

日本著名建筑设计丛书

札幌体育馆

移动足球赛场和多功能双重赛场

SAPPORO DOME

[日]彰国社 编

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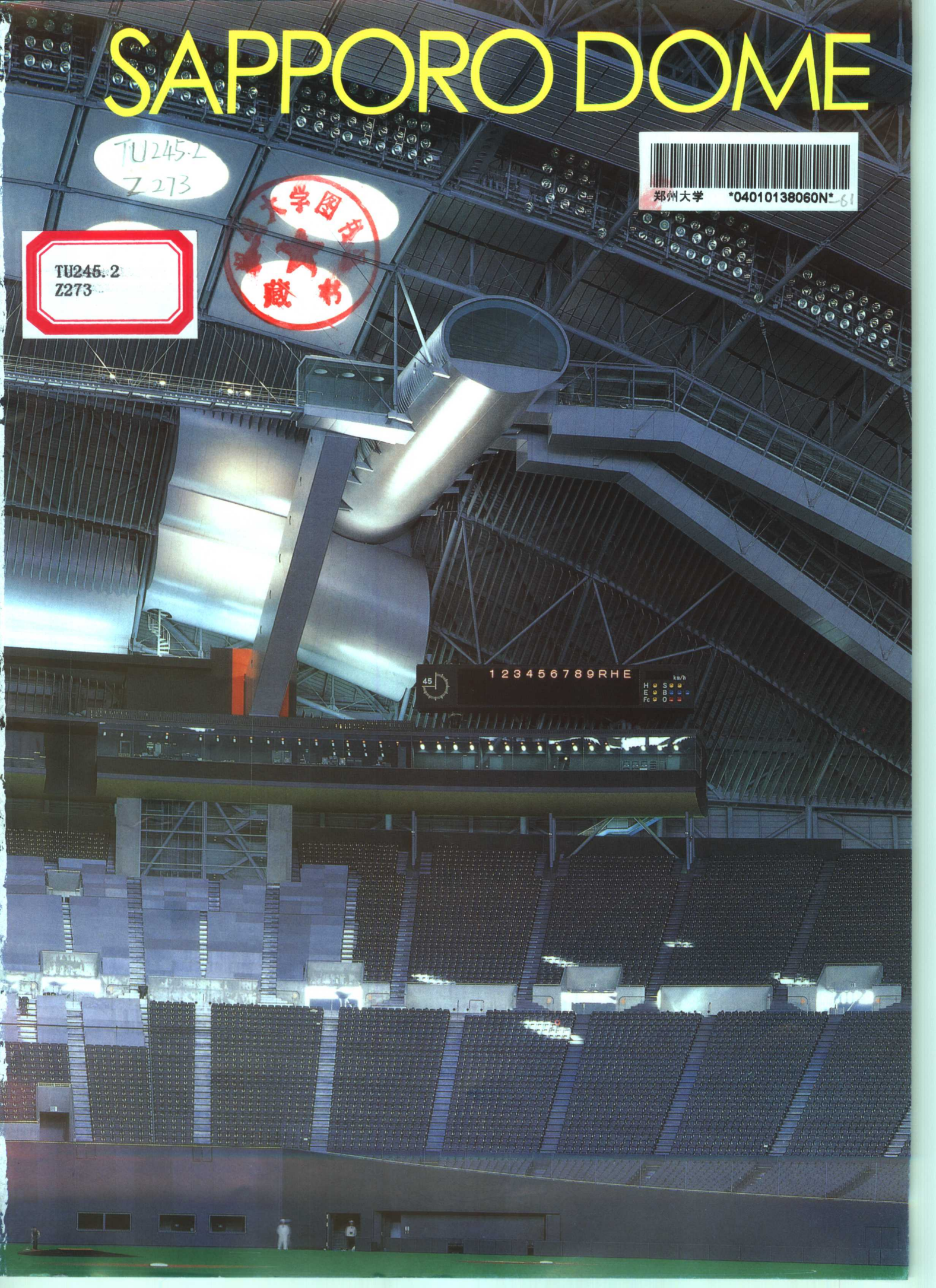
SAPPORO DOME

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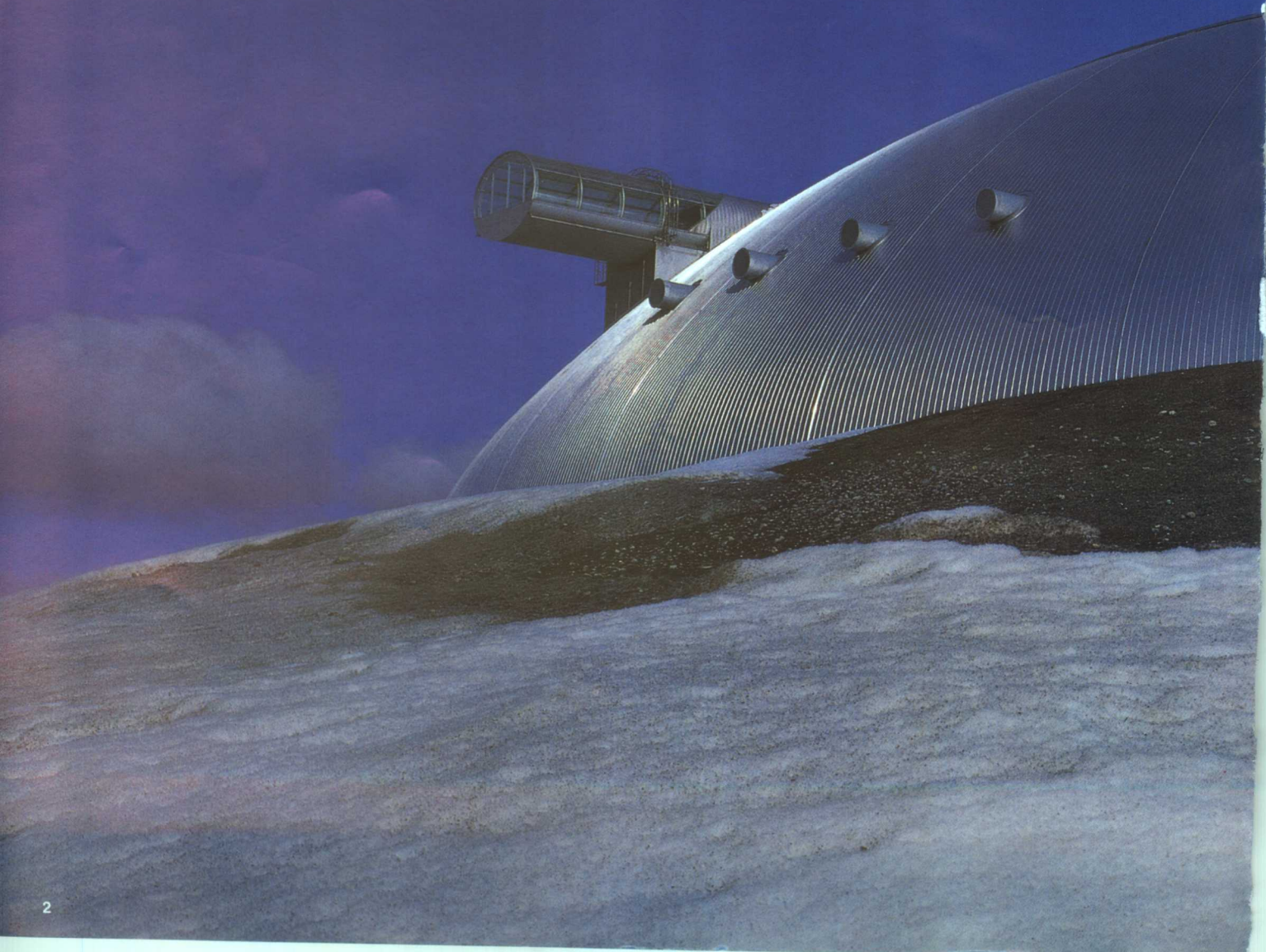
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SKY AND AIR

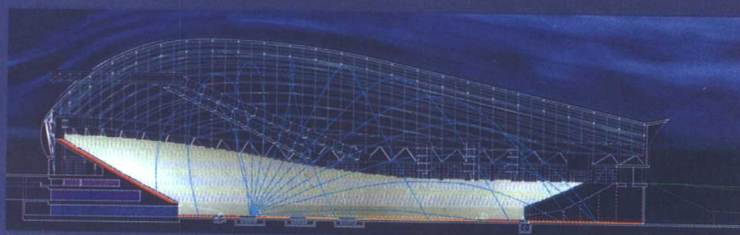


天空与空气

札幌体育馆是以像充了气的气球一样轻快的形式进行构思而建造的。其造型也是容易将积雪吹拂掉的形式。在风和日丽的季节里，风会从体育馆中穿过，移动赛场也利用空气的力量上浮。因此，札幌体育馆中，“空气的设计”成为一个重要的主题。

Sky and Air

Sapporo Dome was designed with an image of light object like a balloon. This shape can help the wind to blow the snow off its roof. In warm seasons, the wind brings fresh air through the dome. The Hovering Stage also moves with the help of air. Thus "air design" is one important theme for Sapporo Dome.



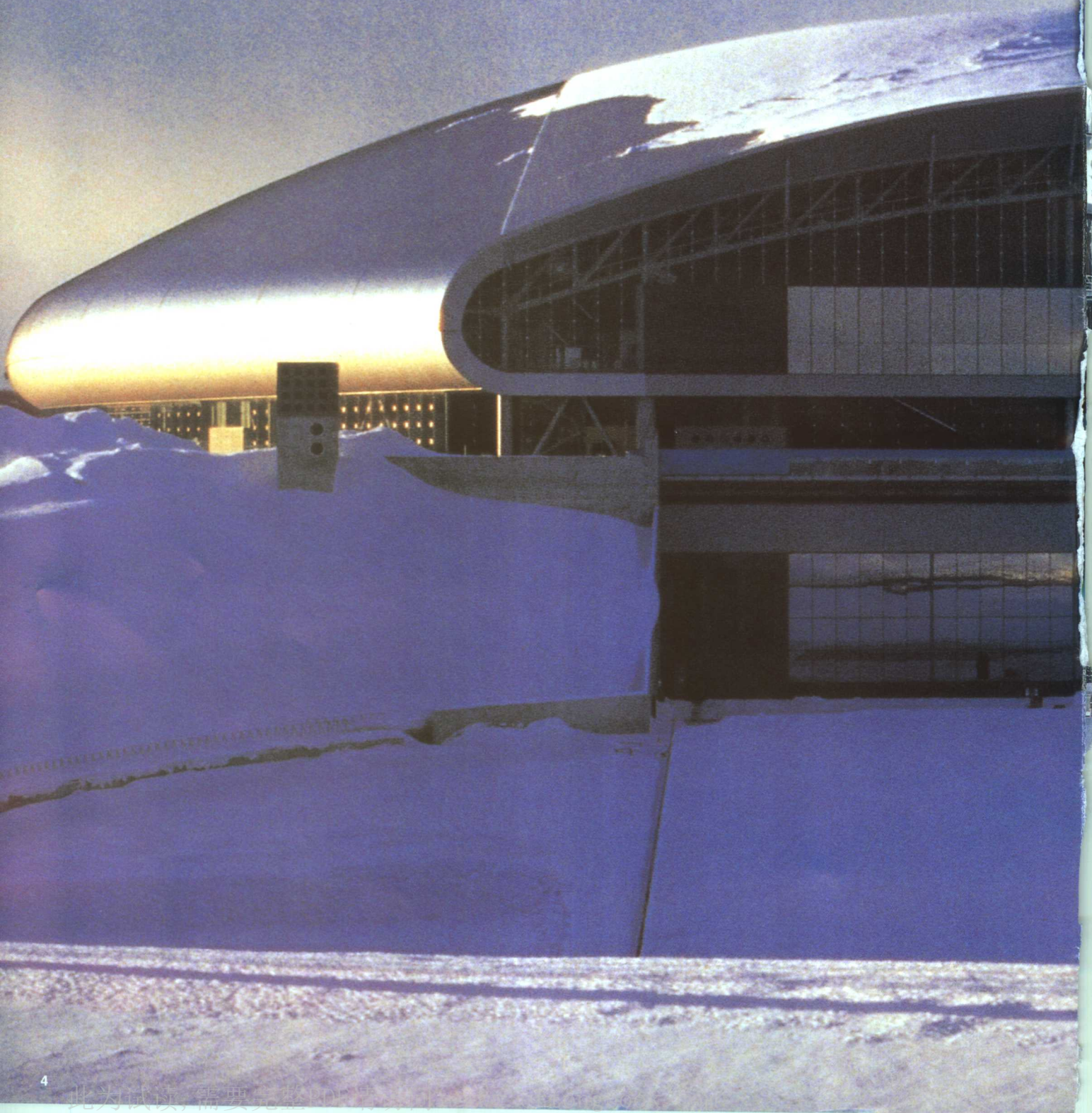
剖面图

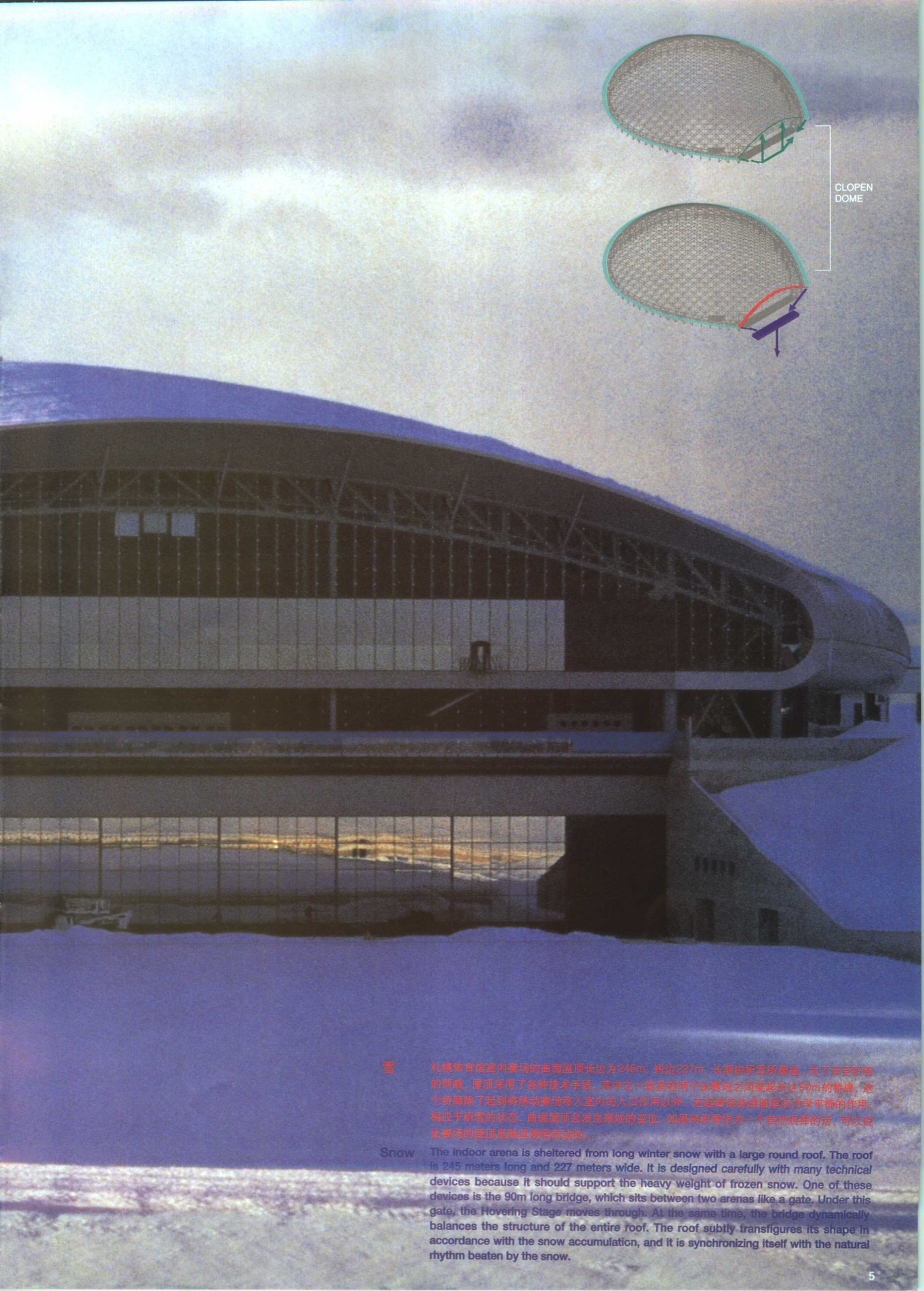


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SNOW

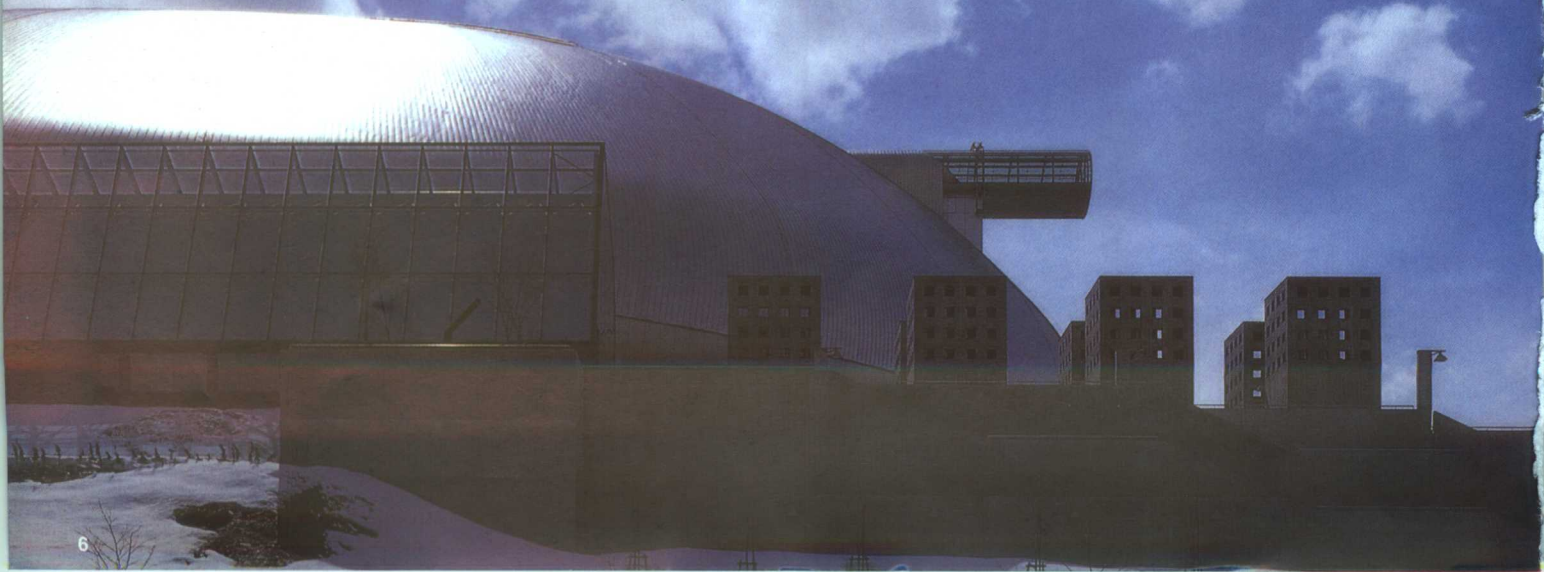


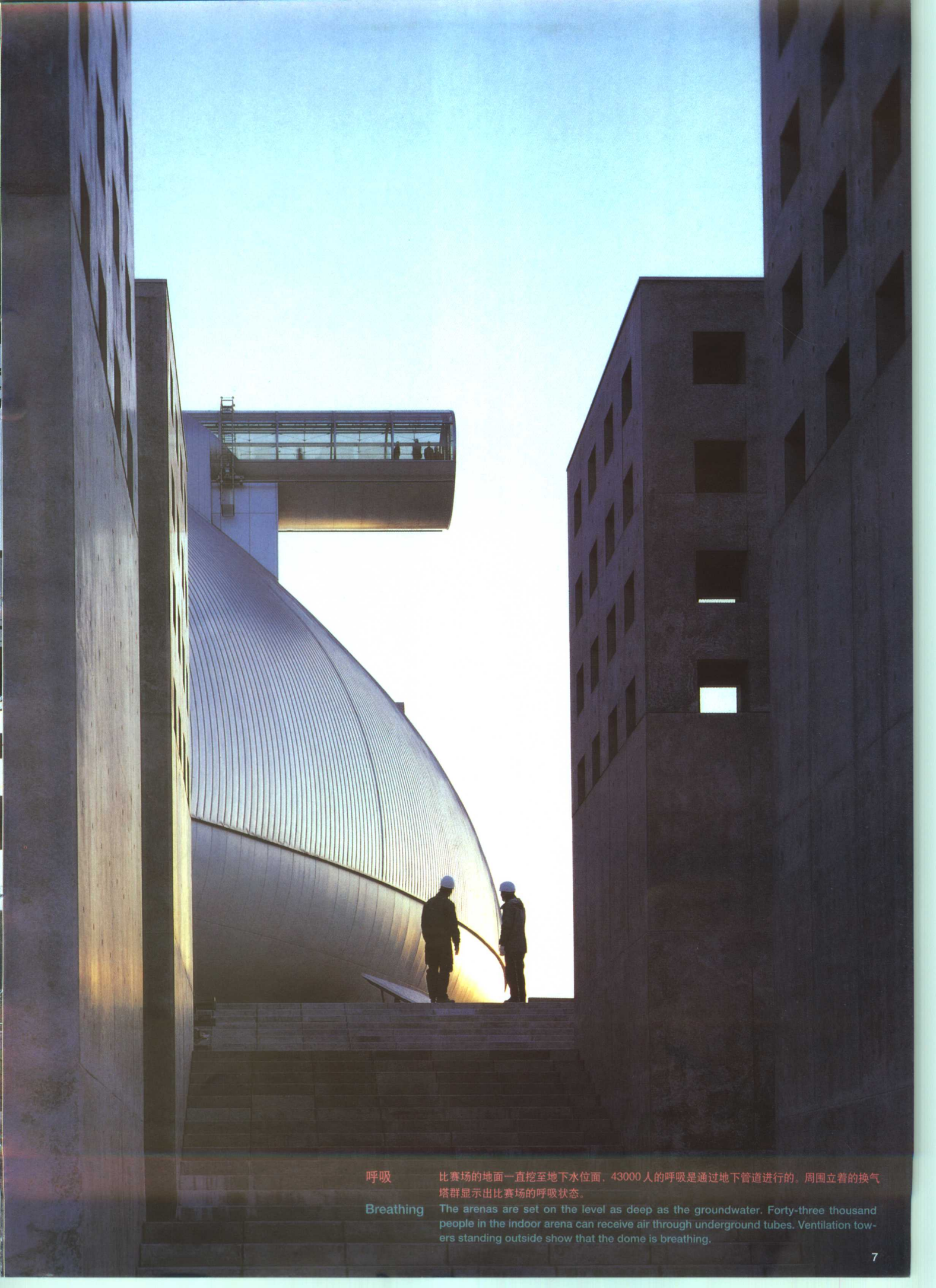


雪 札幌体育馆室内赛场的曲面屋顶长边为245m，短边227m，长期由积雪所覆盖。为了承受积雪的荷载，屋顶采用了各种技术手段，其中之一就是在两个比赛场之间架设长达90m的桥梁。这个桥梁除了起到将移动赛场移入室内的入口作用以外，还起着保持曲面屋顶力学平衡的作用。相应于积雪的状态，曲面屋顶会发生微妙的变位。如果将积雪作为一个自然规律的活，可以说比赛场的屋顶是随其规律而动的。

Snow The indoor arena is sheltered from long winter snow with a large round roof. The roof is 245 meters long and 227 meters wide. It is designed carefully with many technical devices because it should support the heavy weight of frozen snow. One of these devices is the 90m long bridge, which sits between two arenas like a gate. Under this gate, the Hovering Stage moves through. At the same time, the bridge dynamically balances the structure of the entire roof. The roof subtly transfigures its shape in accordance with the snow accumulation, and it is synchronizing itself with the natural rhythm beaten by the snow.

BREATHING





呼吸

比赛场的地面一直挖至地下水位面，43000 人的呼吸是通过地下管道进行的。周围立着的换气塔群显示出比赛场的呼吸状态。

Breathing

The arenas are set on the level as deep as the groundwater. Forty-three thousand people in the indoor arena can receive air through underground tubes. Ventilation towers standing outside show that the dome is breathing.



DUAL ARENA

双重赛场

札幌体育馆是将室内和室外两个比赛场合在一起的体育馆。如果将屋顶去掉的话，会呈现出像眼镜一样的平面，内外比赛场都是半径为73.2m的圆形，两者形状相同。“双重”是指成为一对的形状，但是也可以看到内部和外部，阶梯状看台和草皮看台的不同。

Dual Arena

Sapporo Dome has a set of two arenas. One is indoor and the other is outdoor. If we took the roof off, a footprint like a pair of eyeglasses would appear. Two arenas have the same circular shape with a 73.2-meter radius. The indoor arena has stands with tiered seats, whereas the outdoor arena is surrounded with grass slopes for seating.



露天赛场

露天赛场是让足球场的草皮晒太阳的地方。在寒冷的季节草皮在积雪下冬眠。春天到来时看台成为围绕草皮的回廊式庭院。当然，在室外也可以踢足球。在室内进行足球比赛的前后，露天赛场成为眺望像船一样行进的移动赛场风景的庭院。

Open Air Arena

Open (outdoor) Arena is a sun-bathing deck for the soccer field. During winter, grass is hibernating underneath the snow. In spring, you can walk around on the grass stand. It is like a garden promenade. Of course you can play soccer under the sun. When they play big games inside, you can watch from this garden the Hovering Stage moving into the dome like a big ship.



OPEN AIR ARENA



INDOOR ARENA



比赛场

札幌体育馆是一个具备举行各种活动的多功能体育馆。它既是为了举行像棒球和足球那样的体育项目的专用设施，也是具备举行音乐会和歌舞功能的剧场，而且还是大规模的展览会场。根据不同的使用目的，可以灵活运用自然光。同时，通过可动看台和移动墙等可动装置，可以改变赛场的形状，或者改变观众席的布置。在看台顶部有瞭望台，从那里可以远望札幌市中心的远景和俯瞰赛场的整体景象。

Indoor Arena

Sapporo Dome is a multipurpose dome. A wide range of events will take place in this space. It is a sports stadium for baseball, soccer, etc. It can be a theater for concerts or musicals. It also is a big exhibition hall. Natural light will be brought into the dome if necessary. Movable Stands and the Moving Wall change the shape of the arena and its seating positions. Floating above the main stand is the observatory space. You can enjoy a distant view of Sapporo City, and a bird's-eye-view of the entire arena.





BASEBALL MODE

棒球比赛

Baseball Mode

札幌体育馆代表性的使用形态是进行棒球比赛。进行该项目时，地面会铺上人工草皮，埋在赛场地面下的投手踏板和4个垒通过自动操作，会升至地面。从本垒到左右看台的距离约为99m，到背后的看台约为122m。外防护栏的高度为5.75m。玻璃面和照明灯具等都是针对飞球的撞击而进行安全设计的。

Baseball will be one of the main usages of Sapporo Dome. Artificial turf is laid on the arena for the games. A pitcher's mound and four bases come up from the pits by remote control. Its dimensions are 99 meters to the left and right field foul pole, and 122 meters to the center field. The outfield fence is 5.75 meters high. Glass surfaces and lighting equipment are designed with safety precautions against flying balls.



足球比赛

札幌体育馆最吸引人的特征就是采用了利用气压来移动足球赛场的方式。进行足球比赛时，首先将平常置于室外的移动看台向室内直线式移动。其后，为了和主看台及长边吻合，将方向旋转90°。此时两个月牙形的移动看台也和场地一起旋转。露天比赛场也可以进行比赛，除了移动赛场以外，在用地内还有自然草坪和人工草坪的足球赛场，能够让更多的人在此踢球。

Soccer Mode

The most extraordinary feature of Sapporo Dome is its movable soccer field (Hovering Stage). This field usually stays outside. When there is a game inside, first this field moves straight into the dome. Then it rotates by 90 degrees, in order to face the main stand. Two crescent-shaped stands simultaneously move in an arc. Other than the Hovering Stage, there are two soccer fields in this park for soccer players, one with a grass field and the other with artificial turf.

