美 特 鋁 質 有 限 公 司
MIDI ALUMINIUM FABRICATOR LTD.

工程指示 / 要求簡箋(E.I.)

工程指示編號：EI /0859 / 19　　修改版次：-

工程編號　：J - 837　　工程名稱　：觀塘裕民坊

工程項目　：Glass Cladding 玻璃收貨色差問題(MO1)

收件人　：生統 / 王良　　發件人　：Eric Liu　　日　期：22/07/2019

☐要求提供 / ☐確認 事項 ：

( ) 初步鋁料 B.M.　( ) 加工拆圖，然後生產　( ) 尺寸表

( ) 正式鋁料 B.M.　( ) 技術上資料 / 指示　( ) 報價

( ) 配件 B.M.　( ) 樣辦或貨品說明書　( ) 分判合約

( ) 其他 ：_____

內容 ：

按合約內容及玻璃標準(ASTM-C1376)，

Glass Cladding，MO1 玻璃在檢驗後，色差在標準範圍內，請安排收貨

謝謝！

請在 2019 / 07 / 25 前完成上列要求。

附：

以上項目為:

☐ 原合約工程包　☐ 原合約工程加 / 減賬　☐ 新工程報價

原因：-

分發東莞各部門 ：

( )生產技術總監☐連附件　( )技術部　☐連附件　永林　( )生產部　☐連附件　( )機械設計部☐連附件

( )採購部　☐連附件　( )生產統籌部☐連附件　梅

( )質檢部　☐連附件　( )會計部　☐連附件　( )報關組　☐連附件　( )其他 楊榮輝 ☐連附件

分發香港各部門 ：

( )行政部☐連附件　( )會計部☐連附件　( )統籌部☐連附件　( )工程部地盤科文 ☐連附件　炳哥 / 民 / 豪

( )採購部☐連附件　( )QS 部 ☐連附件　( )維修部☐連附件　( )其他 _____☐連附件

傳遞編號：　　發件人簽署：

HK1672 / 19　　項目經理簽署：

中航三鑫股份有限公司

AVIC SANXIN CO., LTD.

联系函

To	美特铝质工程有限公司	Date	2019.7.15
Attn		From	中航三鑫 品质部
Subject	观塘裕民坊蓝玻色差事宜	Tel	0752-5199503
Page	1 页	Fax	0752-5195078

非常感谢贵司一直以来对我司工作的支持。

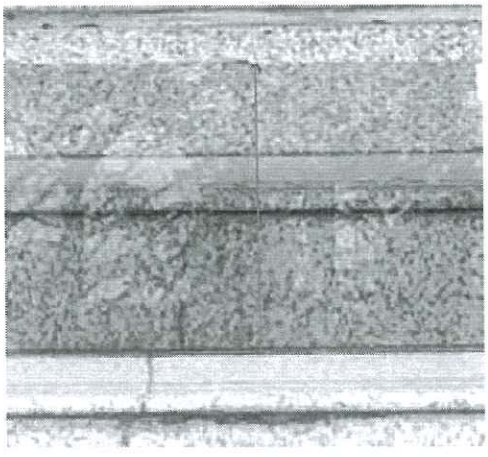
关于观塘裕民坊项目所使用的蓝玻存在片与片之间色差一事，我司进行了相关调查：

1、浮法原片（包括白玻，色玻，LOWE 等玻璃）普遍客观存在批间次的色差，特别是色玻及 LOWE 由于工艺更加复杂，其色差差值比普通白玻的差值要大，因此相关区域标准对玻璃间色差做出了约定。

2、色玻在建筑市场的使用量较少，与采矿时砂矿石材质的稳定性及市场需求有关，因此国内生产色玻的原片厂家也极少，相对应的各个厚度的色玻原片生产轮换周期也延长，即前后批次的同厚度玻璃，可能间隔半年甚至更长时间以上。这都会造成色玻不同批次间的色差更加难以控制。

3、裕民坊项目前期样板层及部分玻璃于 2018 年开始生产，使用了去年年度的蓝玻原片。今年原片厂家熔炉改造，技术更新，原蓝玻已经停产，但过渡的蓝玻颜色与旧款原片颜色差异较大，且试用期间，该过渡原片质量不稳定，存在很高的自爆率，明显不符合香港市场的质量要求，当然，不排除不同砂矿石的采集影响到了新旧玻璃之间的颜色差异。经过协调厂家，折中生产了颜色很接近、同时产品质量有所保证的现款蓝玻供于我司加工。

4、我司收到新原片后，检验了新旧原片间的色差差异，相关图片及数据如下图：



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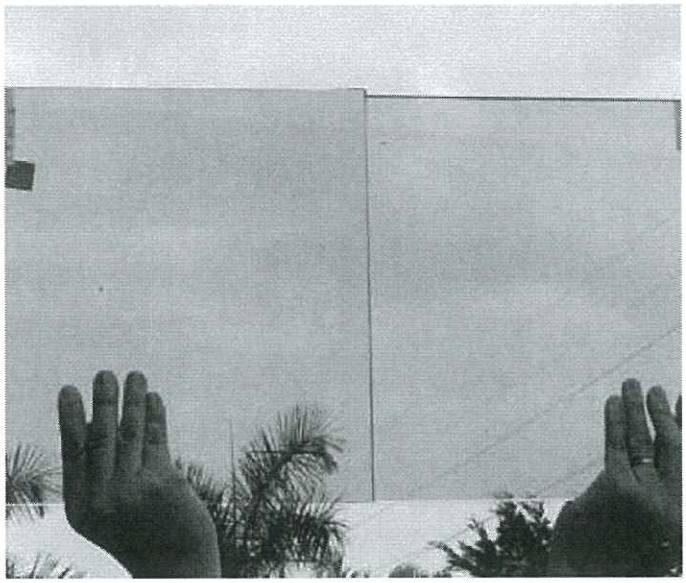

从测量仪器上的数值可知，去年与今年蓝玻的色差差值在△E=1.3 左右，符合美标玻璃色差值不超过△E=4.5 的要求。我司多年购买各种玻璃原材料，理解批间次玻璃会客观存在一定的色差差异，鉴于来料检验数据结果显示符合我司与原片厂家签订的色差质量标准要求，亦满足贵我两司签订的美标要求，我司按合格品签收原片厂家的蓝玻原片，正常用于玻璃的后续加工。

以上关于裕民坊项目蓝玻的色差分析，望贵司理解，并正常使用符合标准要求的玻璃，后续订单将继续使用今年的蓝玻原片加工。我司将全程跟踪并配合贵司的相关工作，如有问题请立即联系我司。

顺祝！

商棋！

中航三鑫股份有限公司

品质部

2019 年 7 月 15 日

ASTM C1376.

TABLE 3 Quality Specifications for Cut Size Coated Spandrel Glass (Kind CS)[A]

Blemish[B,C]	Range Number 1, in. (mm)[D]	Range Number 2, in. (mm)[D]
Pinhole	1/8(3.2) max	5/32(4.0) max
Spot	1/8(3.2) max	5/32(4.0) max
Coating scratch	3 (75) max length	6 (150) max length
Mark/contaminant	3 (75) max length	6 (150) max length
Coating rub	none allowed	length plus width not to exceed 3/4(19)
Crazing	none allowed	none allowed
Corrosion	none allowed	none allowed

[A]These specifications apply to cut size glass only. For specifications of stock size glass contact the manufacturer.

[B]The glass shall be inspected, in reflection, at a distance equal to or greater than 15 ft (4.6 m) at a viewing angle of 90° to the specimen under uniform lighting conditions. If a blemish is readily apparent under these viewing conditions, the above criteria applies.

[C]No more than two readily apparent blemishes are allowed in a 3 in. (75-mm) diameter circle and no more than five readily apparent blemishes are allowed in a 12 in. (300-mm) diameter circle.

[D]The specifications separates glass by the distance that it will be viewed when installed. Range No. 1 is for all glass within a viewing distance of 15 ft (4.6 m) or less, and Range No. 2 is all glass viewed from a distance greater than 15 ft (4.6 m).

size mock-ups under typical site conditions and surrounding landscape is highly recommended before construction.

6.4.1 The scientific nature of controlling gas flow, electrical charges, and coating layer densities require production tolerances for light transmittance, reflectance, and color of coated glass products. Glass within allowable production tolerances may yield differences in reflected color or intensity of light transmittance or reflectance or both. Perceivable differences are not immediate cause for rejection.

6.4.2 Glass should be viewed as installed and from the exterior of the building for uniformity comparison. Coating nonuniformity may occur from lite to lite in a building. It may also occur within a lite in the form of edge-to-edge gradation, banding, mottling, or picture framing.

6.4.3 Nonuniformity is defined using a ΔE*ab as defined in Test Method D 2244 for CIE 1976 L*A*B*, Illuminant D65, and 10° Observer. Using a reference target established by the manufacturer, or the average color readings as defined below, no color readings should exceed a ΔE*ab of 4.5. To calculate ΔE*ab, the following procedure should be used: Using a mobile/handheld spectrophotometer, color readings will be taken and documented from a predetermined number of units that have been installed on a building. A minimum of ten readings should be taken and should include any glass that is in question. The readings taken should then be averaged and that average will be used as a target for calculating the ΔE*ab. Using the average color reading as a target, no color readings should exceed a ΔE*ab of 4.5.

NOTE 4—Design professionals and building owners should be aware that certain coated glass products will yield color differences when used in adjacent vision and spandrel area conditions and when used in laminated glass constructions or on different glass thickness.

NOTE 5—Refer to manufacturer for blemishes not listed in this specification.

7. Keywords

7.1 coated glass; flat glass; glazing; nonuniformity; overhead glass; pyrolytic coating; spandrel glass; sputtered coatings; vacuum deposition coating; vision glass

	Cycle)
- ASTM C743	Standard Test Method for Continuity of Porcelain Enamel
-ASTM C774	Standard Test Method for Yield Strength of Enameling Steels After Straining and Firing
- ASTM C792	Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealant
- ASTM C794	Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
- ASTM C864	Specifications for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
- ASTM C920	Standard Specification for Elastomeric Joint Sealants
- ASTM C1036	Standard Specification for Heat-Treated Flat Glass – Kind HS, Kind FT Coated and Uncoated Glass
- ASTM C1087	Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems
- ASTM C1172	Standard Specification for Laminated Architectural Glass
- ASTM C1184	Standard Specification for Structural Silicone Sealants
- ASTM C1199	Standard Test Method for Measuring the Steady-State Thermal Transmittance of Fenestration Systems Using Hot Box Methods
- ASTM C1253	Standard Test Method for Determining the Outgassing Potential of Sealant Backing
- ASTM C1363	Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by means of a Hot Box Apparatus
- ASTM C1376	Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass
- ASTM C1401	Standard Guide for Structural Sealant Glazing
- ASTM D412	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
- ASTM D790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- ASTM D2200	Pictorial Surface Preparation Standard for Painting Steel Surface.
- ASTM D2244	Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
- ASTM D2247	Standard Practice for Testing Water Resistance Coating in 100% Relative Humidity
- ASTM D2583	Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impresser
- ASTM D2584	Test Method for Ignition Loss of Cured Reinforced Resins
- ASTM D2563	Classifying Visual Defects in Glass Reinforced Plastic Laminate Parts
- ASTM D2794	Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
- ASTM D3039/3039M	Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials
- ASTM D3363	Standard Test Method for Film Hardness by Pencil Test
- ASTM D3359	Standard Test Methods for Measuring Adhesion by Tape Test
- ASTM D3330/D3330M	Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape
- ASTM D3363	Standard Test Method for Film Hardness by Pencil Test
- ASTM E84	Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E119	Standard test Methods for Fire Tests of Building Construction and Materials
- ASTM E136	Standard Test Method for Behaviour of Materials in a Vertical Tube Furnace at 750°C
- ASTM E283	Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
- ASTM E330/E330M	Structural Performances of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
- ASTM E331	Standard Test Method for Water Penetration of Exterior