

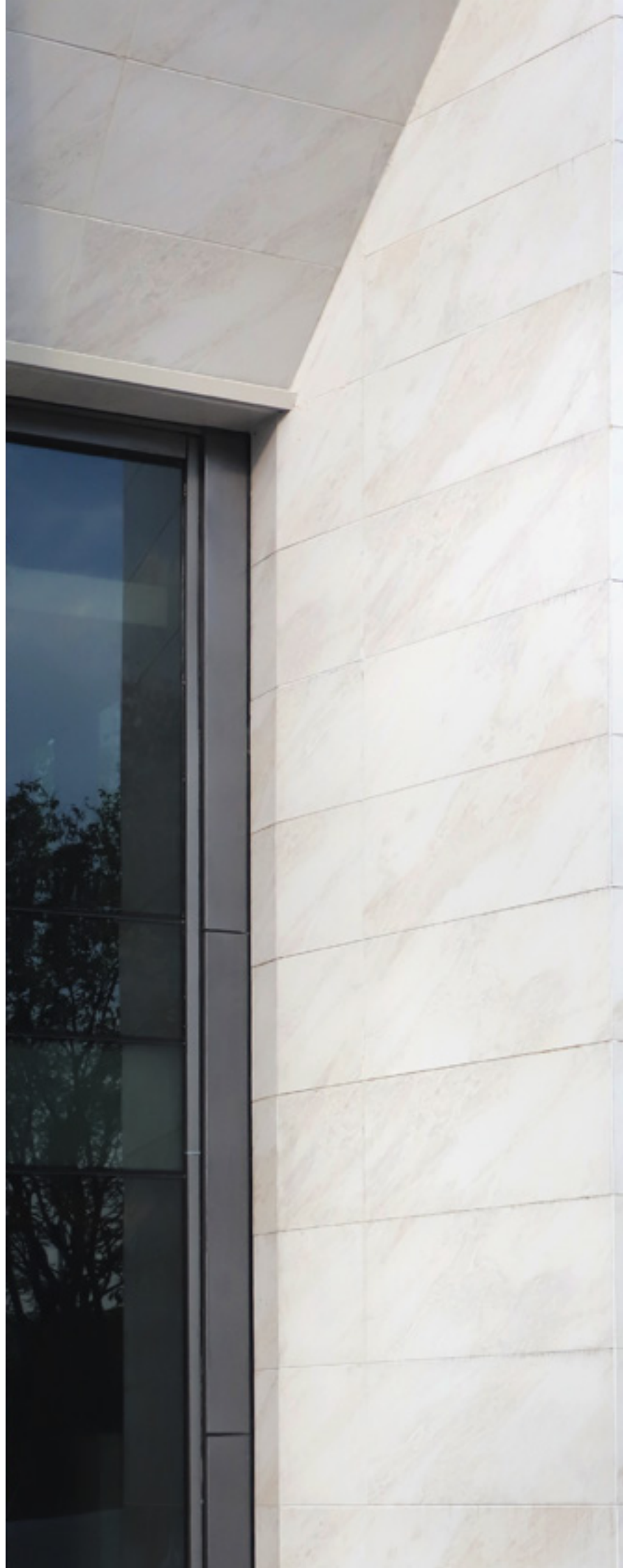
# **GANI**

## ***CURTAIN WALL PORCELAIN PANEL***

—

简一幕墙瓷板

简一® 大理石瓷砖  
GANI MARBLE TILES



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# 01 /

## ABOUT 关于

With the development of building and building materials science and technology, the stronger environmental protection awareness and richer modern designs, protecting and respecting nature is becoming the an irresistible trend of material selection. More and more traditional building materials have adopted new production technologies while leveraging their original advantages in product performance, making them widely used in curtain wall.

Compared with stone curtain wall, Gani porcelain panel curtain wall, featuring high bending and shear strength, low water absorption, high glaze hardness, etc., has many edges over the stone curtain wall, such as diversified surface textures, strong anti-contamination, anti-collision and wear resistance, no color difference, good frost resistance. In addition, its super real stone-like texture breaks through the bottleneck of high price and complicated procurement of precious natural stones, and its flexibility allows designers to choose whatever stone-like texture they want. It is an revolutionary decorative material.

随着建筑及建筑材料科学技术的发展，越来越强的环保理念和更丰富多样的现代设计力，保护自然、尊重自然是选材用材大趋势，越来越多的传统建筑材料在利用其原有优势的产品性能基础上，采用了新的生产技术使其在幕墙领域中得到较为广泛的应用。

简一瓷板幕墙相比于石材幕墙，具有抗弯抗剪强度高、吸水率低、釉面硬度高等特点，造就了表面效果多样性、抗污染性强、防撞耐磨、无色差、抗冻性好等诸多优点，另外，超真表面石材效果，突破了名贵石材因为价格高，采购复杂而使设计师及业主望而却步的瓶颈，让设计师可以随意选择自己想要的石材效果，是一种革命性的装饰材料。



Gani Group invented the marble tiles in 2009, and actively promoted the formulation of national standard in marble tiles as the main drafter. The birth of Gani marble tiles successfully broke the norm of "natural marble for high-end places and ceramic tiles for general places", and our marble tile was praised as "revolutionary decorative material". It provide a new choice for high-end decoration. Gani marble tiles have been exported to more than 70 countries, including Italy and France, and have been widely used in projects of Hilton Hotel, Sheraton Hotel, Marriott Hotel, Vanke Real Estate, China Merchants Property, Greentown Real Estate, Yintai Real Estate, Red Star Macalline and Changchun Transportation Hub.

As a leading brand in China's ceramic tile industry, Gani has won many honors, and has been rated as a National High-tech Enterprise, a National Green Factory and a Cleaner Production Enterprise in Guangdong Province.

简一，2009 年开创大理石瓷砖新品类，并作为主要起草单位积极推动大理石瓷砖国家标准的制定。简一大理石瓷砖的诞生，成功打破了“高端场所用天然大理石，一般场所用瓷砖”的格局，被誉为“革命性装饰材料”。让人们在高档装修时，多了一个好的新选择。简一大理石瓷砖已出口意大利、法国等 70 多个国家，并被广泛应用于希尔顿酒店、喜来登酒店、万豪酒店、万科地产、招商地产、绿城地产、银泰地产、红星美凯龙以及长春交通枢纽等各类大型项目。

简一作为中国瓷砖行业翘楚品牌，先后荣获多项荣誉，被评为国家高新技术企业、国家绿色工厂、广东省清洁生产企业。

## ICONIC REAL ESTATE CLIENTS

/ 合作标杆地产



## HOTELS

/ 酒店





## Marble Tiles R&D Center 大理石瓷砖研发中心

Gani focuses on the R&D, design, production and application of high-end marble tiles, and has mastered the core manufacturing technology and proprietary technology in marble tiles. Up to now, we own more than 200 invention technologies, utility model patents, design patents and other technologies. We have a production base in Qingyuan,Guangdong, with more than RMB 700 million investment, and founded the Marble Tiles Application Design Institute. By following the international trend, we've designed various marble tiles application scenarios, cultivated professional marble tiles application designers, leading and promoting the application of marble tiles continuously to meet the needs of interior and exterior decoration.

简一专注于高端大理石瓷砖的研发、设计、生产与应用，掌握了大理石瓷砖制造核心技术、专有技术，至今已拥有二百多项发明技术、实用新型专利、外观专利等技术。拥有总投资 7 亿元的清远生产基地，成立了大理石瓷砖应用设计学院，通过对接国际潮流，研究并推出各种大理石瓷砖应用设计方案，培养专业的大理石瓷砖效果应用设计师，不断引领和推动大理石瓷砖效果的应用，满足内外装修的需求。



## Gani Group Production Base 简一集团生产基地

As a representative of the building materials industry, Gani Group was praised as the "National Green Manufacturing Model Enterprise" by the Ministry of Industry and Information Technology, and officially joined the Green Factory Promotion Alliance of China. As the pioneer in green manufacturing, Gani will play fully the model role as a green factory, actively promote the construction of green manufacturing system, and realize the transformation, upgrading and sustainable development of the industry.

Qingyuan Factory of Gani Group, with accumulated investment of over RMB 800 million, is a specialized manufacturing base in marble tiles with the greatest investment in the world. It covers an area of over 430,000 square meters and has 6 production lines, achieving an annual output of marble tiles exceeding 10 million square meters.

The Guangxi Base of Gani Group (signed in early 2019), with a total investment of more than RMB 2.5 billion, covering an area of 1,000,000 square meters, has nine high-end intelligent automatic marble tiles production lines, and is expected to increase the production capacity by 30 million square meters.



简一集团作为建材行业代表，被国家工信部评选为“国家绿色制造示范企业”，正式加入全国绿色工厂推进联盟。绿色制造，简一先行，简一将充分发挥绿色工厂的标杆示范作用，积极带动行业加快绿色制造体系建设，实现行业转型升级和可持续发展。

简一集团清远工厂，是全世界投资最大的专业化大理石瓷砖制造基地，占地面积超过 43 万平方米，累计投资超过 8 亿元，现有 6 条生产线，大理石瓷砖产品年产量超过 1000 万平方米。

简一集团广西基地（于 2019 年初签约），总投资超过 25 亿元，占地 100,000 平方米，拥有 9 条高端智能全自动的大理石瓷砖生产线，生产能力预计将增加 3000 万平米。



### Back bolt fixing porcelain panel curtain wall 背栓式瓷板幕墙

Use professional drilling machine to drill a taper round hole with large end inside and small end outside as per the designed size on the back of the porcelain panel, and then insert the anchor bolt into the taper hole and screw in, so that the bottom of the anchor bolt is completely expanded and match with the taper hole to form a stress-free concave-convex match. Then, fix the connector on the porcelain panel with the self-locking nut, and then install on the base surface.

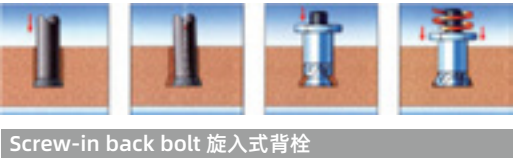
1. The porcelain curtain wall fixed with back bolt can be used in the non-seismic design and the processing, manufacturing, installation, project acceptance, maintenance of civil building reconstruction with seismic fortification intensity of 6, 7 and 8.
2. Stainless steel back bolts with a diameter of 6mm should be used for back bolt fixing, and austenitic stainless steel or aluminum alloy profiles should be used for connectors, with thickness not less than 3mm.
3. There are two main types of back bolt, which are screw-in back bolt and percussion back bolt.

通过专业的钻孔设备，在瓷板的背面按设计尺寸加工成一个里大外小的锥形圆孔，把锚栓植入锥形孔中，拧入螺杆，使锚栓底部彻底扩张开，与锥形孔相吻合，形成一个无应力的凸型配合。然后通过止滑螺母将挂钩件固定在瓷板，再安装在基面上。

1. 背栓连接的瓷板幕墙可用在非抗震设计和抗震设防烈度为 6、7、8 度的民用建筑改造的加工、制作、安装施工、工程验收、保养和维护的瓷板幕墙工程。
2. 背栓连接宜采用直径 6mm 的不锈钢背栓，连接件应采用奥氏体不锈钢或铝合金型材，厚度不宜小于 3mm。
3. 背栓的种类主要有两种，旋入式背栓和敲击式背栓。

See the following figure for installation principle:

安装原理见下图：



4. The back bolt hole shall be machined by special drilling machine.
5. The number, position and depth of back bolts should be determined by the designer according to the specifications, size, installation method and bearing capacity of porcelain panel, and the distance between the center of back bolt hole and the edge of panel should not be less than 50mm, nor more than 25% of the side length, and the distance between back bolt holes should not be more than 800 mm.
6. Back bolt holes shall not be damaged or cracked, and the hole inner surfaces shall be smooth and clean.
7. The remaining thickness of color panel after back bolt hole processing (i.e. the distance from hole bottom to panel surface) shall not be less than 3mm.
8. Allowable deviation of the machining dimension of back bolt hole shall comply with the specifications shown in table below:

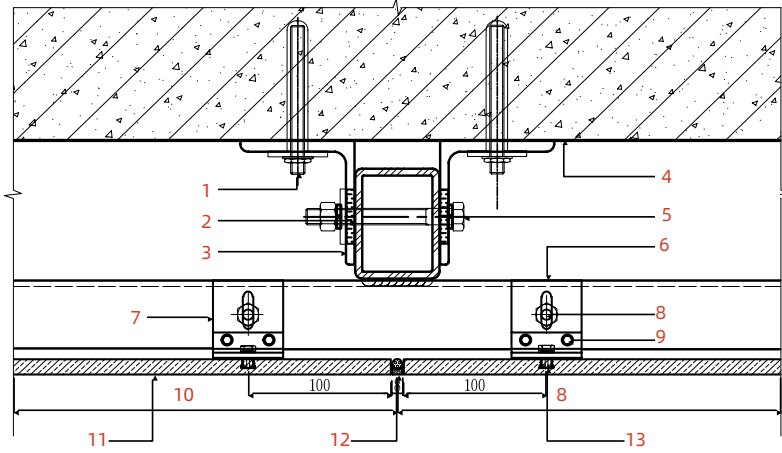
4. 背栓孔的加工应采用专用钻孔机械加工。
5. 背栓的数量、位置和深度应根据瓷板的规格尺寸、安装方式和承载力大小由设计确定，背栓孔中心距离板边的距离不宜小于 50mm，也不宜大于边长的 25%，背栓孔间距不宜大于 800mm。
6. 背栓孔不得有损坏或崩裂现象，孔内应光滑、洁净。
7. 背栓孔加工后彩板的剩余厚度（即孔底到板面的距离）不得低于 3mm。
8. 背栓孔的加工尺寸允许偏差应符合下表的要求：

Item 项 目	Straight hole 直孔		孔扩		Hole position 孔位	Hole pitch 孔距	Distance from hole position to edge 孔位到边的距离
	Diameter 直径	Hole depth 孔深	Diameter 直径	Hole depth 孔深			
Allowable deviation 允许偏差	0~+0.4	0~+0.3	0~+0.3	0~+0.4	±0.5	±1.5	最小 50

Distance from hole position to edge 背栓式 H 型瓷板干挂剖面图

Cross Section Detail 1:3 of Porcelain Panel Back Bolt Dry Fixing with H-shaped Connector  
背栓式 H 型 - 瓷板干挂横剖节点图 1:3

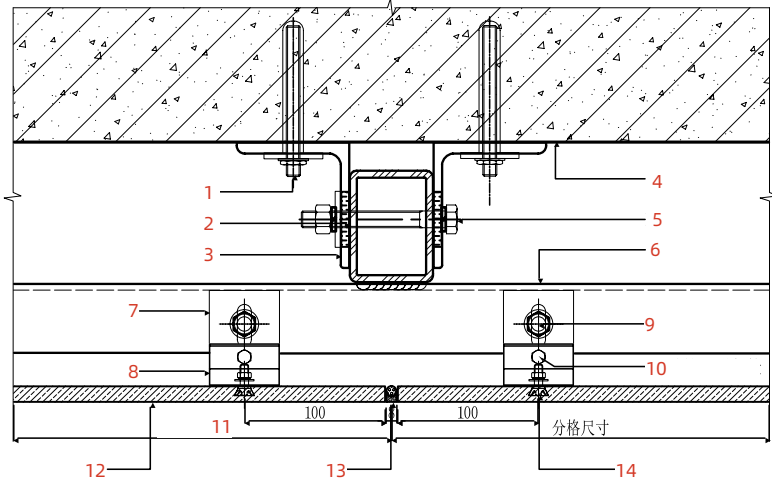
- 1. Chemical anchor bolt 化学锚栓
- 2. Mullion 竖龙骨
- 3. Galvanized steel adapter 镀锌钢转接件
- 4. Wall 墙体
- 5. M12 stainless steel bolt M12 不锈钢螺栓
- 6. Transom 横龙骨
- 7. H-shaped aluminum alloy connection element 镀锌钢转接件
- 8. M8 stainless steel bolt M8 不锈钢螺栓
- 9. M5\*25 stainless steel bolt M5\*25 不锈钢螺栓
- 10. Panel dimension 分格尺寸
- 11. Porcelain panel 瓷板
- 12. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒
- 13. Stainless steel back bolt 不锈钢背栓



Cross Section of Porcelain Panel Back Bolt Dry Fixing with Ear - Shaped Connector  
背栓式耳型瓷板干挂剖面图

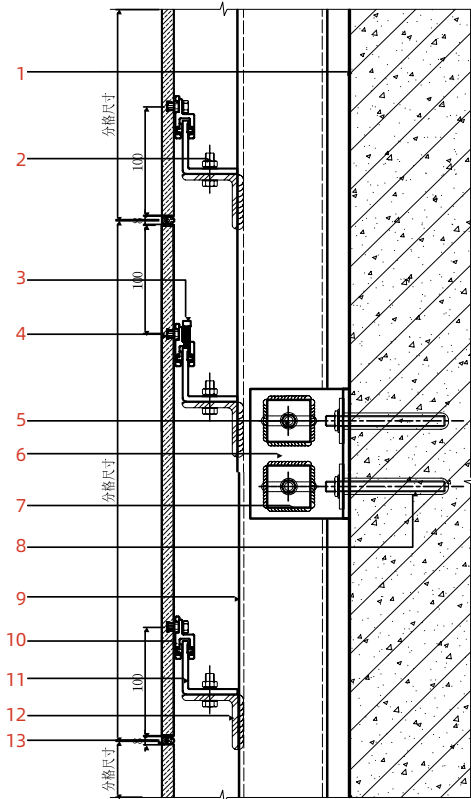
Cross Section Detail 1:3 of Porcelain Panel Back Bolt Dry Fixing with Ear-shaped Connector  
背栓式耳型 - 瓷板干挂横剖节点图 1:3

- 1. Wall 墙体
- 2. M12 stainless steel bolt M12 不锈钢螺栓
- 3. Transom 横龙骨
- 4. Wall 墙体
- 5. M12 stainless steel bolt M12 不锈钢螺栓
- 6. Transom 横龙骨
- 7. H-shaped aluminum alloy connection element 镀锌钢转接件
- 8. M8 stainless steel bolt M8 不锈钢螺栓
- 9. M5\*25 stainless steel bolt M5\*25 不锈钢螺栓
- 10. Panel dimension 分格尺寸
- 11. Porcelain panel 瓷板
- 12. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒
- 13. Stainless steel back bolt 不锈钢背栓



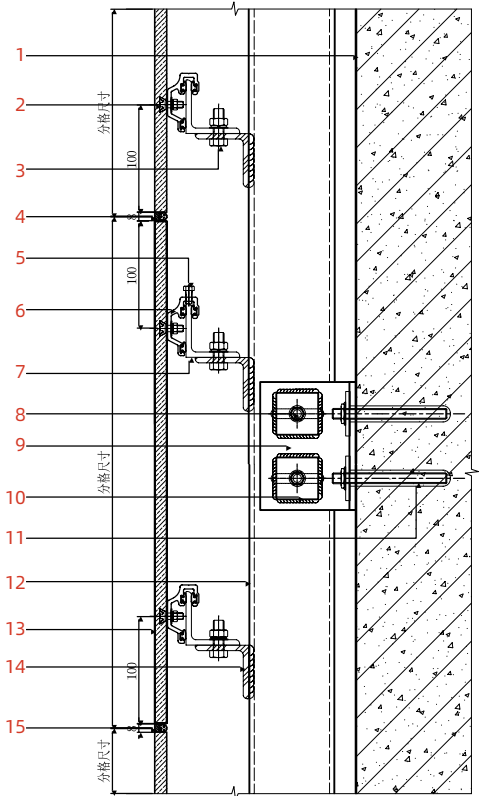
Profile Detail 1:3 of Porcelain Panel Back Bolt Dry Fixing with H - Shaped Connector  
背栓式 H 型 - 瓷板干挂竖剖节点图 1:3

- 1. Wall 墙体
- 2. M8 stainless steel bolt M8 不锈钢螺栓
- 3. M5\*25 stainless steel bolt M5\*25 不锈钢螺栓
- 4. stainless steel bolt 不锈钢螺栓
- 5. M12 stainless steel bolt M12 不锈钢螺栓
- 6. Galvanized steel adapter 镀锌钢转接件
- 7. Galvanized square gasket 镀锌方垫片
- 8. Chemical anchor bolt 化学锚栓
- 9. Mullion 竖龙骨
- 10. H-shaped aluminum alloy connection element 铝合金 H 型挂件
- 11. 50\*50\*5 corner connector 50\*50\*5 角码
- 12. Transom 横龙骨
- 13. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒



Profile Detail 1:3 of Porcelain Panel Back Bolt Dry Fixing with Ear- shaped Connector  
背栓式耳型 - 瓷板干挂竖剖节点图 1:3

- 1. Wall 墙体
- 2. stainless steel bolt 不锈钢螺栓
- 3. M8 stainless steel bolt M8 不锈钢螺栓
- 4. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒
- 5. M6 stainless steel adjusting bolt M6 不锈钢调节螺栓
- 6. Aluminum alloy ear-shaped connector 铝合金耳型挂件
- 7. 50\*50\*5 corner connector 50\*50\*5 角码
- 8. M12 stainless steel bolt M12 不锈钢螺栓
- 9. Galvanized steel adapter 镀锌钢转接件
- 10. Galvanized square gasket 镀锌方垫片
- 11. Chemical anchor bolt 化学锚栓
- 12. Mullion 竖龙骨
- 13. Porcelain panel 瓷板
- 14. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒





Basic Configuration of Back Bolt Fixing Porcelain Panel Curtain Wall 背栓式瓷板幕墙基本配置表

Sample 实 样	Description 名 称	Model 型 号	Specification 规 格	Amount for each panel 每片砖用量
	Back bolt 背栓		M6X5 M6X7 M6X9	4
	铝合金挂件 Aluminum alloy connector	H shape H 型	Width 50 mm 50 宽	4
		R shape R 型	Width 50 mm 50 宽	4
	铝合金挂件 Aluminum alloy connector	C shape C 型	Width 50 mm 50 宽	4
	铝合金挂件 Aluminum alloy connector	F shape F 型	Width 50 mm 50 宽	4
	Corner connector 连接角码	L	50*50*5	4

Drawing force of back bolt connection 关于背栓连接方式的拉拔力

It is assumed that the 100m-high building (corner area) in Guangzhou adopts back-bolted porcelain panel with a single panel size of 600x1200,The load and back bolt drawing force are calculated as follows:

假设广州 100 米高的楼（墙角区）采用背栓式瓷板方式，单块板大小 600x1200，计算荷载及背栓拉力如下：

Standard value of wind load: 2.283kN/m²

风荷载标准值：2.283kN/m²

Panel:

Calculated bending strength value:

9.4995N/mm²

Bending strength design value: 15N/mm²

Bending strength margin: 36.7%

Meet the requirements!

面板：

抗弯计算值：9.4995N/mm²

抗弯设计值：15N/mm²

抗弯强度富余：36.7%

满足要求！

At the notch:

Calculated shear strength value:

4.147N/mm²

Shear strength design value: 7.5N/mm²

Shear strength margin: 44.7%

Meet the requirements!

槽口处：

抗剪计算值：4.147N/mm²

抗剪设计值：7.5N/mm²

抗剪强度富余：44.7%

满足要求！

Back bolt:

Calculated tensile strength value:

787.725N

Tensile strength design value: 3720.93N

Tensile strength margin: 78.8%

Meet the requirements!

背栓：

抗拉计算值：787.725N

抗拉设计值：3720.93N

抗拉强度富余：78.8%

满足要求！

Drawing force required for 100m-high building in Guangzhou 广州 100 米高楼所需拉拔力	Drawing force required for 20m-high building in Guangzhou 广州 20 米高楼所需拉拔力	Minimum drawing force value used in the experiment by Gani 我司实验拉拔力最小值
787.725N	460N	1680N

The required back bolt drawing force is 787.725N, but the minimum back bolt drawing force used in the experiment by Gani is 1680N (see the above test report), which can meet the load requirement. Moreover, this is calculated based on the assumption of 100m-high building in Guangzhou (the basic wind pressure in Guangzhou is 0.5), if it is a 20m-high building, the drawing force only needs to be 460N; therefore, Gani product can meet the requirement;

所需背栓拉力是 787.725N，但我司背栓拉拔力实验最小值是 1680N（见上检验报告），可以满足荷载需求；而且这可是按广州 100 米高楼计算（广州的基本风压 0.5），如果按 20 米高楼计算，拉拔力只需要 460N，远远满足；

管理编号: JGJ33-1009



广东省建设工程质量安全检测总站有限公司

201719121470

挂装强度检验报告

普通送检

委托单位:	佛山市简一陶瓷有限公司	报告编号:	E2019(40)232660
工程名称:	—	委托日期:	2019-12-18
工程部位:	—	检验日期:	2019-12-28
见证人:	—	报告日期:	2020-01-03
见证单位:	—	检验依据:	GB/T 9906.7-2001

样品信息	样品名称	旋入式背栓瓷板	样品编号	YE2019(40)201248
	规格型号(mm)	300×300×12.5	出厂日期	—
	生产厂家或商标	—	批号	—
	板材品种	瓷板	板材规格	—
	数量	—	背栓品种	M6

序号	检验项目	检 验 结 果	
		单个值	试样破坏情况
1	挂装强度, N (拉拔破坏荷载)	1730	瓷板破坏
		1970	瓷板破坏
		2010	瓷板破坏
		1680	瓷板破坏
		2050	瓷板破坏
2	挂装强度, N (剪切破坏荷载)	—	—
		—	—
		—	—
		—	—
		—	—
备注	—		

内附: 1. 本站抽样的样品, 检验报告仅对抽检样品有效; 2. 未经本站书面批准, 不得部分复制检验报告(完整复制除外); 3. 如对本报告的有效性有异议, 请在报告日期15天内提出, 逾期不予受理。

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Point fixing porcelain panel curtain wall 点挂式瓷板幕墙

If the wall is a pure shear wall, fix the corner connector on the wall with chemical anchor bolts or stainless steel bolts, and then connect with the porcelain panel through connectors and back bolts. It is known as "simple curtain wall" and "curtain wall without keel".

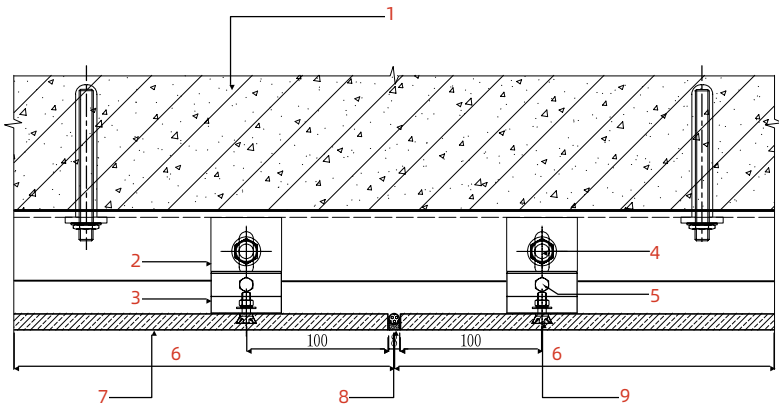
1. Point-fixing curtain wall can be used for non-seismic design and civil building design, manufacturing, installation, construction and acceptance projects with seismic fortification intensity of 6, 7 and 8.
2. When the main body is a pure shear wall structure, the panel fixing height should not be higher than 100m; When the main body is reinforced solid brick, then the fixing height should not exceed 24m.
3. If point-fixing curtain wall is adopted, fix the corner connector directly on the main structure, without keel structure required, makes the installation simple and easy, and shortens the installation distance between the panel and the wall main body.

在墙体是纯剪力墙时前提下, 用化学锚栓或不锈钢螺栓, 把角码固定在墙体, 然后通过挂件和背栓与瓷板连接。有“简易幕墙”“无龙骨幕墙”之称。

1. 点挂幕墙可用于非抗震设计及6度、7度、8度抗震设防烈度的民用建筑的设计、制作、安装施工及验收工程项目。
2. 当主体为纯剪力墙结构时, 其挂装高度不宜超过100米; 当主体为加强实心砖块时, 其挂装高度不宜超过24米。
3. 点挂幕墙是将角码直接固定在主体结构上, 省去了龙骨结构, 安装简单方便, 也缩短了面材与主体的安装距离。

Cross Section of Porcelain Panel Back Bolt Point Fixing with Ear-shaped Connector  
背栓式耳型瓷板点挂剖面图

- 1. Wall 墙体
- 2. 50\*50\*5 corner connector 50\*50\*5 角码
- 3. Aluminum alloy ear-shaped connector 铝合金耳型挂件
- 4. M8 stainless steel bolt M8 不锈钢螺栓
- 5. M6 stainless steel adjusting bolt M6 不锈钢调节螺栓
- 6. Panel dimension 分格尺寸
- 7. Porcelain panel 瓷板
- 8. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒
- 9. Stainless steel back bolt 不锈钢背栓



Ceramic adhesive and steel rod fixing porcelain panel curtain wall 挂贴式瓷板幕墙

This method is to fix the stainless steel rod behind the porcelain panel by stainless steel back bolts, then fix the porcelain panel on the wall by spreading ceramic adhesive, and fix the other end of the stainless steel rode by expansion bolts.

1. If this method is used, the wall shall be leveled with cement mortar with cement-sand proportion complying with the design requirements. Cement (cement grade not less than 425#) to sand proportion should be 1:2.5. The thickness of leveling layer should be 20mm. If the total thickness is more than 35mm, strengthening measures should be taken (like adding wire mesh). The quality of leveling layer shall meet the provisions in GB50210-2001 Standard for Construction Quality Acceptance of Building Decoration.

2. The tie points of porcelain panels shall meet the following requirements:
- 1) The spacing between tie points shall not be more than 800mm;
  - 2) When the area of a single panel is less than 1 m², the number of tie points on each panel shall be no less than 2;
  - 3) When the area of a single panel is greater than 1 m², the number of tie points on each panel shall be no less than 3;
  - 4) When the area of a single panel is less than 0.4 m², the number of tie points on each panel may be 1

挂贴式是通过不锈钢背栓将不锈钢条固定在瓷板背后，然后用满铺陶瓷粘结剂的方式将瓷板固定在墙体上，以膨胀螺栓固定不锈钢条的另一端。

1. 采用挂贴式安装瓷板，挂装前须多墙体水泥砂浆找平，找平层采用的砂浆比例应符合设计要求，水泥（标号不低于 425#）与砂的比例宜为 1:2.5。找平层厚度宜为 20mm，如总厚度大于 35mm 时，应采取加强措施（如加钢丝网）。找平层的质量要求应符合 GB50210-2001《建筑装饰装修工程质量验收规范》的规定。

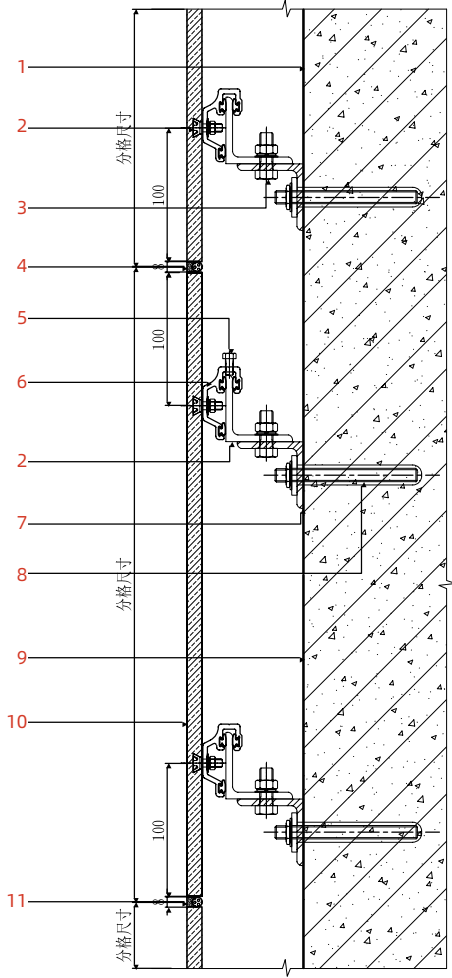
2. 瓷板拉结点应符合下列规定：
- 1）拉结点间距应不大于 800mm；
  - 2）当单块板材面积小于 1 m²时，每块板的拉结数量应不少于 2 点；
  - 3）当单块板材面积大于 1 m²时，每块板的拉结数量应不少于 3 点；
  - 4）当单块板材面积小于 0.4 m²时，每块板的拉结数量可为 1 点；

3. The wall grade shall meet the requirements of the following table:

3. 墙体等级应符合下表的要求：

Masonry 砌 体	Masonry strength grade ≥ 砌块强度等级≥	Mortar strength grade ≥ 砂浆强度等级≥
Sintered common bricks 烧结普通砖	MU10	M5
Sintered perforated bricks 烧结多孔砖	MU10	M5
Autoclaved lime-sand brick and autoclaved flyash-lime brick 蒸压灰砂砖、蒸压粉煤灰砖	MU10	M5
Single-row bolt concrete and lightweight aggregate concrete blocks 单排孔栓砼和轻骨料砼砌块	MU7.5	Mb5

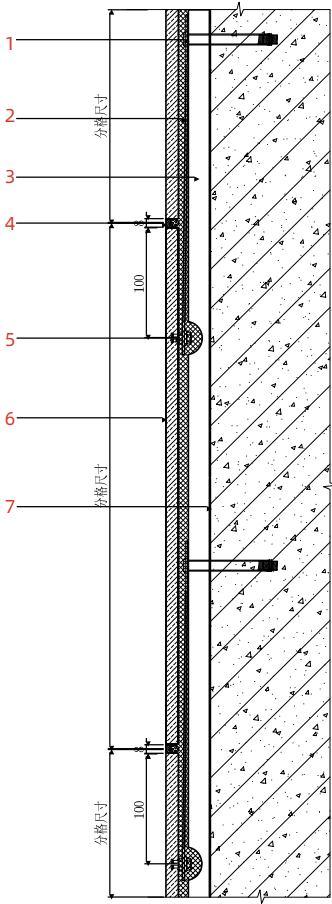
- 1. Wall 墙体
- 2. Stainless steel back bolt 不锈钢背栓
- 3. M8 stainless steel bolt M8 不锈钢螺栓
- 4. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒 M8 stainless steel bolt M8 不锈钢螺栓
- 5. M6 stainless steel adjusting bolt M6 不锈钢调节螺栓
- 6. Aluminum alloy ear-shaped connector 铝合金耳型挂件
- 7. 50\*50\*5 corner connector 50\*50\*5 角码
- 8. Transom 横龙骨
- 9. Chemical anchor bolt 化学锚栓
- 10. Wall 墙体
- 11. Porcelain panel 瓷板



- 4. If back bolt unit facade tile is adopted, the concrete wall strength grade of the building shall not be lower than C15.
- 5. The drawing force between the back bolt and porcelain panel shall not be less than 1KN.
- 6. The drawing force between the expansion bolt and wall shall not be less than 1KN.
- 7. Before construction of plastering leveling layer, the surface of masonry and concrete should be cleaned to remove all kinds of release agents, oil stains and dust. The surface of concrete should be treated with interface agent, to ensure good adhesion between the primary structure and plaster layer.
- 8. Before installation of porcelain panel, the surface of plastering layer shall be watered, so that the ceramic adhesive has good cohesiveness and adhesion to plastering layer.

- 4. 背栓式单元挂贴外墙饰面瓷砖要求建筑物混凝土墙体强度等级应不小于 C15。
- 5. 背栓与饰面瓷砖的抗拉拔力应不小于 1KN。
- 6. 膨胀螺栓与墙体的抗拉拔力应不小于 1KN。
- 7. 抹灰找平层施工前，应对砌体、砼体表面进行清理，清除各种脱模剂、油渍、粉尘， 砼体表面应采用界面剂进行处理，使基体与抹灰层有良好的粘结性和附着力。
- 8. 瓷板安装前，应对抹灰层表面进行洒水处理，使陶瓷粘结剂于抹灰层有良好的粘结性和附着力。

- 1. Expansion bolt 膨胀螺栓
- 2. Stainless steel bar 不锈钢钢条
- 3. Leveling course 找平层
- 4. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒
- 5. Stainless steel back bolt 不锈钢背栓
- 6. Porcelain panel 瓷板
- 7. Wall 墙体



Cross section of ceramic adhesive and steel rod fixing of porcelain panel 瓷板挂贴剖面图

Slotted porcelain panel curtain wall 开槽式瓷板幕墙

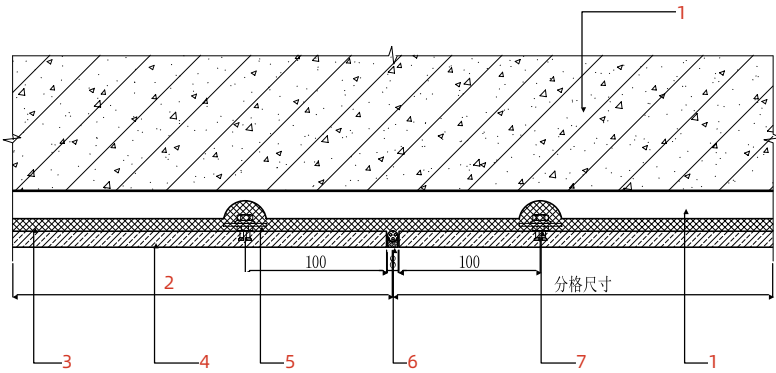
Slotted type is a dry fixing method, that is to use special slotting equipment to open a 10mm-deep short slot or through slot on the side of porcelain panel, and uses structural adhesive to fix special connectors to the keel system.

- 1. There are two types of slotted connection of porcelain panels: short slot and through slot. The slotted porcelain panels should be installed using short connectors with through slot.
- 2. Porcelain panels fixed with through slots can be used for curtain walls with non-seismic design or seismic design of 6, 7 and 8 degrees and dry fixing in interior decoration. When used for external enclosed structure, the area of porcelain panel should not be greater than 1.5.

开槽式是使用专用的开槽设备在瓷板的侧边开一个 10mm 深的短槽或通槽，通过结构胶使专用的连接件与龙骨系统结合的一种干挂方式。

- 1. 开槽式连接的瓷板有短槽和通槽两种形式，开槽连接的瓷板宜采用通槽短挂件的安装形式进行安装。
- 2. 通槽连接的瓷板可在非抗震设计或 6 度、7 度、8 度抗震设计的幕墙以及室内装修干挂中应用。用于外维护结构时，瓷板的面积不宜大于 1.5 m²。

- 1. Wall 墙体
- 2. Panel dimension 分格尺寸
- 3. Porcelain binder 陶瓷粘结剂
- 4. Porcelain panel 瓷板
- 5. Stainless steel bar 不锈钢钢条
- 6. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒
- 7. Stainless steel back bolt 不锈钢背栓
- 8. Leveling course 找平层





3. Special equipment shall be used for machining the slot of porcelain panels, and manual saw blades shall not be used for slotting on site.The allowable deviation of slotting shall meet the provisions in the following table:

3. 开槽连接的瓷板，槽口的加工应采用专用设备加工成型，不得在现场采用手工锯片开槽，  
槽口的加工应符合下表的规定：

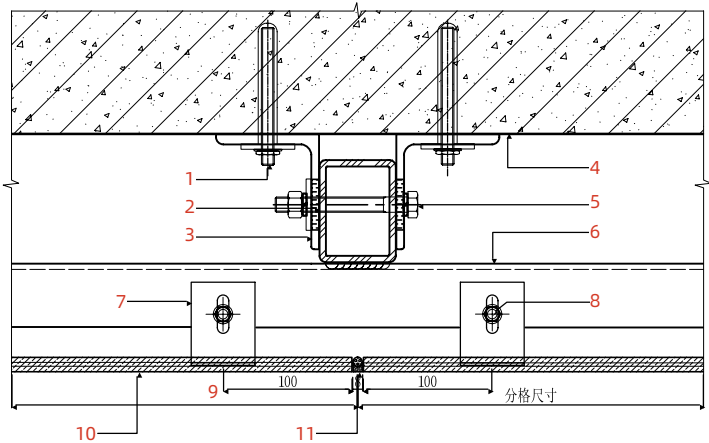
Fixing form 固定形式	Allowable error of slot width 槽宽度允许误差	Slot length 槽长度	Allowable error of slot depth 槽深度允许误差	Distance from slot edge to end edge 槽边到端边距离	Distance from slot edge to panel surface 槽边到板面距离	
					Minimum size 最小尺寸	Allowable Error 允许误差
Short-slot type 短槽式	0~+0.5	100~200	0~+1.0	50~200	5	0~0.5
Through-slot type 通槽式	0~+0.5	Full-length 通长	0~+1.0	Full-length 通长	5	0~0.5

4. The median line of the slot shall be located at the center of the nominal thickness of the porcelain panel.
5. The slot depth should be 10.0~11.0mm and the slot width should be 3.5 ~ 4.0 mm.
6. The slot shall not be damaged or cracked after processing, and the surface of slot shall be smooth and clean.
7. Epoxy adhesive for stone curtain wall dry-fixing should be poured into the slot where the connector is installed, with performance complying with JC887 Epoxy Adhesives for Dry-fixing Stone Curtain Wall.
8. Elastic gasket should be set at the place where the porcelain panel is supported, and the thickness of gasket should not be less than 2mm.

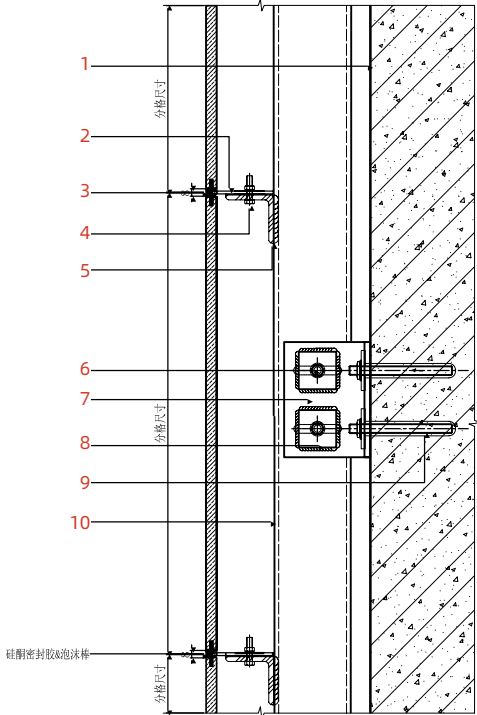
4. 槽口的中位线应位于瓷板的公称厚度的中心。
5. 槽口深度宜取 10.0~11.0mm，开槽宽度为 3.5~4.0mm
6. 槽口加工后不得有损坏或崩裂的现象，槽内应光滑、洁净。
7. 安装挂件部位的槽内宜灌注干挂石材幕墙用环氧胶粘剂，其性能应符合《干挂石材幕墙用环氧胶粘剂》JC887 的规定。
8. 承托瓷板处宜设置弹性垫片，垫片的厚度不宜小于 2mm。

Cross Section of Side Slot Porcelain Panel Back Bolt Dry Fixing 背栓式侧槽 瓷板干挂剖面图

1. Chemical anchor bolt 化学锚栓
2. Mullion 竖龙骨
3. Galvanized steel adapter 镀锌钢转接件
4. Wall 墙体
- 5.M12 stainless steel boltM12 不锈钢螺栓
6. Transom 横龙骨
7. T-shaped aluminum alloy connector 铝合金 T 型挂件
8. M8\*25 stainless steel bolt M8\*25 不锈钢螺栓
9. Panel dimension 分格尺寸
10. Porcelain panel 瓷板
11. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒



1. Wall 墙体
2. T-shaped aluminum alloy connector 铝合金 T 型挂件
3. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒
4. M\*25 stainless steel bolt M\*25 不锈钢螺栓
- 5.Transom 横龙骨
- 6.M12 stainless steel bolt M12 不锈钢螺栓
7. Galvanized steel adapter 镀锌钢转接件
8. Galvanized square gasket 镀锌方垫片
9. Chemical anchor bolt 化学锚栓
10. Mullion 竖龙骨



Cross Section of Side Slot Porcelain Panel Back Bolt Dry Fixing 背槽式瓷板幕墙

Use special back slot processing equipment to machine a dovetail slot on the back of the porcelain panel according to design size, then connect special anchor and fix it with the porcelain panel by mechanical means and adhesive, and then install the panel on the wall surface by connectors. The commonly used connection method is a back slot T-shaped connection.

通过专用的加工背槽设备，在瓷板的背面设计尺寸加工成一个燕尾槽，然后将专用的锚固件采用机械和胶粘的方式与瓷板连接固定，通过挂件连接将瓷板安装在基面上。常用的有背槽式 T 型连接。

1. Porcelain panels fixed through back slots can be used for curtain walls with non-seismic design or seismic design of 6, 7 and 8 degrees and dry fixing in interior decoration. When used for external enclosed structure, The area of single porcelain panel should not be greater than 1.5 m² .

2. The porcelain panel with back slots shall be connected with patented special anchorage (patent number: embedded 020123424.8), and the connectors shall be made of austenitic stainless steel or aluminum alloy Profile, with thickness not less than 3mm.

3. For porcelain panels connected with back grooves, if there are items or parts requiring reinforcing measures, safety composite coatings can be added for reinforcement.

4. The anchors shall be processed as per the following requirements:

1) The length and depth of the anchoring slot shall be determined according to the design requirements, and the depth of the slot shall not be less than 5mm within the effective length, and shall not be more than 1/2 of the thickness of the porcelain panel;

2) The finished anchoring slot shall not be damaged or cracked, and the slot shall be straight and smooth;

5. The anchors shall be installed as per the following requirements:

1) The aluminum alloy surface of the anchors shall be anodized, and the end surface shall be free of defects such as machining deformation or burr;

2) Before installation of anchors, the slot should be clean and dry, without organic contaminant;

3) The anchors and slot should perfectly match;

4) The anchors and porcelain panel shall be bonded with special epoxy resin structural adhesive, and laid flat for natural drying. The drying time shall be specified according to the structural adhesive, and not less than 24h;

6. The drawing strength after the bonding between anchors and porcelain panel shall be ≥ 2KN. The shear strength after the bonding between anchors and porcelain panel shall be ≥ 2KN.

1. 背槽连接的瓷板可在非抗震设计或 6 度、7 度、8 度抗震设计的幕墙以及室内干挂装修工程中应用。用于外维护结构时，瓷板的单片面积不应大于 1.5 m²。

2. 背槽连接的瓷板应采用具有专利（专利号：嵌入式 020123424.8）的专用锚固件，连接件应采用奥氏体不锈钢或铝合金型材，厚度不宜小于 3mm。

3. 背槽连接的瓷板，如有特殊强加要求的项目或部分，可增加安全复合层加强。

4. 锚固件的加工应符合下列要求：

1) 锚固槽的长度和深度应根据设计要求确定，在有效的长度内槽深度不宜小于 5mm，且不宜大于瓷板的厚度的 1/2；

2) 加工完成的锚固槽不得有损坏或崩裂现象，槽口应顺直，光滑；

5. 锚固件的安装应符合下列规定

1) 锚固件铝合金表面应经阳极氧化处理，端口不应有加工变形或毛刺等缺陷；

2) 锚固件安装前应对槽内清洁干净、干燥，不得有有机物污染；

3) 锚固件与槽的配合应吻合良好；

4) 锚固件与瓷板应采用环氧树脂型专用结构胶粘结，粘结后，应平放让其自然干燥，干燥时间应根据结构胶说明。且不宜小于 24 小时；

6. 锚固件与瓷板粘结完成后的抗拉拔强度应≥ 2KN。锚固件与瓷板粘结完成后的抗剪切强度应≥ 2KN。

Cross Section of Back Slot Porcelain Panel Fixing with C-shaped Connector 背槽式 C 型 瓷板剖面图

1. Chemical anchor bolt 化学锚栓

2. Mullion 竖龙骨

3. Galvanized steel adapter 镀锌钢转接件

4. Wall 墙体

5.M12 stainless steel bolt M12 不锈钢螺栓

6. M8 stainless steel bolt M8 不锈钢螺栓

7. M6 stainless steel bolt M6 不锈钢螺栓

8. Transom 横龙骨

9. Angle iron adapter 角钢转接件

10. Aluminum alloy C-shaped connector 铝合金 C 型挂件

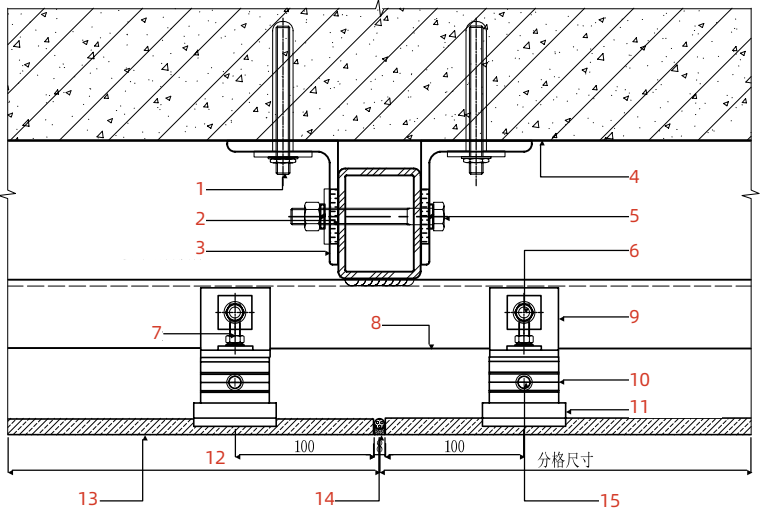
11. C-shaped anchor C 型锚固件

12. Panel dimension 分格尺寸

13. Porcelain panel 瓷板

14. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒

15. Stainless steel bolt 不锈钢螺栓



1. M6 stainless steel bolt M6 不锈钢螺栓

2. M8 stainless steel bolt M8 不锈钢螺栓

3. Silicone sealant & foam bar 硅酮密封胶 & 泡沫棒

4. Stainless steel bolt 不锈钢螺栓

5. Aluminum alloy C-shaped connector 铝合金 C 型挂件

6. C-shaped anchor C 型锚固件

7. M6 stainless steel bolt M6 不锈钢螺栓

8. Transom 横龙骨

9. Galvanized steel adapter 镀锌钢转接件

10. Porcelain panel 瓷板

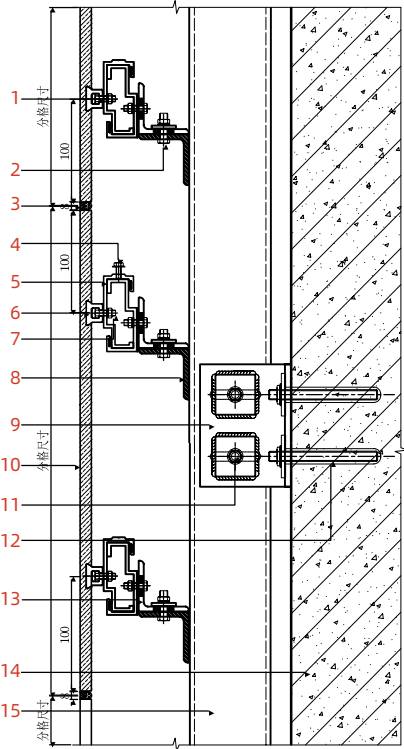
11. M12 stainless steel bolt M12 不锈钢螺栓

12. Chemical anchor bolt 化学锚栓

13. Angle iron adapter 角钢转接件

14. Wall 墙体

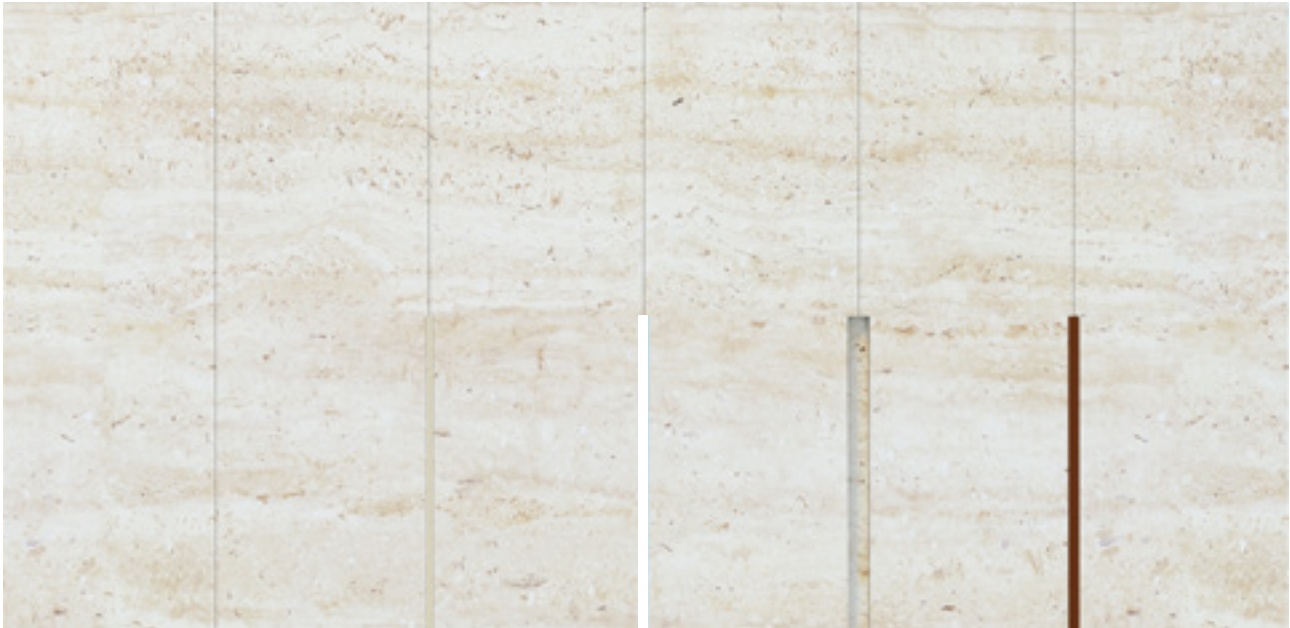
15. Mullion 竖龙骨



Basic Configuration of Back Slot Fixing Porcelain Panel Curtain Wall 背槽式瓷板幕墙基本配置表

Sample 实 样	Description 名 称	Model 型 号	Amount for each panel 每片砖用量
	Back bolt 背栓	C shape C 型	4
	U2 type anchor (fixed on porcelain panel) U2 型锚固件 (固定在瓷板上)	L shape L 型	2
	A type anchor (fixed on porcelain panel) A 型锚固件 (固定在瓷板上)	T shape T 型	4
	铝合金扣件 Aluminum alloy fastener	C shape C 型	4
	铝合金栓件 Aluminum alloy bolt	L 型	2 for each 各 2 个
	铝合金挑件 Aluminum alloy connector		
	Stainless steel connector 不锈钢挂件	T shape T 型	2

Joint type 接缝形式



密缝  
Seamless joint



胶缝  
Glue line



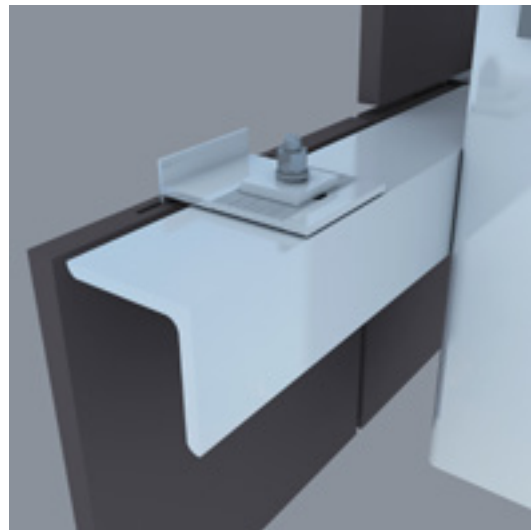
开缝  
Seam



凹槽  
Cavity



金属条镶嵌  
Metal strip inset



T-shaped T 型



F-shaped F 型



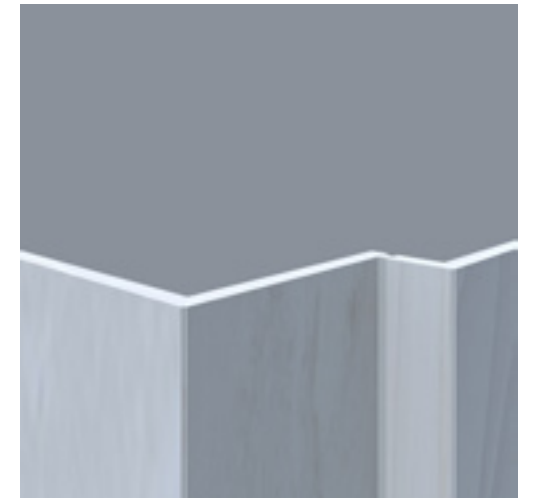
Ear-shaped 耳型



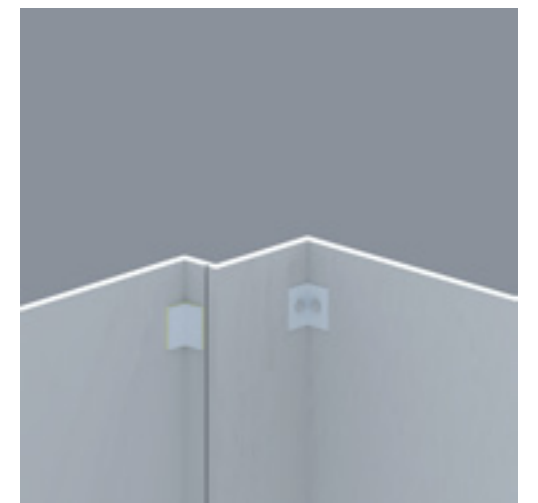
Ear-shaped 背槽



Small wall corner installation -back  
小折角安装 - 背面效果



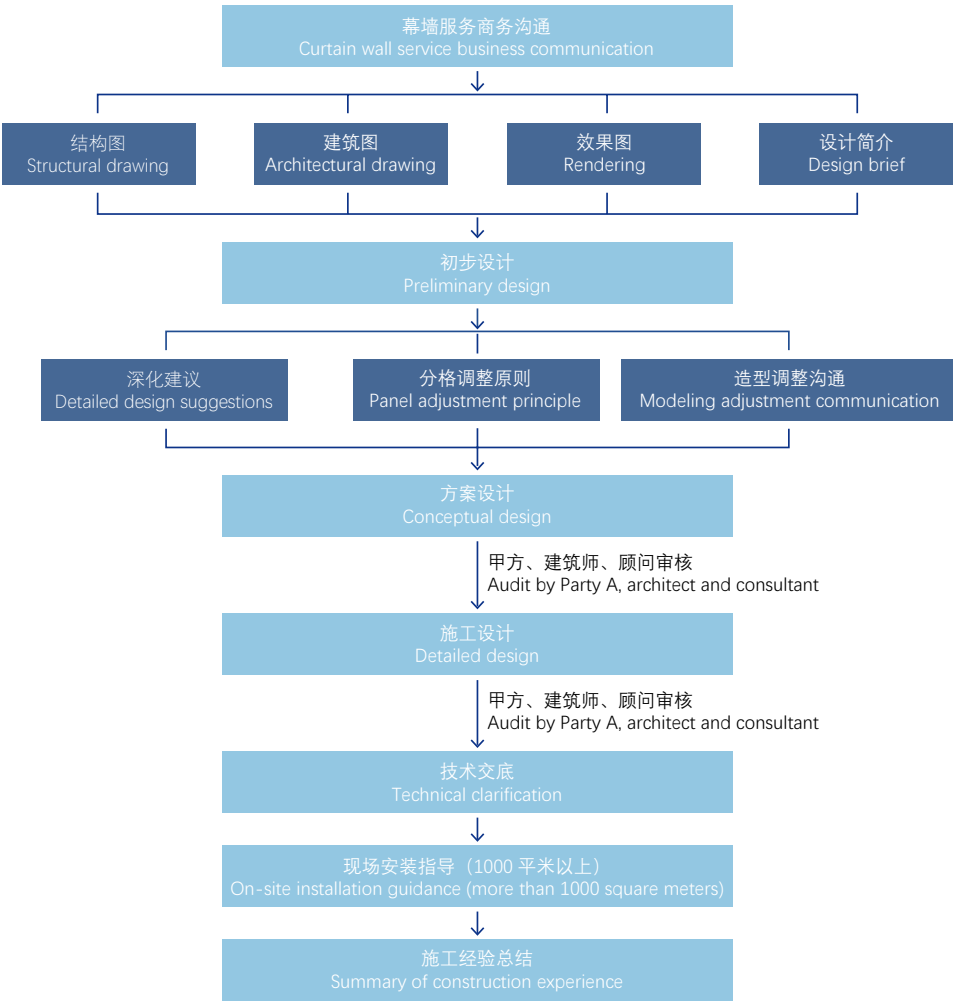
Small wall corner and Begonia angle  
小折角、海棠角造型



Internal and external corner connection - back  
bonding method & back bolt connection  
阴阳角连接 - 背面粘接方式 & 背栓连接



Technology Department Service Flow of Gani Porcelain Panel Curtain Wall  
简一瓷板幕墙技术部服务流程



Integrated Design and Technical Solution 一体化设计与技术方案

The curtain wall team of Gani Headquarters is composed of seven senior industry engineers; it adopts the project leader system, providing customized system R&D and overall project solutions for projects, including initial scheme design, construction difficulties tackling, installation guidance, etc. In 2019, we had completed over 100 projects, which were designed directly by the headquarters team, who provided accurate and high-end and professional service, reducing customer costs and improving project benefits.

简一总部幕墙团队由七名行业资深工程师组成，以项目负责人制度服务客户，为项目提供定制化系统研发、项目整体解决方案：包括初期方案设计、施工图难点突破、安装指导等，2019 年超百个项目，由总部团队直接负责设计，体现精准高端服务力和专业性，减少客户成本，提高项目效益。



PRODUCT FIDELITY  
产品逼真性

As the original creator and leader of marble tiles, Gani uses the latest technology to restore 99.9% of the natural beauty, vein and warmth of natural stone. The innovative combination of Italian ink-jet printing technology and screen printing technology makes the details of layout patterns rich and well structured. Compared with pure ink-jet technology, the mixed printing technology can better render the stone-like texture on the surface of products, especially the realistic texture, and life-like roughness, which is obviously superior to ordinary high-gloss products in hand feeling and texture, and the finished product surface has stronger stereoscopic impression.

作为大理石瓷砖的原创者和领导者，简一运用最新科技 99.9% 还原天然石材的自然美感、矿脉感和温润感。突破性应用意大利喷墨打印技术和丝网印刷技术，使版面花纹细节体现丰富，层次感明显，相对纯喷墨技术，混合印刷技术更能体现产品表面的石材感觉，特别是质感逼真，实现凹凸面，手感与质感上明显优于普通高光面产品，成品表面立体感更强。



APPLICATION CASES  
应用案例

At present, we've completed over 100 curtain wall and landscape projects, including Ningxia International Conference Center, Chongqing Zongshen R&D Building, Guangzhou World Trade Clothing City, Xining Iron and Steel Real Estate, etc., covering different fields such as commerce, office, real estate, residence, etc., which are favored and loved by major real estate owners and architects such as CIFI, Vanke, China Merchants, Sunac, etc.

目前我公司幕墙及景观项目逾百个，如宁夏国际会议中心、重庆宗申研发楼、广州世贸服装城、西宁钢铁置业等工程，涵盖商业、办公、地产、住宅等不同领域，以其独特的产品完美展示力及综合解决方案，深受旭辉、万科、招商、融创等各大地产业主及建筑师青睐和喜爱。



BRAND SERVICE  
总部服务，品牌背书

Gani curtain wall team is directly led by the professional team at headquarters to provide customers with customized system R&D and overall project solutions; In addition to product supply, it also provides initial scheme design, detailed design, construction difficulties tackling, installation guidance, etc. Its panel design integrates neat aesthetics, engineering, construction technology and working procedures, material specifications and performance, cooperation with other disciplines, etc., delivering accurate and high-end and professional service, to reduce customer costs and improve project benefits.

简一幕墙团队由总部专业团队直接跟进项目设计，为客户提供定制化系统研发、项目整体解决方案；除了产品供应外，还包括初期方案设计、深化设计、施工图难点突破、安装指导等，其中分格设计综合了整洁美学、工程学、施工工艺和工序、材料规格和性能、其他专业的配合等，体现精准高端服务力和专业性，以减少客户成本，提高项目效益。



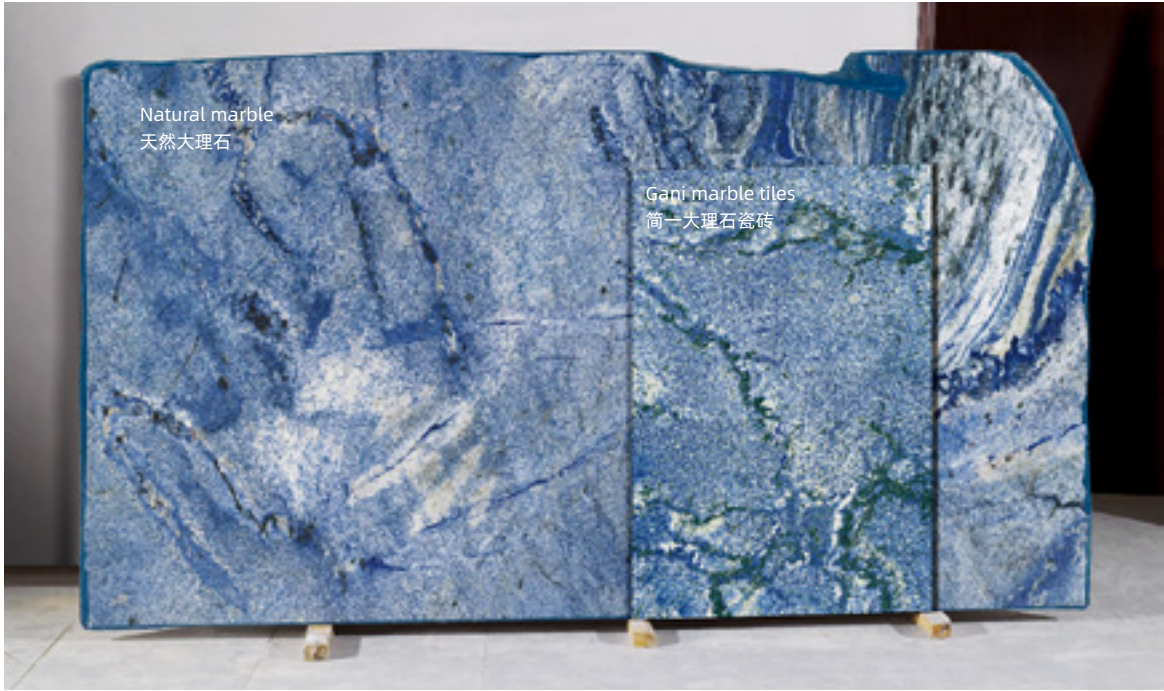
PRODUCT CUSTOMIZATION  
产品定制力

Gani marble tiles has a perfect customized product service system, which can fully meet the personalized and unique needs of designers. The stable price and panel quality also make it the trusted choice for owners, and Gani porcelain panel curtain wall will become a groundbreaking panel material in curtain wall industry to serve consumers.

简一大理石瓷砖具有完善的定制性产品服务体系，完全可以满足设计师个性化、独特化需求。而稳定的价格和板材品质也让业主放心选择，简一瓷板幕墙将成为幕墙行业的突破性面板材料服务于广大消费者。

石材幕墙 VS 瓷板幕墙

Stone curtain wall vs porcelain plate curtain wall



Stone is shaped under natural and random geological movement, making its textures random, with significant color difference. It looks hard, but it has pores of different sizes; in addition, long term exposure to sunshine, temperature and humidity easily cause natural traces like arabescato corchia (mainly referred to salt petering), water spots and stain. Comparatively speaking, granite has good weather resistance, while marble and tuff with better texture are more easily weath-ered, so it needs surface coating treatment when used for facades.

Selected raw materials, reasonable formula, and pressing and sintering at high temperature make the design texture of the porcelain panel stable. Pressing and sintering at high temperature ensure its compact structure and small porosity, making its weather resistance and durability much higher than those of stone. Exposure to wind and rain and polluted air will not cause deterioration, fading, contamination and other problems, and has better dirt resistance.

石材是通过地质运动自然、随机条件下生成，其花纹图案随意性大，色差明显。其看似坚硬，但存在大小不一的孔隙，且受日照、温湿度等影响，时间长容易产生白花（主要指泛碱）、水斑、锈迹等天然性病变症状。相比而言，花岗岩耐候性好，而纹理更好的大理石、凝灰岩更易风化，用于外墙需进行表面封闭处理。

瓷板是经过原料的拣造，合理的配方，经压制和高温烧结而成，花纹设计稳定性强。瓷板经压制和高温烧结而成，其结构致密，气孔率小，具有远高于石材的耐候性及耐久性。暴露于风雨及污染空气中，不会产生变质、褪色、吸污等问题，自洁性更好。

对比项目 Item		石材幕墙 Stone curtain wall	瓷板幕墙 Porcelain panel curtain wall
Formation condition 生成条件	Formation condition 生成条件	Geological movement under natural and random con- ditions 通过地质运动自然、随机条件下生成	经过原料的精心拣造，正确配方，大吨位压制和高温烧结而成 Careful sorting of raw materials, correct formula, large ton- nage pressing and high temperature sintering
Pattern & texture 花式效果	Pattern 花纹图案	Random patterns and rich hand feeling. Obvious color difference and cannot be customized 花纹图案随意性大，表面触感丰富。 色差明显，不可定制	Stable design pattern, rich hand feeling, and no color differ- ence in the same batch of panels. Gani has the richest stone patterns and strong customization in the whole industry. 花式设计稳定性强，表面触感丰富，同批板材无色差 简一拥有全行业最丰富石材花式和较强定制力
Material per- formance 物料性能	Thickness 厚度	25Mm or above 25mm 或以上	12-15mm
	Weight 重量	每平方米 60kg-80kg 之间 Between 60 kg and 80 kg per square meter	Between 25 kg and 30 kg per square meter 每平方米 25~30kg 之间
	Density 密度	多孔非致密结构 Porous structure, not compact	Compact structure and small porosity 结构致密，气孔率小
	Water absorption rate 吸水率	1%-7%	≤ 0.5%, water absorption rate of Gani is ≤ 0.1%
	Dirt resistance 抗污性	Weak 弱	Minimum Grade 3 最低等级 3
	Freezing resis- tance 抗冻性	Weak 弱	Strong 强
	Wear resistance (Moh's hardness) 耐磨（莫氏硬度）	Grade 33 级	Grade 4-5; and Gani product achieves Grade 5.5, which is more wear-resistant
	Flexural strength 抗折强度	9-15Mpa	27Mpa or above, Gani product achieves 37-52Mpa
	Strength descrip- tion 强度说明	Prone to "focal point of stress" causing local failure, accelerating the damage of panels. 容易出现局部破坏" 应力集中点"，加速板材的损坏	There is no weakest spot, and seldom disruptive stress concentration 不存在最薄弱的环节，难出现破坏应力集中等现象
	Acid and alkali resistance 耐酸、耐碱性	Granite has a Class B acid resistance, but not alkali resistant; Marble has a Class B alkali resistance, but not acid resistant. 花岗岩耐酸是 B 级，但不耐碱；大理石耐碱是 B 级，但 不耐酸	Grade A A 级
	Weather resis- tance 耐候性	Weak 弱	Strong 强
	Weather resis- tance,Dirt resis- tance 耐候性、自洁性	Long term exposure is likely to cause natural traces like arabescato corchia (mainly referred to salt peter- ing), water spots and stain. 时间长容易产生白花（主要指泛碱）、水斑、锈迹等天然 性病变症状。	Exposure to wind and rain and polluted air will not cause deterioration, fading, contamination and other problems, and has better dirt resistance. 暴露于风雨及污染空气中，不会产生变质、褪色、吸污等问题， 自洁性更好。
Supply 供货	Supply period 供货周期	Bulk supply is unstable, and it is difficult to replenish goods after being sold out; Need on-site processing. 批量供货不稳定，售罄补货存在困难；需现场加工	Mass production, stable supply, controllable supply period, factory processing 批量生产，供货稳定，周期可控，工厂加工
Installation 安装	Installation con- struction 安装施工	Thick, heavy, long processing cycle, and relatively complex on-site processing (cutting and grinding), high installation strength, low efficiency, long construction period and high construc- tion cost. 厚，重量大，加工周期长，现场加工相对复杂 (切割、打磨)，安装强度高、效率低，整个施工周期长， 施工成本高。	Short production period, small thickness, light, easy on-site pro- cessing and cutting (water jet saw), reducing installation labor intensity, improving installation efficiency, effectively shortening construction period and reducing construction cost 生产周期短，厚度小，重量轻，易于现场加工切割（水刀）， 降低安装劳动强度，提高安装效率，可有效缩短施工周期，降 低施工成本

Dry fixing porcelain panels can be preferred for the following projects:  
以下项目可以优先选择干挂瓷板：

- Projects with environmental protection awareness and pursuing nature, that is, paying attention to healthy living environment
- May be used as alternatives for most of the projects originally designed as stone curtain walls:
  - Projects pursuing low cost (utilizing the cost-effectiveness of porcelain panel)
  - Projects looking for special stone patterns (utilizing the customization of porcelain panel)
  - Projects with different stone patterns (utilizing the rich patterns of Gani products)
  - Projects with high requirements on quality and supply stability and tight schedule (utilizing the stability of porcelain panels)
  - Projects expecting durability and resistance to natural corrosion (utilizing the weather resistance of porcelain panels)
- Building facade with limited structural load (utilizing the high strength and lightness of porcelain panels)
- Using Gani products in indoor decoration, its good quality can ensure sealed infinite continuous pattern, thus ensuring integrity of the overall design. Such as the background and feature wall of the hall in the indoor public area.
- It is applicable to indoor and outdoor dry fixing curtain wall systems for office buildings, sales centers, landscape gardens, villas, residential buildings, podium buildings, municipal services, shopping malls, etc.

- 具有环保意识、追求自然即注重健康人居环境的项目  
计为石材幕墙的大部分项目，可作为替代：
  - 希望降低成本的（利用瓷板的经济性）
  - 追求特殊石材花式而难以寻找的（利用瓷板的定制能力）
  - 石材款式较多的项目（利用简一花式的丰富性）
  - 对品质、供货稳定性要求较高、施工时间不充足的项目（利用瓷板的稳定性）
  - 希望经得住时间和自然腐蚀的（利用瓷板的耐候性）
- 结构载荷受限的建筑外立面（利用瓷板的高强而轻盈特性）
- 选择简一产品于室内应用，可使用简一产品良好的品质实现密封无限连纹工艺满足整体设计的完整性，如室内公区大堂背景及造型墙等。
- 适用于写字楼、销售中心、景观园林、别墅群、住宅楼、裙楼、市政、商场等室内外干挂幕墙系统

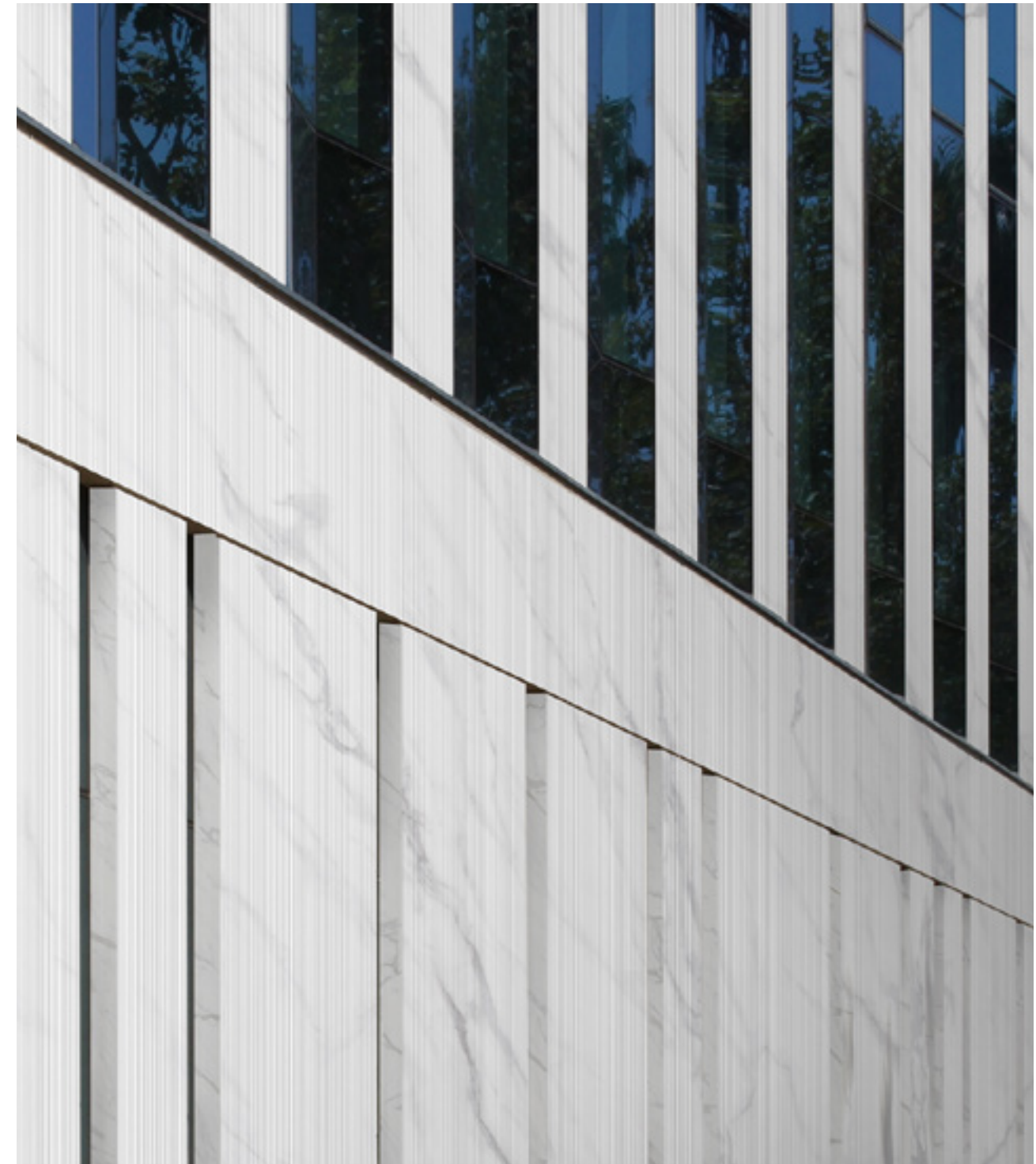
# 02 /

## PROJECTS 案例



# BUILDING CURTAIN WALL

建筑幕墙



Statuario Calacatta (curtain wall with grooved surface)

卡拉拉白（拉槽面幕墙效果）



# High-Rise Building Porcelain panel curtain wall

## 从高层建筑看瓷板幕墙

Project Name | Jiayuan Jinli No.7 Commercial Area, Longkou, Shandong

Project Address | Jinli, Longkou, Shandong

Project Address | 15000 m²

Gani Product Used | Armani Brown, Ocean Cream

Installation Technique | back bolt dry fixing installation

**Overall appearance design:** the main design points using porcelain panel includes ribbon wings, flutings and two cornices. The ribbon wing design, as the outer contour of the whole building, mainly reflects the commercial feature of the building. To ensure the integrity of the ribbon, Armani Brown and black sealant are selected to ensure that glue joints do not destroy the continuity of the ribbon; To make the building look tall and robust, 200mm wide and 100mm deep grooves are designed on the column, and the column is also set with the structure of upper cornice and upper and lower cornice to deliver a staggered design;

**Detail design:** the transverse keel of the column, rather than conventional keel layout of bending along with the groove shape, adopts the cantilever with connector to facilitate the welding and installation of the keel;

**System selection:** R-shaped connector with screw-in back bolt is adopted. There are three main factors to be considered. First, this project is an offshore project with large wind pressure, and the test results of drawing force of screw-in back bolt show that it has small discrete distribution and good stability. In addition, the wall thickness of R-shaped connector is greater than 4mm, and 6063-T5 aluminum profile is adopted, which has solid stress resistance; Second, the ribbon wing has a suspended ceiling structure, and the back bolt can make it more reliable; Third, Shandong is one of the production bases of domestic stone, and there are many stone processing factories nearby, providing convenience for the processing of back bolt holes nearby;

**整体造型设计:** 瓷板主造型包括飘带翼、凹槽包柱、双挑檐包梁，飘带翼造型主要体现建筑的商业感，为整个楼体的外轮廓造型，为了体现翼带的完整性，选用了深色的阿玛尼棕和黑色密封胶相配合，没有让胶缝破坏翼带的连贯性；为了体现整栋楼的挺拔与立体，包柱中间设置了 200mm 宽 100mm 深的凹槽设计，同时包梁也设置了上单挑檐和上下挑檐的结构，造型错落有序；

**细节设计:** 包柱的横向龙骨设计，突破常规的龙骨布置随凹槽造型弯曲的做法，采用挂件悬挑的方式，方便了龙骨的焊接与安装；

**系统选择:** 采用旋进式背栓 R 型挂件，主要考虑的因素有三点，一是此项目为近海项目，风压较大，旋进式背栓拉拔力测试结果显示其离散型较小，有较好的稳定性，另外 R 型挂件的壁厚大于 4mm，且采用 6063-T5 铝型材，受力扎实；二是飘带翼有吊顶结构，采用背栓连接比较可靠；三是山东是国产石材的生产基地之一，附近石材加工厂较多，为背栓孔就近加工提供了方便；





Jiayuan Jinli No.7 is developed and constructed by Jiayuan Huacheng Real Estate, located in the south of Gangcheng Avenue, Xincheng District, Longkou City, Shandong Province. This project is a complex commercial area in Lot S1 of Zone A, covers facades of shopping mall, hotel, office building and other buildings. Yantai Architectural Design Company is responsible for the architectural design, who selected Gani marble tiles for the curtain wall system, adopting back bolt dry fixing method. As long as it is properly selected and designed, the porcelain panel can also achieve excellent stone-like appearance in high-rise buildings, and has obvious advantages in safety, cost-effectiveness and long-term benefit of the project.

**Factors to be considered in the application of porcelain panel curtain wall in high-rise buildings:**

The design of porcelain panel curtain wall should meet the requirements on "safety and quality, economy, aesthetics, function and environmental protection". Considering the architectural characteristics, application effect and owner's demand of Jiayuan Project, we gave the following suggestions to the architectural design company:

1) Product model selection: Considering the overall shape of high-rise buildings as the main factor, as well as the designer's style design and color matching of this building, the two products selected in this project not only achieved perfect color matching, but also avoided any abrupt eye-catching pattern standing out from the overall architectural style;

2) Selection of dry fixing system: Considering the large wind load of high-rise and super-high-rise buildings, back bolt connection or back slot connection is generally selected. The drawing force used in the experiment of back bolt connection can reach 1600N and that of back slot connection can reach 3200 N; This project is a high-rise building, but the elevation is less than 40m. After calculation, the back bolt method is adopted to meet the stress requirements. The back bolt system is stable and durable, with safety performance and strong displacement ability;



嘉元锦里 7 号为嘉元华诚房地产开发建设，位于山东省龙口市新城区港城大道南。本项目为 A 区 S1 地段综合商业区，含商场、酒店、办公楼等建筑外墙。由烟台建筑设计公司负责建筑设计，应用简一大理石瓷砖幕墙系统，采取背栓干挂施工。瓷板幕墙只要选型设计得当，同样可以在高层建筑中取得出色的石材效果，同时这种方案对安全性、对经济性、对项目长远效果，优势明显。

**瓷板幕墙在高层建筑应用需考虑的因素**

瓷板幕墙在设计时应满足幕墙的“安全与质量、经济性、美观性、功能性与环保要求”。结合嘉元项目的建筑特点、使用效果、业主需求，我们为建筑设计公司建议如下：

1）产品款式选择：高层建筑一般以整体造型为主要考虑因素，应充分考虑到设计师对于这栋建筑的风格设计及色彩搭配，本工程选用的两款产品既考虑了颜色的相互搭配，又避免了因为单片花纹过于吸睛而影响整体建筑风格；

2）干挂系统选择：考虑到高层及超高层建筑的风荷载较大，一般选用背栓连接或背槽连接，背栓连接的拉拔力实验值可达到 1600N，背槽可达到 3200N；本工程属高层建筑，但标高不到 40 米，经过计算采用背栓方式以满足受力要求，背栓系统稳定，安全性能高，不宜破损，位移能力强；

3）分格划分：主要考虑两点，一是基本分格大小，600x1200mm 是非常理想的分格；二是充分考虑窗高、窗宽等其他材料分格的互相搭配；另外也应该考虑到瓷板利用率的问题。





# We Share Thousands of Miles of Mountains And Rivers | Here in Dongguan CIFI Landscape Villa

## 千万里江山与共 | 东莞旭辉江山墅

Project Name   Dongguan CIFI Landscape Villa	项目名称   东莞旭辉江山墅
Project Address   Dongguan, Guangdong Province	项目地址   广东省东莞市
Project Address   28000 m²	项目面积   28000 m²
Porcelain Panel Curtain Wall   Portugal Cream, Cenerina, Wood Grain Grey	瓷板幕墙   葡萄牙米黄 银翼石 法国木纹灰
Installation Technique   back bolt dry fixing installation	安装技术   背栓式干挂安装

Overall appearance design: this project mainly includes commercial podium, villa and apartment podium. The Portugal Cream of the commercial podium and the champagne gold aluminum plate at the window complement each other, and together with the noble column cover, render a high-end commercial style;

Detail design: the left and right columns of the commercial podium are connected with the aluminum plate, to avoid the complex shape caused by the use of porcelain panels and improve the waterproof performance; The side panels on both sides with lamp troughs still use porcelain panels, whose diffuse reflection can avoid disordered light effect;

System selection: For the commercial podium, back bolt fixing R-shaped connectors are adopted, and for the shear walls of villas and apartment podium, point fixing method is adopted, which greatly reduces cost for the use of keel;

**整体造型设计:** 本工程主要包括商业裙楼、别墅、公寓裙楼。商业裙楼葡萄牙米黄与窗边香槟金铝板配合相得益彰，整体包柱高贵，商业气息浓；

**细节设计:** 商业裙楼包柱左右中间都与铝板交接，避免了都用瓷板带来的造型复杂问题，也提高了防水性能；两侧灯槽侧板依然采用瓷板，依靠瓷板的漫反射，不会让灯光效果出现混乱；

**系统选择:** 商业裙楼采用背栓式 R 型挂件，别墅与公寓裙楼有剪力墙部位采用点挂方式，大大节省了龙骨成本；



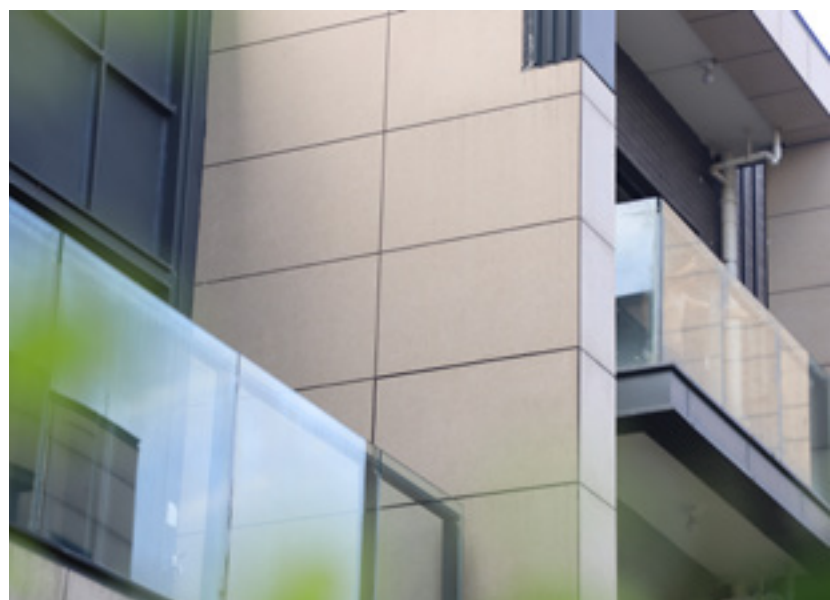


With the integration of urban and nature, and the innovation and upgrading of modern and traditional beauty, CIFI Landscape series, making the best of excellent natural resources of the city, build ideal residence. In Chongqing, Wuhan, Nanjing, Hefei, Dongguan, the Landscape series are standing upright, showing people the beauty of ideal residence.

China's mountains and rivers are precious natural endowments, and CIFI Landscape series, engrave this natural endowments into the soul of the city; with the city, land and natural resources ingeniously, they stand out from the city while respecting the cultural connotation of each land, and foresee the pattern of urban residences, creating exotic landscape that can only be seen in China.

历经城市与自然的文脉交融，现代与传统的创新升级，旭辉江山系作品于优渥城市自然资源之上，匠凿理想人居。重庆、武汉、南京、合肥、东莞，一座座江山系作品正巍然屹立，书写着一篇篇理想人居华章。

中国的山川大地，都是一种难得的天赋，而旭辉江山系希冀把这份天赋充分发挥，将不可复制的自然刻入城市的灵魂里，对城市、土地、自然资源匠心甄选，并且于尊重每一块土地的人文地脉之上，屹立于城市的峰境，远见城市人居的格局，造就只有在中国才能出现的山水封面作品。







## Garden Townhouse | Minyoun Qingcheng Courtyard

### 花园联排墅居 | 明宇豪雅青城院子



Project Name | Minyoun Qingcheng Courtyard  
 Project Address | Chengdu, Sichuan  
 Project Address | 18000 m<sup>2</sup>  
 Porcelain Panel Curtain Wall | Giallo California  
 Installation Technique | Wet Fixing Installation

项目名称 | 明宇豪雅青城院子  
 项目地址 | 四川省成都市  
 项目面积 | 18000 m<sup>2</sup>  
 瓷板幕墙 | 加州金麻  
 安装技术 | 湿贴安装





**Overall design:** This project is a villa community project located in picturesque Dujiangyan. The whole villa community is dominated by fresh and comfortable air, the imported stone material Giallo California with Litchi surface is selected, going with brown painted roof, to render light luxury and natural style;

**Detail design:** The villas mostly have three to four stories and the stairs are not high, therefore, the outer walls are decorated with 300\*600 small panels;

**System selection:** Wet fixing, which is suitable for small panels, with safety and low cost;

**整体造型设计:** 本工程为别墅区工程，且坐落在风景宜人的都江堰，整个别墅区造型以清新、舒适气息为主，所以选用加州金麻荔枝面进口石材表面，配合屋顶棕色喷漆，小资又自然；

**细节设计:** 因别墅多为三到四层建筑，楼梯不高，故外墙采用 300\*600 小板装饰；

**系统选择:** 挂贴方式，适合小板湿挂安装，安全又成本低；





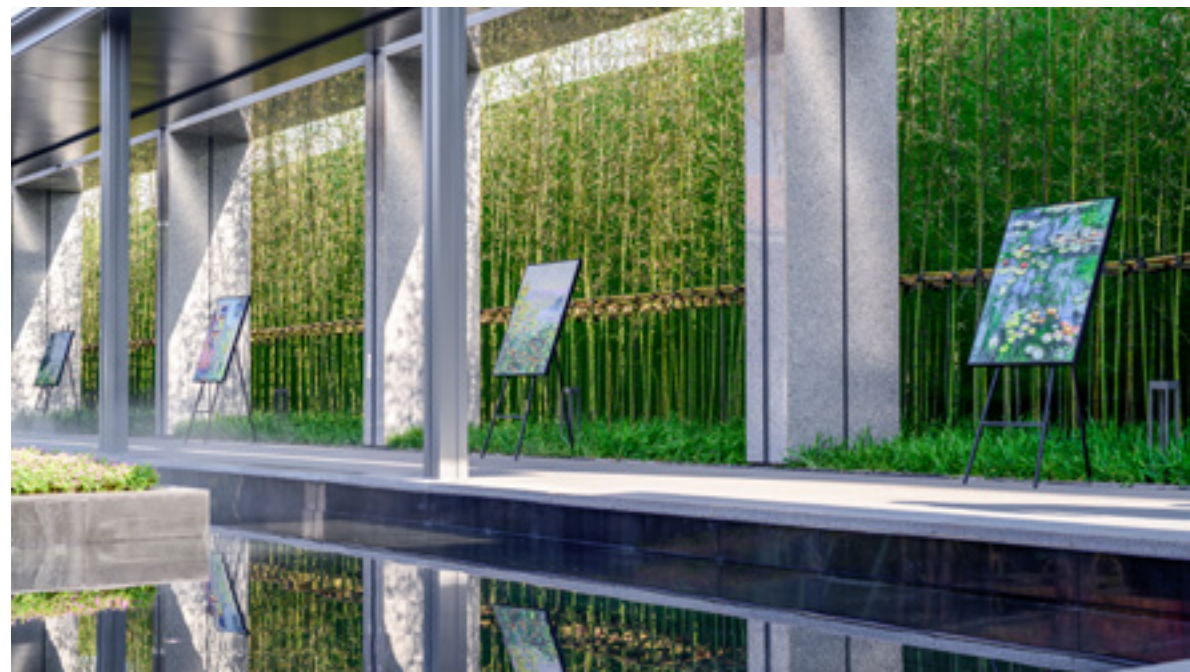
# Sunac Ganjiang Palace

## 融创·红城投赣江府

Project Name | Sunac Ganjiang Palace  
Landscape Design | Guangzhou S.P.I Design Co., Ltd.  
Project Location | Nanchang, Jiangxi  
Gani Product Used | Blue Pearl

项目名称 | 融创·红城投 赣江府  
景观设计 | 广州山水比德设计股份有限公司  
项目地点 | 江西南昌  
项目用砖 | 珍珠蓝

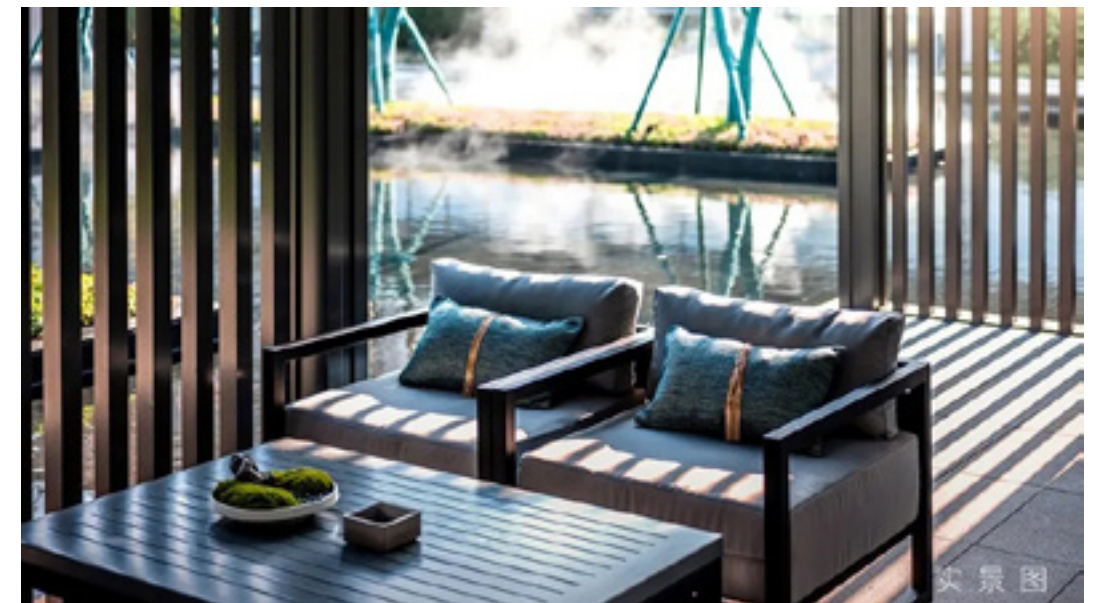




The entrance space, rather than a confined space, is designed into an open space. Landscape and architecture complement each other, and hackberry and Citrus Paradisi on both sides form a sense of staggered order, which weakens the boundary of architecture. In addition, the steps, cascade and tree pool at the entrance complement each other without border, making the entrance guiding the direction of home airily.

入口空间并没有采用边界式的门头形式，而是呈开放式的空间处理形式。景观与建筑相辅相成，两侧丛生朴树与胡柚形成交错的序列感，弱化了建筑的边界。同时，入口的台阶、叠水、树池采用无界式的处理形式，让入口处有更为轻盈的表达，让归家更有导向性。

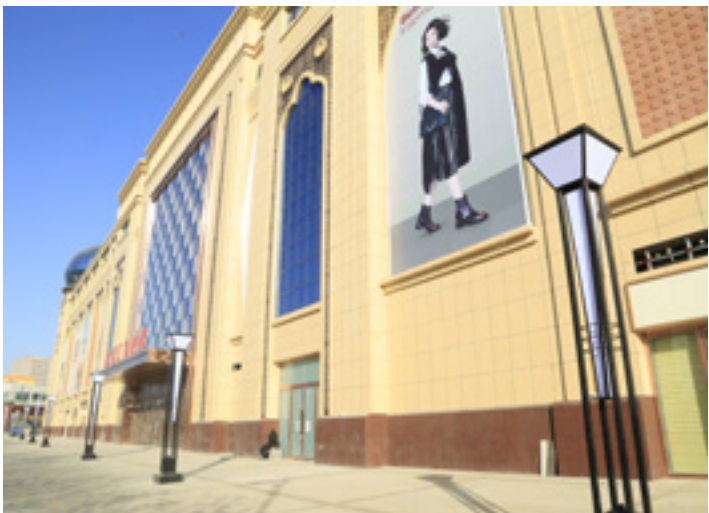




Steady colors always comfort people, and Blue Pearl is a customized product of Gani curtain wall. In this era of pursuing personalization, it is very important to build customization ability according to the needs of customers, and Gani can do it.

稳重的颜色总是给人舒适感，珍珠蓝是简一的幕墙定制产品。现在的个性化时代，可以根据客户想要的效果打造匹配产品的能力很重要，简一可以根据设计师及客户的要求，呈现出他们想要的效果。





# Wuzhong Huijin Times Square

## 吴忠汇金时代广场

Project Name | Wuzhong Huijin Times Square

Province | Wuzhong, Ningxia

Project Type | Commercial Project

Area | About 21000m<sup>2</sup>

Product Application | Golden thread beige

Installation Technique | back bolt dry fixing

项目名称 | 吴忠汇金时代广场

所属省份 | 宁夏吴忠

项目类型 | 商业工程

应用面积 | 约 21000 m<sup>2</sup>

产品应用 | 金线米黄

安装技术 | 背栓式干挂安装





## Jinsheng Times Square, Nanning, Guangxi Province

### 广西省南宁金盛时代广场

Project Name | Jinsheng Times Square, Nanning

Province | Guangxi Province

Project Type | Commercial Project

Area | About 7000m<sup>2</sup>

Product Application | Big Brown: Facade; Gardenia White: Interior Wall, Ground, etc; Cappuccino: Interior Wall, Ground, etc.

Project Description | The decoration of this project, from interior to exterior, all use Gani products; this project can be deemed as the image project of Gani

项目名称 | 南宁金盛时代

所属省份 | 广西省

项目类型 | 商业工程

应用面积 | 约 7000 m<sup>2</sup>

产品应用 | 大国棕：外墙干挂 美国白麻：内墙、地面等

卡布奇诺：内墙、地面等

项目描述 | 本项目由外而内，全部使用简一产品，可谓简一形象工程







## Guangzhou World Trade Clothing City

### 广州世贸服装城

Project Name | Guangzhou World Trade Clothing City  
 Project Address | Guangzhou, Guangdong Province  
 Project Address | 5000m<sup>2</sup>  
 Porcelain Panel Curtain Wall | Tan Brown

项目名称 | 广州世贸服装城  
 项目地址 | 广东省广州市  
 项目面积 | 5000 m<sup>2</sup>  
 瓷板幕墙 | 英国棕



## Ji'an Ideal City Digital Electronic Port

### 吉安市理想城数码电子港

Project Name | Ji'an Ideal City Digital Electronic Port  
 Project Address | Ji'an City, Jiangxi Province  
 Project Address | 4500m<sup>2</sup>  
 Application Products | Big Brown

项目名称 | 吉安理想城数码电子港  
 项目地址 | 江西省吉安市  
 项目面积 | 4500 m<sup>2</sup>  
 应用产品 | 大国棕





## Shengshihuacheng Block E Office Building, Xining 西宁盛世华城 E 区写字楼

Project Name | Xining Xilin Iron & Steel Group Office Building

Project Address | Xining City, Qinghai Province

Project Address | 11000m<sup>2</sup>

Application Products | GiallioThailand

项目名称 | 西宁西钢办公楼

项目地址 | 青海省西宁市

项目面积 | 11000 m<sup>2</sup>

应用产品 | 泰国金麻



## Zongshen Industrial Group Facade 宗申集团外墙

Project Name | Chongqing Shenzong R&D Building

Project Address | Chongqing

Project Address | 10000m<sup>2</sup>

Application Products | Giallo California

项目名称 | 重庆申宗研发楼

项目地址 | 重庆市

项目面积 | 10000 m<sup>2</sup>

应用产品 | 加州金麻





## Bavaria City Hotel, Beihai 北海巴伐利亚酒店

Project Name | Bavaria City Hotel, Beihai

Project Address | Beihai City, Guangxi Province

Project Address | 3000m<sup>2</sup>

Application Products | Big Brown

项目名称 | 北海巴伐利亚酒店

项目地址 | 广西省北海市

项目面积 | 3000 m<sup>2</sup>

应用产品 | 大国棕



## Jinrui Gujing Hotel, Anqing 安庆金瑞古井大酒店

Project Name | Jinrui Gujing Hotel, Anqing

Project Address | Anqing, Anhui Province

Project Address | 3000m<sup>2</sup>

Application Products | Imperial Brown

项目名称 | 安庆金瑞古井大酒店

项目地址 | 安徽省安庆市

项目面积 | 3000 m<sup>2</sup>

应用产品 | 大啡珠







## Beihai Suifeng Jinwan 北海穗丰金湾

Project Name | Beihai Suifeng Jinwan

Project Address | Beihai City, Guangxi Province

Project Address | 6000m<sup>2</sup>

Application Products | Big Brown

项目名称 | 北海穗丰金湾

项目地址 | 广西省北海市

项目面积 | 6000 m<sup>2</sup>

应用产品 | 大国棕

## Xining Xigang Real Estate Shengshi Huacheng 西宁西钢置业盛世华城

Project Name | Xining Xigang Real Estate Shengshi Huacheng

Project Address | Xining City, Qinghai Province

Project Address | 7000m<sup>2</sup>

Application Products | Silver Grey Travertino

项目名称 | 西宁西钢置业盛世华城

项目地址 | 青海省西宁市

项目面积 | 7000 m<sup>2</sup>

应用产品 | 银灰洞石



# LANDSCAPE GARDEN

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景观园林







## Nanning CIFI Hushan Yue

### 南宁旭辉·湖山樾

Project Name | Nanning CIFI Hushan Yue

Project Location | Xiping Road, Liangqing District, Nanning City, Guangxi

Designer | DDON

Gani Products Used | GANI Marble Tile Wood Grain Grey

项目名称 | 南宁旭辉·湖山樾

项目地点 | 广西南宁市良庆区新平路

设计服务 | DDON 笛东

项目用砖 | 简一大理石瓷砖法国木纹灰



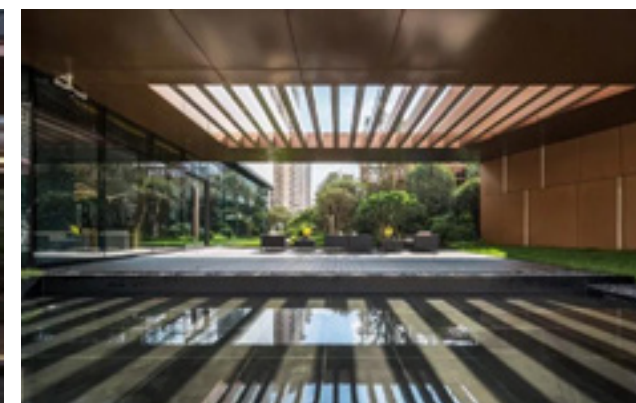
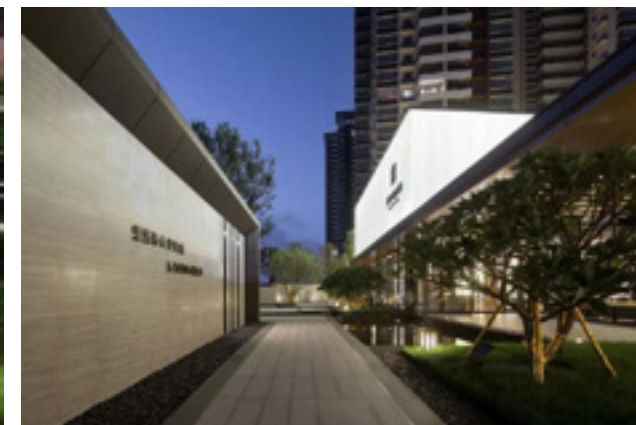
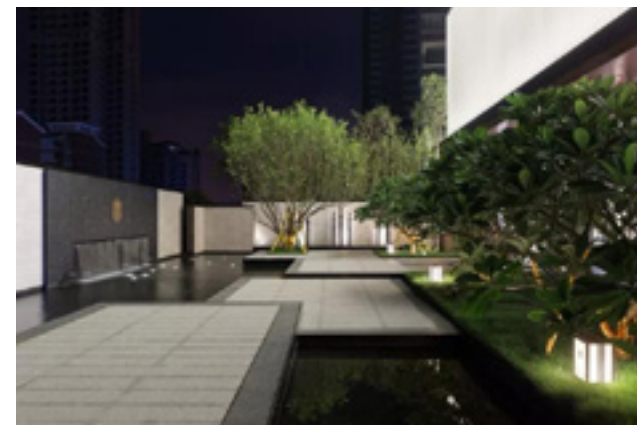






Gani Wood Grain Grey completely clones the texture of French wood grain grey stone, which fully shows the introversion and magnanimity of grey, is magnanimous and full of enthusiasm, and perfectly presents the warmth of wood and the connotation of grey. It renders graceful beauty when used in landscape, and integrates with nature, highlighting the beauty of nature.

简一法国木纹灰完全克隆了法国木纹灰石材纹理，将灰的内敛和达观充分展现，坦荡，充满热情，将木质的温暖与灰色的内涵完美呈现。用于景观中显其沉稳大气，与自然相融，更显自然之美。







## China Merchants Realm, Liuzhou

### 柳州招商境界

Project Name | China Merchants Realm, Liuzhou Sales Center

Project Location | Liuzhou, Guangxi Province

Gani Products Used | White Onyx

Application Area | 2000m<sup>2</sup>

项目名称 | 柳州招商境界售楼处

项目地点 | 广西省柳州市

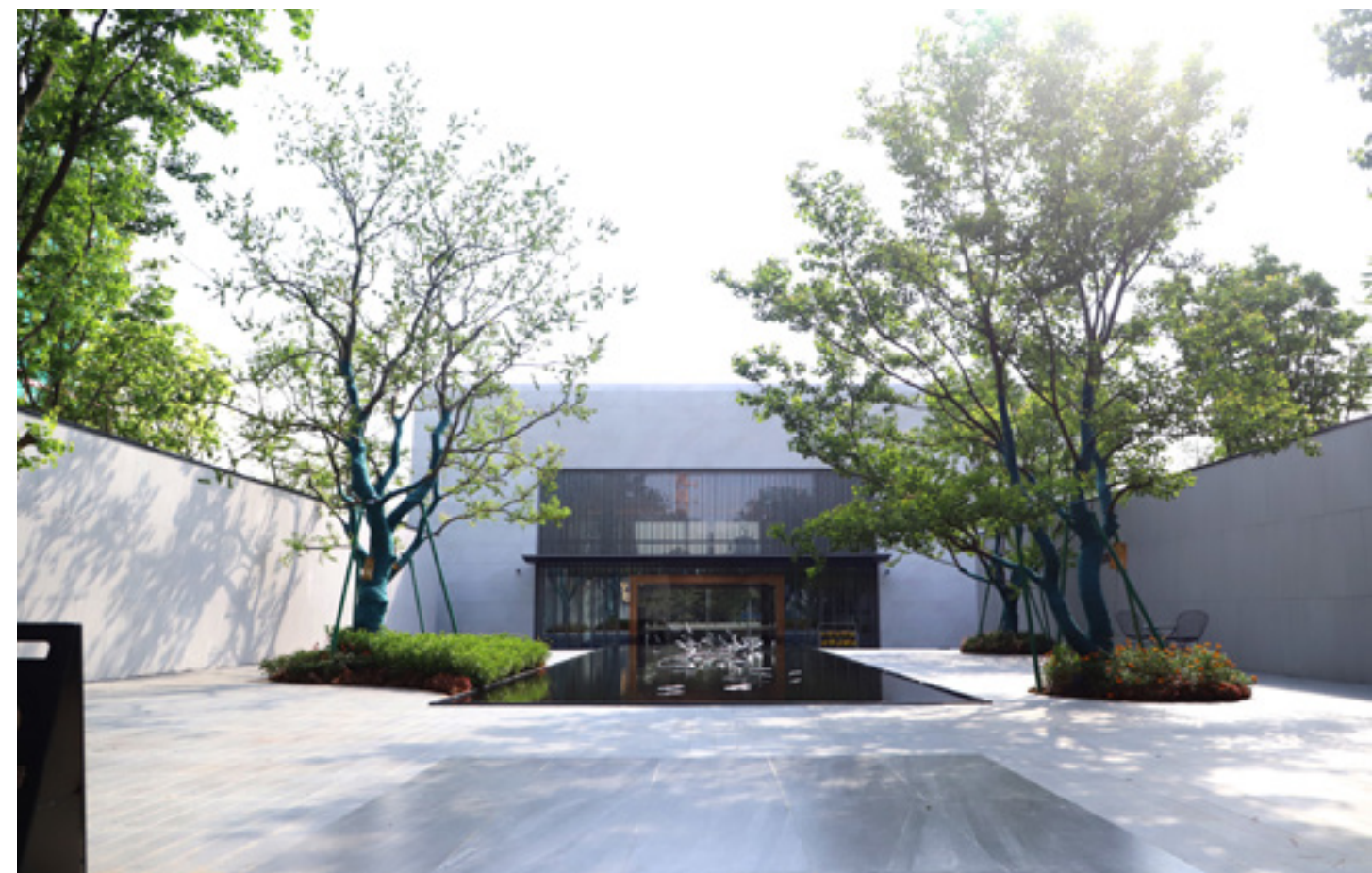
项目用砖 | 皇家白玉

使用面积 | 2000 m<sup>2</sup>

Complex shape has high requirements for curtain wall design, porcelain panel processing and construction ability. When designing panel size, the utilization ratio of porcelain panel should be considered comprehensively, with consideration also given to the continuity of glue joints at the joints of different surfaces. Therefore, 3D modeling is needed at the initial stage of design. Irregular surfaces jointing leads to more processing sizes for porcelain panel, which undoubtedly increases a lot of processing difficulties for factories. In the process of curtain wall construction, three-dimensional setting-out was carried out for keel installation; and many procedures complement each other, finally making the project completed perfectly and achieving the architectural effect desired by Party A and the designer.

复杂的造型对幕墙的设计、瓷板加工及施工能力有较高的要求，设计分格时需要综合考虑瓷板的利用率，同时要兼顾折面交接部位胶缝的连贯性，因此设计初期需要进行三维建模，不规则的折面拼接导致瓷板加工规格较多，对工厂而言，无疑增加了很多加工难度。在幕墙施工过程中龙骨的安装要进行三维放线，诸多环节相辅相成，最终让项目完美绽放，达到了甲方、设计师想要的建筑效果。









# Ningbo Vanke Corniche

## 宁波万科·滨河道

Project Name | Ningbo Vanke Corniche

Project Address | Ningbo, Zhejiang Province

Gani Products Used | Claros Grey(dark)

项目名称 | 宁波万科·滨河道

项目地点 | 浙江省宁波市

项目用砖 | 阿波罗灰

**Overall design:** Claros Grey 918 large panel with continuous pattern effect is selected, highlighting the wholeness. The dark gray panel is decorated with gold decorative strips and carved characters, rendering strong artistic atmosphere;

**Detail design:** Maintaining pattern continuous is a demanding work, and through the full range of services covering early layout, blanking tracking and processing numbering by the technical department, we perfectly achieved the effect required by the designer;

**System selection:** Back bolt H-shaped connectors, with 6 installation points on each large panel;

**整体造型设计:** 产品选用阿波罗灰 918 大板面连纹效果, 造型整体性明显, 深灰色板面加上金色装饰条及雕刻字的装饰, 艺术气息浓;

**细节设计:** 连纹排版较复杂, 通过技术部对于前期排版、下料跟踪、加工编号等全系列服务, 完美实现了设计师要求的效果;

**系统选择:** 背栓式 H 型挂件, 每块大板 6 个安装点;









## CIFI Urban Origin, Ningbo

### 宁波旭辉·上宁府

Project Name | CIFI Urban Origin, Ningbo  
Project Address | Ningbo, Zhejiang Province  
Gani Products Used | Ivory travertino

项目名称 | 宁波旭辉·上宁府  
项目地点 | 浙江省宁波市  
项目用砖 | 米白洞石

**Overall design:** Both the column and the cornice are shuttle-shaped flying wings, and this unified overall style makes the whole structure more expressive. The internal structure of the flying wing is steel structure;

**Detail design:** The difficulty lies in the fixing of small panels at the tip of flying wing and the treatment of joints;

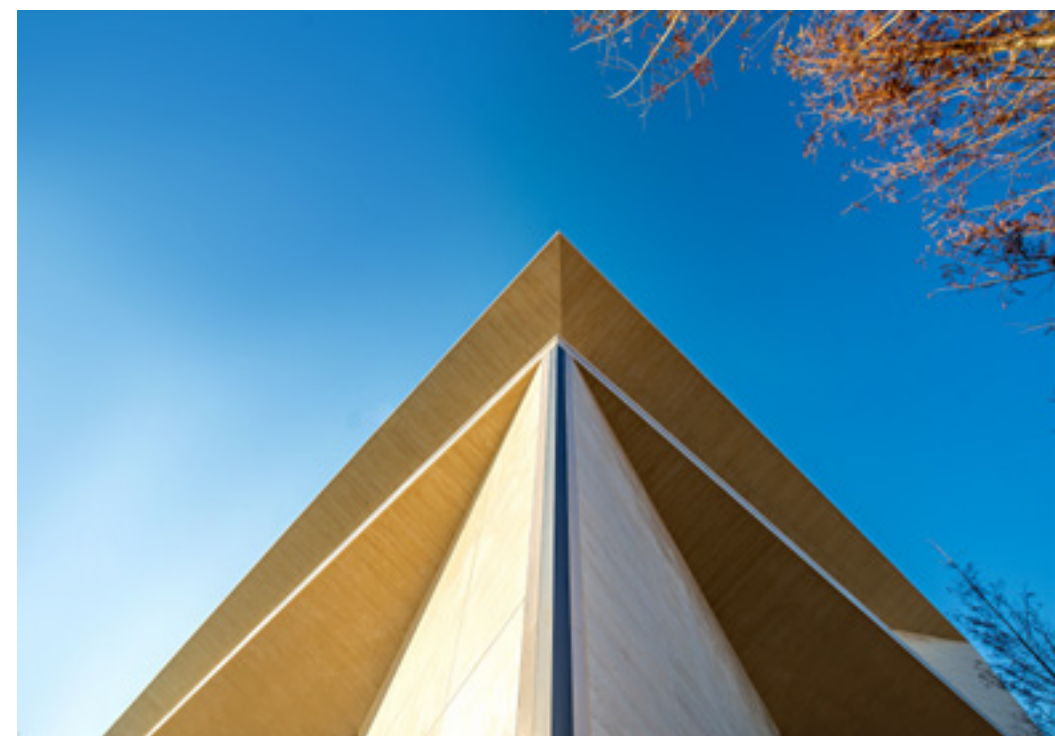
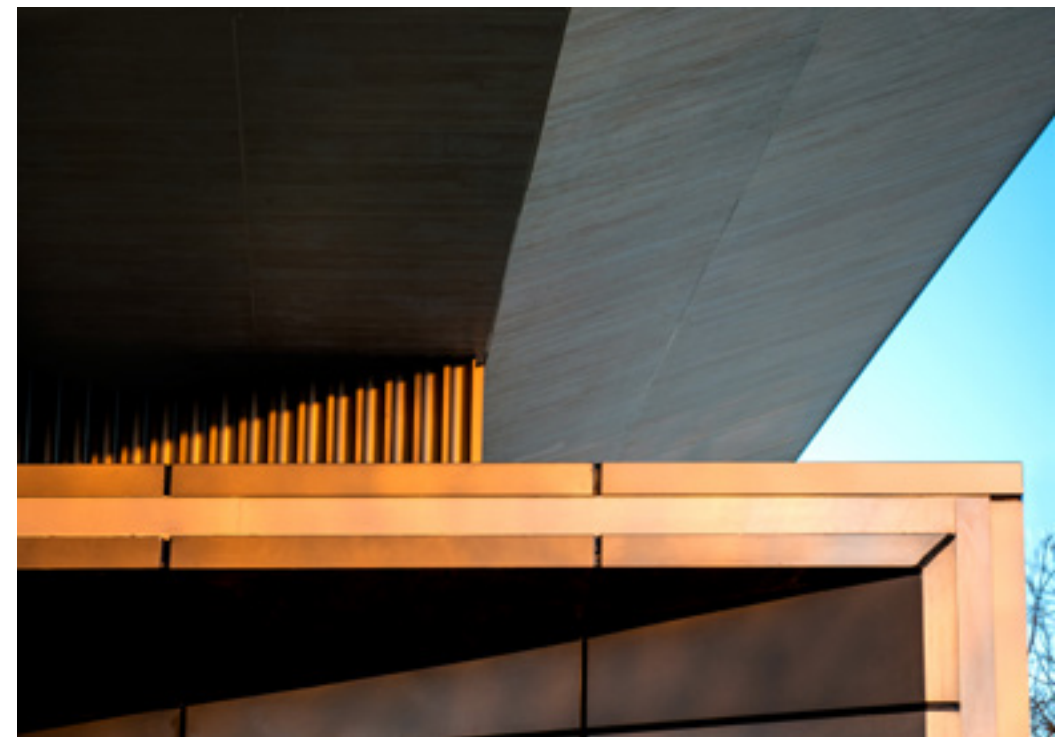
**System selection:** There are many cantilever structures, so the back bolt R-shaped connector is adopted, which is stable and firm;

**整体造型设计:** 包柱和挑檐均为梭型飞翼形状，整体造型统一，有张力，飞翼内部结构均为钢结构；

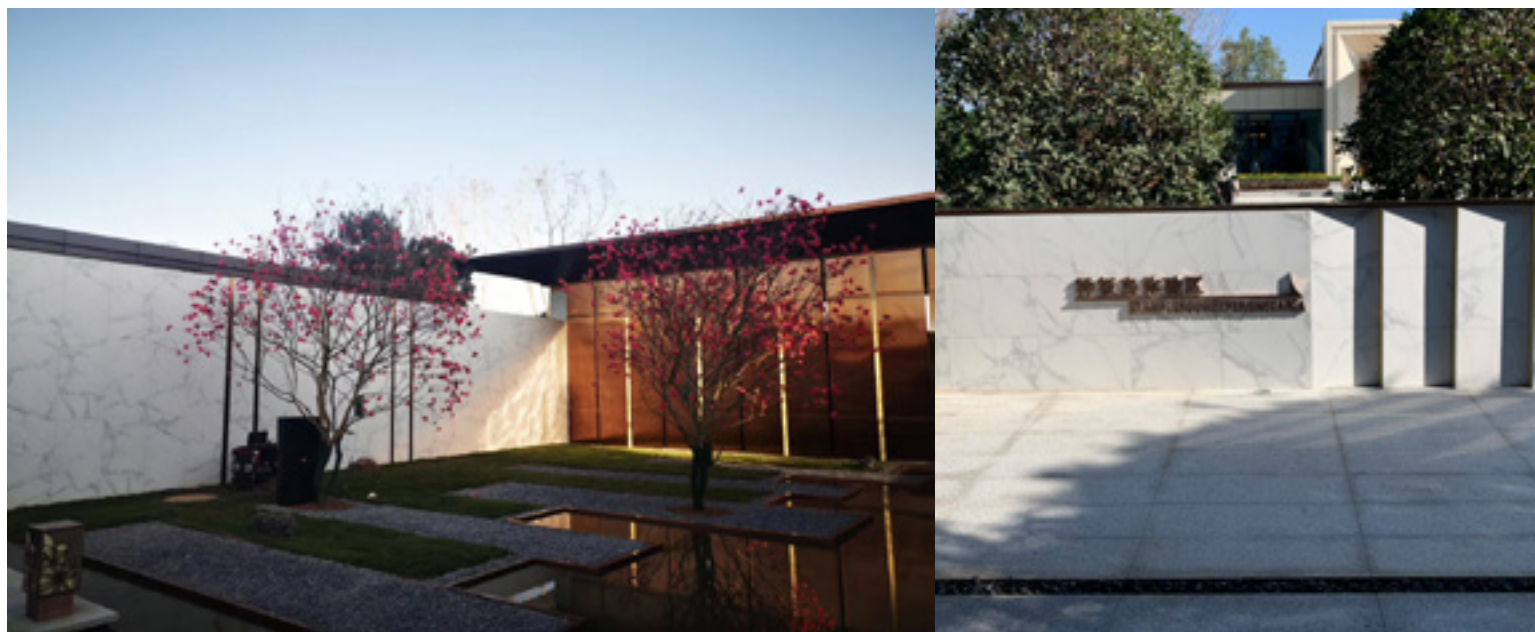
**细节设计:** 设计难点在于飞翼尖点部位小砖的固定和接缝的处理；

**系统选择:** 悬挑结构多，故采用背栓式 R 型挂件，稳固牢靠；









# China Merchants Park Avenue, Kunming

## 昆明招商·公园大道

Project Name | China Merchants Park Avenue, Kunming  
 Project Location | Wujiaaba, Guandu District, Kunming  
 Gani Products Used | Statuario Calacatta

项目名称 | 昆明招商·公园大道  
 项目位置 | 昆明市官渡区巫家坝  
 项目用砖 | 卡拉拉白





## Beihai Suifeng Jinwan 湖北融创·宜昌融园

Project Name | Sunac Yichang Rongyuan, Hubei

Project Location | Xiling District, Yichang City, Hubei Province

Gani Products Used | Beige Marbre Portugal

项目名称 | 湖北融创·宜昌融园

项目位置 | 湖北省宜昌市西陵区

项目用砖 | 浅葡萄牙米黄

## Sunac Xuegeting, Nanchang 南昌融创·雪个庭

Project Name | Sunac Xuegeting

Project Location | Qingyunpu District, Nanchang

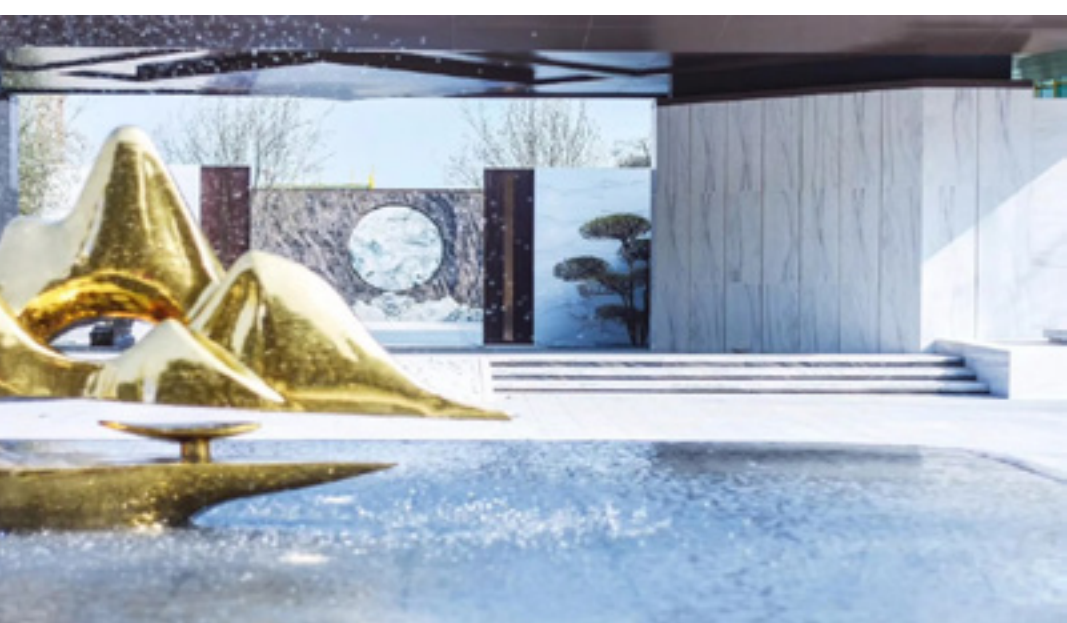
Gani Products Used | Beige Marbre Portugal

项目名称 | 融创·雪个庭

项目位置 | 南昌青云谱区

项目用砖 | 浅葡萄牙米黄





## Vanke Zhangqiu Zhonglufu, Jinan 济南万科·章丘中麓府

Project Name | Vanke Zhangqiu Zhonglufu, Jinan

Project Location | Zhangqiu District, Jinan

Gani Products Used | Volakas

Design Team | Vdesign

项目名称 | 济南万科·章丘中麓府

项目位置 | 济南市章丘区

项目用砖 | 希腊伯爵白

设计团队 | 济万设计 Vdesign

## Vanke Yongjiang Academician Island, Ningbo 宁波万科·甬江国际院士岛

Project Name | Vanke Yongjiang Academician Island, Ningbo

Project Location | Zhuangshi Avenue, Zhenhai District, Ningbo, Zhejiang

Gani Products Used | Statuario Calacatta

Design Team | L & A Design

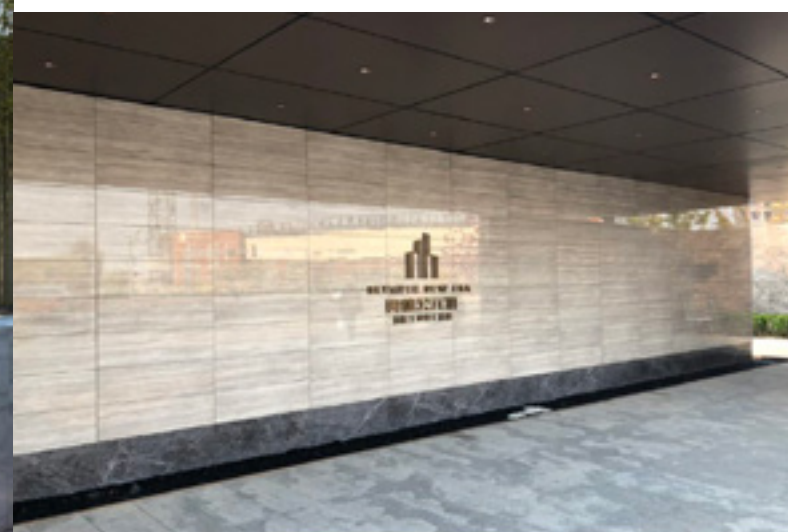
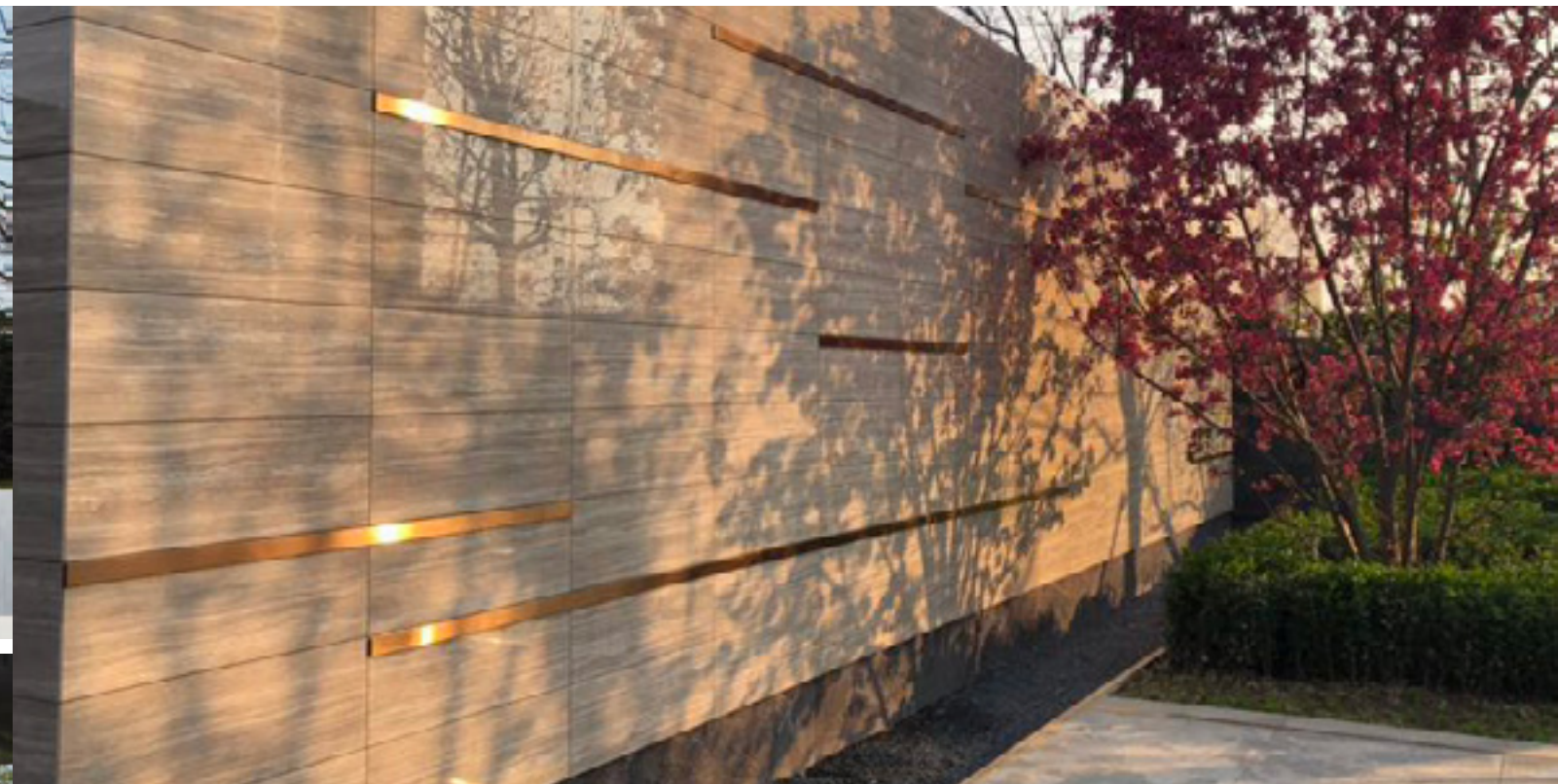
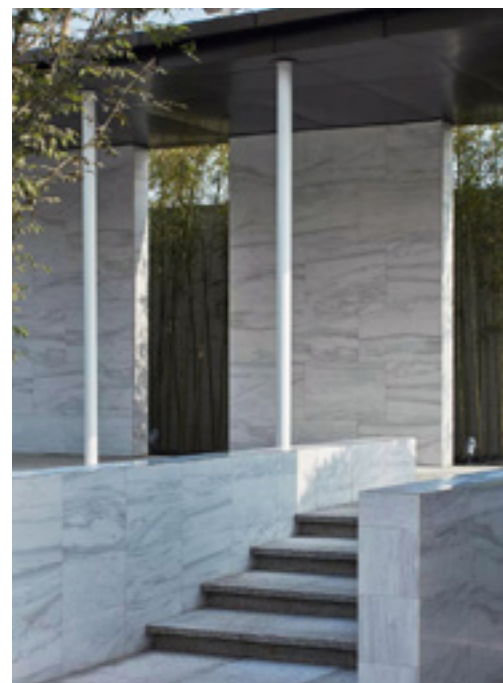
项目名称 | 宁波万科·甬江国际院士岛

项目位置 | 浙江省宁波市镇海区庄市大道

项目用砖 | 卡拉拉白

设计团队 | 奥雅园林景观





## Chongqing Vanke Guancheng Villa 重庆·万科观承

Project Name | Chongqing Vanke Guancheng Villa

Project Location | Next to Jiayue Bridge, Liangjiang New Area, Beibei, Chongqing

Gani Products Used | Volakas

项目名称 | 重庆·万科观承

项目位置 | 重庆市北碚两江新区嘉悦大桥旁

项目用砖 | 希腊伯爵白

## Tianjin CIFI Olympic New Era 101 天津旭辉·奥体公元 101

Project Name | Tianjin CIFI Olympic New Era 101

Project Location | Intersection of Jiankang Avenue and Tiyu Avenue, West District of Tuanbo New City, Jinghai District, Tianjin

Gani Products Used | Wood Grain Grey

项目名称 | 天津旭辉·奥体公元 101

项目位置 | 天津静海区团泊新城西区健康大道与体育大道交口

项目用砖 | 法国木纹灰





## CIFI Datang Jiangshan Tianjing 旭辉大唐·江山天境

Project Name | CIFI Datang Jiangshan Tianjing  
Project Location | Zhangzhou City, Fujian Province  
Design Team | HWA  
Gani Products Used | New Castle Grey

项目名称 | 旭辉大唐·江山天境  
项目位置 | 福建省漳州市  
设计团队 | HWA 安琦道尔  
项目用砖 | 云朵拉灰

## China Merchants Yongjing City, Chongqing 重庆招商·雍璟城

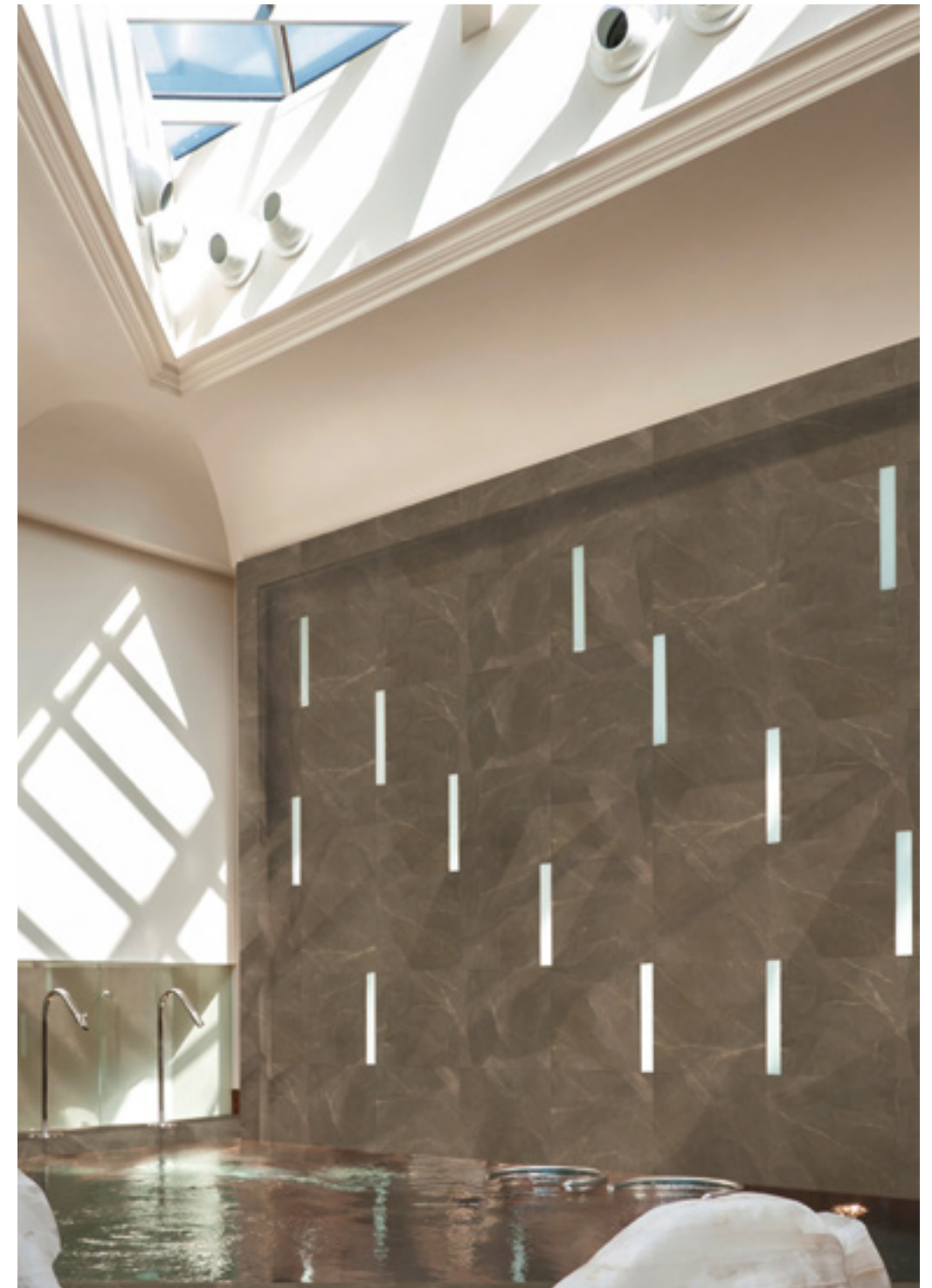
Project Name | China Merchants Yongjing City, Chongqing  
Project Location | Lianhua Station of Light Rail Line 3, Airport New Town, North Chongqing  
Gani Products Used | Wood Grain Grey  
Design Team | S.P.I Design

项目名称 | 重庆招商·雍璟城  
项目位置 | 重庆北空港新城轻轨 3 号线莲花站  
项目用 砖 | 法国木纹灰  
设计团队 | 山水比德设计



# INDOOR DRY FIXING

室内干挂



阿玛尼棕室内干挂效果





## Ningxia International Conference Center 宁夏国际会议中心

Project Name | Ningxia International Conference Center

Gani Products Used | Volakas, Fior Di Pesco Carnico, Botticino Semiclassico

Application Area | 51000m<sup>2</sup>

Application Areas | public areas, restaurants, image background wall, etc.

项目名称 | 宁夏国际会议中心

项目用砖 | 希腊伯爵白、新帕斯高灰、莎安娜米黄

使用面积 | 51000 m<sup>2</sup>

应用区域 | 公共区域、餐厅、形象背景墙等





With a total construction area of more than 60,000 square meters, the Ningxia International Convention Center, as a venue for international conferences, is aligned with international high standards in terms of engineering construction, surrounding environment, exhibition content and service quality, with the goal of building the project into a quality project that can stand the test of time.

Due to the strict control of environmental protection, convenient construction and effect, marble tiles was selected in a large area for interior decoration. After multi-brand analysis and various tests, Gani marble tiles broke through the tradition with four innovative technologies, achieving products cobwebbing-free, and natural color, layers and texture, making marble tiles infinitely lifelike and even surpassed natural marble.

The Gani indoor dry fixing technology is applied to the wall of Ningxia Convention Center, and the stainless steel back bolt and aluminum alloy connector system are adopted, which makes it firm and anti-corrosive and easy to install and adjust.



宁夏国际会议中心总建筑面积达 6 万多平方米，作为国际性会议的举办场所，无论是工程建设、周边环境、会展内涵、服务质量都是向国际高标准看齐，目标就是把项目建设成为经得起考验的精品工程。

室内装修因环保、施工便捷、效果等严格的指标控制，大面积选用大理石瓷砖，经过多品牌分析与多种试验后，简一大理石瓷砖凭借四大创新技术，突破了传统，产品实现无网纹，颜色、层次、肌理仿如天然，使大理石瓷砖产品效果无限逼真甚至超越天然大理石。

宁夏会议中心墙面应用了简一的室内干挂技术，采用的是不锈钢背栓及铝合金挂件系统，使其牢固防腐又便于安装调节。





## Harbin Railway Station

### 哈尔滨火车站

Project Name | Harbin Railway Station

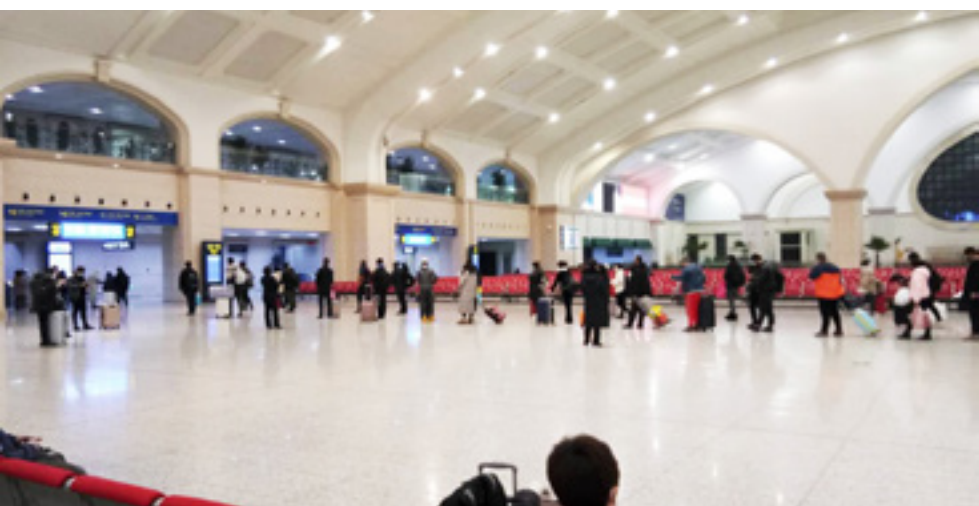
Gani Products Used | Golden-Leaf

Application Area | 25000m<sup>2</sup>

项目名称 | 哈尔滨火车站

项目用砖 | 千叶金

使用面积 | 25000 m<sup>2</sup>



**Overall design:** The architectural style of Harbin Railway Station is the epitome of the combination of Chinese and Russian architectural styles, and the improved version of Golden-Leaf Cream is used indoor with dry fixing method used, which is more in line with the European architectural style;

**Detail design:** The column top and bottom are applied with natural Golden Leaf stone, which matches marble tiles perfectly;

**System selection:** For this project is a densely populated area, the back bolt R-shaped connector is adopted, which is stable and firm; In the lower part of the wall below 1.2 meters high, the panel back was provided with anti-falling reinforcing net, and no damage due to collision has occurred so far;

**整体造型设计:** 哈尔滨火车站的建筑风格是中俄建筑风格相结合缩影，内部干挂采用千叶金米黄的改进版，更符合欧式建筑格分的要求；

**细节设计:** 柱头柱脚采用天然千叶金石材，天然石材与大理石瓷砖的结合毫无违和感；

**系统选择:** 由于是人员密集区，故采用背栓式 R 型挂件，稳固牢靠；墙身下部 1.2 米高以下背后刷防坠加固背网，至今未产生由于碰撞发生的破损；





## Chongqing Airport 重庆机场

Project Name | Chongqing Airport  
Gani Products Used | Cloud Grey  
Application Area | 6000m<sup>2</sup>  
Application Area | T3 Terminal Office Building

项目名称 | 重庆机场  
项目用砖 | 水云石  
使用面积 | 6000 m<sup>2</sup>  
应用区域 | T3 航站楼办公楼

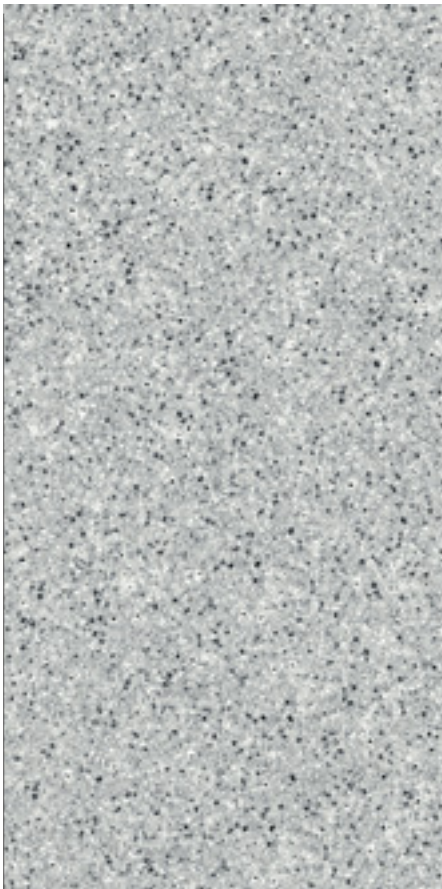

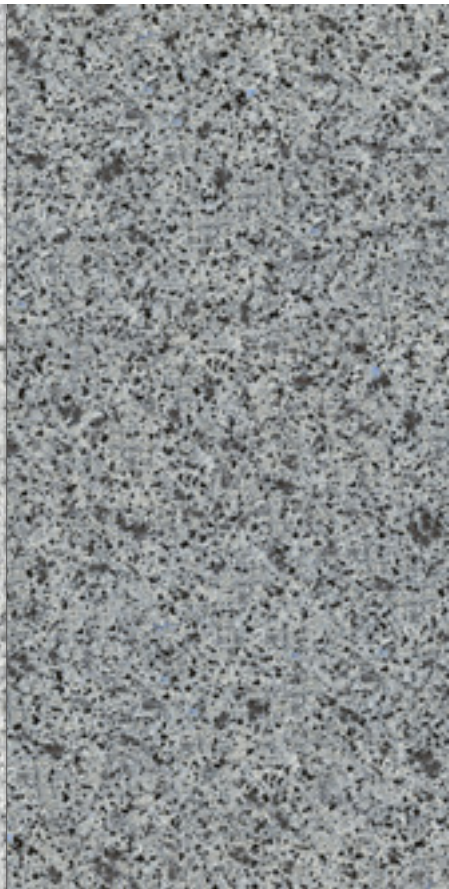
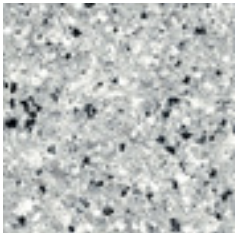
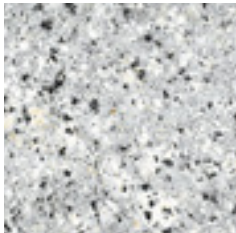
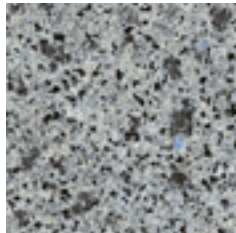


03  
/

COLLECTION  
系列



		
<div><div>Giallo Cecilia (Full Body Polish)</div><div>ID: TD1262732BMT-G</div><div>Size: 600*1200mm</div><div>Thickness: 13.5mm</div></div> <div><div>黄金麻（通体石材光）</div><div>编号：TD1262732BMT-G</div><div>规格：600*1200mm</div><div>厚度：13.5mm</div></div> <div></div>	<div><div>Beige Marbre Portugal (Full Body Honed)</div><div>ID: TD1262211BST-G</div><div>Size: 600*1200mm</div><div>Thickness: 13.5mm</div></div> <div><div>浅葡萄牙米黄（通体低光面）</div><div>编号：TD1262211BST-G</div><div>规格：600*1200mm</div><div>厚度：13.5mm</div></div> <div></div>	<div><div>Platinum Silver (Full Body Polish)</div><div>Ref.: TD1265150BMT-G</div><div>Size: 600*1200mm</div><div>Thickness: 13.5mm</div></div> <div><div>铂金灰（通体石材光）</div><div>编号：TD1265150BMT-G</div><div>规格：600*1200mm</div><div>厚度：13.5mm</div></div> <div></div>

		
<div><div>Pearl Blue (Full Body Polish)</div><div>Ref.: TD1265149BMT-G</div><div>Size: 600*1200mm</div><div>Thickness: 13.5mm</div></div> <div><div>珍珠蓝（通体石材光）</div><div>编号：TD1265149BMT-G</div><div>规格：600*1200mm</div><div>厚度：13.5mm</div></div> <div></div>	<div><div>Pearl Blue (Full Body Antique)</div><div>Ref.: TD1265149LZT-G</div><div>Size: 600*1200mm</div><div>Thickness: 13.5mm</div></div> <div><div>珍珠蓝（通体荔枝面）</div><div>编号：TD1265149LZT-G</div><div>规格：600*1200mm</div><div>厚度：13.5mm</div></div> <div></div>	<div><div>Top Blue Eye (Full Body Polish)</div><div>Ref.: TD1265134BMT-G</div><div>Size: 600*1200mm</div><div>Thickness: 13.5mm</div></div> <div><div>顶级蓝眼睛（通体石材光）</div><div>编号：TD1265134BMT-G</div><div>规格：600*1200mm</div><div>厚度：13.5mm</div></div> <div></div>



**Giallo Cecilia**  
(Full Body Polish)

黄金麻（通体石材光）

ID: TD1262732BMT-G

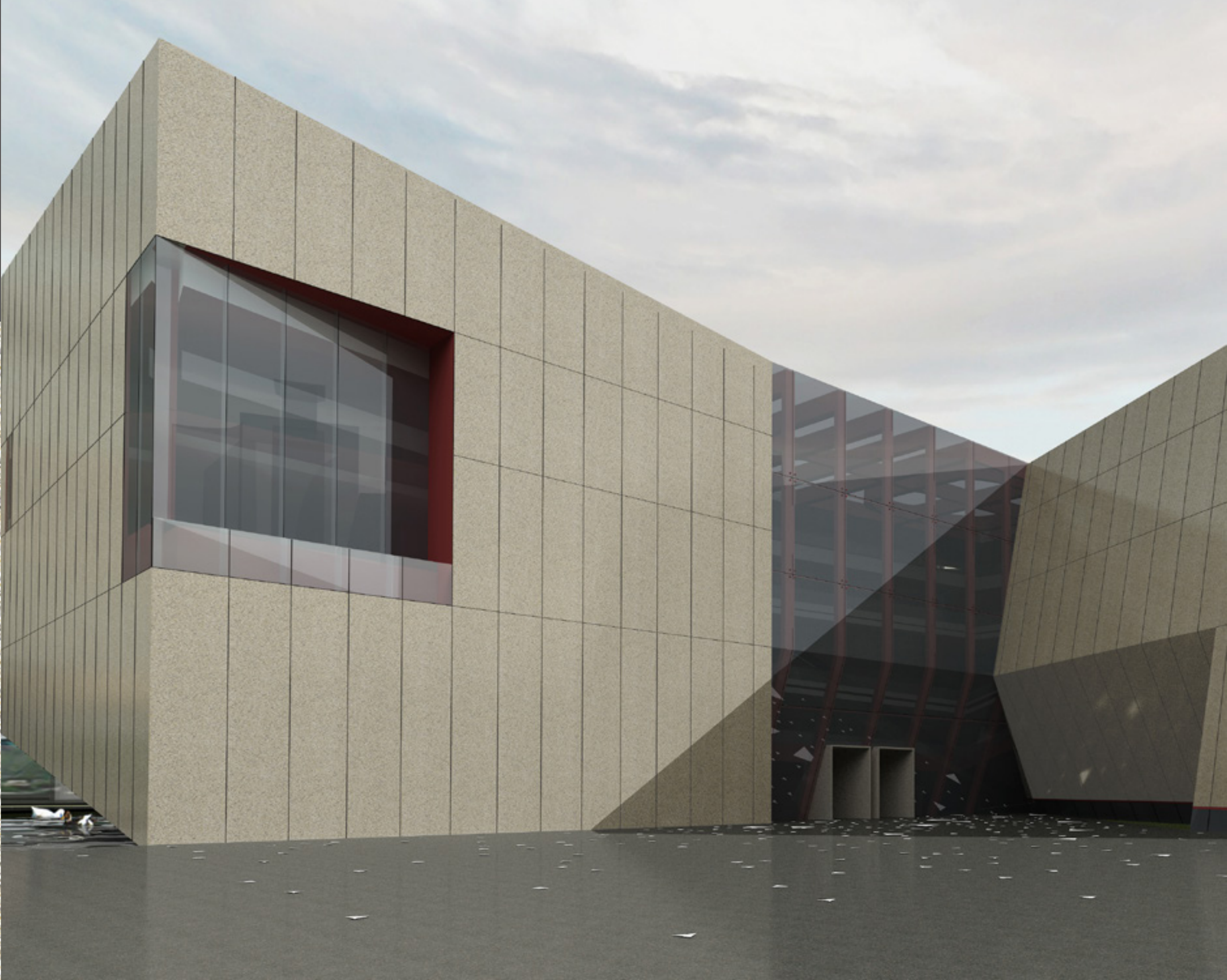
编号：TD1262732BMT-G

Size: 600\*1200mm

规格：600\*1200mm

Thickness: 13.5mm

厚度：13.5mm





**Beige Marbre Portugal**  
(Full Body Honed)

浅葡萄牙米黄（通体低光面）

Ref.: TD1262211BST-G

编号：TD1262211BST-G

Size: 600\*1200mm

规格：600\*1200mm

Thickness: 13.5mm

厚度：13.5mm





Platinum Silver

(Full Body Polish)

铂金灰（通体石材光）

Ref.:TD1265150BMT-G

编号：TD1265150BMT-G

Size: 600\*1200mm

规格：600\*1200mm

Thickness: 13.5mm

厚度：13.5mm





Pearl Blue

(Full Body Polish)

珍珠蓝（通体石材光）

Ref.: TD1265149BMT-G

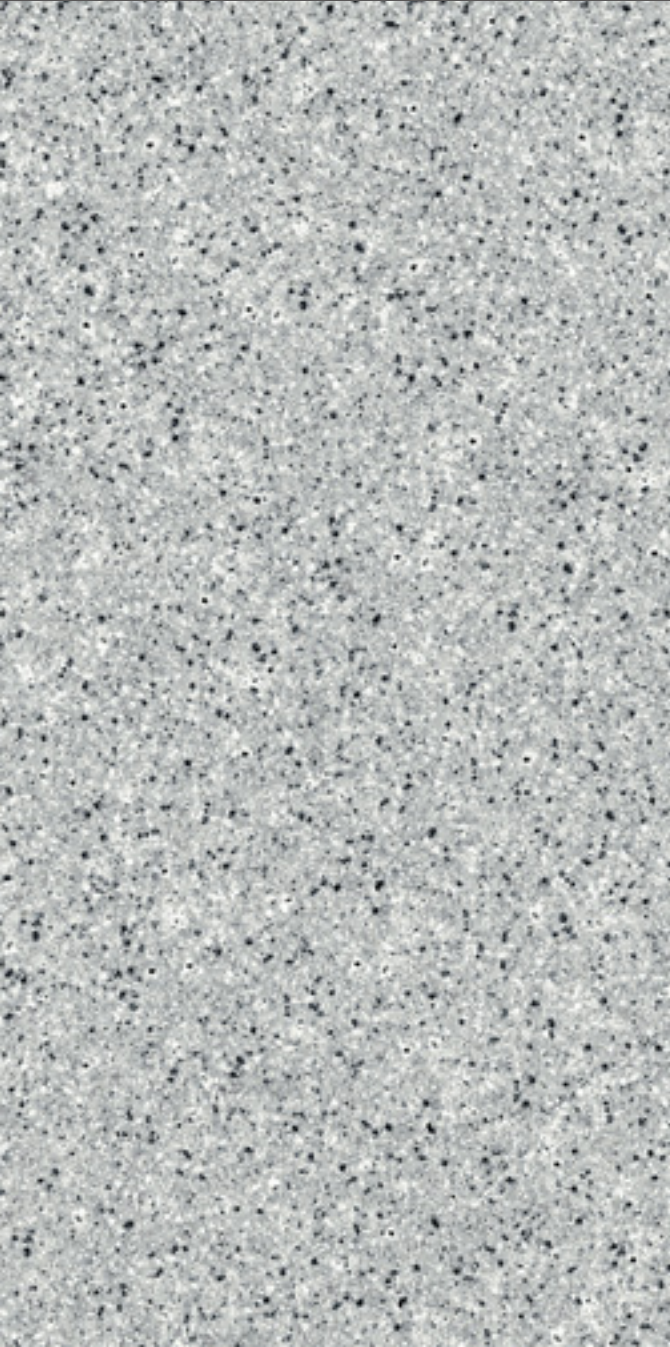
编号：TD1265149BMT-G

Size: 600\*1200mm

规格：600\*1200mm

Thickness: 13.5mm

厚度：13.5mm





**Pearl Blue**  
(Full Body Antique)  
**珍珠蓝**（通体荔枝面）

Ref.: TD1265149LZT-G	编号：TD1265149LZT-G
Size: 600*1200mm	规格：600*1200mm
Thickness: 13.5mm	厚度：13.5mm





Top Blue Eye

(Full Body Polish)

顶级蓝眼睛（通体石材光）

Ref.: TD1265134BMT-G

编号：TD1265134BMT-G

Size: 600\*1200mm

规格：600\*1200mm

Thickness: 13.5mm

厚度：13.5mm







**Camelia White**

(Full Body Polish)

世贸白麻（通体石材光）

Size: 600\*1200mm

Thickness: 13.5mm

规格：600\*1200mm

厚度：13.5mm



**Camelia White**

(Full Body Honed)

顶级贝金米黄（通体低光面）

Size: 600\*1200mm

Thickness: 13.5mm

规格：600\*1200mm

厚度：13.5mm





**Giallo Cecilia**

(Full Body Antique)

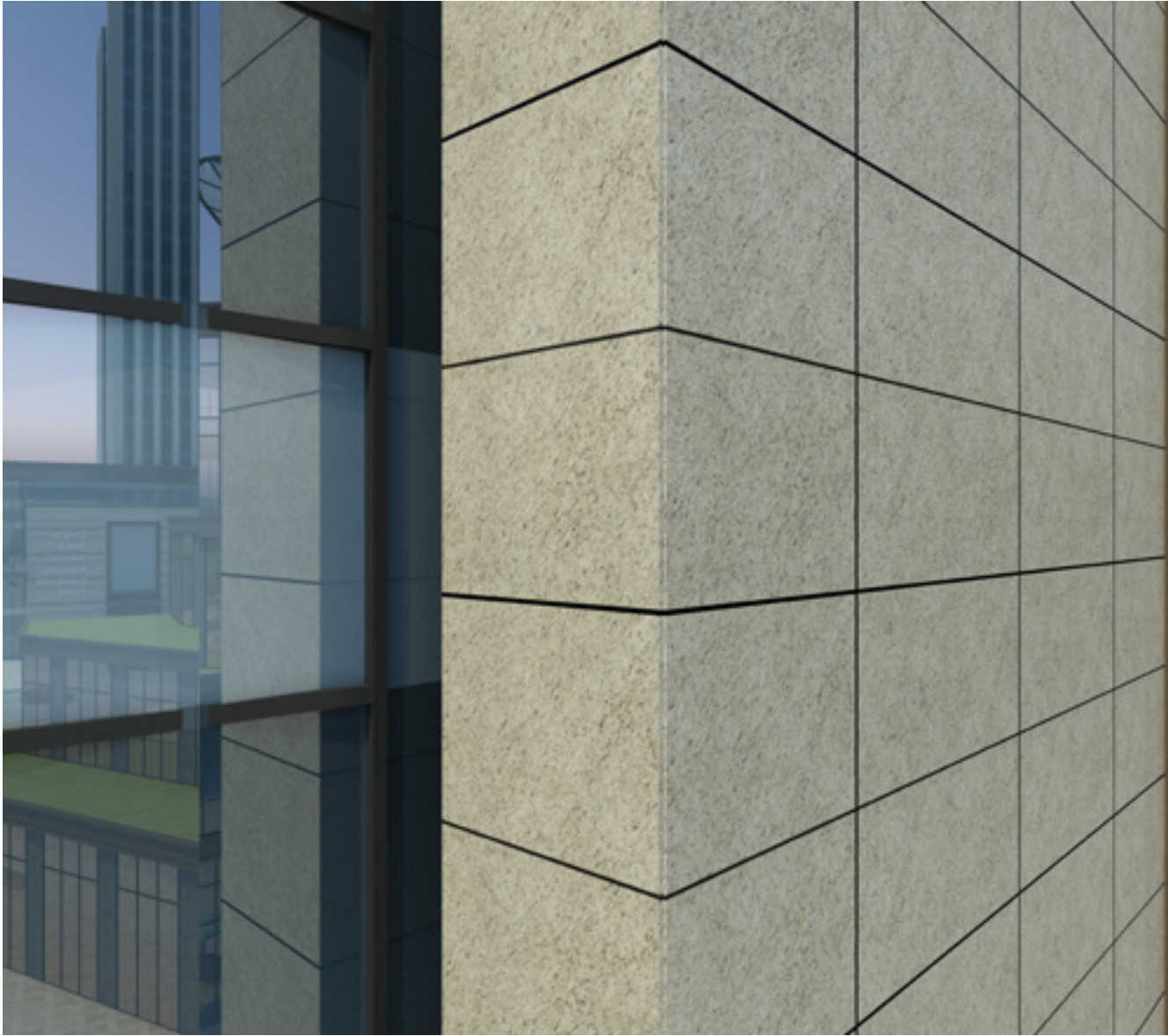
黄金麻（通体荔枝面）

Size: 600\*1200mm

Thickness: 13.5mm

规格：600\*1200mm

厚度：13.5mm



**Giallo Ornamental**

(Full Body Polish)

奥纹度金麻（通体石材光）

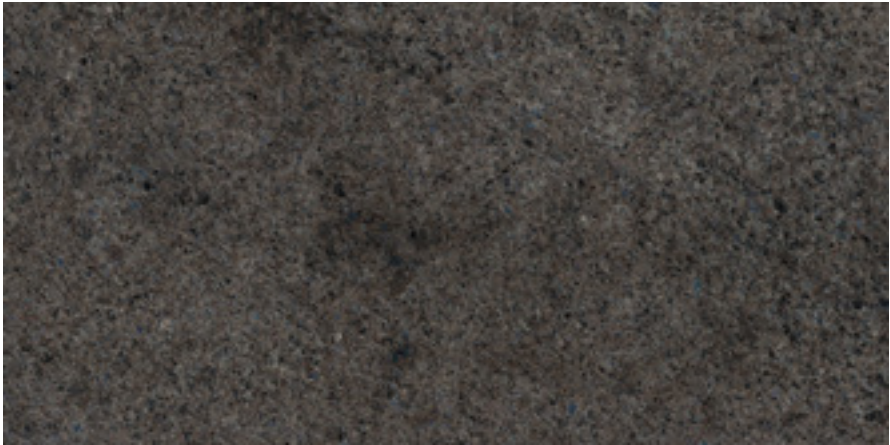
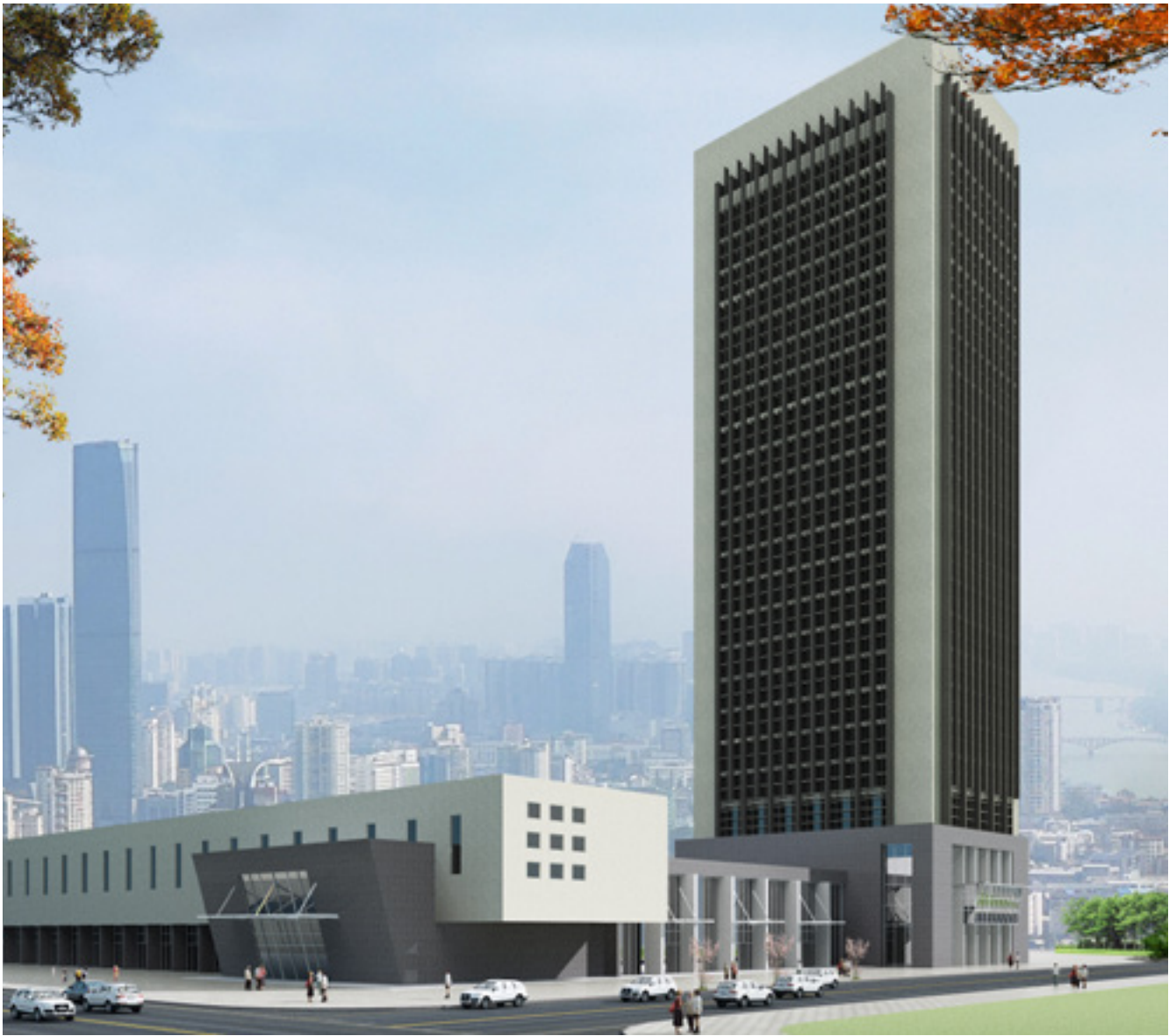
Size: 600\*1200mm

Thickness: 13.5mm

规格：600\*1200mm

厚度：13.5mm





**Labrador Antique**  
(Full Body Antique  
七彩啡 (Full Body Polish)

Size: 600\*1200mm

Thickness: 13.5mm

规格: 600\*1200mm

厚度: 13.5mm









管理编号: JGJ18-2003

广东省建设工程质量安全检测总站有限公司

201719121470

挂装强度检验报告

普通送检

委托单位: 佛山市简一陶瓷有限公司

报告编号: E2019(40)232660

440600210

工程名称: ————

委托日期: 2019-12-18

工程部位: ————

检验日期: 2019-12-28

见证人: ———— 监督员: ————

报告日期: 2020-01-03

见证单位: ————

检验依据: GB/T 9906.7-2001

样品信息	样品名称	嵌入式背栓瓷板	样品编号	YE2019(40)201248
	规格型号(mm)	300×300×12.5	出厂日期	——
	生产厂家或商标	——	批号	——
	板材品种	瓷板	板材规格	——
	批量	——	背栓品种	M6

序号	检验项目	检验结果	
		单个值	试样破坏情况
1	挂装强度, N (拉拔破坏荷载)	1730	瓷板破坏
		1970	瓷板破坏
		2010	瓷板破坏
		1680	瓷板破坏
		2050	瓷板破坏
2	挂装强度, N (剪切破坏荷载)	——	——
		——	——
		——	——
		——	——
		——	——
备注			

内附: 1. 本站抽样的样品, 检验报告仅对被检样品有效; 2. 未经本站书面批准, 不得部分复制检验报告(完整复制除外);

3. 如对本报告的有效性有异议, 请在报告日期 15 天内提出, 逾期不予受理。

批准:

审核:

校核:

主检:

地址: 广东省广州市黄埔区开创大道北建业六路 6 号

邮政编码: 510530

电话: (020) 32066668、32067668

传真: (020) 32066168

第 1 页 共 1 页







No. CCB-WT02209

# 检 验 报 告

## Test Report

产品名称: 瓷一大理石瓷砖 \_\_\_\_\_  
 委托单位: 清远市瓷一陶瓷有限公司 \_\_\_\_\_  
 生产单位: 清远市瓷一陶瓷有限公司 \_\_\_\_\_  
 检验类别: 委托检验 \_\_\_\_\_



国家陶瓷及水暖卫浴产品质量监督检验中心  
(送检专用章)

National Center of Supervision and Inspection for Ceramic  
Sanitary and Plumbing Fixture



国家海关及生活消费品质量监督检验中心





No. G24-MT-12227

## 检 验 报 告

编号: G24-C30-01-01-01-01-01
共 2 页 第 1 页

产品名称 型号、规格 材料、等级	同一品牌充电宝 G24000013000000011.5mm 型号: 0000	生产日期 或批号	_____
委托单位	深圳市赛一海能科技有限公司	检验类别	委托检验
委托单位地址	深圳市宝安区西乡街道铁岗社区工业路	样品数量/ 来源方式	14件/送样
生产企业 (国内/外地址)	深圳市宝安区一海能有限公司	检验日期	2024年01月28日
生产企业地址 (国内/外地址)	深圳市宝安区西乡街道铁岗社区工业路	检测人	陈伟平
样品特征 及备注	测试品	检验日期	2024年01月28日 2024年01月28日
检验依据	GB/T 317-2007 《便携式锂电池》		
检 验 结 果	经检验, 所检样品符合GB/T 317-2007标准要求。		
备 注	本报告仅对来样负责。 <div style="text-align: right;">  </div>		

地址: 深圳 

审核: 何强

检测: 陈伟平

检验单位地址: 广东省深圳市宝安区西乡街道铁岗社区工业路 电话: 0755-87670000 邮箱: ccc@sgg.com.cn

检测报告				No. G19-WT122P	
样品号: QH-C204-01A/B/C/D/E				第 2 页 共 3 页	
序号	检测项目	单位/标准	检测结果	标准范围	判定
1	厚度(不含涂层值)	mm	2.02	1.14~2.13	合格
2	扁平系数	m <sup>2</sup>	40.15	0.10	合格
3	弯曲质量	——	符合国家标准GB17821的规定	符合	合格
4	尺寸公差值	%	长度方向公差值	3.3, 4.0~10.0	合格
		mm	长度方向公差值	3.3, 4.0~10.0	
		mm	宽度方向公差值	3.3, 4.0~10.0	
		mm	厚度方向公差值	3.3, 4.0~10.0	
		mm	厚度(不含涂层厚度)	4.0, 4.1~9.1	
5	拉强度	%	平均值为5.5	5.5	合格
6	伸长率(拉强度)	%	平均值为1.1	1.1	合格
7	弯曲公差度	%	平均值为0.1	0.1	合格
8	弯曲公差度	mm	平均值为0.1	0.1	合格
9	弯曲公差度	%	平均值为0.1	0.1	合格
10	断裂率	%	平均值为0.1	0.1	合格
11	断裂率	——	符合国家标准GB17821中不低于标准值的规定	符合	合格
12	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
13	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
14	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
15	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
16	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
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18	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
19	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
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22	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
23	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
24	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
25	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
26	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
27	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
28	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
29	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
30	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
31	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
32	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
33	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
34	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
35	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
36	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
37	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
38	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
39	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
40	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
41	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
42	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
43	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
44	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
45	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
46	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
47	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
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50	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
51	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
52	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
53	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
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61	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
62	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
63	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
64	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
65	抗压强度	——	符合GB17821中不低于标准值的规定	符合	合格
66	抗压强度				

[illegible]



I. What kind of projects can Gani tiles be used?

1. Real estate exhibition area;
2. Real estate landscape wall;
3. Commercial podium buildings and towers of housing estates;
4. Real estate shopping malls and high-rise office buildings;
5. Monomer buildings: office buildings, schools, hospitals, etc.;
6. Indoor work area, lobby, background wall, etc.

II.What are the specifications of porcelain panel curtain wall to follow? Are these specifications required to be followed for landscape walls and indoor dry fixing?

*Curtain Wall for Building* GB/T21086-2007 (National Code for Curtain Walls)

*Technical Code for Artificial Panel Curtain Wall Engineering* JGJ336-2016 (technical code for construction)

*Porcelain Plate for Building Curtain Walls* GB/T217-2007 (Material Specification)

There is no strict regulation available in the standards of landscape wall and indoor dry fixing, so you may not abide by the above standard;

III. What kind of installation techniques are required? Wet fixing? What is the reference price?

Different projects need different techniques, as shown in the following table (distance from wall)

Type	Process	Distance from wall
Landscape wall and exhibition area	Wet fixing (stainless steel connector, low cost, simple process, prone to saltpetering and hollowing)	30- 60mm away from the wall
	Generally, the back bolt dry fixing is adopted (on-site processing and design life is 5 years)	80- 150mm away from the wall
	Back bolt dry fixing (factory processing, reliable)	80- 200mm away from the wall
Podium building, high-rise buildings	Dry fixing through side slot (factory processing, weak connector, poor displacement ability)	100- 200mm away from the wall
	Back bolt dry fixing (factory processing, reliable)	100- 250mm away from the wall
	Back slot dry fixing (factory processing, high-rise, super high-rise)	120- 300mm away from the wall
Indoor dry fixing	Wet fixing (stainless steel connector, low cost, simple process, prone to saltpetering and hollowing)	30- 60mm away from the wall
	Back bolt dry fixing (factory processing, reliable)	80- 200mm away from the wall

IV. Arc curtain wall

The maximum arch height shall be 10mm;

Query list:

Panel width L	The minimum arc radius of building R(mm)
300	1500
600	4000
900	1000
1200	15000
1800	25000

V. How to deal with the exposed body?

Conventional curtain wall products adopt integrated technology, which can meet the requirements of exposed body.

一、你们简一的瓷砖可以用在哪些区域？

1. 地产示范区；
2. 地产园林景观观墙；
3. 地产小区商业裙楼、塔楼；
4. 地产商场、写字楼高层；
5. 单体项目：办公楼、学校、医院等；
6. 室内工区、大堂、背景墙等；

二、瓷板幕墙所要遵循的规范有哪些？园林景墙及室内干挂是否要遵循这些规范？

《建筑幕墙》GB/T21086-2007( 幕墙国家规范 )

《人造板材幕墙工程技术规范》JGJ336-2016（ 施工技术规范）

《建筑幕墙用瓷板》GB/T217-2007（材料规范）

园林景观及室内干挂规范没有严格规定，可不遵守以上规范；

三、工艺是怎样的？湿贴吗？参考价是多少？

不同的工程类型适用的工艺不同，见下表（离墙距离）

类型	工艺	离墙距离
景墙、示范区	湿挂工艺（ 不锈钢挂钩、成本低、工艺简单、易泛碱、空鼓 ）	离墙 30- 60mm
	通常背条干挂（ 现场加工、设计年限按 5 年 ）	离墙 80- 150mm
	背栓干挂（ 工厂加工，牢固 ）	离墙 80- 200mm
裙楼、高层	侧槽干挂（ 工厂加工，挂件弱，位移能力差 ）	离墙 100- 200mm
	背栓干挂（ 工厂加工，牢固 ）	高墙 100- 250mm
	背槽干挂（ 工厂加工，高层、超高层 ）	高墙 120- 300mm
室内干挂	湿挂工艺（ 不锈钢挂钩、成本低、工艺简单、易泛碱、空鼓 ）	离墙 30- 60mm
	背栓干挂（ 工厂加工，牢固 ）	离墙 80- 200mm

四、圆弧型幕墙

拱高不超过 10mm，一般不影响效果；

查询列表：

砖宽 L	建筑最小圆弧半径 R（mm）
300	1500
600	4000
900	1000
1200	15000
1800	25000

五、露坯体怎么处理？

幕墙常规产品采用通体技术，可以满足露坯体要求。



VII. How to treat the external corners?

- 1. Generally, 3-5mm Begonia angle is adopted;
- 2. The method of direct splicing can also be adopted, and the body of conventional curtain wall is integrated;



VII. What is the thickness of Gani curtain walls? Do they meet national specifications?

The conventional curtain wall product is 13.5mm thick; The required thickness in specification is 12mm;sed body.



六、关于阳角对角部位怎么实现？

- 1. 一般 3-5mm 海棠角；
- 2. 也可采用直拼方式，常规幕墙产品的坯体为通体；



七、简一幕墙产品厚度是多少？ 是否满足国家规范要求？

幕墙常规产品为 13.5mm； 规范规定为 12mm；





IX. Under what circumstances will point fixing be applicable rather than keel?

Concrete shear walls, structural beams, structural columns, and solid brick walls with drawing force being able to stand the stress;

X. Can Seamless joint be adopted on the exterior wall?

Usually, 6-12mm glue joints are reserved for curtain wall, mainly for waterproof purpose and to eliminate structural displacement and temperature difference; However, there are two cases where seamless joint can be adopted: 1. Projects with low waterproof requirements, such as landscape walls and first-floor columns with cornices; 2. Open curtain wall with aluminum flashing instead of porcelain panel, and displacement elimination joints are set between floors;

XI. Please clarify the daily hole drilling capacity of porcelain panel, Can the holes of porcelain panel be processed on site?

What is the difference comparing with stone processing tools?

About 500m2/ day;

It can be processed on site. Bench-type drilling machine shall be used. Special drill bit for porcelain panel is required for the high compactness of porcelain panel.

XII. How about its frost resistance? Will it be frozen to crack?

1. We have performed frost resistance and glaze crack resistance tests for many times, and the results are all qualified;
2. We have exterior wall projects in Alpine regions such as Harbin, Siping, Wuzhong and Xining for more than 5 years, and no frost crack has been found;

Test Item	Test Content	Standards	Results
Thermal shock resistance	After 10 times of thermal shock resistance test, there is no explosion or crack	Conformed	Pass
Freezing resistance	After the test, there is no crack or spalling	Conformed	Pass
Glaze crack resistance	After one glaze crack resistance test, the glazed surface should be free of cracks or spalling	Conformed	Pass

九、什么情况下可以省掉龙骨，采用点挂模式？

混凝土剪力墙、结构梁、结构柱，拉拔力满足受力的实心砖墙；

十、外墙可否做密缝处理？

幕墙板缝通常会留有 6-12mm 的胶缝，主要作用一是满足幕墙防水功能，二是用来消除结构位移及温差；但有两种情况可以做密缝处理：1. 景观墙、有挑檐的首层包柱等对防水要求不高的项目；2. 不靠瓷板防水，而是靠背衬铝板防水的开放式幕墙，且在层间设置消除位移缝；

十一、目前我司瓷板开孔一天加工量多少平方？瓷板开孔能否现场加工？与石材加工工具区别在哪里？

大概 500m<sup>2</sup>/ 天；

能现场加工，打孔采用台式打孔机，因瓷板质密性更好，配备瓷板专用钻头。

十二、抗冻性如何？ 北方会不会冻裂？

1. 我司多次进行抗冻性、抗釉裂性试验，均合格；
2. 我司在高寒地区如哈尔滨、四平、吴忠、西宁等地区均有 5 年以上的外墙工程，均未发现有冻裂情况发生；

检验项目	检验事项	检验标准	检验结果
抗热震性	经 10 次抗热震性试验后不出现炸裂或裂纹	符合	合格
抗冻性	经试验后反应无裂纹或剥落	符合	合格
抗釉裂性	经 1 次抗釉裂性试验后，有釉表面应无裂纹或剥落	符合	合格



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