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Hollow Wall

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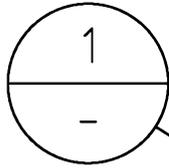
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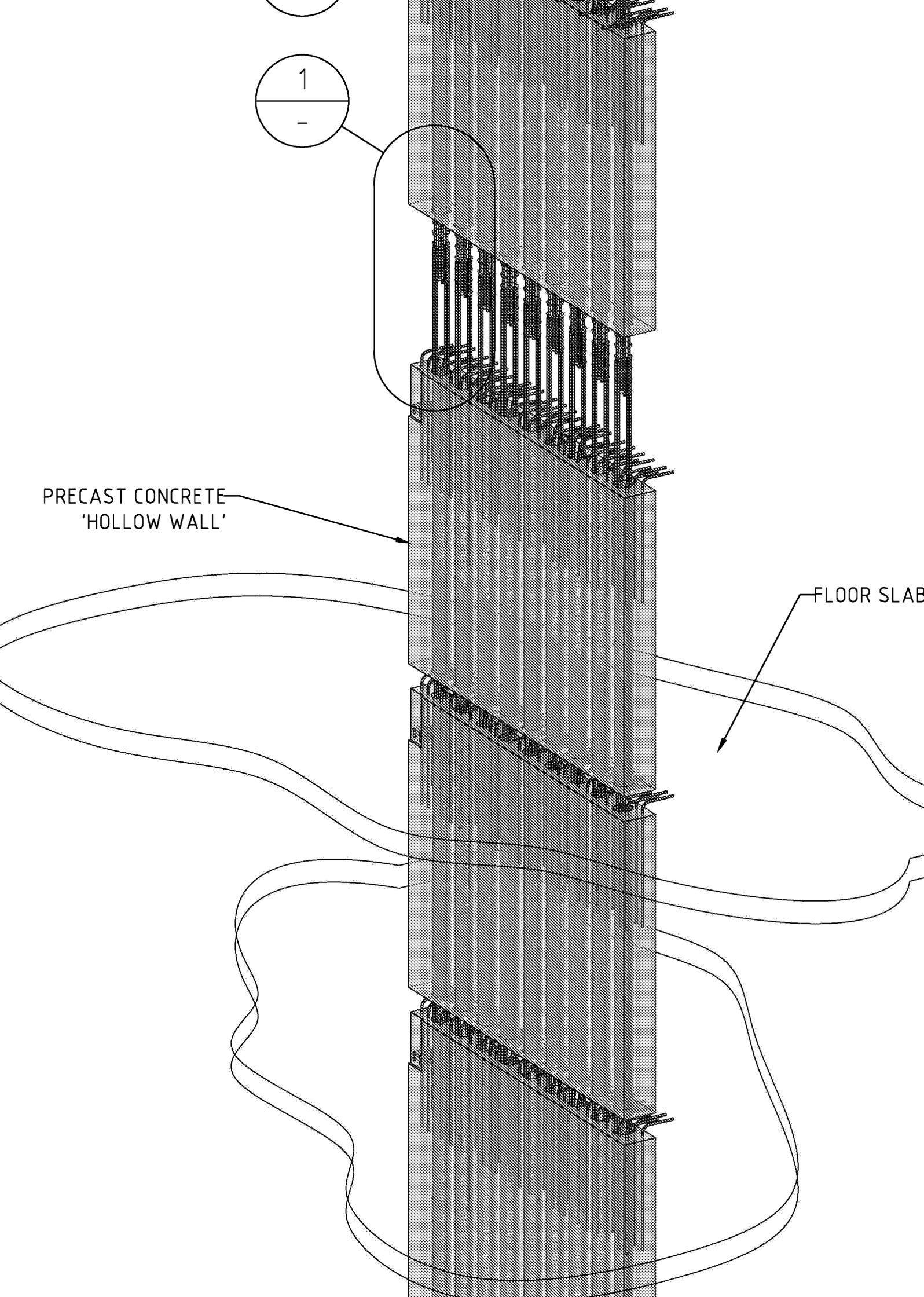
ABSTRACT

The 'Hollow Wall' is a prefabricated concrete vertical panel with voids that will form a shear wall or partition wall that incorporates a column reinforcement cage connecting panel to panel. Developed to provide a safe, clean and efficient alternative in which to provide shear strength to low rise and high-rise multilevel structures.



PRECAST CONCRETE
'HOLLOW WALL'

FLOOR SLAB



SHEAR COLUMN
REINFORCEMENT
LOWERED WITH UPPER
ELEMENT TO MESH
WITH LOWER CAGE

SHEAR COLUMN
REINFORCEMENT

SHEAR COLUMN VOID

STARTER BAR

TOP SURFACE
THOROUGHLY

Title of Invention: Hollow Wall

Background

[0001] The 'Hollow Wall' is a precast concrete vertical panel with voids that will form a shear wall or partition wall that incorporates a column reinforcement cage connecting panel to panel.

[0002] Developed to provide safe, clean and efficient manner in which to provide shear strength to low rise and high-rise multilevel structures.

The Hollow Wall

[0003] Precast walls are manufactured off-site with voids cast into the wall. The number of voids can vary depending on the structural drawings and allowance to lighten the walls can be manufacture up to 40% lighter using green concrete. The size of the voids can vary to suit the load requirements.

[0004] Hollow Walls are connected together by peers/columns (described below) and are inserted through the voids. Concrete is poured into the voids to secure the column and the wall. Depending on the load requirements, not all voids are required to be filled with concrete and can remain as a void to lighten the wall. The void can also be filled with other materials to reduce acoustic noise, thermal qualities or to be used as a duct for other purposes.

[0005] The size of the wall can be altered to suit the requirement of the design, including flexibility in the thickness length and width of the wall and void.

[0006] The Hollow Wall allows you to fill the voids in the wall when horizontal slab is poured on site when the wall is secured and in position.

The peers/columns

[0007] The columns strengthen the wall for side load for wind and earthquake conditions. The Columns vary in size depending on the strength and requirements of the walls. The columns travel through the voids from the footings/base of the building through to the top of the building repeating itself as many times as required. In achieving the required strength for side loads/wind loads or earthquakes the wall void can be filled with either steel bars that form a column; a single bar that achieves greater flexibility or a post tensioning cable.

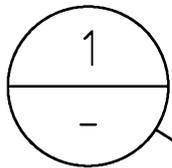
[0008] The bars/columns are overlapped with the previous bar/columns as the building climbs therefore creating continuity. This is inserted through the voids and is then filled with high strength concrete or concrete that the slab has been poured with.

Void Mould

[0009] The void can be circular, square or otherwise and can be made from any number of materials.

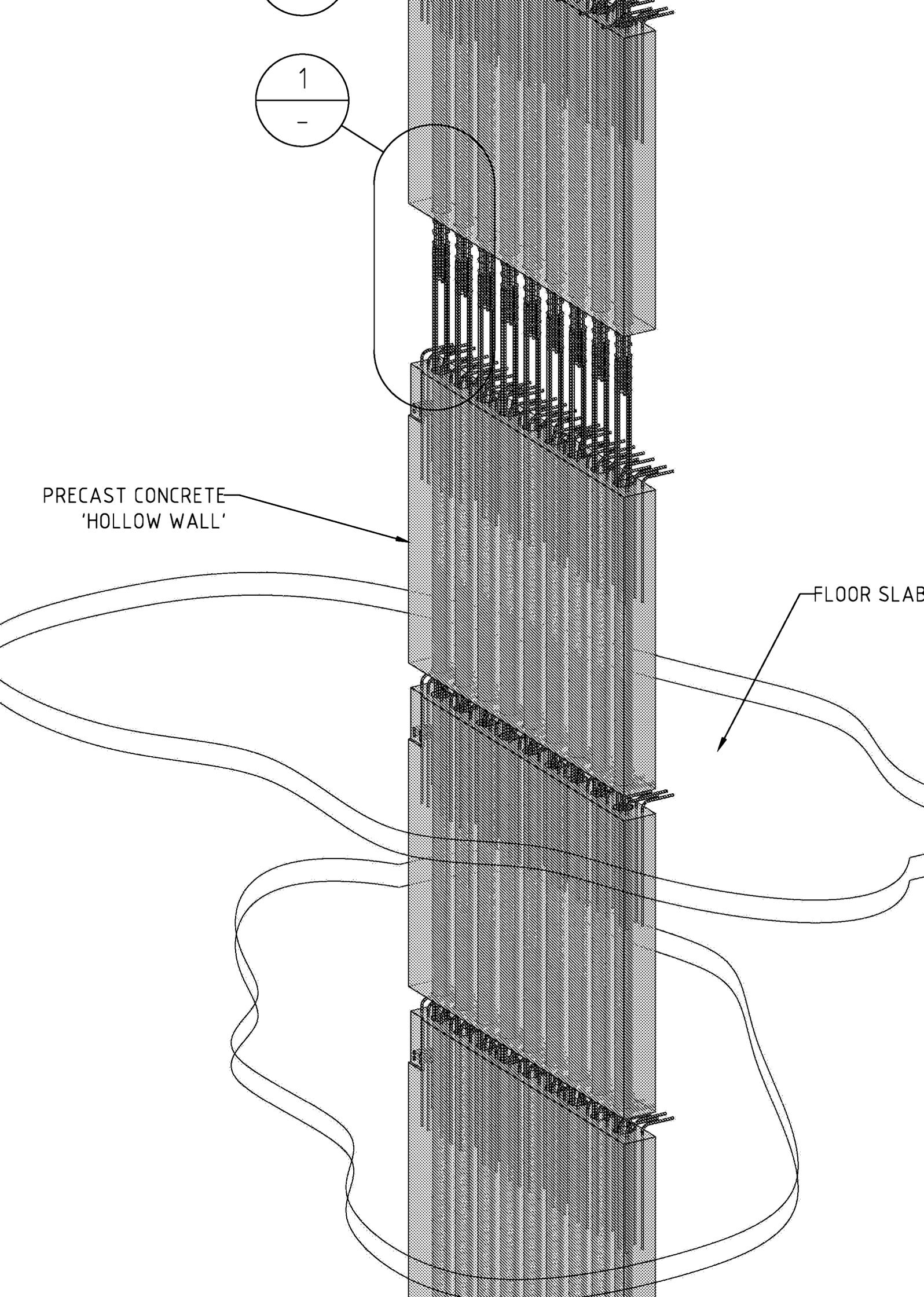
CLAIMS

1. The fabrication of precast walls is done off site with any shape of voids; it can be circular, square or otherwise.
2. Hollow wall incorporates a column reinforcement cage connecting panel to panel which can repeat as many times as required as the building climbs.
3. The column reinforcement can be designed as shear wall to resist side load for wind and earthquake.
4. The void can be filled with other materials to improve acoustic performance, thermal qualities, or filled with high strength grout or concrete that the slab has been poured with.
5. A further claim is to protect the process of installation system of the Hollow Wall, setting reinforcement, placement and finishing in-situ concrete.



PRECAST CONCRETE
'HOLLOW WALL'

FLOOR SLAB



SHEAR COLUMN
REINFORCEMENT
LOWERED WITH UPPER
ELEMENT TO MESH
WITH LOWER CAGE

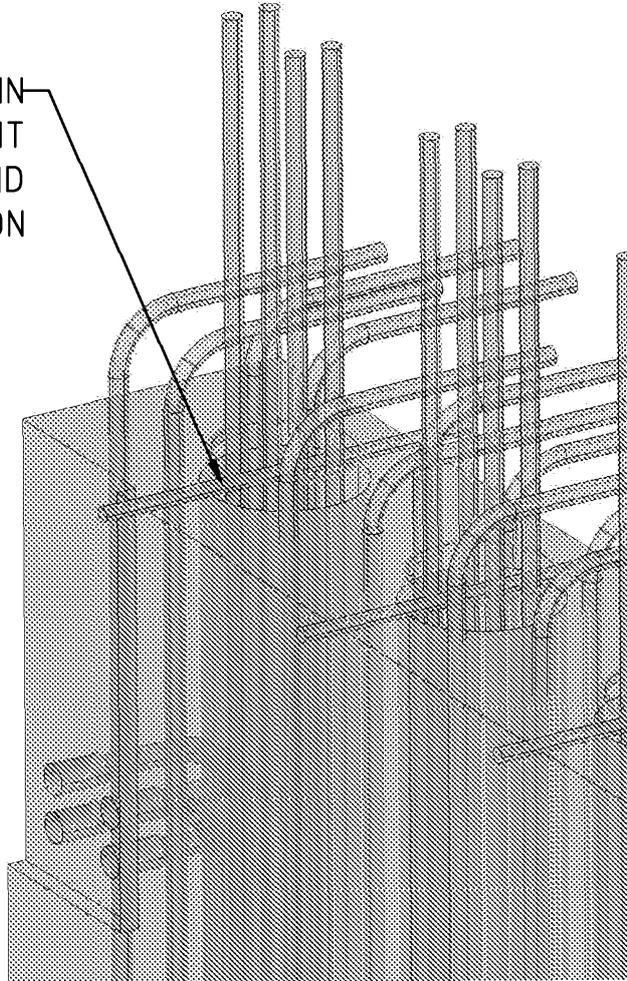
SHEAR COLUMN
REINFORCEMENT

SHEAR COLUMN VOID

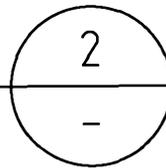
STARTER BAR

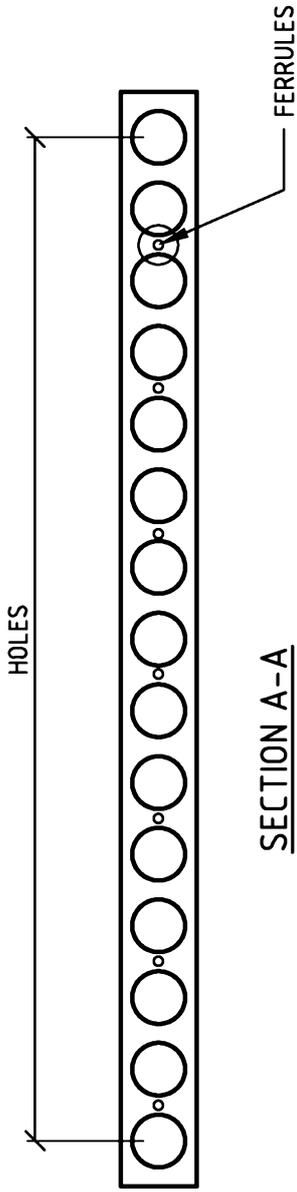
TOP SURFACE
THOROUGHLY

SHEAR COLUMN
REINFORCEMENT
SUSPENDED IN VOID
DURING INSTALLATION



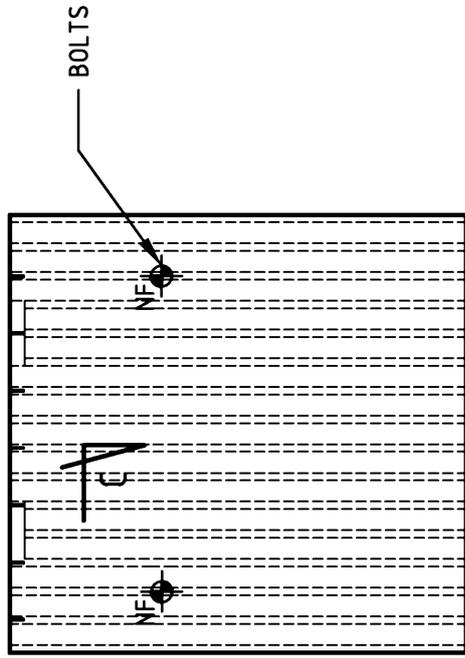
DETAIL



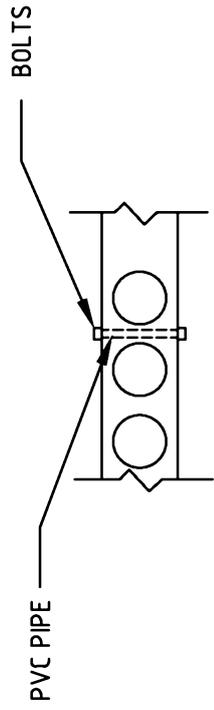


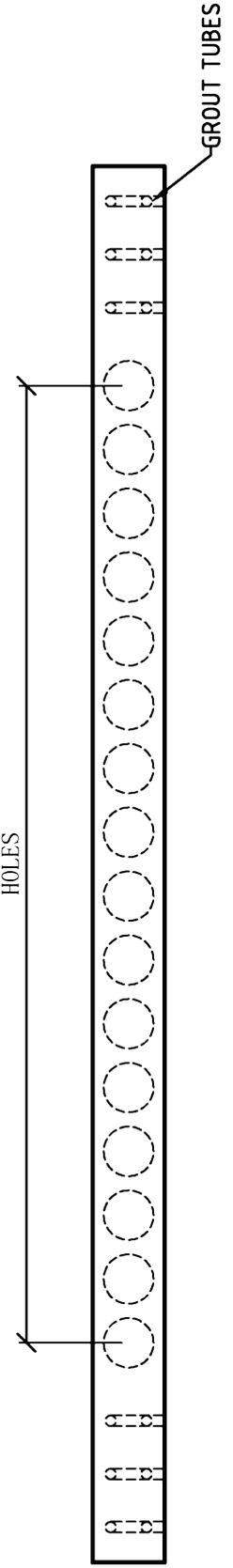
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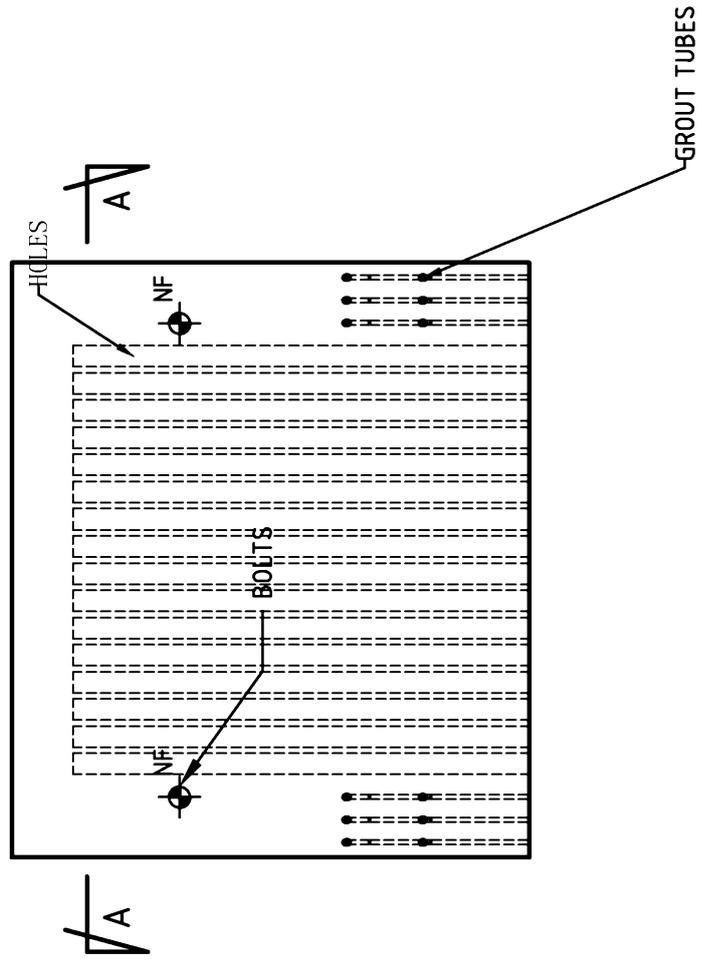


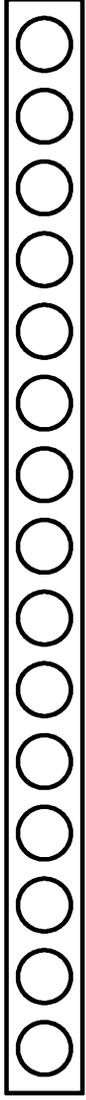
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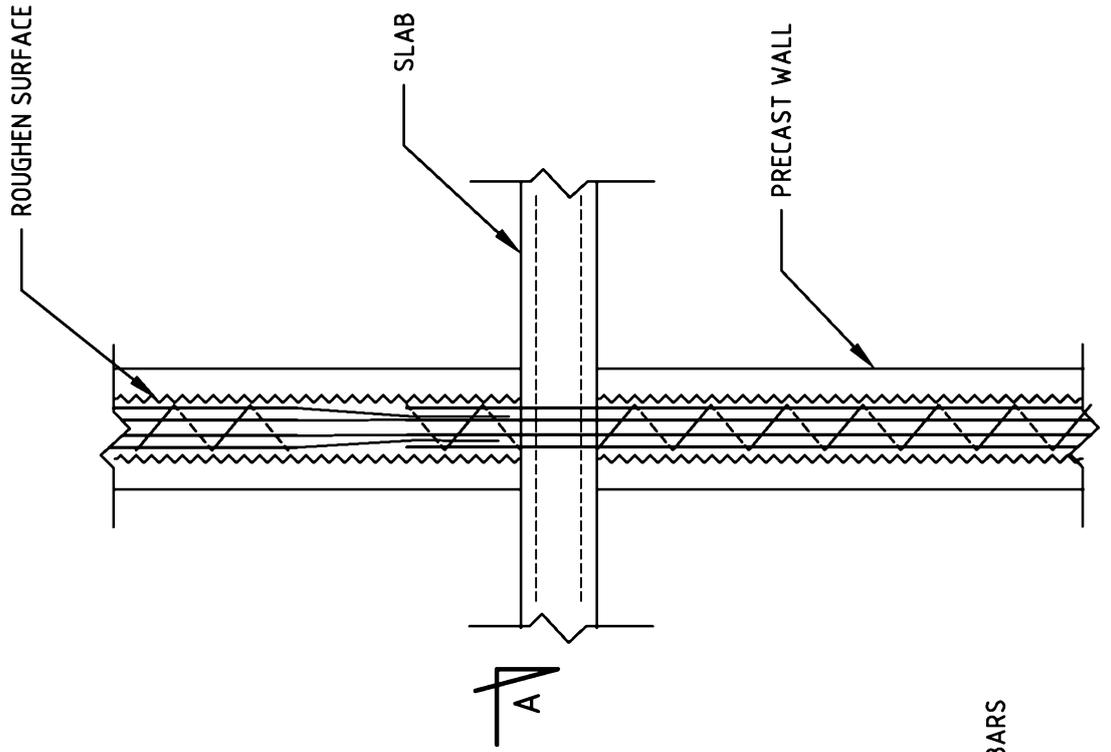
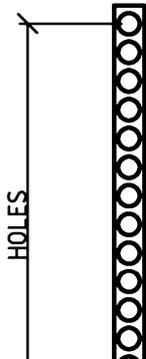


SECTION A-A

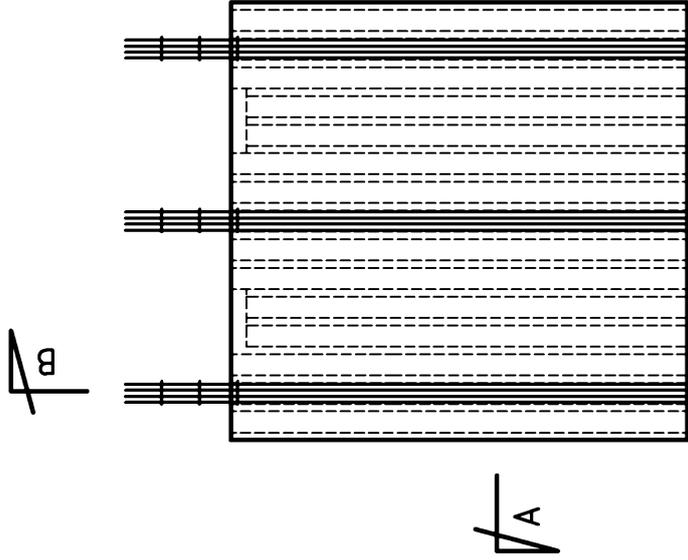




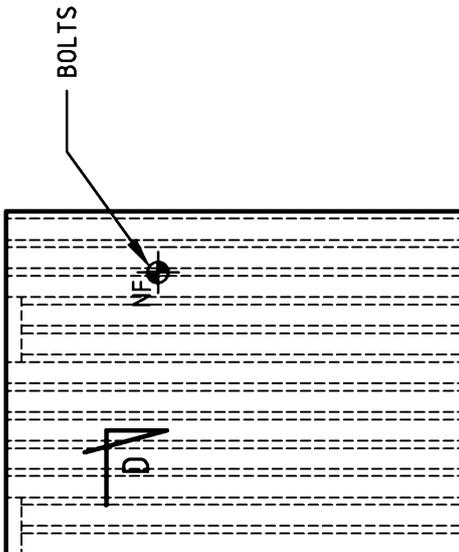
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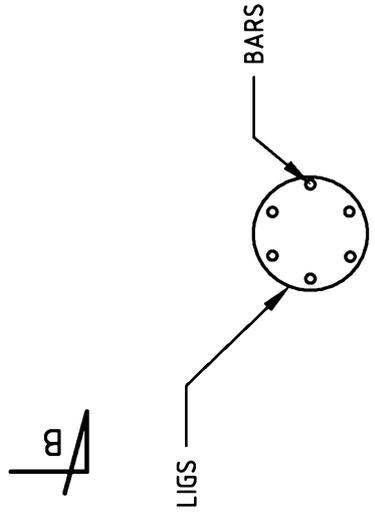
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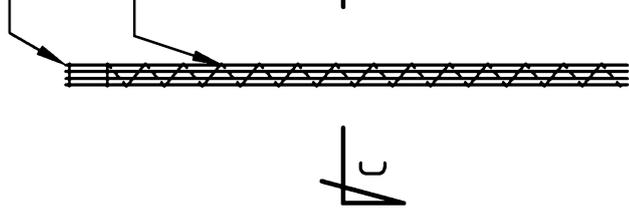
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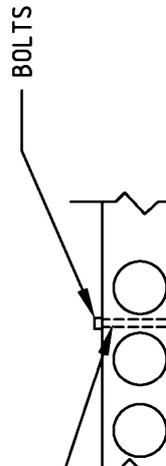
SECTION D-D



SECTION C-C



SECTION 1



BOLTS