

initial gravity bar concept sketch
The Guinness Storehouse as a physical Pint of Guinness



aerial view of finished extension

Guinness Storehouse Gravity Bar Expansion

Buildability & Assembly

Gravity 2's radius is 11,000mm, 2,000mm larger than Gravity 1. Gravity 2 is supported off a circulation core and 4 strategically placed circular steel columns, which penetrate the existing Storehouse building. 3 of the columns are supported directly off the existing historic steel columns below, the 4th column being a new introduction, and was installed floor by floor from ground level up to the new Gravity Bar level, with each section of column being fixed to the one below, coring through every existing floor level down to lower ground, where a new column foundation was required.

Primary diagonal beams span 13,700mm and support cantilever beams of 3500mm in length, which taper to 255mm ensuring a continuous slim edge detail to the perimeter. 800mm deep fabricated box girders are utilized as the primary support beams ensuring the façade deflection criteria was achieved for the large faceted glazed panels.

The roof, a single ply membrane on semi-rigid insulation with a continuous circular recess for drainage, leading to rainwater downpipes concealed within the perimeter columns. A 50mm diameter steel section curves around the top perimeter PFC which has the double function of support abseiling for maintenance and visually reducing the mass of the parapet upstand.

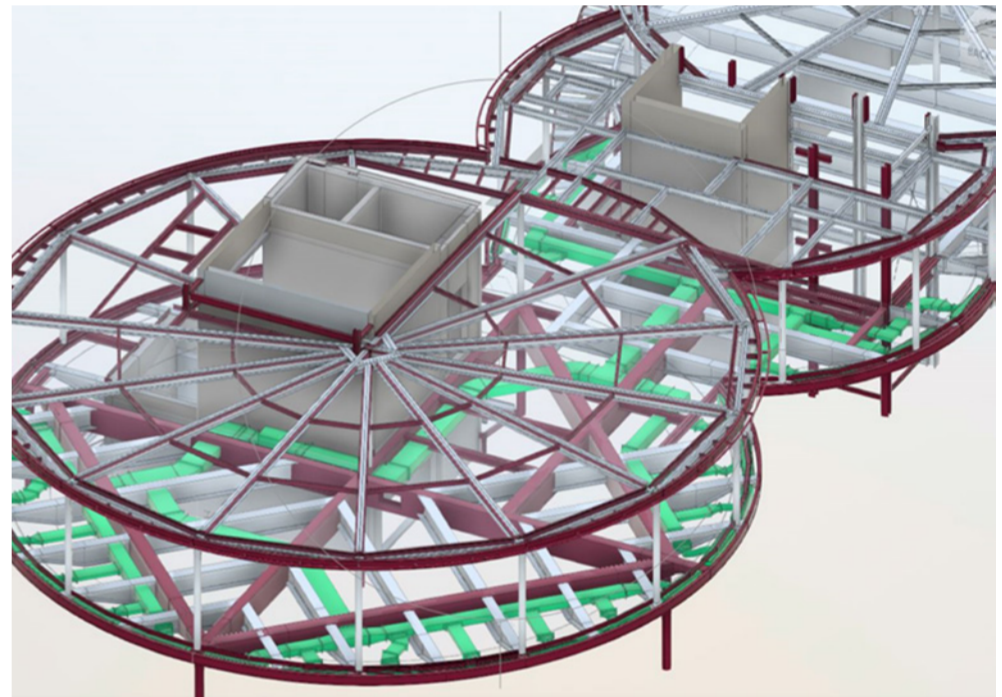
The glazing consists of laminated extra-clear annealed glass of 19+15mm in thickness, supported by continuous stainless-steel angles top and bottom. 800mm deep fabricated box girders are utilized as the primary support beams to ensure the façade deflection criteria was achieved.



photograph of the finished bar expansion and views over Dublin City

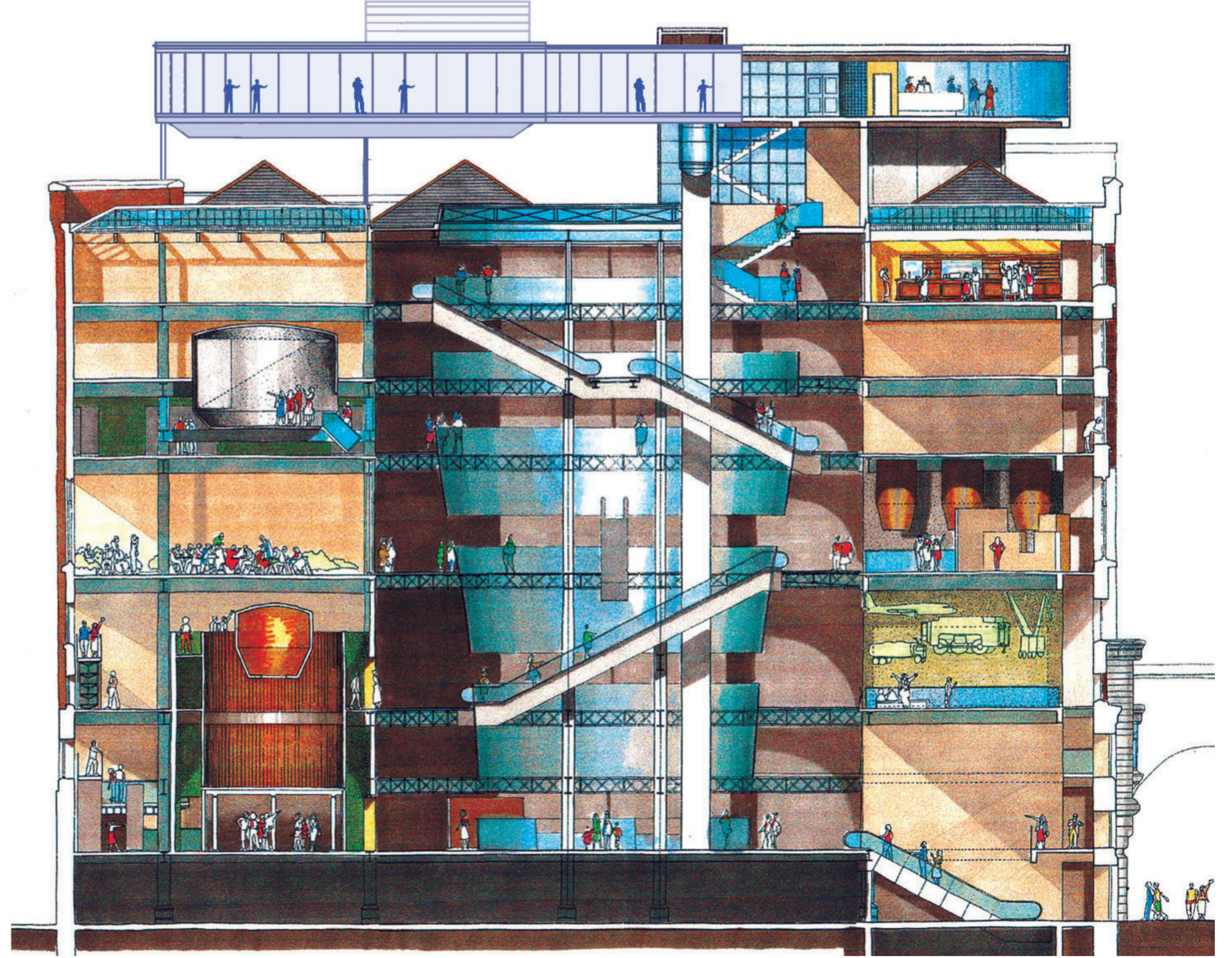
The floor comprises of wide engineered timber planks fixed to plywood on concrete base supported by the extensive steel structure below, all fully concealed by a radial designed zinc soffit. The soffit of the concrete deck and steel is clad in insulation exceeding U-value requirements. The chosen semi-rigid insulation system also gives the primary steel it's 90-minute fire protection. Ventilation ducts route through both primary and secondary beam below and this present as slimline ventilation grilles at floor level.

The original Storehouse steel frame structure is comprised of plated mild steel columns and a combination of riveted plate girders and deep lattice floor beams. The expansion of Gravity Bar has been carefully considered to minimize the interventions required to the Storehouse structure. This is achieved by ensuring that the new columns required to support the Gravity Bar expansion are located to coincide with the existing Storehouse columns under. In addition, the new infill floor slab thickness at 5th floor was limited to a 150mm thick slab to minimize the loading increase. A detailed assessment of original columns was completed



Revit model of structural and services co-ordination

to justify that strengthening works were generally not required, except for a portion of the top story columns and complete strengthening works to existing column head connections at the 4th floor.



initial gravity bar section with extension added in blue.

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GUINNESS STOREHOUSE GRAVITY BAR EXTENSION
A2 BOARD 1 OF 2

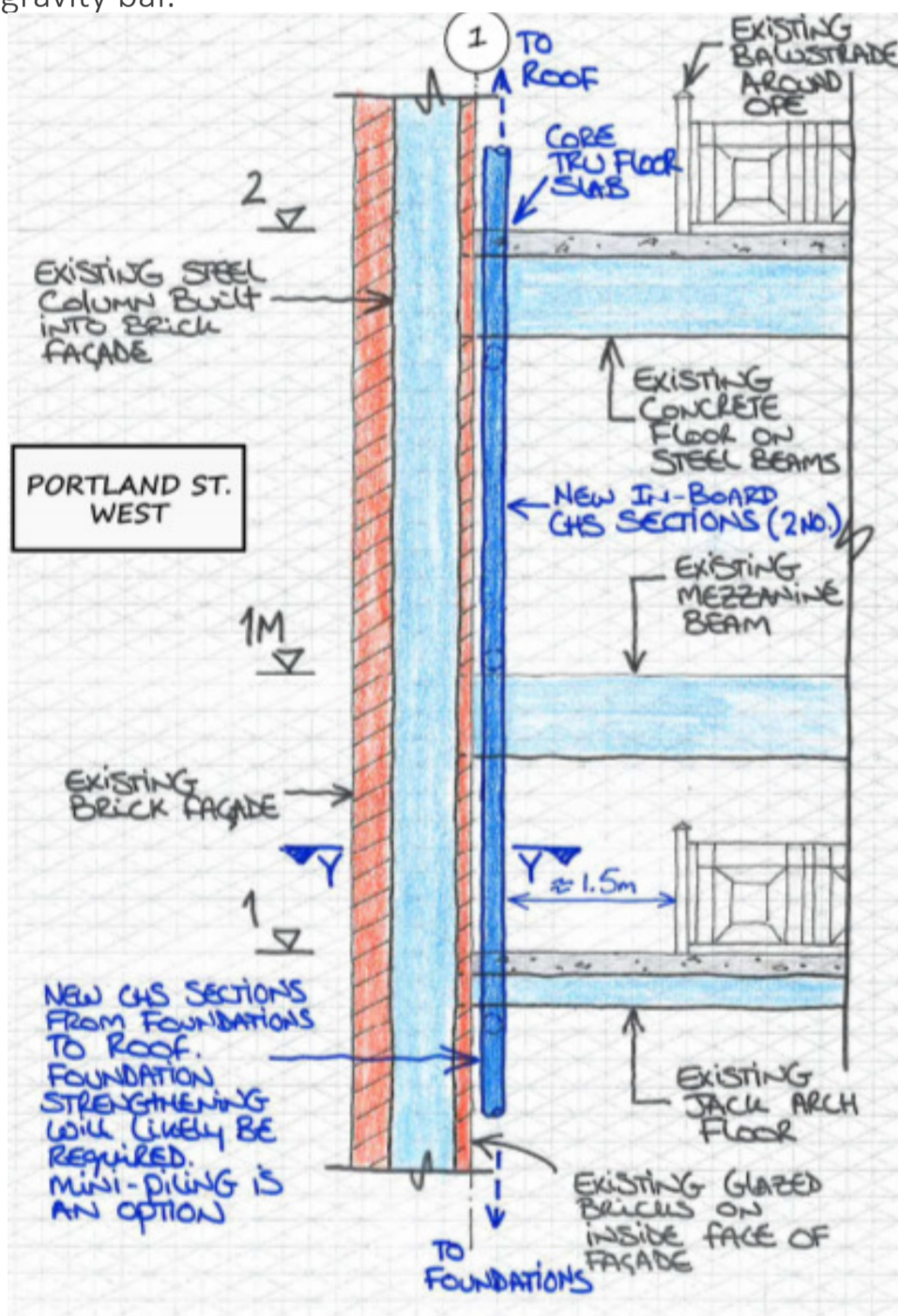


Functionality & Inclusivity

The client's brief was based on the Storehouse building operating at capacity in terms of visitor numbers, within the existing fire safety certification. When the figures were analysed, it indicated that there was a maximum capacity of 270 persons in the existing Gravity Bar. Survey information taken from customers noted that comfort levels in the gravity bar are regarded as poor when the numbers go above 200 persons.

The proposal to extend the Gravity Bar as per the plan drawings was to relieve the pressure on the existing Gravity Bar. With the proposed expansion consideration was also given to increasing the availability of enhancing the corporate hospitality offers, thus an increase in the service areas attached to the Gravity Bar, by the introduction of the kitchen and toilets at Level 5.

Gravity Bar Expansion - The development comprises of an extension west of the existing Gravity 1 Bar at Level 7, consisting of a new circular in plan gravity bar located and supported directly above the existing vertical stair B and passenger lifts. The existing stair and passenger lifts were extended up to serve the new gravity bar expansion. Gravity 2 is linked at level 7 to the existing Gravity 1 via a smaller circular transition space, which houses the existing stair A and glazed passenger lifts. The two new circular spaces are constructed in a similar manner to the existing gravity bar.



initial sketch concept of structural detail for extension

Innovation & Sustainability

Economic viability is central to good conservation practice. If a building fulfils a meaningful purpose, it will be valued and maintained into the future. In the alteration and reuse of an historic building these considerations must be balanced against the degree of intervention required to make it sufficiently adaptable; in some cases to serve a new purpose that is very different to that for which it was first constructed. The guiding principles should be to first preserve its significance, historic character, and evidence of its previous use, as was achieved in the original scheme from 2000 (pre-building listing) and now in this reiteration.

Fabric Enhancement – the building fabric design, detailing and construction of the roof and the large exposed soffits of the existing and new Gravity Bars were increased above the U-value norms to ensure a high level of performance of the envelope. Insulation values were targeted in the performance requirements to compensate for the use of non double glazing throughout, which was required to ensure the views from the gravity bars did not produce reflections by using laminated extra-clear annealed glass throughout.

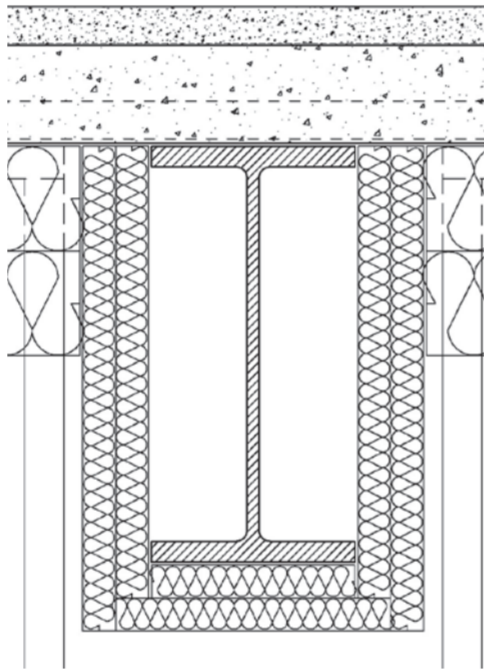
The interiors were designed to be contemporary and to reflect the brand identity, with dark oak flooring, exposed ceiling structure, acoustically treated with a spray on Sonaspray acoustic product, a bespoke designed welded blackened steel bar counter to reflect the shape of the structure itself. The walls were treated to look like exposed concrete, where in fact a specialist Armourcoat plaster wall finish was used. Large colourful murals were painted on the walls by renowned Dublin artist Aches.

Mechanical service plant was located on the Level 6 flat roof area adjacent staircore B and screened in a similar manner to service plant located on this level currently serving the Level 5 restaurant areas below.

On Level 5 there was a section of the storehouse which housed one of the existing 1900 century large steel water tanks. This tank needed to be recorded for historical purposes before it could be carefully dismantled and stored in archive storage building in the St. James's Gate Campus. The vacant floor space, allowed for the introduction of circa 500sqm of new floor space for a large commercial kitchen with associated cold rooms and stores to service the extended gravity bar above. Adjacent the kitchen is a new Part M compliant toilet core to service the visitors to the building whose numbers have increased since the Storehouse design was envisaged in 1997.



photograph of glazing roof interface



detail of floor structure



photographs of crash deck during construction



aerial photograph of steel structure during construction



photograph of night time lift of girder structure



3D render of the extended Gravity Bar



photograph of steel structure during construction

Performance & Robustness

Steel structure – the existing cast iron steel structure holding the 1900s large water tank, 16.7m long by 5m wide tank could support the new installed concrete floor forming the level 5 floor plate for the new toilet, kitchen, associated cold room stores with minimal structural strengthening. However, the steel which were undisturbed since the original 1900s work required to be stripped back to remove all traces of lead paint, before being intumescent painted to achieve the required fire rating to meet the current Fire Safety certification. A Sherwin Williams intumescent paint was used which allowed for Sherwin Williams finished coat to be applied giving the distinctive aquamarine colour used throughout the Storehouse. These steels are left exposed throughout the building.

Concrete structure – concrete floors were cast at level 5 infill. The floors were power floated, sealed with a Watco Powerfloat clear sealer offering protection and added slip resistance. There was no attempt to make the concrete pristine clean before the sealer was applied, as the overall architectural affect was to have a concrete surface like the 1900s floors.

The extended core B (at level 6 and 7) which supported the new Gravity 2 Bar steelwork, was extended upwards in concrete with precast stair flights. Originally an escape staircore with simple robust floor, wall, ceiling, and lighting – function over aesthetics. However, with the new Gravity 2 above it became the main access to the new visitor space from level 5. We introduced a Forbo vinyl floor covering mimicking the exposed concrete finish on flights below, with Gradus nosing's offering added slip resistance and LRV levels. The balustrades are painted metal sections with mesh infills, industrial in appearance. The walls are rendered and painted white. Concrete soffits are painted white. The lighting was enhanced from level 5 to the Gravity 2 level and large graphics introduced at each half landing level to add interest to the stair circulation route.

New toilet core added at level 5, which is compliant with current building standards and regulations. The materials used are hard wearing, large porcelain tiles, with a concrete like appearance. Walls are tiled with a small white rectangular tile mimicking the original white glazed bricks used in the 1900s storehouse building, and are still evident throughout. The toilet cubicles are Thirstington Cubicle system – Flow. The vanity trough units were a bespoke design made from a Corian. All materials are robust and easy to maintain.

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A2 BOARD 2 OF 2

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