

**204 Alamo Plaza**

**The Menger Hotel**

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## HISTORIC AND DESIGN REVIEW COMMISSION

February 03, 2016

Agenda Item No:

**HDRC CASE NO:** 2016-050  
**ADDRESS:** 204 ALAMO PLAZA  
**LEGAL DESCRIPTION:** NCB 143 BLK P-101A & LOT 1 THRU 4  
**ZONING:** D H HE RIO-3  
**CITY COUNCIL DIST.:** 1  
**DISTRICT:** Alamo Plaza Historic District  
**LANDMARK:** Menger Hotel  
**APPLICANT:** Mike Stellato  
**OWNER:** 1859 Historic Hotels Ltd  
**TYPE OF WORK:** Restoring Main Entry Canopy  
**REQUEST:**

The applicant is requesting a Certificate of Appropriateness for approval to remove the existing unoriginal panels on the entry canopy of the Menger Hotel and replace them with polycarbonate in order to restore the original glazed look of the canopy as it appeared in the early 20th century.

### APPLICABLE CITATIONS:

*Historic Design Guidelines, Chapter 2, Guidelines for Exterior Maintenance and Alterations*

#### 11. Canopies and Awnings

##### A. MAINTENANCE (PRESERVATION)

i. *Existing canopies and awnings*—Preserve existing historic awnings and canopies through regular cleaning and periodic inspections of the support system to ensure they are secure.

##### B. ALTERATIONS (REHABILITATION, RESTORATION, AND RECONSTRUCTION)

i. *Replacement canopies and awnings*—Replace canopies and awnings in-kind whenever possible.

ii. *New canopies and awnings*—Add canopies and awnings based on accurate evidence of the original, such as photographs. If no such evidence exists, the design of new canopies and awnings should be based on the architectural style of the building and be proportionate in shape and size to the scale of the building façade to which they will be attached. See UDC Section 35-609(j).

iii. *Lighting*—Do not internally illuminate awnings; however, lighting may be concealed in an awning to provide illumination to sidewalks or storefronts.

iv. *Awning materials*—Use fire-resistant canvas awnings that are striped or solid in a color that is appropriate to the period of the building.

v. *Building features*—Avoid obscuring building features such as arched transom windows with new canopies or awnings.

vi. *Support structure*—Support awnings with metal or wood frames, matching the historic support system whenever possible. Minimize damage to historic materials when anchoring the support system. For example, anchors should be inserted into mortar rather than brick. Ensure that the support structure is integrated into the structure of the building as to avoid stress on the structural stability of the façade.

### FINDINGS:

a. The Menger Hotel is located on the southern side of Alamo Plaza. It was built in 1859 by architect John M. Fries and owned by William Menger. The hotel changed hands several times after Menger's death in 1871. In 1909 architect Alfred Giles was hired to renovate the hotel, and added a glazed iron canopy across the main floor supported by iron columns.

- b. The applicant is requesting to remove the existing canopy panels, which appear to be made of a synthetic material and unoriginal to the canopy, and replace them with 6mm thick translucent polycarbonate panels in order to replicate the original glazed appearance of the canopy.
- c. According to the Guidelines for Exterior Maintenance and Alterations 11.B.ii, new canopies should be based on evidence of the original, such as photographs. The applicant has provided staff with photographs of the original canopy and how it appeared in the early 20<sup>th</sup> century at its time of construction. The photographs illustrate the metal canopy as having individual glass panels set into the metal frame. The proposal to remove the existing non-glass panels and install clear panels of polycarbonate is consistent with the Guidelines as well as the Secretary of Interior Standards for Restoration as a treatment.
- d. Staff finds that polycarbonate panels are an acceptable and comparable material in lieu of glass. When choosing restoration as a treatment, the Secretary of the Interior emphasizes that only those designs that can be documented as having been built should be re-created in a restoration project, and repairs may also include the limited replacement in kind--or with compatible substitute material--of extensively deteriorated or missing parts of existing features when there are surviving prototypes to use as a model.

**RECOMMENDATION:**

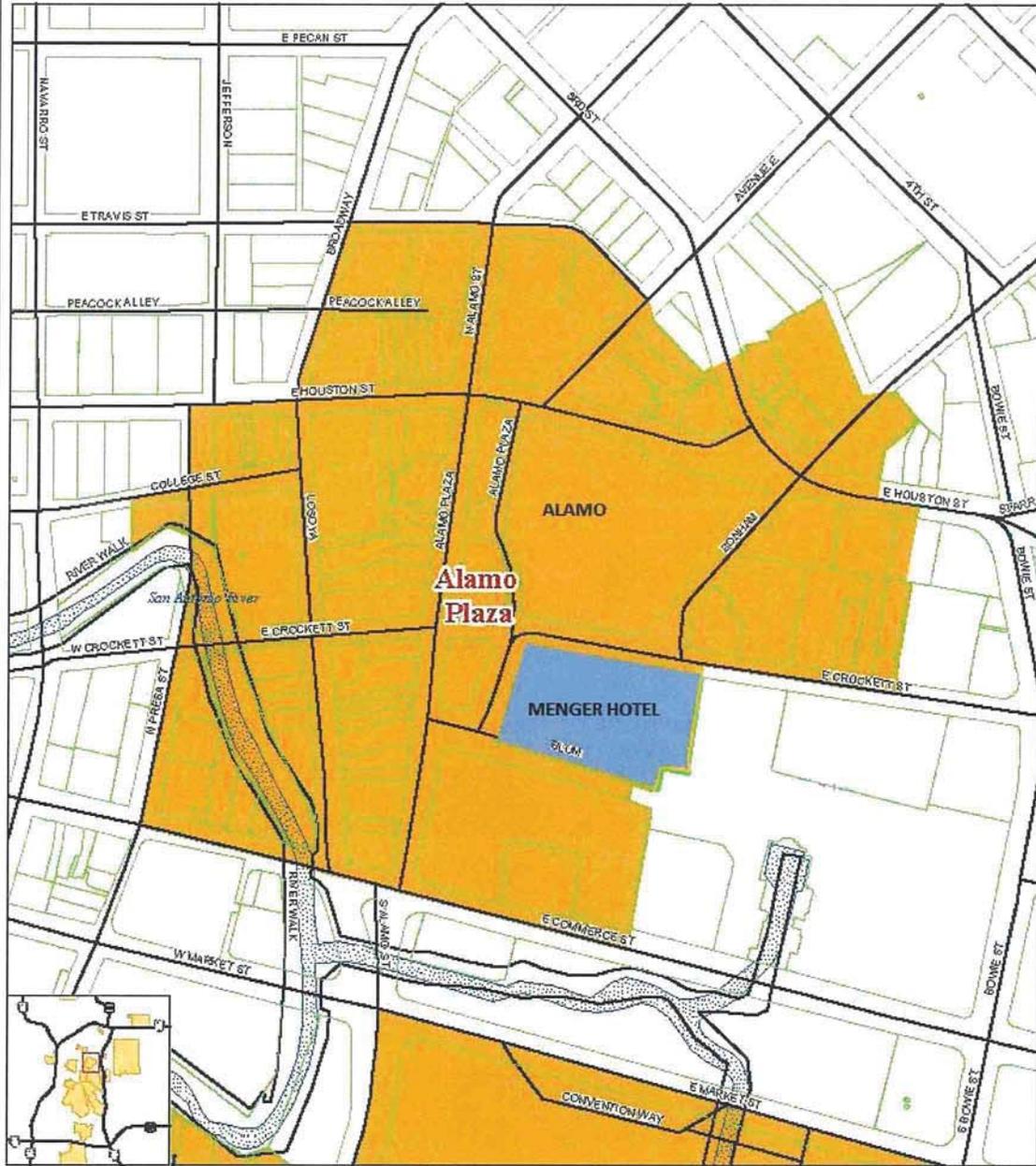
Staff recommends approval based on findings a through d with the following stipulations:

- i. The installation method of the new polycarbonate should not damage or compromise the existing metal canopy frame.

**CASE MANAGER:**

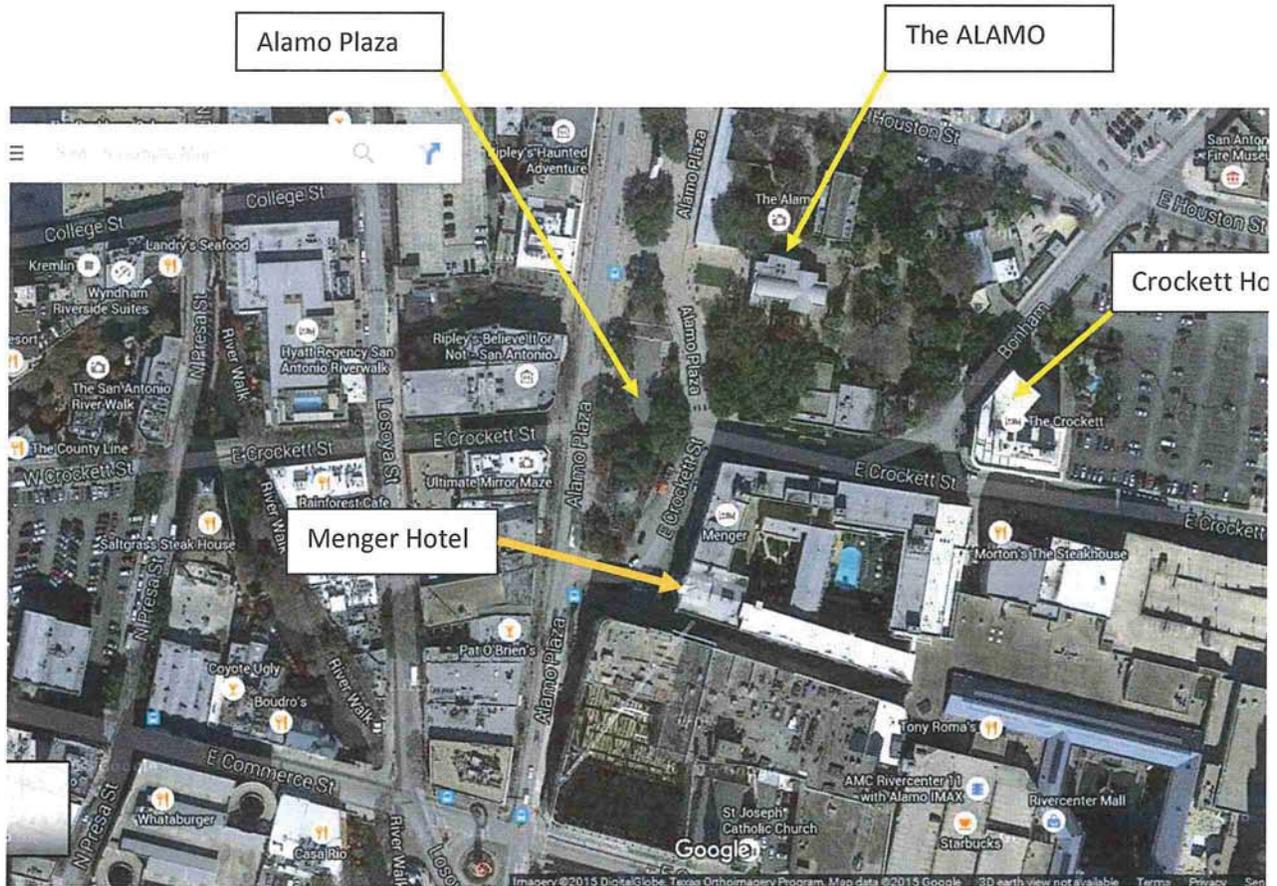
Katie Totman

# Alamo Plaza Historic District



City of San Antonio  
Historic Preservation Division





## Site Map

Site Map showing the Menger Hotel in relation to the Alamo and the RiverWalk & Alamo Plaza

## Description:

An Art Nouveau Entry Canopy was added to the main entry [west side] of the Menger hotel sometime in the early 1900's. This once lovely canopy had translucent glass that offered filtered shade. The frosted glass in the canopy has over the years been decimated by time and weather to now being filled in with plexiglass, plywood and sheet metal. A coat of dark green paint obscures any light from passing through it. The cast iron metal frame rusted through in spots and bent in a few places. It is salvageable and repairable. Once the metal frame has been rehabilitated, the existing panels will be replaced with a translucent poly-carbonate material [Polygal] that complies with Federal Safety Glazing Standards. This will bring back the original character of the entry canopy that it had circa 1912.

## Work to be done:

The canopy will be stripped to its bare metal frame using a combination of chemical stripping where appropriate, walnut-shell blasting with an IBEX encapsulated water-blasting head, mechanical abrasion and needle scaling methods. Bare metal will be primed with Sherwin-Williams KemKromic primer. Joints will be inspected and repaired and missing pieces will be duplicated and installed. Because of concerns of lead based paint, a capture system will be employed and the droppings filtered. The metal frame

will be repaired to as close to new as possible. Then the frame will be painted to the original color green. New translucent panels made of cellular, 6 mm thick, poly-carbonate [Polygal] will be cut and fixed to the openings as was the original glass. Fortunately pictures are available to show what the canopy looked like soon after its installation. The Polygal plastic is rated to Federal Safety standards for overhead glazing and has a very close resemblance to the original glass.

# MENGER HOTEL

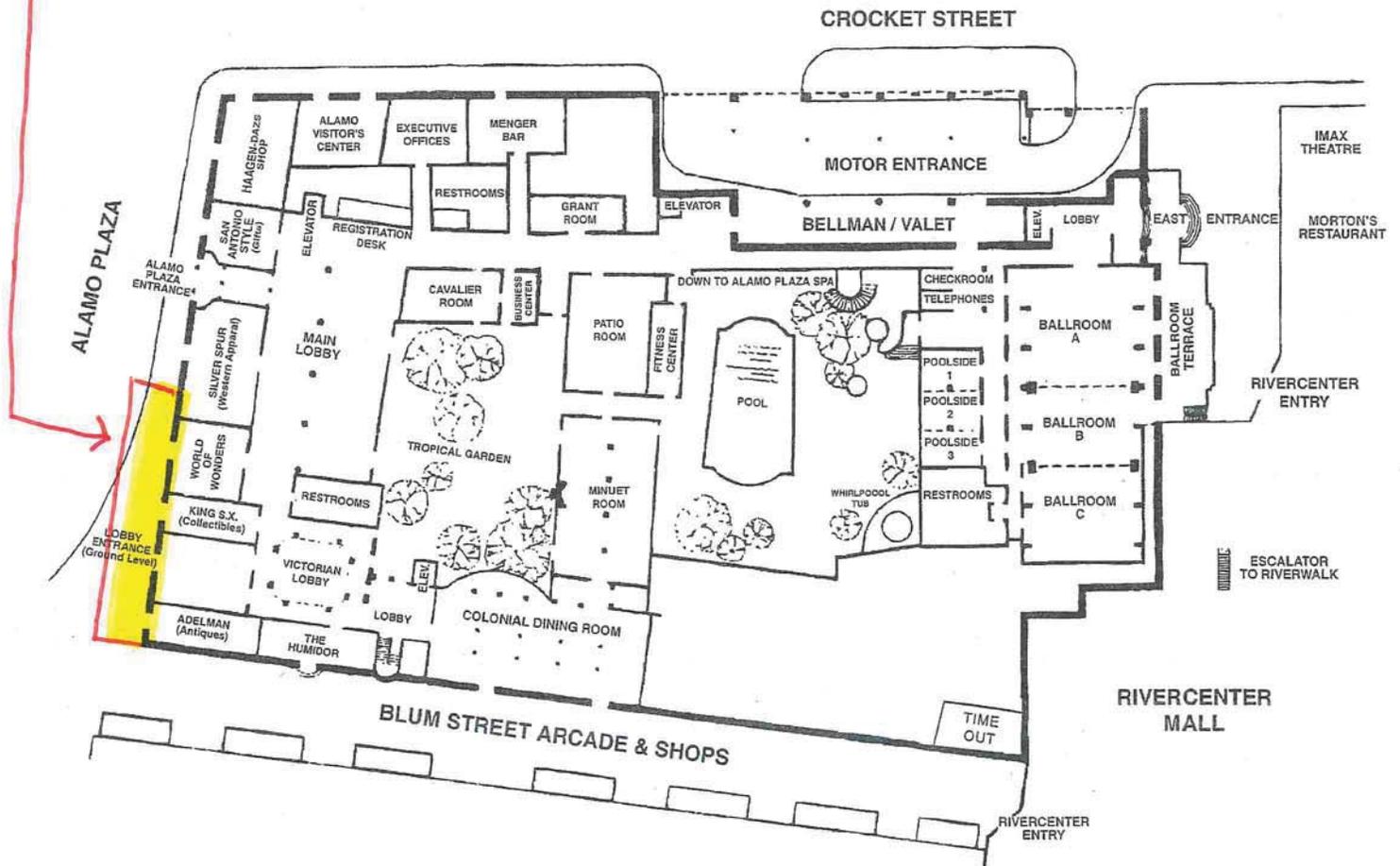
204 Alamo Plaza / San Antonio, Texas 78205

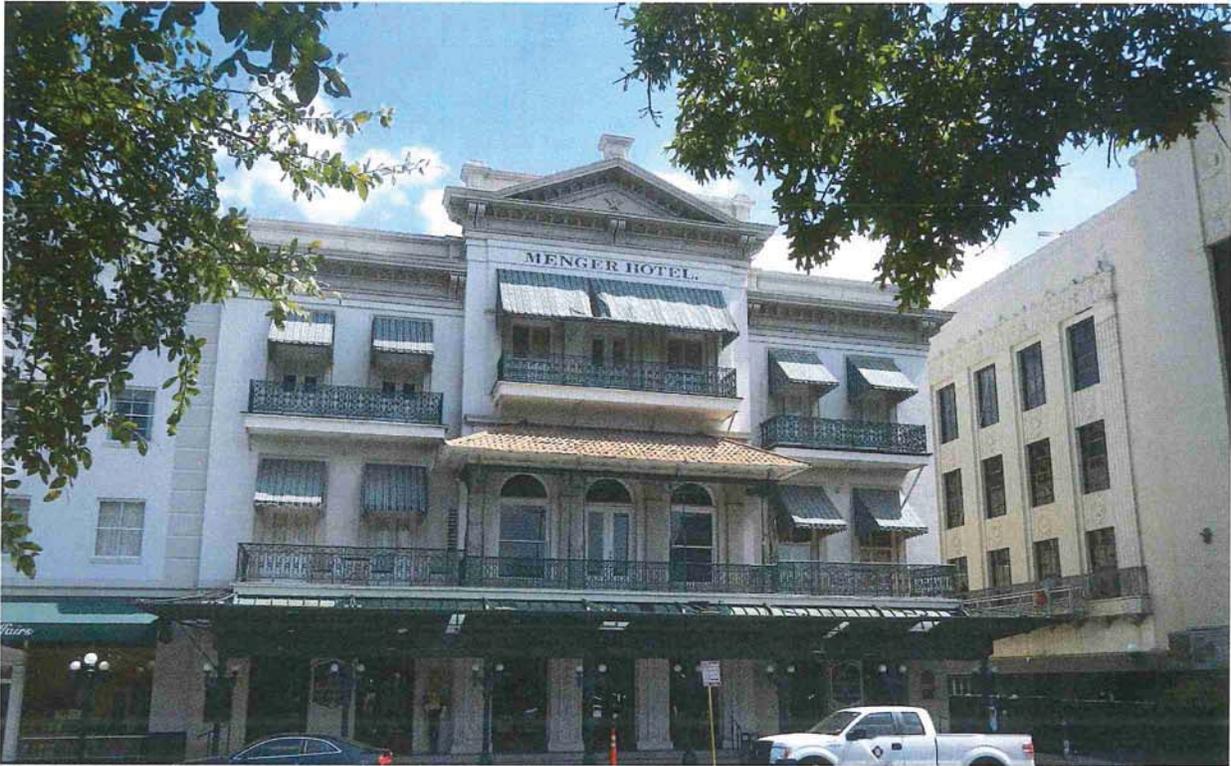
Telephone (210) 223 4361 Toll Free (800) 345 9285 / Fax (210) 218 0222

www.mengerhotel.com

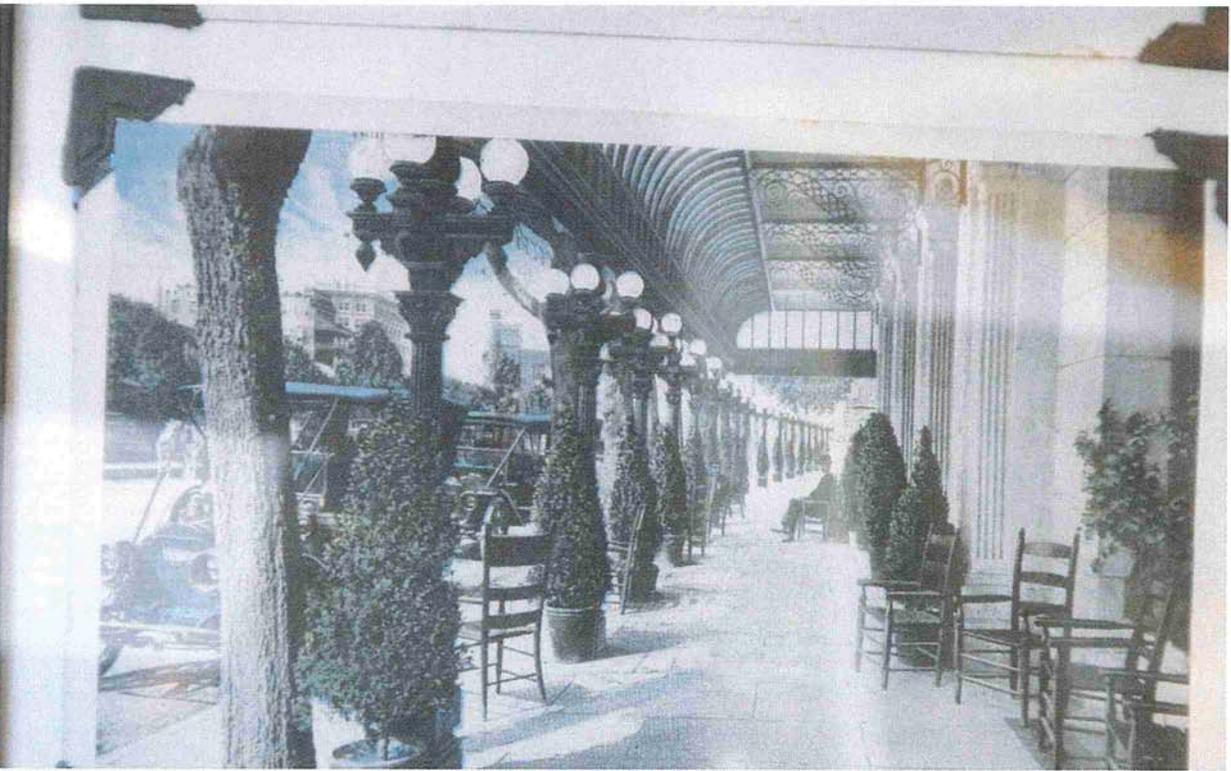
*PORTION OF THE BUILDING  
EFFECTED BY THIS SCOPE OF WORK*

THE ALAMO

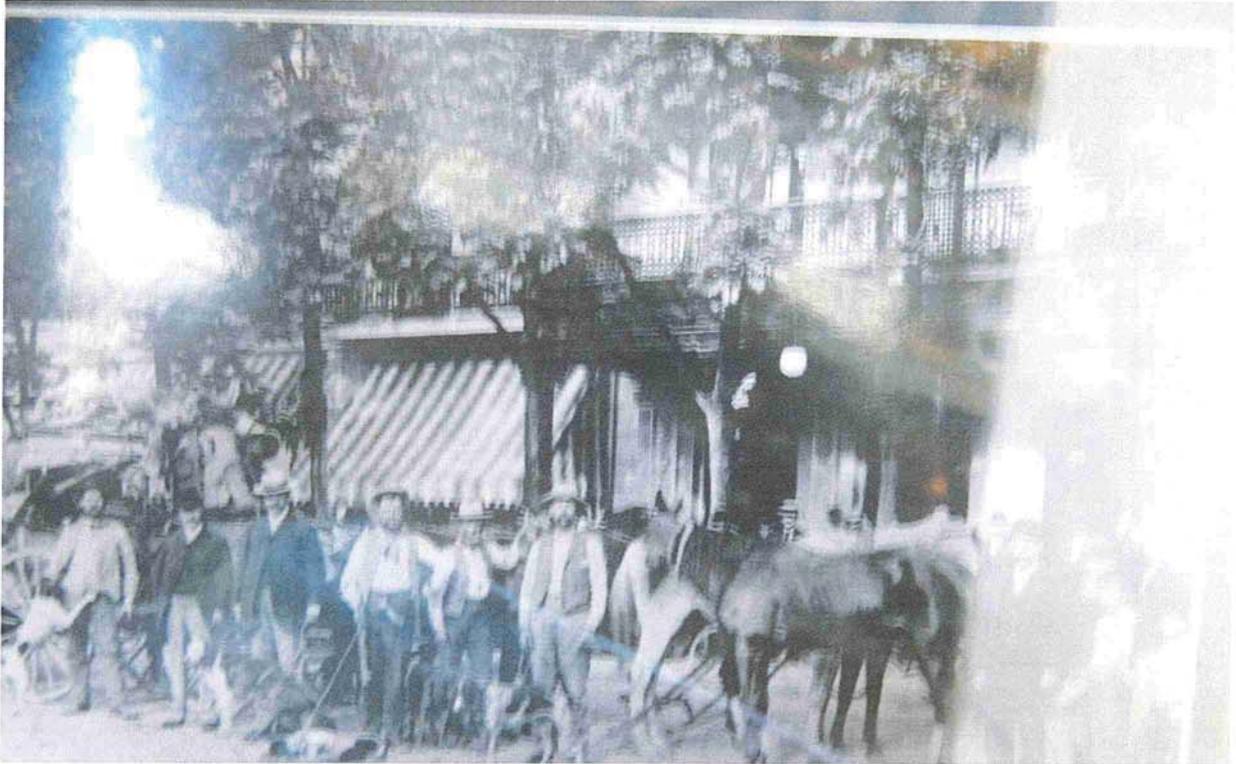




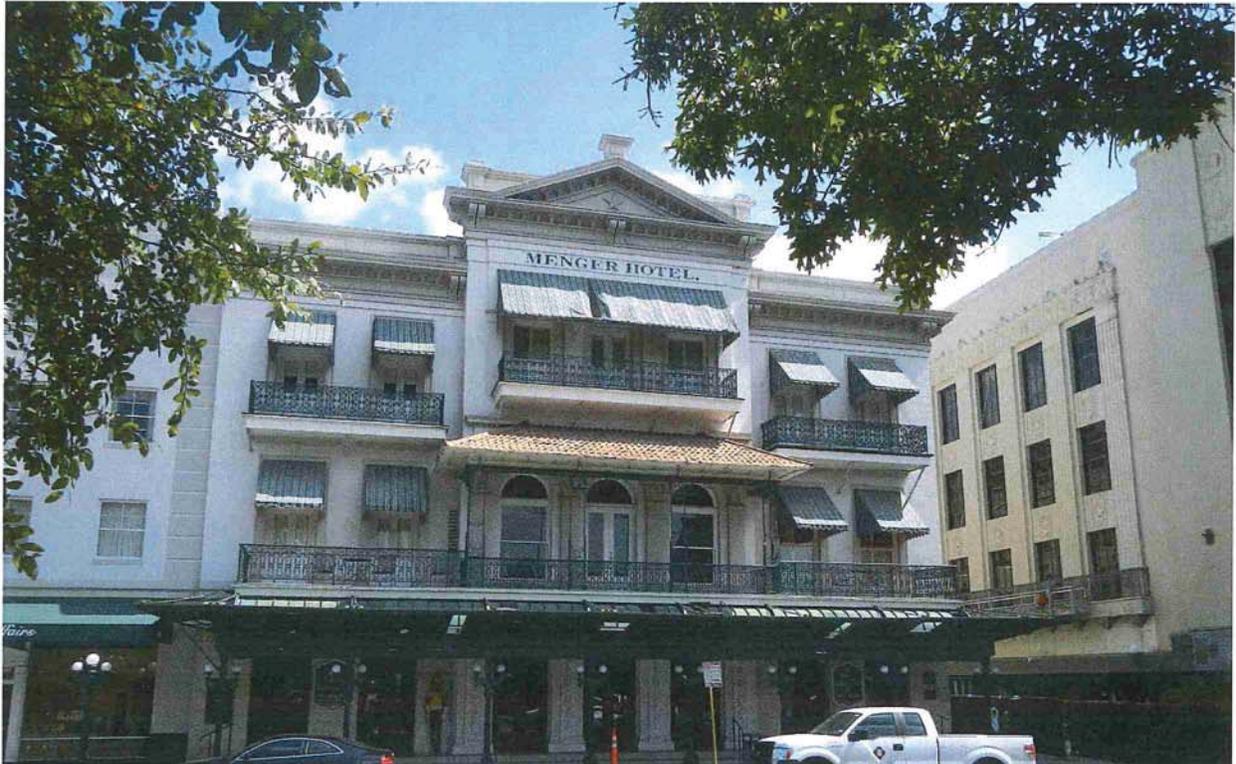
**PHOTOGRAPH 1 – MENGER HOTEL ORIGINAL WESTERN FACING ENTRY FAÇADE. THIS IS THE LIMIT OF THE AREA OF WORK.**



**PHOTOGRAPH 2 – PICTURE CIRCA 1912 SHOWING UNDERSIDE OF ENTRY CANOPY**



**PHOTOGRAPH 4 – HISTORICAL PHOTO CIRCA 1880 SHOWING CANVAS AWING TO SHADE THE WINDOWS**



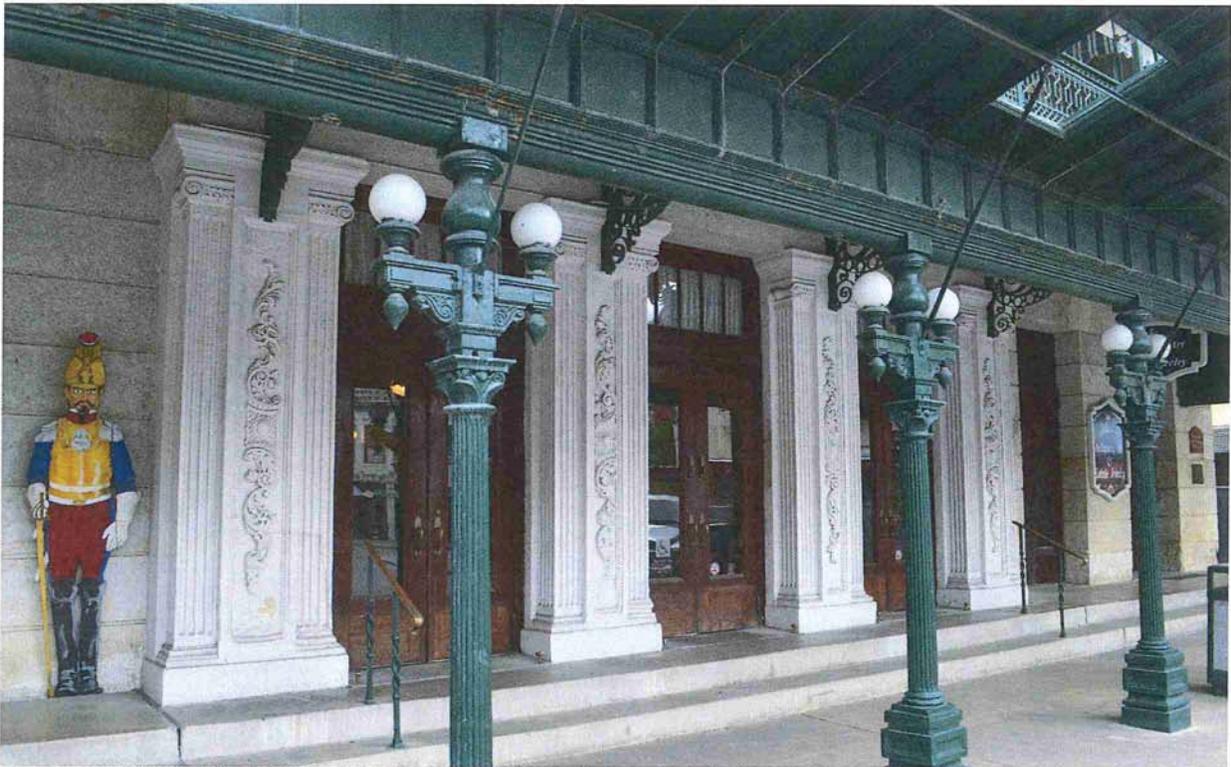
**PHOTOGRAPH 5 – WESTERN FAÇADE TODAY SHOWING THE WINDOWS SHADED BY CANVAS AWNINGS. NOTE THE STIPES IN THE CLOTH AWNING FABRIC.**



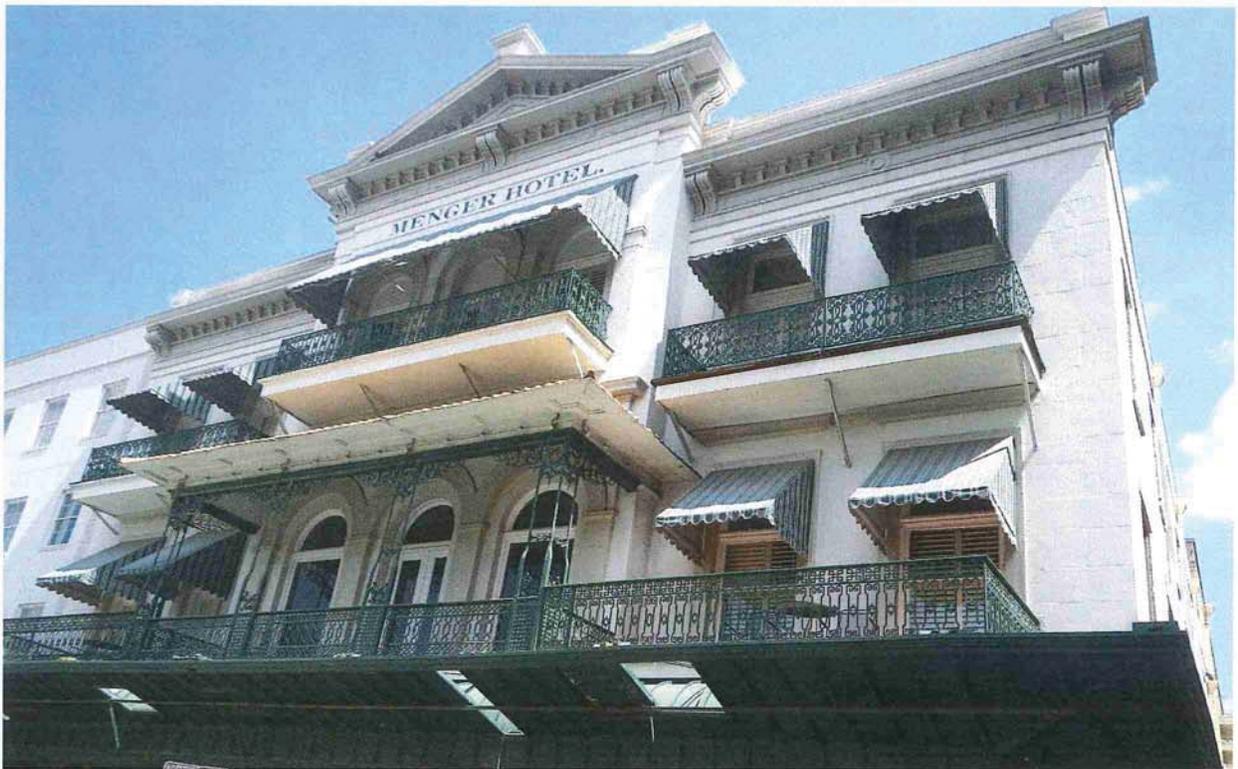
**PHOTOGRAPH 7 – PHOTO SHOWING THE NINE (9) AWINGINGS ON THE EXISTING FACADE**



**PHOTOGRAPH 8 – AREA UNDER THE CANOPY SHOWING PAINTED PILASTERS AND BARE LIMESTONE.**



**PHOTOGRAPH 11 – FOUR (4) PAINTED PILASTERS AT THE ENTRY TO REMAIN PAINTED**



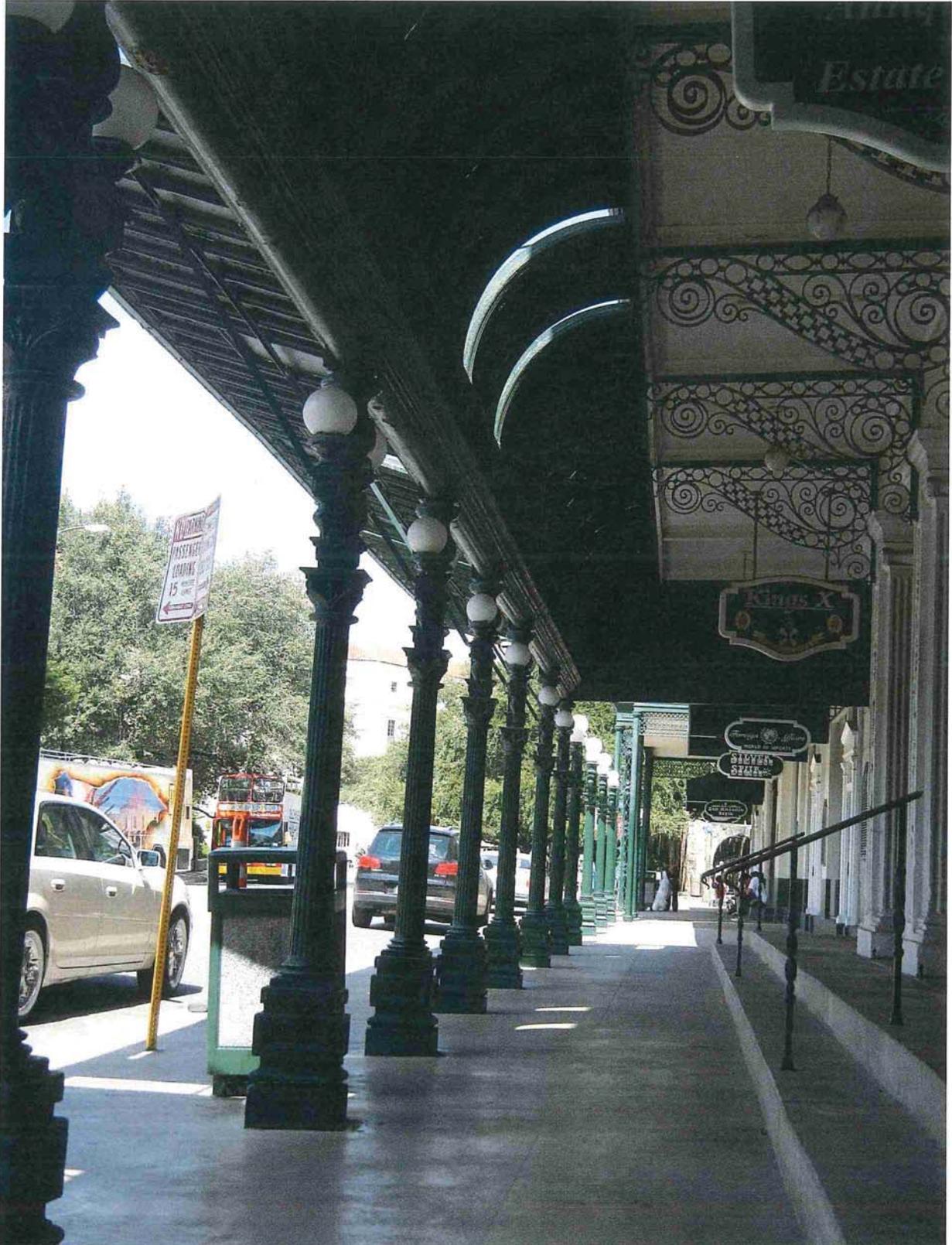
**PHOTOGRAPH 12 - AREAS ABOVE THE ENTRY CANOPY ARE TO REMAIN PAINTED. NOTE WOODEN BALCONIES EXTENDING FROM THE LIMESTONE.**



**PHOTOGRAPH 14 – VIEW OF BOTTOM SIDE OF WOODEN BALCONY. SOME REPAIR WORK IS REQUIRED TO REPLACE MISSING OR DAMAGED AREAS.**



**PHOTOGRAPH 15 – VIEW LOOKING DOWN ON CANOPY, BALCONY TILE AND A PORTION OF THE METAL TILE ROOF. NOTE THE ORNATE METAL RAILING. NOTE THE DAMAGE TO THE INFILL PANELS OF THE ENTRY CANOPY.**



PHOTOGRAPH 3 – EXISTING ENTRY CANOPY 2015. NOTICE HOW DARK IT IS UNER THE OPAQUE PANELS.

# ***Polygal Polycarbonate Multiwall Sheets***

## **Technical Specifications**

*Updated Dec. 2011*

### **Index**

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    - 1.1 Dimensions weights and colors
    - 1.2 Standard products
    - 1.3 Special structured products
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    - 2.2 Thermal insulation (U value)
  3. Optical properties
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    - 3.2 Standard Sheets Optical properties – Light transmission
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    - 5.4 Cleaning
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**1. Product group descriptions**

**1.1 Dimensions weights and colors**

Polycarbonate is a unique engineering thermoplastic which combines a high level of mechanical, optical and thermal properties. The versatility of this material makes it suitable for many engineering applications. When extruded in multi-wall sheet form, its optical and impact properties in particular render this material an ideal candidate for a wide range of roofing and glazing applications.

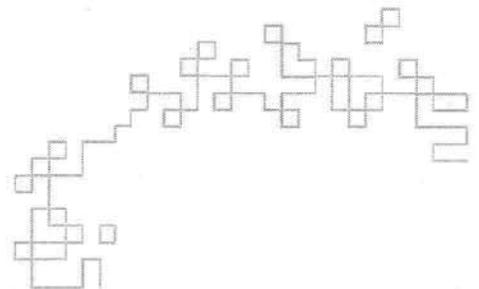
Standard sheet length: 24/ft. & 36/ft  
 Maximum length: subject to shipping constraints.

**1.2 Standard sheets dimensions and weights**

Standard Sheets of PCSS (*polycarbonate structured sheets*) manufactured in various colors and degrees of transparency, designed for use in most conventional roofing and glazing applications. Standard sheets are manufactured with different thicknesses, ranging from 4mm to 16mm.

**Standard sheets, dimensions and weights**

Structure	Thickness (mm)	Weight (g/m <sup>2</sup> )	Standard width (inches)
	4.5	900	48"
	6	1300	48"
	8	1500	48"& 72"
	10	1700	48"& 72"
	16	2700	48"& 72"





## POLYGAL STANDARD GRADE | MULTIWALL SHEET

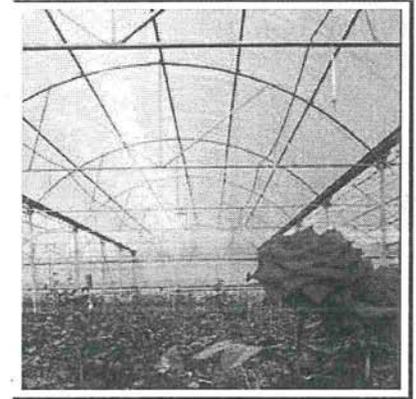
### Combines endless design possibilities with many important advantages:

Polygal Standard Sheets double and triple layered, manufactured in various colors and degrees of transparency, are designed for use in most conventional roofing and glazing applications.

- Excellent thermal insulation
- Highly flexible, yet virtually unbreakable
- Lightweight and easy to install
- Rigid sheet structure provides extra strength under wind and snow loads. To see sheet performance under loads, go to "[Support / Wind Load Charts](#)".

Standard Sheets feature a UV protective layer to protect against yellowing, and are covered by a 10 Year Warranty against breakage and yellowing (6 mm and higher).

Recommended Uses: Covering of medium span structures where excellent thermal insulation is required.



Technical Specifications:						
<b>Structure</b>		□□□□□□	□□□□□	□□□□	□□□	
<b>Thickness (mm)</b>		4	6	8	10	16
<b>Weight</b>	g/m <sup>2</sup>	800	1300	1500	1700	2700
	lb / ft <sup>2</sup>	0.16	0.27	0.31	0.35	0.55
<b>Standard width</b>	mm	980, 1050, 1200, 1220, 1250, 2100				
	inch	48"		72"		
<b>Minimum radius for</b>	mm	0.7	1.05	1.4	1.75	2.8
<b>cold bending arches</b>	inch	2' 3"	3' 5"	4' 7"	5' 9"	9' 2"
<b>U-Factor by ASTM C177</b>	W / m <sup>2</sup> • °C	3.9	3.6	3.3	3	2.3
	Btu / h • ft <sup>2</sup> • f°	0.69	0.63	0.58	0.53	0.41

Optical Specification :												
Thickness (mm)	Light Transmission (%) by ASTM D 1003											
	Clear	NGL*	ICE	bronze	snow	grey	green	red	orange	blue	turquoise	yellow
4	82	-	32	42	25	30	30	20	55	30	52	70
6	80							16				
8	80	25						12				
10	79							12				
16	72	35	16									

## 2. Thermal properties

### 2.1 Service temperature and Thermal expansion

#### Service Temperature

Polygal multiwall polycarbonate can be installed in a diversity of applications, with varying temperatures. However, the material's mechanical performance is known to remain stable in prolonged service in temperatures ranging from -40°F to +240°F. PVC has a maximum service temperature of 140°F while acrylic is 176°F.

#### Thermal Expansion

The coefficient of linear expansion of polycarbonate material is  $6.7 \times 10^{-5} \text{m/m} \cdot ^\circ\text{C}$ . This is high relative to that of most other materials in conjunction with which it is normally used. As a consequence careful allowance must be made for the thermal expansion of Polygal polycarbonate multi wall sheets, both longitudinally and laterally. In practical terms it is necessary to allow ~1/4" per 4' length or width for thermal expansion.

### 2.2 Thermal Insulation and the U-Value

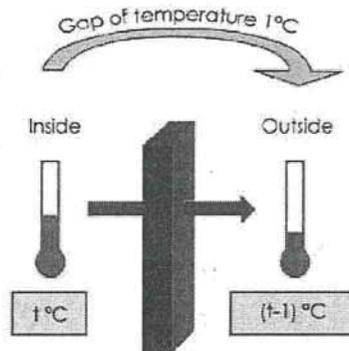
Thermal Insulation definition is the resistance to heat transfer as a result of temperature differences between two material bodies.

In the case of MWPC (*multi-wall polycarbonate*) the Thermal insulation is important in application in which there is a difference between the outside to the inside air temperature.

Examples for of thermal insulation can be seen in applications with closed structures such as sunrooms and indoor swimming pools. Whereas in roofing for open structures, such as bus shelters and/or a canopies... the thermal insulation has no meaning.

U or R-Value is the coefficient which determines heat loss in the glazing walls of a building. As the U-Value decreases... the thermal insulation increases.

*Definition:* Heat will flow through a wall of 1 square meter at a temperature difference of one degree Celsius between the two environments.



Unit:  $\text{W/m}^2 \cdot ^\circ\text{C}$   
 $U = 1/R$   
 $R = \text{Thermal resistance}$

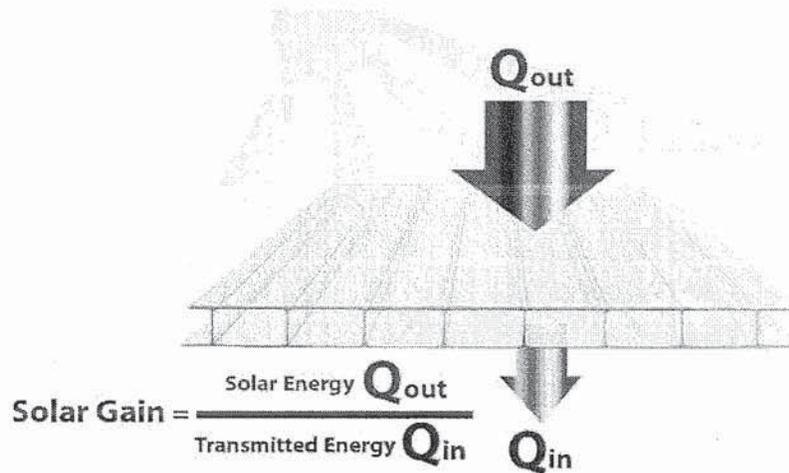
Structure	Thickness	R-Factor- BTU (h/ft2/F)
	4	1.449
	6	1.587
	8	1.667
	10	1.887
	16	2.439

### 3. Optical properties

#### 3.1 Solar gain:

The most common misconception in translucent materials is that in order to reduce the sun's heat we must reduce the light transmission whereas the value which determines the amount of solar heat is SHGC (solar heat gain coefficient or solar gain).

SHGC indicates how much of the sun's energy striking the sheet is transmitted as heat. As the SHGC increases, the solar gain potential through a given sheet increases.



A sheet with a SHGC of 0.6 will admit twice as much solar heat gain as one with a SHGC of 0.3.

The importance of the SHGC can be seen in the following table which compares two colors:

Sheet Color	LT [by ASTM D 1003]	SHGC
10mm Primalite	45 %	0.38
10mm ICE	32 %	0.48

It can be seen in the table that although the special color Primalite brings more light than the Ice color... it ultimately transfers less solar heat. This fact does not fit with the common sense which tells us that the Primalite will bring more heat than the Ice since it brings more light.

The explanation for this extraordinary property of the Primalite is in the ability of a special pigment in the coextruded layer to filter (*via reflection*) the solar heat in the invisible part as can be seen in the graph below.

## 4. Technical information

### 4.1 Acoustic

Accordance with DIN 52210-75, the maximum obtainable sound transmission class for a particular thickness is listed below.

Sheet Thickness (mm)	Sound reduction Values (dB)
4	15
6 - 8	18
10	19
16	21
20	22
25 - 32	23

### 4.2 Chemical resistance

Polygal sheets have been successfully used in combination with building materials and glazing components. The chemical stability depends on many factors such as concentration of the chemical agents and on exposure temperatures. Considering the complexity of chemical compatibility, all chemicals which come into contact with polycarbonate should always be tested.

Polygal offers lab service for testing chemical stability and gaskets and sealants which have been approved. In general, polycarbonate is not compatible with PVC (*polyvinyl chloride*).

### 4.3 Fire performance

Polygal has received high ratings in several major American & European 3<sup>rd</sup> Party Laboratories. More detailed information and official test reports are available from your local Service Center or authorized dealer. Much of this information can also be found on our website ([www.polygal-northamerica.com](http://www.polygal-northamerica.com)).

### Flammability

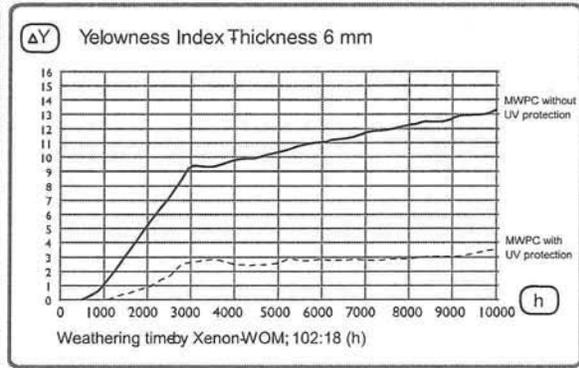
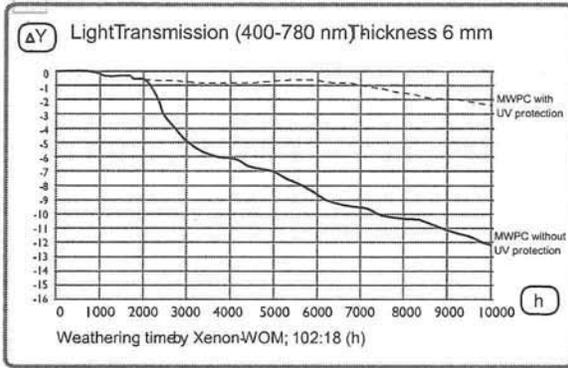
Method	Classification*
BS 476/7	Class 1
DIN 4102	B-1 (10&16 mm)
NSP 92501	M-1, M-2
ASTM D-635	CC-1
ASTM-E-84	Class A
EN 13501	B, s1, d0

\*Classifications depend on sheet type and thickness.

### 4.4 UV protection

Solar radiation has a harmful component by UV rays which initiate degradation of many polymeric materials including polycarbonate. This depends on geographic locations, seasons, etc.

Polygal's polycarbonate sheets feature a specially coextruded UV absorption and protection layer, which provides long-lasting high stability against damaging UV radiation, protects against outdoor weathering and retains its original color and light transmission as shown in the accelerated weathering tests illustrated in the graph below.



Polygal's warranty is a 10 year (*non-prorated*) warranty that covers the following: discoloration, loss of light transmission and loss of strength due to hail damage (up to 3/4" size hail). However, proper installation and good maintenance will ensure an even longer period of product life.

The UV-protected side of the sheet is shown by the printed film. In case the protective film is removed before installation, it is still possible to identify the UV-protected side: In order to ensure the full traceability of our production and the follow-up of quality issues, sheets are ink-printed every meter. This marking is shown on the UV-protected side.

Visual control: On clear sheets the edge of the upper skin has a bluish tint. On colored sheets, the partition lines are more visible on the UV protected side.

#### 4.5 Impact strength – Hail Resistance:

Loss of "impact strength in the event of hail" shall be determined by an impact test according to ASTM D 5628-95 geometry FE (tap diameter 20mm). (In this test, failure is determined when the upper wall of the sheet is penetrated by the tap. The sheet does not reach the required standard if the Mean Failure Energy obtained in the test is less than 0.831 Joules. This energy is equal to the energy generated by a 20 mm (~3/4") diameter ice ball at a speed of 21 m/s.)

#### 4.6 Bending the sheet

Polygal sheet can be successfully cold bent over curved support glazing profiles, to suit many glazing applications to include domes, roof-lights, etc. Providing the radius is not below the minimum recommended value, then the introduced stress by cold-bending will not have any adverse effect upon the mechanical performance of the sheet. Sheets must always be bent longitudinally, never across the width of the sheet.

Table : minimum radius values

Sheet Thickness (mm)	Min. cold bending radius (inches)
4	27.5"
6	41"
8	55"
10	69"
16	110"
20	138"
25	172"
32	220.5"
35	240"

**Appendix 1: Load bearing capacity – wind and snow load**

In order to choose the suitable sheet to stand the local standards of wind and snow loads one should consider several factors:

- The sheet type (e.g., structure and weight): 8mm twin wall 1500 gr/m<sup>2</sup> will deflect more than Titan sky 16mm 2500 gr/m<sup>2</sup>.
- The sheet width: 600mm (~23.6") width will deflect less than 1200mm (~47.24") width under the same load.
- Distance between supports – Obviously shorter distance between supports improves the resistance to positive loads.
- Type of connectors –Aluminum or Polycarbonate
- Supports conditions (four sides, two sides, two sides with purlins)
- Flat or curve structure
- Positive or negative wind load
- Permitted deflection – the standard in MWPC is 5% from the sheet width

The following tables simplify the complex problem of choosing the suitable design configurations.

The simple distinguish is between flat and curve structure.

**For flat structure:**

The table below gives the permitted distance (feet) between purlins for sheets 48" wide with a maximum deflection of 5% on the width (2.4").

Sheet	Load (PSF)						
	17	21	25	29	33	37	41
6 mm Standard	3.61	3.28	2.95	2.62	x	x	x
8 mm Standard	5.58	4.27	3.61	3.28	2.95	2.62	2.30
10 mm Standard	6.23	5.58	5.25	4.92	4.59	4.27	3.94
10 mm Titan Sky	6.56	5.91	5.58	5.25	4.92	4.59	4.27
16 mm Standard	7.55	6.56	5.91	5.58	5.25	4.92	4.59
16 mm Selectogal	8.86	8.53	6.89	6.23	5.58	5.25	3.94
16 mm Titan Sky	9.19	8.86	7.22	6.56	5.91	5.58	5.25
25 mm Thermogal	∞	∞	7.55	6.89	6.23	5.91	5.58
32 mm Thermogal	∞	∞	9.19	7.87	6.89	6.56	6.23

\* The infinity sign (∞) represents two sides supported for a negative wind load.

**For curved structure:**

The tables give the permitted width (feet) according to sheet type, wind load and radius.

**The max permitted sheet width for 6mm Standard sheets**

Radius (inches)	Load (PSF)						
	17	21	25	29	33	37	
41"	6.89	5.91	5.25	4.43	3.94	3.61	
47"	6.23	4.92	4.27	3.94	3.44	2.95	
59"	4.59	3.94	3.44	2.95	2.62	2.46	
71"	3.94	3.44	2.79	2.46	2.30	1.97	
78"	3.44	2.95	2.62	2.30	1.97	x	
98"	2.79	2.30	1.97	x	x	x	