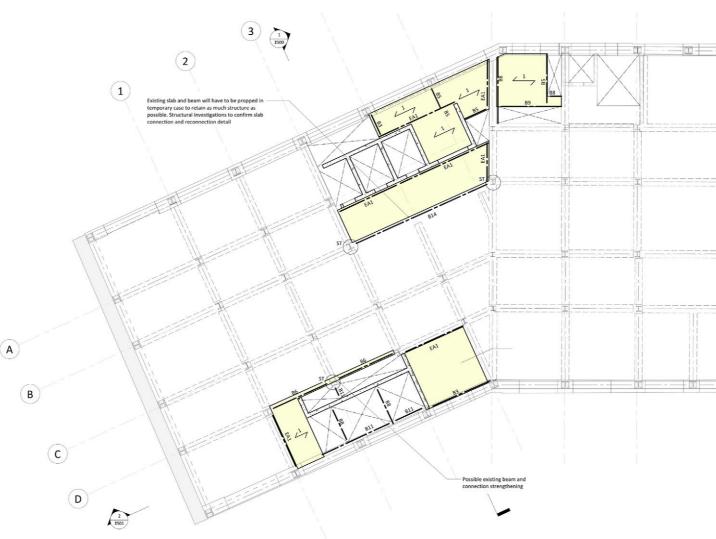
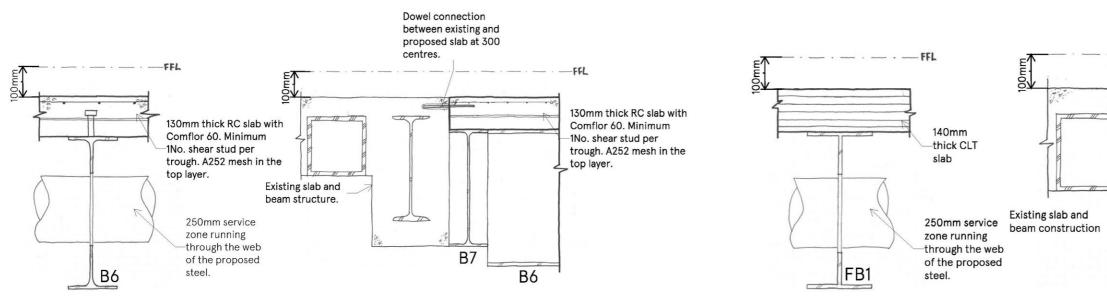
4.5 Structural Slab Options

The proposed construction is CLT panels supported on steel beams. New steel beams supporting CLT will span between either existing or proposed columns. The CLT is currently assumed to have a 40mm screed build up to suit acoustic requirements.

An alternative structural slab option is a concrete slab, on metal deck supported by steel beams. To minimise the amount of beam encasement required to be removed, and possible strengthening, a new steel beam would run parallel to the existing downstand to support the new steelwork.

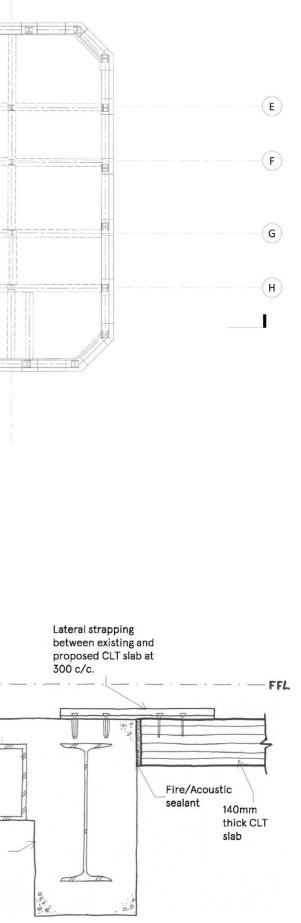


CLT Typical Floor



Section Through Metal Deck Construction

Section Through Metal CLT Construction





4.6 Roof Replacement

The existing roof structure (the 1960's extension²) is assumed to only have a limited access load capacity (0.75 kN/m² from archive drawings) and therefore is unable to support the current proposal of mechanical plant and a terrace.

Therefore the 8th floor structure is proposed to be demolished and reconstructed to support plant and terrace loading. The plant will be located above at new roof level and enclosed by a plant roof screen be set back either 1.5m/2.5m/3.5m. Both the primary core and secondary core stair will be extended, including lifts with the new RC core providing stability to the additional floors.

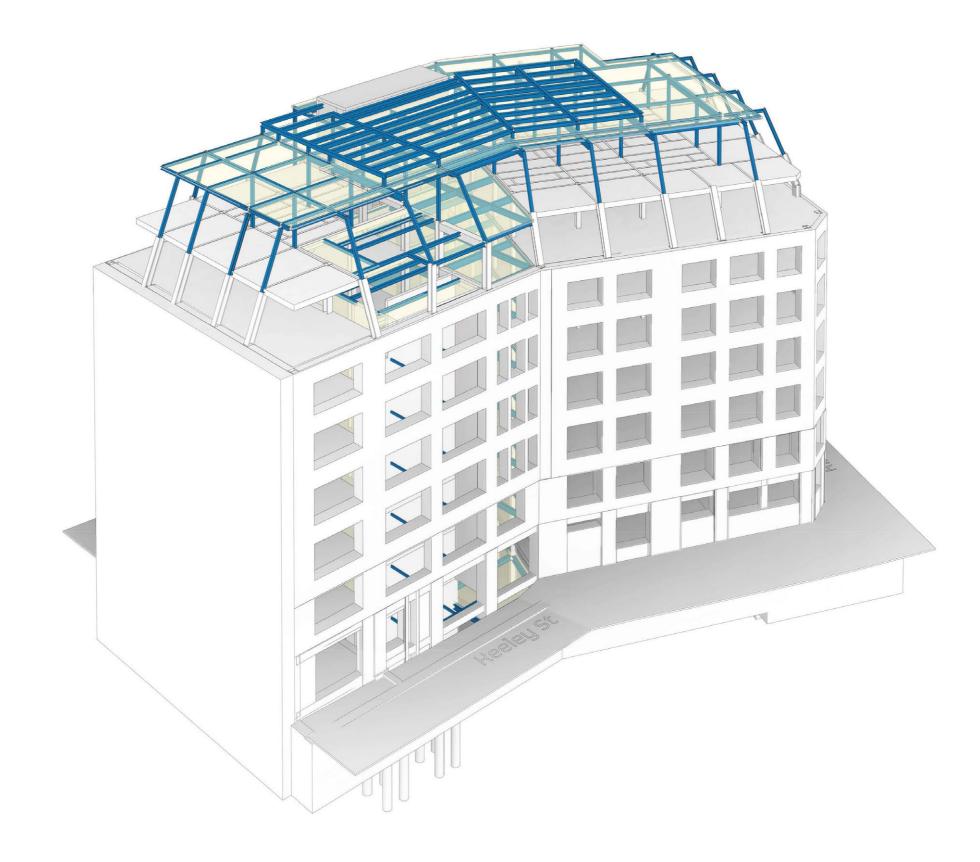
The steel frame will consist of UC sections with a combination of UC sections and fabricated beams as the primary and secondary beams, utilising the existing column grid.

The plant support on top of the CLT will need to be considered to spread the load of any plant to the allowable floor load. It has been advised by Hann Tucker that an independent plant support will be required.

The addition of a plant and terrace floor will require column strengthening through the upper few floors of the building to accommodate the extra floor load.

4.6.1 Terrace Slabs

There are proposed terrace slabs which require an additional thermal build up on top to meet requirements. The terrace will be constructed from CLT panels on steel beams.





4.7 Strengthening

4.7.1 Columns

As a result of the column removal and increased floor load, there are a number of columns which are assumed to require strengthening. The form of column strengthening will depend on the existing profile of the column. From the limited intrusive surveys carried out so far (as discussed with the London Borough of Camden), it is assumed that the columns below 5th floor have plates rivetted to them. Owing to the structure being exposed in the final case, the two options being progressed for the column strengthening are Type B and Type C.

- Type B Plates welded to existing column flanges (only applicable on columns without rivets)
- Type C The column can be scanned and a profiled plate can be fabricated with holes at the existing rivet locations.

Both of these options allow the original aesthetics of the columns to be expressed and rivets exposed.

For both options, temporary works might be required to de-stress the columns before strengthening.

It is assumed that the existing columns towards the top of the existing building will not have rivets and so the strengthening can be welded parallel to the existing flanges.

The columns will require the existing encasement to be removed (using hand tools), the steel surface blasted clean and the column redressed with primer and intumescent paint.

4.7.2 Beams

There are a limited number of beams that are expected to require strengthening due to an increase in load. The beam strengthening will be in the form of plates welded to the underside of the existing flange. This will require the existing encasement to be carefully removed (using hand tools), plates welded on and the column reprotected as appropriate. Similar to columns, temporary works might be required to de-stress the beams before strengthening.

4.7.3 Foundations

Foundation strengthening is required for the proposed RC cores and the as part of the column removal and extension. Any new foundations will have to avoid undermining the existing.

The foundation strengthening depends on the intrusive ground investigation currently being carried out, which do not affect the original fabric. It is expected that tension piles will be required for the new cores, and foundation stitching would be required to enlarge the existing pads along grid 3 and 6.

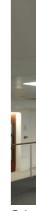
4.8 Column Encasement Removal

It is proposed to remove existing column encasements to express the exposed structure and improve internal floor area. The existing encasements are anticipated to be a combination of concrete and brick masonry, minimum 2" thick, providing fire protection to the structure. The encasement removal has been considered by Bidwells and is considered to be of benefit in heritage terms as the existing steel will be revealed.

Reinstatement of the fire protection, in the form of intumescent paint, will be required with film thickness specified to suit building fire resistance rating defined by the fire consultant. The columns will require surface preparation in the form of grit or sponge blasting to ensure successful application of the intumescent coatings.

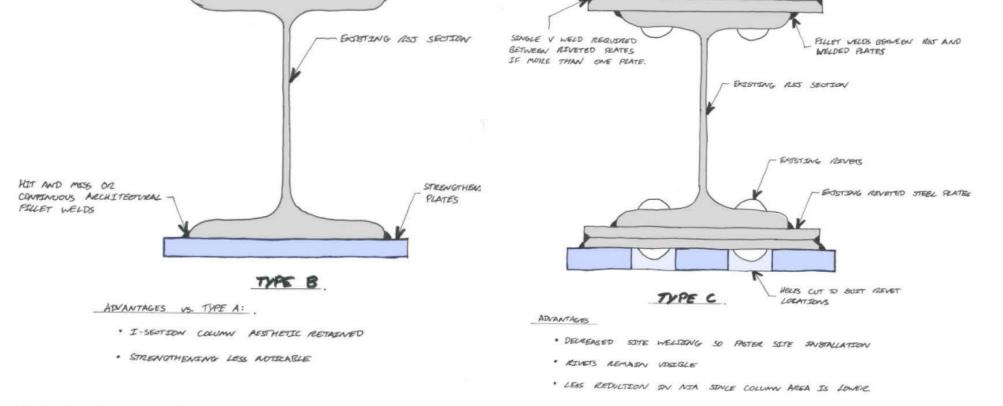
Where existing columns aren't concrete encased, the existing fire protection will have to be investigated, validated and possibly replaced.













Existing Rivets In Columns



Column in Upper Floors



Column With Rivetted Plates



4.9 Water Tank Relocation

The existing water tank, currently housed within the double height sprinkler tower at level 6, is to be relocated to the basement to provide additional office space.

Archive drawing information indicates the sprinkler tower was part of the original building fabric and was constructed as a steel frame clad in concrete with solid brickwork infill masonry between columns for weatherproofing due to its location above roof level. Subsequent roof extensions in 1925 and 1986 have enclosed the sprinkler tower at levels 6 and 7, and chiller plant has been added above the roof of the tower.

Visual inspection of the tank room supports the archive information; therefore, it is anticipated that the infill brickwork cladding between columns can be removed to allow extension of internal office floor plates with the steel frame structure, supporting roof plant above, to be retained.

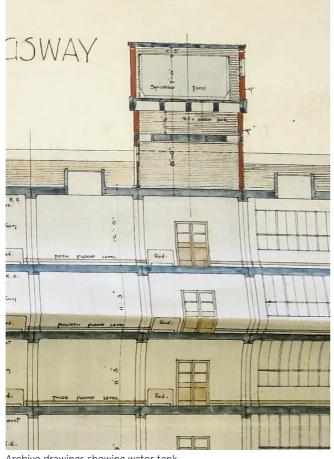
Consideration of local stability to double height structure will also be required to ensure suitable lateral restraint is provided following removal of masonry walls.

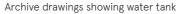
4.10 Façade Repair

PAYE have carried out a review of the existing façade and have identified areas where steel frame corrosion is causing cracking in the façade. PAYE stated that this corrosion was at the early stages.

Based on our observations from site opening up works we propose that the scope of repair works includes stone masonry repairs and re-pointing to cracked joints identified. Works should also allow for replacement and appropriate detailing of new guttering/roof finishes/ rainwater downpipe connections to address current issues with water ingress through the façade to the embedded steel frame.

An option for a more intrusive façade repair, if found to be required, would be to remove isolated facade stones, remove the corrosion from the existing steelwork, reprotect and replace the stone. This approach will be discussed with the London Borough of Camden and Bidwells and would be carried out whilst minimising the impact on the fabric of the building and preserve areas of significance







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Photographs of the Water tank







4.11 Party Wall

There is an existing party wall on the site of which the construction is unknown. From archive drawings, it is currently assumed to have steelwork supporting the existing floors embedded within masonry.

It is assumed that the existing 6th floor raking columns are founded from the party wall. There will be a load increase within these columns due to the demolition of the lightweight 8th floor structure and reconstruction of a plant floor. Column strengthening is expected to be required to the columns from 6th floor. The load change within the wall is assumed to be around a 20% increase at the top, reducing to around 5% at the base.

All works will need to be agreed with the neighbours and Party Wall Surveyor

4.12 Proposed Below Ground Drainage Arrangement:

Due to the evidence of issues with sewer surcharging in the existing scenario, mitigating against this is the key driver for the below ground drainage design. In order to achieve this mitigation, there are two options.

These options are set out below:

- Both foul and surface water from upper floors are routed to the final manhole at high level by the M&E engineers. The existing below ground drainage network is reused to serve the basement level foul water appliances only. A foul water pumping chamber is installed on the existing network to serve the basement drainage only. The existing outfall is reused. Some new below ground drainage runs will be required to serve additional foul water appliances being located in the basement.
- The existing below ground drainage network is reused to serve the upper floors only. A new below ground drainage network is installed to serve the basement and this discharges via a foul water pump. The existing outfall is reused. Depending on the above ground drainage proposals, some new below ground drain runs may be required if any additional drop points are proposed.

4.13 Design Considerations

4.13.1 Disproportionate Collapse

The proposed building will comprise 8 storeys (including ground floor), plus a basement and thus the building would still be classified as class 2B as per Approved Document A of building regulations under the description of 'Retailing premises greater than 3 storeys but less than 15 storeys'. As the class is not changing, it is not expected that any changes will be required to suit disproportionate collapse. This is to be confirmed with the Approved Inspector.

Proposed steelwork connections will be detailed to ensure effective horizontal and vertical ties are achieved to satisfy Class 2B.

4.13.2 Fire Protection

Archive drawings indicate the existing steel frame is fire protected by a combination of solid brick masonry and concrete encasement, minimum 2" thick (approx. 50mm). Removal of encasement will require provision of alternative fire protection i.e. intumescent paint.

Fire protection to CLT is provided by the natural charring protection of the timber, and avoiding the spread of flame (combustability) by site applying a class 0 spread of flame treatment by Envirograph or similar. New steelwork and exposed columns will be intumescent painted.

Any damaged existing clay pots will be sensitively repaired to a standard agreed with the fire engineer to provide adequate fire resistance.



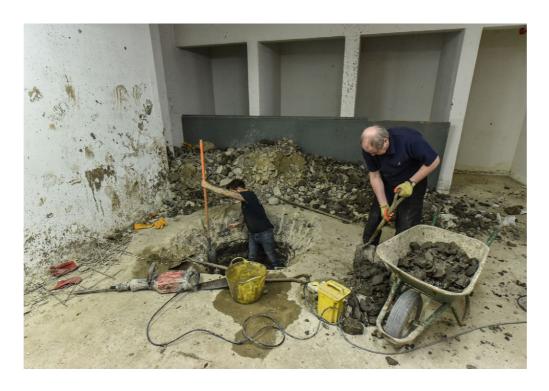
5 Investigation Works

5.1 Future Investigation Works

In order to progress the structural design a schedule of intrusive and geotechnical investigations will be required during the next stages. These are required to verify the information contained within the archive drawings and inform the structural design where no archive information is available. These will be discussed with Bidwells and the London Borough of Camden, and care will be been taken with these works to minimise impact on the fabric of the building and preserve areas of significance

The expected future investigation works are likely to include:

- Measured survey of existing lift shaft structure
- Concrete testing to slabs and foundations, to check cover, carbonation, concrete strength, and chlorides.
- Investigations of perimeter details and junctions between the buildings to help establish the party wall condition.
- Site sampling and testing of existing steel structural frame; inspection of beams/columns, to check strength grade, capacity, evidence of corrosion, protective treatment and material assessment
- Intrusive investigations to confirm stability system in building
- Full Measured survey to building





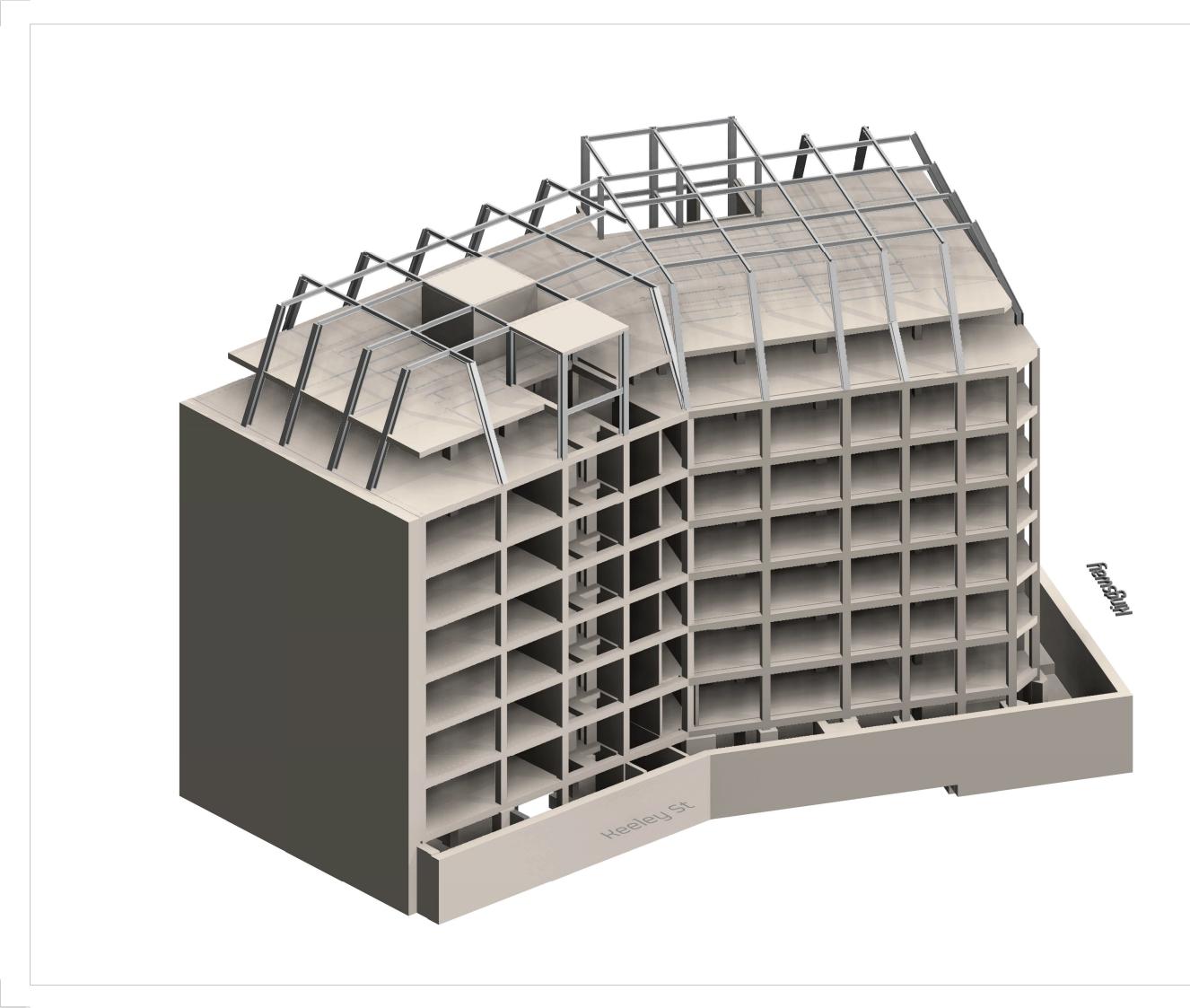
















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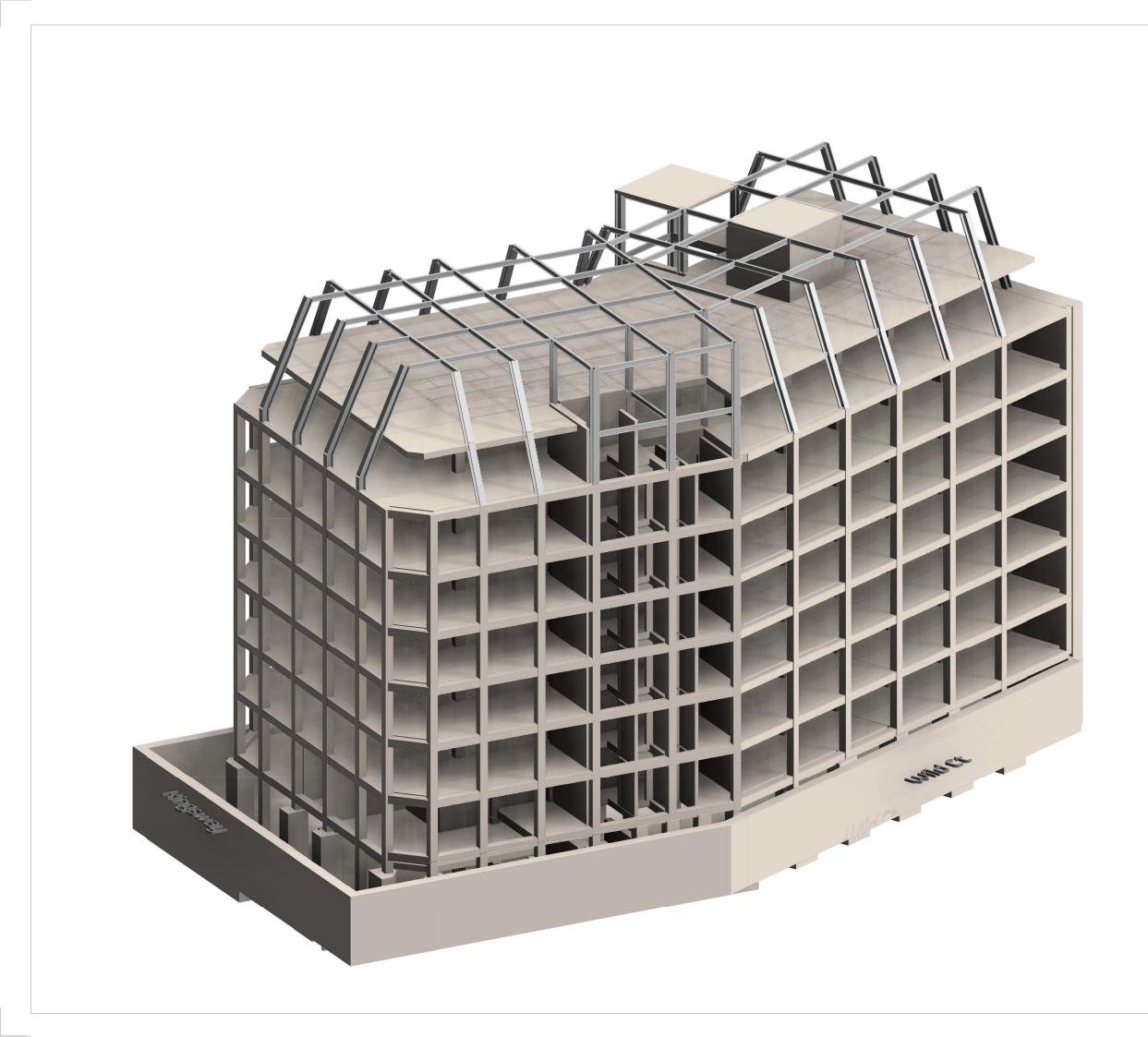
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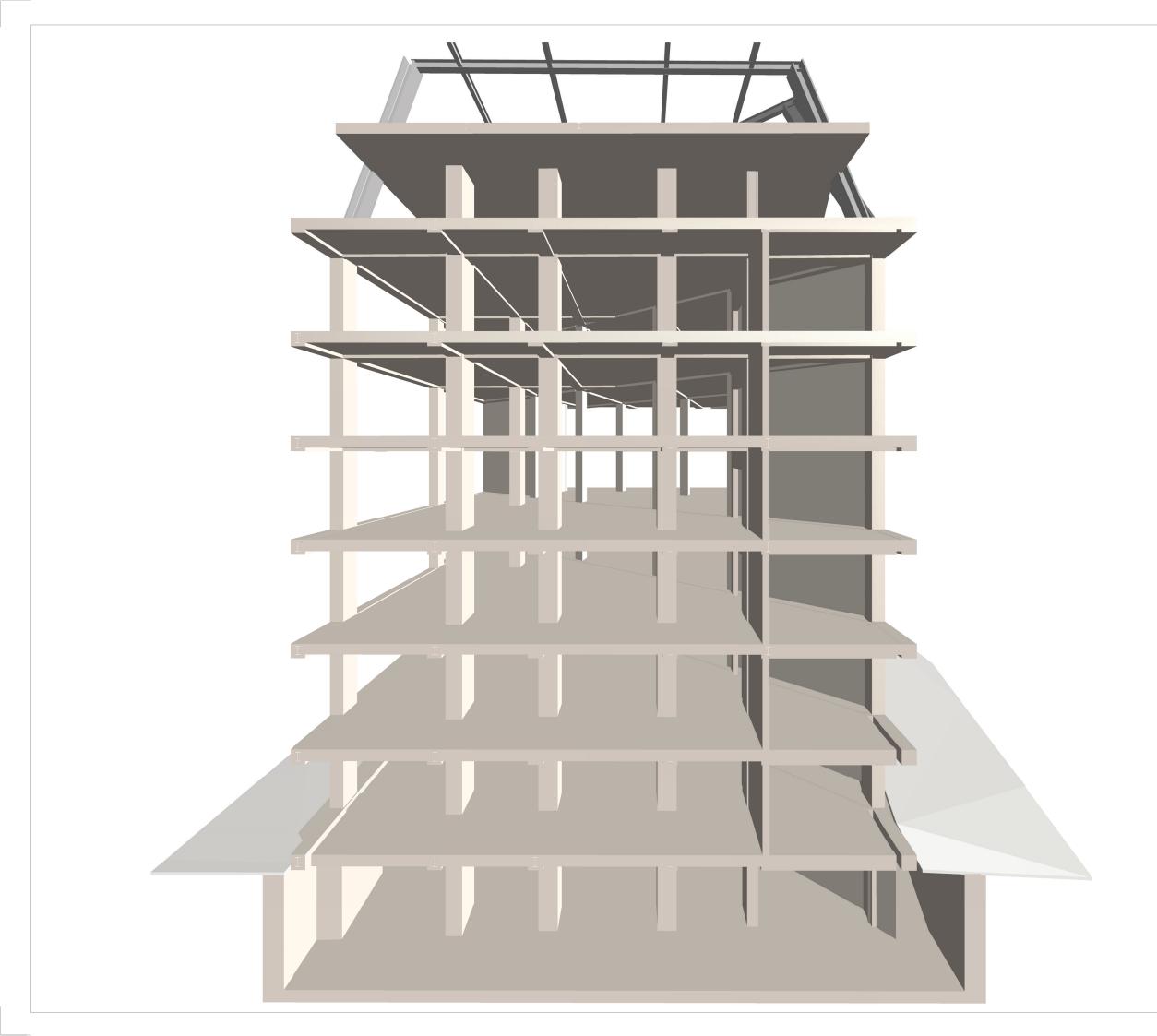
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Purpose of Issue STAGE 2 Scale at A1

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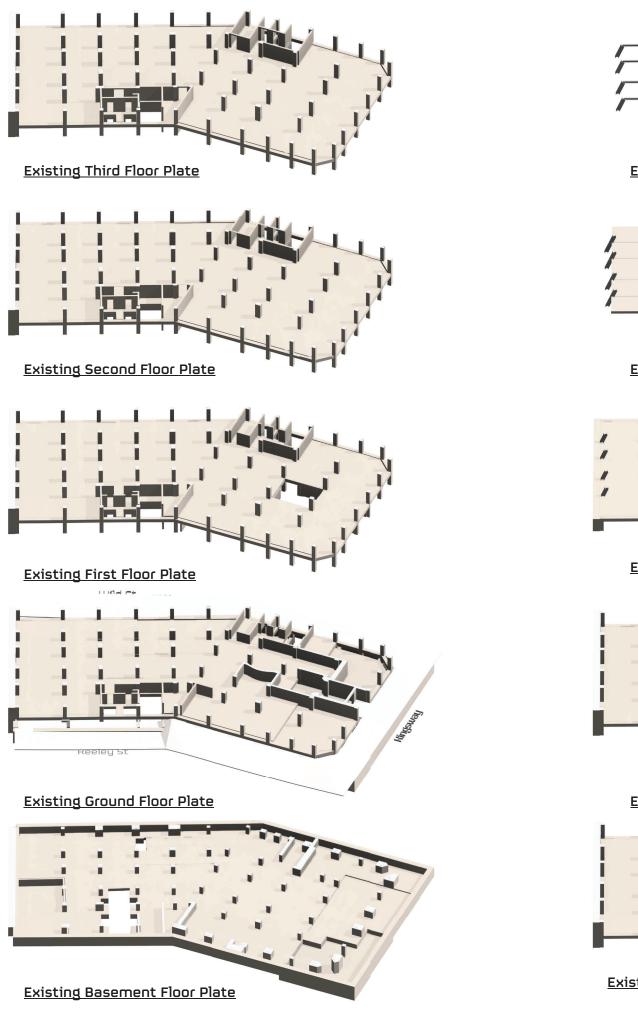


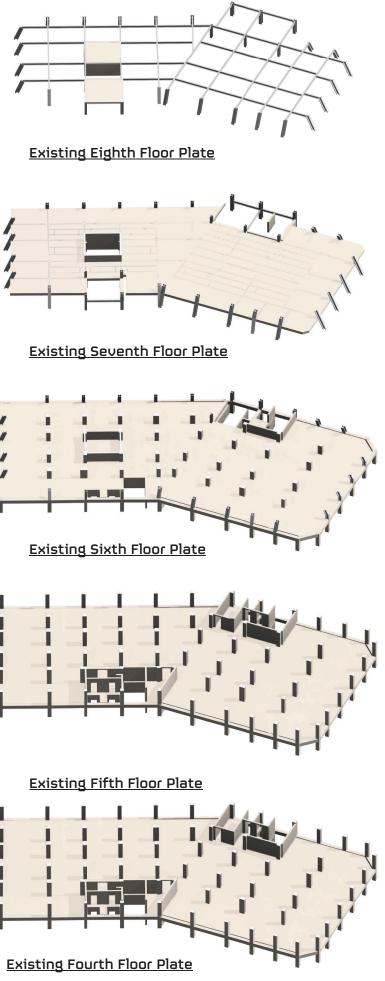




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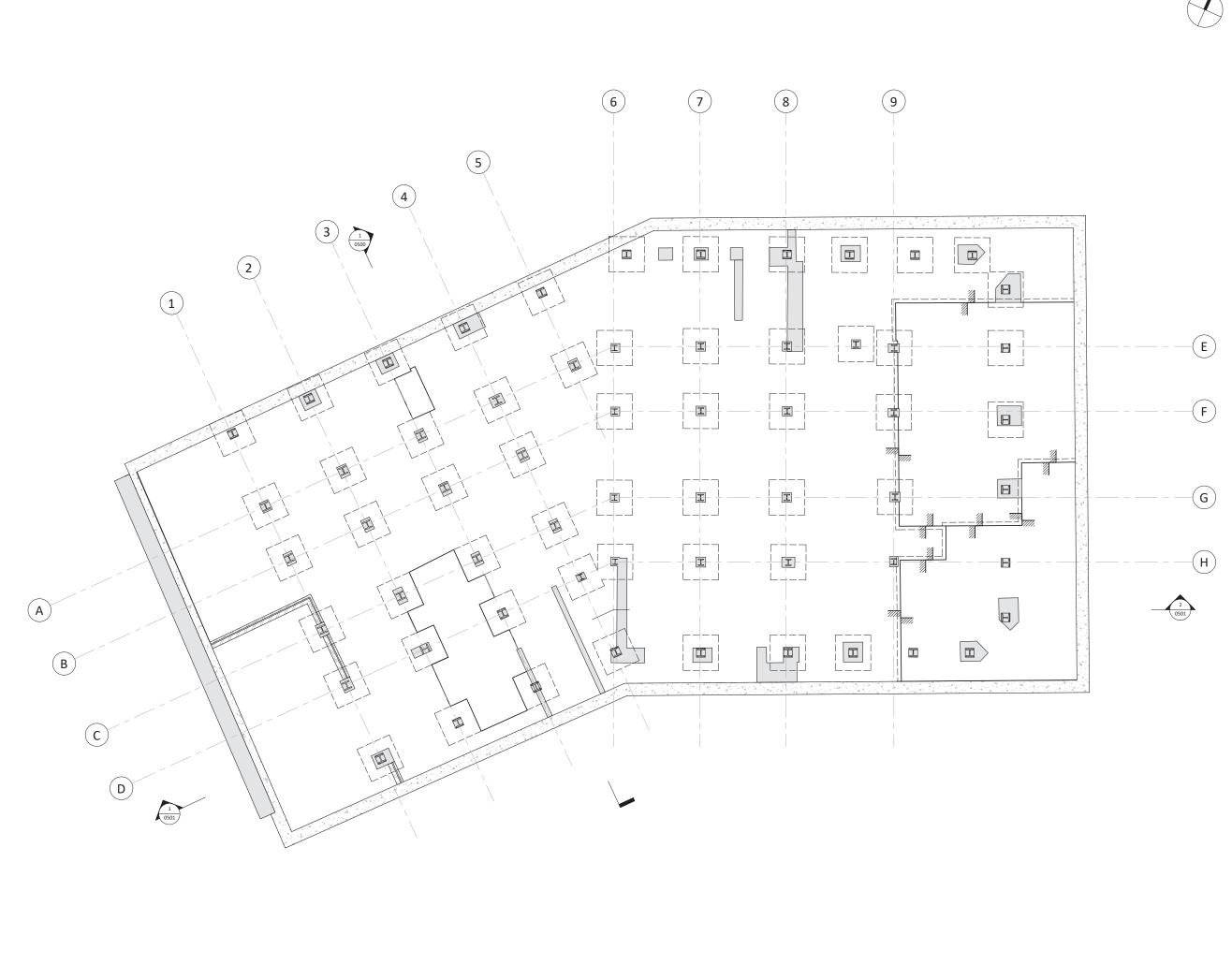
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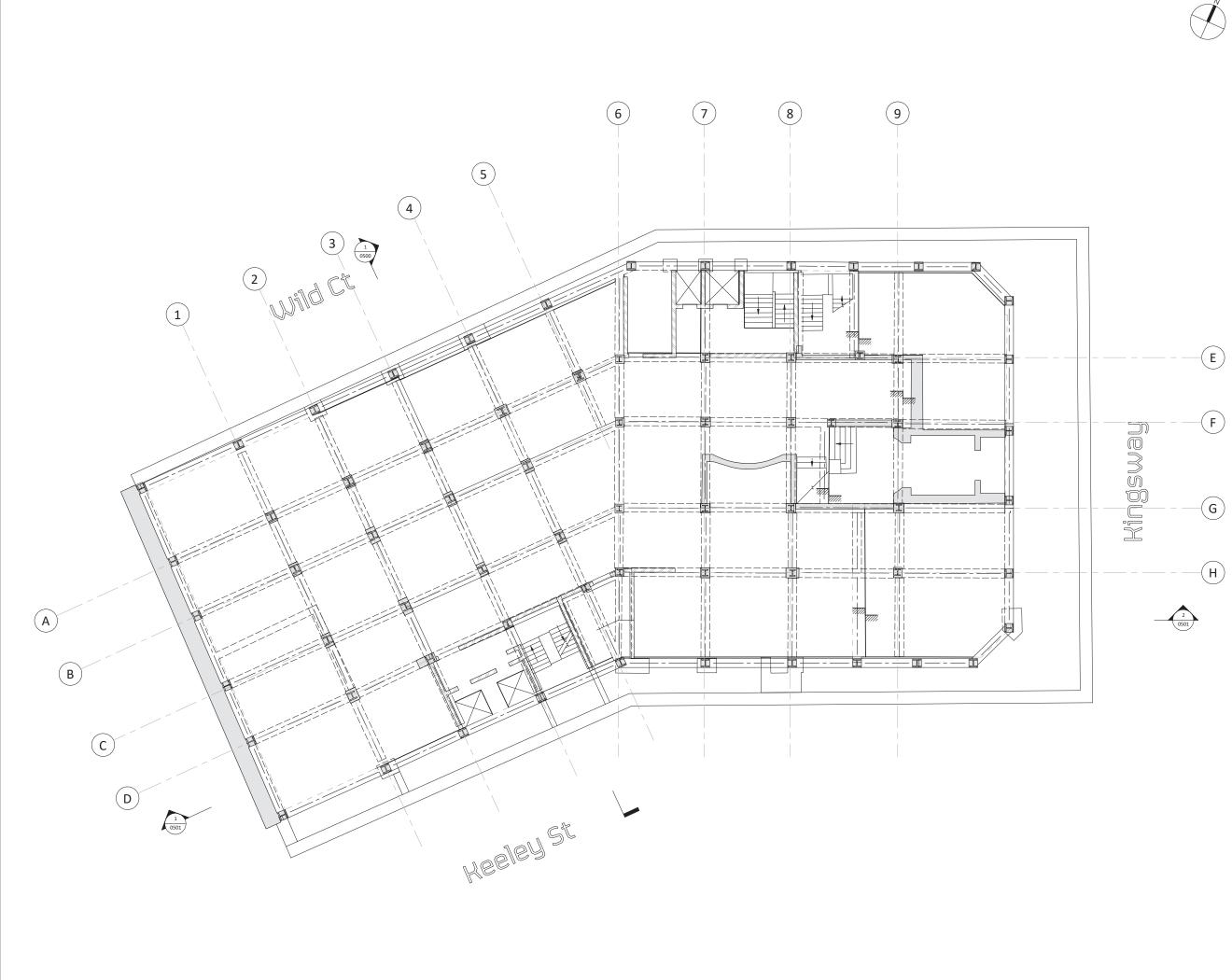
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Floor Plan

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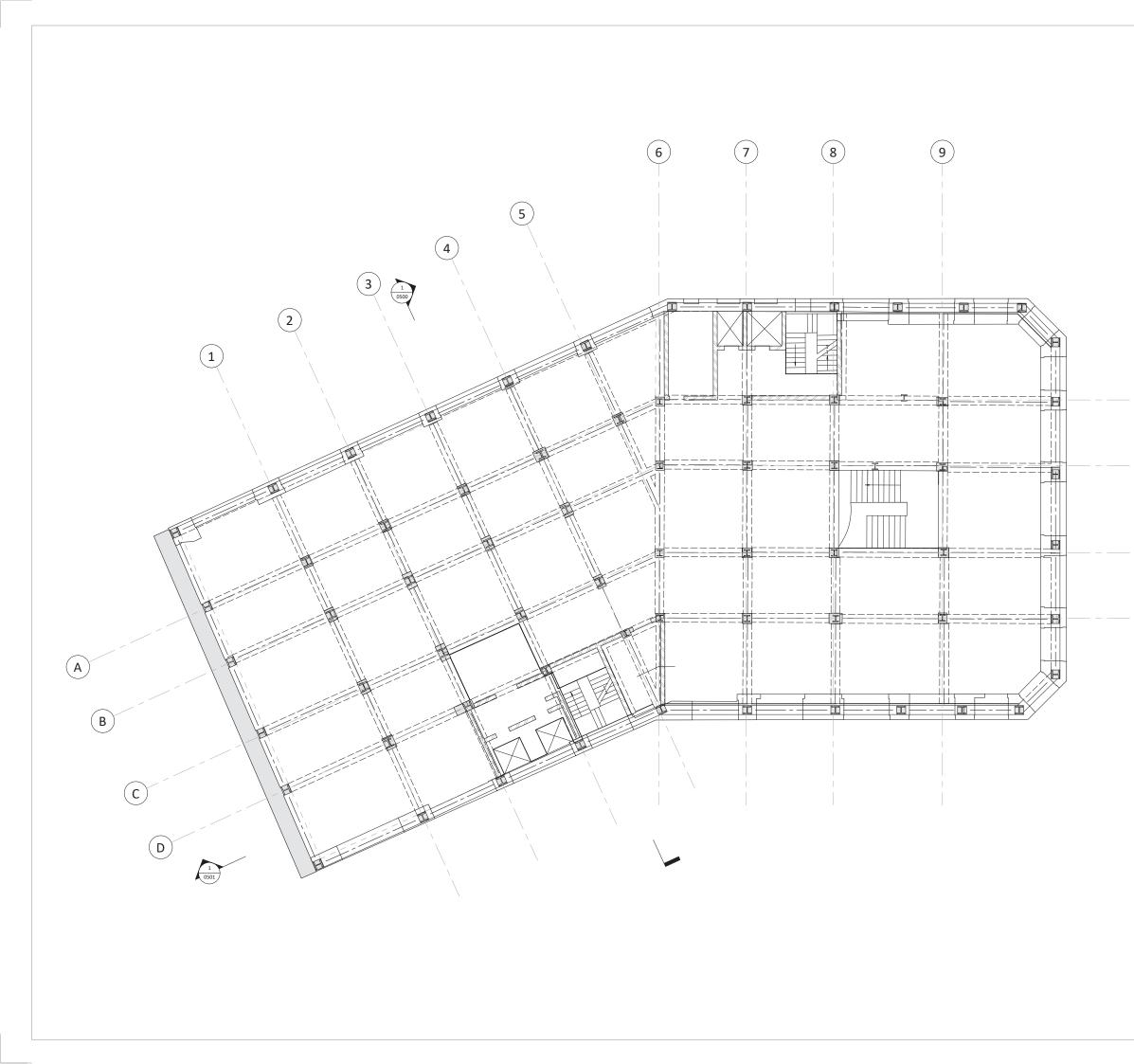
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Existing Ground Floor Plan

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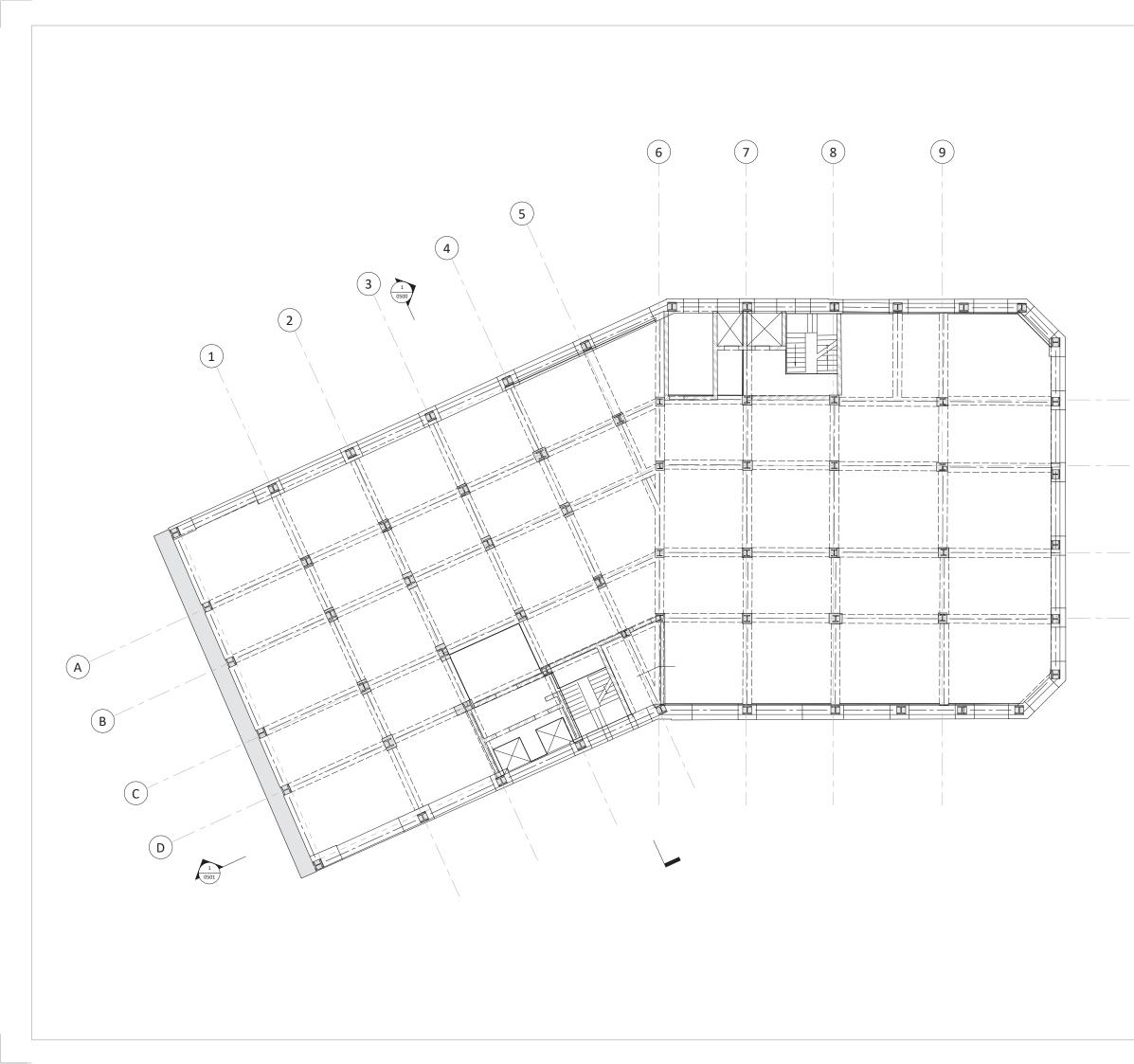
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Existing First Floor Plan

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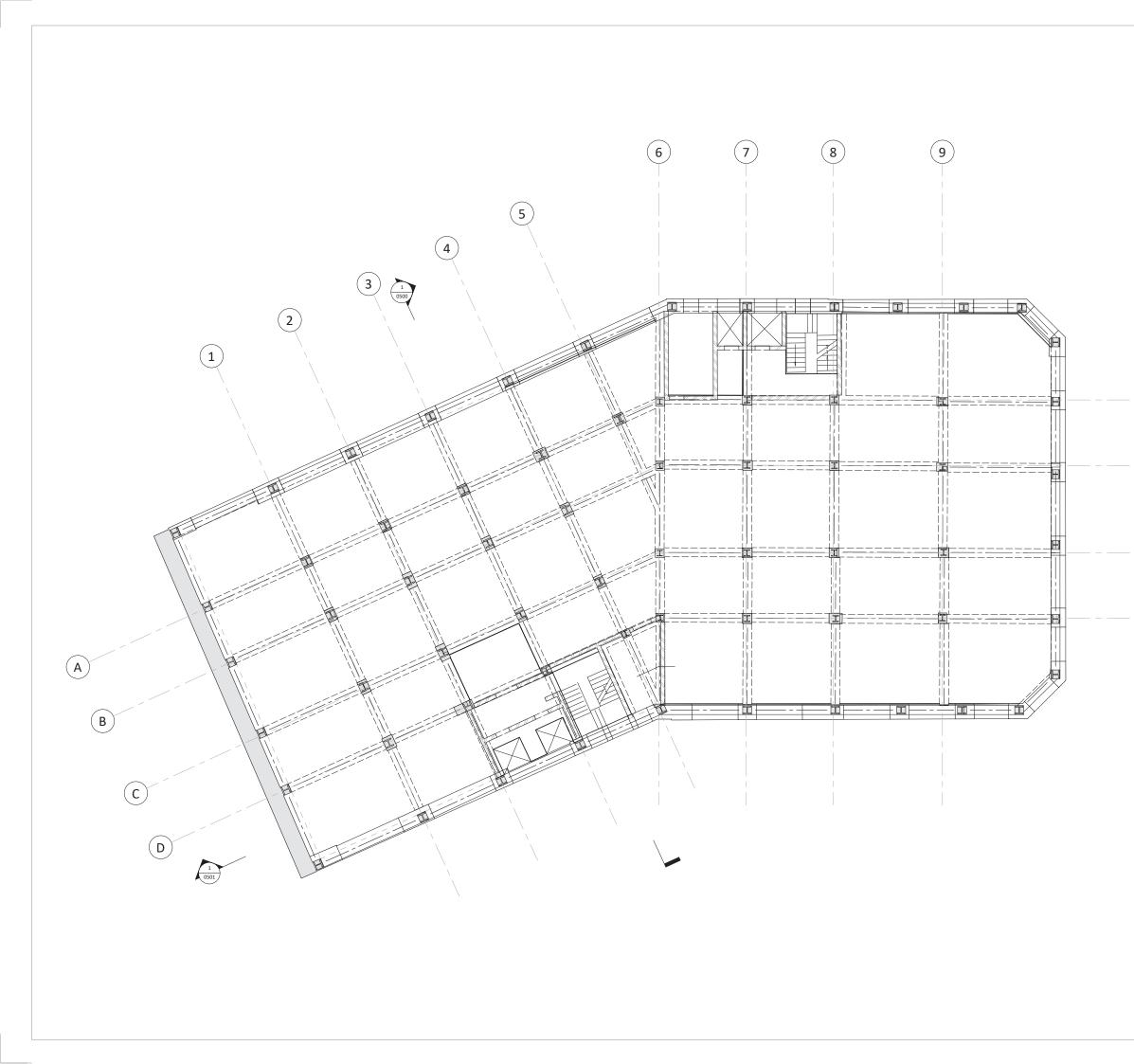


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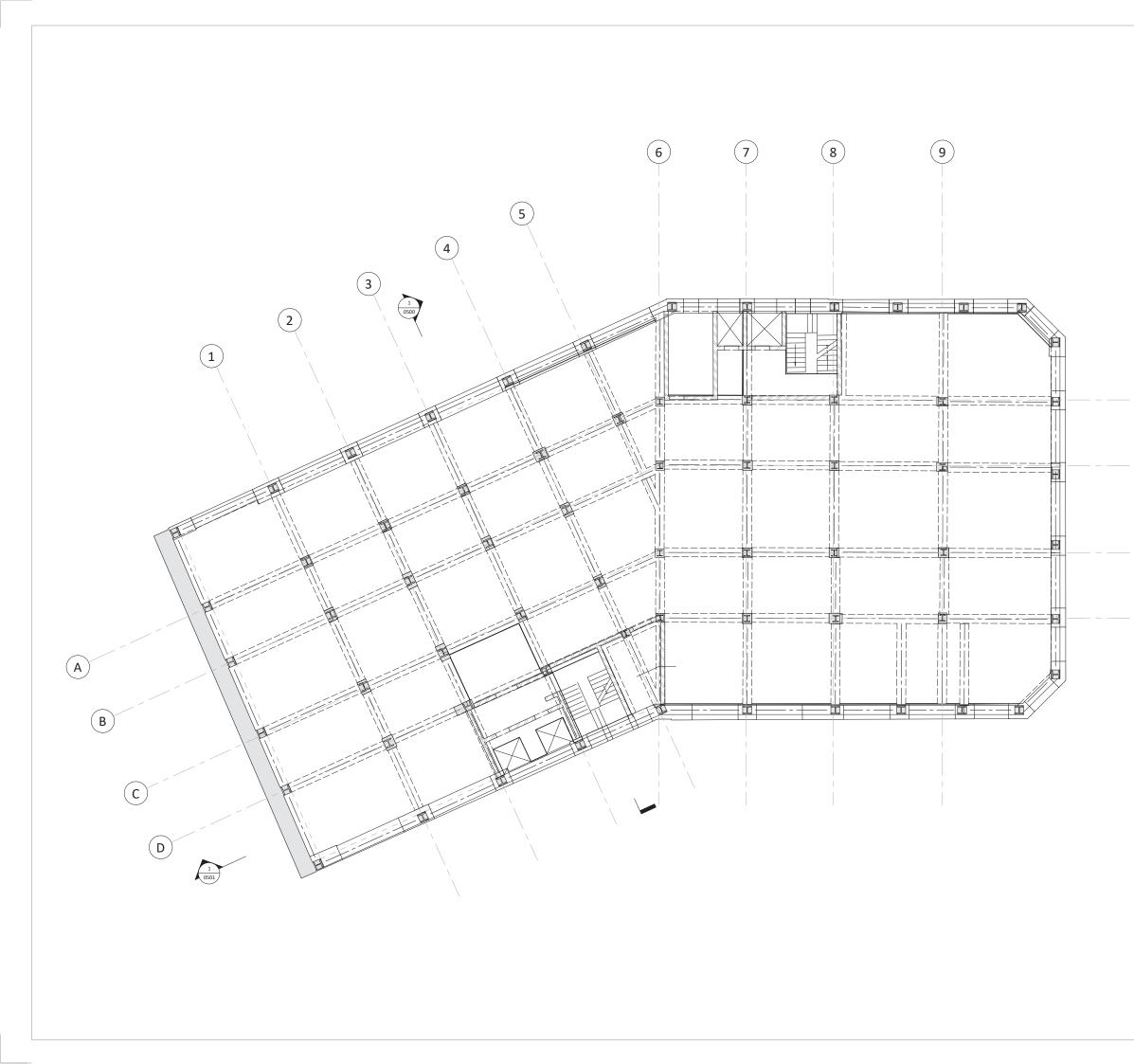


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Drawing Title
Existing Third Floor Plan

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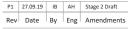
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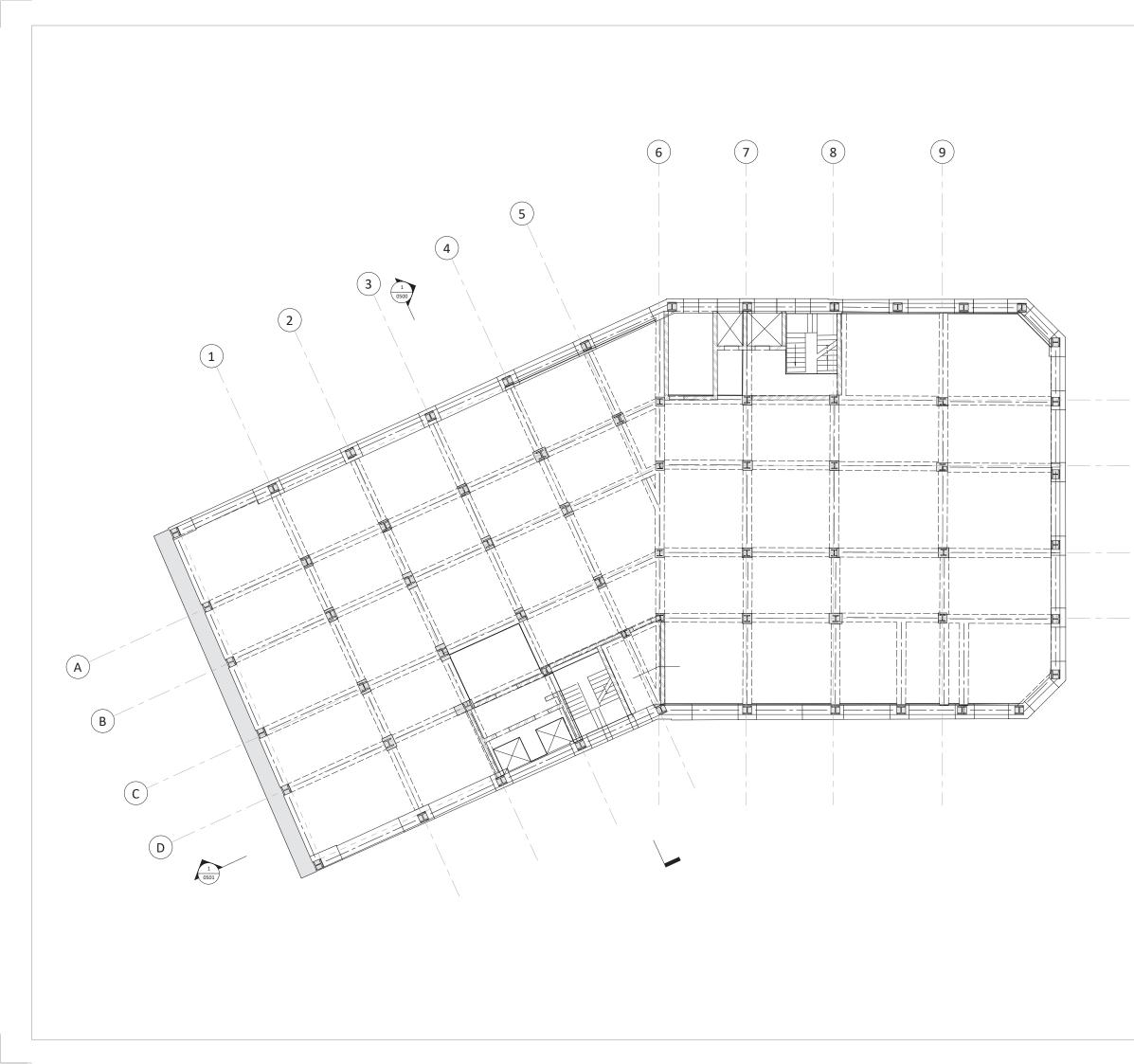


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Existing Fourth Floor Plan

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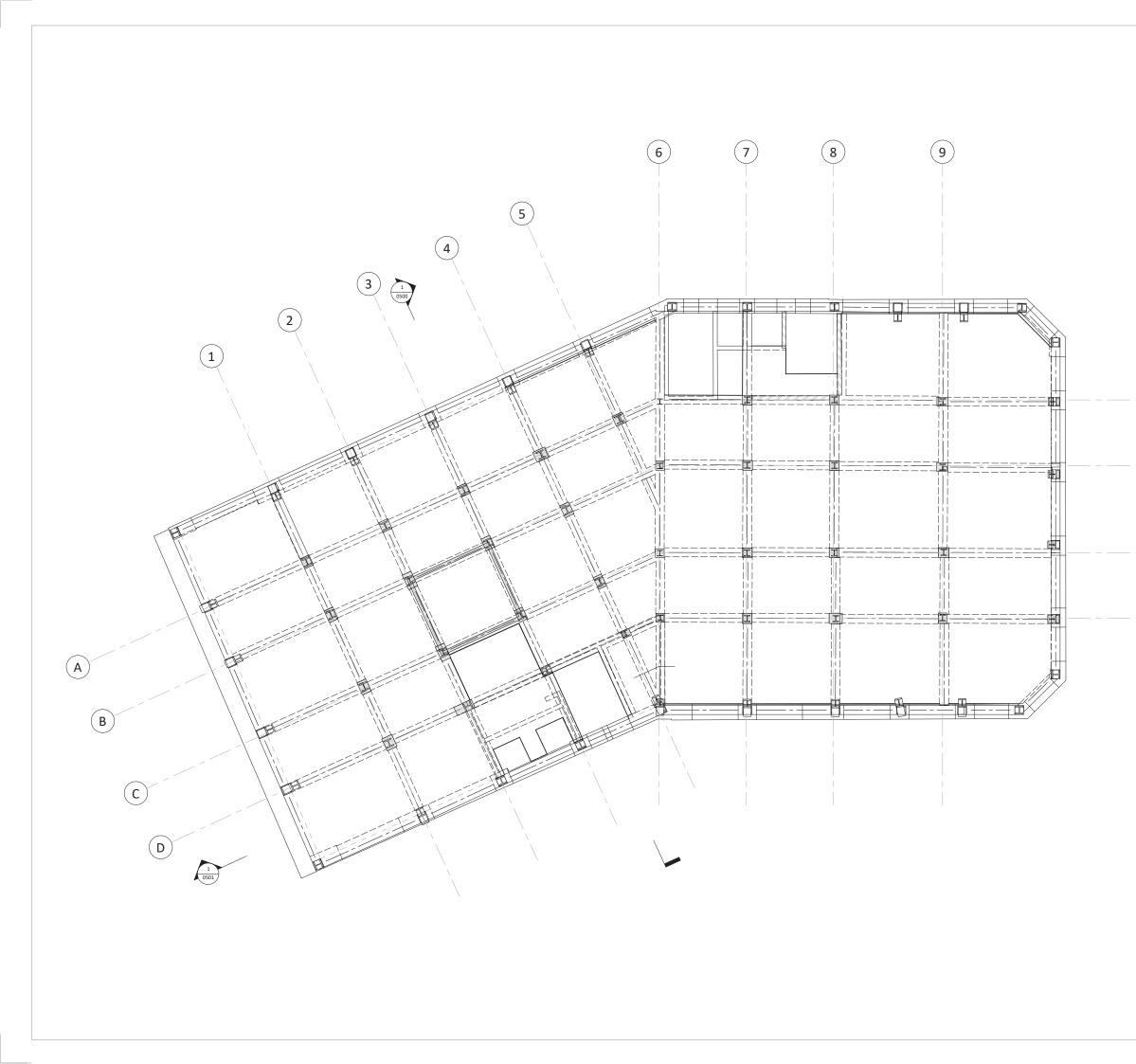


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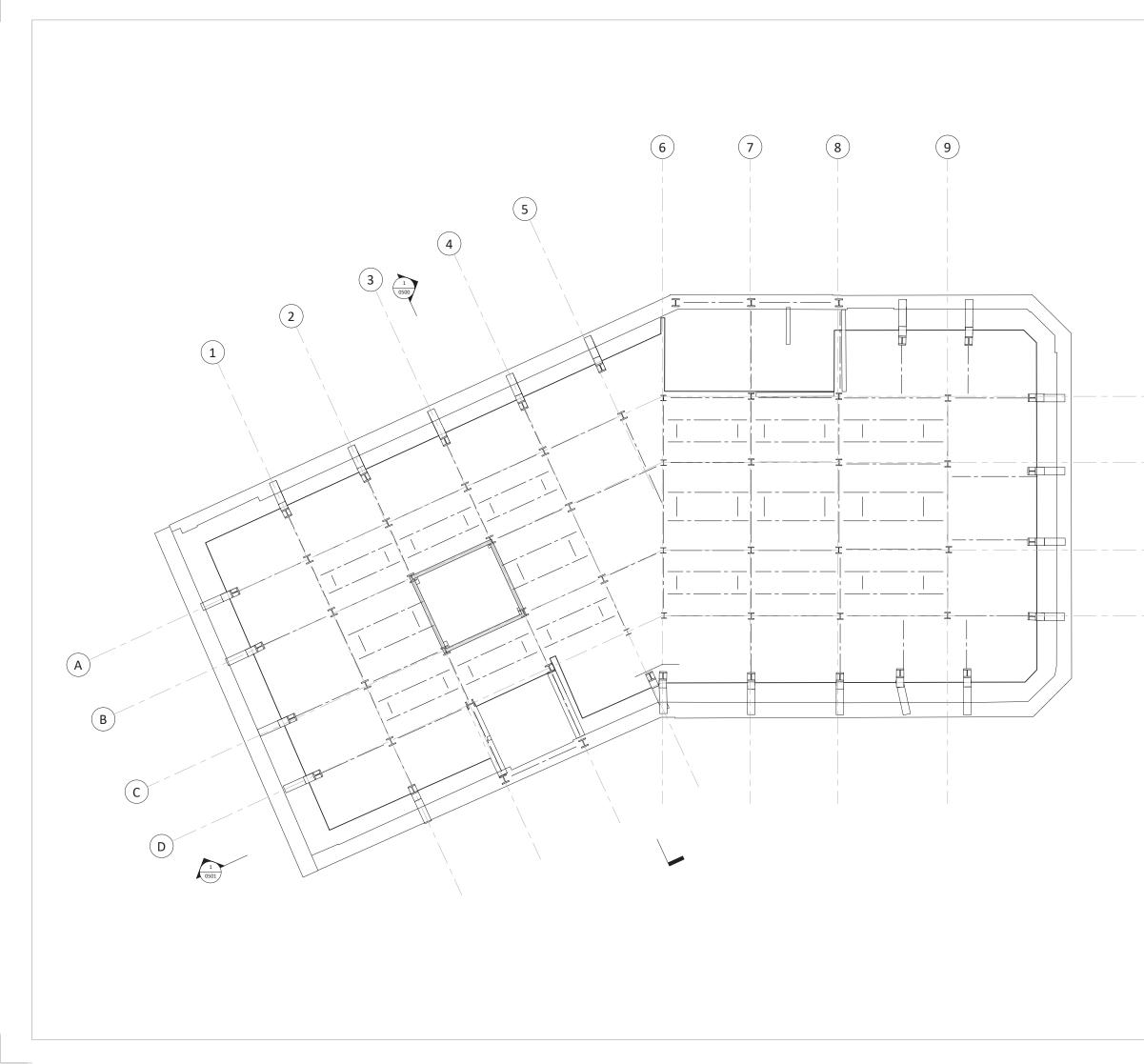


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Existing Sixth Floor Plan

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Floor Plan

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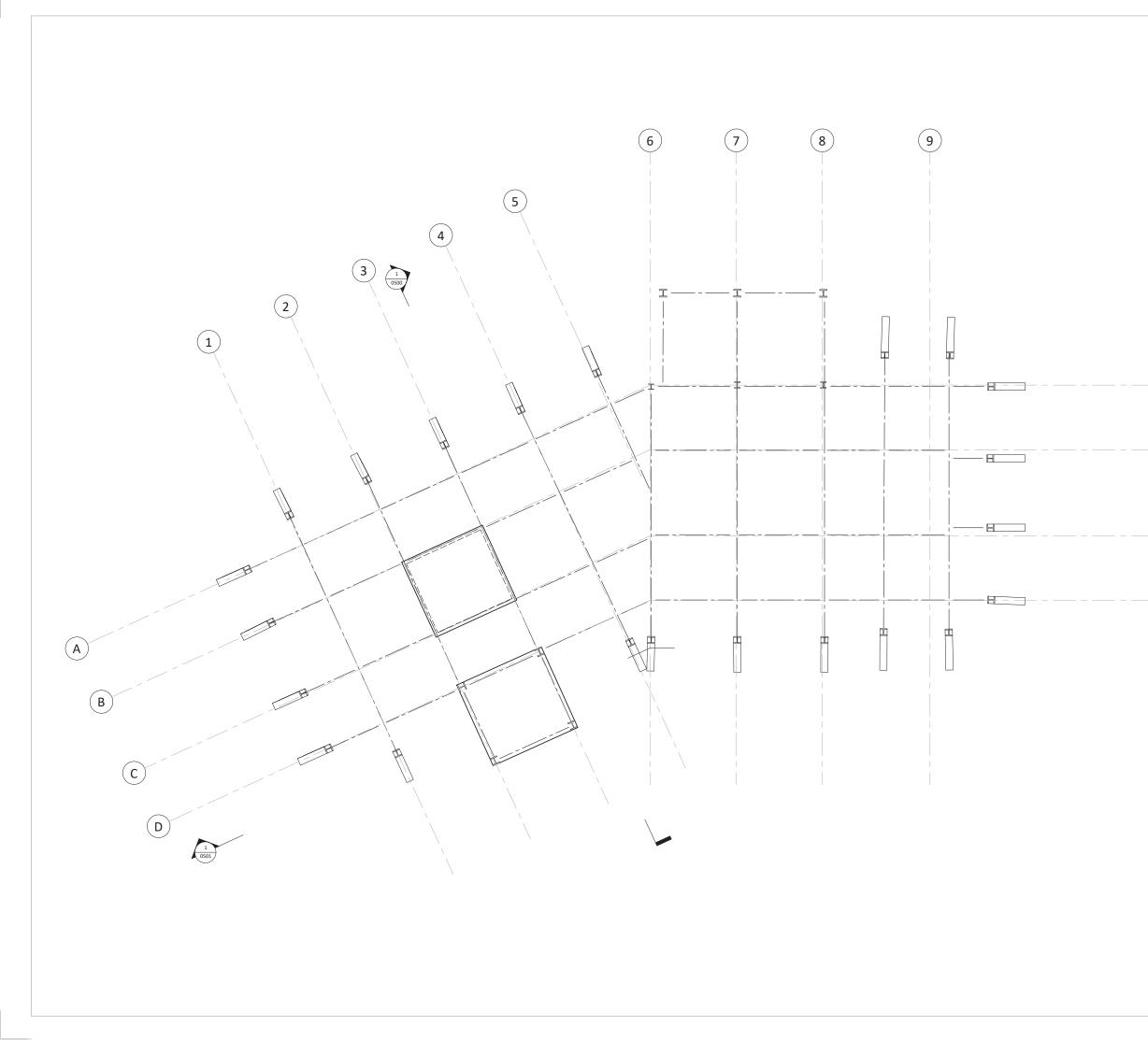
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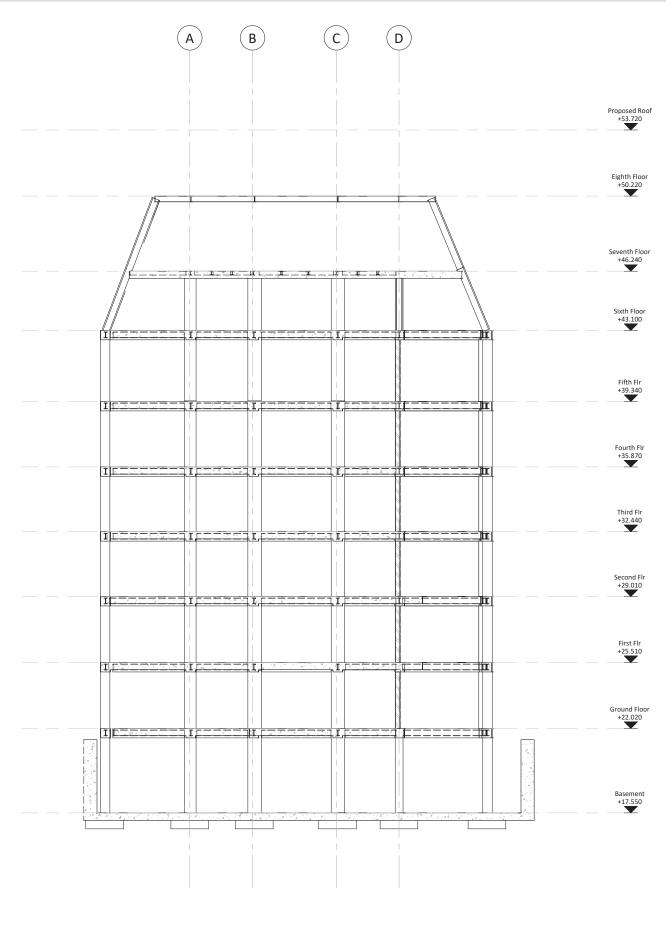


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Existing Roof Floor Plan

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NOTE: All existing details shown are based on archive drawings and limited opening up works. Assumptions have been made regarding existing construction. Materials, construction, framing and spans of existing slabs and walls to be confirmed by site investigations.

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Existing legend

Existing structural walls

Existing structure below



Drawing Title
Existing Overall Sections

P1 27.09.19 IB AH Stage 2 Draft

HEYNE

Sheet 1

Job Name

TILLETT STEEL

65 Kingsway

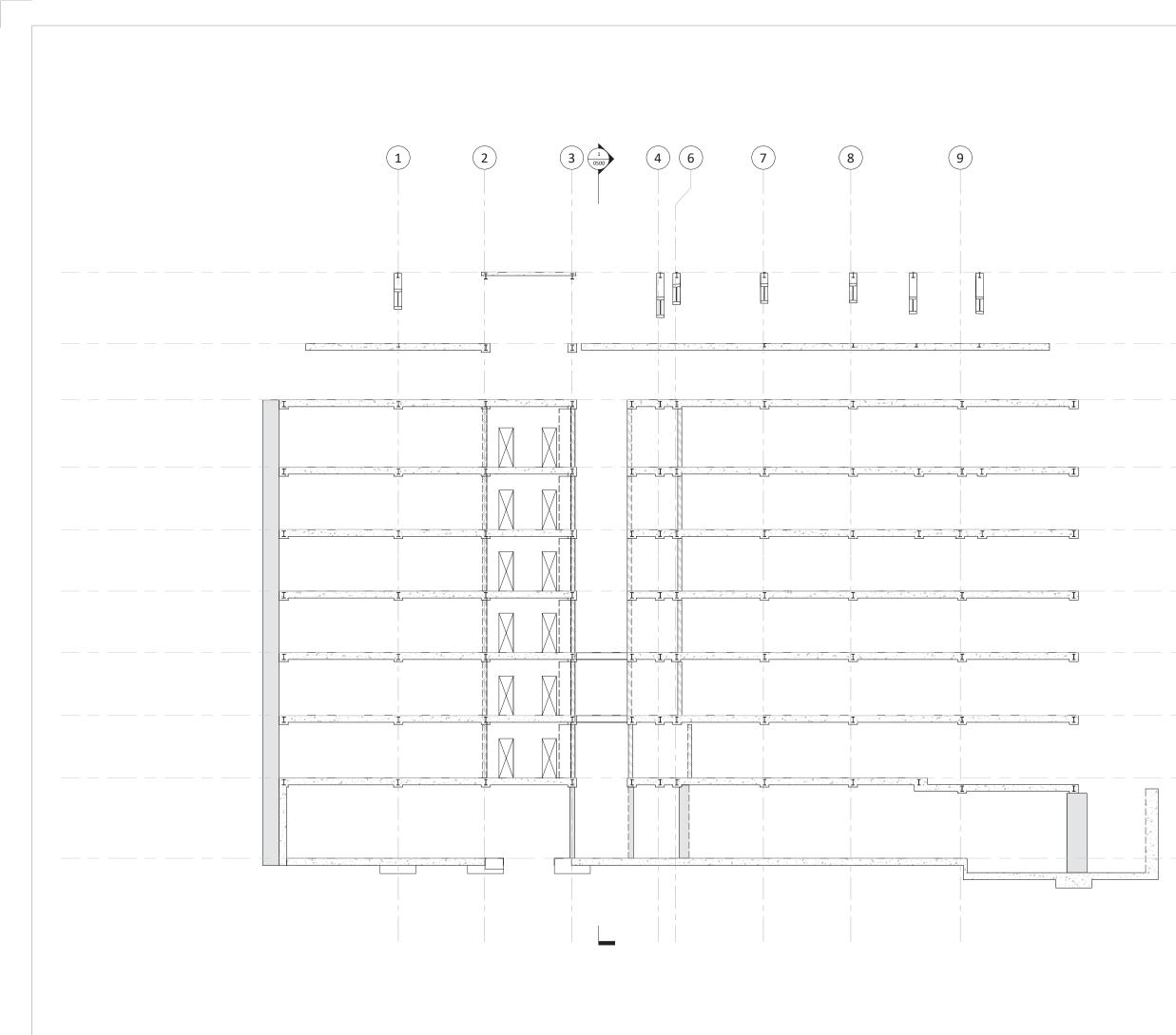
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Drawing Title
Existing Overall Sections Sheet 2

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