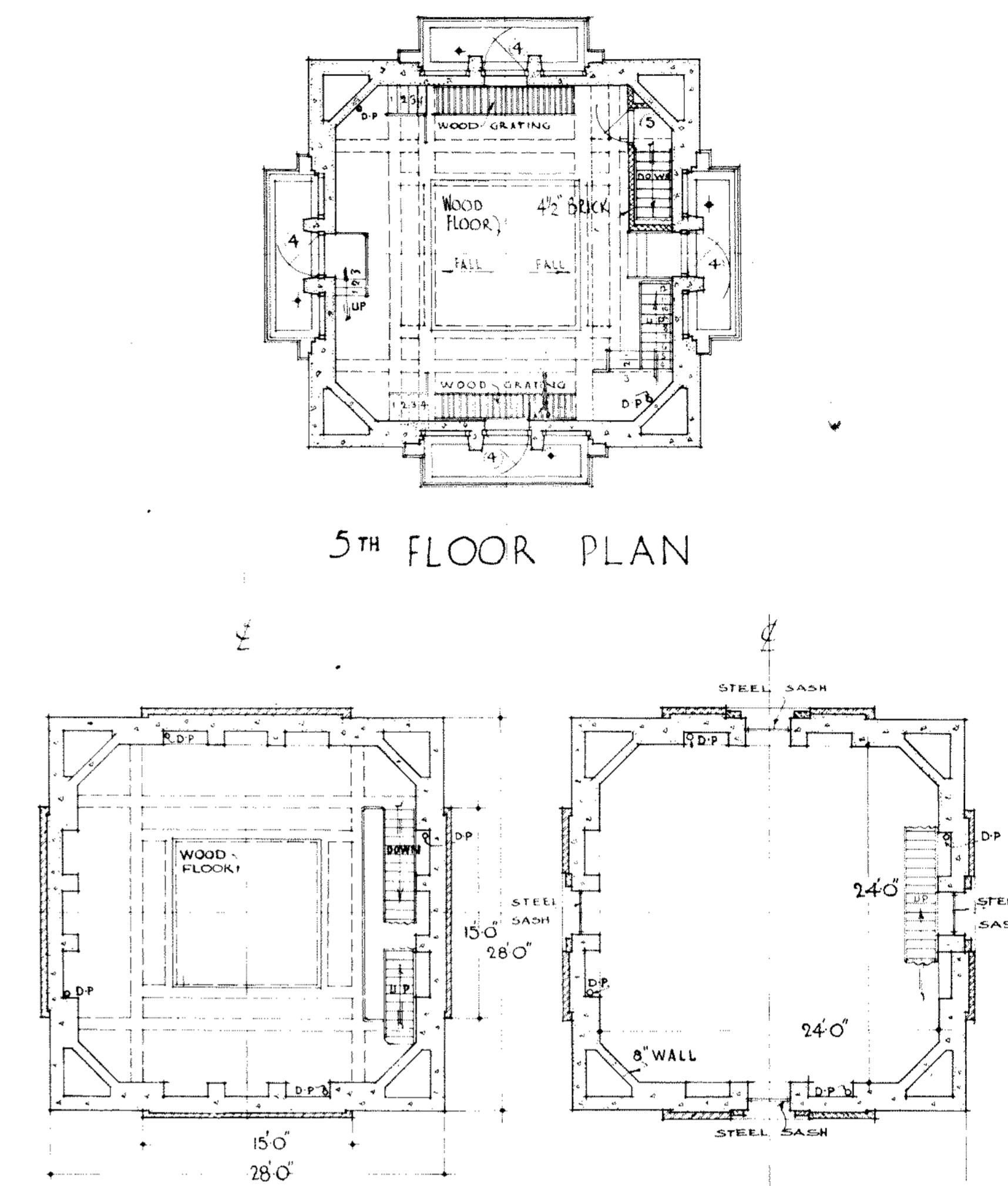
DRAINAGE AND FOUNDATION PLAN



PLAN AT
BASE OF SHAFT
3RD FLOOR

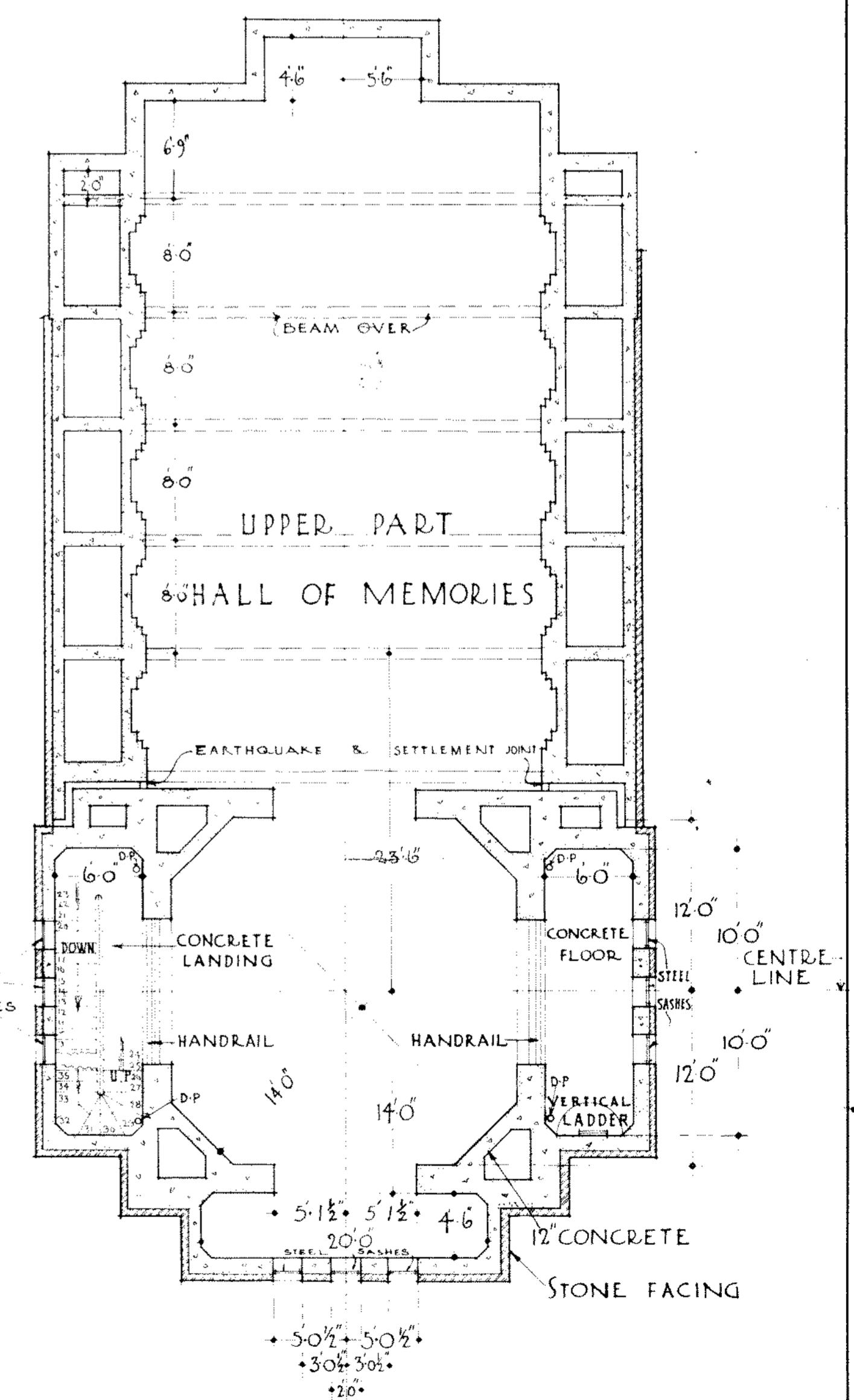


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GROUND FLOOR PLAN



4TH FLOOR PLAN

PLAN BELOW
5TH FLOOR



PLAN AT 1ST FLOOR

INDICATIONS

CONCRETE IN SECTION

STONE

BY WHOM
DRAWN L.M.W
TRACED L.B.H
CHECKED R.F.
DATE 24-10-30

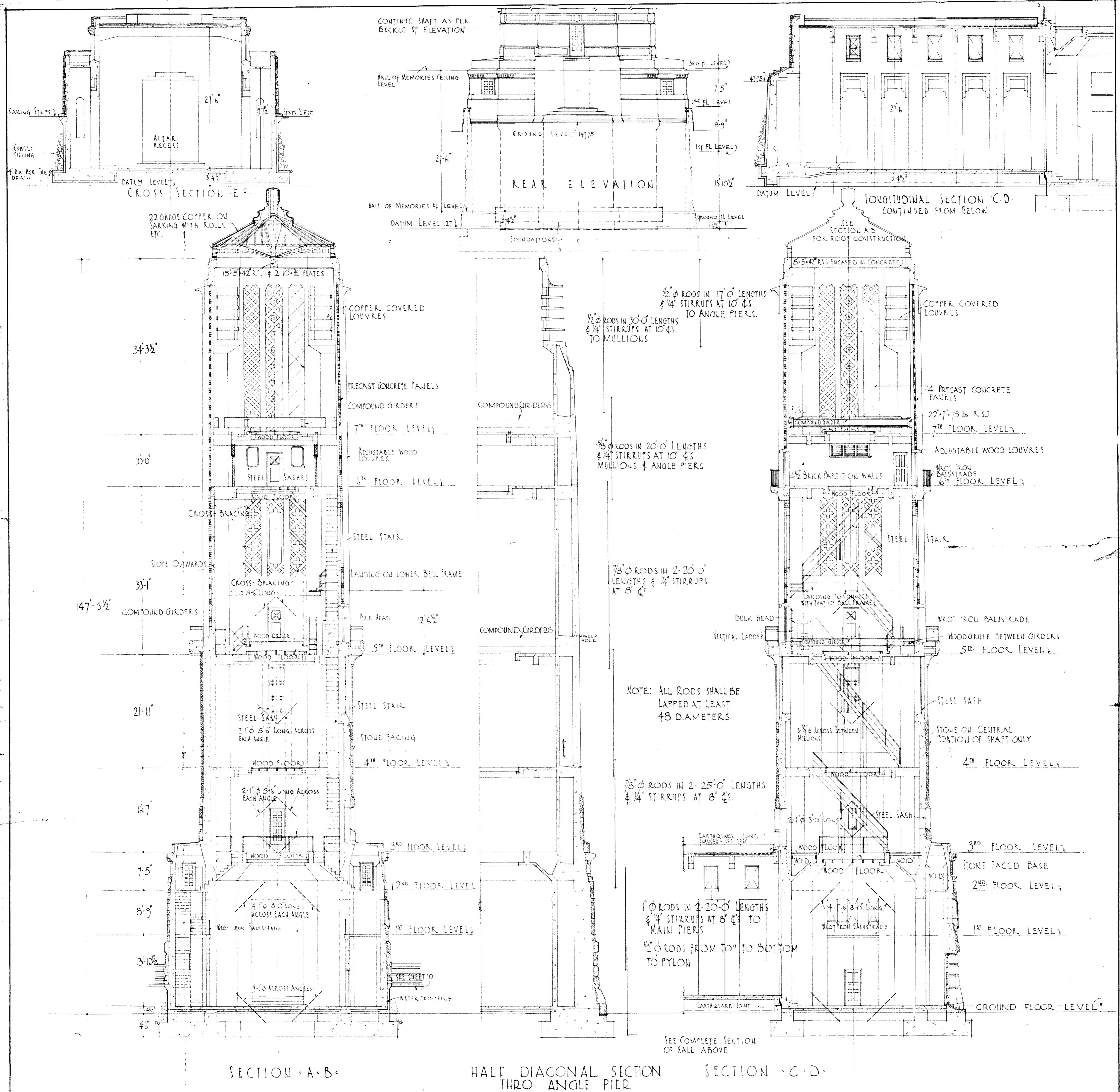
WELLINGTON CARILLON

MEMORIAL TOWER

GUMMER & FORD
ARCHITECTS
STRUCTURAL ENGINEERS
AUCKLAND

SCALE
EIGHTH INCH EQUALS
NAME
PLANS

D ERS	SCALE ONE EIGHTH INCH EQUALS ONE FOOT	CONTRACT NO 209
	NAME PLANS	DRAWING NO 1



INDICATIONS
CONCRETE IN SECTION
STONE IN " "
ROBBLE FILLING

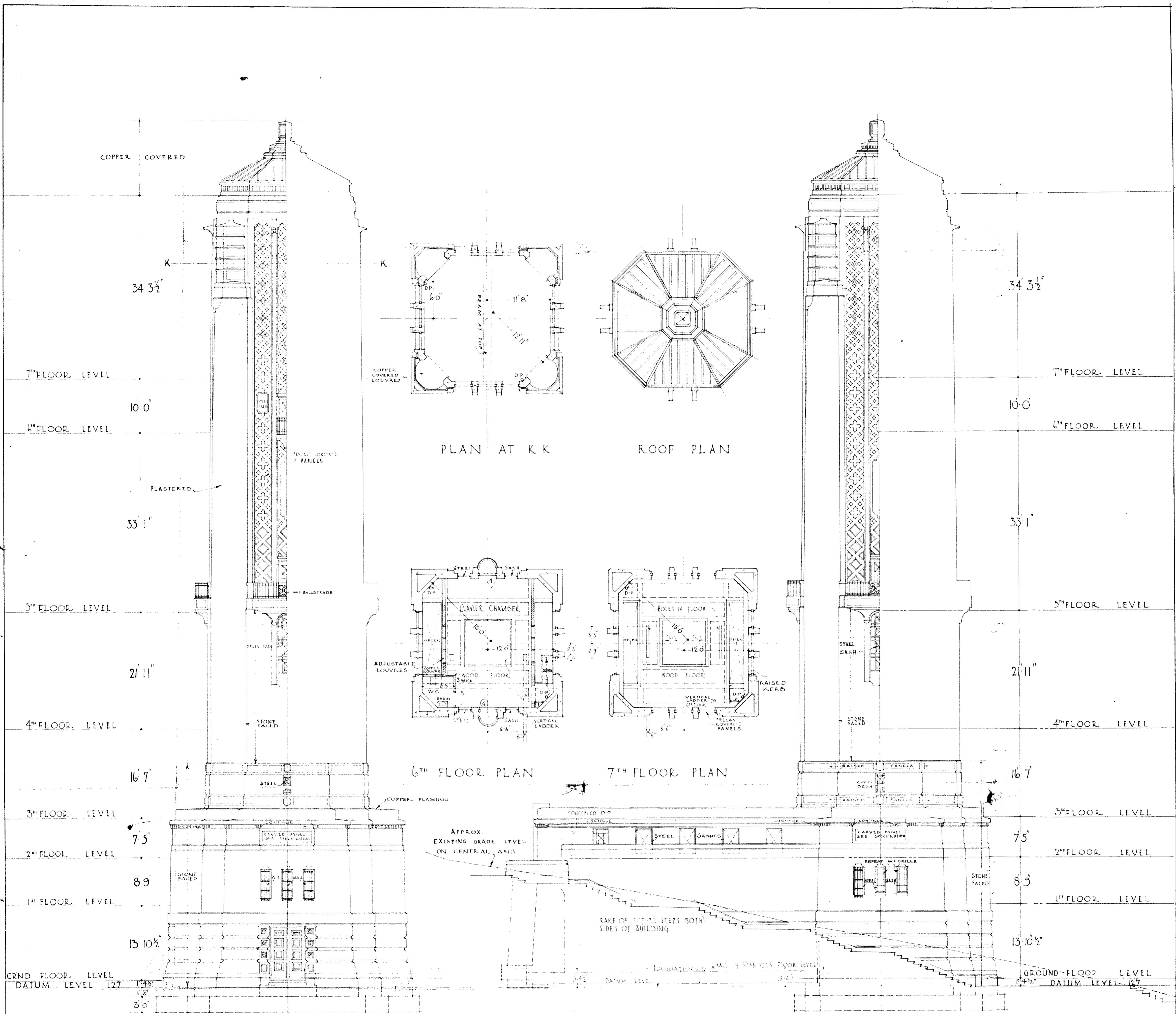
BY WHOM
DRAWN L.M.W.
TRACED L.M.W. & L.B.H.
CHECKED R.M.G.
DATE: 24-10-30.

WELLINGTON CARILLON

MEMORIAL TOWER

GUMMER & FORD
ARCHITECTS
STRUCTURAL ENGINEERS
AUCKLAND

SCALE
ONE EIGHTH INCH EQUALS ONE
FOOT
NAME
VERTICAL SECTIONS
DRAWING NO
2

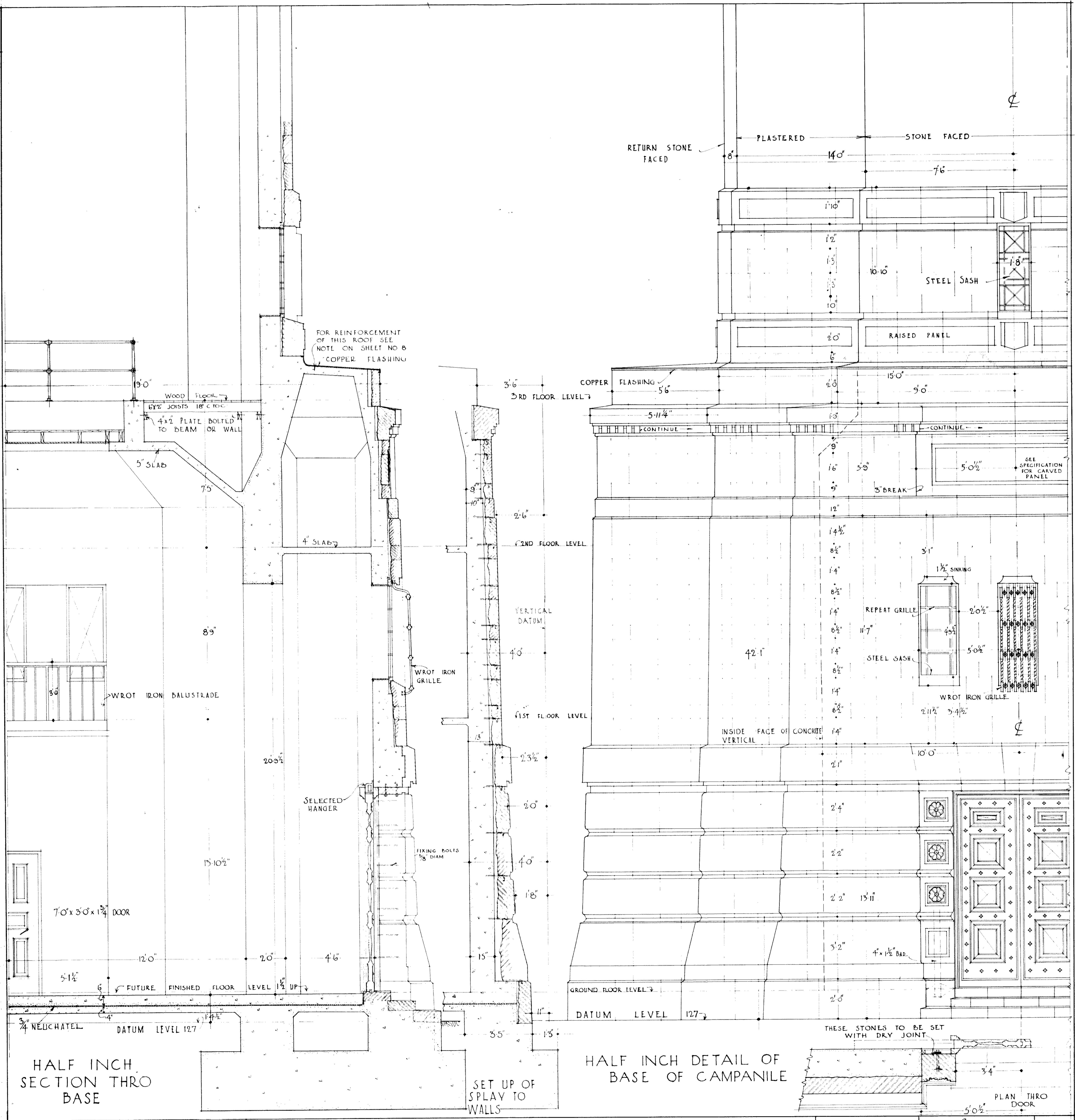


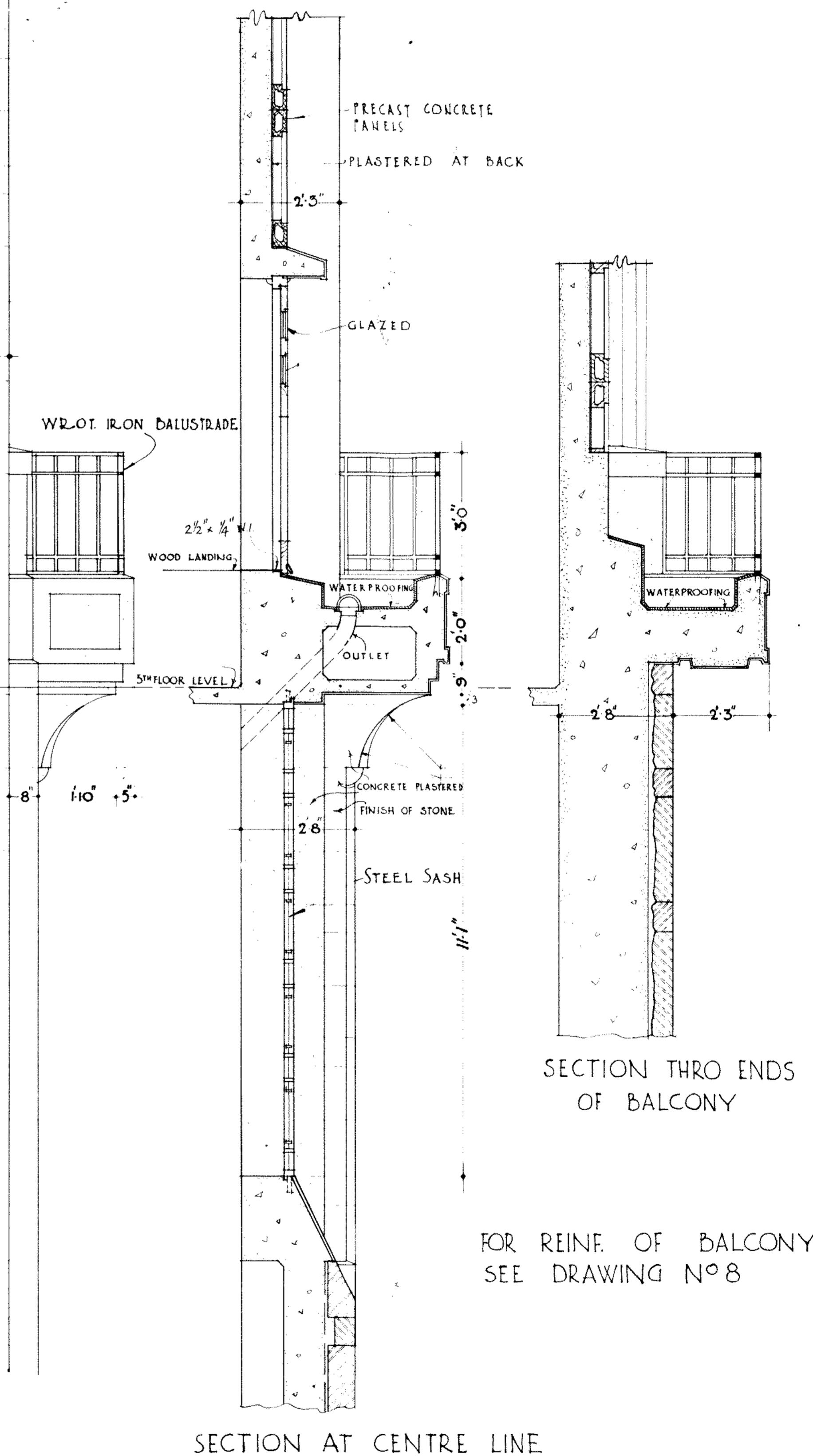
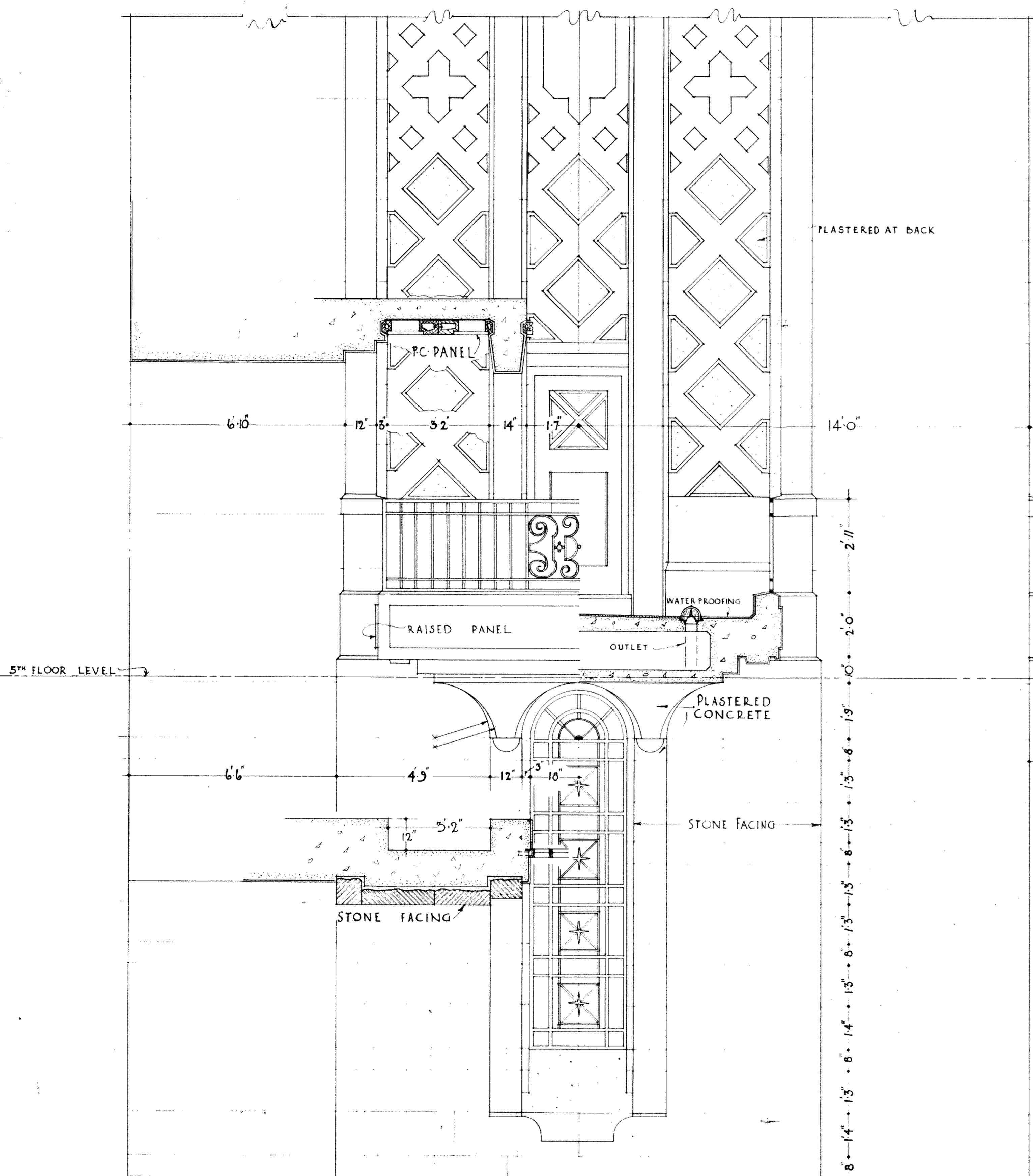
ELEVATION TO BUCKLE ST
BACK ELEVATION SHAFT SIMILAR.

SIDE ELEVATION
OTHER SIMILAR

WELLINGTON CARILLON MEMORIAL TOWER

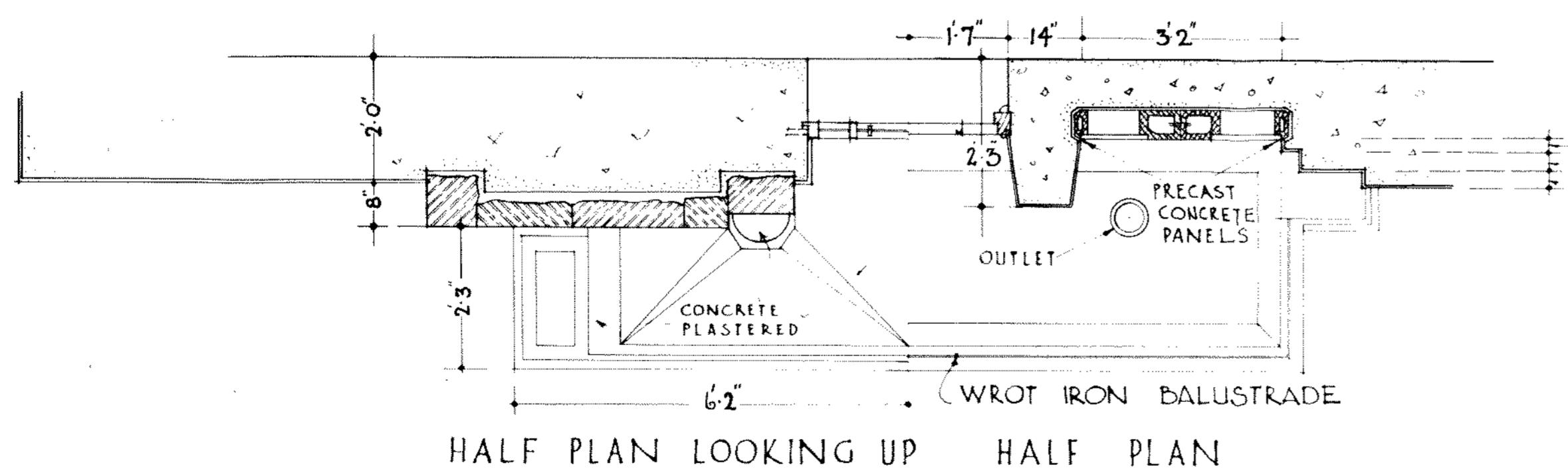
INDICATIONS	BY WHOM DRAWN: L.M.W. TRACED: L.B.H. CHECKED: R.G. DATE: 24-10-30.	SCALE. ONE EIGHTH INCH EQUALS ONE FOOT. CONTRACT NO. 209.
		NAME. DRAWING NO. 3 PLANS & ELEVATIONS





FOR REINF. OF BALCONY ETC
SEE DRAWING No 8

SECTION AT CENTRE LINE



INDICATIONS

CONCRETE IN SECTION

STONE IN

PRECAST CONCRETE IN

BY WHOM
DRAWN G.F.W.
TRACED L.B.H.
CHECKED W.G.
DATE: 24-10-30

WELLINGTON CARILLON

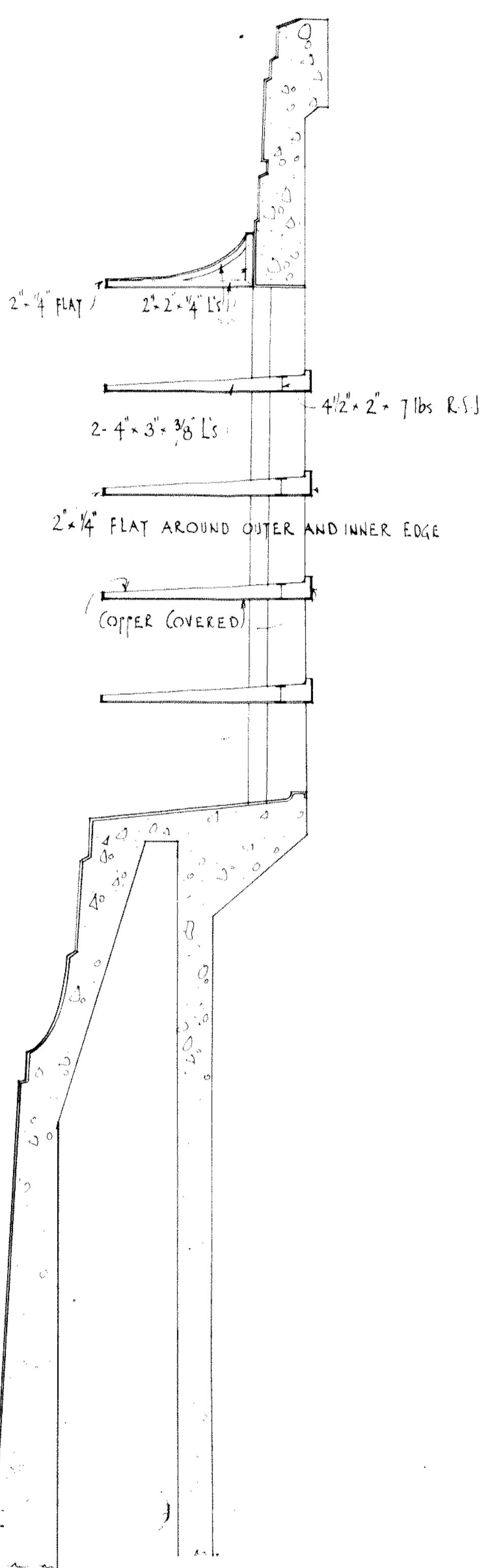
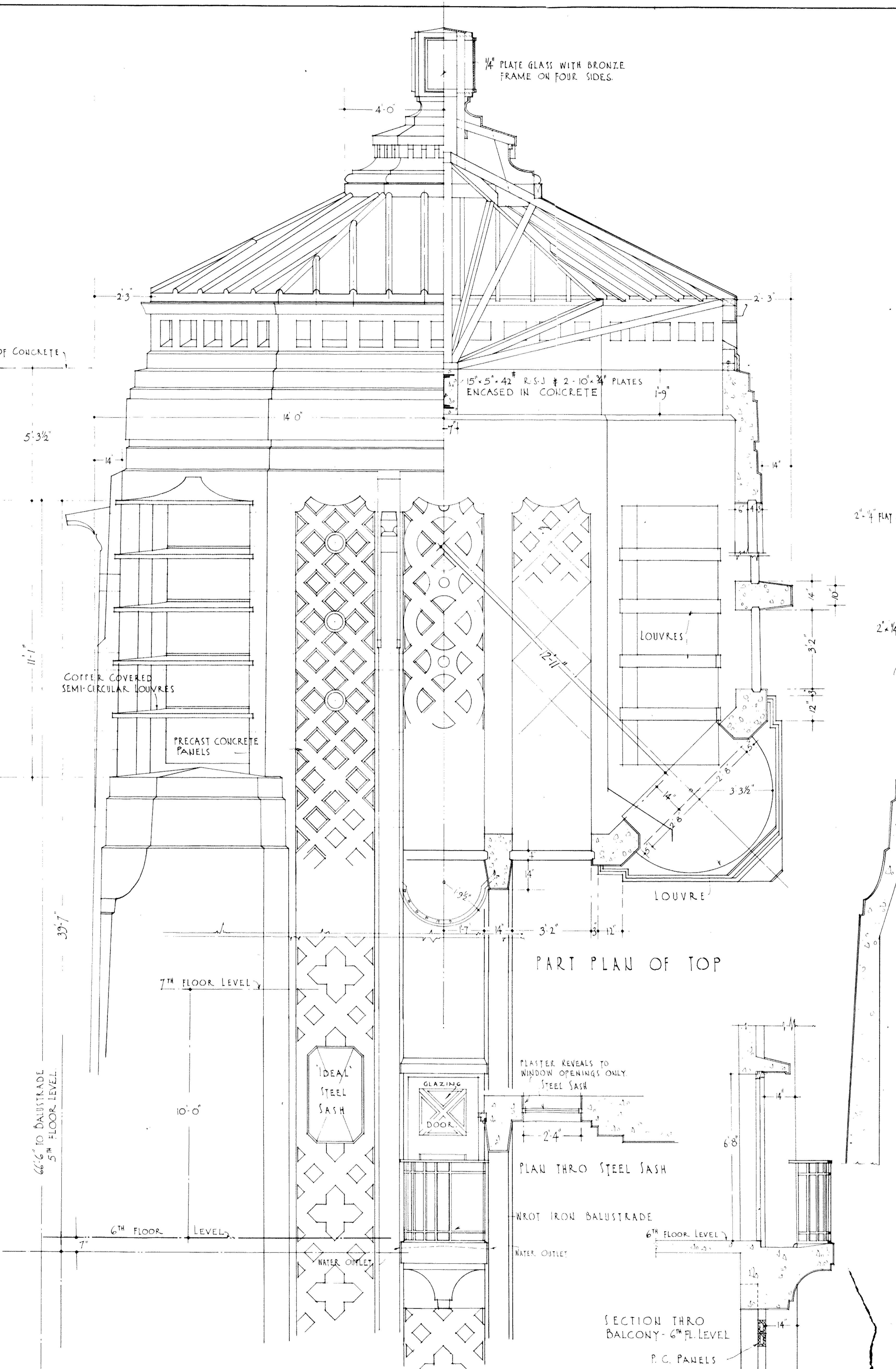
MEMORIAL TOWER

GUMMER & FORD
ARCHITECTS
STRUCTURAL ENGINEERS.
AUCKLAND

SCALE ONE HALF INCH EQUALS ONE FOOT	CONTRACT NO 209.
NAME DETAIL AT 5 TH FLOOR LEVEL	DRAWING NO. 5.

CONTRACT
No.
209.

DRAWING
No.
5.



DIAGONAL SECTION
THRO TOP

FOR REINFORCEMENT SEE
DRAWINGS NOS 3, 7, 8.
VERTICAL REINF. SHEET NO 3
BEAMS INTERNALLY, " " 8
DETAIL TOP BAND & BALCONY, DITTO
DOOR HEAD & ANGLE MATS, SHEET NO 7.

HALF INCH DETAIL OF TOP OF CAMPANILE.

INDICATIONS
CONCRETE IN SECTION
PRECAST CONCRETE IN "

BY WHOM
DRAWN G.F.W.
TRACED L.M.N.
CHECKED R.E.H.G.
DATE: 24-10-30

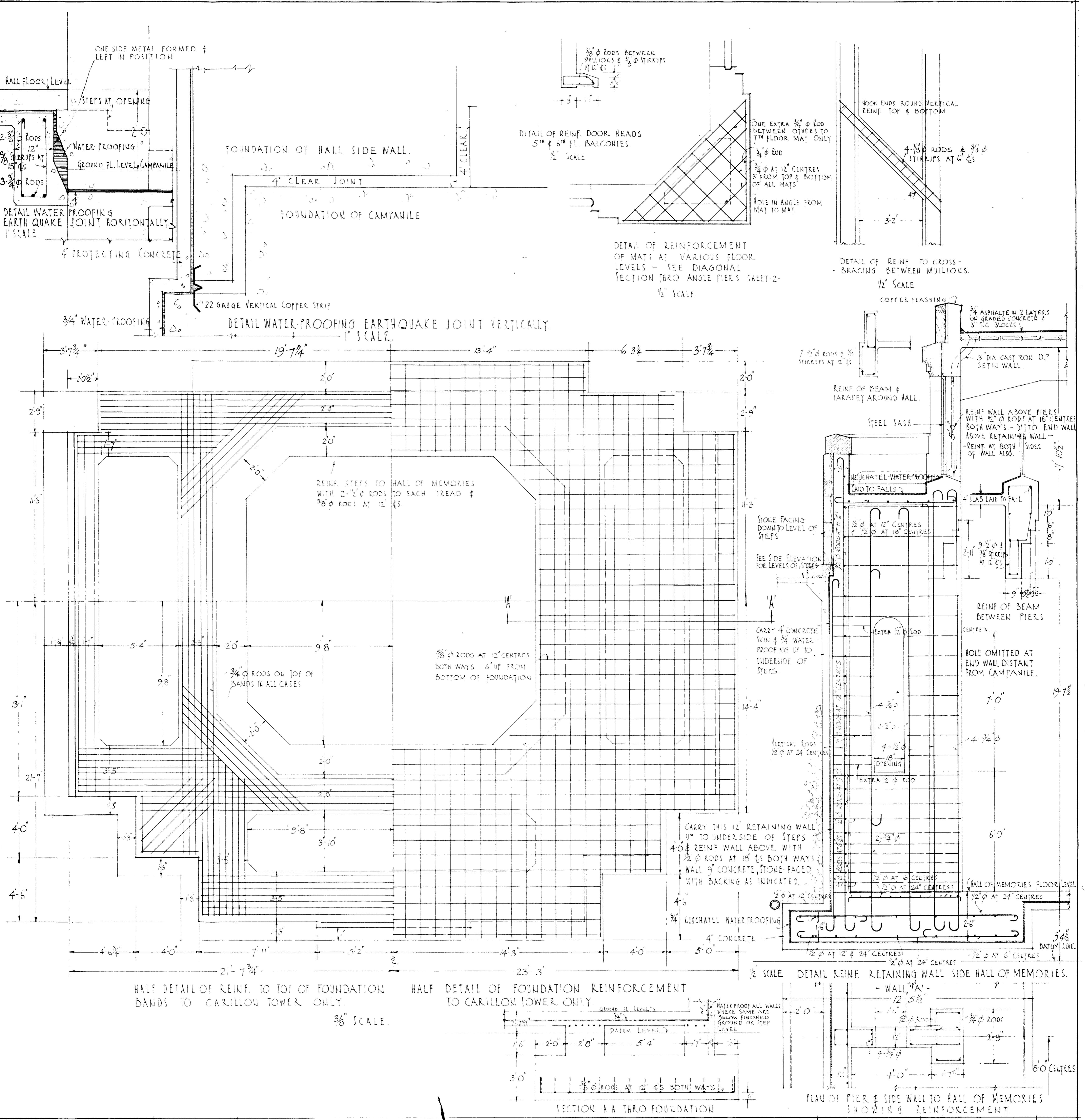
WELLINGTON
CARILLON

MEMORIAL
TOWER

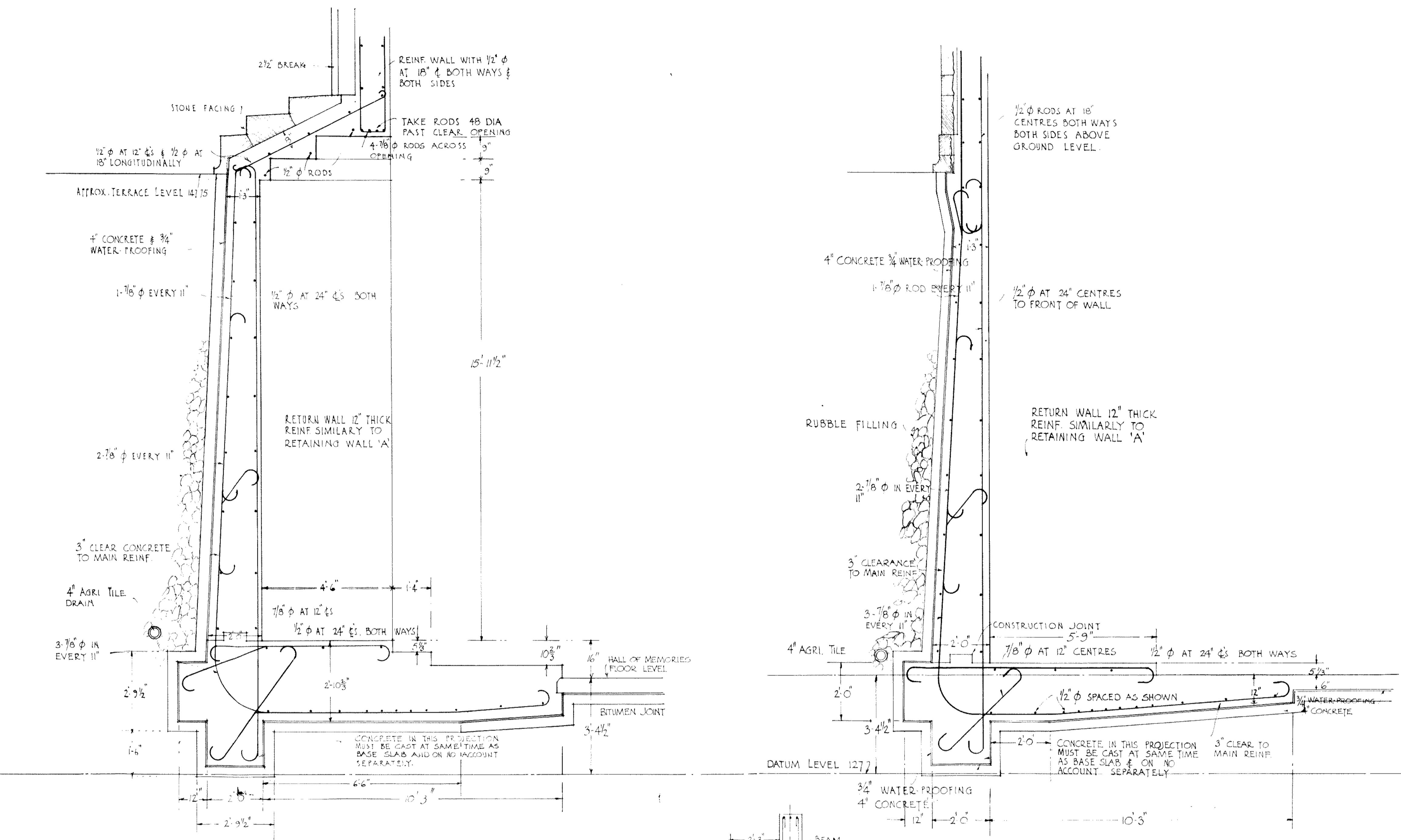
GUMMER & FORD
ARCHITECTS
STRUCTURAL ENGINEERS
AUCKLAND

SCALE
ONE HALF INCH EQUALS ONE FOOT
NAME
DETAIL OF TOP

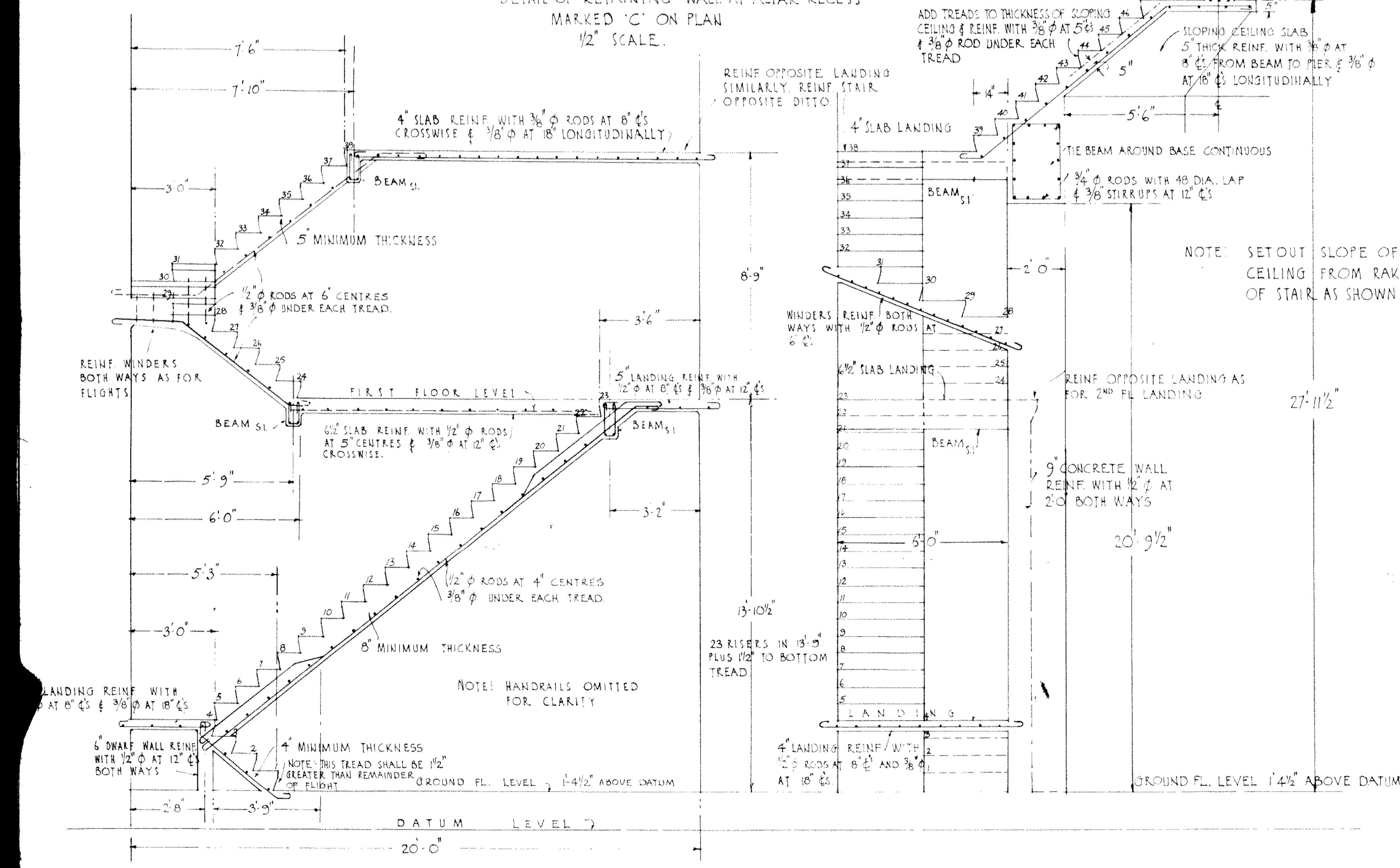
CONTRACT
NO 209
DRAWING
NO 6



INDICATIONS	BY WHOM DRAWN [initials] TRACED [initials] CHECKED [initials] DATE 24-10-30	WELLINGTON CARILLON	GUMMER & FORD ARCHITECTS STRUCTURAL ENGINEERS AUCKLAND	MEMORIAL TOWER	SCALES $\frac{3}{8}$ ", $\frac{1}{2}$ " & 1" EQUALS ONE FOOT	CONTRACT NO 203
					NAME STRUCTURAL DETAILS.	DRAWING NO 7



DETAIL OF RETAINING WALL AT ALTAR RECES
MARKED 'C' ON PLAN
1/2" SCALE.



DETAIL OF CONCRETE STAIR

ELEVATION

SECTION THRO STAIR

3/8" SCALE

WELLINGTON CARILLON

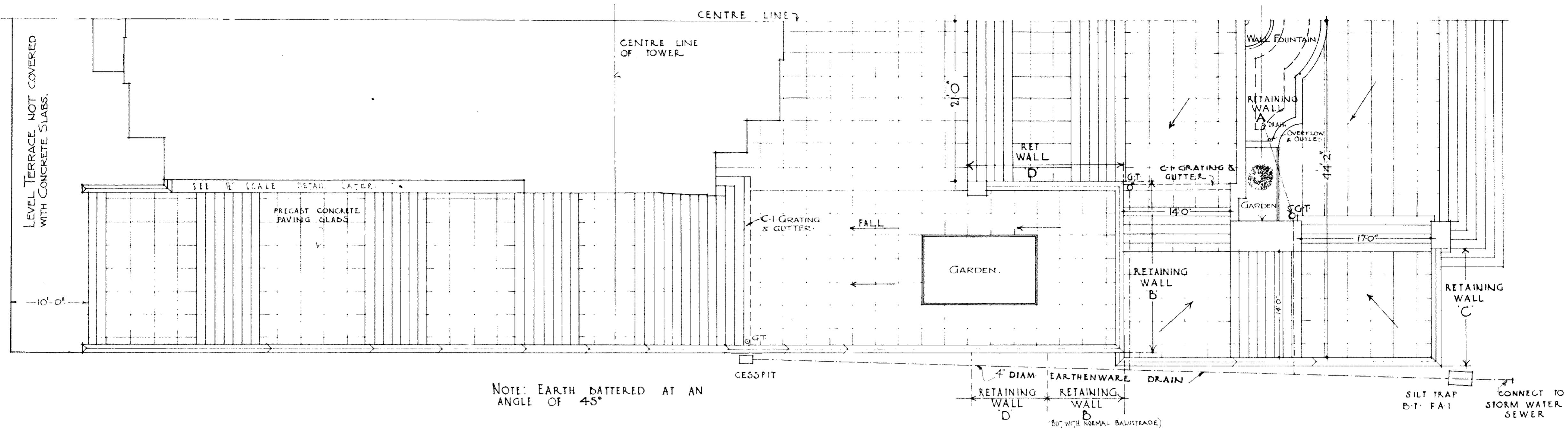
MEMORIAL TOWER

GUMMER & FORD
ARCHITECTS
STRUCTURAL ENGINEERS
AUCKLAND

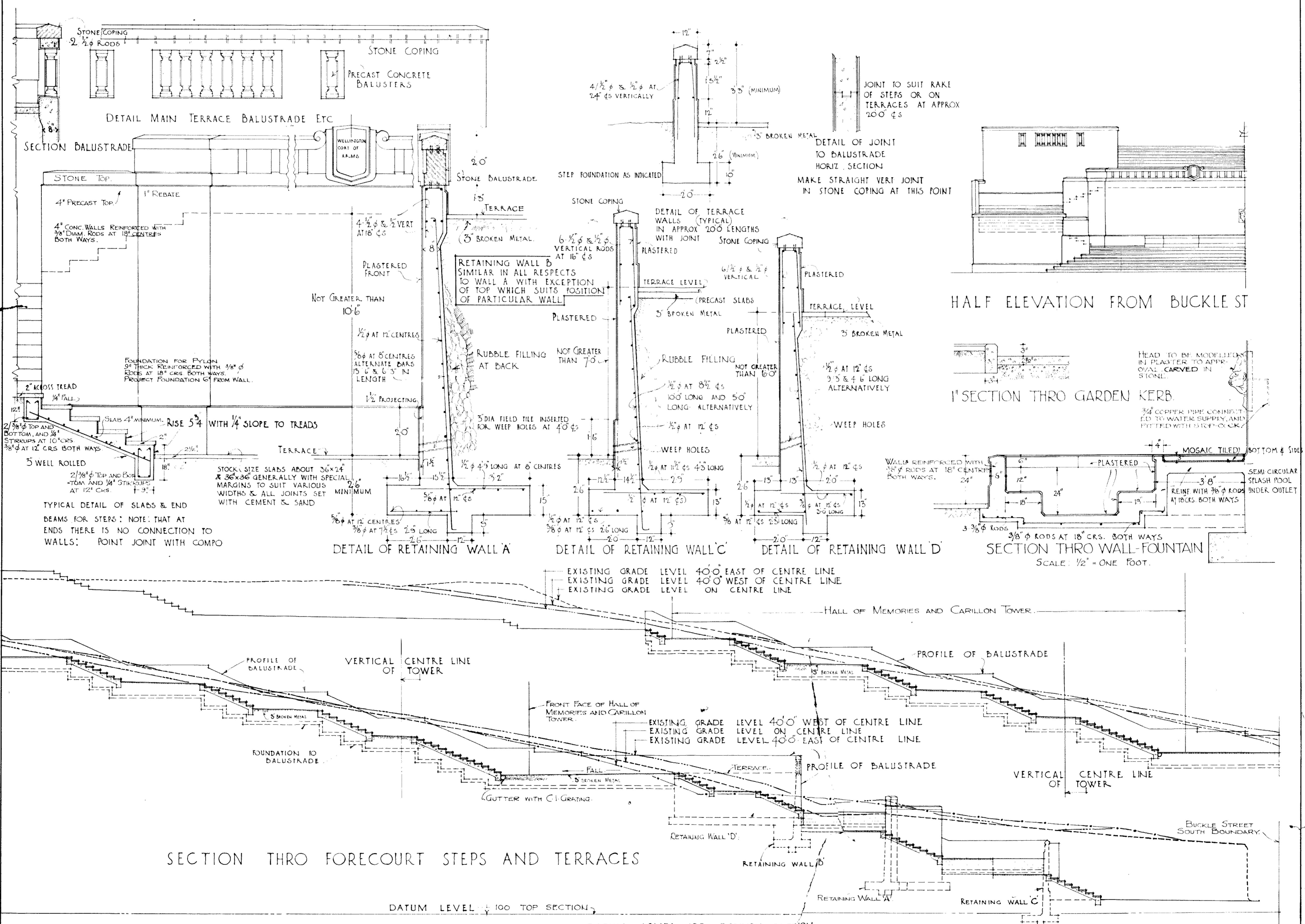
SCALE
1/2" AND $\frac{3}{8}$ " EQUALS ONE FOOT

CONTRACT
NO.
209

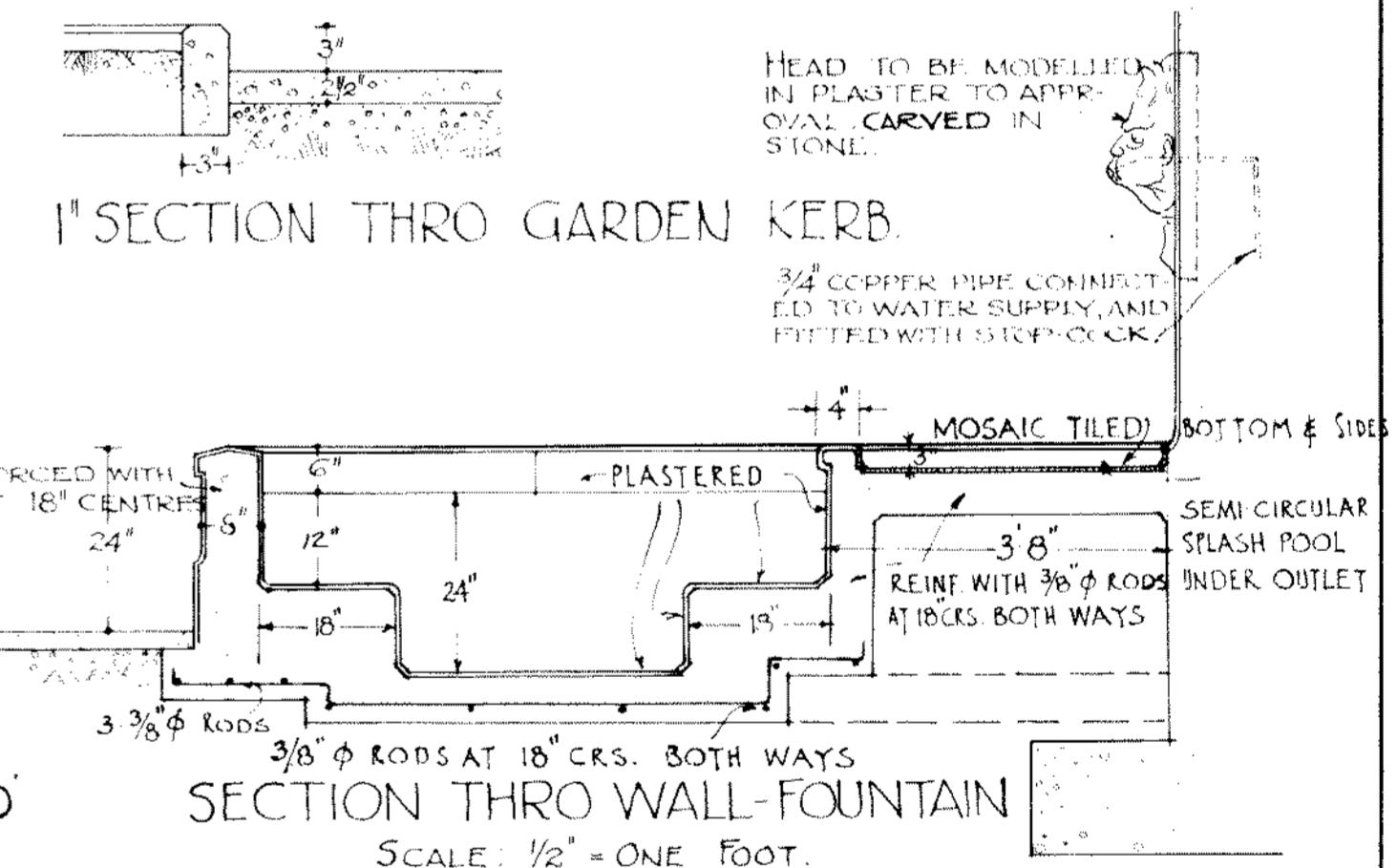
DRAWING
NO
9



HALF PLAN OF FORECOURT STEPS AND TERRACES



HALF ELEVATION FROM BUCKLE ST



SECTION THRU GARDEN KERB

SECTION THRO FORECOURT STEPS AND TERRACES

DATUM LEVEL + 100 TOP SECTION

DATUM LEVEL - 100 BOTTOM SECTION

INDICATIONS

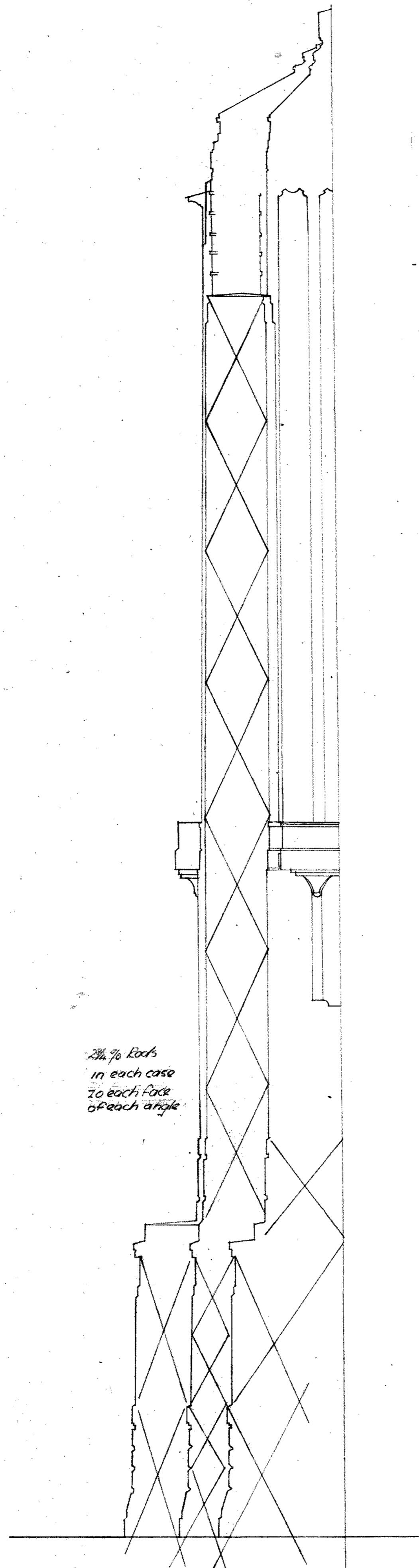
BY WHOM
DRAWN [REDACTED]
TRACED [REDACTED]
CHECKED [REDACTED]
DATE 24-10-30

WELLINGTON
CARILLON

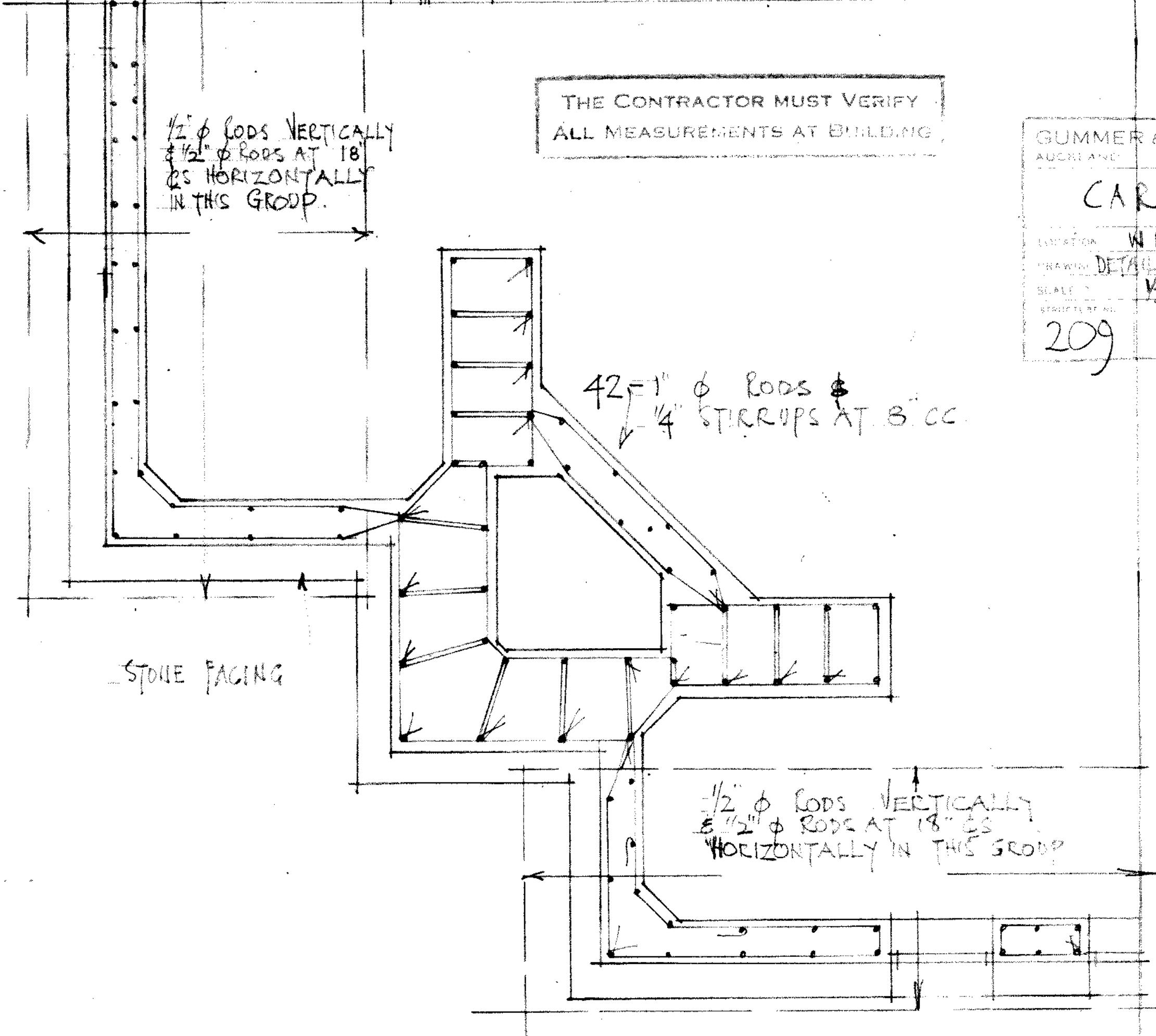
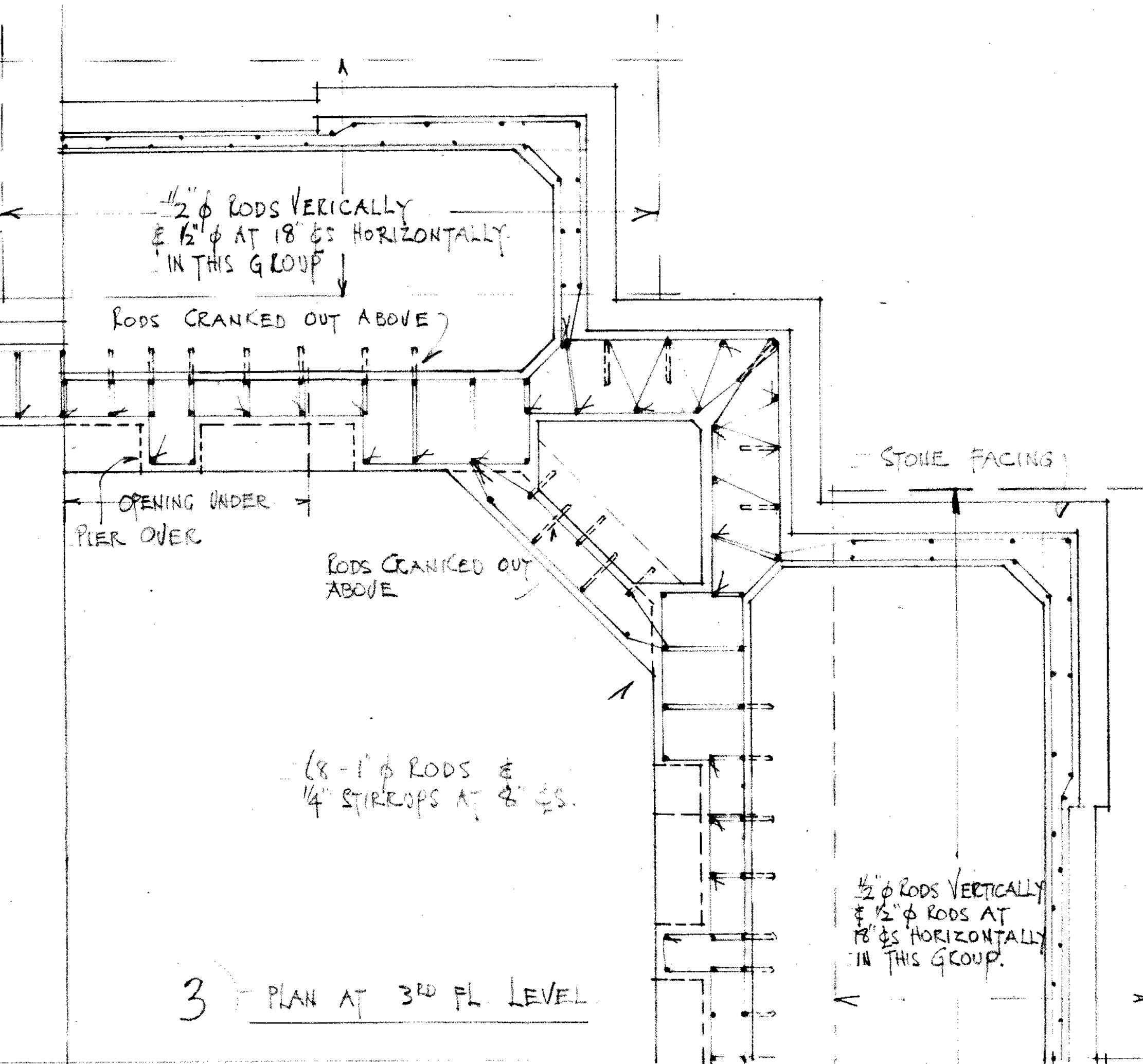
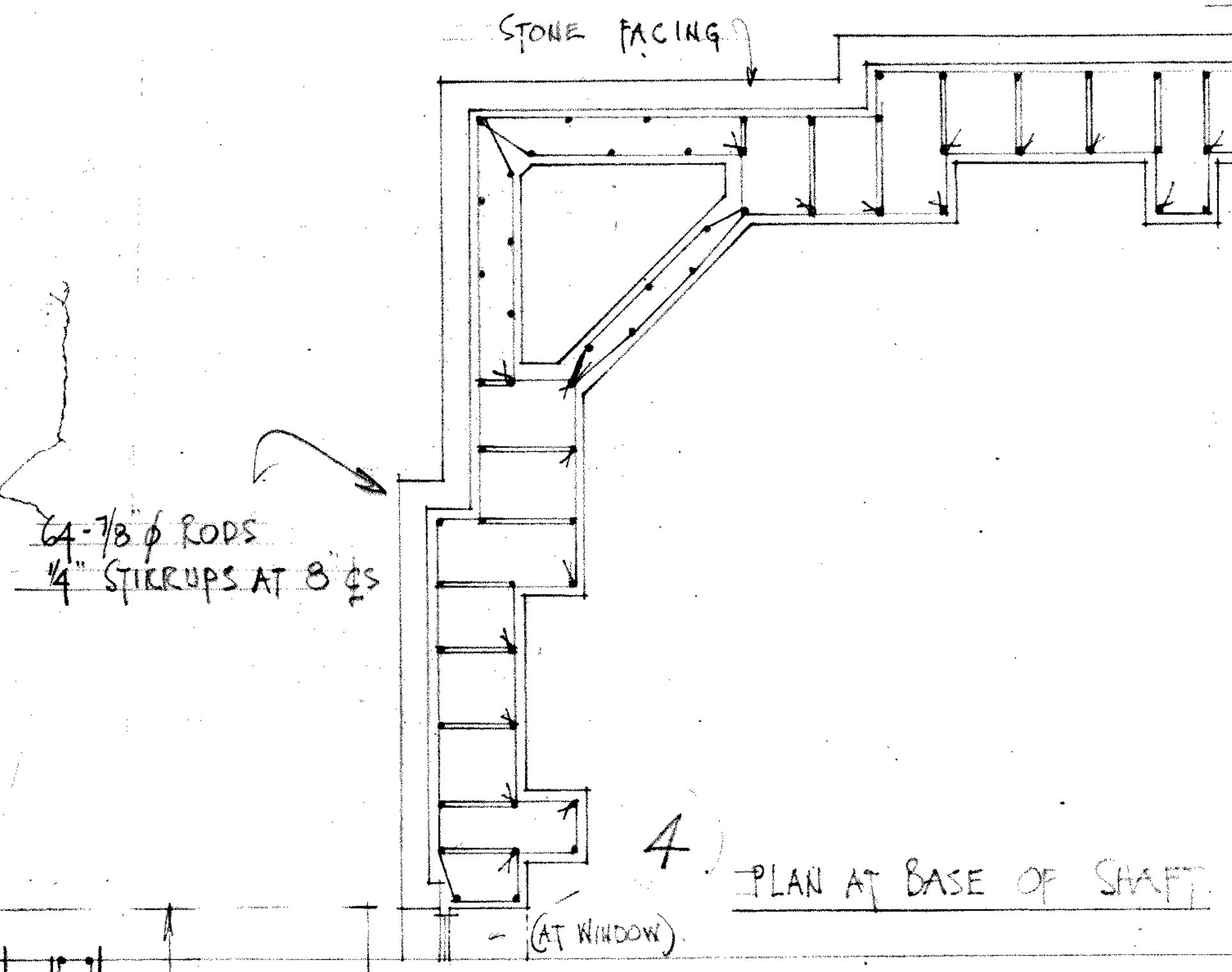
MEMORIAL
TOWER

GUMMER & FORD
ARCHITECTS
STRUCTURAL ENGINEERS
AUCKLAND

SCALE
1/2" AND 1/8" EQUALS ONE FOOT
CONTRACT
No 209
NAME
FORECOURT
DRAWING
NO 10



GUMMER & FORD, ARCHITECTS & STRUCTURAL		ENGINERS
AUCKLAND NEW ZEALAND		
CARILLON TOWER		
LOCATION	WELLINGTON	
DRAWING	DIAG. REINF. TO PIER FACES	
SCALE	1/8 inch	
STRUCTURE NO.	BY WHOM	DATE
209	LMW	2.3.31
42	N	2.3.31



THE CONTRACTOR MUST VERIFY
ALL MEASUREMENTS AT BUILDING

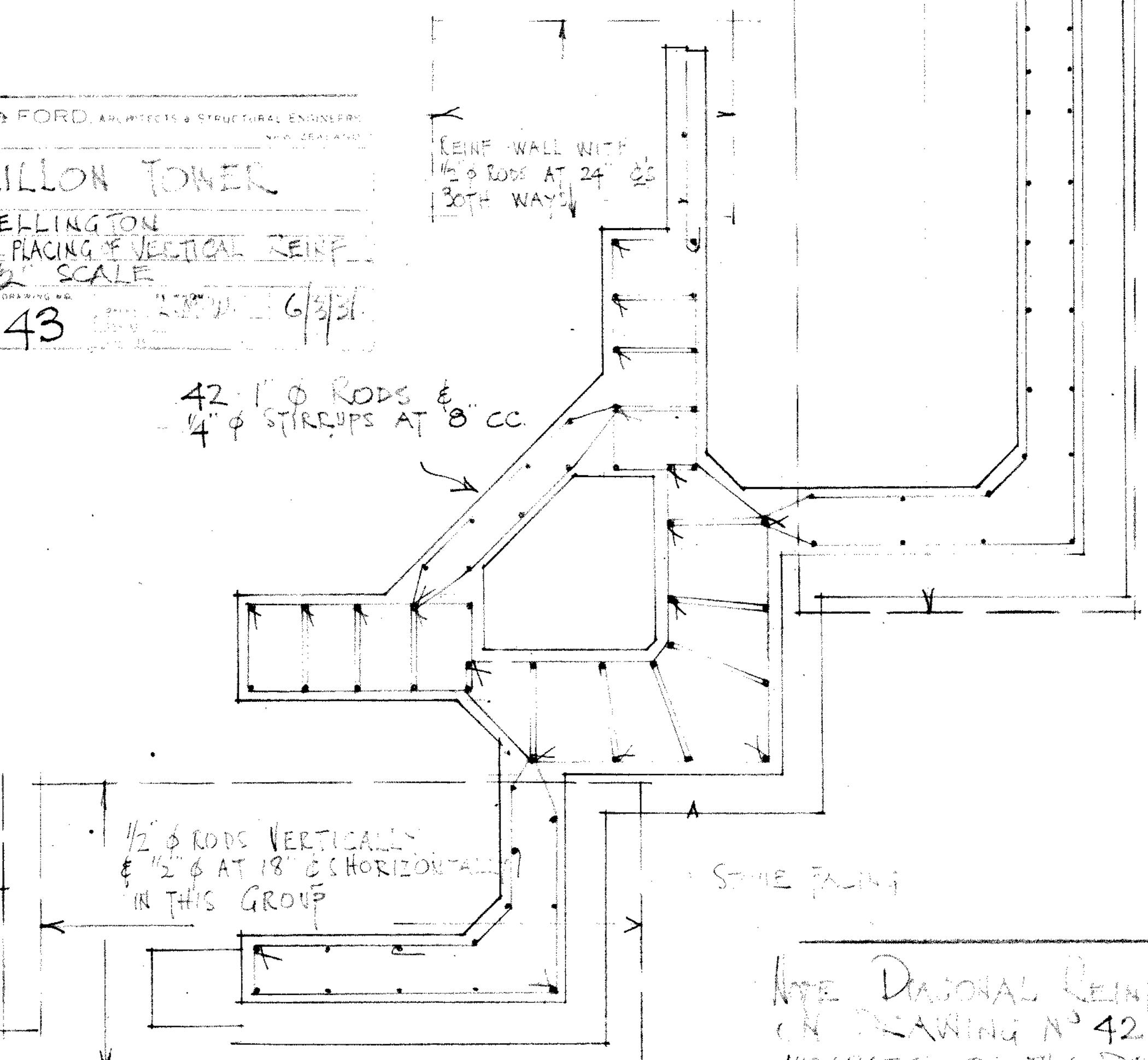
GUMMER & FORD, ARCHITECTS & STRUCTURAL ENGINEERS
AUGUST AND SEPTEMBER 1968

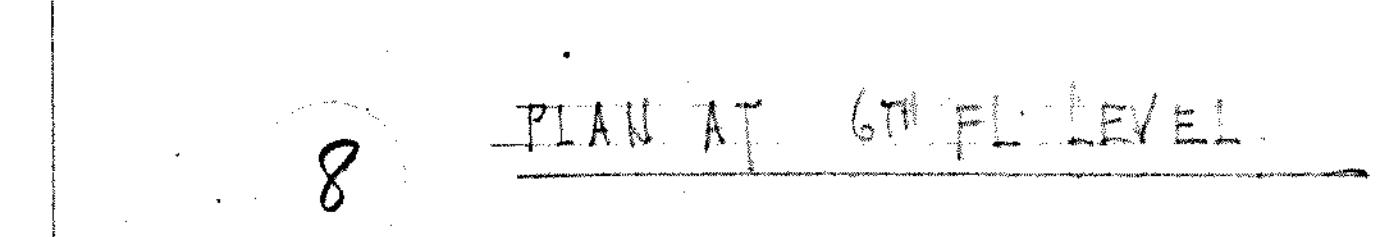
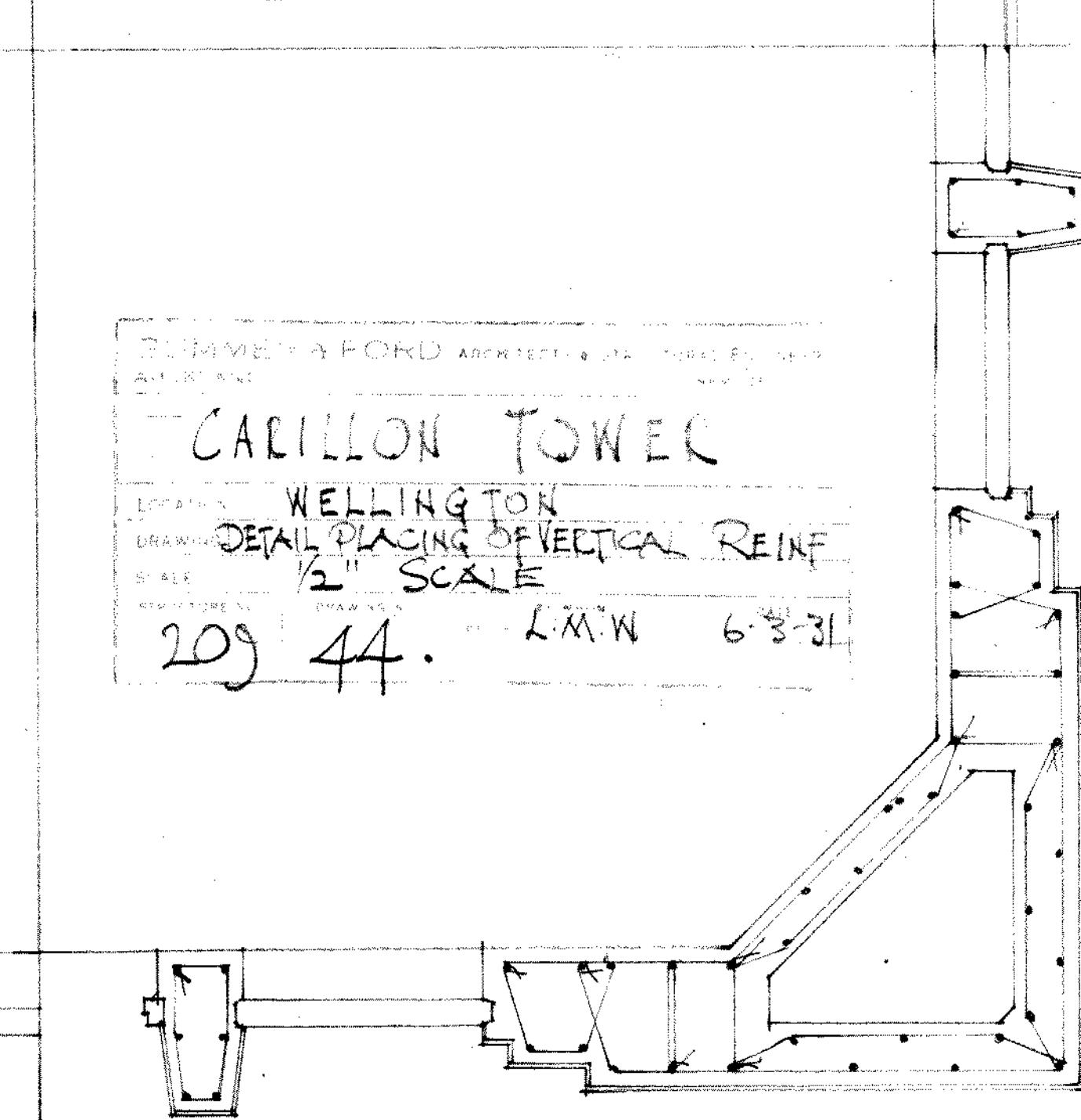
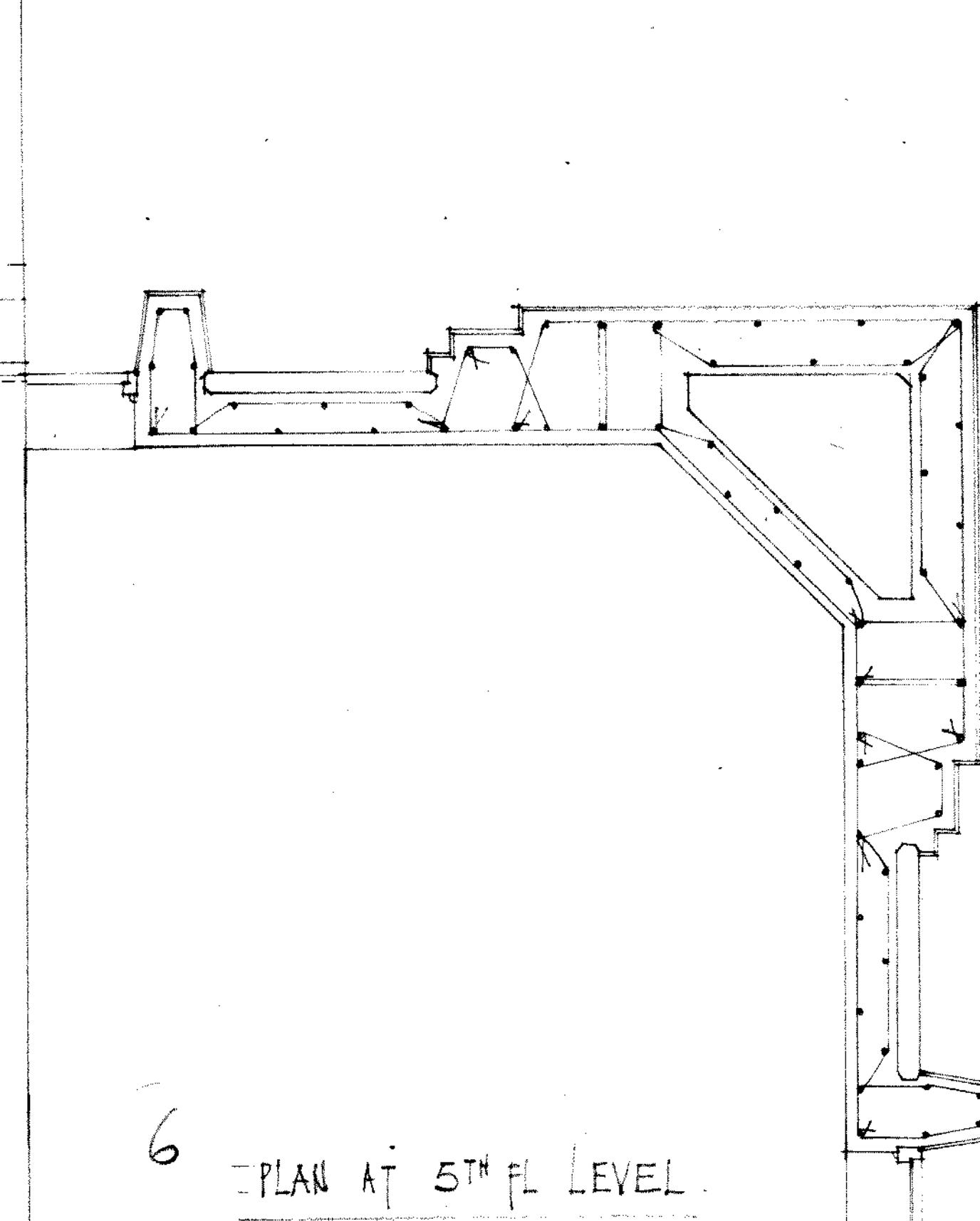
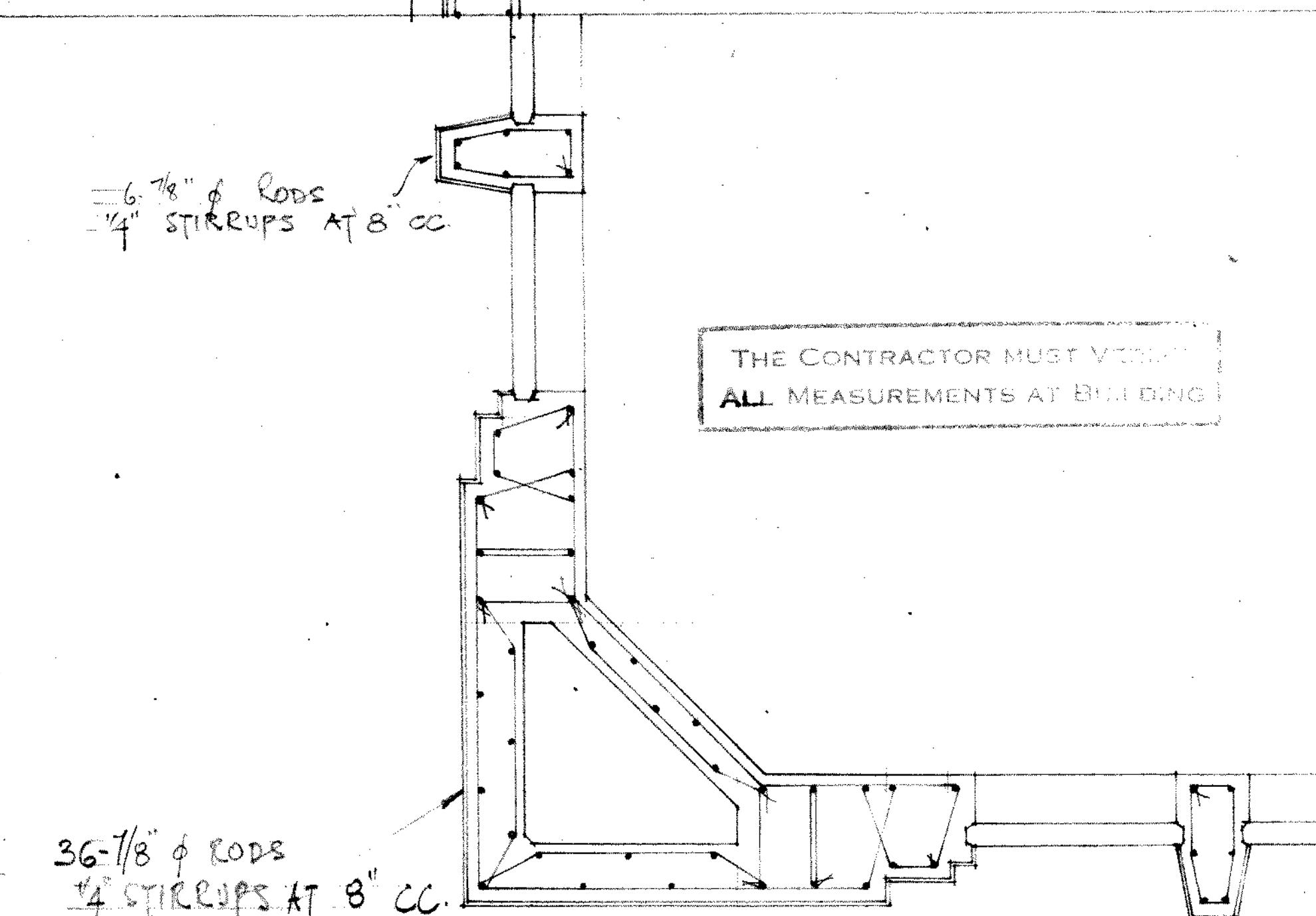
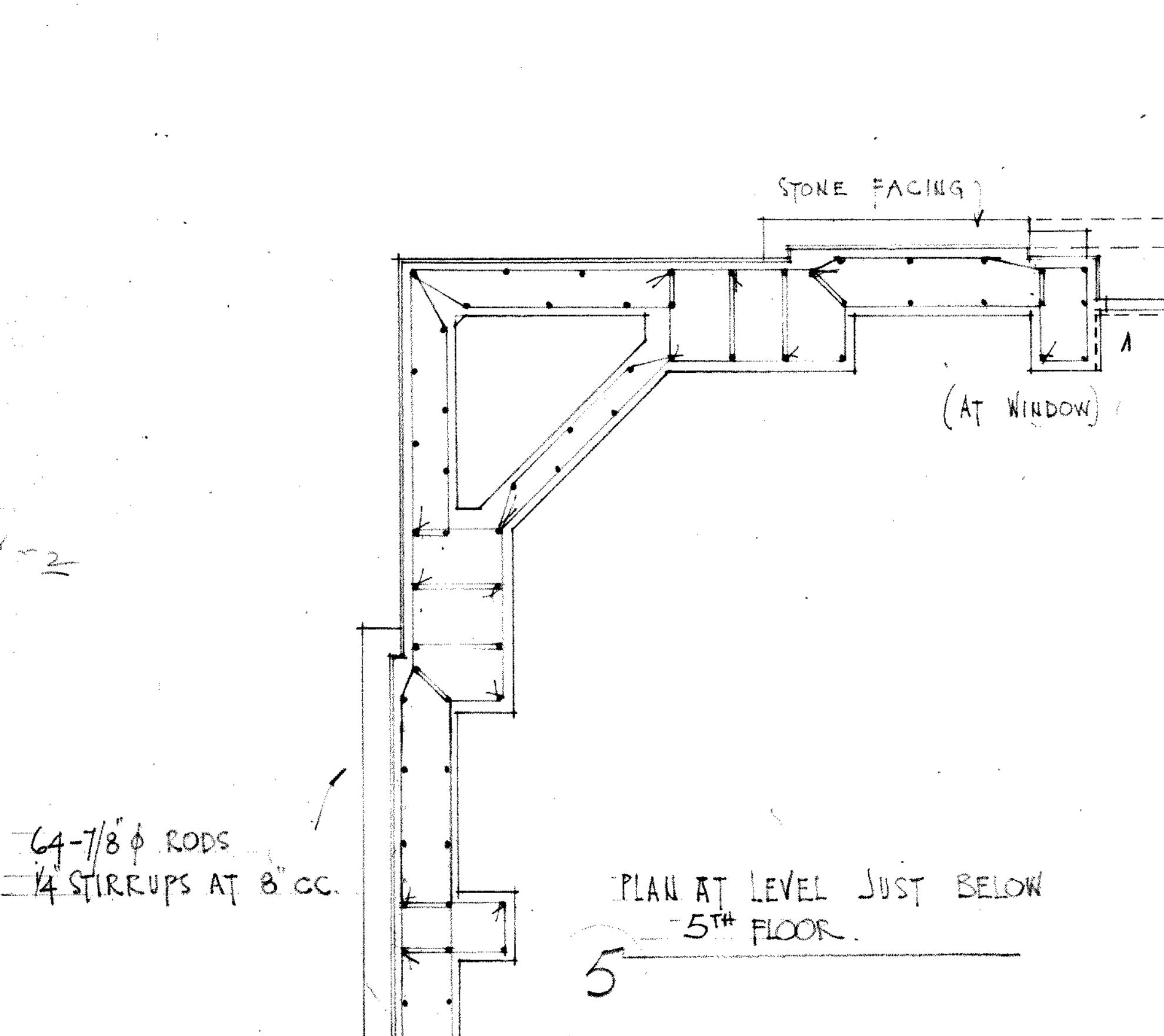
CARILLON TOWER

LOCATION: WELLINGTON
DRAWING NO. 209 43

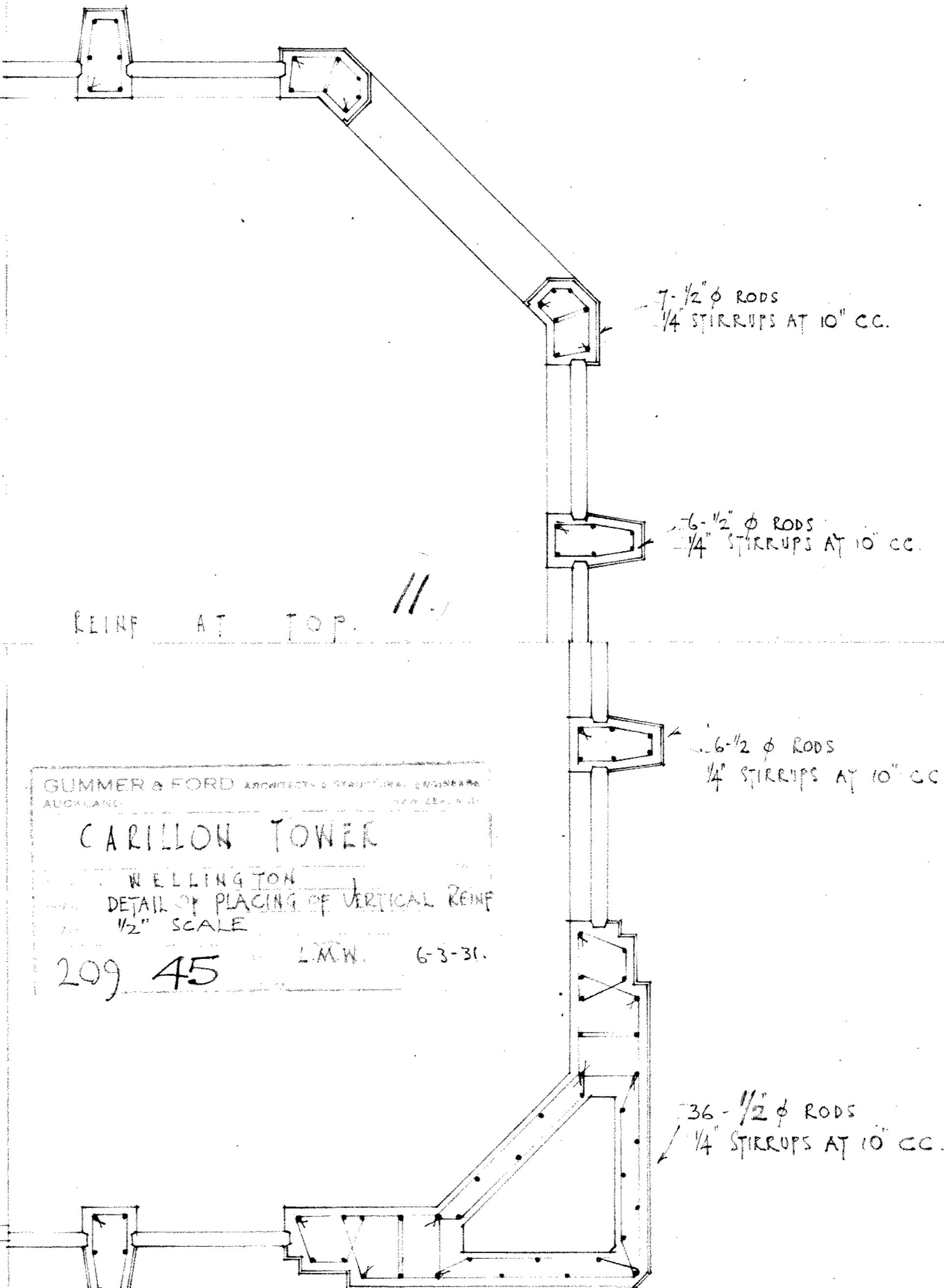
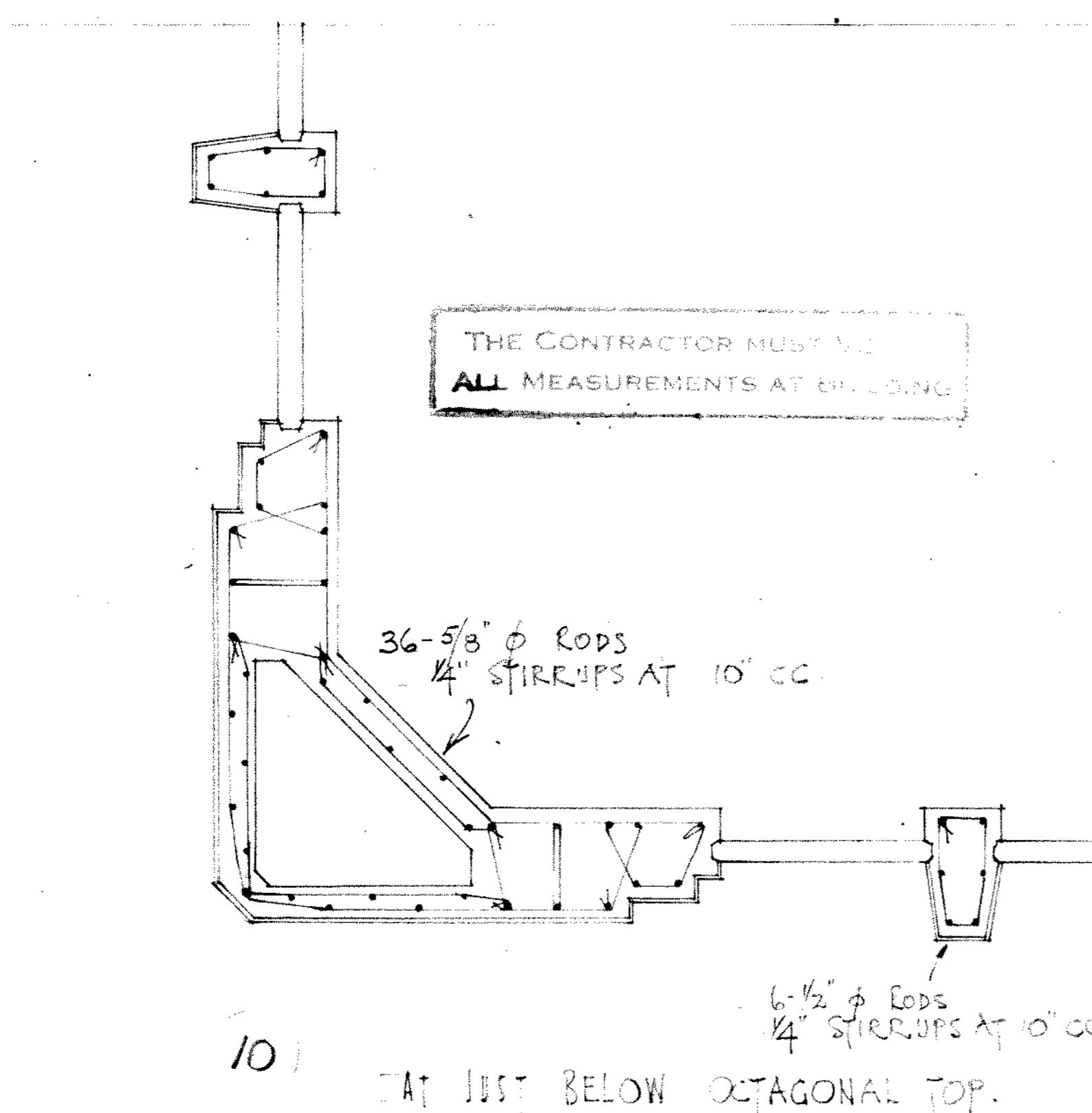
DETAIL PLACING OF VERTICAL REINFORCEMENT
1/2" SCALE

DRAWING NO. 209 43



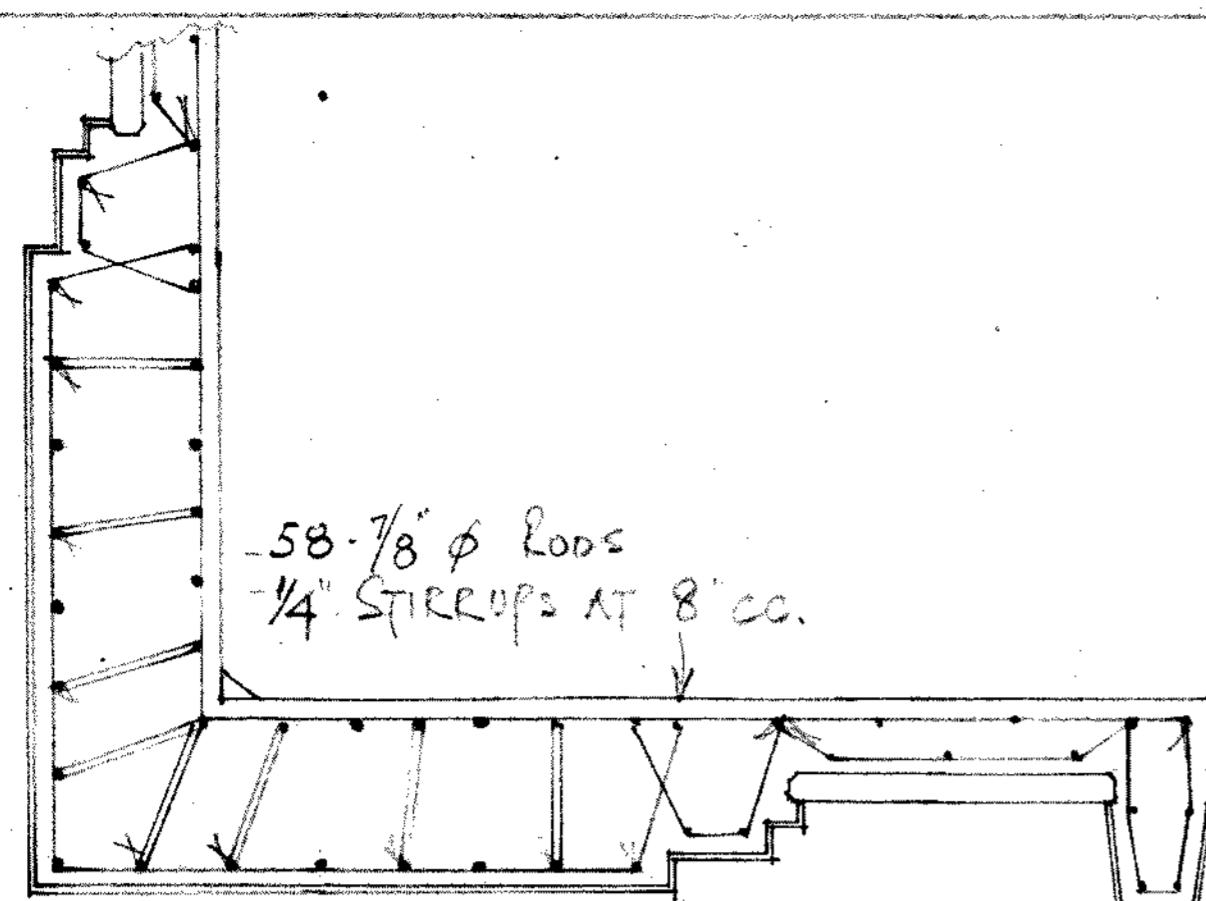


NOTE: DIAGONAL REINF INDICATED
ON DRAWING #42 NOT
SHOWN ON THIS DRAWING
BUT SHALL GO ON INSIDE
OF VERTICAL REINF.

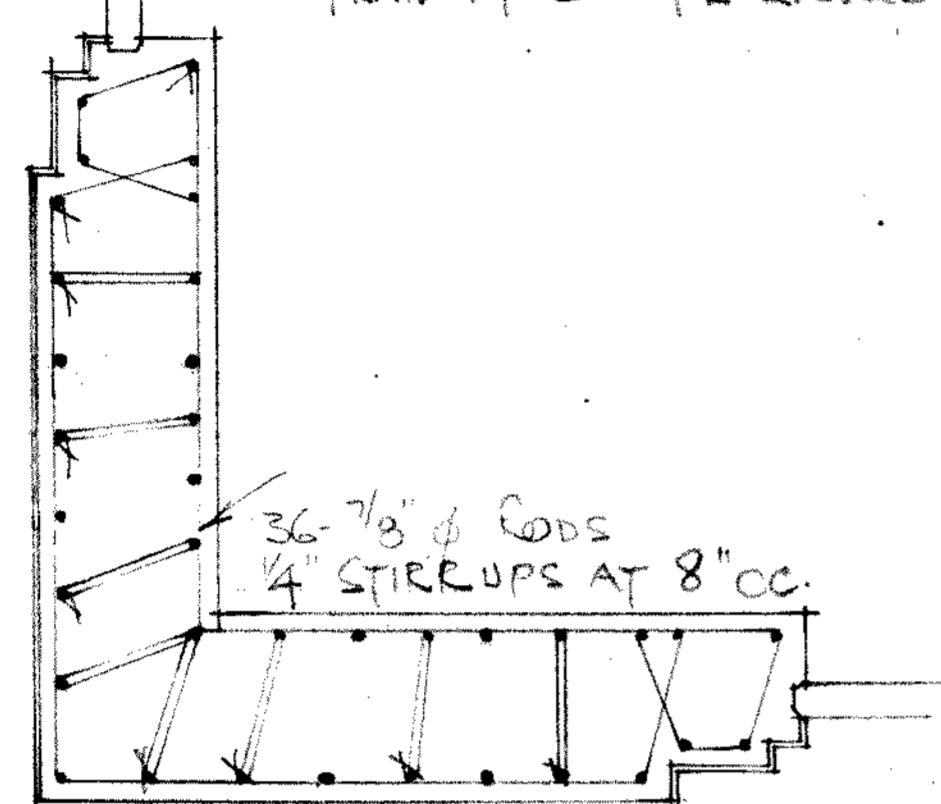


9 FROM OCTAGON TOP TO 7TH FL.

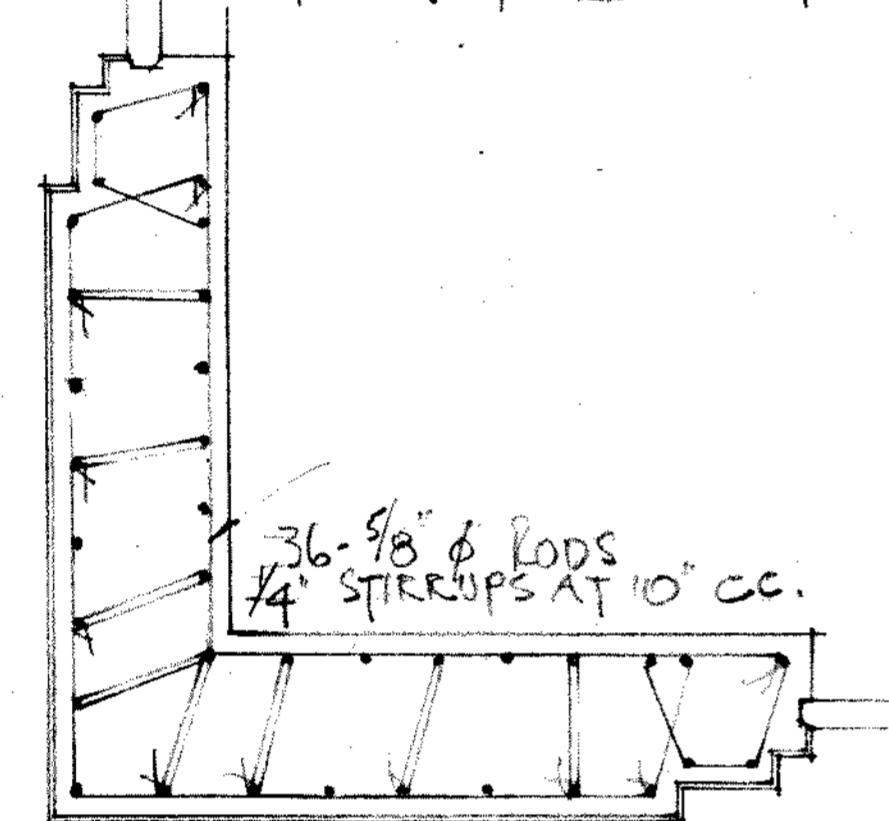
NOTE: DIAGONAL REINF.
INDICATED ON DRAWING NO 42
NOT SHOWN ON THIS DRAWING
BUT SHALL GO ON INSIDE OF
VERTICAL REINF.



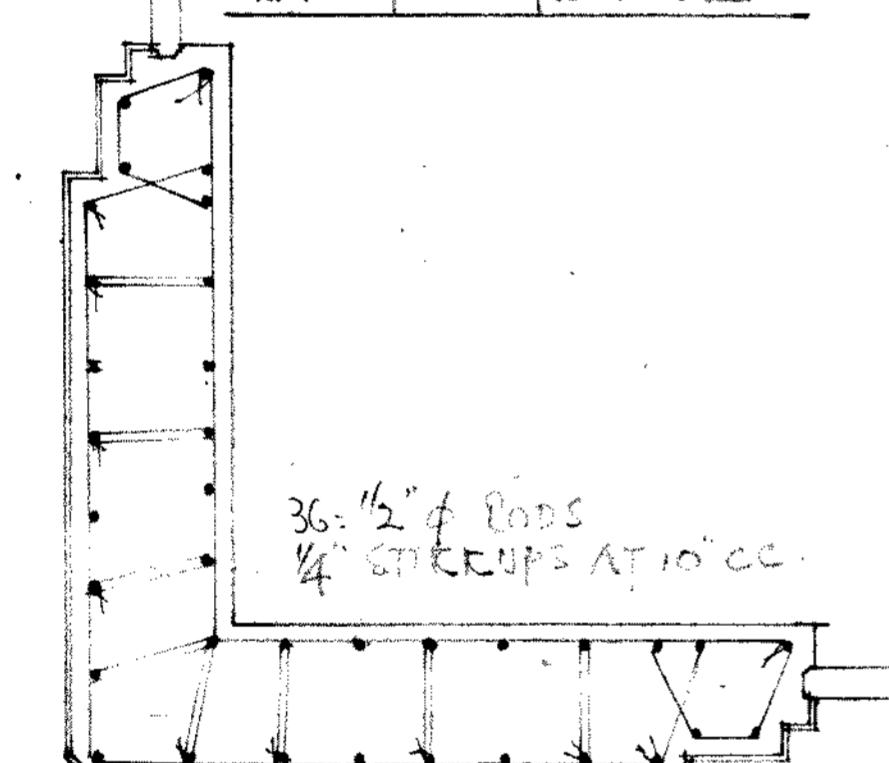
PLAN AT 5TH FL LEVEL (6)



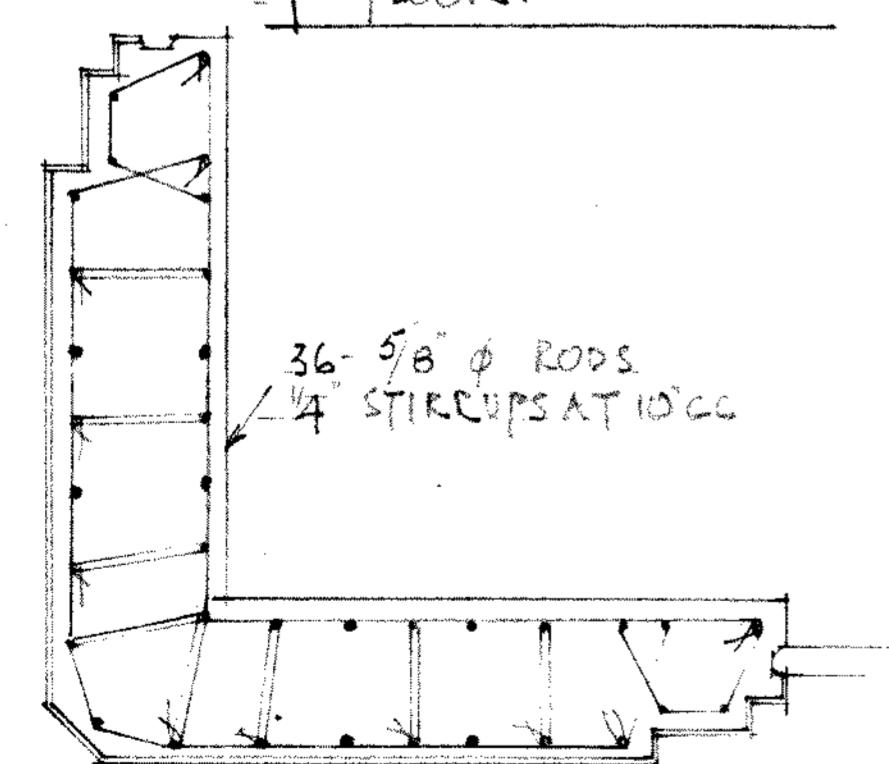
PLAN JUST BELOW 6TH FL LEVEL (7)



PLAN AT 6TH FL LEVEL (8)



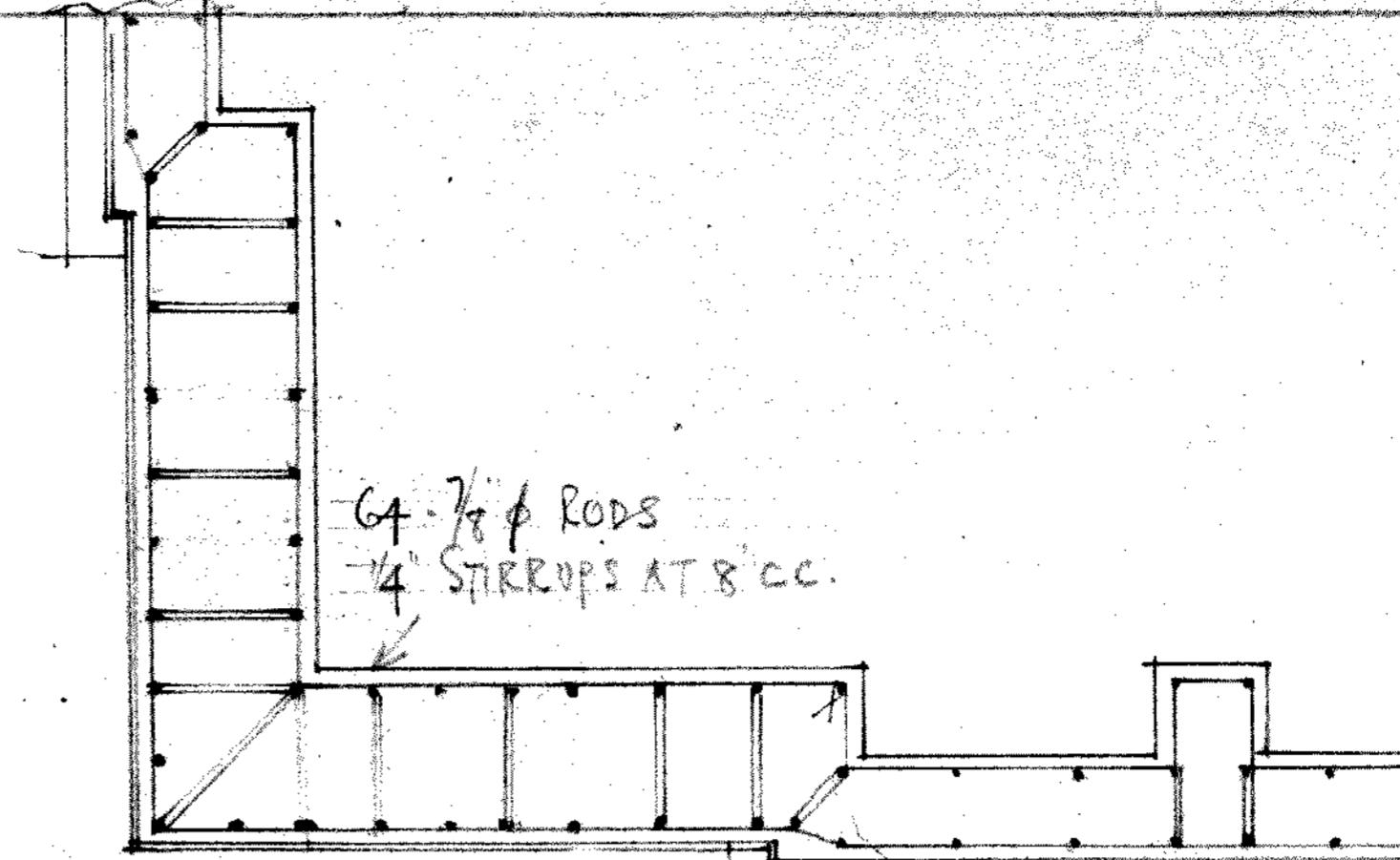
FROM OCTAGONAL TOP TO 7TH FLOOR (9)



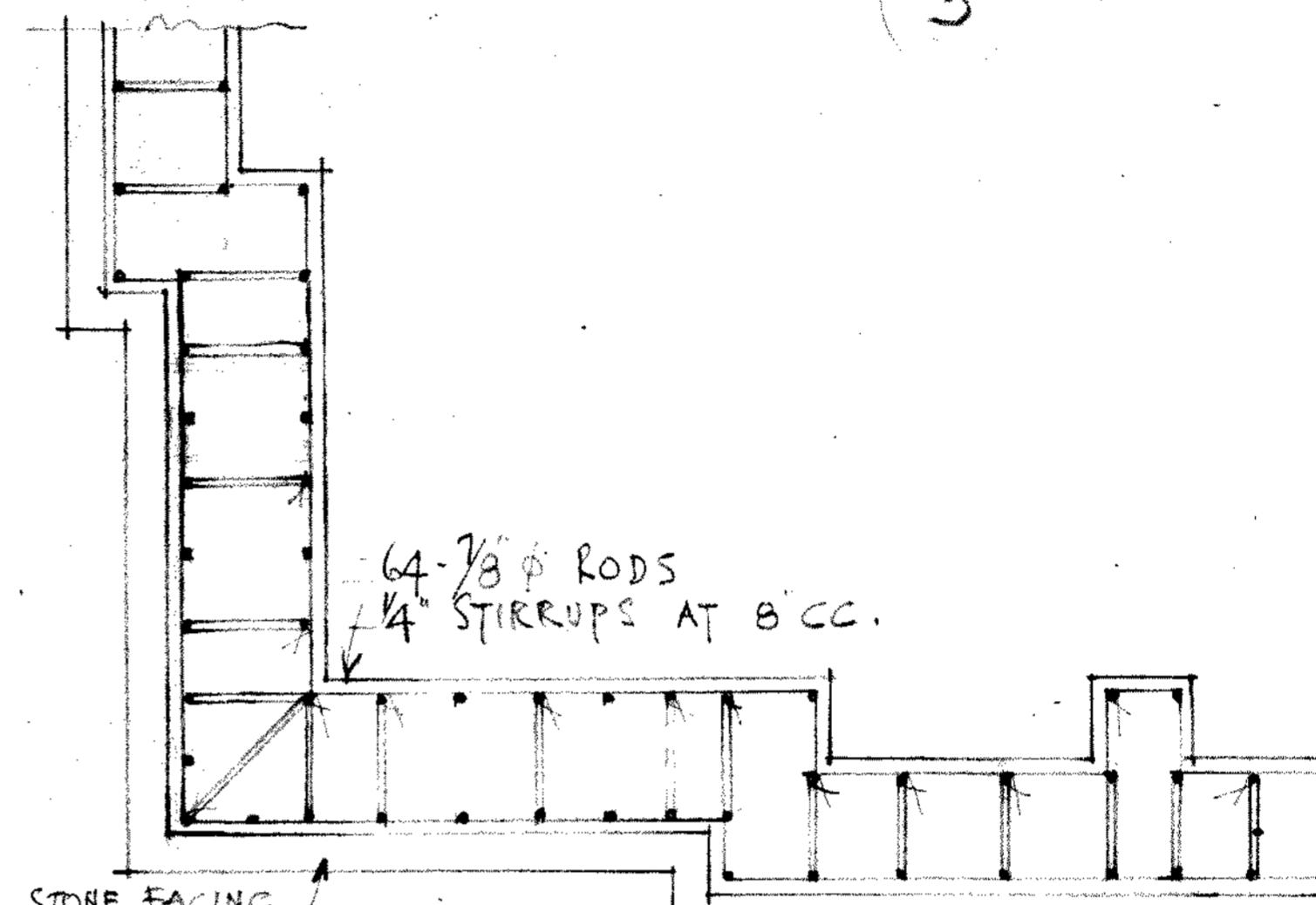
JUST BELOW OCTAGONAL TOP (10)

(SEE DRAWING NO 45 FOR LEVEL (11))

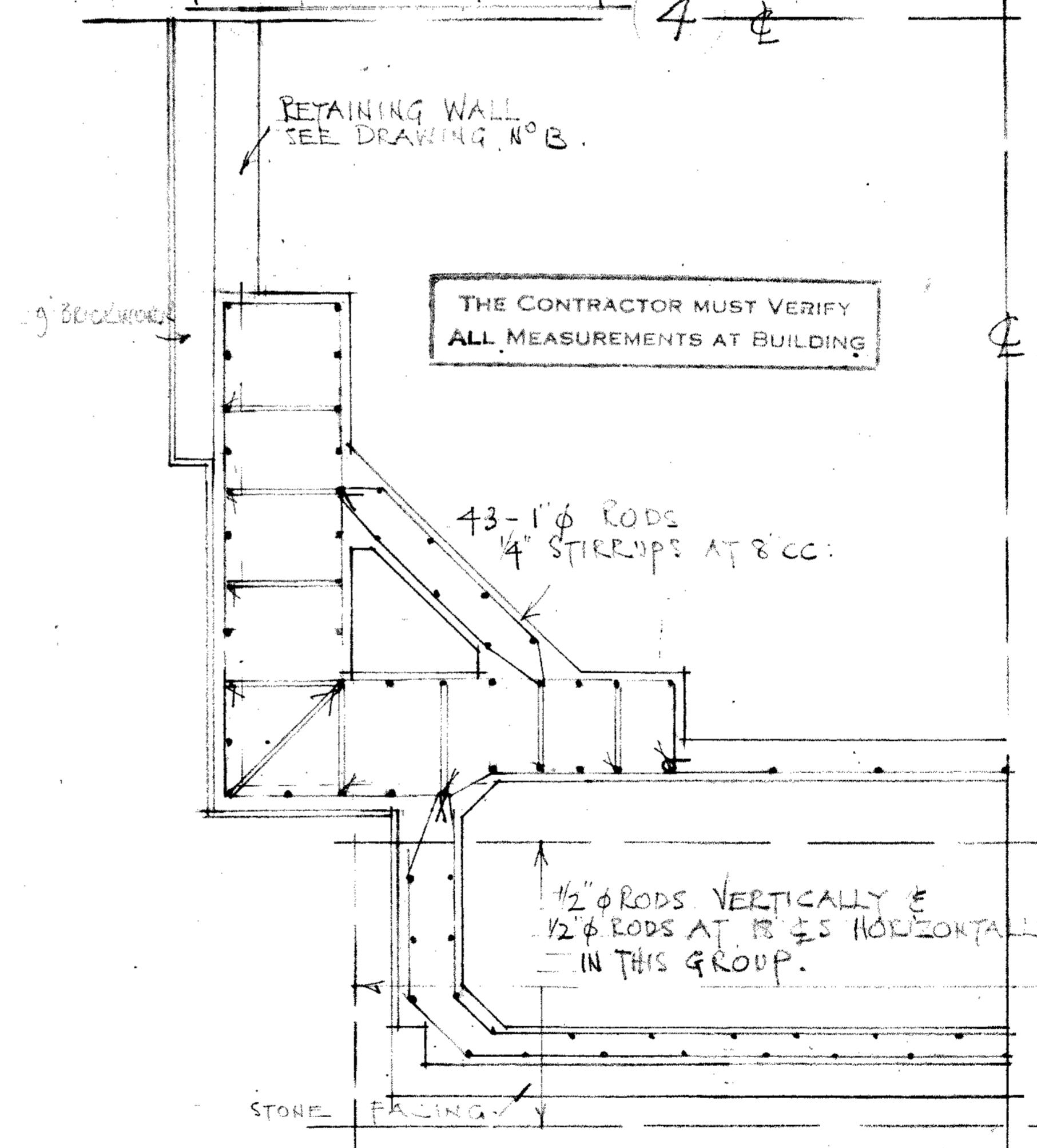
HALF INCH DETAIL OF PLACING
OF REINF. TO PIER IN ELEVATOR
CORNER OF TOWER.



PLAN JUST BELOW 5TH FL LEVEL (5)



PLAN AT BASE OF SHAFT (4)



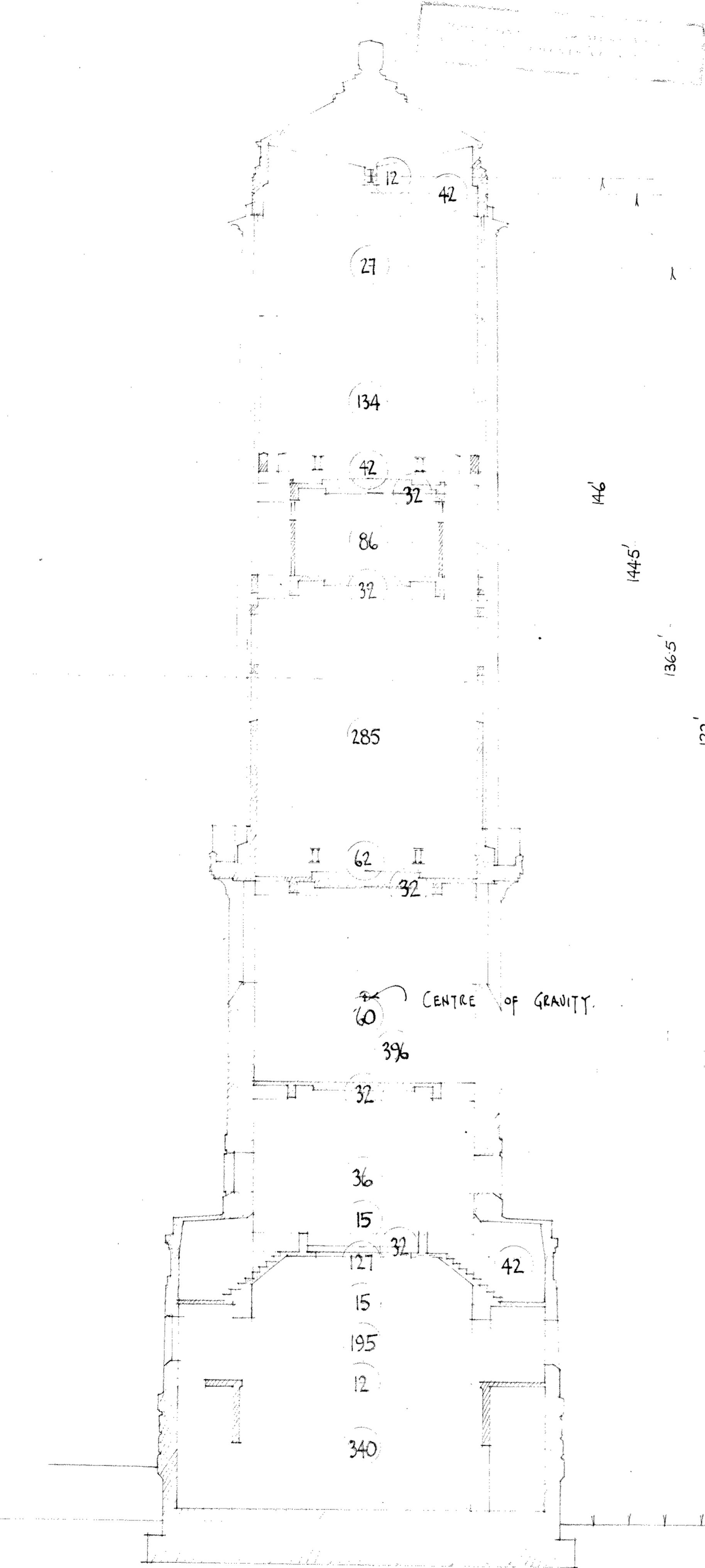
PLAN AT BASE (3) (CARRIES DOWN PRACTICALLY
SIMILAR)

GUMMER & FORD LTD. MELBOURNE & STRUCTURAL ENGINEERS
AUSTRALIA NEW ZEALAND SINGAPORE THAILAND

CARILLON TOWER

WELLINGTON
REINF. PLACING ELEVATOR PIPE
1/2" SCALE
209-46 L.M.W. G.P.B.L.

NOTE: DIAGONAL REINF. SHOWN
ON DRAWING NO 42
NOT INDICATED ON
THIS DRAWING BUT SHALL
BE PLACED INSIDE VENT.
REINF.

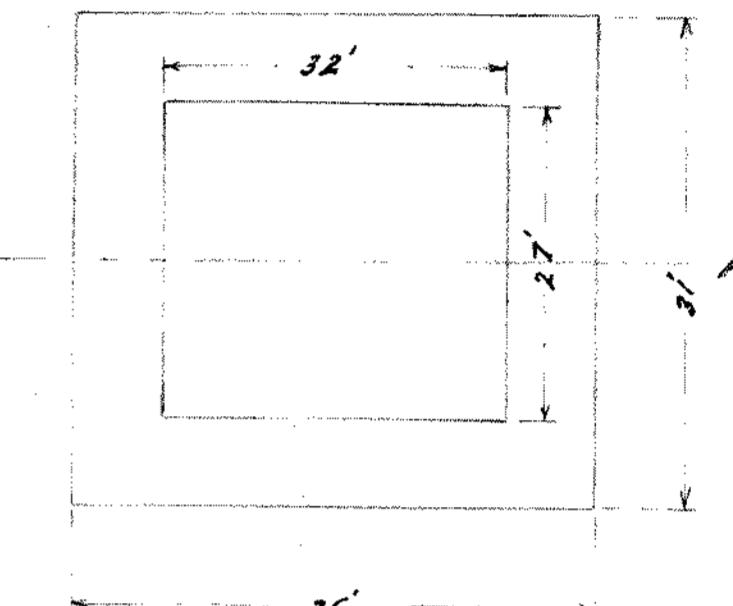


LOAD IN TONS	LEVER ARM IN FT.	
12	x 14.6	1752
42	x 144.5	6069
27	x 136.5	3675.5
134	x 122	16348
42	x 114	4788
32	x 111.5	3568
86	x 106.5	9159
32	x 101.5	3248
285	x 85.5	24367.5
62	x 71.5	4433
32	x 69	2208
60	x 55	3300
39.6	x 51.5	20394
32	x 46.5	1488
36	x 37.5	1350
15	x 32.5	487.5
32	x 30	960
127	x 28.5	3629.5
42	x 28	1176
15	x 24	360
195	x 19.5	3802.5
12	x 15.5	186
340	x 8	2720
2088		119,479.5

Carillon Tower Calculations
Wellington.

209 51

19/3/28



HEIGHT OF CENTRE OF GRAVITY.

$$= \frac{119,480}{2088} = 57' \text{ APPROX.}$$

Area of base at G.L. = 252 sq ft

Perimeter = 126'

At thickness = 2'.

$$I_1 = \frac{bd^3}{12} = \frac{36 \times 12 \times 31 \times 31 \times 12 \times 12}{12} = 1,853 \times 10^6$$

$$I_2 = \frac{bd^3}{12} = \frac{32 \times 12 \times 27 \times 27 \times 27 \times 12 \times 12}{12} = 1,088 \times 10^6$$

$$I_1 - I_2 = 765 \times 10^6$$

$$I_S = Ax^2 = 10 \times 14 \times 132 \times 132 = 17 \times 10^6$$

$$\text{Total } I = 182 \times 10^6$$

$$\text{From Dr. Omori's formula: } a = \frac{Egk}{x^2 A V}$$

MV = 2088 tons.

L = 57 x 12"

g = 3,800 mm per sec per sec.

x = 174"

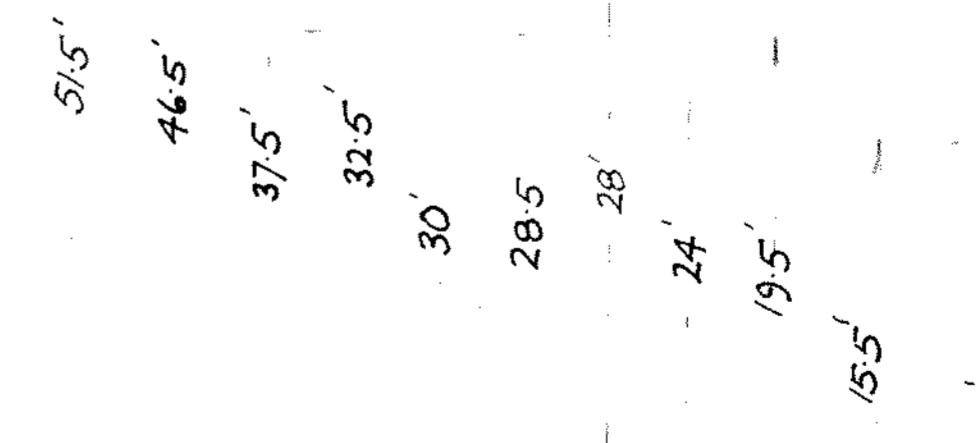
t = 150 / 165 "

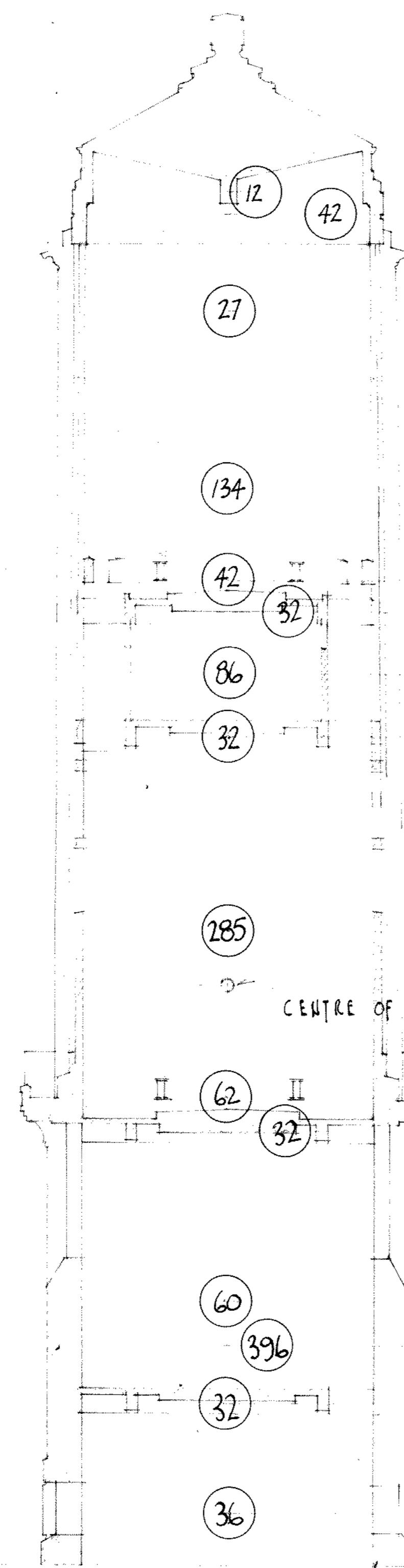
$$a = \frac{182 \times 10^6 \times 9,800 \times 150}{174 \times 57 \times 12 \times 2,088 \times 2240}$$

min. fracturing acceleration. = 2,070 m.m. per sec. per sec.

$$A = \frac{2088 \times 2240}{252 \times 144} = 129 \text{ lbs. per sq in.}$$

Load per sq. ft on foundations = 1 ton.





LOAD IN TONS		LEVER ARM IN FT.	
12	x	112.5	1350
42	x	111	4662
27	x	103	2781
134	x	88.5	11859
42	x	80.5	3381
32	x	78	2496
86	x	73	6278
32	x	68	2176
285	x	52	14820
62	x	38	2356
32	x	35.5	1136
60	x	21.5	1290
396	x	18	7128
32	x	13	416
36	x	4	144
1310			62273

HEIGHT OF CENTRE OF GRAVITY
(AT THIS LEVEL)

$$\frac{62.273}{1310} = 47.6$$

Area at base of shaft = 162 sq. ft.

$$\text{Perimeter} = 108'$$

A.v. thickness = 1.5'

$$I_1 = \frac{bd^3}{12} = \frac{28.5 \times 12 \times 28.5 \times 28.5 \times 28.5 \times 12 \times 12 \times 12}{12} = 1,139 \times 10^6$$

$$I_z = \frac{6d^3}{12} = \frac{25.5 \times 12 \times 25.5 \times 25.5 \times 25.5 \times 12 \times 12 \times 12}{12} = 730 \times 10^6$$

$$I_1 - I_2 = 409 \times 10^6$$

$$I_s = Ax^2 = 128 \times 6 \times 14 \times (13.5 \times 12)^2 = 28 \times 10^6$$

$$Total \ I = 437 \times 10^6$$

From Dr. Omori's formula $a = \frac{I g t}{x h w V}$

WV = 1310 tons.

$$h = 47.5 \times 12''$$

$$g = 9,800 \text{ m.m. per sec per sec.}$$

$$x = 15 \times 12^{\circ}$$

$t = 150$ lbs per sq. in.

$$a = \frac{4.27 \times 10^6 \times 9,800 \times 150}{15 \times 12 \times 47.5 \times 12 \times 1310 \times 2240}$$

Min. fracturing acceleration = 2,120 m.m. per sec. per sec.

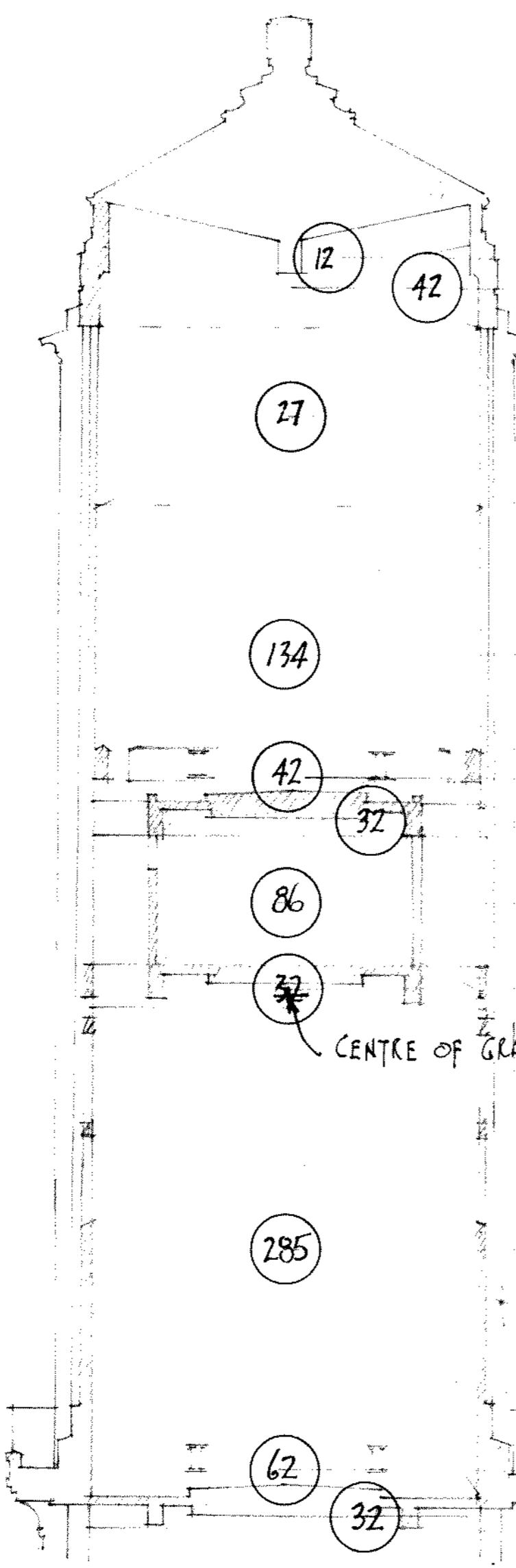
$$\frac{W}{A} = \frac{1310 \times 2240}{162 \times 144} = 125 \text{ lbs. per sq. in.}$$

HUMMER & FORD

carillon Tower Calculations.
Wellington.

209 52

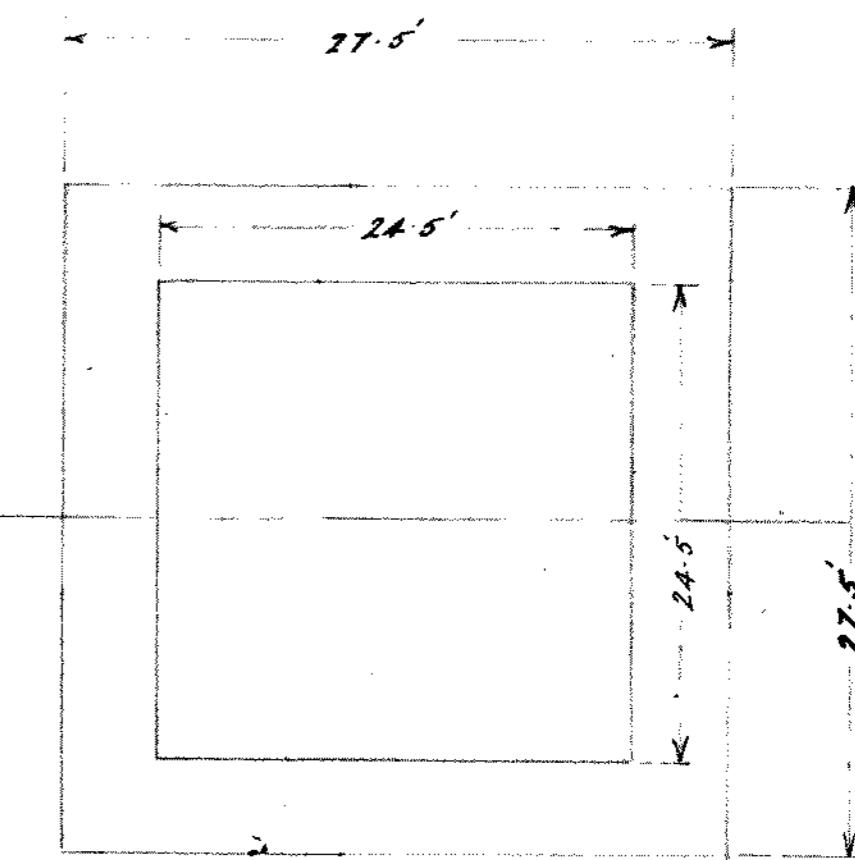
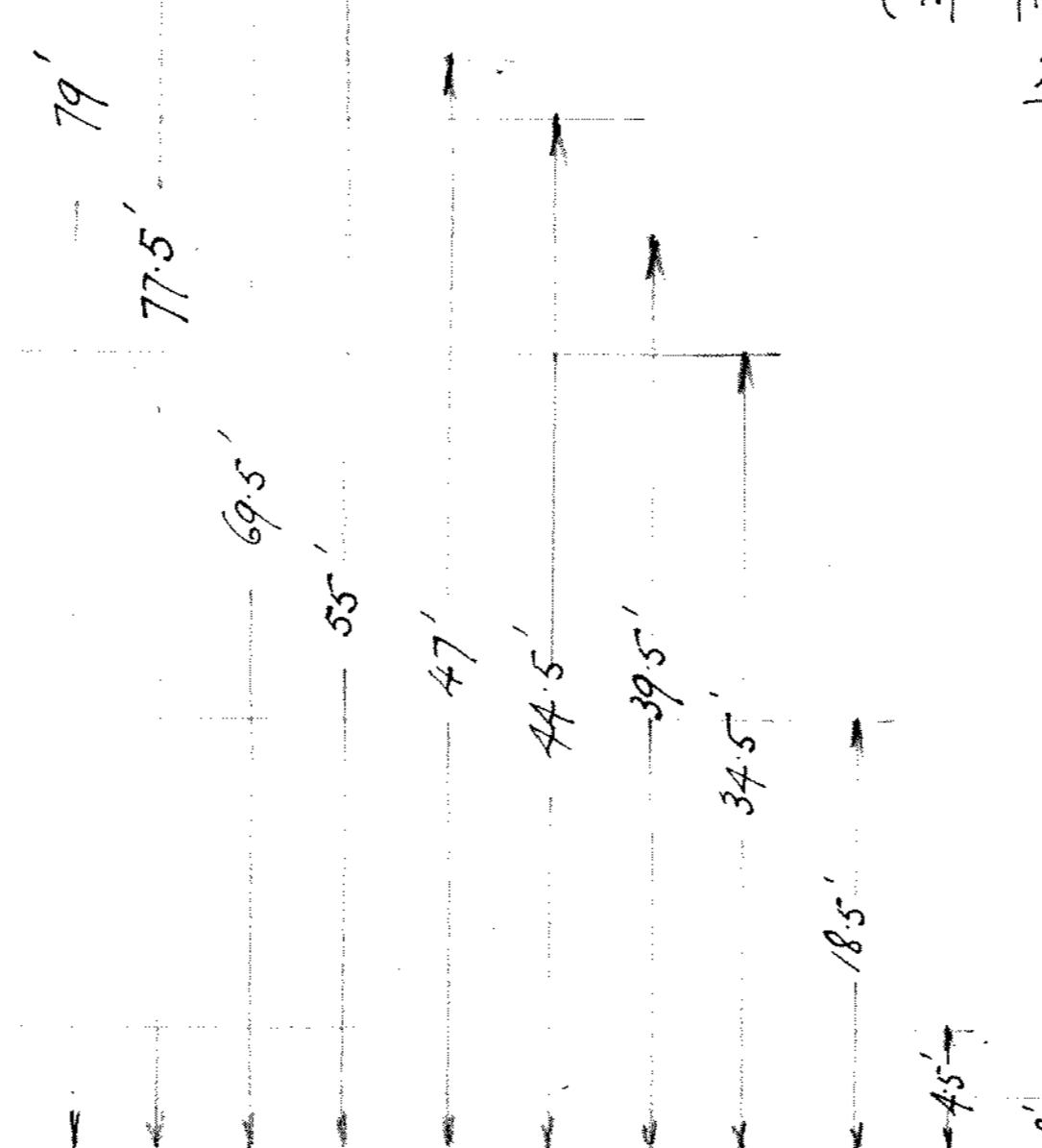
19/3/31



LOAD IN TONS	LEVER ARM IN FT	
12	x	79
42	x	77.5
27	x	69.5
134	x	55
42	x	47
32	x	44.5
86	x	39.5
32	x	34.5
285	x	18.5
62	x	4.5
32	x	2
		948
		32.55
		1,876
		7,370
		1,974
		14.24
		3,397
		11,04
		5,272
		219
		64
786		26,963

HEIGHT OF CENTRE OF GRAVITY
(AT THIS LEVEL)

$$\frac{26,963}{786} = 34.3$$



Area below 5th floor = 156 sq.ft.
Perimeter = 104'
Av. thickness = 1.5'

$$I_1 = \frac{bd^3}{12} = \frac{27.5 \times 12 \times 27.5 \times 27.5 \times 12 \times 12 \times 12}{12} = 391 \times 10^6$$

$$I_2 = \frac{bd^3}{12} = \frac{22.5 \times 12 \times 24.5 \times 24.5 \times 24.5 \times 12 \times 12 \times 12}{12} = 622 \times 10^6$$

$$I_1 - I_2 = 365 \times 10^6$$

$$I_s = Ax^2 = 128 \times 6 \times 14 (13 \times 12)^2 = 26 \times 10^6$$

$$\text{Total } I = 391 \times 10^6$$

$$\text{From Dr. Omori's Formula } a = \frac{IgE}{xL^2W}$$

$$\begin{aligned} wV &= 786 \text{ tons.} \\ L &= 34.3 \times 12'' \\ g &= 9,800 \text{ m.m. per sec. per sec} \\ x &= 177'' \\ e &= 150 \text{ lbs per sq.in.} \end{aligned}$$

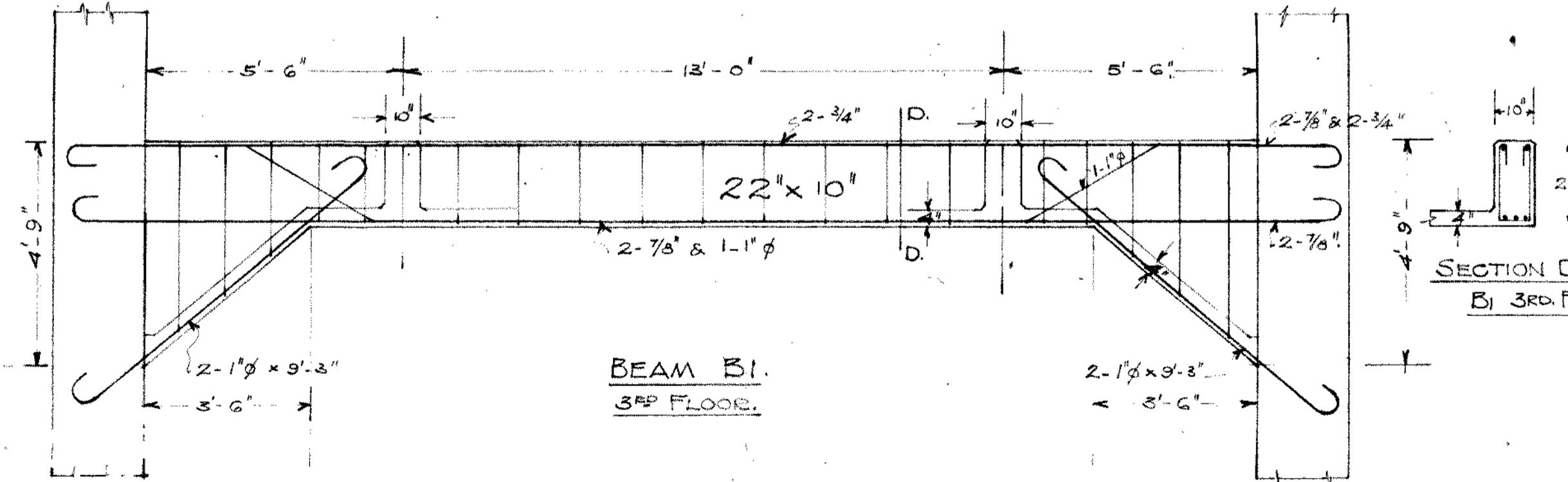
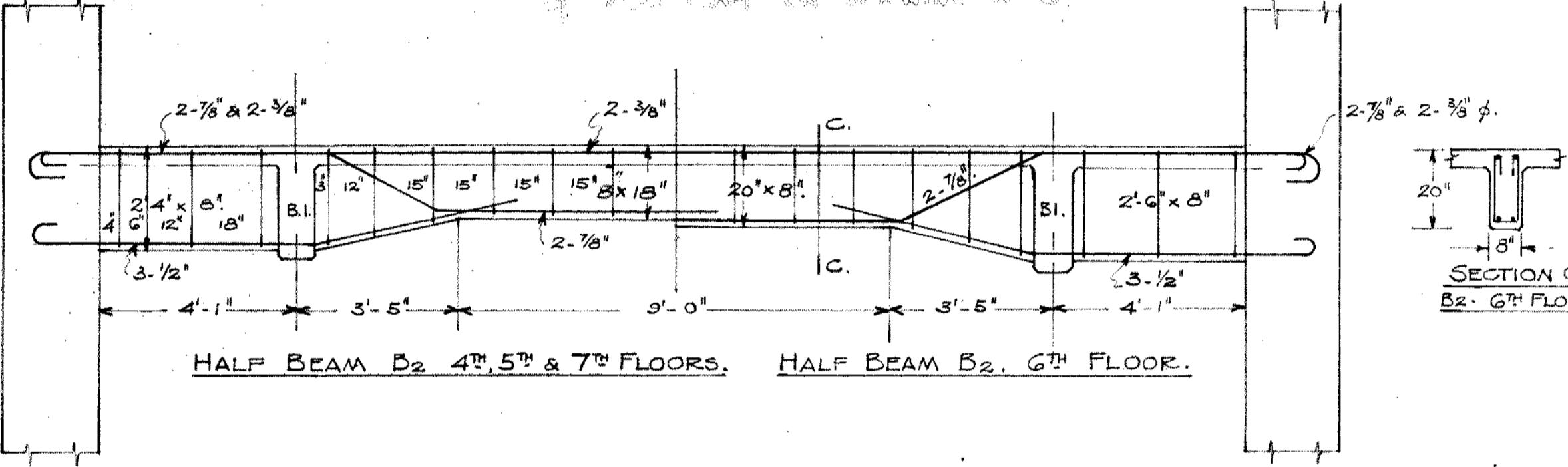
$$\text{Min. fracturing acceleration } \theta = 4,500 \text{ m.m. per sec. per sec.}$$

$$\frac{W}{A} = \frac{786 \times 2240}{156 \times 144} = .78 \text{ lbs per sq.in.}$$

Carillon Tower Calculations
Wellington.

GUMMER & FORD, ARCHITECTS & STRUCTURAL ENGINEERS
AUCKLAND, NEW ZEALAND

CARILLON TOWER.



FLOOR SLAB REINFORCEMENT.

GROUND FLOOR: UNDERSLAB 4": NO REINFORCEMENT.
TOP SLAB 6": REINFORCED WITH $\frac{1}{2}$ " Ø RODS
AT 24" CENTRES BOTH WAYS AT TOP OF SLAB.

1ST & 2ND FLOORS: (EXCEPT 6½" LANDING).
4" SLAB WITH $\frac{3}{8}$ " Ø RODS AT 8" CRS. & $\frac{3}{8}$ " Ø AT
18" CRS. LONGITUDINALLY.

3RD FLOOR: (VESTIBULE CEILING).
4" SLAB WITH $\frac{3}{8}$ " Ø RODS AT 8" CRS. & $\frac{3}{8}$ " Ø AT
18" CRS. LONGITUDINALLY.

**4TH, 5TH, 6TH, & 7TH FLOORS: 4" SLAB REINFORCED WITH $\frac{3}{8}$ " Ø RODS
AT 8" CRS. & $\frac{3}{8}$ " Ø AT 12" CRS. LONGITUDINALLY.**

