

## **Smithsonian National Museum of American History**

2nd Floor West Exhibit Design | Many Voices, One nation

Package 3 | List and Specifications

95% Package | April 7, 2016

OFEO Project No.: 1403109



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## 1.0 Display Cases List



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Client: **Smithsonian Institution**

Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
 Project No.: **1403109**

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### Display Case List For: NMAH-2W - Many Voices, One Nation

Case No.	Case Type	Qty	Basic Information								Additional Information						Finishes			Key Suite Information																									
			No. of Bays	No. of Doors	Access	External Dimensions (mm)			Display Dimensions (mm)			Case Base Height (mm)	Case Header Height (mm)	Glass Height (mm)	Structural Panels	Glass Thickness (mm)	Glass Bonnet Weight (kg)	High Security	Lighting	Environmental Control	Shelving Type	Case Header & Kicker Finish	Case Deck Finish	Dress Panel Finish	Case Suite	Service Suite																			
						W	x	D	x	H	W																x	D	x	H															
<b>0-Intro/Outro</b>																																													
No cases																							x	x	x	x																			
<b>Section 1.0</b>																																													
C2101	FS, LH	1		3	HL, HDD	3100	x	1200	x	3450	3030	x	1130	x	2800	254	396	3204	GF, SS, ST, back half glass/half solid	11.3			LUXAM LED (top)			Epoxy powder coat	Fabric F1	Back - Graphic Sides - Paint																	
<b>Section 2.0</b>																																													
C2201 Omitted																																													
C2202	FS, LH	1		2	HDD	1600	x	770	x	3000	1530	x	550	x	2400	450	150	2700	GF, GS, SB, ST	11.3			LUXAM LED (top / base)			Epoxy powder coat	Fabric F1	Back - Graphic																	
C2203	FS, LH	1		2	HDD	1600	x	770	x	3000	1530	x	550	x	2400	450	150	2700	GF, GS, SB, ST	11.3			LUXAM LED (top / base)	Passive (pollutant scavenger & silica gel)		Epoxy powder coat	Fabric F1	Back - Graphic																	
C2204	FS, LH	1		2	HDD	1400	x	1100	x	3000	1330	x	880	x	2400	450	150	2700	GF, GS, SB, SRS, ST	11.3			LUXAM LED (top / base)	Passive (pollutant scavenger & silica gel)		Epoxy powder coat	Fabric F1	Back - Graphic Side - Paint																	
C2205	FS, LH	1		2	HDD	2500	x	1000	x	3000	2430	x	780	x	2400	450	150	2700	GF, SLS, GB, GS, ST	11.3			LUXAM LED (top / base)			Epoxy powder coat	Fabric F1	Back - Graphic Side - Paint																	
C2206	PM, LH (on plinth 150mm H)	1		2	HDD	1700	x	700	x	2850	1630	x	480	x	2400	300	150	2700	GF, GS, SB, ST	11.3			LUXAM LED (top / base)			Epoxy powder coat	Fabric F1	Back - Graphic																	
C2207	WMTD (at 775mm AFF)	1		1	HL	650	x	450	x	800	580	x	360	x	625	150	-	800	GF, GS, SB, ST	11.3			External			Epoxy powder coat	Fabric F1	Back - Paint																	
C2208	WMTD (at 775mm AFF)	1		1	HL	650	x	450	x	800	580	x	360	x	625	150	-	800	GF, GS, SB, ST	11.3			External			Epoxy powder coat	Fabric F1	Back - Paint																	
C2209	WMTD (at 775mm AFF)	1		1	HL	650	x	450	x	800	580	x	360	x	625	150	-	800	GF, GS, SB, ST	13		Yes	External			Epoxy powder coat	Fabric F1	Back - Paint																	
<b>Section 3.0</b>																																													
C2301	TT (at 800mm AFF)	1				400	x	420	x	400	330	x	300	x	275	100	-	300	GF, GS, GB, GT	6 (acrylic)	3.7		LUXAM LED Micro (base)			Fabric F1	n/a																		
C2303	TT (at 800mm AFF)	1				600	x	550	x	500	530	x	430	x	375	100	-	400	GF, GS, GB, GT	6 (acrylic)	7		LUXAM LED Micro (base)			Fabric F1	n/a																		
C2304	TT (at 800mm AFF)	1				1200	x	650	x	750	1130	x	530	x	625	100	-	650	GF, GS, GB, GT	6 (acrylic)	18.3		LUXAM LED Micro (base)			Fabric F1	n/a																		
C2306	PM, LH (on plinth 300mm H)	1		2	HR, HR	2700	x	1000	x	2200	2530	x	780	x	1900	150	150	2200	GF, GS, SB, ST	11.3			LUXAM LED (top / base)			Fabric F1	Back - Paint																		
C2307	PM (on plinth 300mm H)	1		2	HDD	1400	x	550	x	1300	1330	x	480	x	875	400 (inc 150 strip for hinge)	-	1050	GF, GS, GB, GT	11.3			External			Fabric F5	n/a																		
C2308	FS, LH	1		1	HL	1450	x	880	x	2350	1380	x	660	x	1750	450	150	2050	GF, GS, SB, ST	11.3			LUXAM LED (top / base)			Fabric F1	Back - Paint																		
C2309	PM, LH (on plinth 300mm H)	1		2	HDD	1900	x	620	x	2200	1830	x	400	x	1900	150	150	2200	GF, GS, SB, ST	11.3			LUXAM LED (top / base)			Fabric F1	Back - Graphic																		
C2310	PM, LH (on plinth 300mm H)	1		2	HR, HR	2250	x	1070	x	2200	2180	x	850	x	1900	150	150	2200	GF, GS, SB, ST	11.3			LUXAM LED (top / base)			Fabric F1	Back - Paint																		
<b>Section 4.0</b>																																													
C2401	WMTD, LH (at 610mm AFF)	1		3	HL, HDD	3000	x	450	x	2040	2930	x	310	x	1740	150	150	2040	GF, GS, SB, ST	11.3			LUXAM LED (top)		none	Epoxy powder coat	Fabric F1	Back - Graphic																	
C2402	FS, LH	1		5	HDD, HL, HDD	5000	x	1300	x	3000	4930	x	1080	x	2400	150	150	2700	GF, SS, SB, ST	11.3			LUXAM LED (top / base)	Passive (pollutant scavenger & silica gel)	none	Epoxy powder coat	Fabric F1	Back - Paint Sides - Paint																	

## Display Case List For: NMAH-2W - Many Voices, One Nation

Basic Information												Additional Information						Finishes			Key Suite Information									
Case No.	Case Type	Qty	No. of Bays	No. of Doors	Access	External Dimensions (mm)			Display Dimensions (mm)			Case Base Height (mm)	Case Header Height (mm)	Glass Height (mm)	Structural Panels	Glass Thickness (mm)	Glass Bonnet Weight (kg)	High Security	Lighting	Environmental Control	Shelving Type	Case Header & Kicker Finish	Case Deck Finish	Dress Panel Finish	Case Suite	Service Suite				
C2403	FS, LH	1		3	HDD, HR	5200	x	1200	x	3000	5130	x	980	x	2400	450	150	2700	GF, GS, SB, SRS, ST	13		Yes	LUXAM LED (top / base)	Passive environmental control (to 1/3 of the case)	none	Epoxy powder coat	Fabric F1	Back - Graphic Side - Paint		
C2404	FS, LH	1		4	HDD, HDD	3700	x	1300	x	3000	3630	x	1080	x	2400	450	150	2700	GF, SS, SB, ST	11.3			LUXAM LED (top / base)		none	Epoxy powder coat	Fabric F1	Back - Graphic Sides - Paint		
C2405	FS, LH	1		2	HDD	3000	x	1200	x	3000	2930	x	980	x	2400	450	150	2700	GF, SS, SB, ST	11.3			LUXAM LED (top / base)		none	Epoxy powder coat	Fabric F1	Back - Graphic Sides - Paint		
C2406	FS, LH	1		1	HR	1200	x	1200	x	3000	1130	x	1130	x	2400	450	150	2700	GF, GS, GB, ST	11.3			LUXAM LED (top)		none	Epoxy powder coat	Fabric F1	n/a		
C2407	FS, LH	1		1	HL	1200	x	1070	x	3000	1130	x	930	x	2400	450	150	2700	GF, GS, SB, ST	11.3			LUXAM LED (top)				Fabric F1	Back - Paint		
C2408	WMTD (at 800mm AFF)	1		1	HL	1150	x	470	x	800	1080	x	250	x	625	150	-	650	GF, GS, SB,GT	11.3			External				Fabric F1	Back - Paint		
C2409	emitted	4				1450	x	250	x	1000	1380	x	180	x									External							
<b>Section 5.0</b>																														
C2501	FS, LH	1		2	HDD	2400	x	890	x	3000	2330	x	670	x	2400	450	150	2700	GF, GS, SB, SRS, ST	11.3			LUXAM LED (top / base)		none	Epoxy powder coat	Fabric F1	Back - Paint Side - Paint		
C2502	FS, LH	1		2	HDD	2300	x	890	x	3000	2230	x	670	x	2400	450	150	2700	GF, SS, SB, ST	11.3			LUXAM LED (top / base)				Fabric F1	Back - Graphic Sides - Paint		
C2503	PM (on plinth 300mm H)					700	x	450	x	900	630	x	380	x	425	450	-	450	GF, GS, GB, GT	6 (acrylic)	8.3		External		none	Epoxy powder coat	Fabric F7	n/a		
C2504	PM (on plinth 300mm H)					700	x	650	x	900	630	x	580	x	425	450	-	450	GF, GS, GB, GT	6 (acrylic)	9.9		External		none	Epoxy powder coat	Fabric F7	n/a		
<b>Section 6.0</b>																														
C2601	FS, LH	1		2	HDD	1800	x	1200	x	3000	1730	x	980	x	2400	450	150	2700	GF, GS, SB, ST	11.3			LUXAM LED (top / base)		none	Epoxy powder coat	Fabric F1	Back - Graphic		
C2602	FS, LH	1		2	HDD	1800	x	1500	x	3000	1730	x	1280	x	2400	450	150	2700	GF, GS, SB, SRS, ST	11.3			LUXAM LED (top / base)		none	Epoxy powder coat	Fabric F1	Back - Paint Side - Paint		
C2603	FS, LH	1		1	HR	1650	x	1650	x	3000	1580	x	1580	x	2700	150	150	3000	GF, GS, GB, ST	11.3			LUXAM LED (top)		none	Epoxy powder coat	Fabric F1	n/a		
C2604	PM (on plinth 300mm H)	1		1	HL	1700	x	1000	x	2460	1630	x	930	x	2285	150	-	2460	GF, GS, GB, GT	11.3			External		none	Epoxy powder coat	Fabric F1	n/a		
C2605	PM (on plinth 300mm H)	1		2	HDD	1900	x	900	x	1650	1830	x	830	x	1475	150	-	1650	GF, GS, GB, GT	11.3			External		none	Epoxy powder coat	Fabric F1	n/a		
C2606	FS, LH	1		4	HDD x 2	4650	x	1300	x	3000	4580	x	1080	x	2400	450	150	2700	GF, GS, SB, SRS, ST	11.3			LUXAM LED (top / base)		none	Epoxy powder coat	Fabric F1	Back - Graphic Side - Paint		
<b>Section 7.0</b>																														
No cases																														
<b>Section 8.0</b>																														
No cases																														
<b>Section 9.0</b>																														
No cases																														
Total		34	0	61																										

### INTERNAL CASE DIMENSIONS TAKE PRECEDENCE

Case Type Key:-	Access Key:-	Structural Panel Key:-	Lighting Key:-	Lock Suite Key:-
LH = Lighting Header	HL = Left Hinged Door Access (facing case)	GB = Glass Back	top = light fittings in case header	Case Lock Suite = EXEC Locks for Case Locks - suited per Gallery
WMTD = Wall Mounted	HR = Right Hinged Door Access (facing case)	GF = Glass Front	base = light fittings in case base	Type B, Type C
FS = Floor Standing	HDD = Hinged Double Door Access	GS = Glass Side/s		
PM = Plinth Mounted	HT = Hinged Top Access	GT = Glass Top		
TT = Table Top	LOF = Lift-off Front	SB = Steel / Wood Product Back		Service Lock Suite = HP Locks for ALL Plinth, Lid & Silica Gel Locks (where applicable)
	LOT = Lift-off Top	SS = Steel / Wood Product Side/s		Type A - single suite throughout
	P&S = Pull & Slide Aside Door Access	SLS = Steel / Wood Product Left Side (facing case)		
		SRS = Steel / Wood Product Right Side (facing case)		
		ST = Steel / Wood Product Top		

**High Security** = Case is alarmed, glass is 13mm laminated glass.  
**Glass height** dimension includes display height plus sections of glass at bottom and top of case which sit in front of case base and case header, where applicable. These sections of glass to be backpainted to conceal case structure behind.  
 See Finishes List for finish references.

### GENERAL REQUIREMENTS

- All materials and services to be suitable for intended purpose and only used in accordance with manufacturer's instructions.
- All materials and services to conform to relevant ANSI (or equivalent) standards as appropriate.
- All materials to be used in conjunction with manufacturers' recommended stipulations.
- All permanent fixed works to be class A fire rated unless otherwise stated.
- All material selection and services to be executed in accordance with ADA Standards for Accessible Design
- All federal, state and local regulations prevail
- The completed exhibit must be visibly free from defects from a distance of 1000mm. Defects include distortion of material, paint loss, surface scratching and discoloration.
- All sharp edges to be removed unless otherwise specifically stated. In areas of extreme exposure between (0 and 1800mm aff) all edges and corners to be rounded to a minimum of 6mm in radius.

## Display Case List For: NMAH-2W - Many Voices, One Nation

Basic Information											Additional Information						Finishes			Key Suite Information		
Case No.	Case Type	Qty	No. of Bays	No. of Doors	Access	External Dimensions (mm)	Display Dimensions (mm)	Case Base Height (mm)	Case Header Height (mm)	Glass Height (mm)	Structural Panels	Glass Thickness (mm)	Glass Bonnet Weight (kg)	High Security	Lighting	Environmental Control	Shelving Type	Case Header & Kicker Finish	Case Deck Finish	Dress Panel Finish	Case Suite	Service Suite
<p>9. All reveals to be finished as appropriate.</p> <p>10. Cable management separated into power, data and security to be included as accessible conduits with draw strings as required.</p> <p>11. Adequate and safe provision to be made in all exhibit structure for access to services (existing or new) and any required ongoing maintenance. Type of access to accommodate frequency of requirements.</p> <p>12. All lighting (light box) and electrical compartments to be fully ventilated at the upper and lower areas promoting natural air flow.</p> <p>13. All internal surfaces of the light box to be painted out white to promote uniformity and maximize the brightness of any lamp provided.</p> <p>14. Any serviceable items to be clearly identified and provided to enable ongoing maintenance for min 10 years from practical completion.</p> <p>15. All visible fasteners to be non-standard tamper proof unless specifically stated otherwise. Any necessary key bits etc. to be supplied to the client with spares as appropriate.</p> <p>16. All free standing exhibit structure to be supplied with self leveling feet and floor scribe.</p> <p>17. In addition to the above all wall fixed exhibit structure to be supplied with scribe panels.</p> <p>18. All goods to be inspected and correctly packed and labeled prior to arriving on site.</p> <p>19. All site works / activities are to be supervised by a competent person and assessed and signed off by a qualified person.</p> <p>20. All aspects of cases to be maintenance free.</p> <p>21. All parts to be available for a minimum of 10 years.</p> <p>22. The main display case structures are to be warranted for 25 years inclusive of structural glass, doors and hinges. Seals and light sources are excluded.</p> <p>23. No company branding should be in evident on showcases.</p> <p>24. All joints where visible to be mitered unless specified otherwise.</p> <p>25. All dimensions to be verified in the field / on site prior to production.</p> <p>26. As applicable, Contractor's performance shall conform to the following codes, standards, and regulations:</p> <ul style="list-style-type: none"> <li>International Building Code 2012 Edition</li> <li>Americans with Disabilities Act (ADA)</li> <li>Architectural Barriers Act (ABA)</li> <li>Casework - Architectural Woodwork Institute (AWI)</li> <li>Electrical Work - National Electric Code (NEC)</li> <li>Professional Standards for Museum Accreditation</li> <li>U.S. Department of Energy - Architects and Engineers Guide to Energy Conservation</li> <li>Illumination Engineers Society Standards</li> <li>National Fire Protection Association Life Safety Code 2012</li> <li>Occupational Safety and Health Standards</li> <li>ASHRAE Handbook and Standards (for lighting)</li> <li>All governing local, state, and national codes</li> </ul>																						

### PRODUCTION DESIGN

#### Carcass

- Fully enclosed steel construction with all interior joints sealed. Sealed access panels to be provided to any enclosed dead spaces around or beneath cases to allow for cleaning. Provision to be made to allow leveling on site. Display chamber to be completely sealed from light chamber (where present). Adequate air circulation is required between the display chamber and the environmental display chamber equal to a continuous 10mm air gap around the solid display base.
- Floor mounted cases to have adjustable feet, to allow for final leveling.
- The supplier is to state the guarantee period for all elements, seals, glass, locks, moving panels, linings, hinges.
- The warranty period is to be provided and shall not be less than 1 year from date of acceptance.

#### Access & Doors

- Access to all cases to be 50% via hinged doors, or pull-and-slide doors.
- Doors able to be operated by one person. Gas struts/stays/support system to be provided where necessary. Case doors normally self-supporting once opened.
- Hinge to be heavy duty double action hinge to allow compression seals at perimeter of door including hinged side. Access clearance to be min 95% of opening width. Suggested hinge supplier - Manfred Frank or similar.
- Pistons should be air and dust sealed and no parts should require lubrication.
- All showcases to be normally opened by one person unless otherwise stated.
- Showcase manufacturer to supply materials/equipment to allow for continued period of being open for off gassing (at least 2 weeks) or object installation.

#### Seals to Case Access

- Extruded polyester-based silicone rubber compression seals (low modular, neutral curing and vulcanizing at room temperature) are required on all access doors to display chamber and environmental control chamber. Maximum 0.25 air changes per 24hrs.
- All gasket seals to be held in place by a trim, not adhesive, seals to be non rubber.

#### Ventilation

- Light chamber (where present) always vented to prevent heat transmittance to display chamber, with silent fan assistance to evacuate hot air.
- Any fan incorporated should avoid associated noise problems be as silent as possible (40 dBA at 1 meter) and placed on pads to prevent vibrations.
- Particle filters to be fitted to all vents (Intercept-particle filter or similar).

#### SECURITY - To be read in conjunction with SI Guidelines: *Exhibit Case Construction & Alarming Design*

Refer to Section 13800 (Security) of the Specification book

#### Locks

- All doors to have min 2no. locks with min 7no. discs / 5no. levers. All locks to be concealed where possible. Hinges to be concealed. All locks to be high security - Kenstan Medeco (or equal) - and keyed alike by gallery (key suited) all maintenance locks to light chamber and environmental control chamber to be keyed alike independently to display chamber.
- Locks concealed and protected from attack where possible.
- It should not be possible to remove key when lock in open position.
- Locks must not be used to hold door closed.
- Locks to be suited as follows:
  - Type A - Maintenance key all serviceable locks
  - Type B - Display Case top
  - Type C - Display Case bottom
 Display access can be further split out by zone as directed by the SI.
- All keys provided during manufacture must be listed and accounted for. Handover procedure to be agreed with SI.
- All other compartments secured with locks of different suiting to main display volume.

## Display Case List For: NMAH-2W - Many Voices, One Nation

Basic Information											Additional Information						Finishes			Key Suite Information		
Case No.	Case Type	Qty	No. of Bays	No. of Doors	Access	External Dimensions (mm)	Display Dimensions (mm)	Case Base Height (mm)	Case Header Height (mm)	Glass Height (mm)	Structural Panels	Glass Thickness (mm)	Glass Bonnet Weight (kg)	High Security	Lighting	Environmental Control	Shelving Type	Case Header & Kicker Finish	Case Deck Finish	Dress Panel Finish	Case Suite	Service Suite

### Glazing

- It is the responsibility of the showcase contractor to demonstrate that the glass provided for the cases meets the necessary security and sealing requirements. This should be demonstrated to the CA during the manufacture period.

### Alarms

- Provision for alarm contacts to be included.
- Alarm contacts to be fully concealed.
- Provision to be made to seal alarm cable routes as required to maintain air exchange rate.
- Any adhesives or sealants used to be submitted for approval by SI.
- All connections between alarm contacts and control panel to be verified by SI.
- The coordination of security wiring, sensor installation and commissioning of the integrated security system is the responsibility of the contractor.

### CASE CONSTRUCTION MATERIALS

#### Support Framework

- Steel system, no wood or composite board. All visible metal to be powder coated.
- All metalwork to be formed and jointed to support intended weights, inclusive of objects and object mounts. Sheet metalwork is to be of 16SWG / 1.626mm. Provide for powder-coated finish unless otherwise indicated.
- Corner flanges on high security cases should have at least 20mm overlap round the glass to prevent a levering attack on the corners of case. For display cases holding other materials, glass corners cemented or bonded together are acceptable.
- All moving parts (hinges, etc.) and bolts, fasteners, etc. to be stainless steel (Grade 316).

#### Lining Panels

- Glass or steel coated substrate.
- Substrate panels to be treated to class A fire resistance.

#### Glazing

- As a minimum the glass should be anti-bandit laminated glazing, five-ply, 9.5mm thick or greater (11.3mm for panels larger than 1000mm in any dimension, 13mm for high security cases).
- Glazing is to be bonded to all framing and articulated fastenings.
- Glass to be low-reflectance (Amiran or equal).

#### Interior

- (Except for metal, acrylic, glass) - all parts that can potentially off-gas into interior space to be sealed with aluminum barrier film, stapled in place with stainless steel staples, with acid-free aluminum sealing tape. At least 2 weeks to be allowed for drying and off-gassing.
- Non-acidic materials must be used at all times; felt and wool in particular should be avoided because they attract insect pests. All materials in contact with the internal volume of the showcase must have been Oddy tested either previously or as part of this project. Oddy tests can be carried out provided that a 6g sample of the material is made available (approx. 10 cms squared) minimum 10 weeks prior to production.

#### Sealant

- All interior joints sealed with clear silicone or acrylic latex based caulk sealant.
- Sealant to be Silastic 3145 (clear) or 7091 (black or grey). Or equivalent alcohol – curing silicone sealant.
- Dacrylate sealant is not to be used.
- All sealants to be checked with SI prior to use.

### CASE DRESSING MATERIALS

#### Adhesives

- Clear acrylic based adhesive, adhesive tapes and hot-melt stick adhesives. Stainless steel pin, screw or edge as appropriate 2-4 weeks must be allowed for off-gassing.
- All adhesives to be checked with SI prior to use.

#### Paints

- Must be water based/acrylic coatings and 30 days must be allowed for off-gassing.

#### Fabrics

- All textiles to have recently passed oddy tests. Stainless steel stapled in place.

#### In-case Graphic Panels

- Aluminum/ph neutral foam board/sign blank. Use of spray mounted adhesives to be avoided. Any heat seal film must be polyester based. Any in-case graphics to be demountable.
- Only acid-free foam board, resin-coated paper or all-rag museum-board inside case. Any adhesives and encapsulation films must be non-PVC based (e.g. polyester, acetate or polypropylene) and approved prior to use.

#### Off - gassing (time before the installation of objects)

- Use only fabrics as specified in the finishes schedule
- Use of adhesives completed, including spray mounting – four weeks
- Painting completed – 30 days
- Contractor to maintain a record of when each case has been completed and when it will be available for installation of artifacts.

### IN-CASE HUMIDITY CONTROL

#### Air Exchange

- SI reserve the right to test the air exchange of any case supplied after construction and as cases are offered for handover. If the case is found to underperform by more than 20% then it is the responsibility of the contractor to do any necessary works to meet the desired results. This work will be carried out at the expense of the contractor. The contractor will be liable for the costs involved in any re-testing of the air exchange of the cases should they fail the initial test.

#### Active RH Control

- The internal environment should be able to control conditions between 40 and 60% RH with the use of Miniclimas and dehumidifiers remotely positioned outside of the case environment.
- It is the responsibility of the contractor to install all equipment so that it confirms to the manufacturer's warranty. If this is not achievable then this must be raised with the client and the contract administrator.

## Display Case List For: NMAH-2W - Many Voices, One Nation

Basic Information										Additional Information							Finishes			Key Suite Information		
Case No.	Case Type	Qty	No. of Bays	No. of Doors	Access	External Dimensions (mm)	Display Dimensions (mm)	Case Base Height (mm)	Case Header Height (mm)	Glass Height (mm)	Structural Panels	Glass Thickness (mm)	Glass Bonnet Weight (kg)	High Security	Lighting	Environmental Control	Shelving Type	Case Header & Kicker Finish	Case Deck Finish	Dress Panel Finish	Case Suite	Service Suite

**Passive RH Control**

1. To allow response to a unit failure the cases will have conditioned ProSORB in them, sufficient to allow for a fourteen day period within limits without conditioning. With showcases at 1 air exchange per day, this will require 8kg/m<sup>3</sup> of display case area, with 0.1per day, 3kg/m<sup>3</sup>.
2. Access to ProSORB shall be external to case environment and sealed with secure locks of a separate suite.
3. The facility chamber should be made of metal.
4. The use of the facility tray should not compromise the air exchange of the case.
5. The showcase structure must be able to support the amount of buffering material required.

**DRAWINGS**

1. The contractor will be required to supply (but not limited to) the following shop drawings for approval:
  - Structural drawings of case frame with any necessary supporting structural calculations.
  - Details of door access and seals.
  - Details of lighting systems.
  - Details of environmental alarm integration.
  - Details of security power and signal, terminal (gathering strips) and sensor integration into casework / exhibitry as appropriate.

**O&M MANUAL CONTENTS**

1. Final specification for the whole installation.
2. Opening and closing instructions.
3. Range of internal display systems and methods of removing and inserting internal display systems.
4. Safe weight loading of lining panels, shelves and display systems.
5. All operational requirements and maintenance procedures.
6. Full surface finish details.
7. Air exchange testing results.
8. Cleaning specifications including method statements for specialist finishes.
9. Electrical testing certificate.
10. Any guarantees or warranties for the cases and for any associated equipment which must commence from the date of practical completion for the contract.
11. All items requiring maintenance and details of maintenance support provided under the contract, including anticipated response times.
12. Names and addresses of all manufacturers of specialist elements in order for SI to place direct orders for spares and replacement parts.
13. Schedule of equipment and accessories required to access and use the display case.
14. As installed drawing in PDF and DWG format, hard copy and digital CD.
15. Lamp schedules to facilitate re-lamping.
16. Method of focusing light fittings.





## 2.0 AV-IT List



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Client: **Smithsonian Institution**  
 Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
 Project No.: **1403109**  
 Our ref: **9961-5a-MVON-AV-IT Specification**  
 Revision: **Rev L**

Date: **February 29, 2016**  
 Distribution: **Kathryn Campbell, Nancy Davis, Megan Smith, Cassie Mancer (SI-NMAH), Bill Haley, David Donoghue, Kevin Callis (HSD)**

### AV and IT Specification For: NMAH-2W - Many Voices, One Nation

Exhibit No.	Exhibit Name	Position in gallery	Software	Brief Description	Media Level	Duration (Dwell time)	Trigger	Basic Hardware Requirement	Resolution	Web / Mobile-device Enabled	Audio	Physical Exhibit Structure
<b>Section 1.0 MANY VOICES ONE NATION</b>												
M2101	How Did We become US	Section 1 center gallery wall facing the concourse area	TBC	Images (of people) from particular time periods will be displayed within "zones" along the wall. These zones will not be labelled or particularly obvious to visitors, but the most recent images will be to the far right and the oldest to the far left. This visual experience is intended to both draw visitors into the exhibit and take them back in time, moving from the "present" to the era of contact—the beginning of Section 2. It will continue the visual motif of the mosaic of faces seen at the threshold to the exhibition. The audio track will consist of 8-10 different voices, asking the questions "How Did We Become Us? And "How Do We Become Us?" in different accents/tones. Voices should not be overwhelming or annoyingly repetitive, but should be inviting, intriguing, and subtly add character to the experience. The voices are not keyed to particular faces/ images on the video.	Low level	30 seconds - 1 minute 6-8 minutes of looped content	Loop / gestural TBC	3.00 Panasonic TH55LF50U 6.00 Sharp PN-E421 42" LCD Screen 2.00 Sharp PN-Y325 32" LCD Screen 1.00 3M M2467PW 24" Chassis Mount Touchscreen 3.00 Premier Mounts PREM-LMV 6.00 Premier Mounts P4263F 3.00 Premier Mounts P2642F 12.00 Roku Brightsign XD232 12.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13 12.00 Interconnection cable set 2.00 Tannoy OCV 6	1920 x 1080	To be considered for mobile friendly web application	Yes	center wall structure with supporting framework and panels
M2102	Entry Wall Screen (faces Identifier)	Section 1 Donor panel	TBC	Screen based presentation that tiles through individual faces seen on the introductory wall panels and on How Did We Become Us? Media piece. The purpose of this screen is to allow image credits and names of individuals to be available to the visitor if required. Screen will run through a loop of the images from the face collage. Each face will be identified with the name of the sitter (if known) and the credit line for the image. The caption for each image will be less than 25 words.	Low level	30 seconds	Loop	1.00 3M C2167PW 21.5" Open-Frame Touchscreen 1.00 Roku Brightsign XD232 1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13 1.00 Interconnection cable set	1920 x 1080	No	No	Embedded into Donor panel wall.
<b>Section 2.0 UNSETTLING THE CONTINENT</b>												
M2201	Unsettling a Continent Video (Map Based)	Section 2 Contact/Boom	History Channel	<b>VIDEO:</b> This map-based video animation will show a chronological overview of first contact in the Western hemisphere between native, European, and African peoples, and the location, timing, and impact of a range of early contacts (including all of the areas focused on in subsections.) The video will feature map based visuals of origins; graphics of settlements that depict social dynamics distinctly (slave markets; Indian villages; places of ethnic identity as well as commerce), and routes of trade and cultural exchange into the heart of what would become America. It should have a powerful visual impact that allows visitors to understand the basic messages of the video without dwelling too long.	Low level	2 minutes	Loop	1.00 3M M2467PW 24" Chassis Mount Touchscreen 1.00 Premier Mounts P2642F 1.00 Roku Brightsign XD232 1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13 1.00 Interconnection cable set	1920 x 1080	To be considered for mobile friendly web application	No	Mounted landscape in vertical blade
<b>Section 3.0 CENTRAL WALL (VOICES OF DEBATE) AND CLUSTERS (PLACES OF NEGOTIATION)</b>												
M2301	Our Debates	Central wall facing into the gallery- 5 installations / AV experiences located adjacent to 5 small display cases each containing 2 small objects relating to a debate	TBC	This will be a dynamic word and image display, with kinetic typography and animated sections of images taking advantage of multiple surfaces and planes. The boundaries should not be square and static; rather, the interplay between images should visually represent the debates that were occurring, and should visually direct focus to the physical objects as the centers of living debates. This section of the exhibit considers five important debates that shaped—and continue to shape—the nation: Slavery v. Abolition, Nativism v. Belonging (or Ethnic Identity), Exclusion v. Inclusion, Segregation v. Integration, and Deportation v. Legalization. Each debate is represented by the simple juxtaposition of two artifacts.  There are to be five separate media pieces along the wall, each of which will provide context for that debate and elaborate on the tension suggested by the object juxtapositions. Each piece will use a variety of visual and print primary source materials to present the views on both sides.	Low level	1 minute each debate	Loop	4.00 Panasonic PT-RZ370 WUXGA Projector (2 of 2100 x 1181mm, PD 3300mm; 2 of 1800 x 1013mm, PD 2810mm) 4.00 Projector Mount 2.00 Dataton WatchPax 2 4.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13 4.00 Interconnection cable set 4.00 Tannoy OCV 6	1920 x 1080	To be considered for mobile friendly web application	TBC	Ceiling mounted projectors
M2302	Digital Yearbook	Education Cluster	TBC	<b>TOUCHSCREEN WITH SOUND.</b> A selection of School related ephemera will be arrayed on a background that is styled to look like a desk or table. The objects portrayed will include approximately 4 pieces of assorted ephemera (class photos/ pamphlets and 2-4 yearbooks. Each digital yearbook or pamphlet will allow visitors to "flip the pages" on screen. Each yearbook will have up to 4 individual spreads that show class picture, group pictures, and article. 1-2 selected in each spread will allow the visitor to get (slightly) more information, either via zoom-able image or additional 20-30 word pop-up label. Some of the individual pictures will act as hot spots that when touched, pull-up a short video clip or an oral history. Short 50 word 'articles' within the yearbook layouts will convey information about major legislation or other historical moments that reflect national shifts in education. The yearbooks will feature topics roughly grouped by time period, beginning in the 1900's moving towards the current day.	Medium level	1 - 2 minutes	Visitor activated	1.00 3M C2167PW 21.5" Open-Frame Touchscreen 1.00 Dell OptiPlex 9020 Small FF - See Spec 1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13 1.00 Extron USB Extender TX 60-871-12 & RX 60-871-22 1.00 Visaton FR 8 WP +70V transformer 1.00 Interconnection cable set	1920 x 1080	To be considered for mobile friendly web application	Yes	Housed in AV lectern
M2303	Voices of the Military	Military Cluster	History Channel	This interactive features the voices of individuals struggling with the question of whether their participation in the military gives them rights to be recognized as United States citizens.  The visitor will be presented with 3 different characters from across a wide span of time, from the Civil War to the present. The stories selected for each individual will highlight how people have used their military service to argue for their right to citizenship in the United States, and how the major values debates portrayed along the "Voices of Debate" wall adjacent to the "clusters" have impacted the everyday lives of Americans.  While the objects are situated in the exhibition chronologically, the interactive components in the clusters in this section ask timeless questions. In each cluster we ask a question that is relevant in the present moment, but for which the objects included provide historical precedent.  The question for this interactive is: "Does military service make us American?"	Medium level	2 minutes	Visitor activated	1.00 3M C3266PW 32" Open-Frame Touchscreen 1.00 Dell OptiPlex 9020 Small FF - See Spec 1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13 1.00 Extron USB Extender TX 60-871-12 & RX 60-871-22 1.00 Visaton FR 8 WP +70V transformer 1.00 Interconnection cable set	1920 x 1080	To be considered for mobile friendly web application	Yes	Mounted portrait in vertical blade

**AV and IT Specification For: NMAH-2W - Many Voices, One Nation**

Exhibit No.	Exhibit Name	Position in gallery	Software	Brief Description	Media Level	Duration (Dwell time)	Trigger	Basic Hardware Requirement	Resolution	Web / Mobile-device Enabled	Audio	Physical Exhibit Structure
M2304	Sports and American Identity Jumbotron	Sports cluster- High above floor level and themed like a Jumbotron structure if possible	History Channel	<p>The video itself should resemble a small version of a jumbotron from a sporting arena. The seating area/bench should be a section of metal bench like you would find in bleachers. A video comprised of footage from newsreels, sports broadcasts, and contemporary sports TV shows like Sports center will show major moments when Americans have debated issues of race, identity, and belonging through sports. The video will not be narrated—the storyline will be carried in the selection and juxtaposition of clips. The video will highlight contemporary and historical moments like:</p> <ul style="list-style-type: none"> <li>-Jackie Robinson makes his Major League Baseball debut in 1947</li> <li>-Knicks point guard Jeremy Lin discusses race</li> <li>-Jesse Owens in the Olympics</li> <li>-Debates over ethnic team names</li> <li>-Serena Williams wins Wimbledon</li> </ul> <p>These will not all be triumphant moments, but will show how Americans have both succeeded and failed to make one of many in the arena of sports.</p>	Low level	3-4 minutes	Loop	<ul style="list-style-type: none"> <li>1.00 Panasonic TH55LF50U</li> <li>1.00 Premier Mounts PREM-LMV</li> <li>1.00 Roku Brightsign XD232</li> <li>1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13</li> <li>1.00 Tannoy OCV 6</li> <li>1.00 Interconnection cable set</li> </ul>	1920 x 1080	To be considered for mobile friendly web application	Yes	
M2305	Work Interactive	Work Cluster	TBC	<p>This interactive will be based on the game "Two Truths and a Lie." Visitors will be given three scenarios that have to do with American work life, laws, and culture. Two will be fictional, and one will be true. Each scenario will be represented by a stylized pen and ink-style drawing, along with a short (less than 25 word) description of the scenario. If the visitor makes a wrong selection, that scenario will be x-ed or greyed out. When the visitor makes the correct selection, any remaining wrong answers will grey out, and the correct drawing with morph into the historical photograph on which it is based, and grow to fill the whole screen. A short text (less than 50 words) will appear, along with a "next" button that will take visitors to the next set of three scenarios.</p> <p>Visitors will cycle through 4 sets of scenarios before the game ends.</p>	Medium level	2 minutes	Visitor activated (Touchscreen)	<ul style="list-style-type: none"> <li>1.00 3M C2167PW 21.5" Open-Frame Touchscreen</li> <li>1.00 Dell OptiPlex 9020 Small FF - See Spec</li> <li>1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13</li> <li>1.00 Extron USB Extender TX 60-871-12 &amp; RX 60-871-22</li> <li>1.00 Interconnection cable set</li> </ul>	1920 x 1080	To be considered for mobile friendly web application	No	Housed in AV lectern
M2306	Religion Interactive	Religion Cluster	Video elements possibly History Channel	<p>A map, explorable by hotspots. There are 8 "hotspots"—touching these will pull up contextualizing label text (50-75 words) and 1-2 graphics. Touchscreen interactive will feature an exploration of one street, Bowne Street in Queens, NY, that contains both historical and contemporary examples of religious pluralism.</p>	Medium level	2 minutes	Visitor activated (Touchscreen)	<ul style="list-style-type: none"> <li>1.00 3M C2167PW 21.5" Open-Frame Touchscreen</li> <li>1.00 Dell OptiPlex 9020 Small FF - See Spec</li> <li>1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13</li> <li>1.00 Extron USB Extender TX 60-871-12 &amp; RX 60-871-22</li> <li>1.00 Visaton FR 8 WP +70V transformer</li> <li>1.00 Interconnection cable set</li> </ul>	1920 x 1080	To be considered for mobile friendly web application	Yes	Housed in AV lectern
<b>Section 4.0 PEOPLING THE EXPANDING NATION</b>												
M2401	Expanding the Nation Video	Central island in section 4	TBC	<p>Expanding the Nation is a map-based video animation. The infographic/animation style should be of a related visual character to the Section 2 interactive, and should be a modern update/adaptation of period-appropriate graphics. This will be a constantly-looping video projected onto a large, angled surface. The video will have about 3-4 minutes total run time.</p> <p>There will be three main topical segments of the video, each separated by a single short dynamically animated interstitial. Each topical segment lasts for about 1 minute. Within the topical segments, up to 3 popup factoids or inset images may appear</p>	Low level	3 minutes	Loop	<ul style="list-style-type: none"> <li>1.00 Panasonic PT-RZ670 WUXGA Projector (2600 x 1625mm PD 2320mm)</li> <li>1.00 Panasonic DLE-085 Lens</li> <li>1.00 Projector Mount (Angled)</li> <li>1.00 Roku Brightsign XD232</li> <li>1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13</li> <li>1.00 Interconnection cable set</li> </ul>	1920 x 1200	To be considered for mobile friendly web application	No	Ceiling mounted projector
<b>Section 5.0 CREATING COMMUNITY- CHICAGO AND LOS ANGELES</b>												
<b>Section 6.0 NEW AMERICANS- CONTINUING DEBATES</b>												
<b>Section 7.0 WHAT DOES AMERICA SOUND LIKE?</b>												
M2701	What Does America Sound Like	Section 7 (northeast Corner of gallery)	TBC	<p>This section will be a cultural geography of contemporary America as told through sights and sounds that make up our diverse nation. This sonic journey will include voices, stories, music, jokes, accents, environmental soundscapes, and a range of everyday sounds that illustrate cultural practices. Using historical and contemporary imagery and footage, this experience will create a visceral sense of being in particular moment and place.</p> <p>Visuals—both still and video footage—will be projected on an arrangement of surfaces on the wall, sometimes functioning together and sometimes individually.</p>	Low level	5 minutes	Loop	<ul style="list-style-type: none"> <li>1.00 Panasonic PT-RZ670 WUXGA Projector (4100 x 2563mm PD 1555mm)</li> <li>1.00 ET-DLE030(0.38-1)</li> <li>1.00 Projector Mount</li> <li>1.00 Dataton WatchPax 2</li> <li>1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13</li> <li>2.00 Tannoy OCV 6</li> <li>1.00 Interconnection cable set</li> </ul>	1920 x 1200	To be considered for mobile friendly web application	Yes	Ceiling mounted projectors
<b>Section 8.0 CONCLUSION</b>												
<b>Equipment Room</b>												
								<ul style="list-style-type: none"> <li>2.00 Netgear GS748T4 Rack mount 48 Port 1G Switch</li> <li>2.00 Interconnection lead allowance</li> <li>2.00 Equipment Rack - 42U inc hardware</li> <li>1.00 Netgear WNDAP660 Access Point</li> </ul>				
								<ul style="list-style-type: none"> <li>1.00 Medialon Showmaster ST</li> <li>1.00 REAL VNC License to enable remote access to ALL computers</li> <li>1.00 Dell Precision M4700 Lap Top</li> <li>2.00 iPad</li> </ul>				
								<ul style="list-style-type: none"> <li>1.00 Bose PowerMatch 8250N</li> <li>1.00 QSC SPA4-60</li> </ul>				
<b>Services</b>												
								<ul style="list-style-type: none"> <li>1.00 System Design and Project Management</li> <li>1.00 Project Engineering</li> <li>1.00 Installation &amp; accommodation</li> <li>1.00 Commissioning</li> <li>1.00 Media Loading</li> <li>1.00 System/show control Programming</li> </ul>				

## AV and IT Specification For: NMAH-2W - Many Voices, One Nation

Exhibit No.	Exhibit Name	Position in gallery	Software	Brief Description	Media Level	Duration (Dwell time)	Trigger	Basic Hardware Requirement	Resolution	Web / Mobile-device Enabled	Audio	Physical Exhibit Structure
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### Media Type Key:

Low Level IT Media =	Looping video / audio
Medium Level IT Media =	Low to medium level interaction (e.g. IT Database)
High Level IT Media =	High level interaction (e.g. Complex Simulation Game)

### AV Hardware

#### General Requirements

- All materials and services to be suitable for intended purposes as indicated in these exhibition drawings and specifications.
- All materials and services to conform to relevant ANSI (or equivalent) standards as appropriate
- All materials to be used in conjunction with manufacturers' recommended stipulations
- All permanent fixed works to be class A fire rated unless otherwise stated.
- All material selection and services to be executed in accordance with ADA Standards for Accessible Design
- All federal, state and local regulations prevail
- All material to be free from defects and distortion
- All sharp edges to be removed unless otherwise specifically stated. In areas of extreme exposure between (0 and 1800mm aff) all edges and corners to be rounded to a minimum of 6mm in radius
- All reveals to be finished as appropriate
- Cable management separated into 110V, 12V and data to be included as accessible conduits with draw strings as required. Data should have 2no runs (1no to act as spare)
- Adequate and safe provision to be made in all exhibit structure for access to services (existing or new) and any required ongoing maintenance. Type of access to accommodate frequency of requirements.
- All lighting (light box) and electrical compartments to be fully ventilated at the upper and lower areas promoting natural air flow.
- All internal surfaces of the light box to be painted out white to promote uniformity and maximize the brightness of any lamp provided.
- Any serviceable items to be clearly identified and stock provision checked / secured to provide ongoing maintenance for min 5 years from practical completion
- All visible fasteners to be non-standard tamper proof unless specifically stated otherwise. Any necessary key bits etc. to be supplied to the client with spares as appropriate
- All free standing exhibit structure to be supplied with self leveling feet and floor scribe.
- In addition to the above all wall fixed exhibit structure to be supplied with scribe panels.
- All goods to be inspected and correctly packed and labeled prior to arriving on site
- All site works / activities are to be supervised by a competent person and assessed and signed off by a qualified person

- Competent person:** a person who is capable of identifying existing and predictable hazards in the workplace and who is authorized to take prompt corrective measures to eliminate them.
- Qualified person:** a person who by possession of a recognized degree or certificate of professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

20. Contractor to provide descriptions of all the required installation requirements, including final engineering, submittals, loading of all operating software on the respective hardware, system commissioning and staff training (to include 16 hours of Smithsonian Staff training).

21. As applicable, Contractor's performance shall conform to the following codes, standards, and regulations:

International Building Code 2012 Edition  
 Americans with Disabilities Act (ADA)  
 Architectural Barriers Act (ABA)  
 Casework - Architectural Woodwork Institute (AWI)  
 Electrical Work - National Electric Code (NEC)  
 Professional Standards for Museum Accreditation  
 U.S. Department of Energy - Architects and Engineers Guide to Energy Conservation  
 Illumination Engineers Society Standards  
 National Fire Protection Association Life Safety Code 2012  
 Occupational Safety and Health Standards  
 ASHRAE Handbook and Standards (for lighting)  
 All governing local, state, and national codes

### AV Hardware

- All hardware equipment must be Energy Star 4.0 compliant
- All equipment mounting apparatus must conform to the relevant Vesa standard
- All lighting equipment control protocols must conform with ANSI E1.3-2001 (R2006), Lighting Control Systems - 0 to 10V Analogue Control Specification
- All audio visual control protocols and cabling must conform to the ANSI E1.x standard as defined by Plasa
- All equipment must be secured with appropriate anti theft / vandal protection
- All hardware used to store and playback audio and video content should use Solid State storage technology unless otherwise specified
- All high level equipment be mounted and secured to the appropriate rigging equipment with secondary harness as appropriate.
- All equipment rigging should conform to ANSI E1.2-2000 standards: Specifications for the design and manufacture of audio visual rigging equipment and aluminum / steel supporting trusses.
- All AV equipment to be located in a central rack unless otherwise stated.
- All AV equipment to interfaced with the BMS system to facilitate a system shutdown should an emergency evacuation of the premises be required (unless otherwise stated).
- All AV to initiate with a control signal provide in the Control Room (contact closure for 'on' and open for 'off').
- AV Link to Fire System -All AV in gallery to turn off should the fire alarm be initiated and an evacuation be required.
- Local AV Control required - Ability to override BMS in AV rack room and initiate AV out of hours as required.
- Local AV Control required - Ability to turn individual AV elements on or off as required from AV rack room.
- Appointed contractor to supply full cut sheets and technical specs, scheduled out for ease of integration of hardware into cabinets.
- Any manufacturer's brand name or logo visible on equipment housing to be concealed.

### AV & IT Software

#### General Requirements

- All materials and services to be suitable for intended purposes as indicated in these exhibition drawings and specifications.
- All materials and services to conform to relevant ANSI (or equivalent) standards as appropriate
- All material (content) selection and services to be executed in accordance with ADA Standards for Accessible Design
- All federal, state and local regulations prevail
- All site works / activities are to be supervised by a competent person and assessed and signed off by a qualified person

- Competent person:** a person who is capable of identifying existing and predictable hazards in the workplace and who is authorized to take prompt corrective measures to eliminate them.
- Qualified person:** a person who by possession of a recognized degree or certificate of professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.  
Contractor and/or their sub-contractors must be trained technicians in the product lines that they will be installing, and their control system programmers must be Medialon (US) certified.

### AV / IT Software

- All local cultural issues to be reviewed and considered.
- All public accessible screen levels to be tamper proof unless specifically stated otherwise. Any necessary access codes etc. to be supplied to the client instruction as appropriate
- Any internet link to be supplied with virus software and adequate levels of access control as appropriate
- All software to be supplied with regional code compatible licenses.
- All software to be resistant to hard shut down and start up of hardware.
- All software to be supplied with 2 soft back up copies of finished programs
- With regards to off-the-shelf software licenses: all software to be supplied license free/paid for intended use by the end user with any necessary licenses defined and any necessary re-application scheduled.
- For all original material supplied by the client (end user) the full copyright remains with the client. Such material should not be used for any other exhibit/use without the expressed written consent of the client.
- All newly generated software to be supplied license free to the client inclusive of any edited material obtained for the purposes of the exhibit. This includes but is not limited to CGI or original film recordings.
- Contractor is to work in conjunction with HSD and NMAH to develop the user interfaces and graphics styling. Copyright belongs to SI / NMAH.
- All software where encrypted to be supplied with relevant codes for future amendment and updating by a third party.

### Signal & Control

- The Medialon show control system will use a local laptop PC, housed in a rack in the AVCR. The user interface is to be a webpage that can be accessed from this computer and via the network from an alternate computer. Museum personnel will be able to adjust and override AV's running within the gallery, monitor system functions such as the lamp hours on projectors, as well as
- In most case where daily power cycle is controlled via a relay from the BMS. This will be connected to a digital input on the Medialon Showmaster that will in turn control the power up and down sequences. The contact closure signal will be sent to the Showmaster over a single cable holding 2 18AWG wires from the BMS.
- In the exhibits that have projectors, the Showmaster will use network control to perform a soft shutdown of the projectors and computers. This allows the fans on the projectors to continue running for a period of time that allows the projection lamps to cool off safely.  
When the display screens lose signal they will turn themselves off as will all audio amplifiers and DSP's. Brightsigns will be sent a sleep command and will stop playback and go into standby.



2.1 AV Media Briefs



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## Media Detailed Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation** Our ref: **9961-5a-OAJ-Media Brief-2101**

Project Number: **1403109**

Contract Number: **F13CC10273**

Date of Issue: **February 24, 2016**

Distribution: **Nancy Davis, Tim Winkle, Megan Smith, Cassie Mancer, Hana Kim, Kathryn Campbell (SI), Cynthia Roberts, David Donoghue, Kevin Callis file (HSD).**

File ref: 9961-5a-OAJ-Media Brief-Template

Title: How Did We Become US?		Reference M2101
Section:	1	
Type of Multimedia: (i.e. Game, database, Audio, Video, etc.)	Video installation with audio track.	
Key Messages:	America has always been diverse. This is a dynamic, people-focused exhibition that explores two main questions: How did we become US? How do we become us?	
Look and feel: (Visual references)	<p>Images from particular time periods will be displayed within "zones" along the wall. These zones will not be labelled or particularly obvious to visitors, but the most recent images will be to the far right and the oldest to the far left.</p> <p>We like how the screens both function independently and as one visual "unit" across multiple screens: <a href="https://vimeo.com/9316971">https://vimeo.com/9316971</a> (Go to 01:02 through 1:23)</p> <p>Additionally, we want to consider making the presentation respond to visitors' walking by or gesturing; somewhat like this example, <a href="http://www.digitalsignageconnection.com/world-coca-cola-wows-movement-sensing-live-positively-wall-933">http://www.digitalsignageconnection.com/world-coca-cola-wows-movement-sensing-live-positively-wall-933</a> but without the map and factoids!</p> <p>Video loop will repeat every 2 minutes; corresponding audio loop will be 6-8 minutes long to avoid too much repetition of voices.</p>	
Access requirements:	n/a.	
Trigger:	Runs on constant loop	

Title: How Did We Become US?		Reference M2101
Number of people using interactive at once:	10-12	
Target audience:	All visitors	
Dwell Time:	30 seconds	
Content outline: Description of the content/ storyline including how it relates to the exhibition and messages.	<p>This visual experience is intended to both draw visitors into the exhibit and take them back in time, moving from the "present" to the era of contact—the beginning of Section 2. It will continue the visual motif of the mosaic of faces seen at the threshold to the exhibition.</p> <p>Among the faces, two key questions build across the multiple screens on the wall: "How did we become US?" alternating with "How do we become US?" The face images may fade, leaving the question only on the screen before beginning to cycle through the presentation again.</p> <p>Images from particular time periods will be displayed within "zones" along the wall. These zones will not be labelled or particularly obvious to visitors, but the most recent images will be to the far right and the oldest to the far left.</p> <p>We like the visual movement and functionality of the screens shown at 1:02 here: <a href="https://vimeo.com/9316971">https://vimeo.com/9316971</a></p> <p>The audio track will consist of 8-10 different voices, asking the questions "How Did We Become Us? And "How Do We Become Us?" in different accents/tones. Voices should not be overwhelming or annoyingly repetitive, but should be inviting, intriguing, and subtly add character to the experience. The voices are not keyed to particular faces/ images on the video.</p>	
Visitor experience: Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	Visitors will experience this element as part of the threshold as they pass through.	
Learning Objectives:	Draw visitors back in time to where the exhibition begins, and give them an immediate understanding that this exhibition is about people, and will be dynamic.	
Emotional Objectives:	Visitors should "see themselves" in the collection of faces so they understand that they are a part of this story.	

<b>Title:</b> How Did We Become US?		<b>Reference M2101</b>
<b>Behavioral Objectives:</b>	This experience will usher people into the exhibition, leave them curious and excited to see the rest of the exhibition.	
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	Section 1	
<b>Source:</b>	SI will provide all images and credits	
<b>Copyright holder:</b>	SI	
<b>Approximate length of footage required in minutes:</b>	No new footage; SI will provide all images.	
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	N/A	
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	TBD	
<b>Power source requirements on gallery:</b>	HSD - Refer to AV-IT Specification document for hardware details	
<b>Scope of work:</b>	Video wall programming Audio editing Video editing Text enhanced with low-level animated element	
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	HSD - Refer to AV-IT Specification document for hardware details	
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.	

**Cynthia Roberts**  
Content Manager

**Media Detailed Brief**

Client: **Smithsonian Institution – National Museum of American History**  
Project Title: **Many Voices, One Nation** Our ref: **9961-5a-MVON-Media Brief-2102**  
Project Number: **1403109**  
Contract Number: **F13CC10273**

Date of Issue: **February 24, 2016**  
Distribution: **Nancy Davis, Tim Winkle, Megan Smith, Cassie Mancer, Kathryn Campbell (SI), Cynthia Roberts, David Donoghue, Kevin Callis file (HSD).**

File ref: 9961-5a-OAJ-Media Brief-Template

<b>Title:</b> Entry Wall Screen		<b>Reference M2102</b>
<b>Section:</b>	1	
<b>Type of Multimedia:</b> (i.e. Game, database, Audio, Video, etc.)	Database	
<b>Key Messages:</b>	Identification and credits for all of the images featured in the collage of faces on the entry wall.	
<b>Look and feel:</b> (Visual references)		
<b>Access requirements:</b>	n/a	
<b>Trigger:</b>	Runs on constant loop	
<b>Number of people using interactive at once:</b>	1-2	
<b>Target audience:</b>	All visitors	
<b>Dwell Time:</b>	30 seconds	
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	Screen will run through a loop of the images from the face collage. Each face will be identified with the name of the sitter (if known) and the credit line for the image. The caption for each image will be less than 25 words.	
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	Visitors who are very interested in knowing who is included in the collage of faces will stand up to watch the screen for a few minutes before they enter or after they leave the exhibition.	
<b>Learning Objectives:</b>	Identify the faces on the wall and provide credit line information.	

<b>Title:</b> Entry Wall Screen	<b>Reference</b> M2102
<b>Emotional Objectives:</b>	
<b>Behavioral Objectives:</b>	
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	Embedded in the collage of faces wall directly to the left of the donor panel.
<b>Source:</b>	Si will provide all images and credits.
<b>Copyright holder:</b>	SI
<b>Approximate length of footage required in minutes:</b>	n/a
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	n/a
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	All credit/copyright information can go on-screen.
<b>Power source requirements on gallery:</b>	HSD - Refer to AV-IT Specification document for hardware details
<b>Scope of work:</b>	
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	HSD - Refer to AV-IT Specification document for hardware details
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.

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## Media Detailed Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation** Our ref: **9961-5a-OAJ-Media Brief-M2301**  
Project Number: **1403109**  
Contract Number: **F13CC10273**

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Date of Issue: **February 24, 2016**  
Distribution: **Nancy Davis, Howard Morrison, Hana Kim, Megan Smith, Cassie Mancer, Kathryn Campbell (SI), Cynthia Roberts, David Donoghue, Kevin Callis (HSD).**

File ref: 9961-5a-OAJ-Media Brief-M2301

<b>Title:</b> What Kind of Nation Will We Be?	<b>Reference:</b> M2301
<b>Section:</b>	3
<b>Type of Multimedia:</b> (i.e. Game, database, Audio, Video, etc.)	TBD
<b>Key Messages:</b>	Americans have struggled to deal with major divisions and disagreements throughout our history.
<b>Look and feel:</b> (Visual references)	This will be a dynamic word and image display, with kinetic typography and animated sections of images taking advantage of multiple surfaces and planes, a bit like the Lobby Quote Gallery here: <a href="https://vimeo.com/22334739">https://vimeo.com/22334739</a> (00:00 to 00:50) The boundaries should not be square and static; rather, the interplay between images should visually represent the debates that were occurring, and should visually direct focus to the physical objects as the centers of living debates.
<b>Access requirements:</b>	Captioning should be a designed element of the piece, similar to kinetic typography, where some content is meaningfully animated for emphasis.
<b>Trigger:</b>	Continuous loop
<b>Number of people using interactive at once:</b>	12-20 people across the wall.
<b>Target audience:</b>	All visitors, but with a special focus on the two millennial generations (adults in their twenties and thirties)
<b>Dwell Time:</b>	3 minutes



Title: What Kind of Nation Will We Be?		Reference: M2301
<p><b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.</p>	<p>Since the founding of the nation, people in the United States have had diverse, sometimes competing visions of the country. We have grappled with how to make one nation out of our many voices—through debate, discussion, humor, protest, violence, and even war. As we meet each other at work, on the playing field, at school, in the military, and in places of worship, each generation faces these questions anew.</p> <p>We envision one media piece along the wall, which will use a variety of visual and print primary source materials to present a range of visions of America. The experience will be divided into three chapters:</p> <p>Negotiating Freedom Negotiating Inclusion Negotiating Equality</p> <p>These chapters will unfold down the wall from right to left, in chronological order.</p> <p>Each media piece will visually represent the range of views on these questions through animated displays of visual sources (paintings, sketches, wood cuts, and photographs); print materials (broadsides, documents, cartoons, hand-lettered signs); quotes; and questions. See the attached visual concept document.</p> <p>Details of images will need to be highlighted. Selected phrases from text sources will need to be “pulled out” and animated as word art. On-screen activity, perhaps building to “boom” moments, would be enhanced by limited sound effects or environmental sounds, but no music or narration.</p> <p>Each chapter should function not as an independent display but as part of the larger wall. We would like adequate show control to be able to operate the installation as a single, coordinated piece.</p>	
<p><b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)</p>	<p>Visitors will experience these AV elements as an integral part of section 3. They need to help reinforce the sense of tension and struggle, while also showing people working together. This installation should be emotionally resonant.</p>	
<p><b>Learning Objectives:</b></p>	<p>Visitors will better understand important issues that have arisen as the country has grappled with being one nation composed of many diverse voices.</p>	
<p><b>Emotional Objectives:</b></p>	<p>Visitors will feel the tension that has surrounded our attempts to make one nation out of many voices.</p>	

Title: What Kind of Nation Will We Be?		Reference: M2301
<p><b>Behavioral Objectives:</b></p>	<p>Visitors will be inspired to look closely at the objects and think about the impact of the debate on their own lives.</p>	
<p><b>Position in gallery:</b> Links to text/other exhibition elements etc.</p>	<p>Section 3</p>	
<p><b>Source:</b></p>	<p>NMAH will source images and video.</p>	
<p><b>Copyright holder:</b></p>	<p>SI</p>	
<p><b>Approximate length of footage required in minutes:</b></p>	<p></p>	
<p><b>Production Requirements:</b> Actors, costume, set, props, location, etc</p>	<p>n/a</p>	
<p><b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.</p>	<p>TBD</p>	
<p><b>Power source requirements on gallery:</b></p>	<p>HSD - Refer to AV-IT Specification document for hardware details</p>	
<p><b>Scope of work:</b></p>	<p>Image editing Animated enhancement of historical images and text Video editing Playback synchronization across the 5 projectors included in this multimedia program.</p>	
<p><b>Technical information/description:</b> (i.e. projection, speaker, etc.)</p>	<p>HSD - Refer to AV-IT Specification document for hardware details</p>	
<p><b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?</p>	<p>HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.</p>	

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## Media Detailed Brief

Client: **Smithsonian Institution – National Museum of American History**  
 Project Title: **Many Voices, One Nation** Our ref: **9961-OAJ-Media Brief-M2302**  
 Project Number: **1403109**  
 Contract Number: **F13CC10273**

Date of Issue: **December 7, 2015**  
 Distribution: **Nancy Davis, Debbie Schaffer-Jacobs, Megan Smith, Cassie Mancer, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: 9961-5a-OAJ-Media Brief-M2302

<b>Title:</b> Digital Yearbook <b>M2302</b>	
<b>Area:</b>	Education Cluster
<b>Section:</b>	
<b>Type of Multimedia:</b> (i.e. Game, database, Audio, Video, etc.)	Database, Audio
<b>Key Messages:</b>	Education is an arena in which everyday Americans have negotiated, influenced, or encountered many of the nation's most challenging debates, including: inclusion or exclusion? Segregation or integration? Prejudice or tolerance? Deportation or legalization?
<b>Look and feel:</b> (Visual references)	Functionally, most of the objects shown in the interactive would be explorable via page turning and hotspots, like the Ledger shown here: <a href="http://amhistory.si.edu/american-enterprise/merchant-ledger/">http://amhistory.si.edu/american-enterprise/merchant-ledger/</a>  Some images or photos shown would be zoomable.  The team would also like to incorporate some of the original, historic line art graphic elements into the styling of the interactive.  The team wants to be clear that we are not trying to reproduce any single yearbook; rather, we are using the design elements, layout, and balance of text and images to inform how we intend to present our content. Topics will be grouped roughly by time period, and each yearbook for an individual time period should have appropriate styling (eg. 19 <sup>th</sup> century, 1920s, 1940s, 1960s, etc.)
<b>Access requirements:</b>	See Smithsonian Accessibility guidelines for further information.
<b>Trigger:</b>	Touch

<b>Title:</b> Digital Yearbook <b>M2302</b>	
<b>Number of people using interactive at once:</b>	Individuals or visiting social groups (small groups of 2-3 peers or family) clustering around a station; in either situation, we require only a "single-user" interface.
<b>Target audience:</b>	The two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.
<b>Dwell Time:</b>	1-2 minutes
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	A selection of school-related ephemera will be arrayed on a background that is styled to look like a desk or table  The objects portrayed will include approximately 4 pieces of assorted ephemera (class photos, pamphlets), and 2-4 yearbooks.  A digital yearbook or pamphlet will allow visitors to "flip the pages" on screen.  Each yearbook will have up to 4 individual "spreads" that show class pictures, group pictures, and articles (see reference images below). 1-2 selectable elements in each spread will allow visitors to get (slightly) more info, either via zoomable image, or additional 20-30 word pop-up label. Some of the individual pictures will serve as hotspots that, when touched, pull up a short audio or video clip from an oral history. Short (50 wd) "articles" within the yearbook layouts will convey information about major legislation or other historical moments that reflect national shifts in education. The yearbooks will be feature topics roughly grouped by time period, beginning in the 1900s and moving towards the current day.
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	Visitors that approach the clusters will first be attracted to the interactives. The interactives will serve as entry point to the main concept of "arena of interaction." The interface will have a contemporary look that will appeal to the target audience of young adults in their twenties and thirties and families with children aged 12 or older. The cases of objects and labels that accompany the interactives will serve as concrete historical evidence of the larger concepts presented in the interactives.
<b>Learning Objectives:</b>	Visitors will learn about how education is an arena in which people have grappled with issues like segregation/integration, prejudice, tolerance, inclusion, exclusion.
<b>Emotional Objectives:</b>	Visitors will relate to the objects and stories in the exhibition on a personal level as entry points to understanding the role of education as a place where Americans come together.

<b>Title:</b> Digital Yearbook M2302	
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	The cluster interactives are located with each cluster down the center of the gallery. It is important that the interactives are designed as a primary component of the cluster.
<b>Source:</b>	SI
<b>Copyright holder:</b>	SI or copyright obtained by SI
<b>Approximate length of footage required in minutes:</b>	Any video or audio used in the interactive will come from existing SI oral history collections.
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	n/a
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	Credits can be included onscreen.
<b>Power source requirements on gallery:</b>	HSD - Refer to AV-IT Specification document for hardware details
<b>Scope of work:</b>	
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	HSD - Refer to AV-IT Specification document for hardware details
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.

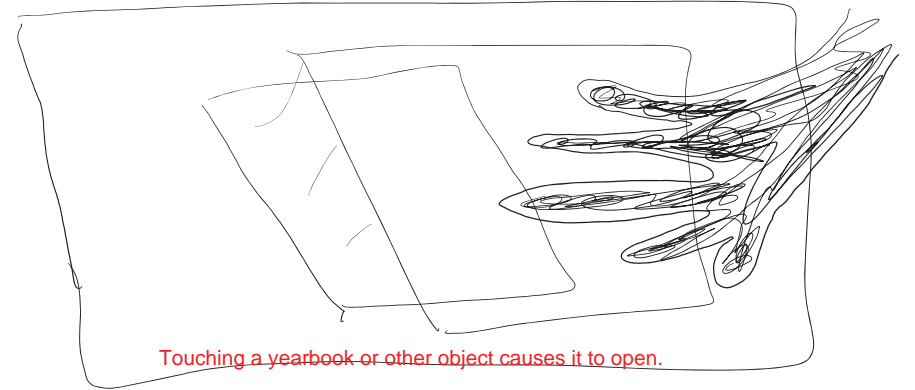
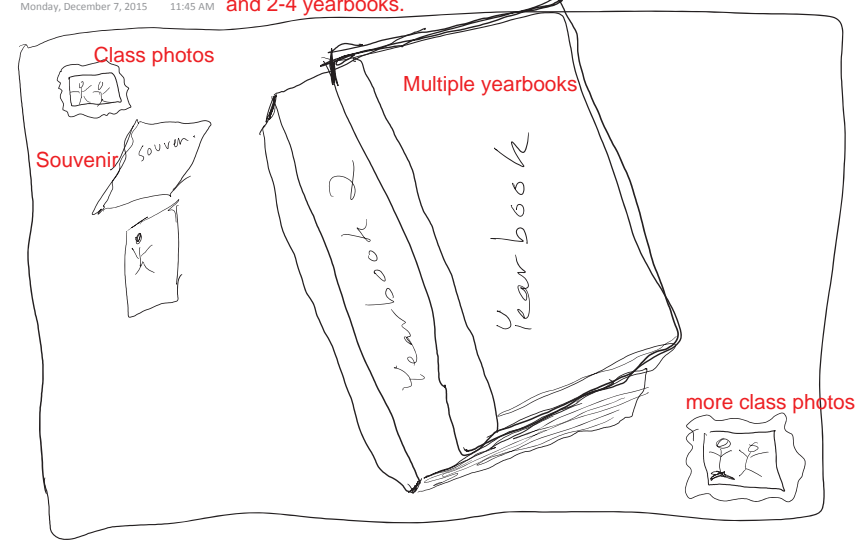




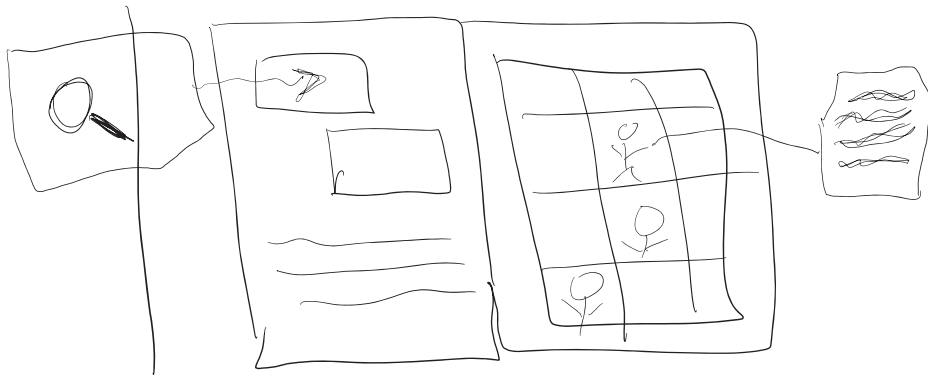
Education touchscreen interactive tentative layout

Items arrayed as if they're on a desk. Approximately 4 pieces of assorted ephemera, and 2-4 yearbooks.

Monday, December 7, 2015 11:45 AM



Touching a yearbook or other object causes it to open.



Layout based on time-appropriate yearbook layout. 1-2 selectable elements in each spread (up to 4 individual "spreads" in each yearbook) allow visitors to get (slightly) more info...either via zoomable image, or additional 20-30 word pop-up label.



WIN\_20151207\_120609.JPG



WIN\_20151207\_120713.JPG



WIN\_20151207\_120719.JPG



WIN\_20151207\_120844.JPG



WIN\_20151207\_121047.JPG



WIN\_20151207\_121138.JPG



WIN\_20151207\_122040.JPG



WIN\_20151207\_122046.JPG



WIN\_20151207\_121205.JPG



WIN\_20151207\_121243.JPG



WIN\_20151207\_122053.JPG



WIN\_20151207\_122509.JPG



WIN\_20151207\_122529.JPG



WIN\_20151207\_122542.JPG



WIN\_20151207\_123357.JPG



WIN\_20151207\_123401.JPG



WIN\_20151207\_122933.JPG

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WIN\_20151207\_123002.JPG



WIN\_20151207\_123411.JPG

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WIN\_20151207\_123424.JPG



WIN\_20151207\_123434.JPG



WIN\_20151207\_123444.JPG



WIN\_20151207\_123458.JPG



WIN\_20151207\_123614.JPG



WIN\_20151207\_123450.JPG

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WIN\_20151207\_123451.JPG



WIN\_20151207\_123622.JPG

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WIN\_20151207\_123634.JPG





WIN\_20151207\_123645.JPG



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### Media Detailed Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation** Our ref: **9961-OAJ-Media Brief-M2303**

Project Number: **1403109**

Contract Number: **F13CC10273**

Date of Issue: **February 24, 2015**

Distribution: **Nancy Davis, Joan Troyano, Megan Smith, Cassie Mancer, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: 9961-5a-OAJ-Media Brief-M2303

<b>Title:</b> Voices of the Military <b>M2303</b>	
<b>Area:</b>	Military Cluster
<b>Section:</b>	
<b>Type of Multimedia:</b> (i.e. Game, database, Audio, Video, etc.)	Touch-screen with animation, audio
<b>Key Messages:</b>	Diverse individuals have used their participation in the United States military to argue for their right to U.S. citizenship, while grappling with the everyday impact of the debates shown in the "Voices of Debate" interactive.
<b>Look and feel:</b> (Visual references)	We would like to capture the immediacy and emotional resonance from the interviews/oral histories shown in "Who, Like Me, is Threatened" <a href="https://vimeo.com/107625623">https://vimeo.com/107625623</a> We also like the way the animations used by StoryCorps convey both the humor and heartbreak in the stories of people's everyday lives: <a href="http://storycorps.org/animation/eyes-on-the-stars/">http://storycorps.org/animation/eyes-on-the-stars/</a> <a href="http://storycorps.org/animation/the-nature-of-war/">http://storycorps.org/animation/the-nature-of-war/</a> <a href="http://storycorps.org/animation/the-icing-on-the-cake/">http://storycorps.org/animation/the-icing-on-the-cake/</a> The marriage of animation, humor, and human stories may end up something like the game <i>Valiant Hearts</i> , but with less interactivity: <a href="https://www.youtube.com/watch?v=MP8q5F6dFgQ">https://www.youtube.com/watch?v=MP8q5F6dFgQ</a>
<b>Access requirements:</b>	All audio must be captioned. See Smithsonian Accessibility guidelines for further information. Captioning should be a designed element of the piece, similar to kinetic typography, where some content is meaningfully animated for emphasis.
<b>Trigger:</b>	Touch-screen

<b>Title:</b> Voices of the Military <b>M2303</b>	
<b>Number of people using interactive at once:</b>	Individuals or visit social groups (small groups of 2-3 peers or family) clustering around a station; in either situation, we require only a “single-user” interface.
<b>Target audience:</b>	The two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.
<b>Dwell Time:</b>	Mostly likely 2 minutes as visitors engage with one component or multiple stories. (1 minute per story--3 minutes total run-time.)
<b>Content outline:</b> Description of the content/storyline including how it relates to the exhibition and messages.	<p>In this interactive we feature the voices of individuals struggling with the question of whether their participation in the military gives them rights to be recognized as United States citizens.</p> <p>The visitor will be presented with 3 different characters from across a wide span of time, from the Civil War to the present. The stories selected for each individual will highlight how people have used their military service to argue for their right to citizenship in the United States, and how the major values debates portrayed along the “Voices of Debate” wall adjacent to the “clusters” have impacted the everyday lives of Americans.</p> <p>While the objects are situated in the exhibition chronologically, the interactive components in the clusters in this section ask timeless questions. In each cluster we ask a question that is relevant in the present moment, but for which the objects included provide historical precedent.</p> <p>The question for this interactive is: “Does military service make us American?”</p>

<b>Title:</b> Voices of the Military <b>M2303</b>	
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	<p>Visitors that approach the clusters will first be attracted to the interactives. The interactive will be shown on a large touch screen, flipped to portrait orientation. The attract screen will prompt visitors with the provocative question “Does military service make us American?”</p> <p>Images of the characters, or still screens from the animations, may also appear in the attract loop, showing the visitor the range of personalities represented. Once visitors break the attract loop, they will be presented with a menu featuring 3 different individuals. The visitor will select a character by touching the screen. Once the character is touched, it launches an animation accompanied by audio. The audio may be pulled from existing first-person interviews, or historical first-person written narratives read by a voice actor. The approximately 1 minute animation will take visitors through an episode in the character’s life that illustrates how that person struggled with debates such as “Inclusion or Exclusion”, “Segregation or Tolerance”, etc. in the progress of their daily lives as they strove to be recognized as an American citizen. The interface will have a contemporary look that will appeal to the target audience of young adults in their twenties and thirties and families with children aged 12 or older. The cases of objects and labels that accompany the interactives will serve as concrete historical evidence of the larger concepts presented in the interactives.</p>
<b>Learning Objectives:</b>	Visitors will connect the stories and objects in the cases to their own experiences of negotiation within arenas of interaction in their own lives. They will learn about and think critically about how personal experiences are part of larger national stories of inclusion and exclusion, cultural pluralism, and cultural invention.
<b>Emotional Objectives:</b>	Visitors will relate to the objects and stories in the exhibition on a personal level; the stories will act as entry points to understanding that each person in the United States is impacted by the debates that diverse groups in the U.S. grapple with to establish identity... and how those debates manifest in practical ways in the “arenas of interaction” in the everyday lives of individuals. Visitors will relate to the both the dynamic and aspirational aspects of that history.
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	The cluster interactives are located with each cluster down the center of the gallery. It is important that the interactives are designed as a primary component of the cluster.

<b>Title:</b> Voices of the Military <b>M2303</b>	
<b>Source:</b>	Potentially: Audio files of interviews, and reference images for animations: <a href="http://www.loc.gov/vets/">http://www.loc.gov/vets/</a>  Potentially: Reference imagery: <a href="http://americanhistory.si.edu/collections/object-groups/women-in-wwi?ogmt_page=women-in-wwi-correspondence">http://americanhistory.si.edu/collections/object-groups/women-in-wwi?ogmt_page=women-in-wwi-correspondence</a>
<b>Copyright holder:</b>	SI
<b>Approximate length of footage required in minutes:</b>	1 minute of footage per story, 3 minutes total run-time
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	Narrated animation with captions Voice actor for 1-2 audio clips for which no audio exists, or that predate recording devices
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	Credits can be included onscreen.
<b>Power source requirements on gallery:</b>	HSD - Refer to AV-IT Specification document for hardware details
<b>Scope of work:</b>	Animation of 3x 1 minute story segments Audio editing for pieces with existing audio Narration Voice actor up to for 1-2 audio clips for which no audio exists, or that predate recording devices
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	HSD - Refer to AV-IT Specification document for hardware details  A large (32") touchscreen, portrait orientation Small speaker
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.

Art style reference:

*Valiant Hearts*





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## Media Detailed Brief

Client: **Smithsonian Institution – National Museum of American History**  
 Project Title: **Many Voices, One Nation** Our ref: **9961-OAJ-Media Brief-M2304**  
 Project Number: **1403109**  
 Contract Number: **F13CC10273**

Date of Issue: **February 24, 2016**  
 Distribution: **Nancy Davis, Steve Velasquez, Cassie Mancer, Megan Smith, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: 9961-5a-OAJ-Media Brief-M2304

<b>Title:</b> Sports and American Identity Jumbotron <b>M2304</b>	
<b>Area:</b>	Sports Cluster
<b>Section:</b>	
<b>Type of Multimedia:</b> (i.e. Game, database, Audio, Video, etc.)	Video
<b>Key Messages:</b>	Sports are an arena in which everyday Americans have negotiated, influenced, or encountered many of the nation's most challenging debates, including: inclusion or exclusion? Segregation or integration? Prejudice or tolerance? Deportation or legalization?
<b>Look and feel:</b> (Visual references)	The video itself should resemble a small version of a jumbotron from a sporting arena. The seating area/bench should be a section of metal bench like you would find in bleachers. (reference images attached.)
<b>Access requirements:</b>	All audio must be captioned. See Smithsonian Accessibility guidelines for further information. Captioning should be a designed element of the piece, similar to kinetic typography, where some content is meaningfully animated for emphasis.
<b>Trigger:</b>	Runs on continuous loop.
<b>Number of people using interactive at once:</b>	2-5 watching.
<b>Target audience:</b>	The two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.
<b>Dwell Time:</b>	2-3 minutes

<b>Title:</b> Sports and American Identity Jumbotron <b>M2304</b>	
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	A video comprised of footage from newsreels, sports broadcasts, and contemporary sports TV shows like Sportscenter will show major moments when Americans have debated issues of race, identity, and belonging through sports. The video will not be narrated—the storyline will be carried in the selection and juxtaposition of clips. The video will highlight contemporary and historical moments like:  <ul style="list-style-type: none"> <li>-Jackie Robinson makes his Major League Baseball debut in 1947</li> <li>-Knicks point guard Jeremy Lin discusses race</li> <li>-Jesse Owens in the Olympics</li> <li>-Debates over ethnic team names</li> <li>-Serena Williams wins Wimbledon</li> </ul> These will not all be triumphant moments, but will show how Americans have both succeeded and failed to make one of many in the arena of sports.  We estimate using approximately 30 images/video clips, none more than 30 seconds.  A small seating area (could be as small as a 2-person bench) will allow visitors to sit to watch the video. This seating should take the form of a metal bleacher-type bench.
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	Visitors will sit on the bench or stand nearby to watch the video, which might be integrated into the casework or displayed above the casework.
<b>Learning Objectives:</b>	Visitors will learn how the debates from the debate wall have been grappled with as everyday Americans have played, watched, or otherwise participated in sports.
<b>Emotional Objectives:</b>	Visitors will likely have a personal connection either to the memory of sitting in bleachers or to one or many of the sports moments on the video.
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	The cluster interactives are located with each cluster down the center of the gallery. It is important that the interactives are designed as a primary component of the cluster.
<b>Source:</b>	TBD
<b>Copyright holder:</b>	SI

<b>Title:</b> Sports and American Identity Jumbotron <b>M2304</b>	
<b>Approximate length of footage required in minutes:</b>	We estimate using approximately 30 images/video clips, none more than 30 seconds.
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	n/a
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	Credits can be included onscreen.
<b>Power source requirements on gallery:</b>	HSD - Refer to AV-IT Specification document for hardware details
<b>Scope of work:</b>	Video editing Audio editing Text enhanced with low-level animated element
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	HSD - Refer to AV-IT Specification document for hardware details
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.

Content references:



hsd

Styling references:



hsd



For metal bleacher/benches:

<http://www.isallese.com/bleachers-benches.php>





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## Media Detailed Brief

Client: **Smithsonian Institution – National Museum of American History**  
 Project Title: **Many Voices, One Nation** Our ref: **9961-OAJ-Media Brief-M2305**  
 Project Number: **1403109**  
 Contract Number: **F13CC10273**

Date of Issue: **February 24, 2016**  
 Distribution: **Nancy Davis, Margie Salazar-Porzio, Megan Smith, Cassie Mancera, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: 9961-5a-OAJ-Media Brief-M2305

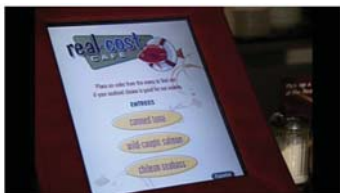
<b>Title:</b> Work interactive <b>M2305</b>	
<b>Area:</b>	Work Cluster
<b>Section:</b>	
<b>Type of Interactive:</b> (i.e. Game, database, Audio, Video, etc.)	Game
<b>Key Messages:</b>	Work is an arena in which every day Americans have negotiated, influenced, or encountered many of the nation's most challenging debates, including: inclusion or exclusion? Segregation or integration? Prejudice or tolerance? Deportation or legalization?
<b>Look and feel:</b> (Visual references)	Potentially similar in tone to the Real Cost Cafe interactive at the Monterey Bay Aquarium, but without the video of the actors: <a href="http://www.cortinaproductions.com/projects/monterey-bay-aquarium-real-cost-cafe/">http://www.cortinaproductions.com/projects/monterey-bay-aquarium-real-cost-cafe/</a> The team likes that the visitor makes their selection, then is presented with factual information in a fun and accessible way.
<b>Access requirements:</b>	See Smithsonian Accessibility guidelines for further information.
<b>Trigger:</b>	Touchscreen
<b>Number of people using interactive at once:</b>	Individuals or visit social groups (small groups of 2-3 peers or family) clustering around a station; in either situation, we require only a "single-user" interface.
<b>Target audience:</b>	The two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.
<b>Dwell Time:</b>	Approximately 2 minutes

<b>Title:</b> Work interactive <b>M2305</b>	
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	This interactive will be based on the game "Two Truths and a Lie." Visitors will be given three scenarios that have to do with American work life, laws, and culture. Two will be fictional, and one will be true. Each scenario will be represented by a stylized pen and ink-style drawing, along with a short (less than 25 word) description of the scenario. If the visitor makes a wrong selection, that scenario will be x-ed or greyed out. When the visitor makes the correct selection, any remaining wrong answers will grey out, and the correct drawing will morph into the historical photograph on which it is based, and grow to fill the whole screen. A short text (less than 50 words) will appear, along with a "next" button that will take visitors to the next set of three scenarios.  Visitors will cycle through 4 sets of scenarios before the game ends.
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	Visitors that approach the clusters will first be attracted to the interactives. The cases of objects and labels that accompany the interactives will serve as concrete historical evidence of the larger concepts presented in the interactives
<b>Learning Objectives:</b>	Visitors will learn how a diverse American workforce has come together in different ways to change workplace conditions over time
<b>Emotional Objectives:</b>	Visitors will have a personal connection to the stories of peoples' work experiences and struggles with national debates.
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	The cluster interactives are located with each cluster down the center of the gallery. It is important that the interactives are designed as a primary component of the cluster.
<b>Source:</b>	Animated
<b>Copyright holder:</b>	SI
<b>Approximate length of footage required in minutes:</b>	N/A
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	n/a
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	Not anticipated but can go onscreen if needed.
<b>Power source requirements on gallery:</b>	HSD - Refer to AV-IT Specification document for hardware details
<b>Scope of work:</b>	Low-level artistic rendering/animation of existing historical still images Programming of four sets of three scenarios each

**Title:** Work interactive M2305

<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	HSD - Refer to AV-IT Specification document for hardware details
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.

Real Cost Café references:



Content reference:







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## Media Detailed Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation** Our ref: **9961-OAJ-Media Brief-M2306**

Project Number: **1403109**

Contract Number: **F13CC10273**

Date of Issue: **February 24, 2016**

Distribution: **Nancy Davis, Margie Salazar-Porzio, Megan Smith, Cassie Mancera, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

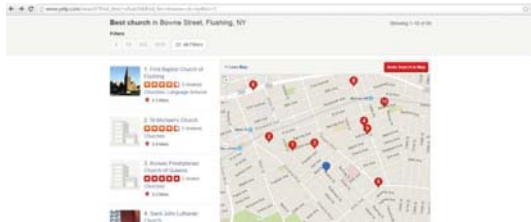
File ref: 9961-5a-OAJ-Media Brief-Template

<b>Title:</b> Religion Interactive <b>M2306</b>	
<b>Area:</b>	Religion Cluster
<b>Section:</b>	
<b>Type of Multimedia:</b> (i.e. Game, database, Audio, Video, etc.)	Database, with video/audio element
<b>Key Messages:</b>	Each cluster represents an “arena of interaction,” key spaces where people come together and negotiate their place <i>between unity and pluralism</i> in the American cultural landscape. The arenas are not situated in time, but are both contemporary and historical. While the objects are situated in the exhibition chronology, the interactive components ask timeless questions. In this cluster we ask a question that is relevant in the present moment for which the objects included could provide historical precedent: “How does religion unite and divide us?”
<b>Look and feel:</b> (Visual references)	Updating the approach shown here: <a href="http://americanhistory.si.edu/documentsgallery/exhibitions/nursing_interactive.html">http://americanhistory.si.edu/documentsgallery/exhibitions/nursing_interactive.html</a> but the building from the concept: a map, explorable by hotspots. The team envisions 8 “hotspots”—touching these will pull up contextualizing label text (50-75 words) and 1-2 graphics.
<b>Access requirements:</b>	See Smithsonian Accessibility guidelines for further information.
<b>Trigger:</b>	Touch
<b>Number of people using interactive at once:</b>	Individuals or visit social groups (small groups of 2-3 peers or family) clustering around a station; in either situation, we require only a “single-user” interface.
<b>Target audience:</b>	The two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.

<b>Title:</b> Religion Interactive <b>M2306</b>	
<b>Dwell Time:</b>	1.5 minutes
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	Touchscreen interactive will feature an exploration of one street, Bowne Street in Queens, NY, that contains both historical and contemporary examples of religious pluralism. We envision this as a map that contains 8-12 “hotspots”—touching on some of these will pull up text (50-75 words) and 1-2 graphics.  See here for historical maps of Flushing: <a href="http://murrayhill.byethost8.com/maps.htm?ckattempt=1">http://murrayhill.byethost8.com/maps.htm?ckattempt=1</a>
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	Visitors that approach the clusters will first be attracted to the interactives. The interactives will serve as entry point to the main concept of “arena of interaction.” The interface will have a contemporary look that will appeal to the target audience of young adults in their twenties and thirties and families with children aged 12 or older. The cases of objects and labels that accompany the interactives will serve as concrete historical evidence of the larger concepts presented in the interactives.
<b>Learning Objectives:</b>	Visitors will connect the stories and objects in the cases to their own experiences of negotiation within arenas of interaction in their own lives. They will learn about and think critically about how personal experiences are part of larger national stories of inclusion and exclusion, cultural pluralism, and cultural invention.
<b>Emotional Objectives:</b>	Visitors will relate to the objects and stories in the exhibition on a personal level as entry points to understanding the importance of migration in the making of the nation, and will relate to the both the dynamic and aspirational aspects of that history.
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	The cluster interactives are located with each cluster down the center of the gallery. It is important that the interactives are designed as a primary component of the cluster.
<b>Source:</b>	SI will source all graphics
<b>Copyright holder:</b>	SI
<b>Approximate length of footage required in minutes:</b>	None
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	None

<b>Title:</b> Religion Interactive M2306	
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	Credits can be included onscreen.
<b>Power source requirements on gallery:</b>	HSD - Refer to AV-IT Specification document for hardware details
<b>Scope of work:</b>	Programming map with 8-12 explorable hotspots, each with 1-2 historical images/graphics.
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	HSD - Refer to AV-IT Specification document for hardware details
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.

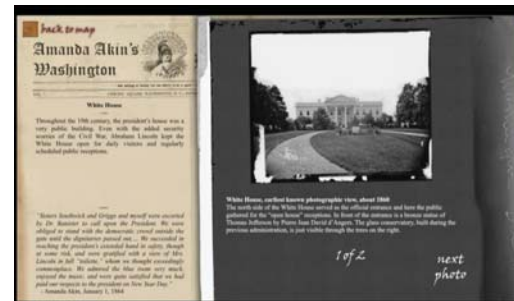
Current View of Bowne Street (for reference only; hotspot areas not determined yet.)



Historic map of Flushing, 1840



Interactive map interface with hotspots





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## Media Detailed Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation** Our ref: **9961-5a-OAJ-Media Brief-M2403**

Project Number: **1403109**

Contract Number: **F13CC10273**

Date of Issue: **February 24, 2016**

Distribution: **Nancy Davis, Bonnie Lilienfeld, Hana Kim, Cassie Mancer, Kathryn Campbell, Megan Smith, (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: 9961-5a-OAJ-Media Brief- M2202

<b>Title:</b> Expanding the Nation Video		<b>Reference #:</b> M2401
<b>Section</b>	4	
<b>Type of Multimedia:</b> (i.e. Game, database, Audio, Video, etc.)	Video	
<b>Key Messages:</b>	The United States expanded geographically and demographically as it transformed from Republic to Empire. People came to the United States in 3 ways: Incorporation, Importation, and Immigration/Migration.	
<b>Look and feel:</b> (Visual references)	<p><i>Expanding the Nation</i> is a map-based video animation. The infographic/animation style we're looking for should be of a related visual character to the Section 2 video, and should be a modern update/adaptation of period-appropriate graphics.</p> <p>Reference videos for functionality and visual style:</p> <p><a href="https://vimeo.com/20621660">https://vimeo.com/20621660</a> National Museum of American Jewish History</p> <p><a href="http://artcom.de/wp-content/uploads/2015/02/2010_salzweltweit_video_01.ogv">http://artcom.de/wp-content/uploads/2015/02/2010_salzweltweit_video_01.ogv</a> German Salt Museum</p>	
<b>Access requirements:</b>	See Smithsonian Accessibility Guidelines.	
<b>Trigger:</b>	Continuous loop.	
<b>Number of people using interactive at once:</b>	3-5	

<b>Title:</b> Expanding the Nation Video		<b>Reference #:</b> M2401
<b>Target audience:</b>	General audience, with a special attention to the two millennial generations. (adults in their 20s and 30s)	
<b>Dwell Time:</b>	1-2 minutes.	

Title: Expanding the Nation Video		Reference #: M2401
<p><b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.</p>	<p>Between 1776 and 1900 the United States expanded geographically and demographically as it transformed from Republic to Empire. The nation acquired new territory by agreement and by force; the population migrated, sometimes voluntarily, sometimes by coercion or force, to new territories, and expanded through immigration and the incorporation of new land and its people.</p>	
	<p>This will be a constantly-looping video projected onto a large, angled surface. The video will have about 3-4 minutes total run time.</p> <p>There will be three main topical segments of the video, each separated by a single short dynamically animated interstitial. Each topical segment lasts for about 1 minute. Within the topical segments, up to 3 popup factoids or inset images may appear</p> <p>The interstitial (attract) segment will display an animated/infographic map showing the different population movement and effects that Incorporation, Immigration, and Importation had on the changing landscape of the United States. The map will show infographic-type data visualizations showing the different types of movement, along with a year counter at the bottom of the display to orient visitors in time. Out of this display showing all of the different types of movement happening at once, the pertinent topic/movement pattern will be visually highlighted and used as a transition into the next topical segment. Each topical segment lasts for about 1 minute. Within the topical segments, up to 3 popup factoids or inset images may appear. Topics are arranged in roughly chronological order.</p> <p>Topic areas:</p> <ol style="list-style-type: none"> <li>1. <b>Importation</b> Slavery</li> <li>2. <b>Migration</b> Homestead Act Gold Rush Returning to country of origin/Chinese Ellis Island/New Orleans</li> <li>3. <b>Incorporation</b> Indian Removal-Nez Pierce Mexican War Louisiana Purchase Puerto Rico Hawaii</li> </ol>	

Title: Expanding the Nation Video		Reference #: M2401
<p><b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)</p>	<p>Visitors will stand to look at map. The map will also have a visual presence, drawing people into section 4 from section 2.</p>	
<p><b>Learning Objectives:</b></p>	<p>Visitors will learn how major historical events and decisions of the 19<sup>th</sup> century affected the United States' population and territory. Visitors will see the case studies of section 4 within a larger context.</p>	
<p><b>Emotional Objectives:</b></p>	<p>Visitors will make connections between what they see and their own family or personal history and realize they are part of the shared history of the nation.</p>	
<p><b>Behavioral Objectives:</b></p>	<p>Visitors will engage more meaningfully with content throughout the exhibition.</p>	
<p><b>Position in gallery:</b> Links to text/other exhibition elements etc.</p>	<p>Section 4</p>	
<p><b>Source:</b></p>	<p>New animation</p>	
<p><b>Copyright holder:</b></p>	<p>SI</p>	
<p><b>Approximate length of footage required in minutes:</b></p>	<p>n/a</p>	
<p><b>Production Requirements:</b> Actors, costume, set, props, location, etc</p>	<p>Animation.</p>	
<p><b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.</p>	<p>Not anticipated, but if needed credits can be included onscreen.</p>	
<p><b>Power source requirements on gallery:</b></p>	<p>HSD - Refer to AV-IT Specification document for hardware details</p>	
<p><b>Scope of work:</b></p>	<p>Image editing Low-level animated enhancement of historical images and text Video editing/animation of data visualizations</p>	
<p><b>Technical information/description:</b> (i.e. projection, speaker, etc.)</p>	<p>HSD - Refer to AV-IT Specification document for hardware details</p>	
<p><b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?</p>	<p>HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.</p>	

**Cynthia Roberts**  
Content Manager

for and on behalf of Haley Sharpe Design Limited

References:

Pull-down maps:



Style references:

Salt Museum projection/physical map



National Museum of American Jewish History

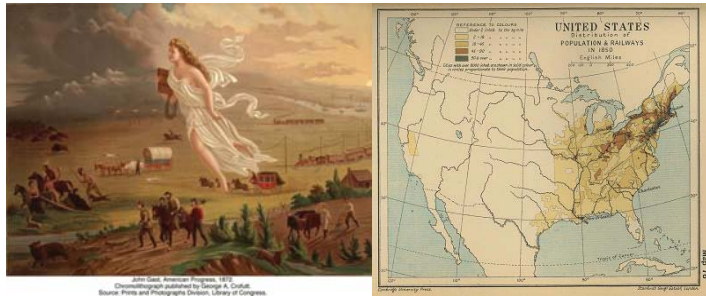


Content references:

Composite map:



Created from:



### Media Detailed Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation** Our ref: **9961-5a-OAJ-Media Brief-Template**

Project Number: **1403109**

Contract Number: **F13CC10273**

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Date of Issue: **February 24, 2016**

Distribution: **Nancy Davis, Steve Velasquez, Hana Kim, Cassie Mancer, Megan Smith, Kathryn Campbell (SI), Cynthia Roberts, David Donoghue, Kevin Callis (HSD).**

File ref: 9961-5a-OAJ-Media Brief-Template

<b>Title:</b> What Does America Sound Like?	<b>Reference:</b> M2701
<b>Section:</b>	7
<b>Type of Multimedia:</b> (i.e. Game, database, Audio, Video, etc.)	Audiovisual installation
<b>Key Messages:</b>	Through music, voices, images, and the rhythms we make together, we hear the diverse sounds of everyday life in America.
<b>Look and feel:</b> (Visual references)	This should be an immersive sound and multimedia show, like a smaller-scale Cathedral of Images/ Carrières de Lumières <a href="https://vimeo.com/118717268">https://vimeo.com/118717268</a> or like the images listed in the styling references section at the end of this brief.
<b>Access requirements:</b>	All audio needs to be captioned. Captioning should be a designed element of the piece, similar to kinetic typography, where some content is meaningfully animated for emphasis.
<b>Trigger:</b>	Continuous loop
<b>Number of people using interactive at once:</b>	4-10 people watching/listening at once.
<b>Target audience:</b>	All visitors, but with a special focus on the two millennial generations (adults in their twenties and thirties)
<b>Dwell Time:</b>	4 minutes

Title: What Does America Sound Like?	Reference: M2701
<p><b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.</p>	<p>This section will be a cultural geography of contemporary America as told through sights and sounds that make up our diverse nation. This sonic journey will include voices, stories, music, jokes, accents, environmental soundscapes, and a range of everyday sounds that illustrate cultural practices...</p> <p>...the crack of the bat, <i>Take Me Out to the Ballgame</i>, a Vaudeville one liner, the sound of a military march, a Baptist hymn, a Cuban exile: <i>"I always felt like I never belonged, always felt like I never belonged... I always felt like a hybrid. ... it's, it's like I wasn't Cuban anymore, I wasn't American, what am I?"</i> The sound of a receptionist in tech company answering phone, a klezmer song...</p> <p>...These are sounds that make up our identity and our culture. They will help reinforce the ideal of a diverse America and that despite our cultural and personal differences we interact and build upon each encounter.</p> <p>Using historical and contemporary imagery and footage, this experience will create visceral sense of being in particular moment and place.</p> <p>Visuals—both still and video footage--will be projected on an arrangement of surfaces on the wall, sometimes functioning together and sometimes individually.</p>
<p><b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)</p>	<p>Small groups of visitors will watch and listen in the space. The experience will be as immersive as possible—a transformed space that the visitor steps into.</p>
<p><b>Learning Objectives:</b></p>	<p>Visitors will learn that America is rich with cultural diversity and always has been, and that the interactions between different people have created new cultural practices.</p>
<p><b>Emotional Objectives:</b></p>	<p>Visitors will feel positive about American cultural diversity.</p>
<p><b>Behavioral Objectives:</b></p>	
<p><b>Position in gallery:</b> Links to text/other exhibition elements etc.</p>	<p>Section 7.</p>
<p><b>Source:</b></p>	<p>NMAH will work internally and with partner organizations to source some of the footage and audio files needed. Contractor may also need to use stock footage, working from a list of suggested sounds/videos supplied by NMAH.</p>

Title: What Does America Sound Like?	Reference: M2701
<p><b>Copyright holder:</b></p>	<p>SI</p>
<p><b>Approximate length of footage required in minutes:</b></p>	<p>5 minutes.</p>
<p><b>Production Requirements:</b> Actors, costume, set, props, location, etc</p>	<p>Will need to use stock footage where archival footage/images/sounds cannot be sourced.</p>
<p><b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.</p>	<p>Credits/copyright information can be located on a separate wall label.</p>
<p><b>Power source requirements on gallery:</b></p>	<p>HSD - Refer to AV-IT Specification document for hardware details</p>
<p><b>Scope of work:</b></p>	<p>Video editing Audio editing Text enhanced with low-level animation</p>
<p><b>Technical information/description:</b> (i.e. projection, speaker, etc.)</p>	<p>HSD - Refer to AV-IT Specification document for hardware details</p>
<p><b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?</p>	<p>HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.</p>
<p><b>OPTIONAL SERVICES</b></p>	<p>Allow for low-level interactivity, such as a motion-based system for selecting a specific chapter or theme for the video.</p>

Styling references:



Content references:





**Thematic/Poetic inspiration:**

<http://abcnews.go.com/Politics/today-richard-blanco-poem-read-barack-obama-inauguration/story?id=18274653>

**Inaugural poet Richard Blanco read his poem "One Today" at the swearing-in ceremony for President Obama. Here is the full text of the poem as written.**

**"One Today"**

One sun rose on us today, kindled over our shores,  
peeking over the Smokies, greeting the faces  
of the Great Lakes, spreading a simple truth  
across the Great Plains, then charging across the Rockies.  
One light, waking up rooftops, under each one, a story  
told by our silent gestures moving behind windows.

My face, your face, millions of faces in morning's mirrors,  
each one yawning to life, crescendoing into our day:  
pencil-yellow school buses, the rhythm of traffic lights,  
fruit stands: apples, limes, and oranges arrayed like rainbows  
begging our praise. Silver trucks heavy with oil or paper—  
bricks or milk, teeming over highways alongside us,  
on our way to clean tables, read ledgers, or save lives—  
to teach geometry, or ring-up groceries as my mother did  
for twenty years, so I could write this poem.

All of us as vital as the one light we move through,  
the same light on blackboards with lessons for the day:  
equations to solve, history to question, or atoms imagined,  
the "I have a dream" we keep dreaming,  
or the impossible vocabulary of sorrow that won't explain  
the empty desks of twenty children marked absent  
today, and forever. Many prayers, but one light  
breathing color into stained glass windows,  
life into the faces of bronze statues, warmth  
onto the steps of our museums and park benches  
as mothers watch children slide into the day.

One ground. Our ground, rooting us to every stalk  
of corn, every head of wheat sown by sweat  
and hands, hands gleaning coal or planting windmills  
in deserts and hilltops that keep us warm, hands  
digging trenches, routing pipes and cables, hands  
as worn as my father's cutting sugarcane  
so my brother and I could have books and shoes.

The dust of farms and deserts, cities and plains  
mingled by one wind—our breath. Breathe. Hear it  
through the day's gorgeous din of honking cabs,  
buses launching down avenues, the symphony  
of footsteps, guitars, and screeching subways,  
the unexpected song bird on your clothes line.

Hear: squeaky playground swings, trains whistling,  
or whispers across café tables, Hear: the doors we open  
for each other all day, saying: hello, shalom,  
buon giorno, howdy, namaste, or buenos días  
in the language my mother taught me—in every language  
spoken into one wind carrying our lives  
without prejudice, as these words break from my lips.

One sky: since the Appalachians and Sierras claimed  
their majesty, and the Mississippi and Colorado worked  
their way to the sea. Thank the work of our hands:  
weaving steel into bridges, finishing one more report  
for the boss on time, stitching another wound  
or uniform, the first brush stroke on a portrait,  
or the last floor on the Freedom Tower  
jutting into a sky that yields to our resilience.

One sky, toward which we sometimes lift our eyes  
tired from work: some days guessing at the weather  
of our lives, some days giving thanks for a love  
that loves you back, sometimes praising a mother  
who knew how to give, or forgiving a father  
who couldn't give what you wanted.

We head home: through the gloss of rain or weight  
of snow, or the plum blush of dusk, but always—home,  
always under one sky, our sky. And always one moon  
like a silent drum tapping on every rooftop  
and every window, of one country—all of us—  
facing the stars  
hope—a new constellation  
waiting for us to map it,  
waiting for us to name it—together.



2.2 AV Hardware Narrative



## 2 West – Many Voices One Nation 95%

Audio Visual Hardware

April 2016

**DJ Willrich Ltd**

Audio Visual & Multimedia Specialists



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## Introduction

The AV integrator will be required to work with the Museum, Design Team and media producers to deliver a fully operable system. This will include providing sample hardware and assisting in the loading of software onto computers and media players within the gallery.

The AV integrator is required to ensure that all aspects of the system conform to all Museum standards; they should be properly addressed and read in conjunction with this document.

The AV integrator is to deliver a fully integrated system, automated to power up, run for the day and power down at the end of the operational day. All source equipment, audio equipment and show control equipment will be centrally located in the Audio Visual Control Room (AVCR).

All computers, video projectors, monitors and amplifiers will be controlled or indirectly controlled via the control system for power up and power down procedures. All displays should be of the type that will go into standby on removal of signal, however, they must activate on application of a signal even after a power outage without user intervention. The audio visual integrator will be required to ensure that the entire system can be controlled remotely within the building for power up, power down and general systems status.

## Network

The communication network is of fundamental importance, it is there to control data to all the displays, provide staff interaction and control, plus status feedback on individual items of equipment.

An IP matrix is included with this package; however, the final range will be dictated directly by the Museum AV & IT teams. The logic of the last three digits of the address should be adhered to, regardless of the IP range given, but this should be coordinated in advance with NMAH AV and OCIO. The matrix provides “a logic” for the fixed IP addresses to be given to each item of equipment on the network.

The AV network will need to integrate into the general Museum network infrastructure. The AV integrator will be required to approve the final IP range with the Museum. The contractor should coordinate in advance with NMAH AV and OCIO to ensure that the design and network requirements are compatible.

A Real VNC software license to cover **ALL** computers in this project is required as an integral part of the AV system. This should be a site license for the life of the gallery. All computers are to be configured for remote access within the gallery network. Each computer can be administered and updated as necessary within the gallery or remotely.

A wireless access point is to be located in the gallery to enable staff interaction with the system via lap top computers or tablet devices.

## Media Storage

Each screen or projector will require a media source; the prime units are to be the Dell Optiplex 9020 computer and the Roku Brightsign solid-state media player. The requirement for this project is to locate all media replay equipment in the control rack within the AVCR.

All computer based interactive exhibits use the Dell Optiplex 9020 small form factor computer. A cut-sheet detailing the full Dell specification is included with the cut-sheet package. The AV integrator is expected to match or improve on this specification. The minimum requirement is as follows:

- Intel i7-4790 Processor (Quad core, 8MB, 3.6Ghz with HD4600 Graphics)
- Windows 7 Professional
- 8GB 1600MHz DDR3 Memory
- 500GB 2.5inch Solid State Hybrid Hard Drive
- AMD Radeon R7 250, 2GB DDR3 half height
- 3 year Hardware service warranty

## Displays

A number of screen types will be employed within the gallery, the aim throughout has been to keep the range to a minimum, without compromising the design creatively. The AV integrator should verify that ALL displays will automatically turn on with application of a video signal. If there is any doubt the AV integrator will be required to provide the necessary control interface to ensure that **ALL** displays power up without human intervention as part of the automated show control process described later in this document.

## Touch Screens

SI has a preference for 3M capacitive touch screens, care should be taken with regard to integrating any touch screen into a display to ensure nothing conductive makes contact with the screen surface as this will impede the performance. Ventilation around screens and allied equipment should be ensured, the AV integrator must work with the exhibit fabricator to ensure good airflow and cooling of all equipment housed within a given display.

The touch screens in the specification are 3M Multi-touch capacitive technologies, however, SI reserves the right to provide "Government Furnished Equipment" for integration and installation and commissioning by the AV integrator.

Screens in this project are as follows:

- 3M C2167PW 21.5" Open Frame – 1920 by 1080

## Non-touch

A preference for Sharp displays has been expressed for all large screen displays where possible. The following displays or equivalent should be supplied:

- Panasonic TH55LF50U
- Sharp PN-E421 42" – 1920 by 1080
- Sharp PN-Y325 32" – 1920 by 1080
- 3M M2467PW 24" Chassis Mount Touchscreen (used without touch)

## Projectors

The preferred projector is the Panasonic PT-RZ370, a DLP projector with an LED/LASER hybrid based light source:

- Resolution 1920 by 1080
- DLP technology
- 3500 ANSI Lumen light output
- Rated for Museum use i.e. no warranty usage restrictions
- Network control; PJLink of similar protocol
- HDMI and/or DVI input
- LED light engine, if not LED please state lamp hours on normal setting

In some cases the Panasonic PT-RZ670 is used, with the wide angle zoom, DLE-085, lens, and elsewhere with an ultra short throw, DLE-030 lens. It has the same specifications excepting the following:

- Resolution 1920 by 1200
- DLP technology
- 6500 ANSI Lumen light output
- DLE-085 0.8 – 1.0:1 Lens - OR - DLE-030 0.38:1 Lens
- Rated for Museum use i.e. no warranty usage restrictions
- Network control; PJLink of similar protocol
- HDMI and/or DVI input
- LED light engine, if not LED please state lamp hours on normal setting

## Extenders

SI has expressed a preference for Extron DVI extenders with serial and audio support. To ensure commonality throughout the gallery, the DVI 330 Transmitters and Receivers have been used throughout. It should be noted that interconnection between transmitter and receiver should be done using Extron recommended cable; XTP DTP 24 TP.

In some instances HDMI to DVI and DVI to HDMI adaptors will be required.

All touch screens are USB, therefore, a separate USB extender will be required. The Extron USB 60 series should be used; Transmitter 60-871-12 and Receiver 60-871-22.

## Audio

Sound is arguably one of the most contentious aspects of a new gallery; being subjective in terms of quality and intelligibility. Audio in galleries requires discipline in every respect of the design process;

- Number of displays requiring audio
- Navigational or show sound
- Speaker type
- Speaker location

There is always a danger of locating speakers in the wrong place due to the reality that they are not the most visually pleasing of objects at which to look. Great care has been taken to locate speakers in positions that will minimize dispersion into other display areas. There is a joint responsibility for the whole team to ensure sound tracks are constructed and replayed sensibly to minimize the risk of sound spread. It is equally important that sound is intelligible within its own display proximity.

Speakers throughout the gallery will be either suspended from the ceiling and therefore, point down directly at the carpeted floor, or be display mounted and angled towards the carpeted floor.

The majority of media based exhibits with audio employ small speakers to provide local sound within the immediate exhibit area. Visaton produce a speaker with integral domed grill for easy integration into exhibits.

A number of media exhibits have a wider coverage or a requirement for a higher quality of sound, the Tannoy OCV speaker with a 90-degree conical dispersion pattern will be used. **All speakers are to be BLACK.** These displays require the use of a higher power amplifier along with the ability to control them via show control.

Amplifiers will be Bose or QSC products. The Bose amplifiers will have a network control facility for direct control by the Medialon Showmaster across the network. The QSC will be controlled by way of contact closure for muting during alarm status.

Parts Express (<http://www.parts-express.com/wholesale>) and E-speakers.com (<http://www.e-speakers.com>) are both USA distributors of Visaton speakers.



## Show Control

This section should be read in conjunction with the SI Control Functionality document included with this package.

The show control system will be a Medialon Showmaster. A laptop PC is to be provided as the control interface for both gallery attendants and the technical staff, although technical staff will have remote access to the system. In reality it will be possible to control the system from any authorized network device capable of running a web browser, as the control panel would be displayed as a web page.

All computers, video projectors and directly controlled amplifiers, will be controlled via the control system for daily power up and power down procedures. All displays should be of the type that will go into standby on removal of a video signal, however, they must activate on application of a video signal even after a power outage without user intervention.

Currently, there is no requirement for linking show control to the lighting control system. Both systems will be independent.

Power to **ALL** AV hardware will be turned off at night via the main Museum control system. Therefore, it will be necessary for the Showmaster to be given time to power up and load its control system when power is first applied in the morning. After this period (to be specified by the AV integrator) a contact closure will be applied to a digital input on the Showmaster. On "seeing" the contact closure the system should begin the power up procedure:

### Daily power up and down procedure

- Turn on all projectors; this should be done with set intervals between commands to avoid a power up surge with all projectors coming on together. Typically 15 seconds should be allowed within the task between each power up command. The power up command will need to be followed by a lamp on command.
- Displays under direct show control should be powered up in the same way.
- Computers should then be activated using the **Wake on LAN** (WOL) feature within Medialon. Again 15 seconds should be allowed between each computer being activated.
- Brightsign players should be activated via LAN and video replay started.
- Amplifiers will turn on automatically once a signal is applied to an input.

- Throughout the booting process the Medialon panel should provide confidence messages showing that the power up task is running and provide timer indications to confirm the process is running. Panel indicators should indicate for each display as follows:
  - Exhibit powered off: RED
  - Exhibit powering up: AMBER
  - Exhibit powered up and running: GREEN
  - Exhibit powering/cooling down: BLUE
- On completion of power up the Medialon Panel should confirm all displays are active and display operating hours of all projectors.
- Confirmation should be given on the control panel that all media is running, this will require liaison with the media producer to provide feedback that their software is running. If Medialon does not receive confirmation within 5 minutes that an application is running it should re-launch the application and flag a warning on the control panel. All events should be logged.
- Medialon has a logging facility, this should be used to log the time that the system is powered up and down each day. Show cycles controlled by Medialon should be logged as should projector lamp hours.
- Low-level control of individual displays will be required for re-booting and muting through the Medialon system.

On removal of the volt-free contact closure the system will power down, computers first followed by projectors and remaining AV equipment. The panel will indicate the power down sequence as discussed above.

### Display Screens

All displays, touch or non-touch should set to turn on and select an active input and drop into standby on removal of the signal. **IF** a display is not capable of this, then it is the AV integrators responsibility to provide an automated solution.

### Show start and stop in the event of fire alarm

A normally closed contact from the fire alarm system will be provided to the show control system in the AVCR. When this contact changes state, the Show Control system will detect this and mute all audio and shut down the AV system as discussed for above for end of

day power down. Show stops during fire alarms and alarm testing will need to be manually restarted by an SI AV technician.

## Audio Visual Control Room (AVCR)

The AVCR for this gallery already exists complete with racks. The AV integrator will be required to utilize this facility as necessary in accordance with SI standards. A suggested layout is included with this package. The following should be noted:

- All cables should be high quality, Belden or equivalent
- All cables should be plenum rated for both equipment rack and wiring out to gallery
- All cables should be properly dressed into the equipment racks maintaining proper separation between power and data cables. Minimum required separation is 12"
- Cables should gathered, loomed, dressed and tied back to the rack cable management system using Velcro cable ties at 4" intervals
- Equipment should be mounted with a minimum of 1U spacing between items of equipment. Vents should be fitted to cover vacant space
- AV Integrator is to ensure that all accessories i.e. Extenders are purchased with the correct power supplies
- AV Integrator will be required to undertake all internal rack wiring and power distribution
- **ALL** Extron products are to be properly secured in the rack using Extron ZipClip and Caddy kits. ZipClips can be used at the remote end too.
- Rack mounted Brightsigns and Watchpax products are to be properly mounted within the racks on shelves using rack kits where available
- Space is to be left at the bottom of each rack to allow space for a UPS to be fitted, this will be provided by SI

## Media based display specific requirements

### M2101

Video replay based exhibit requiring three 55" monitors, six 42" monitors, two 32" monitors and one 24" monitor. The media is to be provided by twelve Brightsign XD232 players, located in the AV Control Room (AVCR) and all running in sync.

The AV contractor is required to work closely with the exhibit contractor to ensure that all screens are correctly fixed without their performance being impeded.

This exhibit has 2 Tannoy OCV 6 speakers on a single amplifier channel providing audio.

### M2102

Video replay based exhibit requiring one 21.5" monitor. The media is to be provided by a Brightsign XD232 player, located in the AV Control Room (AVCR).

The AV contractor is required to work closely with the exhibit contractor to ensure that the monitor is correctly fixed without its performance being impeded.

This exhibit has no audio.

### M2201

Video replay based exhibit requiring one 24" monitor. The media is to be provided by a Brightsign XD232 player, located in the AV Control Room (AVCR).

The AV contractor is required to work closely with the exhibit contractor to ensure that the monitor is correctly fixed without its performance being impeded.

This exhibit has no audio.

### M2301

Projection based exhibit using four Panasonic PT-RZ370 WUXGA projectors, media provided by two Watchpax 2 media players, all running in sync and located in the AV Control Room (AVCR). Please note this projector is supplied complete with lens and all projection positions are to be checked and agreed with the client team.

Two of the images will be 2100 x 1180mm, both with the projector at 2580mm above finished floor level (image starts 1400mm from the floor). Two of the images will be 1800 x 1010mm, one with the projector at 2438mm (image shifted to start 1400mm from the floor); the other with the projector at 2610mm (image starts 1600mm from the floor)..

The projector is to be mounted **no lower than 8ft above finished floor level.**

This exhibit has 4 Tannoy OCV 6 speakers, each on a single amplifier channel providing audio.

### M2302

Touch screen computer based interactive exhibit, with the computer located in the AVCR equipment rack.

The AV contractor is required to work closely with the exhibit contractor to ensure all touch screens are correctly fitted without their performance being impeded. Care should be taken to prevent any risk of the exhibit housing making contact with the touch screen.

Consideration should be given to ensuring quick release to facilitate easy removal. All cables should be neatly dressed, and tied using Velcro cable ties with good segregation being maintained between data and power cables.

Visaton speakers (or equivalent) are used for providing navigational sounds, powered by a rack-mounted amplifier over a 70V line. Speakers will require 70V 10W line transformers mounted locally.

### M2303

Touch screen computer based interactive exhibits. The touch screen is 32". **General notes as stated in M2203.**

### M2304

Video replay based exhibit requiring one 55" monitor. The media is to be provided by a Brightsign XD232 player, located in the AV Control Room (AVCR).

The AV contractor is required to work closely with the exhibit contractor to ensure that the monitor is correctly fixed without its performance being impeded.

This exhibit has a Tannoy OCV 6 speaker on a single amplifier channel, suspended above the exhibit.

### M2305

Touch screen computer based interactive exhibits. **General notes as stated in M2203.**

This exhibit has no audio.

### M2306

Touch screen computer based interactive exhibits. **General notes as stated in M2203.**

### M2401

Projection based exhibit using one Panasonic PT-RZ670 WUXGA projector, media provided by a Brightsign XD232 media player, located in the AV Control Room (AVCR). The projector is to be mounted on an angled bracket, so that it is in line with the top of the sloping table and projecting straight on, without any warping. Please note that the lens must be purchased separately and all lenses and projection positions are to be checked and agreed with the client team. The projector is to be mounted **no lower than 8ft above finished floor level.**

This exhibit has no audio.

### M2701

Projection based exhibit using a short throw Panasonic PT-RZ670 WUXGA projector, with a DLE-030 lens, projecting onto a wall which has blocks at different depths. The media is to be provided by a Watchpax 2 media player located in the AV Control Room (AVCR). Please note that the lens must be purchased separately and all lenses and projection positions are to be checked and agreed with the client team. The height of this projector is to be confirmed, but it must be mounted **no lower than 8ft above finished floor level.**

This exhibit has two Tannoy OCV 6 speakers on a single amplifier channel, suspended above the exhibit.

## Summary of Equipment by Display

### 1.0 Many Voices One Nation

<b>M2101</b>	3.00	Panasonic TH55LF50U
	6.00	Sharp PN-E421 42" LCD Screen
	2.00	Sharp PN-Y325 32" LCD Screen
	1.00	3M M2467PW 24" Chassis Mount Touchscreen
	3.00	Premier Mounts PREM-LMV
	6.00	Premier Mounts P4263F
	3.00	Premier Mounts P2642F
	12.00	Roku Brightsign XD232
	12.00	Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
	12.00	Interconnection cable set
	2.00	Tannoy OCV 6
<b>M2102</b>	1.00	3M C2167PW 21.5" Open-Frame Touchscreen
	1.00	Roku Brightsign XD232
	1.00	Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
	1.00	Interconnection cable set

#### Sub total

### 2.0-Worlds Collide

<b>M2201</b>	1.00	3M M2467PW 24" Chassis Mount Touchscreen
	1.00	Premier Mounts P2642F
	1.00	Roku Brightsign XD232
	1.00	Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
	1.00	Interconnection cable set

#### Sub total

### 3.0-Re-Imagining America

<b>M2301</b>	4.00	Panasonic PT-RZ370 WUXGA Projector (3 of 2100 x 1180mm, PD 3300mm; 2 of 1800 x 1010mm, PD 2810mm)
	4.00	Projector Mount
	2.00	Dataton WatchPax 2
	4.00	Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
	4.00	Interconnection cable set
	4.00	Tannoy OCV 6

<b>M2302</b>	1.00	3M C2167PW 21.5" Open-Frame Touchscreen
	1.00	Dell OptiPlex 9020 Small FF - See Spec
	1.00	Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
	1.00	Extron USB Extender TX 60-871-12 & RX 60-871-22
	1.00	Visaton FR 8 WP +70V transformer
	1.00	Interconnection cable set

<b>M2303</b>	1.00	3M C3266PW 32" Open-Frame Touchscreen
	1.00	Dell OptiPlex 9020 Small FF - See Spec
	1.00	Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
	1.00	Extron USB Extender TX 60-871-12 & RX 60-871-22
	1.00	Visaton FR 8 WP +70V transformer
	1.00	Interconnection cable set

<b>M2304</b>	1.00	Panasonic TH55LF50U
	1.00	Premier Mounts PREM-LMV
	1.00	Roku Brightsign XD232
	1.00	Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
	1.00	Tannoy OCV 6
	1.00	Interconnection cable set

<b>M2305</b>	1.00	3M C2167PW 21.5" Open-Frame Touchscreen
	1.00	Dell OptiPlex 9020 Small FF - See Spec
	1.00	Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
	1.00	Extron USB Extender TX 60-871-12 & RX 60-871-22
	1.00	Interconnection cable set

<b>M2306</b>	1.00	3M C2167PW 21.5" Open-Frame Touchscreen
	1.00	Dell OptiPlex 9020 Small FF - See Spec
	1.00	Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
	1.00	Extron USB Extender TX 60-871-12 & RX 60-871-22
	1.00	Visaton FR 8 WP +70V transformer
	1.00	Interconnection cable set

#### Sub total

### 4.0-Expanding The Nation

<b>M2401</b>	1.00	Panasonic PT-RZ670 WUXGA Projector (2600 x 1630mm PD 2320mm)
	1.00	Panasonic DLE-085 Lens
	1.00	Projector Mount (Angled)
	1.00	Roku Brightsign XD232

- 1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
- 1.00 Interconnection cable set

**Sub total**

5.0-Migration North

6.0-Living in a Changing Nation

7.0-Rythms of America

- M2701** 1.00 Panasonic PT-RZ670 WUXGA Projector (4100 x 2563mm PD 1555mm)
- 1.00 ET-DLE030(0.38:1)
- 1.00 Projector Mount
- 1.00 Roku Brightsign XD232
- 1.00 Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13
- 2.00 Tannoy OCV 6
- 1.00 Interconnection cable set

**Sub total**

8.0 Conclusion

Equipment Room

- 2.00 Netgear GS748Tv4 Rack mount 48 Port 1G Switch
- 2.00 Interconnection lead allowance
- 2.00 Equipment Rack - 42U inc hardware
- 1.00 Netgear WNDAP660 Access Point
  
- 1.00 Medialon Showmaster ST
- 1.00 REAL VNC License to enable remote access to **ALL** computers
- 1.00 Dell Precision M4700 Lap Top
- 2.00 iPad

- 2ch** 1.00 Bose PowerMatch 8250N
- 1.00 QSC SPA4-60

**Sub total**









Services

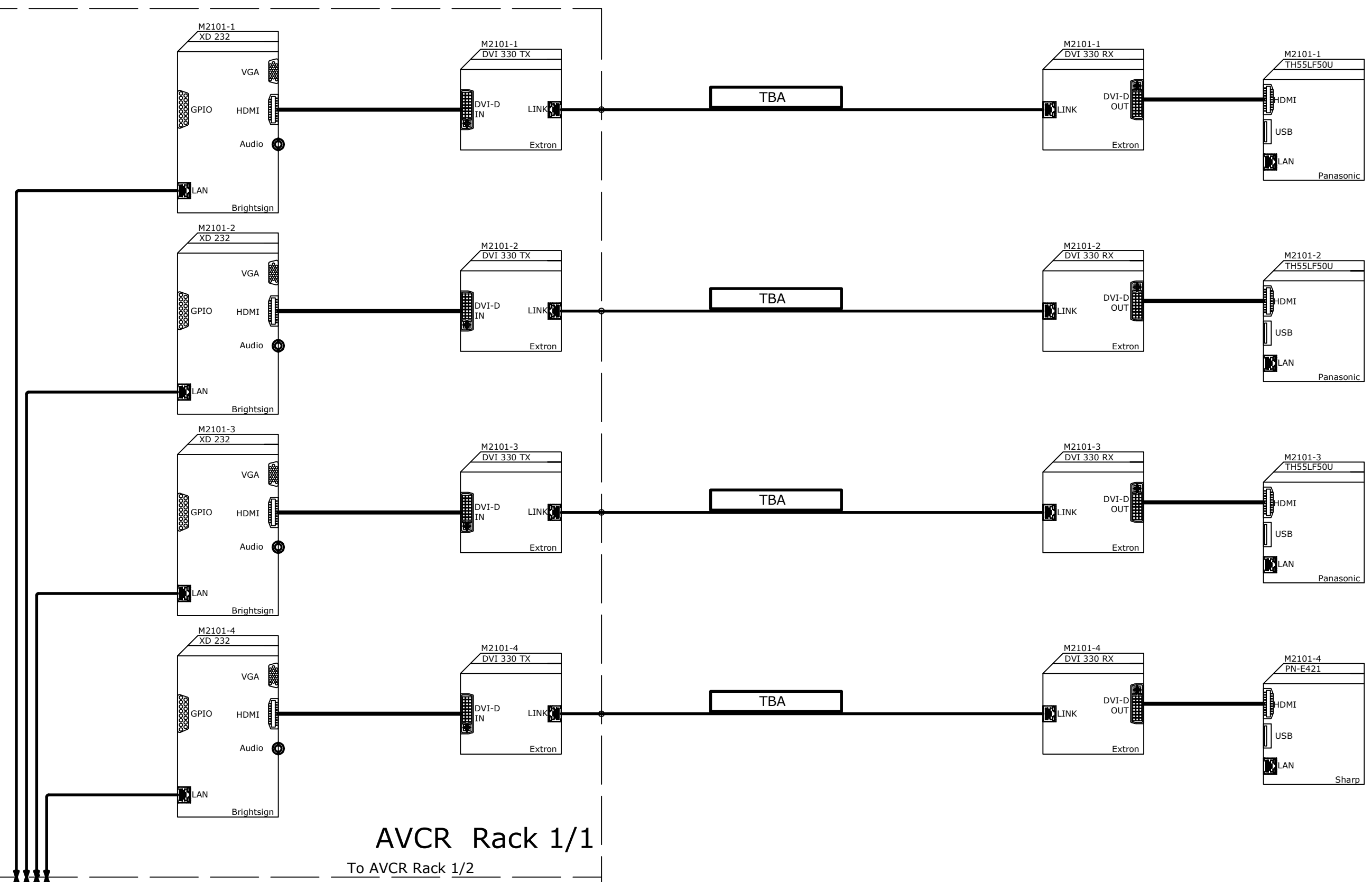
- 1.00 System Design and Project Management
- 1.00 Project Engineering
- 1.00 Installation & accommodation
- 1.00 Commissioning
- 1.00 Media Loading
- 1.00 System/show control Programming

## Summary of Equipment Used

3M C2167PW 21.5" Open-Frame Touchscreen	4
3M C3266PW 32" Open-Frame Touchscreen	1
3M M2467PW 24" Chassis Mount Touchscreen	2
Bose PowerMatch 8250N	1
Dataton WatchPax 2	2
Dell OptiPlex 9020 Small FF - See Spec	4
Dell Precision M4700 Lap Top	1
Equipment Rack - 42U inc hardware	2
Extron DVI 330 Extender Pair TX 60-1360-12 and RX 60-1360-13	25
Extron USB Extender TX 60-871-12 & RX 60-871-22	4
Interconnection cable set	25
Interconnection lead allowance	2
iPad	2
Medialon Showmaster ST	1
Netgear GS748Tv4 Rack mount 48 Port 1G Switch	2
Netgear WNDAP660 Access Point	1
Panasonic DLE-085 Lens	1
Panasonic PT-RZ370 WUXGA Projector (3 of 2100 x 1180mm, PD 3300mm; 2 of 1800 x 1010mm, PD 2810mm)	4
Panasonic PT-RZ670 WUXGA Projector (2600 x 1630mm PD 2320mm)	1
Panasonic TH55LF50U	4
Premier Mounts P2642F	4
Premier Mounts P4263F	6
Premier Mounts PREM-LMV	4
Projector Mount	5
Projector Mount (Angled)	1
REAL VNC License to enable remote access	1
Roku Brightsign XD232	17
Sharp PN-E421 42" LCD Screen	6
Sharp PN-Y325 32" LCD Screen	2
Visaton FR 8 WP +70V transformer	3
ET-DLE030(0.38:1)	1
Tannoy OCV 6	9
Panasonic PT-RZ670 WUXGA Projector (4100 x 2563mm PD 1555mm)	1
QSC SPA4-60	1

A	21.05.14	First release
B	21.12.15	65% release
C	03.15.16	65% release
D	04.07.16	95% issue
E		
F		

-  Dante
-  Audio Speaker output
-  Audio Line level input
-  Optical Fibre
-  CAT 6 network
-  Control
-  Cable Ident number
-  Box colour indicates cable type




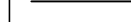






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 E: djw@djwillrich.co.uk  
 W: www.djwillrich.co.uk

CLIENT:	Hayley Sharpe Design
PROJECT:	2 West - Our American Journey
VENUE:	Smithsonian Institute
DRAWING TITLE:	Audio Visual Schematic - AVCR Rack 1/1
SCALE: NTS	DRAWING No
DATE: 21st May 2014	2W_450_OAJ_501_D
DRAWN BY: NJ	



A	21.05.14	First release
B	21.12.15	65% release
C	03.15.16	65% release
D	04.07.16	95% issue
E		
F		

-  Dante
-  Audio Speaker output
-  Audio Line level input
-  Optical Fibre
-  CAT 6 network
-  Control
-  Cable Ident number
-  Box colour indicates cable type

From AVCR Rack 1/1

AVCR Rack 1/2

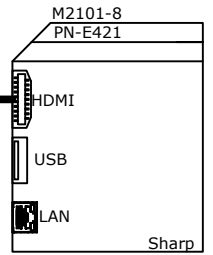
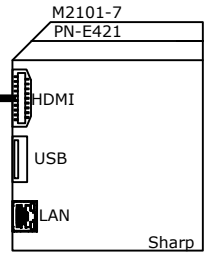
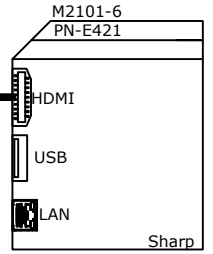
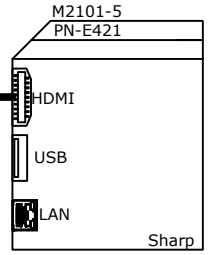
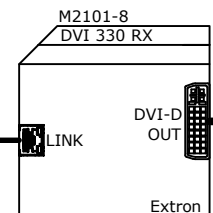
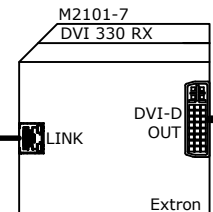
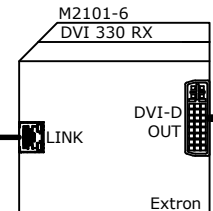
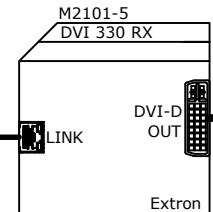
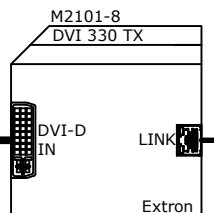
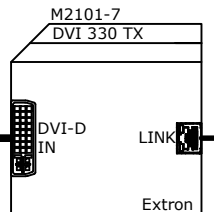
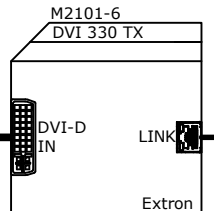
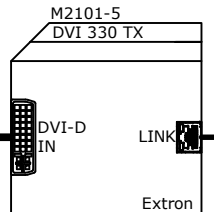
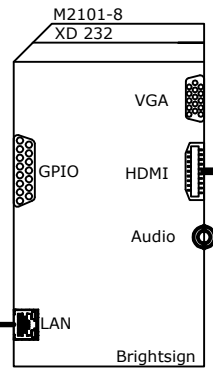
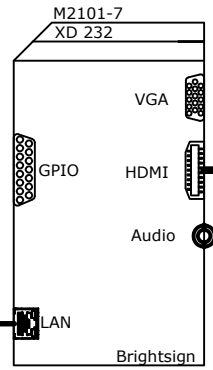
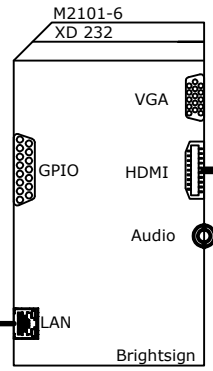
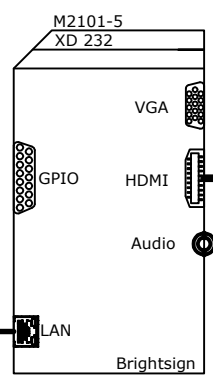
To AVCR Rack 1/3

TBA

TBA

TBA

TBA











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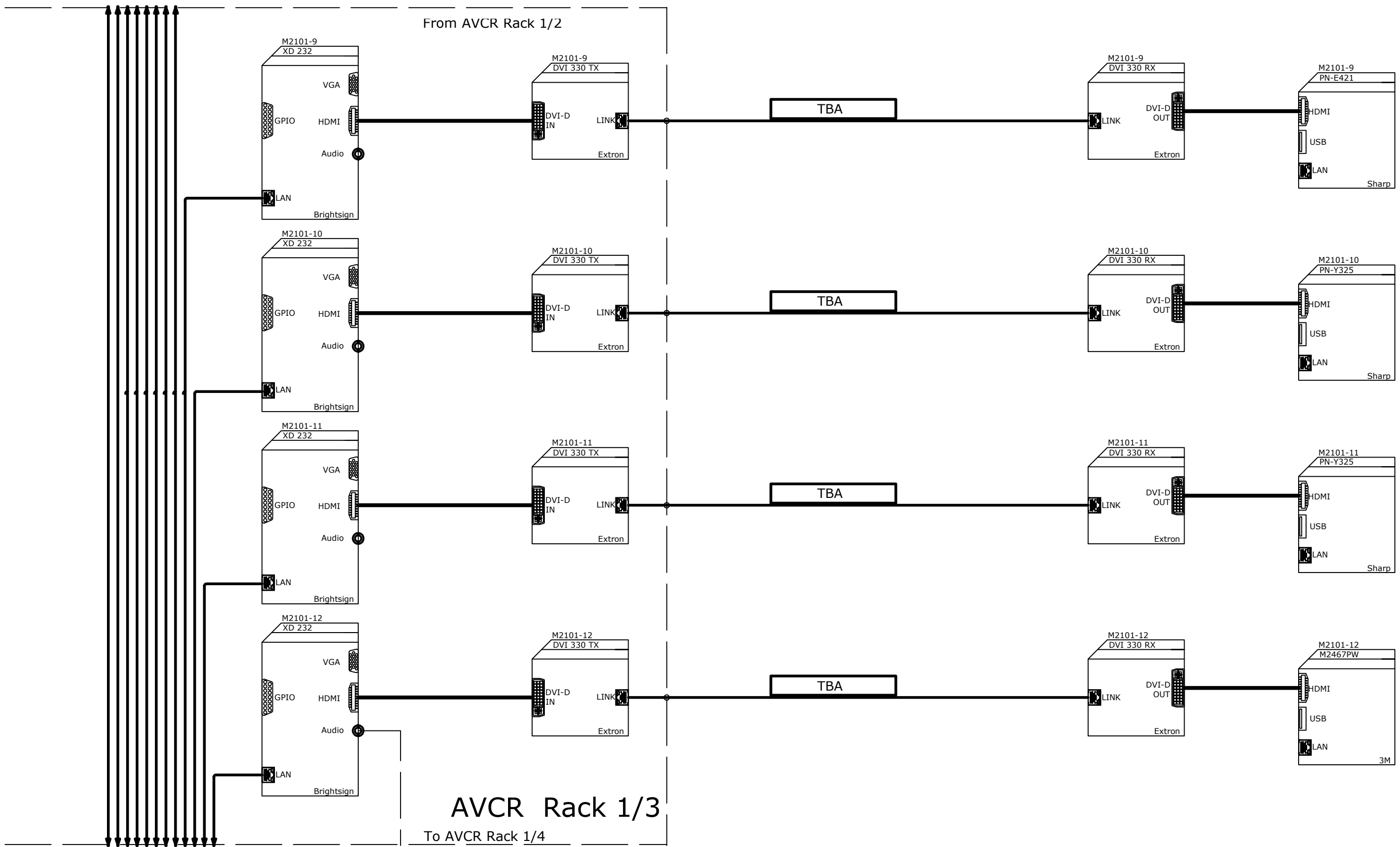
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CLIENT:	Hayley Sharpe Design
PROJECT:	2 West - Our American Journey
VENUE:	Smithsonian Institute
DRAWING TITLE:	Audio Visual Schematic - AVCR Rack 1/2

SCALE: NTS	DRAWING No
DATE: 21st May 2014	2W_450_OAJ_502_D
DRAWN BY: NJ	

A	21.05.14	First release
B	21.12.15	65% release
C	03.15.16	65% release
D	04.07.16	95% issue
E		
F		

-  Dante
-  Audio Speaker output
-  Audio Line level input
-  Optical Fibre
-  CAT 6 network
-  Control
-  Cable Ident number
-  Box colour indicates cable type











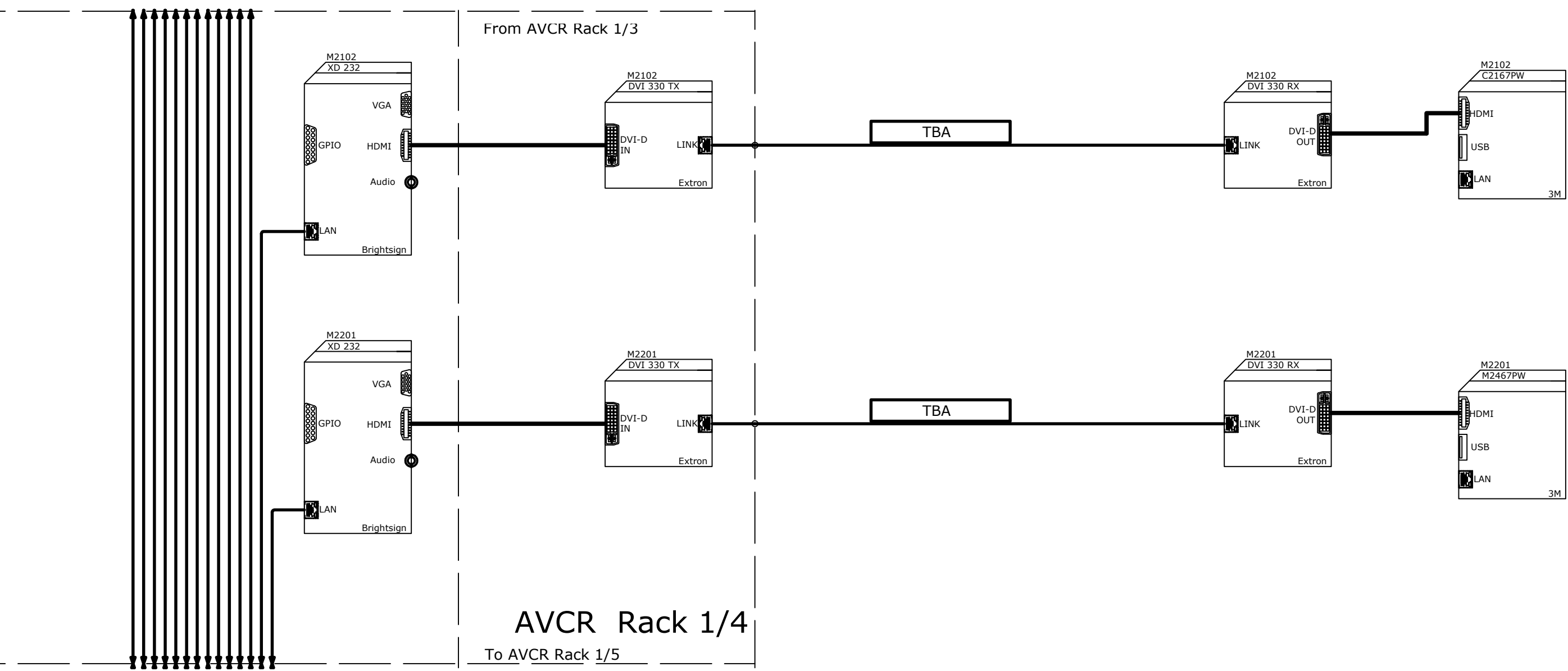
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 F: +44 (0)1 590 61261  
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 W: www.djwillrich.co.uk

CLIENT:	Hayley Sharpe Design
PROJECT:	2 West - Our American Journey
VENUE:	Smithsonian Institute
DRAWING TITLE:	Audio Visual Schematic - AVCR Rack 1/3

SCALE: NTS	DRAWING No
DATE: 21st May 2014	2W_450_OAJ_503_D
DRAWN BY: NJ	

A	21.05.14	First release
B	21.12.15	65% release
C	03.15.16	65% release
D	04.07.16	95% issue
E		
F		

-  Dante
-  Audio Speaker output
-  Audio Line level input
-  Optical Fibre
-  CAT 6 network
-  Control
-  Cable Ident number
-  Box colour indicates cable type



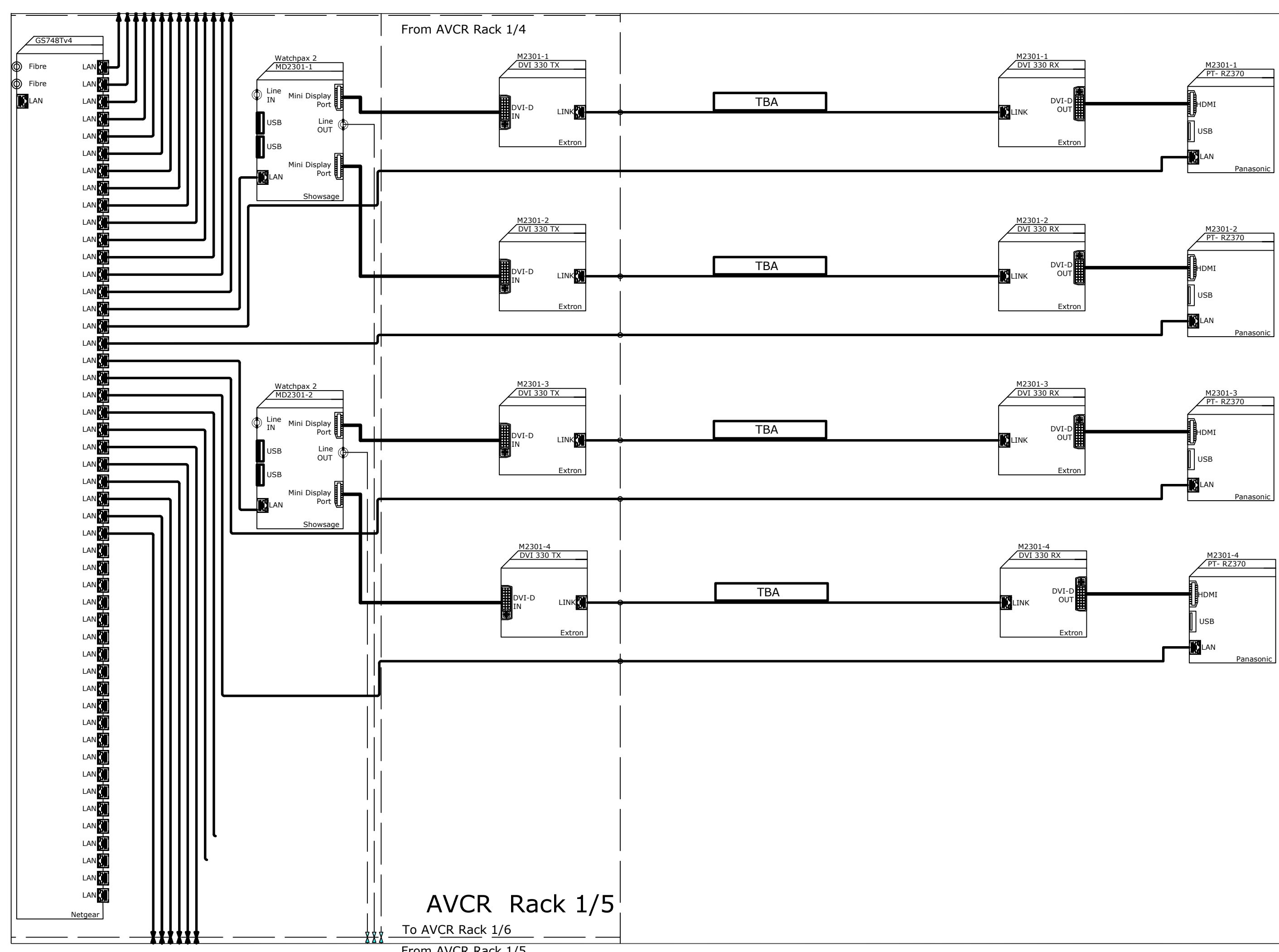
**AVCR Rack 1/4**  
To AVCR Rack 1/5



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 W: www.djwillrich.co.uk

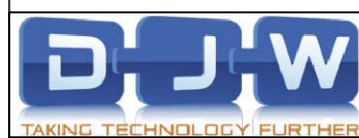
CLIENT:	Hayley Sharpe Design
PROJECT:	2 West - Our American Journey
VENUE:	Smithsonian Institute
DRAWING TITLE:	Audio Visual Schematic - AVCR Rack 1/4

SCALE: NTS	DRAWING No
DATE: 21st May 2014	2W_450_OAJ_504_D
DRAWN BY: NJ	



A	21.05.14	First release
B	21.12.15	65% release
C	03.15.16	65% release
D	04.07.16	95% issue
E		
F		

- Dante
- Audio Speaker output
- Audio Line level input
- Optical Fibre
- CAT 6 network
- Control
- Cable Ident number
- Box colour indicates cable type



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 F: +44 (0)1 530 61261  
 E: djw@djwillrich.co.uk  
 W: www.djwillrich.co.uk

CLIENT:	Hayley Sharpe Design
PROJECT:	2 West - Our American Journey
VENUE:	Smithsonian Institute
DRAWING TITLE:	Audio Visual Schematic - AVCR Rack 1/5

SCALE: NTS	DRAWING No
DATE: 21st May 2014	2W_450_OAJ_505_D
DRAWN BY: NJ	









From AVCR Rack 1/4

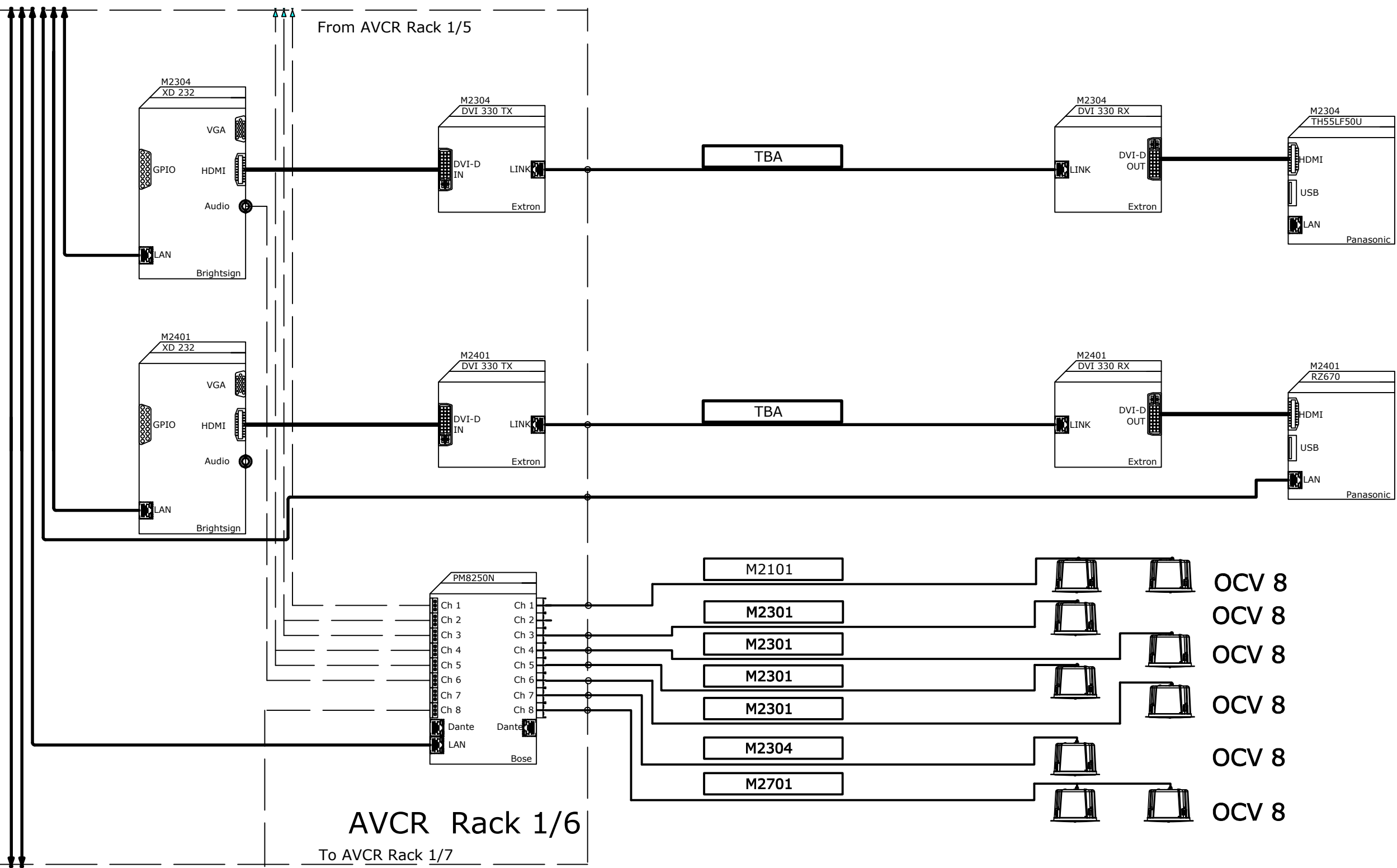
AVCR Rack 1/5

To AVCR Rack 1/6

From AVCR Rack 1/5

A	21.05.14	First release
B	21.12.15	65% release
C	03.15.16	65% release
D	04.07.16	95% issue
E		
F		

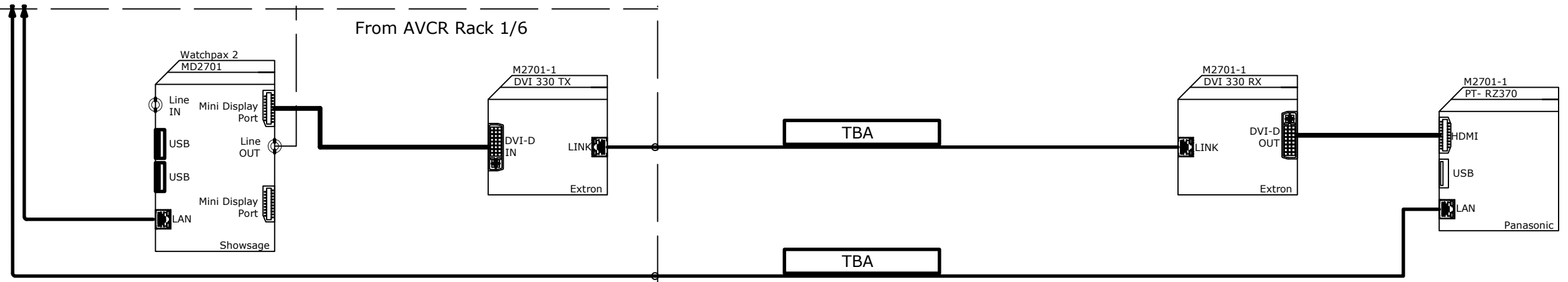
-  Dante
-  Audio Speaker output
-  Audio Line level input
-  Optical Fibre
-  CAT 6 network
-  Control
-  Cable Ident number
-  Box colour indicates cable type











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CLIENT: Hayley Sharpe Design  
 PROJECT: 2 West - Our American Journey  
 VENUE: Smithsonian Institute  
 DRAWING TITLE: Audio Visual Schematic - AVCR Rack 1/6

SCALE: NTS DRAWING No: 2W\_450\_OAJ\_506\_D  
 DATE: 21st May 2014  
 DRAWN BY: NJ



A	21.05.14	First release
B	21.12.15	65% release
C	04.07.16	95% issue
D		
E		
F		

-  Dante
-  Audio Speaker output
-  Audio Line level input
-  Optical Fibre
-  CAT 6 network
-  Control
-  Cable Ident number
-  Box colour indicates cable type

AVCR Rack 1/7












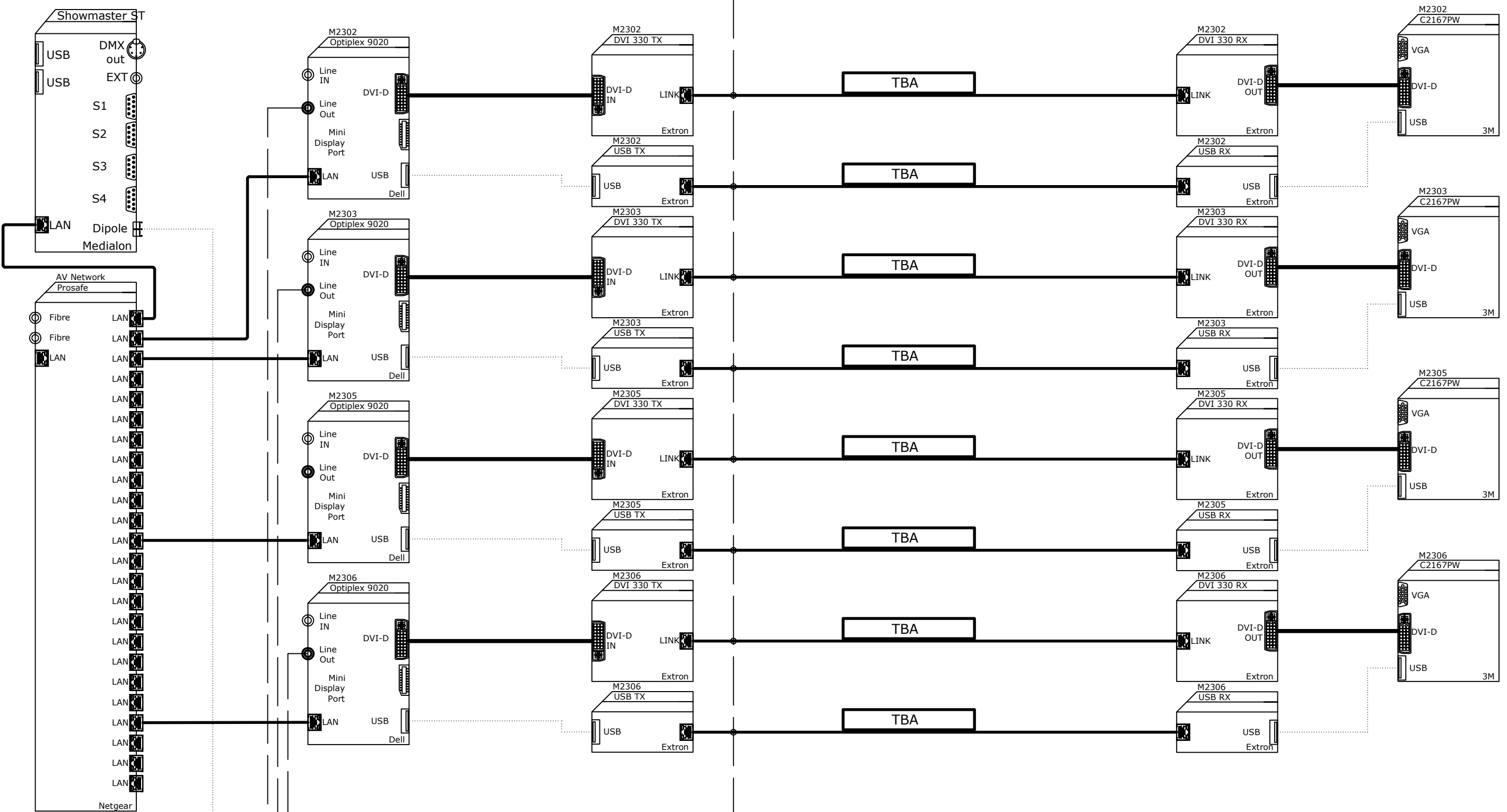
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CLIENT:	Hayley Sharpe Design
PROJECT:	2 West - Our American Journey
VENUE:	Smithsonian Institute
DRAWING TITLE:	Audio Visual Schematic - AVCR Rack 1/7

SCALE: NTS	DRAWING No
DATE: 21st May 2014	2W_450_OAJ_507_D
DRAWN BY: NJ	

A	21.05.14	First release
B	21.12.15	65% release
C	03.15.16	65% release
D	04.07.16	95% issue
E		
F		

-  Dante
-  Audio Speaker output
-  Audio Line level input
-  Optical Fibre
-  CAT 6 network
-  Control
-  Cable Ident number
-  Box colour indicates cable type
-  3M











**AVCR Rack 2/1**  
To AVCR Rack 2/2

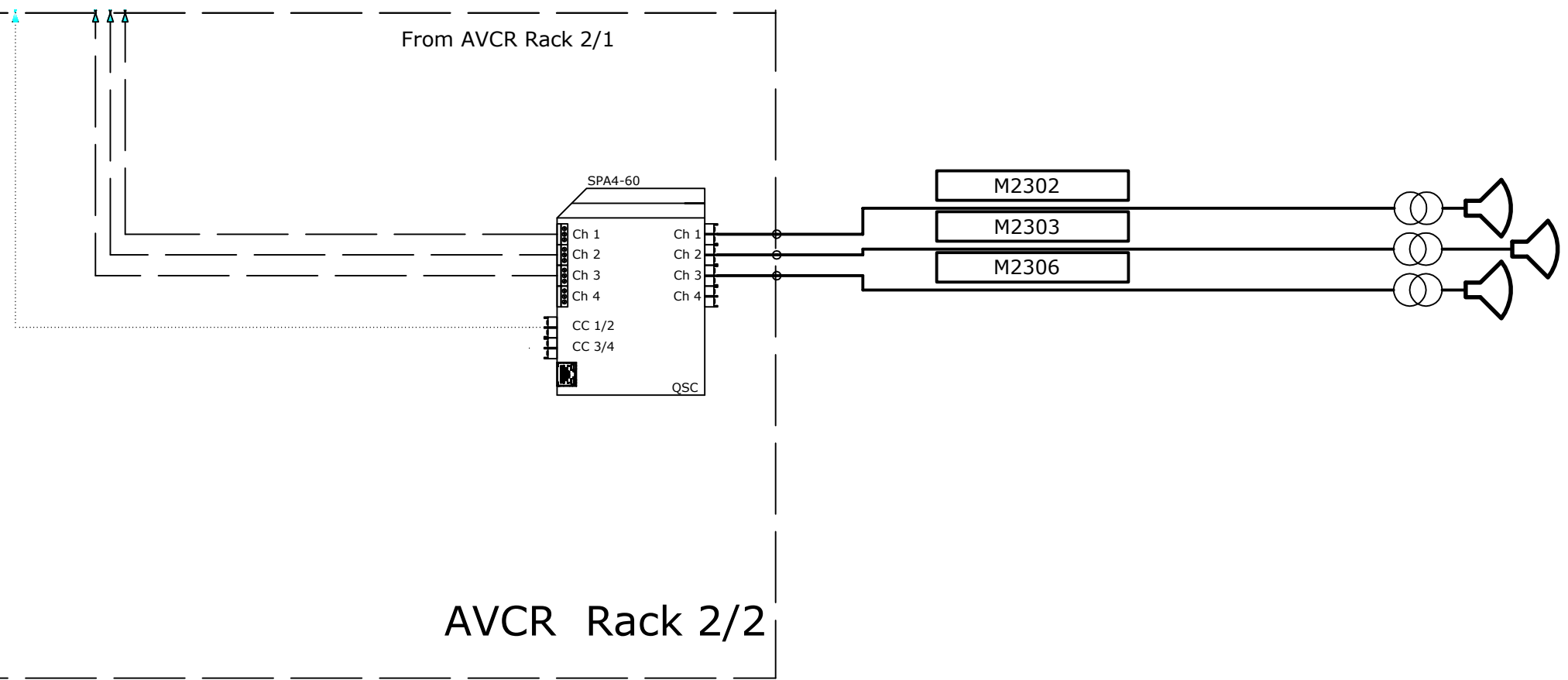


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W: www.djwillrich.co.uk

CLIENT:	Hayley Sharpe Design
PROJECT:	2 West - Our American Journey
VENUE:	Smithsonian Institute
DRAWING TITLE:	Audio Visual Schematic - AVCR Rack 2/1
SCALE: NTS	DRAWING No
DATE: 21st May 2014	2W_450_OAJ_508_D
DRAWN BY: NJ	

A	21.05.14	First release
B	21.12.15	65% release
C	03.15.16	65% release
D	04.07.16	95% issue
E		
F		

-  Dante
-  Audio Speaker output
-  Audio Line level input
-  Optical Fibre
-  CAT 6 network
-  Control
-  Cable Ident number
-  Box colour indicates cable type



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 E: djw@djwillrich.co.uk  
 W: www.djwillrich.co.uk

CLIENT:  
Hayley Sharpe Design

PROJECT:  
2 West - Our American Journey

VENUE:  
Smithsonian Institute

DRAWING TITLE:  
Audio Visual Schematic - AVCR Rack 2/2

SCALE: NTS	DRAWING No
DATE: 21st May 2014	2W_450_OAJ_509_D
DRAWN BY: NJ	



REV	DATE	NOTES
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C	03.15.16	65% release
D	04.07.16	95% issue
E		
F		

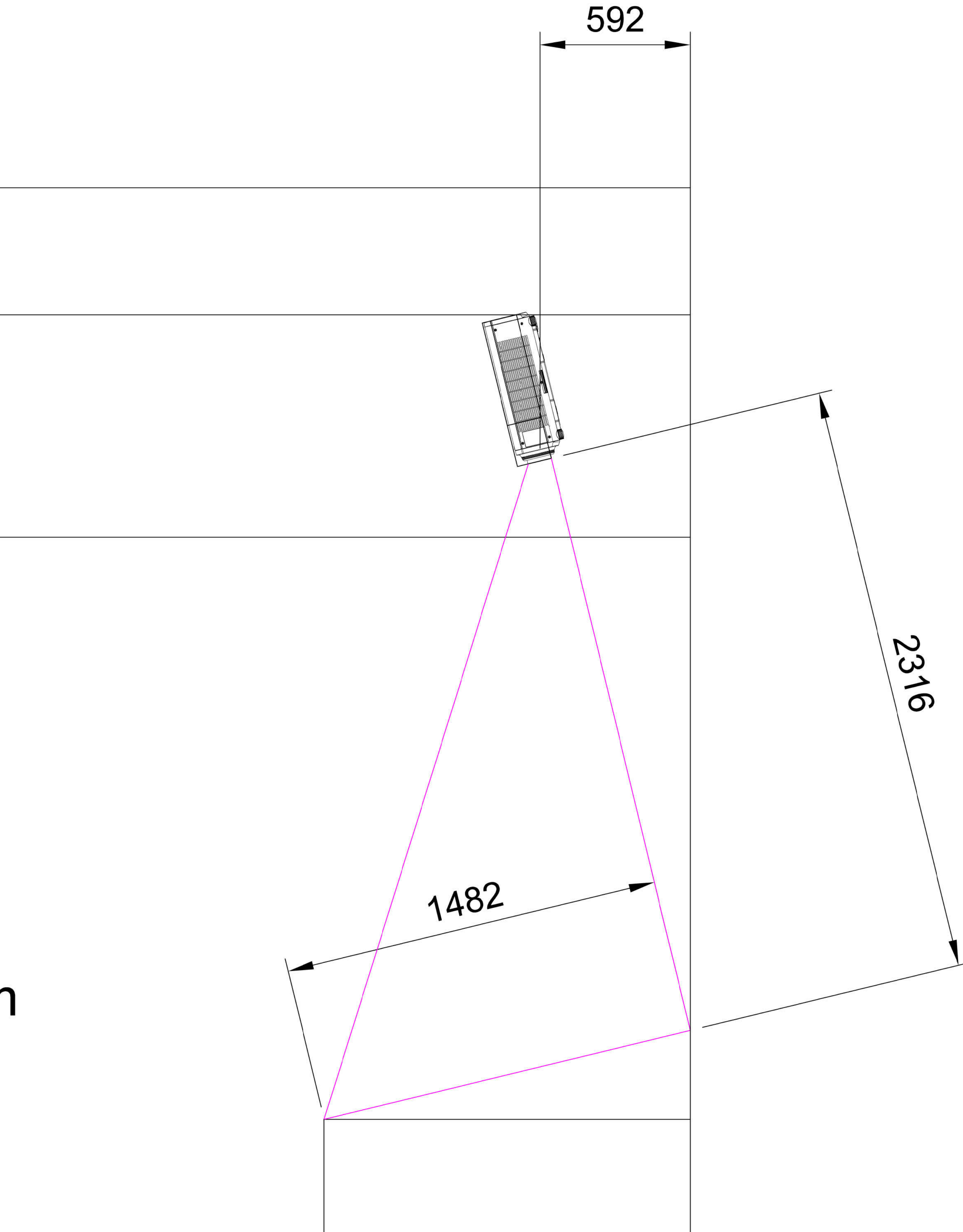
Ceiling

500mm ventilation

Min Projector Height

Image Width 2600mm

FFL



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Beaulieu, Hampshire SO42 7XA  
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W: [www.djwillrich.com](http://www.djwillrich.com)

CLIENT: Hayley Sharpe Design

PROJECT: 2 West - Our American Journey

VENUE: Smithsonian Institute

DRAWING TITLE: M2401 Projector Layout

SCALE: NTS DRAWING No

DATE: 21st Dec 2015 2W\_450\_OAJ\_553\_D

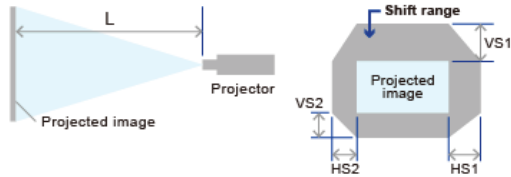
DRAWN BY: NJ

**PT-RZ370**

1-Chip DLP™ Projector • 3,500 lm • Full HD

Lens: **Built-in lens**  
(1.0–1.2:1, zoom)**Calculation result**

Projector:	PT-RZ370
Lens:	Built-in lens
[Projection size]	Aspect ratio: 16:9 Diagonal: 2,065 mm / 81.3 in / 6.77 ft Height: 1,013 mm / 39.9 in / 3.32 ft Width: 1,800 mm / 70.9 in / 5.91 ft
[Projection distance]	L: 2,621–5,289 mm / 103.2–208.2 in / 8.6–17.35 ft
[Optical shift range]	VS1: 739 mm / 29.1 in / 2.42 ft VS2: 486 mm / 19.2 in / 1.59 ft HS1: 630 mm / 24.8 in / 2.07 ft HS2: 486 mm / 19.1 in / 1.6 ft
[Brightness]	Projector output: 3,500 lm Screen illuminance: 1,919 lx



L: projection distance  
 $VS1 = 0.73 \times \text{height of projected image}$   
 $VS2 = 0.48 \times \text{height of projected image}$   
 $HS1 = 0.35 \times \text{width of projected image}$   
 $HS2 = 0.27 \times \text{width of projected image}$

**NOTE:**

- The shift range differs when vertical and horizontal shifting is done at the same time.
- Calculator accuracy:  $\pm 5\%$  (for all values except projector output and screen luminance). The calculated values may vary depending on usage and ambient conditions.
- This program is designed to use only with the browsers that support HTML5 and CSS3, such as the following:  
 Chrome 25 or later, Firefox 15 or later, Internet Explorer 9 or later, Safari 6 or later.

version 3

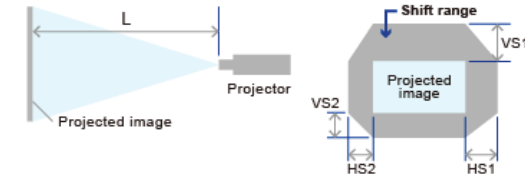
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**PT-RZ370**

1-Chip DLP™ Projector • 3,500 lm • Full HD

Lens: **Built-in lens**  
(1.0–1.2:1, zoom)**Calculation result**

Projector:	PT-RZ370
Lens:	Built-in lens
[Projection size]	Aspect ratio: 16:9 Diagonal: 2,409 mm / 94.8 in / 7.9 ft Height: 1,181 mm / 46.5 in / 3.88 ft Width: 2,100 mm / 82.7 in / 6.89 ft
[Projection distance]	L: 3,065–6,174 mm / 120.7–243.1 in / 10.06–20.26 ft
[Optical shift range]	VS1: 862 mm / 33.9 in / 2.83 ft VS2: 567 mm / 22.3 in / 1.86 ft HS1: 735 mm / 28.9 in / 2.41 ft HS2: 567 mm / 22.3 in / 1.86 ft
[Brightness]	Projector output: 3,500 lm Screen illuminance: 1,411 lx



L: projection distance  
 $VS1 = 0.73 \times \text{height of projected image}$   
 $VS2 = 0.48 \times \text{height of projected image}$   
 $HS1 = 0.35 \times \text{width of projected image}$   
 $HS2 = 0.27 \times \text{width of projected image}$

**NOTE:**

- The shift range differs when vertical and horizontal shifting is done at the same time.
- Calculator accuracy:  $\pm 5\%$  (for all values except projector output and screen luminance). The calculated values may vary depending on usage and ambient conditions.
- This program is designed to use only with the browsers that support HTML5 and CSS3, such as the following:  
 Chrome 25 or later, Firefox 15 or later, Internet Explorer 9 or later, Safari 6 or later.

version 3

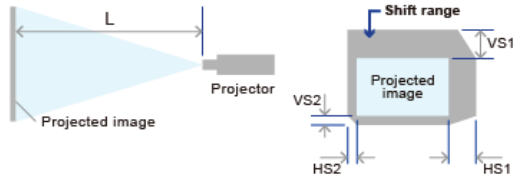
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**PT-RZ670**

1-Chip DLP™ Projector • 6,500 lm • WUXGA

Lens: **Supplied lens**  
(1.7–2.4:1, zoom)**Calculation result**

Projector:	PT-RZ670
Lens:	Supplied lens
[Projection size]	Aspect ratio: 16:10 Diagonal: 3,066 mm / 120.7 in / 10.06 ft Height: 1,625 mm / 64 in / 5.33 ft Width: 2,600 mm / 102.4 in / 8.53 ft
[Projection distance]	L: 4,496–6,188 mm / 177–243.6 in / 14.75–20.3 ft
[Optical shift range]	VS1: 813 mm / 32 in / 2.67 ft VS2: 260 mm / 10.2 in / 0.85 ft HS1: 780 mm / 30.7 in / 2.56 ft HS2: 260 mm / 10.2 in / 0.85 ft
[Brightness]	Projector output: 6,500 lm Screen illuminance: 1,538 lx



L: projection distance  
 VS1 = 0.5 × height of projected image  
 VS2 = 0.16 × height of projected image  
 HS1 = 0.3 × width of projected image  
 HS2 = 0.1 × width of projected image

**NOTE:**

- The shift range differs when vertical and horizontal shifting is done at the same time.
- Calculator accuracy: ±5% (for all values except projector output and screen luminance). The calculated values may vary depending on usage and ambient conditions.
- This program is designed to use only with the browsers that support HTML5 and CSS3, such as the following:  
 Chrome 25 or later, Firefox 15 or later, Internet Explorer 9 or later, Safari 6 or later.

version 3

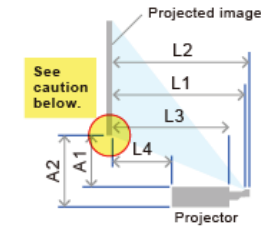
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**PT-RZ670**

1-Chip DLP™ Projector • 6,500 lm • WUXGA

Lens: **ET-DLE030**  
(0.38:1, fixed)**Calculation result**

Projector:	PT-RZ670
Lens:	ET-DLE030
[Projection size]	Aspect ratio: 16:10 Diagonal: 4,835 mm / 190.4 in / 15.86 ft Height: 2,563 mm / 100.9 in / 8.41 ft Width: 4,100 mm / 161.4 in / 13.45 ft
[Projection distance]	L1: 1,555 mm / 61.2 in / 5.1 ft L2: 1,578 mm / 62.1 in / 5.18 ft L3: 1,389 mm / 54.7 in / 4.56 ft L4: 851 mm / 33.5 in / 2.79 ft A1: 884 mm / 34.8 in / 2.9 ft A2: 1,084 mm / 42.7 in / 3.56 ft
[Brightness]	Projector output: 6,500 lm Screen illuminance: 433 lx



L1: Distance from the mirror surface to the screen.  
 L2: Distance from the tip of lens to the screen.  
 L3: Distance from the projector front to the screen.  
 L4: Distance from the projector rear to the screen.  
 A1: Height from the edge of the screen to the top of the projector.  
 A2: Height from the edge of the screen to the bottom of the projector.

**CAUTION:**

- All construction work should be done by qualified technicians.
- Off-axis angle projection is required because of the unique ultra-short throw feature. Make sure that there are no obstructions in the light path.

**NOTE:**

- When mounting to the ceiling, use the special mounting bracket. Furthermore, in order to prevent it from falling down from the ceiling, use the supplied wire on the mounting bracket.
- L4 is not the distance from the projector's rear panel to a wall, but the distance from the projector's rear panel to the screen.
- Provide an unobstructed space of 500 mm (1 foot 8 inches) or more between the rear panel of the projector and a wall or other obstruction. If installing it in an enclosed space, add a separate air conditioning or ventilation system. If ventilation is insufficient, exhaust heat may accumulate and trip the projector's protective circuit.
- Calculator accuracy: ±5% (for all values except projector output and screen luminance). Calculator accuracy: ±5% (for all values except projector output and screen luminance).
- This program is designed to use only with the browsers that support HTML5 and CSS3, such as the following:  
 Chrome 25 or later, Firefox 15 or later, Internet Explorer 9 or later, Safari 6 or later.

version 3

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Project: Many Voices One Nation  
Date: 29 March 2016  
Ref: 450  
Revision: 1.00



Cable Identity		Cable Type	Nominal Cable Diameter	Height	Cable Run	Tail Length	Cable Run To	Tail Length	Equipment	Function	Connector	Connector	Boot Colour	Notes	
Exhibit	KIT #		(in)	ft	(From)	(From)		(To)		(Signal)	(From)	(To)			
<b>Display Specific Cables</b>															
	M2101	VID 01	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101A LCD 01	9ft	Panasonic TH55LF50U	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 02	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101B LCD 02	9ft	Panasonic TH55LF50U	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 03	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101C LCD 03	9ft	Panasonic TH55LF50U	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 04	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101D LCD 04	9ft	Sharp PN-E421 42" LCD Screen	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 05	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101E LCD 05	9ft	Sharp PN-E421 42" LCD Screen	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 06	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101F LCD 06	9ft	Sharp PN-E421 42" LCD Screen	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 07	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101G LCD 07	9ft	Sharp PN-E421 42" LCD Screen	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 08	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101H LCD 08	9ft	Sharp PN-E421 42" LCD Screen	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 09	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101J LCD 09	9ft	Sharp PN-E421 42" LCD Screen	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 10	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101K LCD 10	9ft	Sharp PN-Y325 32" LCD Screen	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 11	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101L LCD 11	9ft	Sharp PN-Y325 32" LCD Screen	Video Data	RJ45	RJ45	Yellow	
	M2101	VID 12	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2101M LCD 12	9ft	3M M2467PW 24" Chassis Mount Touchscreen	Video Data	RJ45	RJ45	Yellow	
	M2101	LSU 01	Belden 16 AWG 6200UE	0.27	Ceiling	AVCR	6ft	M2101A LSU 01	9ft	Tannoy OCV 6	Speaker				
	M2101	LSU 02	Belden 16 AWG 6200UE	0.27	Ceiling	AVCR	6ft	M2101A LSU 02	9ft	Tannoy OCV 6	Speaker				
	M2102	VID 13	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2102A LCD 13	9ft	3M C2167PW 21.5" Open-Frame Touchscreen	Video Data	RJ45	RJ45	Yellow	
	M2201	VID 14	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2201A LCD 14	9ft	3M M2467PW 24" Chassis Mount Touchscreen	Video Data	RJ45	RJ45	Yellow	
	M2301	VID 15	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301A PRJ 15	9ft	Panasonic PT-RZ370	Video Data	RJ45	RJ45	Yellow	
	M2301	VID 16	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301A PRJ 16	9ft	Panasonic PT-RZ370	Control	RJ45	RJ45	Blue	
	M2301	VID 17	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301A PRJ 17	9ft	Panasonic PT-RZ370	Control	RJ45	RJ45	Blue	
	M2301	LSU 03	Belden 16 AWG 6200UE	0.27	Ceiling	AVCR	6ft	M2101A LSU 03	9ft	Tannoy OCV 6	Speaker				
	M2301	VID 18	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301B PRJ 18	9ft	Panasonic PT-RZ370	Video Data	RJ45	RJ45	Yellow	
	M2301	VID 19	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301B PRJ 19	9ft	Panasonic PT-RZ370	Control	RJ45	RJ45	Blue	
	M2301	VID 20	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301B PRJ 20	9ft	Panasonic PT-RZ370	Control	RJ45	RJ45	Blue	
	M2301	LSU 04	Belden 16 AWG 6200UE	0.27	Ceiling	AVCR	6ft	M2301B LSU 04	9ft	Tannoy OCV 6	Speaker				
	M2301	VID 21	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301C PRJ 21	9ft	Panasonic PT-RZ370	Video Data	RJ45	RJ45	Yellow	
	M2301	VID 22	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301C PRJ 22	9ft	Panasonic PT-RZ370	Control	RJ45	RJ45	Blue	
	M2301	VID 23	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301C PRJ 23	9ft	Panasonic PT-RZ370	Control	RJ45	RJ45	Blue	
	M2301	LSU 05	Belden 16 AWG 6200UE	0.27	Ceiling	AVCR	6ft	M2301C LSU 05	9ft	Tannoy OCV 6	Speaker				
	M2301	VID 24	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301D PRJ 24	9ft	Panasonic PT-RZ370	Video Data	RJ45	RJ45	Yellow	
	M2301	VID 25	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301D PRJ 25	9ft	Panasonic PT-RZ370	Control	RJ45	RJ45	Blue	
	M2301	VID 26	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2301D PRJ 26	9ft	Panasonic PT-RZ370	Control	RJ45	RJ45	Blue	
	M2301	LSU 06	Belden 16 AWG 6200UE	0.27	Ceiling	AVCR	6ft	M2301D LSU 06	9ft	Tannoy OCV 6	Speaker				
	M2302	VID 27	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2302A LCD 27	9ft	3M C2167PW 21.5" Open-Frame Touchscreen	Video Data	RJ45	RJ45	Yellow	
	M2302	VID 28	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2302A LCD 28	9ft	3M C2167PW 21.5" Open-Frame Touchscreen	USB Touch	RJ45	RJ45	Blue	
	M2302	LSU 07	Belden 16 AWG 6200UE	0.27	Display	AVCR	6ft	M2302A LSU 07	9ft	Visaton FR 8 WP	Speaker				
	M2303	VID 29	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2303A LCD 29	9ft	3M C3266PW 32" Open-Frame Touchscreen	Video Data	RJ45	RJ45	Yellow	
	M2303	VID 30	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2303A LCD 30	9ft	3M C3266PW 32" Open-Frame Touchscreen	USB Touch	RJ45	RJ45	Blue	
	M2303	LSU 08	Belden 16 AWG 6200UE	0.27	Display	AVCR	6ft	M2303A LSU 08	9ft	Visaton FR 8 WP	Speaker				
	M2304	VID 31	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2304A LCD 31	9ft	Panasonic TH55LF50U	Video Data	RJ45	RJ45	Yellow	
	M2304	LSU 09	Belden 16 AWG 6200UE	0.27	Ceiling	AVCR	6ft	M2304A LSU 09	9ft	Tannoy OCV 6	Speaker				
	M2305	VID 32	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2305A LCD 32	9ft	3M C2167PW 21.5" Open-Frame Touchscreen	Video Data	RJ45	RJ45	Yellow	
	M2305	VID 33	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2305A LCD 33	9ft	3M C2167PW 21.5" Open-Frame Touchscreen	USB Touch	RJ45	RJ45	Blue	
	M2306	VID 34	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2306A LCD 34	9ft	3M C2167PW 21.5" Open-Frame Touchscreen	Video Data	RJ45	RJ45	Yellow	
	M2306	VID 35	CAT 5E -Belden 1585A	0.23	Display	AVCR	6ft	M2306A LCD 35	9ft	3M C2167PW 21.5" Open-Frame Touchscreen	USB Touch	RJ45	RJ45	Blue	
	M2306	LSU 10	Belden 16 AWG 6200UE	0.27	Display	AVCR	6ft	M2306A LSU 10	9ft	Visaton FR 8 WP	Speaker				
	M2401	VID 36	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2401A PRJ 36	9ft	Panasonic PT-RZ670	Video Data	RJ45	RJ45	Yellow	
	M2401	VID 37	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2401A PRJ 37	9ft	Panasonic PT-RZ670	Control	RJ45	RJ45	Blue	
	M2401	VID 38	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2401A PRJ 38	9ft	Panasonic PT-RZ670	Control	RJ45	RJ45	Blue	
	M2701	VID 39	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2701A PRJ 39	9ft	Panasonic PT-RZ670	Video Data	RJ45	RJ45	Yellow	
	M2701	VID 40	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2701A PRJ 40	9ft	Panasonic PT-RZ670	Control	RJ45	RJ45	Blue	
	M2701	VID 41	CAT 5E -Belden 1585A	0.23	Ceiling	AVCR	6ft	M2701A PRJ 41	9ft	Panasonic PT-RZ670	Control	RJ45	RJ45	Blue	
	M2701	LSU 11	Belden 16 AWG 6200UE	0.27	Ceiling	AVCR	6ft	M2701A LSU 11	9ft	Tannoy OCV 6	Speaker				
	M2701	LSU 12	Belden 16 AWG 6200UE	0.27	Ceiling	AVCR	6ft	M2701A LSU 12	9ft	Tannoy OCV 6	Speaker				



2.3 AV Hardware cut sheets

# 3M™ Multi-Touch Display C2167PW

## Commercial-Grade Chassis for Full Multi-Touch Applications

The 21.5-inch 3M™ Multi-Touch Display C2167PW takes interactive technology to the next level by combining uncompromising multi-touch performance, brilliant high-definition graphics, ultra-wide viewing angles and flat front surface product design into a fully integrated, commercial grade multi-touch chassis device.

### Uncompromising Multi-touch Performance

The C2167PW chassis features 3M's innovative Projected Capacitive (3M PCT) technology that delivers high performance "full multi-touch" capabilities. By recognizing up to 20 simultaneous touch events, each at an ultra-fast 8-millisecond response rate, the system delivers a more natural user experience when compared to single- and dual-touch systems. The design of the projected capacitive sensor has more than 3100 touch sensing points in close proximity, making it precise and very accurate across the entire touchscreen.

3M PCT's durable glass surface has anti-stiction properties that greatly reduces surface friction and allows users' fingers to effortlessly glide across the multi-touch display for easy gesture functions. This fast, accurate and easy-to-use multi-touch interface creates a more natural, intuitive and responsive user interaction that results in a truly inspired experience.

### Commercial Grade Design for Multi-touch Interaction

The C2167PW chassis was designed to meet the demanding needs of public environments while being versatile enough to easily integrate into custom enclosures. The all-steel construction provides a rugged metal frame to securely mount into enclosures. Multiple mounting methods (100mm VESA mount and side brackets) are designed to ensure a proper fit in both horizontal and vertical orientations. In addition to being extremely durable, this chassis also features a stylish flat front surface design that makes it an attractive addition to any professional or retail environment. This bezel-free design also provides an easy-to-clean surface while eliminating the dust and debris build up at the edge and corners of the display.

### Optimal Display for Multi-touch Interaction

The high-definition, high-contrast LED backlit display provides impressive picture quality for vibrant, true-to-life graphics, dynamic full HD



### Recommended Multi-Touch Applications

- Kiosks
- Gaming and Amusement
- Point of Information
- Audio Visual
- Industrial Automation
- Digital Signage
- Self Service
- Exhibits and Events
- Media and Broadcast
- Training and Simulation

(1920x1080) video content and crisp, clear images. The C2167PW chassis delivers brilliant images from nearly every angle with its ultra-wide viewing angle (178 degree viewing in both vertical and horizontal directions). Since typical chassis mount applications are fixed, the ultra-wide viewing angle will help create an immersive experience regardless of the user's height or position relative to the display and regardless of the orientation of the display (portrait or landscape). As multiple users interact with the multi-touch display, especially in a horizontal or tabletop position, the ultra-wide viewing angle will ensure that all users experience the same brilliant content. To ensure the image quality is not compromised in strong ambient lighting environments, this display features an anti-glare coating. This anti-glare coating is essential in public environments as these spaces typically have overhead fluorescent lights.

Feature	Benefit
3M PCT Multi-Touch Technology	<ul style="list-style-type: none"> <li>• 20-touch multi-touch performance for intuitive on-screen collaboration</li> <li>• Ultra-fast 8 ms touch response for advanced multi-touch applications</li> <li>• Anti-stiction surface enhances the user experience for simple and advanced gestures</li> </ul>
Commercial Grade Design	<ul style="list-style-type: none"> <li>• All steel construction provides rugged frame for public use environments</li> <li>• Multiple mounting options for ease of installation</li> <li>• Flat front surface design for elegant modern aesthetics</li> <li>• Eliminates dust and debris build up at the edge and corners of the display</li> <li>• Anti-glare coating helps maintain image quality even in bright lighting environments</li> </ul>
Premium Display for Multi-Touch Applications	<ul style="list-style-type: none"> <li>• 1920x1080 full high definition resolution for vivid realistic images</li> <li>• Ultra-wide horizontal/vertical viewing angle presents a brilliant image at any angle</li> <li>• LED backlights deliver a long lasting, bright, uniform image regardless of integrated orientation</li> </ul>



# 3M™ Multi-Touch Display C2167PW Specifications

## Functional Specifications

Display Details	
LCD Technology	IPS (In Plane Switching) PMVA (Premium Multi-domain or Vertical Alignment)
Backlight	LED
Aspect Ratio	16:9
Display Colors	16.7 million
Pixel Pitch	.248 x .248mm
Brightness	250 cd/m <sup>2</sup> (nit) typical with touch sensor (max.)(1) 225 cd/m <sup>2</sup> (nit) typical
Contrast Ratio (2)	1000:1 typical
Viewing Angle	Horizontal/Vertical: 178 degrees typical
Video Response Time (3)	16 ms typical
Refresh Rate	60Hz
Control Type	OSD
Native Resolution	1920x1080

- (1) Brightness measured on a display with 3M™ Projected Capacitive sensor.  
 (2) Measured at a contrast ratio of 10.  
 (3) Gray to Gray

## Touch Details

Number of Touch Points	20 points with palm rejection
Touch Point Speed	8 milliseconds
Input Type	Finger, thin glove
Touch Communication	USB
Operating System Support	Windows 8 / 7 / Vista / XP, Linux, Mac

## Physical Specifications

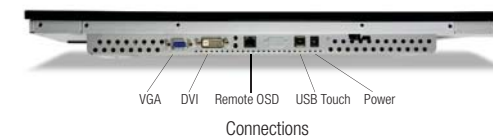
Product Details	
Operating Environment	0 to +40 degrees C, relative humidity, non-condensing 80%
Storage Environment	-20 to +60 degrees C
Video Input	DVI-D, VGA
VESA Pattern	100mm x 100mm
Power Supply	External, 110/220 VAC Power Supply
Power Consumption	27 watts (maximum)
RoHS Compliant	Yes
Agency Approvals	FCC-B, CE, TUV
Warranty	1 year on touch display

## Dimensions and Weight

Physical (WxHxD)	520.8 x 315.8 x 46.0 mm
(viewing area)	20.5 x 12.4 x 1.8 inches
Display Area (WxH)	476.06 x 267.79mm
(viewing area)	18.74 x 10.54 inches
Packaging (WxHxD)	610 x 405 x 160mm
	24.0 x 15.9 x 6.3 inches
Display weight	5.7 kg / 12.6 lbs
Packaging/Display weight	8.7 kg / 19.2 lbs

## Ordering Information

Part Number	98-0003-4242-2
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**3M Touch Systems**  
 Subsidiary of 3M Company  
 501 Griffin Brook Park Drive  
 Methuen, MA 01844 U.S.A.  
 1-888-659-1080  
[www.3m.com/touch](http://www.3m.com/touch)



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# 3M™ Multi-Touch Display C3266PW

## Large Multi-Touch Display Delivers Ultimate User Experience

The **3M™ Multi-Touch Display C3266PW** is engineered by 3M as a fully-integrated 32" multi-touch display that combines cutting-edge 3M Projected Capacitive Touch Technology (3M PCT) with a stunning industrial grade, full high-definition, 120Hz LCD display to create the ultimate user interface. This large format multi-touch capability enables true multi-user interaction for cutting edge collaborative and interactive applications, allowing developers to create a more natural, intuitive and responsive user experience when compared to infrared-based and optical-based systems. The C3266PW display is supplied with a robust bezel for interactive digital signage solutions or the bezel can be removed to create modern flat front surface interactive tables and kiosk solutions.



### Precision Large-format Multi-Touch

In addition to delivering fast multi-touch response, 3M touch electronics have advanced built-in palm rejection algorithm to help ensure that unintended contact with the screen is ignored and does not interfere with the user's intended action. The design of the projected capacitive sensor has more than 6000 touch sensing points in close proximity, making it precise and extremely accurate across the entire touchscreen. 3M PCT's durable glass surface has unique anti-stiction properties that greatly reduces surface friction and allows users' fingers to effortlessly glide across the display for easy gesture functions. This fast, accurate, and easy-to-use multi-touch screen enables customers to create, deliver and experience innovative and engaging multi-user applications.

Recommended Multi-Touch Applications	
• Retail Product Selectors	• Digital Signage
• Casino Gaming	• Arcade Gaming
• Wayfinding	• Point of Information
• Security Monitoring Systems	• Pro Audio/Visual
• Training and Simulation	• Geospatial
• Telepresence	• Broadcast

### Industrial Grade Designed for Multi-Touch Interaction

The C3266PW display has been designed from the ground up to meet the unique requirements of a large format multi-touch display. Unlike televisions or digital signs, an interactive multi-touch display draws users in close proximity to the LCD. To maintain sharp image quality at close distances and brilliant content at any angle, the C3266PW display features a full HD 1080p resolution LCD with an ultra-wide 178 degree viewing angle. Even with dynamic content, the display maintains smooth motion transitions with the 120Hz refresh rate, which is two times faster than the industry standard of 60Hz. An advanced thermal management system is designed to keep the touch surface at a comfortable temperature for the user and to promote robust 24/7 performance of critical electronic components.

Every element of the of the C3266PW display is designed to simplify system level integration while meeting the demanding needs of a public environment. The LED backlight system allows integrators to mount the display in landscape, portrait or horizontal orientations without concern of non-uniformity that CCFL systems can exhibit. At just 2.6" deep and 28 lbs, the C3266PW display can be a sleek wall-mounted interactive digital sign or a slim interactive table or kiosk. The chemically-strengthened all glass surface provides breakage resistance, while the printed black border allows designers to create modern flat front surface kiosks and tables.

Feature	Benefit
3M PCT Multi-Touch Technology	<ul style="list-style-type: none"> <li>• 40 finger multi-touch input with palm rejection capability enables engaging single and multiple user interactions</li> <li>• Fast 10 millisecond touch response (for 20 touches) creates a natural, intuitive and responsive interface</li> <li>• Anti-stiction surface enhances the user experience for simple and advanced gestures</li> </ul>
Premium Display Technology	<ul style="list-style-type: none"> <li>• Full HD resolution with fine pixel pitch maintains sharp image quality while performing up-close interactions</li> <li>• 120Hz refresh rate keeps content crisp and clear while users interact</li> <li>• Ultra-wide viewing angle presents a brilliant image at any angle</li> <li>• LED backlights present a long lasting, bright, uniform image regardless of integrated orientation</li> </ul>
Versatile Product Design	<ul style="list-style-type: none"> <li>• Ultra-slim (2.6" deep) and lightweight (28 lbs) display enables designers to create compelling multi-touch applications</li> <li>• Advanced thermal system to maintain comfortable touch screen temperature</li> <li>• Chemically-strengthened glass construction enables modern durable flat front surface designs</li> <li>• Fully integrated multi-touch display simplifies implementation of multi-touch into product portfolio</li> <li>• Robust Bezel for wall mounting or remove bezel for modern flat front surface integrations.</li> </ul>



# 3M™ Multi-Touch Display C3266PW Specifications

## Functional Specifications

Display Details	
LCD Technology	IPS (In Plane Switching)
Display Colors	1.06 billion
Pixel Pitch	.364 x .364mm
Brightness	360cd/m2 (nit) typical with touch sensor (max.)(1) 313 cd/m2 (nit) typical
Contrast Ratio (2)	1400:1 typical
Viewing Angle	Horizontal/Vertical: 178 degrees typical
Video Response Time (3)	10 ms typical
Refresh Rate	120Hz
Control Type	OSD, RS-232
Native Resolution	1920x1080

(1) Brightness measured on a display with 3M™ Projected Capacitive sensor.  
 (2) Measured at a contrast ratio of 10.  
 (3) Gray to Gray

## Touch Details

Number of Touch Points	40 points with palm rejection
Touch Point Speed (4)	10 milliseconds
Input Type	Finger, thin glove
Touch Communication	Auto detecting, USB and RS232 (Serial)
Operating System Support	Windows 8 / 7/ Vista / XP, Linux, Mac

(4) up to 20 touches

## Physical Specifications

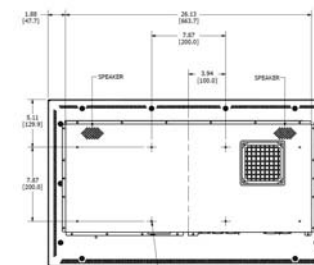
Product Details	
Operating Environment	0 to +40 degrees C, relative humidity, non-condensing 85%
Storage Environment	-10 to +60 degrees C
Video Input	DVI, VGA, HDMI (HDCP), DisplayPort (HDCP)
Audio	5w + 5w @ 8Ω
VESA Pattern	200mm x 200mm
Power Supply	Internal 110/220 VAC Power Supply
Power Consumption	165 watts maximum
RoHS Compliant	Yes
Agency Approvals	FCC-B, CE, TUV
Warranty	1 year on touch display

## Dimensions and Weight

Physical Dimensions	759 x 454 x 66 mm
(outer)	29.9 x 17.9 x 2.6 inches
Display Area (WxH)	698.40 x 392.85 mm
(viewing area)	27.5 x 15.5 inches
Packaging (WxHxD)	850 x 683 x 211 mm
	33.46 x 26.89 x 8.31 inches
Display weight	12.70 kg / 28 lbs
Packaging/Display weight	17.5 kg / 38.6 lbs

## Ordering Information

Part Number	98-0003-3695-2
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On Screen Display (OSD) Panel



Audio (in/out) VGA DVI HDMI DisplayPort Serial (in/out) Serial Touch USB Touch AC Input On/Off



## Connections

**3M Touch Systems**  
 Subsidiary of 3M Company  
 501 Griffin Brook Park Drive  
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1-888-659-1080  
[www.3m.com/touch](http://www.3m.com/touch)



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# 3M™ Multi-Touch Display M2767PW

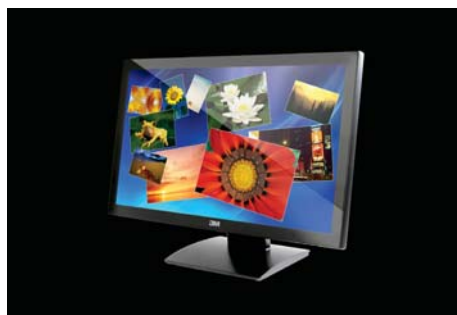
## Sophistication Meets Innovation

The 27-inch **3M™ Multi-Touch Display M2767PW** takes interactive display technology to the next level by combining uncompromising multi-touch performance, brilliant high-definition graphics, wide viewing angles and elegant product design into a fully-integrated, easy-to-use, plug-and-play multi-touch desktop device.

Inspired by the industrial design influence of modern consumer devices, the M2767PW display features a stylish flat front surface design that makes it an attractive addition to any professional or retail environment. Beyond contemporary aesthetics, the M2767PW display is designed to meet the unique demands of multi-touch use by featuring a 3M-proprietary anti-stiction surface treatment that allows a user's fingers to effortlessly glide across the screen. The display also features a sturdy and robust base that easily accommodates a full 90-degree position range for more viewing flexibility. With an active touch area of over 310 square inches, the M2767PW display gives users 56% more touch area than a typical 21.5" touch monitor and provides an inviting horizontal surface for multi-user on screen collaboration. With a standard 100mm x 100mm VESA mount, this display allows for versatile integration onto a wall, swinging arm or other open surfaces.

The M2767PW display features 3M's industry-leading Projected Capacitive (3M PCT) technology that exceeds the typical touch performance of popular smart phone and tablet devices by offering a high performance multi-touch experience. Recognizing up to 40 simultaneous touches and an ultra-fast 10 millisecond response time, the M2767PW display also recognizes and rejects the user's palms or arm resting on the screen to help prevent inadvertent touches. This incredible touch performance allows for a more natural user interaction that results in a truly inspired creative experience unrivaled by competitive touch displays.

Complementing the M2767PW display's stylish industrial design and exceptional multi-touch performance is an 1080p full HD LCD that displays dynamic, vivid and realistic images essential for creating high impact and engaging user applications. The M2767PW display is LED backlit which not only reduces power consumption, but also offers enhanced brightness, better contrast levels, and more consistent light output as compared to



### Recommended Multi-Touch Applications

- Computer Aided Design
- Virtual Concierge
- Software Development
- Assisted Selling
- Trade Show/Convention
- Simulation Training
- Security Management
- Telepresence
- Control Room
- Point of Information
- Digital Signage
- Financial
- Healthcare

typical CCFL displays. The M2767PW display is able to maintain superior image quality even when viewed at off angles, due to its impressive 178 degree vertical and horizontal viewing angles.

By combining industry-leading multi-touch performance, vibrant high-definition graphics, and wide viewing angles with a fully integrated, industrial-design desktop device, the 3M Multi-Touch Display M2767PW clearly defines the next level of interactive touch displays. Sophistication has met innovation.

Feature	Benefit
3M PCT Multi-Touch Technology	<ul style="list-style-type: none"> <li>• 40-touch multi-touch performance for intuitive on-screen collaboration</li> <li>• Ultra-fast 10 ms touch response time for advanced multi-touch applications (up to 20 touches)</li> <li>• Palm rejection creates natural user operation when using one or two hands</li> <li>• Superior touch accuracy (99% of true position) enables precise touch performance, even at display edge and corners</li> </ul>
High Performance 1080p HD LCD with LED Backlight	<ul style="list-style-type: none"> <li>• Vivid realistic images with enhanced brightness and contrast levels creates high-impact on-screen interactive experience</li> <li>• Wide viewing angle for viewing flexibility while maintaining image quality</li> <li>• Provides improved power efficiency and reduced consumption</li> </ul>
Sophisticated Flat Front Surface Design	<ul style="list-style-type: none"> <li>• Provides the elegant and modern aesthetics of popular portable consumer devices</li> <li>• Anti-stiction surface provides improved usability for multi-touch applications</li> <li>• Easy-to-clean surface without bezels</li> <li>• Eliminates dust and debris build up at the edge and corners of the display</li> </ul>



# 3M™ Multi-Touch Display M2767PW Specifications

## Functional Specifications

Display Details	
LCD Technology	P-MVA (premium multi-domain vertical alignment)
Backlight	LED
Aspect Ratio	16:9
Display Colors	16.7 Million
Pixel Pitch	0.248 mm x 0.248 mm
Brightness	250 cd/m2 (nit)
with touch sensor (1)	217 cd/m2 (nit)
Contrast Ratio (2)	3000:1 typical
Viewing Angle	Horizontal/Vertical: 178 degrees typical
Video Response Time (3)	25 milliseconds (typical)
Control Type	OSD with capacitive buttons
Native Resolution	1920 x 1080 (Full HD)

(1) Brightness measured on a display with 3M™ Projected Capacitive sensor.  
 (2) Measured at a contrast ratio of 10.  
 (3) Gray to Gray

## Touch Details

Number of Inputs	40 inputs with palm rejection
Touch Point Speed (4)	10ms
Input Type	Finger, Thin Glove
Touch Communication	USB
Operating System Support	Windows7/Vista/XP, Linux, Mac
Microsoft certifications	Windows 7 AQ

(4) Up to 20 touches



90-degrees of Adjustment



Flat Front Surface (Virtual Bezel)

## Physical Specifications

Product Details	
Operating Environment	0 to +40 degrees C
	Relative Humidity, non-condensing 90%
Storage Environment	0 to +60 degrees C (anticipated)
Video Input	HDMI, VGA, Display Port
Multimedia	Audio input, 3 watt audio speaker
VESA Pattern	100mm x 100mm, 100mm x 200mm
Power Supply	External, 110/220 VAC Power Supply
Power Consumption	46.5 watts (maximum)
RoHS Compliant	Yes
Agency Approvals	FCC-B, CE, TUV
Warranty	1 year on touch display

## Dimensions and Weight

Physical (WxHxD)	648 x 389 x 250 mm
(viewing area)	25.5 x 15.2 x 9.8 in
Display Area (WxH)	597.6 x 336.2 mm
(viewing area)	23.5 x 13.2 in
Packaging (WxHxD)	760 x 551 x 313 mm
	29.9 x 21.6 x 12.3 in
Display Weight	7.7 kd / 17.0 lb
Packaging/Display Weight	10.5 kg / 23.1 lb

## Ordering Information

Part Number	98-0003-3787-7
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Connections

**3M Touch Systems**  
 Subsidiary of 3M Company  
 501 Griffin Brook Park Drive  
 Methuen, MA 01844 U.S.A.  
 1-888-659-1080  
[www.3m.com/touch](http://www.3m.com/touch)



**RoHS Directive compliant:** In accordance with European Directive 2002/95/EC, "RoHS Directive compliant" means that the product or part does not contain any of the following substances in excess of the following maximum concentration values in any homogeneous material, unless the substance is in an application that is exempt under RoHS: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers; or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M's knowledge and belief based on information provided by third party suppliers to 3M. (9/06)

**IMPORTANT NOTICE TO PURCHASER:** Specifications are subject to change without notice. These 3M Touch Systems' Products and software are warranted to meet their published specifications from the date of shipment and for the period stated in the specification. 3M Touch Systems makes no additional warranties, express or implied, including but not limited to any implied warranties of merchantability or fitness for a particular purpose. User is responsible for determining whether the 3M Touch Systems' Products and software are fit for User's particular purpose and suitable for its method of production, including intellectual property liability for User's application. If the Product, software or software media is proven not to have met 3M Touch Systems' warranty, then 3M Touch Systems' sole obligation and User's and Purchaser's exclusive remedy, will be, at 3M Touch Systems' option, to repair or replace that Product quantity or software media for to refund its purchase price. 3M Touch Systems has no obligation under 3M Touch Systems' warranty for any Product, software or software media that has been modified or damaged through misuse, accident, neglect, or subsequent manufacturing operations or assemblies by anyone other than 3M Touch Systems. 3M Touch Systems shall not be liable in any action against it in any way related to the Products or software for any loss or damages, whether non-specified direct, indirect, special, incidental or consequential (including downtime, loss of profits or goodwill) regardless of the legal theory asserted. (7/02)



# PowerMatch® PM8250 / PM8250N configurable power amplifier



## Product Overview

The Bose® PowerMatch PM8250 configurable professional power amplifier provides concert-quality sound with a high level of scalability and configurability. The PM8250 offers multiple channel and power options, an integrated audio DSP, front panel interface and USB connection. Ethernet-equipped versions enable network configuration, control and monitoring. An expansion slot supports inputs from optional digital accessory cards. PowerMatch amplifiers utilize numerous Bose technologies to deliver an unprecedented combination of performance, efficiency and ease of installation—all in a reliable, proprietary design. Available in two versions, the PM8250 provides USB connection for single-unit setup and control using Bose ControlSpace® V3.0 or higher software. The PM8250N adds Ethernet connectivity for network control and monitoring of multiple "N" version amplifiers.

## Applications

Designed for a wide range of applications, including:

- Houses of worship
- Retail stores
- Atriums and malls
- Restaurants
- Auxiliary zones
- Conference centers
- Hospitality venues

## Key Features

- **QuadBridge™ Technology** – Allows each 4-channel loudspeaker block to be configured as Mono, V-Bridge, I-Share or Quad modes, allowing the total available power of the amplifier block to be allocated to one or more output channels. The amplifier is capable of driving both low impedance and 70/100V loudspeaker loads directly.
- **Bose® ControlSpace® Designer™ software** – PowerMatch amplifiers can be fully configured using ControlSpace Designer software via the onboard front panel USB connection, or the rear panel Ethernet connection (network models only). Using ControlSpace Designer software you can access additional features including: Parametric EQ stages, load sweep of each output channel and auto standby. ControlSpace Designer software is also used to integrate network model PowerMatch amplifiers into larger control and monitoring systems comprised of Bose ESP processors and CC control centers.
- **Auto-Standby/Auto-Wake function** – When enabled, this function automatically enters/exits Standby Mode, allowing the system to consume less power.
- **Dual voltage and current feedback loop** – Proprietary design combines Class-D efficiency with a unique current and voltage feedback loop circuit that continuously monitors and controls both the current and voltage delivered to the loudspeaker load. Independent of power level and load impedance, the amplifier consistently delivers the widest possible dynamic range, frequency response and lowest possible distortion.
- **PeakBank™ power supply** – Regenerative 4-quadrant power supply enables higher power density while allowing the re-use of energy from reactive loads that is normally wasted in conventional Class-D designs. This highly efficient amplifier design delivers sustainable and repeatable low frequency response.
- **Fast-tracking power factor correction (PFC)** – Efficiently manages the current drawn from the AC mains, allowing the amplifier to drive loudspeakers to maximum output longer without power fluctuation. PFC provides superior transient response and functions at peak burst power much longer than conventional Class-D amplifier designs to satisfy the requirements of even the most demanding program material.

TECHNICAL DATA SHEET

# PowerMatch® PM8250 / PM8250N configurable power amplifier



## Technical Specifications

Power Rating	2 Ω	4 Ω	8 Ω	70 V	100 V
THD for Power Rating, Typical	< 0.1 %	< 0.1 %	< 0.1 %	1 %	1 %
Mono Mode	250 W	250 W	250 W	See footnote 3	See footnote 3
V-Bridge Mode	250 W <sup>2</sup>	500 W	500 W	400 W	500 W
I-Share Mode	500 W	250 W <sup>2</sup>	150 W <sup>2</sup>	Not available	Not available
Quad Mode	1000 W <sup>2</sup>	1000 W	500 W <sup>2</sup>	800 W	1000 W
Maximum Rated Power	2000 W (250 W x 8 channels at 4 ohms)				
Peak Output Voltage	71 / 142 V (Mono / V-Bridge, I-Share, and Quad modes)				
Voltage Gain	30 / 33 / 30 / 33 dB (Mono / V-Bridge / I-Share / Quad modes)				
Audio Performance Specifications					
Frequency Response	20 Hz - 20 kHz (at 1 W and +/- 0.5 dB)				
Signal-to-Noise Ratio, Analog Input	>99 dB (1 dB below rated power, A-weighted)				
THD	< 0.4 % (at 1 W to 20 kHz)				
Intermod Distortion - SMPTE	< 0.4 % (60 Hz, 7 kHz)				
Channel Separation (Crosstalk)	> 65 dB (adjacent channels, at 1 kHz)				
Damping Factor	> 1000 (10-1000 Hz, 4 ohms, at amplifier output)				
Integrated DSP					
A/D and D/A Converters	48 kHz / 24-bit				
Total Latency (Analog In - Amp Out)	< 0.95 ms				
Input to Output Signal Routing	8 x 8 matrix				
Loudspeaker Presets	Bose Professional				
Input EQ	5-band PEQ (+/- 20 dB), notch, shelving, high pass, low pass				
Bandpass Filters (Crossover)	Butterworth, Bessel, or Linkwitz-Riley, up to 48 dB/octave				
Loudspeaker EQ	9-band PEQ (+/- 20 dB), shelving, high pass, low pass, 2-band RoomMatch® array EQ				
Maximum Output Delay	3 s				
Output Limiter	Peak and RMS voltage				
Audio Inputs					
	Analog	Digital (Optional Card)			
Input Channels	8 (balanced line level)	8			
Input Impedance	> 100 kΩ	N/A			
Sensitivity	0, +4, +12, +24 dBu, selectable	Digital: 0, -12, -20, -24 dBFS, selectable			
Maximum Input Level	+24 dBu (at 24 dBu sensitivity setting)	N/A			
Connectors, Input	3-pin Phoenix Contact® (green color; part # 1776168)	Card Dependent			
Audio Outputs					
Output Channels	2 to 8 (configurable)				
Connectors, Output	8-pin Phoenix Contact® connectors (part # 1778120), supports 10-24 AWG wire				
Indicators and Controls					
LED Status Indicators	Signal, limit, clip, fault				
User Interface Controls	Mute, input sensitivity, output attenuation, EQ on/off, preset select. 240 x 64 LCD. Additional controls available w/ ControlSpace® Designer™ software				
Electrical Specifications					
Mains Voltage	100-240 V (50/60 Hz)				
Mains Circuit Recommendation	15A (120 V) or 10A (230 V)				
Mains Connector	IEC 60320-C14 (Inlet)				
Minimum AC Line Voltage	80 V (reduced output power)				
Maximum Inrush Current	15.4 A (230 VAC, 50 Hz)				
Maximum RMS Current Draw	8 A				
Efficiency, 1/3 Rated Power	> 68 % (pink noise input signal)				
Output Stage Topology	Class-D				
Overload Protection	High temperature, DC, HF, short, voltage limiter, current limiter, inrush current, mains circuit breaker protection				
Physical					
Dimensions	3.5" H x 19" W x 20.7" D (88 mm x 483 mm x 525 mm) - 2 rack space				Shipping Weight: 34 lb (15.4 kg)
Net Weight	28.3 lb (12.8 kg)				
Mounting Depth	21" (533 mm)				
Operating Temperature	32 °F - 104 °F (0 °C - 40 °C)				
Cooling System	Microprocessor-controlled, variable-speed fans, front to rear airflow				

TECHNICAL DATA SHEET

# PowerMatch® PM8250 / PM8250N configurable power amplifier



## General

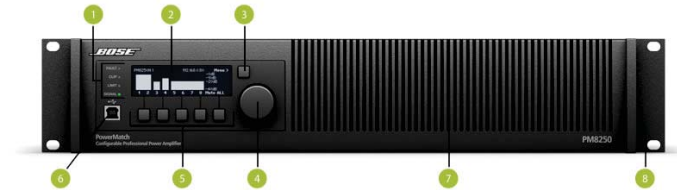
Setup and Configuration Software	ControlSpace® Designer™ software V3.2 or greater
PC Interface Connection	USB (Network version adds Ethernet RJ45)
Fault Notification Output	NC/NO Relay Contact (1 A, 30 VDC), 3-pin Phoenix Contact® connector (orange color; part # 1976010)

## Footnotes:

- 1 Output power is measured per channel, all channels driven, using test signals at 1 kHz.
- 2 Configuration not recommended / not optimal.
- 3 Limited use available. Tap 70V loudspeakers 2x the desired power. Tap 100V loudspeakers 4x the desired power.
- 4 Measured at +24 dBU sensitivity unless otherwise specified.

TECHNICAL DATA SHEET

# PowerMatch® PM8250 / PM8250N configurable power amplifier



1. **LED Indicators** - Fault, Clip, Limit and Signal indication
2. **LCD Display** - Detailed graphical backlit display
3. **Navigation Soft Key** - Front panel interface navigation key
4. **Rotary Encoder** - Scroll to move LCD display cursor, push to select option
5. **Menu Soft Keys (1 – 5)** - Five pushbuttons mapping to onscreen selections
6. **USB connector** - Type B USB port for use with a PC running ControlSpace® Designer™ software
7. **Front airflow vents** - Filterless intake cooling for the amplifier
8. **Front rack-mount ears** - For use when securing into rack-mount enclosures

TECHNICAL DATA SHEET



1. **Analog Input connectors** - Line-level balanced input connectors (+24 dBU max)
2. **Fault-Notification Output** - 3-pin normally open or normally closed contact closure fault connection (1A, 30 VDC max)
3. **Ethernet network connector (network versions only)** - RJ-45 connection supporting ControlSpace Designer software and Serial over Ethernet communications
4. **Rear airflow vents** - Exhaust venting
5. **Digital expansion slot cover** - Supports optional ESPLink and digital audio network cards
6. **Output connector** - Loudspeaker connections (10 - 24 AWG)
7. **AC Mains receptacle** - Power cord connection (IEC 60320-C14 Inlet)
8. **AC Mains retention clip** - Secures the power cord to the amplifier
9. **Power switch** - ON/OFF AC power switch. Also serves as resettable circuit breaker
10. **Rear rack-mount support tabs** - Accommodates rear brackets for rear rail mounting

# PowerMatch® PM8250 / PM8250N configurable power amplifier



# PowerMatch® PM8250 / PM8250N configurable power amplifier

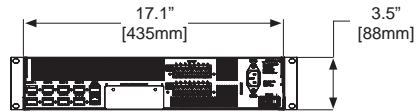


## AC Current Draw and Thermal Dissipation Information

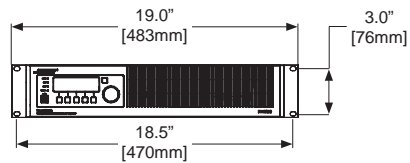
PM8250 / PM8250N							
Test Signal & Power Level	Load Configuration (All Channels Driven)	Total Audio Output, W	120VAC 60Hz. Typical Line Current, A	230VAC 50Hz. Typical Line Current, A	Thermal Dissipation, Typical		
					Watts	BTU/hr.	kCal/hr.
Idle (Standby, Networked)	N/A	0	0.3	0.1	31	106	27
Idle (Awake)	N/A	0	1.3	0.7	153	522	132
1/8th Rated Power IEC65 Bandlimited Pink Noise, 6dB Crest Factor	8Ω/Ch Mono 16Ω/Ch V-Bridge 8Ω/Ch Quad	250	3.9	2.1	201	686	173
	4Ω/Ch Mono 2Ω/Ch I-Share 8Ω/Ch V-Bridge 4Ω/Ch Quad	250	3.9	2.0	214	730	184
1/3rd Rated Power IEC65 Bandlimited Pink Noise, 6dB Crest Factor	8Ω/Ch Mono 16Ω/Ch V-Bridge 8Ω/Ch Quad	667	8.0	4.2	281	959	242
	4Ω/Ch Mono 2Ω/Ch I-Share 8Ω/Ch V-Bridge 4Ω/Ch Quad	667	8.1	4.1	308	1,051	265

TECHNICAL DATA SHEET

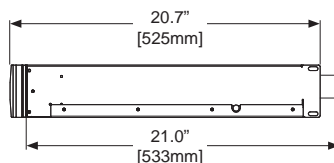
## Mechanical Diagrams



Back View



Front View



Right View

## Architects' and Engineers' Specifications

The amplifier shall contain all solid-state circuitry, using MOSFET output devices employing Class-D topology and a current and voltage feedback loop circuit. The amplifier shall incorporate a switch-mode power supply with fast-tracking power factor correction (PFC) that will allow full-rated power from AC outlets ranging from 100 – 240 V, 50/60 Hz. The amplifier shall have an IEC 60320-C14 10/15-amp electrical power inlet and shall be equipped with a removable power supply cord. The amplifier shall include protection from shorted and open loads, general overheating, DC, high-frequency overloads, under/over voltage and internal faults.

The amplifier shall contain eight independent amplifier channels, which can be configured to allocate the 2000 watts total rated output power between 2 and 8 channels. The amplifier shall contain variable speed fans, which are automatically controlled to minimize acoustic noise. Fan airflow direction will be from the front panel to the rear panel and should not require air filtering. Rack mounting of multiple amplifiers shall be possible without extra rack spacing for ventilation. The amplifier shall be capable of continuous operation at 1/3 of rated power into 4-ohm loads, in ambient temperatures up to 104° F (40° C). The typical current draw at 1/3-rated power shall be 8.1 amps with 120 VAC and 4.1 amps with 230 VAC.

The power amplifier shall meet or exceed the following performance specifications:

- Analog input sensitivity for rated output: 0, +4, +12 and +24 dBu, user selectable
- Rated output power, per channel, with all channels driven at less than 0.1% THD, typical (1 kHz): Mono mode with up to 8 channels, 250 watts into 4 and 8 ohms. V-Bridge mode with up to 4 channels, 500 watts into 4 ohms, 8 ohms, or with 100V lines (at 1% THD), 400 watts with 70V lines (at 1% THD). I-Share mode with up to 4 channels, 500 watts into 2 ohms. Quad mode with up to 2 channels, 1000 watts into 4 ohms or with 100V lines (at 1% THD), 800 watts with 70V lines (at 1% THD)
- Frequency Response (±0.5 dB at 1 watt): 20 Hz to 20 kHz
- Signal-to-Noise Ratio (below rated power, A-weighted with +24 dBu analog input sensitivity) >99 dB
- Total Harmonic Distortion (1 watt from 20 Hz to 20 kHz): less than 0.4%
- Intermodulation Distortion (SMPTE 60 Hz and 7 kHz): less than 0.4%
- Channel Separation (adjacent channels at 1 kHz): greater than 65 dB
- Damping Factor (10 – 1000 Hz, 4 ohms): greater than 1000

The amplifier shall incorporate eight balanced analog inputs, with rear-panel mounting and utilizing 3-pin terminal block connectors. The analog inputs shall support up to +24 dBu input signals. The amplifier shall support a digital expansion slot capable of receiving 8 digital audio channels using optional digital expansion cards, available in proprietary and industry-standard protocols. The amplifier outputs shall terminate with 8-pin, high-current, terminal-block connectors, which accept 10-22 AWG cables.

The amplifier shall include digital signal processing (DSP) optimized for loudspeaker processing, with 24-bit, 48 kHz

operation. The total latency (analog input to amplifier output) shall be less than 0.95 milliseconds. The fixed-block signal processing shall include the following elements for each of the eight channels: 5-band parametric input EQ, array EQ, bandpass (crossover) filters, 9-band parametric output EQ, delay, output peak and RMS-average limiter. An 8x8 matrix mixer shall be included for routing and attenuation of any input/output combination. A signal generator supporting tone, noise and sweep functions shall be included, which shall also enable the amplifier to measure, record and store automated impedance sweeps on any output channel.

The amplifier front panel shall contain a user interface with a 240 x 64 LCD primary display, with LED indicators for signal present, input clipping, output limiting and fault. Functions accessible from the front-panel interface shall include output configuration, fault logging, mute, input sensitivity selection, output attenuation, EQ on/off per channel and loudspeaker processing preset recall.

The amplifier shall contain a PC interface with a front-panel USB connection, which will allow full amplifier setup, configuration and monitoring using Bose® ControlSpace® Designer™ software (PM8250N model only). The network version amplifier shall also contain a rear-panel Ethernet interface available from an RJ45 connector to allow serial over Ethernet communications and network control/monitoring of multiple network version amplifiers when using a PC running Bose ControlSpace Designer software.

The amplifier chassis shall be constructed of steel with a durable black finish. The dimensions of the amplifier shall allow for 19-inch (483 mm) EIA standard rack mounting. The amplifier shall be 3.5 inches (2RU, 88 mm) in height, and 20.7 inches (525 mm) in depth. The amplifier shall weigh 28.3 pounds (12.8 kg).

The amplifier shall be the Bose PowerMatch® PM8250 (PM8250N) configurable professional power amplifier.

## Safety and Regulatory Compliance

PowerMatch configurable professional power amplifiers comply with CE requirements, are cUL listed according to UL60065 (7th edition) and CAN/CSA C22.2 No. 60065-03; CB approved, according to IEC60065 (7th edition), including group and national differences. These models also comply with FCC Part 15B Class A, Canadian ICES-003 Class A, EN55103-1, EN55103-2, and CISPR13 requirements.

## Product Codes

### PowerMatch® PM8250

PowerMatch PM8250 - US	361811-1110
PowerMatch PM8250 - AU	361810-2110
PowerMatch PM8250 - JPN	361811-3110
PowerMatch PM8250 - EU	361811-4110
PowerMatch PM8250 - UK	361811-5110

### PowerMatch® PM8250N (Network model)

PowerMatch PM8250N - US	361810-1110
PowerMatch PM8250N - AU	361810-2110
PowerMatch PM8250N - JPN	361810-3110
PowerMatch PM8250N - EU	361810-4110
PowerMatch PM8250N - UK	361810-5110

### Expansion Cards

PowerMatch ESPLink card	349898-0110
PowerMatch Dante™ network card	359844-0020
PowerMatch CobraNet® network card	345975-0110

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# PowerMatch® PM8250 / PM8250N configurable power amplifier

PowerMatch® AES3 input card

638301-0010



TECHNICAL DATA SHEET

# BrightSign®

## BRIGHTSIGN XD

**INTRODUCING THE UPDATED XD LINE.  
FASTER HTML5 & GRAPHICS ENGINE, AND POE+.**

Leading technology includes an advanced video engine capable of decoding two 1080p60 videos simultaneously, and a hardware-accelerated HTML5 & graphics rendering engine that enables flawless playback and layering of rich content. All models are network-enabled and equipped with Power over Ethernet (PoE+). BrightSign XD1132 can play Live TV, even HDCP-protected content, via HDMI.



### BrightSign XD232 Networked Interactive Player



Powerful video engine capable of dual Full HD 1080p60 video decoding and simultaneous content playback from local, networked and streaming sources. PoE+ networking and abundant content support with a faster graphics and HTML5 engine. GPIO and UDP interactivity with support for the BrightSign App and BrightWall™ video wall synchronization.

### BrightSign XD1032 Networked Multi-Control Interactive Player



All the features of the XD232 plus S/PDIF output for pure digital and surround sound audio, and a diverse range of interactive controls such as GPIO, serial, USB, UDP and mobile devices for engaging interactive displays.

### BrightSign XD1132 Networked Multi-Control Interactive and Live TV Player



Includes all the features BrightSign offers plus Live TV playback via the HDMI Input including HDCP-protected content.

#### XD1132



Live TV

#### XD1032



Touch



USB, Serial & GPIO Interactivity



Digital Sound



Geo-Fencing

#### XD232



Dual 1080p60 decode



Powerful Video Engine



4K Upscaling



Faster HTML5



Power over Ethernet+



Remote Snapshot



IP Streaming



IP Streaming Server



BrightWall™



Sign Preview



Zones



GPIO & IR Interactivity



Live Feeds



UDP Control



BrightSign App



Networking

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# BrightSign®

## SPECIFICATIONS

MODEL	XD232	XD1032	XD1132
	Networked Interactive Player	Networked Multi-Control Interactive Player	Networked Multi-Control Interactive and Live TV Player
<b>VIDEO ENGINE DECODER</b>			
Single 1080p30 video decoding	X	X	X
Single 1080p60 video decoding	X	X	X
Dual 1080p60 decoding	X	X	X
<b>MEDIA FORMATS</b>			
Video Codecs: MPEG-1, MPEG-2, H.264, WMV	X	X	X
Video Containers: MPEG-2 transport and program streams, AVCHD/BD-AV, ASF, MP4, MOV	X	X	X
3D capabilities with side-by-side and top-over-bottom support	X	X	X
Images: BMP, JPEG, PNG	X	X	X
Audio: MP2, MP3, AAC, and WAV (AC3 is passed through)	X	X	X
HTML5 content support	Better	Better	Better
<b>DISPLAY RESOLUTIONS*</b>			
PAL/NTSC	X	X	X
Upscaling to: 3840x2160x24/25/29.97/30p	X	X	X
1920x1080x24/25/29.97/30/50/59.94/60p, 1920x1080x50/59.94/60p, 1360x768x60p, 1280x800x60p, 1280x768x60p, 1280x720x50/59.94/60p, 1024x768x60/75p, 800x600x60/75p, 720x576x50p, 720x480x59.94/60p, 640x480x60p	X	X	X
1920x1080x50/59.94/60p, 1600x1200x60p, 1440x1050x60/75p, 1440x900x60/75p, 1280x1024x60/75p, 1280x960x60p, 1280x800x75p	X	X	X
<b>HARDWARE INTERFACES</b>			
Locking Power Connector	X	X	X
SD Slot for SDHC and SDXC; Storage via SDXC (up to 2TB)	X	X	X
Internal MicroSD Slot	X	X	X
USB High Speed Host Port		X (2 ports)	X (2 ports)
GPIO Port (8 bi-directional)	X	X	X
RS-232 Serial Port		X	X
3.5mm IR Out	X	X	X
3.5mm Analog Stereo Audio Out	X	X	X
S/PDIF Out		X	X
VGA Out (Component Video, Composite/S-Video)	X	X	X
HDMI Out	X	X	X
HDMI Input			X (HDMI 1.4a)
Ethernet	X (10/100)	X (10/100)	X (10/100)
Status LEDs	Power, Error, Update, Network, Wi-Fi, Ethernet, Micro SD, SD		
Reset Button	X	X	X

\*Additional display resolutions are supported

BrightSign, LLC. 16780 Lark Ave., Suite B Los Gatos, CA 95032 | USA 408-852-9263 | International +44 1223 911842 | www.brightsign.biz

MODEL	XD232	XD1032	XD1132
<b>FEATURES</b>			
Dual Video Decoding	X	X	X
4K Upscaling: upscale 1080p content to sharp 4K resolution	X	X	X
Powerful Video Engine: dual decoding and superior scaling	X	X	X
Live TV: brings Live TV to your signage via HDMI in, even HDCP-protected content			X
HTML5: hardware-accelerated engine that plays modular HTML assets flawlessly	X (faster)	X (faster)	X (faster)
Touch: for interactive touch screen and kiosk presentations		X	X
Zones: playback multiple content types on a single screen	X	X	X
BrightWall™: synchronized playback across multiple displays	X	X	X
Interactivity: trigger playback from various interactive ports	X (GPIO)	X (GPIO, USB, Serial)	X (GPIO, USB, Serial)
UDP Control: interact with signage using networking	X	X	X
Live Feeds: Live Text, Audio MRSS, Twitter, Flickr, etc.	X	X	X
BrightSign App: update signs with an iOS device	X	X	X
Geo-Fencing: trigger playback based on location		X	X
IP Streaming: play streaming media	X	X	X
IP Streaming Server: serve IP streams from BrightSign's local storage	X	X	X
Sign Preview: preview presentation playback in BrightAuthor	X	X	X
Networking: update, manage and schedule your signage	X	X	X
Remote Snapshot: remotely view a snapshot image of the display's playback	X	X	X
Power over Ethernet+ (PoE+): type 2 port powers other devices up to 25 watts	X	X	X
Usage tracking statistics and real time clock	X	X	X
Content Update via USB		X	X
<b>SOFTWARE</b>			
Free BrightAuthor Software	X	X	X
BrightSign Networking Options	X	X	X
<b>ACCESSORIES</b>			
USB Button Pads		X	X
Wireless Module	X	X	X
SDHC and MicroSD Class 10 Cards (various capacities)	X	X	X
<b>MISCELLANEOUS</b>			
Dimensions	196 x 43 x 169mm or 7.72 x 1.7 x 6.6 in. (W x H x D)		
Weight	669 grams or 23.6 oz		
Power	12V / 3A		
Multi-Country Power & Regulatory Approvals	X	X	X
Built-in Wall Mounting Brackets	X	X	X
1 year warranty, parts and labor	X	X	X

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### Review Summary

1. COMPONENTS | 2. SERVICES & SUPPORT | 3. ACCESSORIES | 4. REVIEW SUMMARY



**OptiPlex 9020 Small Form Factor**  
 Starting Price \$1,528.71  
 Instant Savings ~~\$458.61~~

Subtotal  
 As low as **\$33.00/month\***

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### Please Take a Moment to Review

Review Your OptiPlex 9020 Small Form Factor

Date & Time: 12/20/2015 6:56:22 AM

OptiPlex 9020 Small Form Factor  
 OptiPlex 9020 Small Form Factor, Windows 7 Professional English, French, Spanish  
 64bit (Includes Windows 10 Pro License)

Unit Price: \$1,528.71  
 - \$458.61

### SYSTEM COMPONENTS

Processor	Intel® Core™ i7-4790 Processor (Quad Core, 8MB, 3.60GHz w/HD4600 Graphics)	<a href="#">edit</a>
Operating System (s)	Windows 7 Professional English, French, Spanish 64bit (Includes Windows 10 Pro License)	<a href="#">edit</a>
Microsoft Application Software	No Office License Included	<a href="#">edit</a>
Dell Data Protection   Encryption Security SW	No DPPE Encryption Software	<a href="#">edit</a>
Memory	8GB (2x4GB) 1600MHz DDR3 Memory	<a href="#">edit</a>
Boot Hard Drives	2.5 inch 500GB Solid State Hybrid Drive	<a href="#">edit</a>
Additional Hard Drive	No Additional Hard Drive	<a href="#">edit</a>
Video Cards	AMD Radeon™ R7 250, 2GB, Half Height, (DP and DVI-I)	<a href="#">edit</a>
Dell Monitors	None	<a href="#">edit</a>
Optical Drives	8X DVD-ROM Drive	<a href="#">edit</a>
Keyboard	US English (QWERTY) Dell KB212-B QuietKey USB Keyboard Black	<a href="#">edit</a>
Mouse	Dell MS111 USB Optical Mouse	<a href="#">edit</a>
Keyboards and Mice	None	<a href="#">edit</a>
All in one Solution	None	<a href="#">edit</a>
E-Star	No Estar	<a href="#">edit</a>
Systems Management	Intel® vPro Technology Enabled	<a href="#">edit</a>
ADD-IN Port Cards	No Add On Cards	<a href="#">edit</a>
Cables - Multi select	NO ADAPTER	<a href="#">edit</a>
Optical Software	PowerDVD Software not included	<a href="#">edit</a>
Operating System Media	Windows 10 OS Recovery 64bit - DVD	<a href="#">edit</a>
Security Software	No Anti-Virus SW	<a href="#">edit</a>
Adobe Creativity and Productivity Software	None	<a href="#">edit</a>
Digitally Delivered Software	NCR	<a href="#">edit</a>
Dropbox for Business	None	<a href="#">edit</a>
Configuration Services	None	<a href="#">edit</a>

### OTHER OPTIONS

Dell Data Protection   Endpoint Security Suite	No Dell Data Protection   Endpoint Security Suite Software	<a href="#">edit</a>
------------------------------------------------	------------------------------------------------------------	----------------------

### PROTECT MY INVESTMENT

Hardware Support Services	3 Year Hardware Service with Onsite/In-Home Service After Remote Diagnosis	<a href="#">edit</a>
Accidental Damage Service	None	<a href="#">edit</a>
Data Protection Services	None	<a href="#">edit</a>
Installation Standard	None	<a href="#">edit</a>
Keep your Hard Drive	None	<a href="#">edit</a>
Asset Recovery Services	None	<a href="#">edit</a>
Logistics - Drop In Box	None	<a href="#">edit</a>
Accessories	None	<a href="#">edit</a>
Absolute Computrace	None	<a href="#">edit</a>
Dell Training Services	None	<a href="#">edit</a>

### ACCESSORIES

- Printers edit
- Business Essentials edit
- External Speakers edit
- Headsets and Webcams edit

Also included in this system

The following options are default selections included with your order

- No Monitor Selected
- OptiPlex 9020 Small Form Factor
- OptiPlex 9020 Small Form Factor up to 85% efficient PSU
- Heatsink, Performance, Small Form Factor
- No Bios Required
- Chassis Intrusion Switch
- Intel® Core™ i7 VPRO Label
- NO RAID
- No Wireless
- No Bios required
- NO INTEL RESPONSSIVE
- System Power Cord (English)
- Internal Speaker
- Additional Software for Window 7 Downgrade
- No Diagnostic/Recovery CD media
- Dell Backup and Recovery Basic (BC)
- No Quick Reference Guide
- Safety/Environment and Regulatory Guide (English)
- Regulatory Label
- NO UPC LABEL
- Shipping Material for System, Small Form Factor
- US No Canada Ship Charge
- Flex\_BTO
- Flexible Catalog Config 03



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Ships in 1 - 3 Business Days

- 1. COMPONENTS
- 2. SERVICES & SUPPORT
- 3. ACCESSORIES
- 4. REVIEW SUMMARY

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- 1. COMPONENTS
- 2. ACCESSORIES
- 3. SERVICES & SUPPORT
- 4. ADD A TABLET
- 5. REVIEW SUMMARY



Dell Precision M4700 Mobile Workstation

Starting Price \$1,498.53 Instant Savings \$479.53

Subtotal \$1,019.00 As low as \$25.00/mo.\*

Dell Business Credit | Apply

- Discount Details
- Preliminary Ship Date: 12/6/2013
- Print Summary

Dell Precision M4700 Mobile Workstation

Starting Price \$1,498.53 Instant Savings \$479.53

Subtotal \$1,019.00 As low as \$25.00/mo.\*

Dell Business Credit | Apply

- Discount Details
- Preliminary Ship Date: 12/6/2013
- Print Summary

Add To Cart

Please Take a Moment to Review

Review Your Dell Precision M4700 Mobile Workstation

Date & Time: 11/9/2013 7:01:39 AM

Dell Precision M4700 Mobile Workstation Dell Mobile Precision M4700, Windows 7 Professional, No Media, 64-bit, English

Unit Price: \$1,498.53 - \$479.53

BUILD MY DELL

Processor	3rd Generation Intel® Core™ i5-3340M Processor (Dual Core 2.70GHz, 3.4GHz Turbo, 3M cache, 35W)	edit
Operating System	Windows 7 Professional, No Media, 64-bit, English	edit
Productivity Software	Microsoft® Office Trial, MUI	edit
Digital Delivered Software	None	edit
System Recovery	None	edit
Warranty & Service	3 Year Basic Hardware Service with 3 Year NBD Onsite Service after Remote Diagnosis	edit
Accidental Damage	None	edit
Memory	2.0GB, DDR3-1600MHz SDRAM, 1 DIMM	edit
Fingerprint and Smartcard Reader	No USH, No Fingerprint Reader and No Contactless Smartcard Reader	edit
LCDs	15.6" HD (1366x768) Anti-Glare	edit
Camera / Microphone	Integrated noise reducing array microphones	edit
Graphics	AMD® FirePro® M4000 Mobility Pro Graphics with 1GB GDDRS	edit
RAID Configuration	No RAID Configuration	edit
Primary Storage	320GB 2.5" 7200rpm Hard Drive	edit
Secondary Storage	None	edit
Optical Hard Drive	None	edit
Mobile Broadband	None	edit
Docking Solutions	None	edit
Internal Keyboard	Internal English Keyboard	edit
Media Bay Devices	8X DVD Tray Load	edit
Primary Battery	6-cell (65Wh) Primary Lithium Ion Battery, (2.8Ah) ExpressCharge Capable	edit
Wireless LAN (802.11)	Dell Wireless™ 1504 802.11g/n Single Band Wi-Fi Half Mini-card	edit
Bluetooth	None	edit
Energy Star/EPEAT	No ESTAR Enabled	edit
Security Software	McAfee 12 Month Subscription	edit
Systems Management	No Out-of-Band Systems Management	edit
Carrying Cases	None	edit
Security: Dell Data Protection Encryption	None	edit

OTHER OPTIONS

Dell SonicWall solutions	None	edit
Non-Microsoft Application Software	Dell Applications for Windows 7 English OS Only	edit

ADD MY ACCESSORIES

Monitors & Stands	None	edit
Printers	None	edit
Keyboards & Mice	None	edit
Customer Favorites	None	edit
Business Essentials	None	edit
Top Selling Software	None	edit
Routers & Extenders	None	edit

PROTECT MY INVESTMENT

Environmental Options	None	edit
-----------------------	------	------

- Add a Tablet edit
- Add Tablet Accessories None

**Also included in this system**

The following options are default selections included with your order

- 180W 3P, A/C Adapter
- Dell Mobile Precision M4700
- Intel Core i5 Label



[Add To Cart](#)

Preliminary Ship  
Date: 12/9/2013

- 1. COMPONENTS
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- 3. SERVICES & SUPPORT
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snFG04

# Specifications

## DTP T/R DP 4K 330

### TRUE 4K specifications

Max. 4K Capabilities		
Resolution and Frame Rate	Chroma Sampling	Max. Bit Depth per Color
4096x2160 at 30 Hz	4:4:4	8 bit
3840x2160 at 30 Hz		
4096x2160 at 60 Hz	4:2:0	
3840x2160 at 60 Hz		

- Frame rate<sup>1</sup> ..... 24, 25, 30, 50, or 60 fps
- Chroma sampling<sup>1</sup> ..... 4:4:4, 4:2:2, or 4:2:0
- Color bit depth<sup>1</sup> ..... 8 bits per color
- Signal type ..... HDMI, DisplayPort, HDCP
- Max. video data rate ..... 10.2 Gbps (3.4 Gbps per color)

**NOTE:** <sup>1</sup>Subject to the maximum data rate limit. Use our calculator (<http://www.extron.com/product/videtools.aspx>) to determine video parameters supported by this data rate.

**NOTE:** This product consists of a transmitter (DTP T DP 4K 330) and a receiver (DTP R DP 4K 330), sold separately, with a twisted pair cable linking the transmitter and receiver.

### Video

- Maximum data rate ..... Up to 10.8 Gbps (2.7 Gbps per lane)
- Maximum pixel clock ..... 300 MHz
- Resolution range ..... Up to 2560x1600\* @ 60 Hz or 4K (4096x2160) @ 30 Hz, UHD (3840x2160) @ 30 Hz, 4K/UHD @ 60 Hz with 4:2:0 chroma subsampling (\* reduced blanking)
- Color bit depth ..... 8, 10, or 12 bits — subject to the maximum data rate limit
- Formats ..... RGB and YCbCr digital video
- Standard ..... DisplayPort 1.2, HDCP 1.4

**NOTE:** Only Single Stream Transport (SST) is supported.

### Video input – transmitter

- Number/signal type ..... 1 DisplayPort
- Connector ..... 1 female DisplayPort

### Interconnection between transmitter and receiver

- Signal type ..... DTP 330
- Connector ..... 1 female RJ-45 per unit
- Termination standard ..... TIA/EIA T568B

Signal transmission distance	
1080p @ 60 Hz .....	Up to 330' (100 m) using shielded twisted pair (STP) cable or XTP DTP 24 STP cable
2560x1600 @ 60 Hz.....	Up to 330' (100 m) using shielded twisted pair (STP) cable or XTP DTP 24 STP cable
4K/UHD @ 30Hz and 60 Hz ....	Up to 330' (100 m) using shielded twisted pair (STP) cable or XTP DTP 24 STP cable
Cable requirements.....	Solid conductor, 24 AWG or better
Cable recommendations .....	400 MHz bandwidth, STP (shielded twisted pair)

**NOTE:** Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance.

**NOTE:** Input and output mode signaling:

**DTP:** HDMI with embedded audio, analog audio, RS-232 and IR, and remote power

**HDBaseT:** HDMI with embedded audio plus RS-232 and IR

### Video output – receiver

Number/signal type.....	1 DisplayPort
Connectors.....	1 female DisplayPort

### Audio

Gain.....	Unbalanced output: 0 dB; balanced output +6 dB
Frequency response .....	20 Hz to 20 kHz, ±0.5 dB
THD + Noise .....	0.03% @ 20 Hz to 20 kHz at maximum output
S/N .....	>90 dB, at maximum input (unweighted)
Stereo channel separation.....	>80 dB
Digital sampling.....	48 kHz
Bit depth.....	16 bit

### Audio input

Signal type	
Analog audio (over DTP) .....	Stereo (2 channel), balanced/unbalanced

**NOTE:** Analog audio is not embedded onto the DisplayPort signal. Embedded digital audio is not de-embedded from the DisplayPort signal.

Digital audio.....	Embedded digital audio on DTP signal
Embedded digital audio source formats	
	2-ch PCM, PCM, Dolby Digital 2/0 Surround, Dolby Digital 2/0, DTS Digital Surround 5.1, DTSES Matrix 6.1, DTS-ES Discrete 6.1
Connector.....	(1) 3.5 mm stereo jack, 2 channel; tip (L), ring (R), sleeve (ground)
Impedance.....	>10k ohms, DC coupled
Nominal level.....	-10 dBV (316 mVrms)
Maximum level .....	+7 dBV (unbalanced)

**NOTE:** 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

### Audio output

Signal type	
Analog audio (over DTP) .....	Stereo (2 channel), balanced/unbalanced

**NOTE:** Analog audio is not embedded onto the DisplayPort signal. Embedded digital audio is not de-embedded from the DisplayPort signal.

Digital audio.....	Embedded digital audio on DTP signal
Embedded digital audio source formats	
	2-ch PCM, PCM, Dolby Digital 2/0 Surround, Dolby Digital 2/0, DTS Digital Surround 5.1, DTSES Matrix 6.1, DTS-ES Discrete 6.1
Impedance.....	50 ohms unbalanced, 100 ohms balanced
Gain error.....	±0.2 dB channel to channel
Maximum level (600 ohm) .....	>+14 dBu, balanced
Connectors	
Digital audio.....	Female DisplayPort
Analog audio .....	(1) 3.5 mm captive screw connector, 5 pole

### Communications – external device (pass-through, unidirectional or bidirectional)

Serial control port input/output	
Transmitter .....	RS-232 via (1) 3.5 mm, 5 pole captive screw connector for RS-232 control (±5 V) (connector is shared with IR control port)
Receiver .....	1 set of proprietary signals on a female RJ-45 jack
Serial control port output/input	
Transmitter .....	1 set of proprietary signals on a female RJ-45 jack
Receiver .....	RS-232 via a 3.5 mm, 3 pole captive screw connector
Baud rates and protocol .....	300 to 115200 baud, 8 or 7 data bits, 1 or 2 stop bits, non-parity (default), even or odd parity
Serial control pin configuration .....	1 = Tx, 2 = Rx, 3 = Gnd
IR control port .....	(1) 3.5 mm, captive screw connector, 5 pole (connector is shared with RS-232 control port)
	TTL level (0 to 5 V) modulated infrared control from 30 kHz up to 60 kHz
IR control pin configuration .....	3 = Gnd, 4 = IR Tx, 5 = IR Rx

### General

Power supply.....	External
	Input: 100-240 VAC, 50-60 Hz
	Output: 12 VDC, 1 A, 12 watts
Power consumption	
Transmitter	
Device .....	9.4 watts, 12 VDC
Device and power supply...	11.0 watts, 100-240 VAC, 50-60 Hz
Receiver	
Device .....	TBD watts, 12 VDC
Device and power supply...	TBD watts, 100-240 VAC, 50-60 Hz

**NOTE:** Each transmitter or receiver can be powered either locally by an external power supply or remotely by receiver or transmitter on the other end of the twisted pair cable.

Temperature/humidity .....	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
	Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling .....	Convection, no vents



Thermal dissipation	
Transmitter	
Device .....	13.4 BTU/hr
Device and power supply...	19.2 BTU/hr
Receiver	
Device .....	TBD BTU/hr
Device and power supply...	TBD BTU/hr
Mounting	
Rack mount.....	Yes, with optional 1U high rack shelf
Furniture mount.....	Yes, with optional under-desk mounting kit
Enclosure type .....	Metal
Enclosure dimensions	
Transmitter .....	1.0" H x 4.3" W x 6.0" D (quarter rack wide) (2.5 cm H x 10.9 cm W x 7.6 cm D) (Depth excludes connectors.)
Receiver .....	1.0" H x 4.3" W x 6.0" D (quarter rack wide) (2.5 cm H x 10.9 cm W x 15.2 cm D) (Depth excludes connectors.)
Product weight	
Transmitter .....	0.5 lbs (0.3 kg)
Receiver .....	1.0 lb (0.5 kg)
Shipping weight .....	3 lbs (2 kg)
Vibration .....	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety .....	CE, c-UL, UL
EMI/EMC.....	CE**, C-tick, FCC Class A**, ICES, VCCI

**NOTE:** \*\*CE and FCC testing is conducted with STP (shielded twisted pair) I/O cable.

Warranty ..... 3 years parts and labor

**NOTE:** All nominal levels are at ±10%.

**NOTE:** Specifications are subject to change without notice.

8.1-072215-D7

# Specifications

## USB Extender Plus T/R Series

### USB

USB host support .....	xHCI (USB 3.0), EHCI (USB 2.0), OHCI/UHCI (USB 1.1)
USB data rates .....	Low speed (1.5 Mbps), full speed (12 Mbps), high speed (480 Mbps)

### USB host – Tx units

Number/signal type.....	1 USB
Connectors.....	1 female USB type B

### Interconnection between transmitter and receiver

**NOTE:** This product supports the four types of data transfer defined by USB: bulk, control, interrupt, and isochronous transfers.

Connectors.....	1 female RJ-45 per unit
Termination standards.....	TIA 568B
Signal transmission distance.....	330' (100 m)

**NOTE:** The transmission distance varies depending on the type of cable used in the system.

### USB hub – Rx units

Number/signal type.....	(1) 4-port USB hub
Connectors.....	4 female USB type A

### General

Power supply.....	External
Input:	100-240 VAC, 50-60 Hz
Output:	12 VDC, 1 A

### Power consumption

Transmitter	
Device .....	2.5 watts
Device and power supply...	3.4 watts
Receiver	
Device .....	12.4 watts
Device and power supply...	14.9 watts

Temperature/humidity .....	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
----------------------------	--------------------------------------------------------------------------------------------------------------------------------------------

Cooling ..... Convection, no vents

### Thermal dissipation

Transmitter	
Device .....	8.5 BTU/hr
Device and power supply...	11.4 BTU/hr
Receiver	
Device .....	8.0 BTU/hr
Device and power supply...	16.7 BTU/hr

Mounting

Rack mount

- USB Extender Plus Rack Mount  
Yes, with optional rack shelf or rack mounting brackets
- USB Extender Plus AAP, USB Extender Plus Decora  
No

Furniture or wall mount

- USB Extender Plus Rack Mount  
Yes, with optional mounting kits
- USB Extender Plus AAP .... Yes, with optional mounting frame or Extron product with AAP openings
- USB Extender Plus Decora  
Wall or furniture mountable in a 1 gang Decora®-style opening

Enclosure type ..... Metal

Enclosure dimensions

- USB Extender Plus Rack Mount  
1.0" H x 4.3" W x 6.0" D (quarter rack width)  
(2.5 cm H x 10.9 cm W x 15.2 cm D)  
(Depth excludes connectors.)

USB Extender Plus AAP

- Faceplate..... 1.4" H x 3.5" W x 0.1" D  
(3.5 cm H x 8.9 cm W x 0.3 cm D)  
Double-space AAP

- Device ..... 1.4" H x 2.7" W x 1.8" D  
(3.5 cm H x 6.9 cm W x 4.6 cm D)

USB Extender Plus Decora

- Faceplate..... 2.6" H x 1.3" W x 0.1" D  
(6.6 cm H x 3.3 cm W x 0.3 cm D)
- Device ..... 2.7" H x 1.7" W x 1.6" D  
(6.9 cm H x 4.3 cm W x 4.0 cm D)

Product weight ..... 1 lb (0.5 kg)

Shipping weight ..... 2 lbs (1 kg)

Vibration ..... ISTA 1A in carton (International Safe Transit Association)

Regulatory compliance


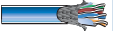
- Safety..... CE, c-UL, KCC, UL
- EMI/EMC..... CE, C-tick, FCC Class A, ICES, VCCI Class A
- Environmental..... Complies with the appropriate requirements of RoHS, WEEE

Warranty ..... 3 years parts and labor

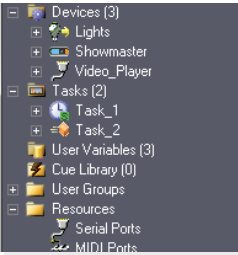
**NOTE:** All nominal levels are at ±10%.

**NOTE:** Specifications are subject to change without notice.

Specifications — XTP™ DTP 24 Cable

Description	UL NEC/ C(UL) CEC UL AWM Temp.	No. of Cond.	Standard Lengths		Shipping Weights		Conductor (solid) Diameter Nom. DCR	Nominal Core OD		Nominal OD		Nom. Vel. (ohms)	Nom. Capacitance pF/ft pF/m	Nominal Attenuation			Power Sum (dB)			Return Loss (dB/ 100 m)										
			ft.	m	Lbs.	kg		Inch	mm	Inch	mm			dB/ 100 ft	dB/ 100 m	NEXT (dB/ 100 m)	NEXT	ELFEXT	ACR											
(8) (4 Unshielded Twisted Pairs) 24 AWG Insulated Solid Bare Copper Conductors Overall Cable Shield: Al/Mylar + Tinned Copper Braid (55%)      Nominal Pair-to Pair Skew: Max. 25 ns/100 m, Min. 8 ns/100 m																														
<b>Nonplenum Cable • Solid Polyolefin Insulation • Gray PVC Outer Jacket</b>																														
<b>22-236-03 (1000') XTP DTP 24</b>   Minimum bend radius: 2.5"	NEC 800 CM UL 1685 75 °C	8	1000	304.8	41	18.6	24 AWG 0.021" 0.53 mm, Solid Cu 43 ohms/ 1k ft, 141 ohms/ 1 km	0.021	0.525	Single: blue/ blue-white, orange/ orange-white, green/ green-white brown/ brown-white	100	66%	15.2	50	conductor- conductor			4	-1.2	-4.1	65	64.3	53.7	58.6	23.01					
															8	-1.8	-5.8									61	59.8	47.7	52.1	24.52
															10	-2.0	-6.5									59	58.3	45.8	49.8	25.00
															16	-2.5	-8.2									56	55.3	41.7	44.5	25.00
															20	-2.8	-9.2									50	48.8	38.7	41.7	25.00
															25	-3.2	-10.4									48	47.3	38.7	38.7	24.32
															31	-3.6	-11.7									47	45.9	35.9	36.0	23.84
															62	-4.7	-15.4									45	44.4	29.8	24.9	21.54
															100	-6.0	-19.8									44	41.3	25.8	15.6	20.11
															155	-8.6	-28.1									42	40.7	22.1	5.4	19.00
200	-9.9	-32.4	40	38.8	19.7	—	18.00																							
250	-11.2	-36.9	38	36.8	17.3	—	17.40																							
300	-12.2	-40.1	28	25.1	15.5	—	14.77																							
400	-13.5	-44.3	26	23.3	13.0	—	13.89																							
500	-15.0	-49.1	24	21.8	13.2	—	13.21																							
Overall: 0.276 7.0 gray													conductor- conductor, connected to shield			Sweep tested 0.8 MHz to 1 GHz.														
<b>Plenum Cable • Solid FEP Insulation • Blue Fire-resistant PVC Outer Jacket</b>																														
<b>22-235-03 (1000') XTP DTP 24P</b>   Minimum bend radius: 3.5"	NEC 800 CMP UL 910 75 °C	8	1000	304.8	43	19.5	24 AWG 0.021" 0.53 mm, Solid Cu 43 ohms/ 1k ft, 141 ohms/ 1 km	0.021	0.525	Single: blue/white, orange/white, green/white, brown/white	100	69%	15.2	50	conductor- conductor			4	-1.2	-4.1	65	60.5	53.7	58.6	23.01					
															8	-1.8	-5.8									61	59.8	47.7	52.1	24.52
															10	-2.0	-6.5									53	53.3	45.8	49.8	25.00
															16	-2.5	-8.2									51	52.3	41.7	44.5	25.00
															20	-2.8	-9.2									50	48.8	38.7	41.7	25.00
															25	-3.2	-10.4									48	47.3	38.7	38.7	24.32
															31	-3.6	-11.7									47	45.9	35.9	36.0	23.84
															62	-5.0	-15.4									45	44.4	29.8	24.9	21.54
															100	-6.6	-19.8									40	40.3	25.8	15.6	20.11
															155	-8.6	-28.1									36	36.0	22.1	5.4	19.00
200	-9.9	-32.4	32	31.8	19.7	—	18.00																							
250	-11.2	-36.9	31	27.8	17.3	—	17.40																							
300	-12.2	-40.6	28	25.1	14.1	—	14.77																							
400	-13.5	-44.3	26	23.3	13.0	—	13.89																							
500	-15.0	-49.1	24	21.8	13.2	—	13.21																							
Overall: 0.268 6.8 blue													conductor- conductor, connected to shield			Sweep tested 0.8 MHz to 1 GHz.														

11 November 2014



# MEDIALON SHOWMASTER ST

> **Embedded Show Controller**

## FEATURES

- 4x Serial ports
- 16x Digital In
- 16x Digital Out
- 1x MIDI In/Out
- 1x DMX Out
- Ethernet
- 5x Web Panel connections
- Drag & drop programming
- 1x Timeline Programming
- Sync Accuracy 100th / Sec
- Device Position Tracking
- Logical Programming
- Real time testing (no Compile / Download / Test / Startover)
- Alarm via Email



## OVERVIEW

**Showmaster ST** is an all in one embedded Show Controller fitted with all necessary show protocol interfaces.

It controls and synchronizes dimmers, lighting desks, videoprojectors, video servers, sound processors etc.

Showmaster ST also provides digital I/O.

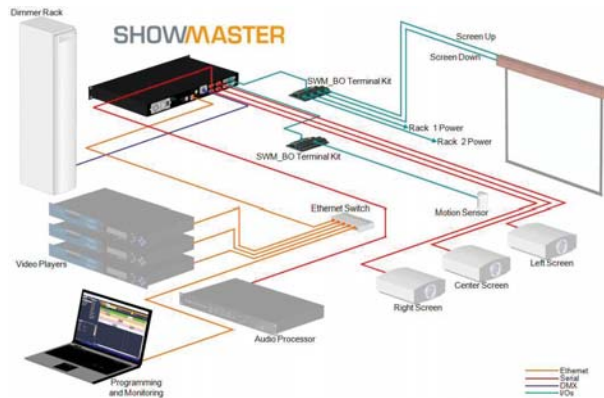
Its free editing software, Showmaster Editor, embeds most of the features of our award winning technology such as devices synchronization & logical programming as well as real time testing.

It allows the programming of one show at a time, and 5 Web Panel connections but does not support third party interfaces.

## APPLICATIONS

Showmaster ST is designed for small to medium Show Control application in Museums, Showrooms, Stores and Restaurants or attractions.

It can also be used as sub system in larger shows or attractions.



## MEDIALON SHOWMASTER ST

## Specifications

### Part Number

- **SWM** - Showmaster ST, Embedded Show Controller, with Showmaster Editor Software included.

### Dimensions

- Rack: 476 (W) x 44.5 (H) x 260 (D) mm (18.75" x 1.75" x 10.25"), Stand-alone: 441 (W) x 44.5 (H) 260 (D) mm (17.38" x 1.75" x 10.25"), Packing: 580 (W) x 145 (H) x 370 (D) mm (22.8" x 5.7" x 14.6")
- Rack size (1U)

### Weight

- Rack: 11 lbs/5 Kg
- Packaging: 17,2lbs/7,8Kg

### Power

- Auto-Ranging 100-240 VAC / 50-60Hz 250 Watts (Actual power requirement is usage dependent)

### Enclosure

- Metal with satin black finish

### Certifications

- FCC, CE, EN60950-1 FCC Class A - EN55022

### Front Panel

- 1x LCD Display 4x20 Characters
- 6x Power / Menu Navigation Buttons
- 4x Status LEDs

### Rear Panel

- 2x USB 2.0 Ports
- 1x IEC Power Connector
- 1x 10/100/1000 Base-T Ethernet Ports
- 4x RS-232 DB9 Male Serial Ports
- 1x DB-37 Male (Digital Inputs, optically-isolated and accept 3-31 Volts DC or AC RMS (40Hz-10kHz))
- 1x DB-37 Female (Relay Outputs, SPST form C electro-mechanical normally open relays. Rated Load: 0.5A @ 125VAC (62.5 VA max.) 1A @ 24VDC (30 W max.). Maximum switching voltage: 125VAC, 60 VDC / Current 1A). When using Breakout boxes (Part#SWM\_BO), the maximum electrical specifications are 150ma / 12VDC per relay with a maximum of 2A for the whole 16 relays.
- 1x DMX Output (5 Pin Female XLR)
- 1x Extension RCA Connector
- Hard Power Switch

### System

- 512 MB DDR2, SDRAM, 533 MHz
- 1x 80 GB 2,5" SATA Hard Drive, 5400 RPM
- Intel Celeron M 430, 1,73 GHz Processor

### Environmental

- Operating Temperature: 0°C/32°F to 50°C/122°F
- Operating Humidity: 10 to 80% at 25°C non-condensing
- Acoustic Noise: NC
- Heat Dissipation (Typical): NC BTU/hr

### Reliability

- NA

### Included Accessories

- 1x IEC Power Cord
- 1x USB-MIDI Adapter Cable
- 2x Rack Mounting Bracket

### Recommended Accessories

- Breakout Terminal Wiring Board and DB-37 Cable (Part# SWM\_BO)

### Software Specifications

- Drag & Drop Programming
- Multitasking: Several tasks can run simultaneously in synchronization or separately.
- 1x TimeLine for Synchronisation
- 1/100th Sec Sync Accuracy
- Device Positiontracking (Sync)
- Logical Programming Operators: +, -, \*, /, %, ^, =, ==, !=, >, <, >=, <=, |, &, #, ()
- Logical Programming Functions: Hours, Minutes, Seconds, Frames, Day, Day Of The Week As Name, Day Of The Week As Number, Month, Year, Lower Case, Upper Case, Length, Char At, Get Field Of Enum, Get Index Of Enum, Random, Sqrt, Round, Ceil, Floor, Abs, Max, Min, Sin, Asin, Tan, Atan, Cos, Acos, Ln, Log, Exp
- Variables Type: Integer, String, Time, Date, Enum. Unlimited number of variables.
- Real Time program testing
- Drivers Editor
- OpenCap Protocol
- Log Files
- 2x Panels (or Panel server)
- Alarm via Email

### Extensions Supported

- NA

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The NETGEAR® new generation of ProSAFE Gigabit Smart Switches offers new, powerful L2 and L2+ features with enhanced performance and usability. They are purposely designed for the future where increased traffic and application-oriented tasks demands more intelligence at the edge, higher reliability and improved network efficiency on top of operational cost savings and ease of management.

There are three products in this series: a 16-port, a 24-port, and a 48-port Gigabit Ethernet Smart Switch. The GS716T and GS724T comes with 2 dedicated Gigabit SFP ports for fiber connectivity while GS748T comes with 2 combo SFP and 2 Dedicated SFP ports, all with increased number of simultaneously connected ports. This new generation of Gigabit Smart Switch from NETGEAR is the optimized solution providing the best value at an affordable SMB price point.

### Highlights

#### Designed for Converged Network, Big or Small

- Gigabit Speed with non-blocking architecture supporting 100% Gigabit throughput
- Auto Voice VLAN for fast and reliable deployment of VoIP
- Auto Video VLAN, following the same concept of Auto Voice, help speed up your deployment of IP-based surveillance system
- Static routing, helps to route internal traffic for more efficient use of network resources
- IGMP and MLD snooping, providing advanced multicast filtering

#### Build a future-proof network with NETGEAR

- Solid performance with non-blocking architecture, 16K MAC addresses, 256 VLANs, 100 shared ACL entries, 32 static routes, and 512 Multicast Groups
- Comprehensive IPv6 supporting management, QoS and ACL, ensuring investment protection and a smooth migration to IPv6-based network
- Dedicated SFPs instead of combo ports, offering more connectivity ports and providing better value and usability at no extra cost
- Energy Efficient Ethernet (IEEE802.3az) support for more energy saving in the future when more EEE-compliant end devices come to market
- Advanced QoS with IPv4/IPv6 ingress traffic filtering and prioritization
- Dynamic VLAN assignment for easy user authentication and location-independent access to network
- Multicast VLAN Registration for eliminating unnecessary multicast traffic and improve the efficiency of network utilization

#### Network Development Made Easy

- Auto Voice VLAN for easy development of VoIP
- Auto Video for simple deployment of IP Surveillance
- ACL Wizard for a guided tour to set up your network access control
- Smart Control Center, a powerful tool for multi-switch discovery, deployment, monitoring and firmware upgrade
- Network Management System (NMS300), allowing all NETGEAR business products to be deployed and managed through this single management interface

#### Small IT, not Big IT

- Easy to manage via web-Based Management GUI or Smart Control Center for multi-switch deployment
- Standard-based technology, ensuring interoperability with any standard-based devices in the existing network
- Dual firmware images, improving reliability and uptime to your network
- Worry-free with NETGEAR ProSAFE Lifetime Hardware Warranty†
- Assist with customer deployment with 1-year Free 24x7 Advanced Technical Support\*

Page 2	Models at a Glance
Page 3-4	Features and Benefits
Page 5	Target Application
Page 6-10	Technical Specifications
Page 11	Ordering information



### Hardware at a Glance

		FRONT		REAR	
Model name	Form-Factor	10/100/1000Base-T RJ45 ports	100/1000X Fiber SFP ports	Power Supply	Fan
GS716Tv3	Rackmount	16	2 (Dedicated)	Internal	No
GS724Tv4	Rackmount	24	2 (Dedicated)	Internal	No
GS748Tv5	Rackmount	48	2 (Dedicated) + 2 (Combo)	Internal	1



GS716Tv3: 16-port 1000base-T Gigabit Smart Switch

- 16 Gigabit copper ports
- 2 dedicated SFP ports
- Fanless



GS724Tv4: 24-port 1000base-T Gigabit Smart Switch

- 24 Gigabit copper Ports
- 2 dedicated SFP ports
- Fanless



GS748Tv5: 48-port 1000base-T Gigabit Smart Switch

- 48 Gigabit Copper Ports
- 2 dedicated SFP and 2 Combo SFP ports

### Software at a Glance

Management	IPv4 / IPv6 Multicast filtering	Auto-VoIP	EEE (802.3az) Auto-EEE	VLANs	Convergence
Web GUI: HTTPs; RMON SNMP	IGMP and MLD Snooping	Yes	Yes	Static, Voice Video, MAC, Protocol-based	LLDP-MED, RADIUS, 802.1X

### Performance at a Glance

Model Name	Packet buffer	ACLs	MAC address table VLANs Multicast Group	Fabric	Static Routes IP interfaces
GS716Tv3 GS724Tv4 GS748Tv5	2Mb	100 shared ACLs (MAC, IP4 and IPv6)	16K MAC 256 VLANs 512 Multicast Groups	all models line-rate	32 static routes IPv4

### Features and Benefits

Hardware Features	Benefits
Dedicated SFP Fiber Uplinks	<ul style="list-style-type: none"> <li>Dedicated SFP ports provides fiber uplinks without sacrificing any downlink Gigabit port. 4 SFP ports provide not only redundant uplinks, but can also build dual redundancy by a trunked uplink with link aggregation and failover, the dual-redundancy, a powerful design for the network virtualization</li> </ul>
Fanless Design (GS716T and GS724T)	<ul style="list-style-type: none"> <li>Quiet operation makes these switches ideal solution for business environments which favor no noise from networking gears such as libraries, class rooms, offices and etc.</li> </ul>
Energy Efficient Ethernet (IEEE802.3az)	<ul style="list-style-type: none"> <li>Maximum power reduction for onging operational cost savings</li> </ul>
Software Features	Benefits
Dynamic VLAN Assignment	<ul style="list-style-type: none"> <li>IP phones and PCs can authenticate on the same port but under different VLAN assignment policies. Users are free to move around and enjoy the same level of network access regardless of their physical location in the network</li> </ul>
Static Routing	<ul style="list-style-type: none"> <li>A simple way to provide segmentation of the network with internal routing through the switch – reserving the router for external traffic routing only, making the entire network more efficient</li> </ul>
Comprehensive IPv6 Support for Management, ACL and QoS	<ul style="list-style-type: none"> <li>Build current network with future in mind. Ensure investment protection and a smooth migration to IPv6-based network without switch replacement</li> </ul>
IGMP Snooping and MLD Snooping	<ul style="list-style-type: none"> <li>Facilitate fast receiver joins and leaves for multicast streams. Save cost and improve network efficiency by ensuring multicast traffic only reaches designated receivers without the need of an extra multicast router.</li> </ul>
Robust Security Features: <ul style="list-style-type: none"> <li>802.1x authentication</li> <li>DHCP Snooping</li> <li>Port-based security by locked MAC</li> <li>ACL filtering to permit or deny traffic based on MAC and IP addresses</li> </ul>	<ul style="list-style-type: none"> <li>Build a secured, converged network with all types of traffic by preventing external attacks and blocking malware while allowing secure access for authorized users</li> </ul>
Auto Voice and Auto Video	<ul style="list-style-type: none"> <li>Automatic Voice over IP prioritization with Auto-VoIP simplifies most complex multi-vendor IP telephones deployments either based on protocols (SIP, H323 and SCCP) or on OUI bytes (default database and user-based OUIs) in the phone source MAC address; providing the best class of service to VoIP streams (both data and signaling) over other ordinary traffic by classifying traffic, and enabling correct egress queue configuration. When deployed IP phones are LLDP-MED compliant, the Voice VLAN will use LLDP-MED to pass on the VLAN ID, 802.1P priority and DSCP values to the IP phones, accelerating convergent deployments</li> </ul>

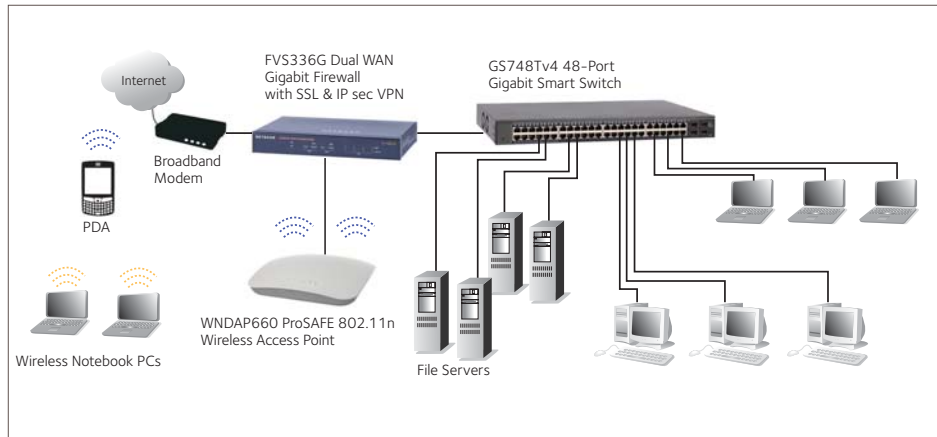
### Features and Benefits

Comprehensive QoS Features: <ul style="list-style-type: none"> <li>Port-based or 802.1p-based prioritization</li> <li>Layer 3-based (DSCP) prioritization</li> <li>Port-based ingress and egress rate limiting</li> </ul>	<ul style="list-style-type: none"> <li>Advanced controls for optimized network performance and better delivery of mission-critical traffic such as voice and video</li> </ul>
DHCP Snooping	<ul style="list-style-type: none"> <li>Ensure IP address allocation integrity by allowing only clients with specific IP/MAC addresses to have access to the network</li> </ul>
Dual Firmware Images and Configuration Files	<ul style="list-style-type: none"> <li>Dual firmware image and dual configuration file for transparent firmware updates/configuration changes with minimum service interruption</li> </ul>
Protected Ports	<ul style="list-style-type: none"> <li>Ensure no exchange of unicast, broadcast, or multicast traffic between the protected ports on the switch, therefore, improve the security of your converged network where your sensitive phone conversation can stay private and your surveillance video clips can be forwarded to their designated storage device without leakage or alteration.</li> </ul>
Dynamic ARP Inspection	<ul style="list-style-type: none"> <li>Prevents a class of man-in-the-middle attacks, where an unfriendly station intercepts traffic for other stations by poisoning the ARP caches of its unsuspecting neighbors.</li> </ul>
Multicast VLAN Registration	<ul style="list-style-type: none"> <li>Eliminates the replication of the same multicast traffic for every VLAN by sending multicast traffic only on to the dedicated multicast/source VLAN, resulting in more efficient utilization of network bandwidth.</li> </ul>
EAV (Ethernet Audio/Video Bridging) Support*	<ul style="list-style-type: none"> <li>Extends Ethernet usage to support multimedia streaming. The Ethernet AVB standard adds QoS (Quality of Service) features like time-synchronized low latency streaming services and bandwidth reservation to make it possible to carry professional quantity audio and video signals on a standard Ethernet line.</li> </ul>

\* EAV support can be acquired through the purchase of EAV software license that is sold separately from the switch. Please refer to ordering information for part numbers of these licenses.

### Converged Network Application

#### Network Diagram



#### Why is the NETGEAR latest generation of Gigabit Smart Switch the right choice for SMBs?

NETGEAR Gigabit Smart Switches offer the best Return on your Investment:

- Well-staged for future network upgrade with Gigabit to desktop and network virtualization
- Cost-Effectively bring intelligence to the edge of the network with traffic management features from the Smart Switches
- Improved usability for easier and smoother deployment of voice, video and WLAN on the same converged platform
- Lifetime warranty and 1-year Free Advanced Tech Support for peace-of-mind

### Technical Specifications

PRODUCT SPECIFICATIONS			
Model	GS716Tv3	GS724Tv4	GS748Tv5
Interfaces	16 10/100/1000 Mbps auto-sensing Gigabit-Ethernet switching ports, and two dedicated 1000M SFP fiber ports.	24 10/100/1000 Mbps auto-sensing Gigabit-Ethernet switching ports, and two dedicated 1000M SFP fiber ports.	48 10/100/1000 Mbps auto-sensing Gigabit-Ethernet switching ports, and two dedicated 1000Mbps SFP fiber ports, and two combo 1000Mbps SFP fiber ports.
PERFORMANCE SPECIFICATION			
Forwarding modes	Store-and-forward		
Bandwidth	36 Gbps	52 Gbps	100 Gbps
Priority queues	8	8	8
Priority queuing	Weighted Round Robin (WRR)		
MAC Address database size	16k media access control (MAC) addresses		
Addressing	48-bit MAC address		
Multicast groups	512		
Number of static routes	32		
Number of routed VLANs	15		
Number of ARP Cache entries	512		
Number of DHCP snooping bindings	8K		
Number of DHCP static entries	1024		
ACL	100 shared for MAC, IP and IPv6 ACLs		
Jumbo frame support	up to 9K packet size		
Acoustic noise (ANSI-S10.12)	0 dBA	0 dBA	37.2 dBA
Mean Time Between Failures (MTBF)	726,612 hours	567,680 hours	390,728 hours
L2 SERVICES - VLANs			
IEEE 802.1Q VLAN Tagging	Yes		
Protocol based VLANs	Yes		
MAC based VLANs	Yes		
Voice VLAN	Based on phones OUI bytes (internal database, or user-maintained) or protocols (SIP, H323 and SCCP)		
Protocol-based VLAN	Yes		

### Technical Specifications

NETWORK SECURITY	
IEEE 802.1x	Yes
Guest VLAN	Yes
RADIUS based VLAN assignment via .1x	Yes
MAC-based .1x	Yes
RADIUS Accounting	Yes
Network Storm Protection, DoS	Yes
Broadcast, Unicast, Multicast DoS Protection	Yes
DoS Attacks	Yes
Dynamic ARP inspection	Yes
L2 SERVICES – AVAILABILITY	
IEEE 802.3ad – LAGs	Yes
LACP	Yes (26 LAGs with max. of 8 members in each LAG)
Broadcast Storm Control	Yes
IEEE 802.3x (Full Duplex and flow control)	Yes
IEEE 802.1D Spanning Tree Protocol	Yes
IEEE 802.1w Rapid Spanning Tree	Yes
IEEE 802.1s Multiple Spanning Tree	Yes
L2 SERVICES – MULTICAST FILTERING	
IGMP Snooping (v1, v2 and v3)	Yes
MLD Snooping Support (v1 and v2)	Yes
IGMP Snooping Queries	Yes
Block Unknown Multicast	Yes
Multicast VLAN Registration	Yes
L3 SERVICES – DHCP	
DHCP Client	Yes
DHCP Snooping	Yes
L3 SERVICES – IPV4 ROUTING	
Static Routing	Yes
VLAN Routing	Yes
IP Source Guard	Yes
NETWORK MONITORING AND DISCOVERY SERVICES	
802.1ab LLDP	Yes
SNMP	V1, V2, V3
RMON 1,2,3,9	Yes

### Technical Specifications

NETWORK TRAFFIC	
Access Control Lists (ACLs)	L2 / L3 / L4
IP-based ACLs (IPv4 and IPv6)	Yes
MAC-based ACL	Yes
TCP/UDP-based ACL	Yes
MAC lockdown	Yes
MAC lockdown by the number of MACs	Yes
IEEE 802.1x Radius Port Access Authentication	Yes
Port-based security by locked MAC addresses	Yes
Dynamic VLAN Assignment	Yes
Dynamic ARP inspection	Yes
QUALITY OF SERVICE (QOS)	
Access Lists	Yes
L2 MAC, L3 IP and L4 Port ACLs	Yes
Ingress rate limiting	Yes
Egress rate limiting	Yes
Support for IPv6 fields	Yes
DiffServ QoS	Yes
IEEE 802.1p COS	Yes
Dst MAC and IP	Yes
IPv4 and v6 DSCP	Yes
IPv4 and v6 TOS	Yes
WRED (Weighted Deficit Round Robin)	Yes
Strict Priority Queue Technology	Yes
Timing and Synchronization for Time-Sensitive Applications (IEEE802.1AS)	Yes
Stream Reservation Protocol (SRP) (IEEE802.1Qat)	Yes
Forwarding and Queuing for Time-Sensitive Streams (IEEE802.1Qav)	Yes
Audio Video Bridging Systems (IEEE802.1BA)	Yes
Auto-VoIP	Yes, based on protocols (SIP, H323 and SCCP) or on OUI bytes (default database and user-based OUIs) in the phone source MAC address
Auto Video	Yes
Port Mirroring	Yes

### Technical Specifications

IEEE NETWORK PROTOCOLS		
IEEE 802.3 Ethernet	IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX	IEEE 802.1D Spanning Tree (STP)
IEEE 802.3i 10BASE-T	IEEE 802.3ae 10-Gigabit Ethernet	IEEE 802.1s Multiple Spanning Tree (MSTP)
IEEE 802.3u 100BASE-T	IEEE 802.3ad Trunking (LACP)	IEEE 802.1w Rapid Spanning Tree (RSTP)
IEEE 802.3ab 1000BASE-T	IEEE 802.1AB LLDP with ANSI/TIA-1057 (LLDP-MED)	IEEE 802.1X Radius network access control
IEEE 802.1Q VLAN Tagging	IEEE 802.1p Class of Service	IEEE 802.1AB*
IEEE 802.3x Full-Duplex Flow Control	IEEE 802.1Qat*	IEEE 802.1AS*
IEEE802.1Qav*		
MANAGEMENT		
Password Management	Yes	
Configurable Management VLAN	Yes	
Admin Access Control via Radius and TACACS+	Yes	
Web-based Graphical User Interface (GUI)	Yes	
Smart Control Center (SCC) for Multi-switch Management	Yes	
IPv6 Management	Yes	
Dual Software (firmware) Image	Yes	
Dual Configuration File	Yes	
SNTP Client over UDP Port 123	Yes	
SNMP v1/v2	Yes	
SNMP v3 with Multiple IP Addresses	Yes	
RMON 1,2,3,9	Yes	
Port Mirroring	Yes	
Many to One Port Mirroring	Yes	
Cable Test Utility	Yes	
SSL/HTTPS and TLS v1.0 for Web-based access	Yes	
File Transfers (uploads, downloads)	TFTP / HTTP	
HTTP Download (firmware)	Yes	
Syslog (RFC 3164)	Yes	

### Technical Specifications

LEDs			
Per Port	Speed, Link, Activity		
Per Device	Power and Fan (GS748T only)		
PHYSICAL SPECIFICATIONS			
Weight (kg)	2.57 kg	2.74 kg	3.46 kg
Dimensions (WxDxH) mm	440 x 204 x 43 mm	440 x 204 x 43 mm	440 x 257 x 43 mm
POWER CONSUMPTION (WHEN ALL PORTS USED, LINE-RATE TRAFFIC AND MAX POE IF APPLICABLE)			
WorstCase, all ports used, line-rate traffic	14.4W	17.4W	41.1W
ENVIRONMENTAL SPECIFICATIONS			
Operating			
Operating Temperature	32° to 122°F (0° to 50°C)		
Humidity	90% maximum relative humidity, non-condensing		
Altitude	10,000 ft (3,000 m) maximum		
Storage			
Storage Temperature	- 4° to 158°F (-20° to 70°C)		
Humidity	95% maximum relative humidity, non-condensing		
Altitude	10,000 ft (3,000 m) maximum		
ELECTROMAGNETIC EMISSIONS AND IMMUNITY			
Certifications	CE mark, commercial		
	FCC Part 15 Class A, VCCI Class A		
	Class A EN 55022 (CISPR 22) Class A		
	Class A C-Tick		
	EN 50082-1		
	EN 55024		
	CCC		
SAFETY			
Certifications	CE mark, commercial		
	CSA certified (CSA 22.2 #950)		
	UL listed (UL 1950)/cUL IEC 950/EN 60950		
WARRANTY AND SUPPORT			
ProSAFE Lifetime Warranty†	Included, lifetime		
ProSUPPORT Lifetime 24x7 Advanced Technical Support*	Included, 1 year		

\* The feature can be acquired through the purchase of EAV software license that is sold separately from the switch. Please refer to ordering information for part numbers of these licenses.





## New Generation of ProSAFE® Gigabit Smart Switches

Data Sheet

GS716Tv3, GS724Tv4 and GS748Tv5

### Ordering Information

PACKAGE CONTENT	
All models	ProSAFE® Gigabit Smart Switch
	Power cord
	Rack-mounting kit
	Resource CD with links to online documentation, installation guides, Web-management user manual, Smart Control Center (SCC) software and user guide.
ORDERING INFORMATION	
GS716T-300NAS	North America and Latin America
GS716T-300EUS	Europe
GS716T-300AJS	Asia
GS724T-400NAS	North America and Latin America
GS724T-400EUS	Europe
GS724T-400AJS	Asia
GS724T-400PRS	China
GS748T-500NAS	North America and Latin America
GS748T-500EUS	Europe
GS748T-500AJS	Asia
GS748T-500PRS	China
OPTIONAL MODULES, SOFTWARE LICENSE AND ACCESSORIES	
GS716TAV-20000S	Ethernet Audio/Video (EAV) software license for GS716T-300
GS724TAV-20000S	Ethernet Audio/Video (EAV) software license for GS724T-400
GS748TAV-20000S	Ethernet Audio/Video (EAV) software license for GS748T-500
AGM731F	1000Base-SX SFP GBIC (Multimode)
AGM732F	1000Base-LX SFP GBIC (Single mode)

† Lifetime warranty for product purchased after 05/01/2007. For product purchased before 05/01/2007, warranty is 5 years.

\* 1-year 24x7 Advanced Technical Support includes Remote Diagnostics performed by our technical experts for prompt resolution of technical issues.

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NETGEAR, Inc. 350 E. Plumeria Drive, San Jose, CA 95134-1911 USA, 1-888-NETGEAR (638-4327), E-mail: info@NETGEAR.com, www.NETGEAR.com

DS-GS716Tv3, GS724Tv4 and GS748Tv5-0

# Panasonic

ideas for life

PT-RZ370  
PT-RW330  
1-Chip DLP™ Projectors



Beyond Ordinary Projection—  
Solid Reliability with the  
LED/Laser-Combined Light Source



Many projector issues have been addressed with the new LED/Laser-combined light source. From the moment you turn on the projector, you'll notice the difference with the quick on and immediate full brightness. No more lamps and air filters, which lets you enjoy maintenance-free use for about 20,000 hours\*1 while maintaining excellent brightness and picture quality. To enhance permanent installation use, we've added DIGITAL LINK support so you can transmit video, audio and control signals



up to 100 meters (328 feet) over a single LAN cable.\*2 System capabilities have also been improved with 2x zoom and an exceptionally wide lens shift range, thus providing superb flexibility for easy first time and replacement installations. And the Total Cost of Ownership (TCO) has been reduced because you no longer have to keep replacement lamps on hand. The next-generation PT-RZ370/RW330 projectors have swept away the weak points of conventional projectors.

installations. And the Total Cost of Ownership (TCO) has been reduced because you no longer have to keep replacement lamps on hand. The next-generation PT-RZ370/RW330 projectors have swept away the weak points of conventional projectors.

## Start projecting as soon as you turn on the power



PT-RZ370
Full HD
3,500 lm

PT-RW330
WXGA
3,500 lm

No Maintenance
20,000
HOURS



### SOLID SHINE series uses the newly developed LED/Laser-combined light source



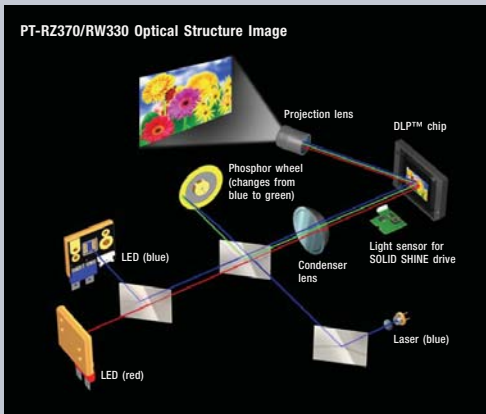
SOLID SHINE series projectors provide solid reliability and long-lasting brightness unprecedented by conventional lamp-based projectors.

**Approximately 20,000 hours\*1 of maintenance-free operation**  
No need to replace the light source or air filter, providing a dramatic reduction in the Total Cost of Ownership (TCO).

**Long-lasting picture quality**  
Excellent picture quality and brightness are maintained for a long time.

**Superb color reproduction**  
Beautiful, vivid colors exceeding the levels of conventional projectors.

**Quick start, quick off**  
The image appears almost instantly upon powering up, and there is no need for cooling after turning the power off. The power can be turned on immediately after being turned off, and it can be turned on/off as many times as you want.



## Long-Lasting Reliability and High Picture Quality

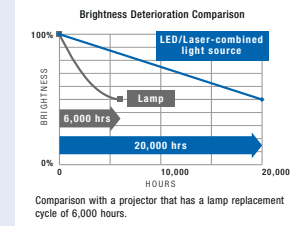
### The LED/Laser-Combined Light Source Enables Approx. 20,000\*1 Hours of Continuous Operation

This new light source requires no maintenance for approximately 20,000 hours.\*1 In many cases, this means no maintenance until your next refresh cycle. Naturally, there are no lamp burnout problems during use, so reliability is further increased. There is also no filter to clean due to carefully engineered sealed optics. As a consequence, running cost is dramatically lowered because of the savings on lamp costs, maintenance labor and hassle of stocking lamps.



### Bright, Beautiful Picture Quality for a Long Period of Time

The PT-RZ370/RW330 features 3,500 lumens of brightness. Rate of brightness deterioration in the LED/Laser-combined light source is extremely slow compared to lamp based projectors. The SOLID SHINE drive uses a built-in sensor to constantly detect the light intensity of the light source and correct corresponding changes in white balance. This all helps to maintain excellent picture quality for a long period of time. Contrast is outstanding too, at 10,000:1, and images are reproduced with a wide dynamic range. The PT-RZ370 features a Full-HD (1920 x 1080) DLP™ chip, allowing highly detailed Full-HD images without resizing.



### Superior Color Reproduction

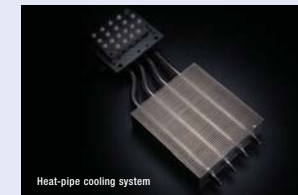
The LED/Laser-combined light source has a higher level of color purity than an ordinary lamp, allowing it to achieve color production with wider color space. Colors are more vibrant than those of conventional projectors.

### 30x Drive\*3 Switching Prevents Color Breaking

In 1-chip DLP™ system projectors with conventional lamp, a color wheel is used for time-division multiplexing in a method where the human eye combines the result to achieve a full-color palette. In the PT-RZ370/RW330, this is done by on/off switching of the LED/Laser-combined light source. A unique Panasonic power supply circuit provides time-division multiplexing with ultrafast 30x drive.\*3 The resulting, high-definition images exhibit virtually no color breaking.\*4

### Heat Pipe Cooling System Maintains Stable Operation up to 45 °C (113 °F)\*5

Laser cooling is performed by releasing the heat to cooling fins, then cooling with a heat pipe cooling system. This suppresses temperature rises inside the projector and allows stable operation up to an ambient temperature of 45 °C (113 °F).\*5 The use of this heat pipe-cooled system also achieves quiet operation of 29 dB,\*6 enabling viewers to concentrate on the presentation or on quiet movie scenes.



### Dust-Resistant Structure with an Airtight Optical Block

The area between the LED/Laser to the DLP™ chip and prism is hermetically sealed to form an airtight structure for the optical block, the heart of the projector. This resists the effects of dust and other particles in the air, and enables use of the projector in a wide range of environments.

### The Daylight View Basic Ensures Clear Images Even in Brightly Lit Rooms

Panasonic's Daylight View Basic technology achieves sharp, easy-to-see images by clearly reproducing the details in dark image areas, which were previously difficult to see in brightly lit rooms. A built-in sensor measures the ambient light, and the Daylight View Basic function adjusts the halftone color and brightness level according to the surrounding illumination.



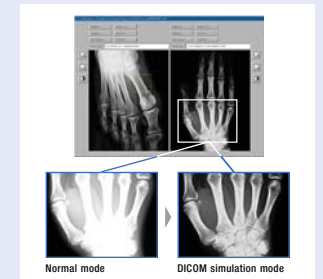
Without Daylight View Basic



With Daylight View Basic

### DICOM Simulation Mode\*7

This imaging mode is similar to DICOM part 14, which is a medical imaging standard. It reproduces X-ray images with remarkable clarity.



### Rec. 709 Mode for HDTV Projection

Optimal color reproduction can be achieved by selecting this mode, compliant with ITU-R Recommendation BT.709, when images from an HDTV source are projected.

\*1 A guideline for light source replacement. The maintenance-free period may be shortened due to environmental conditions.  
\*2 Use a CAT5e (STP) cable or higher.  
\*3 Picture mode: Dynamic, 10x drive in other picture modes. The rate for each vertical sync/blanking interval, with R/G/B light source switching set to 1x.

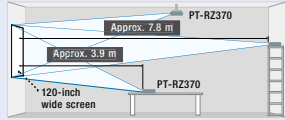
\*4 A condition in which incorrect color expression causes color flickering.  
\*5 The operating temperature range is 0 °C to 40 °C (32 °F to 104 °F) when used in locations from 1,400 m (4,593 ft) to 6,958 ft above sea level.  
\*6 LIGHT POWER mode: ECO, 35 dB with LIGHT POWER mode set to NORMAL.  
\*7 This product is not a medical instrument. Do not use it for actual medical diagnosis.



## Flexible Installation with Clean DIGITAL LINK Wiring

### Versatile First-Time and Replacement Installations

- **2x Zoom Lens:** For a 120-inch-diagonal wide screen, the projection distance extends from approximately 3.9 m (12.8 ft) to approximately 7.8 m (25.7 ft).



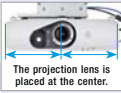
- **Horizontal/Vertical Lens Shift:** The wide shift range accommodates various room sizes and shapes. When lights or ventilation holes are located in the ceiling mounting site, you can simply relocate the projector to avoid them.



- **Flexible 360-Degree Installation:** The projectors can be rotated vertically. This means you can install one at any up-and-down angle you want, to accommodate different installation conditions.



- **Lens-Centered Design:** A lens-centered, symmetrical design provides ease of installation, eliminating the need for any special considerations when planning the installation site.



### DIGITAL LINK Transmits Digital Signals up to 100 m (328 ft) with a Single Cable\*

- **Optional ET-YFB100G Digital Interface Box for Easy Setup:** By combining the optional ET-YFB100G Digital Interface Box, with its

HDMI and other input terminals, uncompressed HD digital video, audio and control signals are transmitted up to 100 m (328 ft) over a single LAN cable.\*\* It allows projector connection with only one cable, making it ideal for ceiling-mounted and other permanent installations. Also, because control signals can be simultaneously transmitted, the ET-YFB100G input signal can easily be switched with the wireless remote control that is included with the projector. The projector can be controlled by either serial or LAN communication.



- **Also Supports Other Manufacturers' Peripheral Equipment:** DIGITAL LINK is an original function added to technology based on the transmission standards used in Creston's DigitalMedia 8G+, Extron's XTP Systems, etc. Signals from the ET-YFB100G can also be relayed to a non-DIGITAL LINK-ready projector by using another manufacturer's equipment based on the same technology.\*\*

For details on other manufacturers' equipment, visit our Projector Global Web Site: [panasonic.net/avc/projector](http://panasonic.net/avc/projector)

### Abundant Connection Terminals, Including HDMI

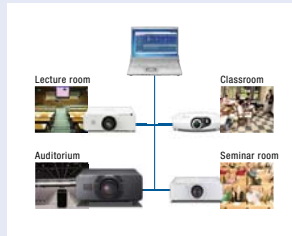
Interfaces include HDMI and DVI-I inputs. The serial terminal (RS-232C) has an Emulate func-



tion that lets you continue using existing control systems when replacing previous Panasonic models. It is also possible to output audio during STANDBY MODE.\*\* This is convenient when connecting an external audio system through the projector.\*<sup>10</sup> A closed caption decoder is built in.

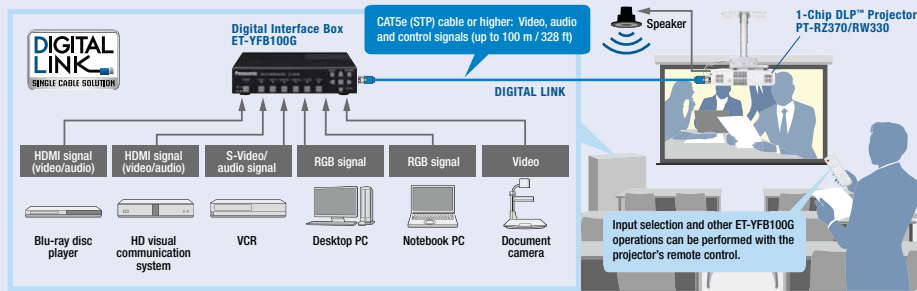
### Easy Remote Monitoring and Control over a LAN

Web browser on a computer connected through a wired LAN system lets you remotely operate projectors and check their status. An e-mail messaging function can also notify you the overall projector status. In addition, Multi Projector Monitoring and Control Software Ver. 2.8 is available for monitoring and controlling multiple Panasonic projectors from a single PC. The wired LAN terminal is compatible with PjLink™ (class 1), an open protocol that is used by many manufacturers, to enable integrated control of systems that contain different brands of projectors.



### Compatible with Crestron RoomView™

The LAN terminal allows a computer connected to the network to use Crestron RoomView™ application software to manage and control system devices.



\*8 Input selection and other ET-YFB100G operations can be performed only when connecting to a DIGITAL LINK compatible projector.

\*9 Requires menu selection.

\*10 Audio monitoring requires external speakers and an audio amplifier.



## Operation Friendly

### Image Appears Immediately—No Need for Cooling after Use

Images do not appear quickly with lamp-based projectors because the projector requires time to warm up. With the PT-RZ370/RW330, the image appears almost instantly. There's also no cooling time required when turning the power off, so you can quickly turn the projector on and off as many times as needed.

### 24/7 Operation

Ordinary lamps are not well suited to continuous operation. Because the PT-RZ370/RW330 does not use a lamp, has efficient cooling system and uses DLP™ chip that has a long life, they are capable of 24/7 operation.

### Scheduling Function

Scheduled operation is possible using the built-in timer function, without having to use a PC and software.

### Effective Theft Prevention with the Startup Logo

You can change the default Panasonic start up logo to any logo you want. A new logo can be easily uploaded by connecting a computer to the PT-RZ370/RW330 through the LAN or serial connection by using the Logo Transfer Software.\*<sup>11</sup> An abundance of other security measures are also included, such as a security bar, Key lock, and Security Password. This is very effective for preventing theft.



### 15 m (49 ft) Long-Range Wireless Remote Control

A unique ID number can be assigned to each projector using the supplied wireless remote control unit. This allows operation of a desired projector when multiple units are set up at the same location. Three frequently



used functions can be assigned to the Function buttons for instant recall.

### Eco Management Functions

A number of functions are provided to reduce power consumption. You can easily set the Eco Management functions according to operating conditions by using the "ECO" button on the remote control.

- Selectable light source modes:
  - NORMAL:** Prioritizes brightness. **ECO SAVE 1:** Reduces power consumption by approximately 20% on average while leaving brightness almost unchanged. **ECO SAVE 2:** Minimizes brightness reduction while reducing power consumption by approximately 30% on average. **LOW:** Prioritizes low power consumption.
  - Adjusts the brightness according to ambient light conditions, and reduces the light source power.
  - Reduces the light source power when there is no signal input or the projector is in AV Mute mode.

### Ecology-Conscious Design

- Lamp-free (no mercury)
- Low heat dissipation
- RoHS Directive compliant
- No halogenated flame retardants are used in the cabinet.
- Non-coated cabinet for easy recycling.
- Lead-free glass is used for the lens.
- Light source mode is selectable to reduce power consumption.
- "ECO" button on the remote control for easy setting up of Eco Management functions.
- Standby power consumption of only 0.5 W has been achieved. (STANDBY MODE: ECO)
- An Auto Off Timer switches the projector to standby mode when no input signal is received for a preset time.

### Projection Distance

Projection size [diagonal]		Projection distance		Height from the edge of screen to center of lens	
[m]	[in]	Min [wide]	Max [telephoto]		
<b>PT-RZ370 (16:9 aspect ratio)</b>					
1.02 / 40	1.3 (4.1)	2.6 (8.5)	-0.12 - 0.49	(-0.4 - 1.6)	
1.52 / 60	1.9 (6.3)	3.9 (12.8)	-0.17 - 0.73	(-0.6 - 2.4)	
2.03 / 80	2.6 (8.5)	5.2 (17.1)	-0.23 - 0.98	(-0.8 - 3.2)	
2.54 / 100	3.2 (10.6)	6.5 (21.4)	-0.29 - 1.22	(-0.9 - 4.0)	
3.05 / 120	3.9 (12.8)	7.8 (25.7)	-0.34 - 1.46	(-1.1 - 4.8)	
3.81 / 150	4.9 (16.0)	9.8 (32.1)	-0.43 - 1.83	(-1.4 - 6.0)	
5.08 / 200	6.5 (21.4)	13.1 (42.9)	-0.57 - 2.44	(-1.9 - 8.0)	
7.62 / 300	9.8 (32.2)	19.6 (64.4)	-0.86 - 3.66	(-2.8 - 12.0)	
<b>PT-RW330 (16:10 aspect ratio)</b>					
1.02 / 40	1.3 (4.2)	2.6 (8.7)	-0.10 - 0.52	(-0.3 - 1.7)	
1.52 / 60	2.0 (6.4)	4.0 (13.1)	-0.15 - 0.78	(-0.5 - 2.5)	
2.03 / 80	2.6 (8.6)	5.3 (17.5)	-0.21 - 1.03	(-0.7 - 3.4)	
2.54 / 100	3.3 (10.9)	6.7 (21.8)	-0.26 - 1.29	(-0.8 - 4.2)	
3.05 / 120	4.0 (13.1)	8.0 (26.2)	-0.31 - 1.55	(-1.0 - 5.1)	
3.81 / 150	5.0 (16.4)	10.0 (32.8)	-0.38 - 1.94	(-1.3 - 6.4)	
5.08 / 200	6.7 (21.9)	13.4 (43.8)	-0.51 - 2.59	(-1.7 - 8.5)	
7.62 / 300	10.0 (32.9)	20.1 (65.8)	-0.77 - 3.88	(-2.5 - 12.7)	

### ET-YFB100G

Projection size [diagonal]		Projection distance		Height from the edge of screen to center of lens	
[m]	[in]	Min [wide]	Max [telephoto]		
<b>ET-YFB100G</b>					
1.02 / 40	1.3 (4.4)	2.7 (8.9)	-0.05 - 0.48	(-0.2 - 1.6)	
1.52 / 60	2.0 (6.6)	4.1 (13.4)	-0.08 - 0.71	(-0.2 - 2.3)	
2.03 / 80	2.7 (8.9)	5.5 (17.9)	-0.10 - 0.95	(-0.3 - 3.1)	
2.54 / 100	3.4 (11.2)	6.8 (22.4)	-0.13 - 1.19	(-0.4 - 3.9)	
3.05 / 120	4.1 (13.5)	8.2 (27.0)	-0.15 - 1.43	(-0.5 - 4.7)	
3.81 / 150	5.1 (16.9)	10.3 (33.7)	-0.19 - 1.79	(-0.6 - 5.9)	
5.08 / 200	6.9 (22.5)	13.7 (45.0)	-0.25 - 2.38	(-0.8 - 7.8)	
7.62 / 300	10.3 (33.9)	20.6 (67.6)	-0.37 - 3.57	(-1.2 - 11.7)	

### Options

#### ET-PKR100H

Ceiling mount bracket for high ceilings



#### ET-PKR100S

Ceiling mount bracket for low ceilings



#### ET-YFB100G

Digital interface box



Brackets included for various installation needs, including server rack (EIA standards) mounting.



\*11 Still images that can be uploaded are limited to 1024 × 768 pixel bitmap files. Also, the application will reduce the number of colors to 191.

## Specifications

Model	PT-RZ370	PT-RW330
Power supply	100–240 V AC, 5.2–2.0 A, 50/60 Hz	
Power consumption	460 W (470 VA) (250 W <sup>1</sup> with LIGHT POWER set to NORMAL, 200 W <sup>1</sup> with LIGHT POWER set to Ecosave1, 178 W <sup>1</sup> with LIGHT POWER set to Ecosave2) (0.5 W with STANDBY MODE set to ECO <sup>2</sup> ; 8 W with STANDBY MODE set to NORMAL)	
DLP™ chip	Panel size	16.5 mm (0.65 in) diagonal (16:9 aspect ratio)
	Display method Pixels	DLP™ chip × 1, DLP™ projection system 2,073,600 (1,920 × 1,080) × 1, total of 2,073,600 pixels
Lens	Manual zoom (2.0×), manual focus, F 2.0–3.4, f 121.5–43.0 mm	
Throw ratio	1.46–2.94:1	1.5–3.1:1
Light source	LED/Laser-combined (R, B; LED; G; Laser diode)	
Screen size (diagonal)	1.02–7.62 m (40–300 inches) diagonally, 16:9 aspect ratio	
Brightness <sup>3</sup>	3,500 lm	
Center-to-corner uniformity <sup>3</sup>	90 %	
Contrast <sup>3</sup>	10,000:1 (full on/off)	
Resolution	1,920 × 1,080 pixels (Input signals that exceed this resolution will be converted to 1,920 × 1,080 pixels.)	1,280 × 800 pixels (Input signals that exceed this resolution will be converted to 1,280 × 800 pixels.)
Scanning frequency	HDMI/DVI-I (digital)	fH: 27–100 kHz, fV: 24–120 Hz, dot clock: 25–162 MHz
	DVI-I (analog)/RGB YPbPr (YCbCr)	fH: 15–100 kHz, fV: 24–120 Hz, dot clock: 162 MHz or lower fH: 15.75 kHz, fV: 60 Hz (480) (525i) fH: 37.50 kHz, fV: 50 Hz [720 (750)/50p] fH: 27.00 kHz, fV: 24 Hz [1080 (1125)/24p] fH: 15.63 kHz, fV: 50 Hz (576) (625i) fH: 33.75 kHz, fV: 60 Hz [1036/60] fH: 27.00 kHz, fV: 48 Hz [1080 (1125)/24sF] fH: 31.50 kHz, fV: 60 Hz (480) (625p) fH: 33.75 kHz, fV: 60 Hz [1080 (1125)/60] fH: 33.75 kHz, fV: 30 Hz [1080 (1125)/30p] fH: 31.25 kHz, fV: 50 Hz (576) (625p) fH: 28.13 kHz, fV: 50 Hz [1080 (1125)/50] fH: 67.50 kHz, fV: 60 Hz [1080 (1125)/60p] fH: 45.00 kHz, fV: 60 Hz (720 (750)/60p) fH: 28.13 kHz, fV: 25 Hz [1080 (1125)/25p] fH: 56.25 kHz, fV: 50 Hz [1080 (1125)/50p] fH: 15.75 kHz, fV: 60 Hz [NTSC/NTSC-4.43/PAL-M/PAL60], fH: 15.63 kHz, fV: 50 Hz [PAL/PAL-N/SECAM]
Video	fH: 15.75 kHz, fV: 60 Hz [NTSC/NTSC-4.43/PAL-M/PAL60], fH: 15.63 kHz, fV: 50 Hz [PAL/PAL-N/SECAM]	
Optical axis shift	Vertical: +73%, -48% (manual), horizontal: +27%, -35% (manual)	Vertical: +69%, -46% (manual), horizontal: +28%, -37% (manual)
Keystone correction range	Vertical: ±40°	
Installation	Ceiling/floor, front/rear	
Terminals	HDMI IN	HDMI 19-pin × 1 (Deep Color, compatible with HDCP) 480p (525p), 576p (625p), 720 (750)/60p, 720 (750)/50p, 1080 (1125)/60i, 1080 (1125)/50i, 1080 (1125)/25p, 1080 (1125)/24p, 1080 (1125)/24sF, 1080 (1125)/30p, 1080 (1125)/60p, 1080 (1125)/50p, VGA (640 × 480)–WUXGA <sup>4</sup> (1,920 × 1,200), compatible with non-interlaced signals only, dot clock: 25–162 MHz, audio signal: linear PCM (sampling frequencies: 48 kHz, 44.1 kHz, 32 kHz)
	DVI-D IN Digital	DVI-I 29-pin × 1 (DVI I.0 compliant, compatible with HDCP, compatible with single link only) 480p (525p), 576p (625p), 720 (750)/60p, 720 (750)/50p, 1080 (1125)/60i, 1080 (1125)/50i, 1080 (1125)/25p, 1080 (1125)/24p, 1080 (1125)/24sF, 1080 (1125)/30p, 1080 (1125)/60p, 1080 (1125)/50p, VGA (640 × 480)–WUXGA <sup>4</sup> (1,920 × 1,200), compatible with non-interlaced signals only, dot clock: 25–162 MHz
RGB YPbPr/YCbCr	R/B: 0.7 Vp-p, 75 ohms, G: 0.7 Vp-p (G: 1.0 Vp-p for sync on G), 75 ohms, HD/VD, SYNC: TTL, high impedance, positive/negative automatic Y: 1.0 Vp-p (including sync signal), Pb/Ps (Cb/Cr): 0.7 Vp-p, 75 ohms	
	COMPUTER (RGB) IN VIDEO IN	D-sub HD 15-pin (female) × 1 (RGB/YPbPr/YCbCr × 1) Pin jack × 1
AUDIO IN AUDIO OUT	M3 (L, R) × 1	
SERIAL IN	M3 (L, R) × 1	
LAN /DIGITAL LINK	D-sub 9-pin (female) × 1 for external control (RS-232C compliant) RJ-45 × 1 (for network and DIGITAL LINK (video/audio/network/serial control) connection, 100Base-TX, compatible with P.LINK™, HDCP compatible, Deep Color compatible) (for network and DIGITAL LINK (video/audio/network/serial control) connection, 100Base-TX, compatible with P.LINK™, HDCP compatible, Deep Color compatible) 1080 (1125)/50i, 1080 (1125)/25p, 1080 (1125)/24p, 1080 (1125)/24sF, 1080 (1125)/30p, 1080 (1125)/60p, 1080 (1125)/50p, VGA (640 × 480)–WUXGA <sup>4</sup> (1,920 × 1,200), compatible with non-interlaced signals only, dot clock: 25–162 MHz	
Cabinet materials	Molded plastic	
Dimensions (W × H × D)	455 × 137 <sup>±5</sup> × 415 mm (17-29/32 × 5-13/32 <sup>±5</sup> × 16-11/32 in) (lens included)	
Weight <sup>4</sup>	Approximately 11.0 kg (24.3 lbs)	
Operation noise <sup>5</sup>	35 dB (LIGHT POWER mode: NORMAL), 29 dB (LIGHT POWER mode: LOW)	
Operating environment	Operating temperature: 0–45 °C <sup>7</sup> (32–113 °F <sup>7</sup> ), operating humidity: 20–80 % (no condensation)	
Supplied accessories	Power cord (with secure lock) × 1 <sup>8</sup> , wireless remote control unit, batteries for remote control (R6/LR6/AA type × 2), software CD-ROM (Logo Transfer Software, Multi Projector Monitoring & Control Software)	

- <sup>1</sup> In STANDARD/GRAPHIC picture mode. Measured based on the power consumption rate and a measurement method for the TV receiver.
- <sup>2</sup> When the STANDBY MODE is set to ECO, network functions such as power on over the LAN network will not operate. Also, only certain commands can be received for external control using the serial terminal.
- <sup>3</sup> Measurement, measuring conditions, and method of notation all comply with ISO 21118 international standards.
- <sup>4</sup> WUXGA resolution is supported only when the signals are compliant with VESA CVT-RB (Coordinated Video Timing-Reduced Blanking).
- <sup>5</sup> With legs at shortest position.
- <sup>6</sup> Average value. May differ depending on the actual unit.
- <sup>7</sup> 0–40 °C (32–104 °F) between 1,400 m and 2,700 m (4,593 ft and 8,858 ft) above sea level. If the ambient temperature exceeds 35 °C (95 °F), the light output may be reduced to protect the projector.
- <sup>8</sup> Power cords available (× 2) for the PT-RZ370EA/RW330EA.

## NOTES ON USE

1. Do not install the projector in locations that are subject to excessive water, humidity, steam, or only smoke. Doing so may result in fire, malfunction, or electric shock.
2. Please observe the following precautions:
  - Never place objects on top of the projector while it is operation.
  - Make sure there is an unobstructed space of 500 mm (1 ft 8 in) or more around the projector's exhaust openings.
- Do not stack projector units directly on top of one another for the purpose of multiple (stacked) projection. When stacking projector units, be sure to provide the amount of space indicated below between them. These space requirements also apply to installations where only one projector unit is operating at one time and the other unit is used as a backup.
- Make sure that nothing blocks the projector's air intake and exhaust openings. Also, install the projector so that cool or hot air from other air conditioning equipment does not flow directly

- toward the projector's air intake or exhaust openings.
- Do not install the projector in an enclosed space. If it is necessary to install it in an enclosed space, add a separate ventilation system. If ventilation is insufficient, hot air will accumulate at the intake opening. This may cause the projector's protective circuit to interrupt projector operation.
- If the projector is placed in a box, ensure that the projector's intake and exhaust openings are not blocked. Take particular care to ensure that hot air from the exhaust openings is not sucked into the intake openings.
- To install and use the projector via a method that does not use the adjustable feet in a floor standing installation, fix the projector using the four screw holes for ceiling mounting. (Screw diameter: M4, tapping depth inside the set: 7 mm, torque: 1.25 ± 0.2 N·m)

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For more information about Panasonic projectors, please visit:  
 Projector Global Web Site – [panasonic.net/avc/projector](http://panasonic.net/avc/projector)  
 Facebook – [www.facebook.com/panasonicprojector](https://www.facebook.com/panasonicprojector)  
 YouTube – [www.youtube.com/user/PanasonicProjector](https://www.youtube.com/user/PanasonicProjector)

All information included here is valid as of December 2012.

PT-RZ370G1 Printed in Japan.

## S P E C F I L E

Product Number : **PT-RZ670B/RZ670W**  
**PT-RZ670LB/RZ670LW**  
 Product Name : **DLP™ Projectors**

As of September 2014. Specifications and appearance are subject to change without notice.

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DLP™ Projector

## PT-RZ670B/RZ670W/RZ670LB/RZ670LW

## Specifications

## Main unit

Power supply	AC100 - 240V 9.0 - 4.0A 50Hz/60Hz (Taiwan: AC110V 8.0A 60Hz)
Power consumption	720W (735VA at 240V AC) (Taiwan: 730VA at 110VAC) NORMAL: 558W ECO: 480W LONG LIFE1: 448W LONG LIFE 2: 430W LONG LIFE 3: 407W *Operating Temperature: 25 °C (77 °F), Altitude: 700m (22 ft 12 in), ICE627087: 2008 Broadcast contents, Picture mode: Standard, Dynamic contrast2 0.3W, 0.2W (Taiwan)
	Standby Mode (Eco)** Standby Mode (Normal)
BTU value	3W Max 2,457 BTU (Without light 2,368 BTU)
DLP™ chip	Panel size Display method Pixels
Lens	PT-RZ670K/RZ670W PT-RZ670LK/RZ670LW
Light Source	Powered zoom/focus lenses (1.7-2.4:1), F 1.7-1.9, f 25.6-35.7 mm Optional powered zoom/focus lenses and fixed-focus lens Laser Diode (Laser class: Class 1) *Class 3R for North America. Luminance life for set: 20,000 hours at half luminance (normal)/ 24,000 hours at half luminance (Eco) * Temperature: 35°C (95°F), Altitude 700m (22ft 12in), Dust: 0.15mg/m <sup>3</sup> 1.27-15.24 m (50-600 inches) *1.27 - 5.08 m (50 - 200 inches) with the ET-DLE055 (16:10 aspect ratio) *2.54 - 7.62 m (100 - 350 inches) with the ET-DLE030 (16:10 aspect ratio)
Screen size	6,500 lumens (Operation mode: NORMAL) 90% 10,000:1 (full on/full off, dynamic contrast ON) 1,920 × 1,200 pixels
Brightness*2	
Center-to-corner uniformity*2	
Contrast*2	
Resolution	
Scanning frequency	SDI 3G-SDI signal (RGB 4:4:4 12-bit/10-bit): SMPTE ST 424 compliant: 1125(1080)/60i, 1125(1080)/50i, 1125(1080)/25p, 1125(1080)/24p, 1125(1080)/24sF, 1125(1080)/30p 3G-SDI signal (YPbPr 4:2:2 10-bit): SMPTE ST 424 compliant: 1125(1080)/60p, 1125(1080)/50p HD-SDI signal (YPbPr 4:2:2 10-bit): SMPTE ST 292 compliant: 750(720)/60p, 750(720)/50p, 1125(1035)/60i, 1125(1080)/60i, 1125(1080)/50i, 1125(1080)/25p, 1125(1080)/24p, 1125(1080)/24sF, 1125(1080)/30p SD-SDI signal (YCbCr 4:2:2 10-bit): SMPTE ST 259 compliant: 525i(480i), 625i(576i) fh: 15- 100kHz, fv: 24 - 120Hz, dot clock: 25 - 162 MHz 525i (480i)*3, 625i (576i)*3, 525p (480p), 625p (576p), 750 (720)/60p, 750 (720)/50p, 1125 (1080)/60i, 1125 (1080)/50i, 1125 (1080)/25p, 1125 (1080)/24p, 1125 (1080)/24sF, 1125 (1080)/30p, 1125 (1080)/60p, 1125 (1080)/50p, VGA (640 x 480) - WUXGA** (1920 x 1200) compatible with non-interlaced signals only
	HDMI/DVI-D
	RGB YPbPr (YCbCr)
	Video/S-Video

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DLP™ Projector

## PT-RZ670B/RZ670W/RZ670LB/RZ670LW

Optical axis shift	Vertical: +50%, -16%(powered), Horizontal: +30%, -10%(When using the ET-DLE085, +28%, -10%)
Keystone correction range	Vertical : ±40°*5 / Horizontal: ±15°*6 (When using the optional upgrade kit ET-UK20 Vertical : ±45°*8/10 / Horizontal : ±40°*9/10)
Installation	Ceiling/floor, front/rear, 360 degree free installation
Terminals	SDI IN BNC × 1, 3G-SDI signal: SMPTE ST 424 compliant HD-SDI signal: SMPTE ST 292 compliant SD-SDI signal: SMPTE ST 259 compliant
	HDMI IN HDMI 19-pin × 1, Deep Color, compatible with HDCP, 525i (480i), 625i (576i), 525p (480p), 625p (576p), 750 (720)/60p, 750 (720)/50p, 1125 (1080)/60i, 1125 (1080)/50i, 1125 (1080)/25p, 1125 (1080)/24p, 1125 (1080)/24sF, 1125 (1080)/30p, 1125 (1080)/60p, 1125 (1080)/50p VGA (640 x 480) - WUXGA (1920 x 1200) compatible with non-interlaced signals only <b>NOTE: Compatible with non-interlaced signals only.</b>
	DVI-D IN DVI-D 24-pin × 1, DVI 1.0 compliant, compatible with HDCP, for single link only 525i (480i), 625i (576i), 525p (480p), 625p (576p), 750 (720)/60p, 750 (720)/50p, 1125 (1080)/60i, 1125 (1080)/50i, 1125 (1080)/25p, 1125 (1080)/24p, 1125 (1080)/24sF, 1125 (1080)/30p, 1125 (1080)/60p, 1125 (1080)/50p VGA (640 x 480) - WUXGA (1920 x 1200) compatible with non-interlaced signals only <b>NOTE: Compatible with non-interlaced signals only.</b>
	RGB 1 IN R, G, B BNC × 5 R: 0.7 Vp-p, 75 ohms, G: 0.7 Vp-p (G: 1.0 Vp-p for sync on G), 75 ohms, B: 0.7 Vp-p, 75 ohms HD, VD/SYNC: TTL, high impedance, positive/negative automatic <b>NOTE: SYNC/HD and VD terminals do not accept tri-level sync signals.</b>
	Y, Pb, Pr (Y, Cb, Cr) Y, C Video Y: 1.0 Vp-p (including sync signal), Pb/Pr (Cb/Cr): 0.7 Vp-p, 75 ohms Y: 1.0Vp-p, C: 0.286Vp-p, 75 ohms 1.0Vp-p, 75 ohms
	RGB 2 IN R, G, B D-sub HD 15-pin (female) × 1 R: 0.7 Vp-p, 75 ohms, G: 0.7 Vp-p (G: 1.0 Vp-p for sync on G), 75 ohms, B: 0.7 Vp-p, 75 ohms HD, VD/SYNC: TTL, high impedance, positive/negative automatic <b>NOTE: SYNC/HD and VD terminals do not accept tri-level sync signals.</b>
	Y, Pb, Pr (Y, Cb, Cr) Y: 1.0 Vp-p (including sync signal), Pb/Pr (Cb/Cr): 0.7 Vp-p, 75 ohms
	SERIAL IN D-sub 9-pin (female) × 1 for external control (RS-232C compliant)
	SERIAL OUT D-sub 9-pin (male) × 1 for link control
	REMOTE 1 IN M3 jack × 1 for wired remote control
	REMOTE 1 OUT M3 jack × 1 for link control (for wired remote control)
	REMOTE 2 IN D-sub 9-pin (female) × 1 for external control (parallel)
	LAN/DIGITAL LINK RJ-45 × 1 for network and DIGITAL LINK (video/network/serial control) connection, 100Base-TX, compatible with Art-Net, compliant with PLink(TM)(Class 1)

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DLP™ Projector

PT-RZ670B/RZ670W/RZ670LB/RZ670LW

Power cord length		3.0 m (9 ft 10 in)
Cabinet materials		Molded plastic
Dimensions (W x H x D)	PT-RZ670B/RZ670W	498 x 200 <sup>**1</sup> x 581mm (19-19/32 x 7-7/8 <sup>**11</sup> x 22-7/8in) with supplied lens
	PT-RZ670LB/RZ670LW	498 x 200 <sup>**1</sup> x 538 mm (19-19/32 x 7-7/8 <sup>**11</sup> x 21-3/16in) without lens
Weight	PT-RZ670B/RZ670W	Approx. 23.2kg (51.1lbs) with supplied lens
	PT-RZ670LB/RZ670LW	Approx. 22.5kg (49.6lbs) without lens
Operation noise		35 dB
Operating temperature		0–45 °C (32–113 °F) <sup>**13</sup>
Operating humidity		10%–80% (no condensation)

Remote control unit

Power supply	3 V DC (R03/AAA type battery x 2)
Operation range	Approx. 30 m (98 ft 5 in) when operated from directly in front of the signal receptor
Dimensions (W x H x D)	48 x 145 x 27 mm (1-57/64 x 5-45/64 x 1-3/64 in)
Weight <sup>**12</sup>	Approx. 102 g (3.6 oz) including batteries

Supplied accessories

- Power cord with secure lock (x 1) (x 2 for EU models)
- Wireless/wired remote control unit (x 1)
- Batteries for remote control (R03/AAA type x 2)
- Software CD-ROM (Logo Transfer Software, Multi Projector Monitoring & Control Software) (x 1)

Optional accessories

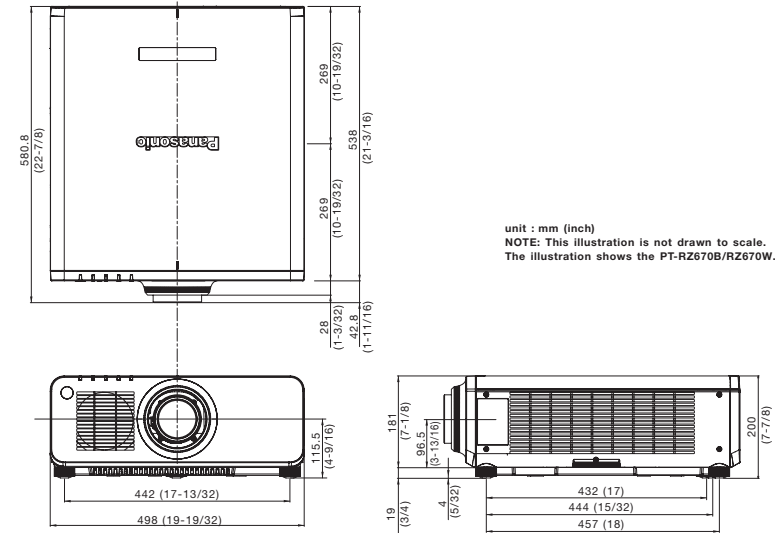
Digital interface box	ET-YFB100G
Zoom lens (0.8–1.0:1)	ET-DLE085
Zoom lens (1.3–1.9:1)	ET-DLE150
Zoom lens (2.3–3.6:1)	ET-DLE250
Zoom lens (3.6–5.4:1)	ET-DLE350
Zoom lens (5.4–8.6:1)	ET-DLE450
Fixed-focus lens (0.38:1)	ET-DLE030
Fixed-focus lens (0.8:1)	ET-DLE055
Ceiling mount bracket	ET-PKD120H (for high ceilings) ET-PKD120S (for low ceilings) ET-PKD130H
High-ceiling mount bracket (6-axis adjustment mechanism)	
Attachment for ceiling mount bracket	ET-PKD130B
Geometry Manager Pro Upgrade kit	ET-UK20
Auto Screen Adjustment Upgrade kit	ET-CUK10 <sup>**14</sup>
Early Warning Software	ET-SWA100

<sup>\*\*1</sup> When the STANDBY MODE is set to Eco, network functions such as power on over the LAN will not operate  
<sup>\*\*2</sup> Measurement, measuring conditions, and method of notation all comply with ISO 21118 international standards  
<sup>\*\*3</sup> Only compatible with dot clock frequency of 27 MHz (pixel repetition signal)  
<sup>\*\*4</sup> WUXGA resolution is supported only when the signals are compliant with VESA CVT-RB (Coordinated Video Timing-Reduced Blanking)  
<sup>\*\*5</sup> +/- 22° with the ET-DLE085/DLE055 and +5° with the ET-DLE030  
<sup>\*\*6</sup> Not operatable with the ET-DLE030  
<sup>\*\*7</sup> +/-30° with the ET-DLE085/DLE055  
<sup>\*\*8</sup> +/-40° with the ET-DLE150/DLE250/supplied lens and +/-22° with the ET-DLE085/DLE055  
<sup>\*\*9</sup> +/-15° with the ET-DLE085/DLE055  
<sup>\*\*10</sup> up to a total of +/-55° during simultaneous horizontal and vertical correction  
<sup>\*\*11</sup> with legs at shortest position  
<sup>\*\*12</sup> Average value. May differ depending on models  
<sup>\*\*13</sup> Limits the luminance when used in locations from 0m to 2700m (0ft to 8858ft) above sea level at ambient temperatures of 35°C (95°F) or higher, or from 2700m to 4200m (8858ft to 13780ft) above sea level at ambient temperatures of 25°C (77°F) or higher.  
<sup>\*\*14</sup> Available for use worldwide except in the US.

DLP™ Projector

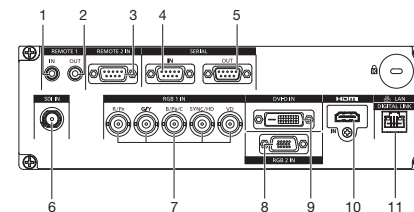
PT-RZ670B/RZ670W/RZ670LB/RZ670LW

Dimensions



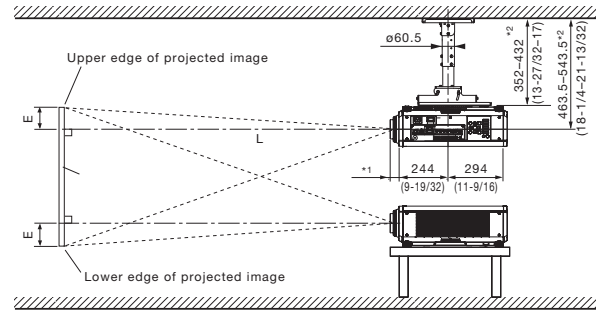
unit : mm (inch)  
 NOTE: This illustration is not drawn to scale.  
 The illustration shows the PT-RZ670B/RZ670W.

Terminals



- 1 Remote 1 input
- 2 Remote 1 output
- 3 Remote 2 input
- 4 Remote 2 output
- 5 Serial input
- 6 Serial output
- 7 SDI input
- 8 RGB 1 input
- 9 RGB 2 input
- 10 DVI-D input
- 11 HDMI input
- 12 LAN/DIGITAL LINK connector

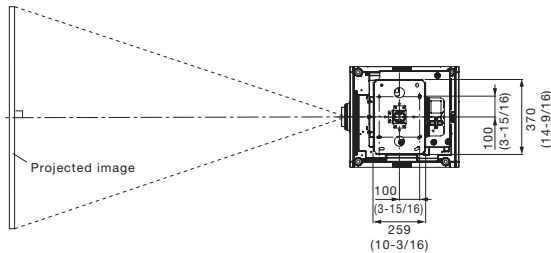
Standard setting-up position (If using other than the ET-DLE030)



\*1 When the lens protrudes to the maximum.  
 84 mm (3-5/16 in) with the ET-DLE085  
 43 mm (1-11/16 in) with the supplied lens  
 44 mm (1-23/32 in) with the ET-DLE150  
 45 mm (1-25/32 in) with the ET-DLE250  
 51mm (2 in) with the ET-DLE350  
 95 mm (3-3/4 in) with the ET-DLE450  
 27 mm (1-1/16 in) with the ET-DLE055

\*2 Adjustable in 40 mm (1-9/16 in) steps.

unit : mm (inch)



NOTE:  
 Illustrations show the projector installed using optional ceiling mount bracket ET-PKD120H, optional bracket assembly ET-PKD130B and an optional lens.  
 This illustration is not drawn to scale.

Caution:

- All construction work should be done by a qualified technician.
- When mounting to the ceiling, use the special mounting bracket. Furthermore, in order to prevent it from falling down from the ceiling, use the supplied wire on the mounting bracket.

Projection distance for 16:10 aspect ratio screen (If using other than the ET-DLE030)

Screen size (diagonal)	Distance to screen (L)											Unit: meters					
	Zoom											Fixed-focus		Height from the edge of screen to center of lens (H)			
	ET-DLE085 Zoom lens		ET-DLE150 Zoom lens		Supplied lens		ET-DLE250 Zoom lens		ET-DLE350 Zoom lens		ET-DLE450 Zoom lens		ET-DLE055 Fixed-focus lens		Zoom lenses	Fixed-focus lens	
[m]	[in]	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.				
1.27 / 50		0.83	1.04	1.38	2.01	1.82	2.57	2.42	3.87	3.80	5.82	5.66	9.12	0.83	0.00	-0.34	0.34
1.52 / 60		1.00	1.25	1.66	2.43	2.20	3.10	2.92	4.65	4.59	7.00	6.85	11.01	1.00	0.00	-0.40	0.40
1.78 / 70		1.17	1.47	1.95	2.84	2.58	3.63	3.42	5.44	5.38	8.19	8.04	12.89	1.18	0.00	-0.47	0.47
2.03 / 80		1.35	1.68	2.23	3.25	2.95	4.16	3.92	6.23	6.16	9.38	9.24	14.78	1.35	0.00	-0.54	0.54
2.29 / 90		1.52	1.90	2.52	3.66	3.33	4.69	4.42	7.02	6.95	10.57	10.43	16.66	1.53	0.00	-0.61	0.61
2.54 / 100		1.70	2.11	2.81	4.08	3.71	5.21	4.92	7.81	7.74	11.76	11.62	18.55	1.70	0.00	-0.67	0.67
3.05 / 120		2.05	2.55	3.38	4.90	4.47	6.27	5.91	9.39	9.31	14.14	14.00	22.32	2.05	0.00	-0.81	0.81
3.81 / 150		2.57	3.19	4.24	6.14	5.61	7.86	7.41	11.75	11.68	17.71	17.58	27.97	2.58	0.00	-1.01	1.01
5.08 / 200		3.44	4.27	5.67	8.20	7.50	10.50	9.91	15.70	15.61	23.66	23.54	37.39	3.45	0.00	-1.35	1.35
6.35 / 250		4.31	5.35	7.10	10.26	9.39	13.15	12.41	19.64	19.55	29.61	29.50	46.81	-	0.00	-1.68	-
7.62 / 300		5.18	6.43	8.53	12.33	11.28	15.79	14.91	23.59	23.49	35.56	35.46	56.24	-	0.00	-2.02	-
10.16 / 400		6.93	8.59	11.39	16.45	15.07	21.08	19.90	31.48	31.36	47.46	47.38	75.08	-	0.00	-2.69	-
12.70 / 500		8.67	10.75	14.25	20.58	18.86	26.36	24.90	39.37	39.24	59.36	59.30	93.93	-	0.00	-3.37	-
15.24 / 600		10.42	12.91	17.11	24.70	22.64	31.65	29.89	47.26	47.11	71.26	71.22	112.77	-	0.00	-4.04	-

Screen size (diagonal)	Distance to screen (L)											Unit: feet					
	Zoom											Fixed-focus		Height from the edge of screen to center of lens (H)			
	ET-DLE085 Zoom lens		ET-DLE150 Zoom lens		Supplied lens		ET-DLE250 Zoom lens		ET-DLE350 Zoom lens		ET-DLE450 Zoom lens		ET-DLE055 Fixed-focus lens		Zoom lenses	Fixed-focus lens	
[m]	[in]	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.				
1.27 / 50		2.7	3.4	4.5	6.6	6.0	8.4	7.9	12.7	12.5	19.1	18.6	29.9	2.7	0.0	- 1.1	1.1
1.52 / 60		3.3	4.1	5.5	8.0	7.2	10.2	9.6	15.3	15.1	23.0	22.5	36.1	3.3	0.0	- 1.3	1.3
1.78 / 70		3.9	4.8	6.4	9.3	8.5	11.9	11.2	17.9	17.6	26.9	26.4	42.3	3.9	0.0	- 1.6	1.6
2.03 / 80		4.4	5.5	7.3	10.7	9.7	13.6	12.8	20.4	20.2	30.8	30.3	48.5	4.4	0.0	- 1.8	1.8
2.29 / 90		5.0	6.2	8.3	12.0	10.9	15.4	14.5	23.0	22.8	34.7	34.2	54.7	5.0	0.0	- 2.0	2.0
2.54 / 100		5.6	6.9	9.2	13.4	12.2	17.1	16.1	25.6	25.4	38.6	38.1	60.8	5.6	0.0	- 2.2	2.2
3.05 / 120		6.7	8.4	11.1	16.1	14.7	20.6	19.4	30.8	30.6	46.4	45.9	73.2	6.7	0.0	- 2.7	2.7
3.81 / 150		8.4	10.5	13.9	20.1	18.4	25.8	24.3	38.6	38.3	58.1	57.7	91.8	8.5	0.0	- 3.3	3.3
5.08 / 200		11.3	14.0	18.6	26.9	24.6	34.5	32.5	51.5	51.2	77.6	77.2	122.7	11.3	0.0	- 4.4	4.4
6.35 / 250		14.1	17.6	23.3	33.7	30.8	43.1	40.7	64.4	64.1	97.1	96.8	153.6	-	0.0	- 5.5	-
7.62 / 300		17.0	21.1	28.0	40.4	37.0	51.8	48.9	77.4	77.1	116.7	116.3	184.5	-	0.0	- 6.6	-
10.16 / 400		22.7	28.2	37.4	54.0	49.4	69.1	65.3	103.3	102.9	155.7	155.4	246.3	-	0.0	- 8.8	-
12.70 / 500		28.5	35.3	46.7	67.5	61.9	86.5	81.7	129.2	128.7	194.7	194.6	308.2	-	0.0	-11.0	-
15.24 / 600		34.2	42.3	56.1	81.0	74.3	103.8	98.1	155.0	154.6	233.8	233.7	370.0	-	0.0	-13.3	-

- The value for L (distance to screen) varies slightly within ±5% depending on the zoom lens characteristics.
- The zoom lens characteristics may cause slight image distortion.
- When vertical keystone correction is used, the image is corrected in the direction that reduces its projected size.
- The brightness varies depending on the zoom setting.

Note: When the ET-DLE055 is mounted, the optical lens shift function cannot be used.

Projection distance for 16:9 aspect ratio screen (If using other than the ET-DLE030)

Table with columns for Screen size (diagonal), Distance to screen (L), Height from the edge of screen to center of lens (H), and various lens types (ET-DLE085, ET-DLE150, Supplied lens, ET-DLE250, ET-DLE350, ET-DLE450, ET-DLE055, Zoom lenses, Fixed-focus lens).

Table with columns for Screen size (diagonal), Distance to screen (L), Height from the edge of screen to center of lens (H), and various lens types (ET-DLE085, ET-DLE150, Supplied lens, ET-DLE250, ET-DLE350, ET-DLE450, ET-DLE055, Zoom lenses, Fixed-focus lens).

- The value for L (distance to screen) varies slightly within ±5% depending on the zoom lens characteristics.
• The zoom lens characteristics may cause slight image distortion.
• When vertical keystone correction is used, the image is corrected in the direction that reduces its projected size.
• The brightness varies depending on the zoom setting.

Note: When the ET-DLE055 is mounted, the optical lens shift function cannot be used.

Projection distance for 4:3 aspect ratio screen (If using other than the ET-DLE030)

Table with columns for Screen size (diagonal), Distance to screen (L), Height from the edge of screen to center of lens (H), and various lens types (ET-DLE085, ET-DLE150, Supplied lens, ET-DLE250, ET-DLE350, ET-DLE450, ET-DLE055, Zoom lenses, Fixed-focus lens).

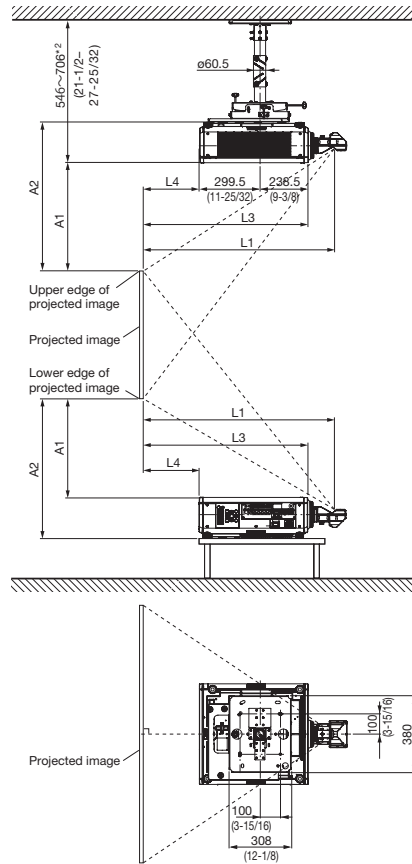
Table with columns for Screen size (diagonal), Distance to screen (L), Height from the edge of screen to center of lens (H), and various lens types (ET-DLE085, ET-DLE150, Supplied lens, ET-DLE250, ET-DLE350, ET-DLE450, ET-DLE055, Zoom lenses, Fixed-focus lens).

- The value for L (distance to screen) varies slightly within ±5% depending on the zoom lens characteristics.
• The zoom lens characteristics may cause slight image distortion.
• When vertical keystone correction is used, the image is corrected in the direction that reduces its projected size.
• The brightness varies depending on the zoom setting.

Note: When the ET-DLE055 is mounted, the optical lens shift function cannot be used.



Standard setting-up position (If using the ET-DLE030)



\*1 When the lens protrudes to the maximum.  
 84 mm (3-5/16 in) with the ET-DLE085  
 43 mm (1-11/16 in) with the supplied lens  
 44 mm (1-23/32 in) with the ET-DLE150  
 45 mm (1-25/32 in) with the ET-DLE250  
 51 mm (2 in) with the ET-DLE350  
 95 mm (3-3/4 in) with the ET-DLE450  
 27 mm (1-1/16 in) with the ET-DLE055

\*2 Adjustable in 40 mm (1-9/16 in) steps.

unit : mm (inch)

NOTE:  
 Illustrations show the projector installed using optional ceiling mount bracket ET-PKD130H, optional bracket assembly ET-PKD130B and an optional lens.  
 This illustration is not drawn to scale.

**Caution:**

- All construction work should be done by a qualified technician.
- When mounting to the ceiling, use the special mounting bracket. Furthermore, in order to prevent it from falling down from the ceiling, use the supplied wire on the mounting bracket.

Projection distance for 16:10 aspect ratio screen (If using the ET-DLE030)

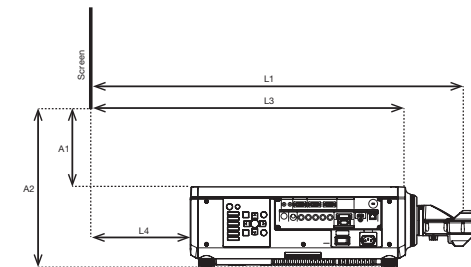
Unit : meters

Ultra-short focal length lens ET-DLE030 Close-up system dimensions								
Throw ratio		0.38:1						
Diagonal image size (Inches)	Diagonal image size (m)	Height (SH)	Width (SW)	Projection distance (From mirror reflective surface to screen) (L1)	From front of set to screen (L3)	From rear of set to screen (L4)	From top of set to bottom edge of screen (A1)	From bottom of set to bottom edge of screen (A2)
100	2.54	1.35	2.15	0.82	0.65	0.12	0.43	0.63
120	3.05	1.62	2.59	0.98	0.82	0.28	0.53	0.73
150	3.81	2.02	3.23	1.23	1.06	0.52	0.68	0.88
200	5.08	2.69	4.31	1.63	1.47	0.93	0.93	1.13
250	6.35	3.37	5.39	2.04	1.87	1.34	1.18	1.38
300	7.62	4.04	6.46	2.45	2.28	1.74	1.43	1.63
350	8.89	4.71	7.54	2.85	2.69	2.15	1.69	1.89

Unit : feet

Ultra-short focal length lens ET-DLE030 Close-up system dimensions								
Throw ratio		0.38:1						
Diagonal image size (Inches)	Diagonal image size (m)	Height (SH)	Width (SW)	Projection distance (From mirror reflective surface to screen) (L1)	From front of set to screen (L3)	From rear of set to screen (L4)	From top of set to bottom edge of screen (A1)	From bottom of set to bottom edge of screen (A2)
100	2.54	4.4	7.1	2.7	2.1	0.4	1.4	2.1
120	3.05	5.3	8.5	3.2	2.7	0.9	1.7	2.4
150	3.81	6.6	10.6	4.0	3.5	1.7	2.2	2.9
200	5.08	8.8	14.1	5.4	4.8	3.0	3.1	3.7
250	6.35	11.0	17.7	6.7	6.1	4.4	3.9	4.5
300	7.62	13.3	21.2	8.0	7.5	5.7	4.7	5.4
350	8.89	15.5	24.7	9.4	8.8	7.1	5.5	6.2

\* The value for L1 may contain an error of within ±5%.  
 \* When using vertical keystone correction, the images will be corrected so that they will tend to be smaller than the specified screen size.  
 \* This measurement is not the distance between the rear of the projector and the wall, but is instead the distance between the rear of the projector and the screen surface. Leave at least 500 mm of space between the rear of the projector and the wall and any other objects in order to provide adequate ventilation space. If setting up the projector in a closed room, be sure to provide separate air conditioning and ventilation equipment. If there is insufficient ventilation in the room, radiated heat may build up and cause the protection circuit of the projector to operate.



L1: Projection distance (from screen to mirror reflective surface)  
 L3: From screen to front of set  
 L4: From screen to rear of set  
 A1: From bottom edge of screen to top of set  
 A2: From bottom edge of screen to bottom of set

Projection Distance Calculation Table

Screen aspect ratio 16:10

Projection distance calculation formula

$$L1 (m) = 0.3205 \times \text{Diagonal image size} + 0.0047$$

Calculation formula for distance from top of set to bottom edge of screen

$$A1 (m) = 0.1977 \times \text{Diagonal image size} - 0.07210$$

Projection distance for 16:9 aspect ratio screen (If using the ET-DLE030)

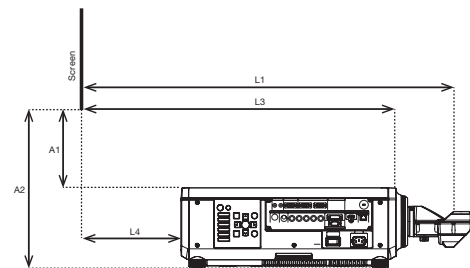
Unit : meters

Ultra-short focal length lens ET-DLE030 Close-up system dimensions								
Throw ratio		0.38:1						
Diagonal image size (Inches)	Diagonal image size (m)	Height (SH)	Width (SW)	Projection distance (From mirror reflective surface to screen) (L1)	From front of set to screen (L3)	From rear of set to screen (L4)	From top of set to bottom edge of screen (A1)	From bottom of set to bottom edge of screen (A2)
100	2.54	1.25	2.21	0.84	0.68	0.14	0.51	0.71
120	3.05	1.49	2.66	1.01	0.84	0.31	0.63	0.83
150	3.81	1.87	3.32	1.26	1.09	0.56	0.81	1.01
200	5.08	2.49	4.43	1.68	1.51	0.97	1.10	1.30
250	6.35	3.11	5.54	2.10	1.93	1.39	1.39	1.59
300	7.62	3.74	6.64	2.52	2.35	1.81	1.68	1.88
350	8.89	4.36	7.75	2.93	2.77	2.23	1.98	2.18

Unit : feet

Ultra-short focal length lens ET-DLE030 Close-up system dimensions								
Throw ratio		0.38:1						
Diagonal image size (Inches)	Diagonal image size (m)	Height (SH)	Width (SW)	Projection distance (From mirror reflective surface to screen) (L1)	From front of set to screen (L3)	From rear of set to screen (L4)	From top of set to bottom edge of screen (A1)	From bottom of set to bottom edge of screen (A2)
100	2.54	4.1	7.3	2.8	2.2	0.4	1.7	2.3
120	3.05	4.9	8.7	3.3	2.8	1.0	2.1	2.7
150	3.81	6.1	10.9	4.1	3.6	1.8	2.6	3.3
200	5.08	8.2	14.5	5.5	5.0	3.2	3.6	4.3
250	6.35	10.2	18.2	6.9	6.3	4.6	4.6	5.2
300	7.62	12.3	21.8	8.3	7.7	5.9	5.5	6.2
350	8.89	14.3	25.4	9.6	9.1	7.3	6.5	7.1

- \* The value for L1 may contain an error of within ±5%.
- \* When using vertical keystone correction, the images will be corrected so that they will tend to be smaller than the specified screen size.
- \* This measurement is not the distance between the rear of the projector and the wall, but is instead the distance between the rear of the projector and the screen surface. Leave at least 500 mm of space between the rear of the projector and the wall and any other objects in order to provide adequate ventilation space. If setting up the projector in a closed room, be sure to provide separate air conditioning and ventilation equipment. If there is insufficient ventilation in the room, radiated heat may build up and cause the protection circuit of the projector to operate.



- L1: Projection distance (from screen to mirror reflective surface)
- L3: From screen to front of set
- L4: From screen to rear of set
- A1: From bottom edge of screen to top of set
- A2: From bottom edge of screen to bottom of set

Projection Distance Calculation Table  
Screen aspect ratio 16:9

Projection distance calculation formula

$$L1 (m) = 0.3294 \times \text{Diagonal image size} + 0.0047$$

Calculation formula for distance from top of set to bottom edge of screen

$$A1 (m) = 0.2304 \times \text{Diagonal image size} - 0.07210$$

Projection distance for 4:3 aspect ratio screen (If using the ET-DLE030)

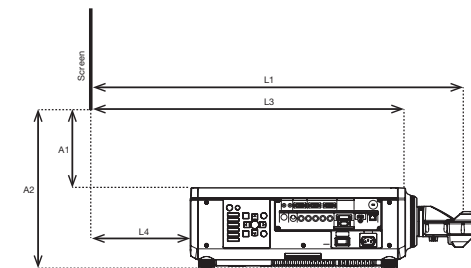
Unit : meters

Ultra-short focal length lens ET-DLE030 Close-up system dimensions								
Throw ratio		0.46:1						
Diagonal image size (Inches)	Diagonal image size (m)	Height (SH)	Width (SW)	Projection distance (From mirror reflective surface to screen) (L1)	From front of set to screen (L3)	From rear of set to screen (L4)	From top of set to bottom edge of screen (A1)	From bottom of set to bottom edge of screen (A2)
100	2.54	1.52	2.03	0.93	0.76	0.22	0.50	0.70
120	3.05	1.83	2.44	1.11	0.94	0.41	0.61	0.81
150	3.81	2.29	3.05	1.39	1.22	0.68	0.78	0.98
200	5.08	3.05	4.06	1.85	1.68	1.14	1.07	1.27
250	6.35	3.81	5.08	2.31	2.14	1.60	1.35	1.55
300	7.62	4.57	6.10	2.77	2.60	2.07	1.63	1.83
350	8.89	5.33	7.11	3.23	3.06	2.53	1.92	2.12

Unit : feet

Ultra-short focal length lens ET-DLE030 Close-up system dimensions								
Throw ratio		0.46:1						
Diagonal image size (Inches)	Diagonal image size (m)	Height (SH)	Width (SW)	Projection distance (From mirror reflective surface to screen) (L1)	From front of set to screen (L3)	From rear of set to screen (L4)	From top of set to bottom edge of screen (A1)	From bottom of set to bottom edge of screen (A2)
100	2.54	5.0	6.7	3.0	2.5	0.7	1.6	2.3
120	3.05	6.0	8.0	3.6	3.1	1.3	2.0	2.7
150	3.81	7.5	10.0	4.6	4.0	2.2	2.6	3.2
200	5.08	10.0	13.3	6.1	5.5	3.8	3.5	4.2
250	6.35	12.5	16.7	7.6	7.0	5.3	4.4	5.1
300	7.62	15.0	20.0	9.1	8.5	6.8	5.4	6.0
350	8.89	17.5	23.3	10.6	10.1	8.3	6.3	6.9

- \* The value for L1 may contain an error of within ±5%.
- \* When using vertical keystone correction, the images will be corrected so that they will tend to be smaller than the specified screen size.
- \* This measurement is not the distance between the rear of the projector and the wall, but is instead the distance between the rear of the projector and the screen surface. Leave at least 500 mm of space between the rear of the projector and the wall and any other objects in order to provide adequate ventilation space. If setting up the projector in a closed room, be sure to provide separate air conditioning and ventilation equipment. If there is insufficient ventilation in the room, radiated heat may build up and cause the protection circuit of the projector to operate.



- L1: Projection distance (from screen to mirror reflective surface)
- L3: From screen to front of set
- L4: From screen to rear of set
- A1: From bottom edge of screen to top of set
- A2: From bottom edge of screen to bottom of set

Projection Distance Calculation Table  
Screen aspect ratio 4:3

Projection distance calculation formula

$$L1 (m) = 0.3628 \times \text{Diagonal image size} + 0.0047$$

Calculation formula for distance from top of set to bottom edge of screen

$$A1 (m) = 0.2238 \times \text{Diagonal image size} - 0.07210$$

Calculation of the projection distance

For a screen size different from the above, use the equation below to calculate the projection distance.

Aspect ratio 16:10

ET-DLE085	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0174 - 0.0471$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0216 - 0.0442$
ET-DLE150	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0286 - 0.0540$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0413 - 0.0498$
<i>Supplied lens</i>	<i>minimum</i> <i>maximum</i>	$L (m) = (\text{diagonal screen size in inches}) \times 0.0379 - 0.0746$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0529 - 0.0725$
ET-DLE250	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0500 - 0.0800$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0789 - 0.0792$
ET-DLE350	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0787 - 0.1351$ $L (m) = (\text{diagonal screen size in inches}) \times 0.1190 - 0.1346$
ET-DLE450	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.1192 - 0.3017$ $L (m) = (\text{diagonal screen size in inches}) \times 0.1885 - 0.2991$
ET-DLE030	(fixed focus)	$L1 (m) = (\text{diagonal screen size in inches}) \times 0.0081 - 0.0047$ $L3 (m) = L1 - 0.166$ $L4 (m) = L1 - 0.704$
ET-DLE055	(fixed focus)	$L (m) = (\text{diagonal screen size in inches}) \times 0.0175 - 0.0476$

Aspect ratio 16:9

ET-DLE085	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0179 - 0.0471$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0222 - 0.0442$
ET-DLE150	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0294 - 0.0540$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0424 - 0.0498$
<i>Supplied lens</i>	<i>minimum</i> <i>maximum</i>	$L (m) = (\text{diagonal screen size in inches}) \times 0.0389 - 0.0746$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0543 - 0.0725$
ET-DLE250	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0513 - 0.0800$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0811 - 0.0792$
ET-DLE350	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0809 - 0.1351$ $L (m) = (\text{diagonal screen size in inches}) \times 0.1223 - 0.1346$
ET-DLE450	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.1225 - 0.3017$ $L (m) = (\text{diagonal screen size in inches}) \times 0.1937 - 0.2991$
ET-DLE030	(fixed focus)	$L1 (m) = (\text{diagonal screen size in inches}) \times 0.0084 - 0.0047$ $L3 (m) = L1 - 0.166$ $L4 (m) = L1 - 0.704$
ET-DLE055	(fixed focus)	$L (m) = (\text{diagonal screen size in inches}) \times 0.0180 - 0.0476$

Aspect ratio 4:3

ET-DLE085	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0197 - 0.0471$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0244 - 0.0442$
ET-DLE150	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0324 - 0.0540$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0467 - 0.0498$
<i>Supplied lens</i>	<i>minimum</i> <i>maximum</i>	$L (m) = (\text{diagonal screen size in inches}) \times 0.0429 - 0.0746$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0599 - 0.0725$
ET-DLE250	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0565 - 0.0800$ $L (m) = (\text{diagonal screen size in inches}) \times 0.0893 - 0.0792$
ET-DLE350	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.0891 - 0.1351$ $L (m) = (\text{diagonal screen size in inches}) \times 0.1347 - 0.1346$
ET-DLE450	minimum maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.1349 - 0.3017$ $L (m) = (\text{diagonal screen size in inches}) \times 0.2133 - 0.2991$
ET-DLE030	(fixed focus)	$L1 (m) = (\text{diagonal screen size in inches}) \times 0.0092 - 0.0047$ $L3 (m) = L1 - 0.166$ $L4 (m) = L1 - 0.704$
ET-DLE055	(fixed focus)	$L (m) = (\text{diagonal screen size in inches}) \times 0.0198 - 0.0476$

• Distances calculated with the above equations will include a slight error.

Formula for calculating possible heights when using the ET-DLE030

If using a screen size which has not been previously mentioned, use the following calculation formulas to obtain the possible setting-up height.

For screen aspect ratio of 16:10 Possible setting-up height A1 (mm) = Projection screen size (inches) x 5.0-72.1  
Possible setting-up height A2 (mm) = A1 + 200

For screen aspect ratio of 16:9 Possible setting-up height A1 (mm) = Projection screen size (inches) x 5.9-72.1  
Possible setting-up height A2 (mm) = A1 + 200

For screen aspect ratio of 4:3 Possible setting-up height A1 (mm) = Projection screen size (inches) x 5.7-72.1  
Possible setting-up height A2 (mm) = A1 + 200

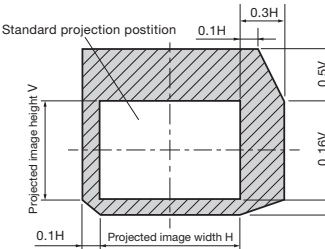
\* There may be a small margin of error in the values obtained from the above formulas.

Shift range

Optical axis shift function allows to shift the position of a projected image as shown below.

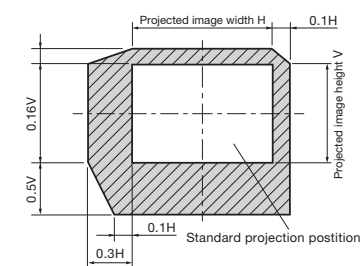
• Floor mount

(When the lens except the ET-DLE085 is mounted.)



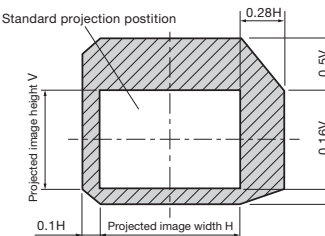
• Ceiling mount

(When the lens except the ET-DLE085 is mounted.)



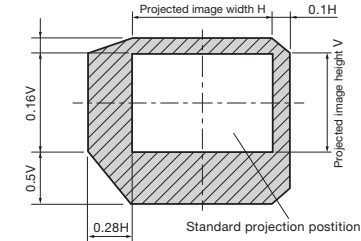
• Floor mount

(When the ET-DLE085 is mounted.)



• Ceiling mount

(When the ET-DLE085 is mounted.)

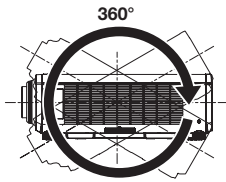


• The ET-DLE055 has a fixed short-focus lens. Therefore, the lens shift function provided in the main unit cannot be used.

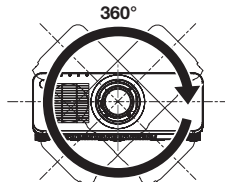
Installable angle

Install the projector at an angle within the range shown below.

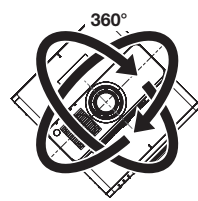
**FULL 360-degree projection**



Vertical 360-deg.



Horizontal 360-deg.



Tilting 360-deg.  
(V&H combination)

List of compatible signals

The signals that can be input to this projector are shown in the table below. Horizontal scanning frequencies of 15 kHz to 100 kHz, vertical scanning frequencies of 24 Hz to 120 Hz, and a dot clock of 162 MHz maximum can be input.

NOTE: The native resolution of this projector is 1,920 × 1,200 pixels. If the display resolution of the input signal is different from the native resolution, image compression or expansion will be used to convert the input signal to a level within the native resolution.

Display mode	Display resolution (dots)*1	Scanning frequency H (kHz)	Scanning frequency V (kHz)	Dot clock frequency (MHz)	Format
NTSC/NTSC4.43/PAL-M/PAL60	720 × 480i	15.7	59.9	—	VIDEO/YC
PAL/PAL-N/SECAM	720 × 576i	15.6	50.0	—	—
525i (480i)	720 × 480i	15.7	59.9	13.5	SDI/RGB
625i (576i)	720 × 576i	15.6	50.0	—	—
525i (480i)	720(1440) × 480i**	15.7	59.9	—	HDMI/DVI-D
625i (576i)	720(1440) × 576i	15.6	50.0	—	—
525p (480p)	720 × 483	31.5	59.9	27.0	RGB/HDMI/DVI-D
625p (576p)	720 × 576	31.3	50.0	—	—
750 (720)/60p	—	45.0	60.0	—	—
750 (720)/50p	1280 × 720	37.5	50.0	—	—
1125 (1080)/60i**	—	33.8	60.0	—	—
1125 (1080)/50i	1920 × 1080i	28.1	50.0	—	—
1125 (1080)/24p	1920 × 1080	27.0	24.0	74.3	SDI/RGB/ HDMI/DVI-D
1125 (1080)/24sF	1920 × 1080i	27.0	48.0	—	—
1125 (1080)/25p	—	28.1	25.0	—	—
1125 (1080)/30p	1920 × 1080	33.8	30.0	—	—
1125 (1080)/60p	—	67.5	60.0	148.5	—
1125 (1080)/50p	—	56.3	50.0	—	—
VESA400	640 × 400	31.5	70.1	25.2	—
—	—	37.9	85.1	31.5	—
—	—	31.5	59.9	25.2	—
—	—	35.0	66.7	30.2	—
VGA480	640 × 480	37.9	72.8	31.5	—
—	—	37.5	75.0	31.5	—
—	—	43.3	85.0	36.0	—
—	—	35.2	56.3	36.0	—
—	—	37.9	60.3	40.0	—
SVGA	800 × 600	48.1	72.2	50.0	—
—	—	46.9	75.0	49.5	—
—	—	53.7	85.1	56.3	—
MAC16	832 × 624	49.7	74.6	57.3	—
—	—	39.6	50.0	51.9	—
—	—	48.4	60.0	65.0	—
—	—	56.5	70.1	75.0	—
XGA	1024 × 768	60.0	75.0	78.8	RGB/HDMI/DVI-D
—	—	65.5	81.6	86.0	—
—	—	68.7	85.0	94.5	—
—	—	81.4	100.0	113.3	—
—	—	98.8	120.0	139.1	—
—	—	53.7	60.0	81.6	—
—	—	64.0	70.0	94.2	—
MXGA	1152 × 864	67.5	74.9	108.0	—
—	—	77.1	85.0	119.7	—
MAC21	1152 × 870	68.7	75.1	100.0	—
—	—	37.1	49.8	60.5	—
—	—	44.8	59.9	74.5	—
1280 × 720	1280 × 720	76.3	100.0	131.8	—
—	—	92.6	120.0	161.6	—
—	—	39.6	49.9	65.3	—
—	1280 × 768	47.8	59.9	79.5	—
1280 × 768	1280 × 768**	47.4	60.0	68.3	—
—	—	60.3	74.9	102.3	—
—	1280 × 768	68.6	84.8	117.5	—

Display mode	Display resolution (dots) <sup>1</sup>	Scanning frequency H (kHz)	V (kHz)	Dot clock frequency (MHz)	Format
1280 x 800	1280 x 800	41.3	50.0	68.0	RGB/HDMI/DVI-D
		49.7	59.8	83.5	
	1280 x 800 <sup>2</sup>	49.3	59.9	71.0	
	1280 x 800	62.8	74.9	106.5	
MSXGA	1280 x 960	71.6	84.9	122.5	
		60.0	60.0	108.0	
		52.4	50.0	88.0	
SXGA	1280 x 1024	64.0	60.0	108.0	
		72.3	66.3	125.0	
		78.2	72.0	135.1	
		80.0	75.0	135.0	
		91.1	85.0	157.5	
1366x768	1366 x 768	47.7	59.8	85.5	
		39.6	49.9	69.0	
		54.1	50.0	99.9	
		64.0		108.0	
SXGA+	1400 x 1050	65.2	60.0	122.6	
		65.3		121.8	
		78.8	72.0	149.3	
		82.2	75.0	155.9	
		55.9	59.9	106.5	
WXGA+	1440 x 900	46.3		86.8	
		46.4	49.9	96.5	
1600x900	1600 x 900	55.9	60.0	119.0	
UXGA	1600 x 1200	61.8	49.9	131.5	
		75.0	60.0	162.0	
WSXGA+	1680 x 1050	65.3	60.0	146.3	
		54.1	50.0	119.5	
		1920 x 1080	55.6	49.9	141.5
1920x1080	1920 x 1080 <sup>3</sup>	66.6	59.9	138.5	
		1920 x 1080 <sup>5</sup>	67.2	60.0	173.0
		1920 x 1200	61.8	49.9	158.3
WUXGA	1920 x 1200 <sup>4</sup>	74.0	60.0	154.0	
		1920 x 1200 <sup>5</sup>	74.6	59.9	193.3

<sup>1</sup> The "i" appearing after the resolution indicates an interlaced signal.  
<sup>2</sup> Only compatible with dot clock frequency of 27 MHz (pixel repetition signal)  
<sup>3</sup> When 1125(1035)/60i signal input, it displays as 1125(1080)/60i signals.  
<sup>4</sup> Compliant with VESA CVT-RB (Coordinated Video Timing-Reduced Blanking).  
<sup>5</sup> Image resolution is reduced by the image processing circuit before projection.

NOTE: DIGITAL LINK and HDMI inputs share the same compatible signal.



SPA Series

SPA2-60 | SPA4-60

Low-Z / High-Z Professional Amplifiers

Features

- **Up to 60 watts per channel into 4 and 8 ohms** - The outputs of the SPA2-60 and SPA4-60 are designed to provide 60 watts per channel into Low-Z loads
- **ENERGY STAR qualified amplifier** - The SPA2-60 and SPA4-60 are ENERGY STAR qualified amplifiers; efficient class-D amplifiers that conserve energy and require no active cooling, so they reduce operational costs
- **Bridgeable outputs for higher power** - Bridging the outputs of the SPA2-60 and SPA4-60 provide up to 200 watts into low impedance, into low impedance, and up to 250 watts into 70V or 100V providing outstanding flexibility
- **Auto-Ramp provides quiet startup and power-down** - The ENERGY STAR Auto-Ramp circuitry ensures quiet and fast power up from Standby and seamless power-down following 25 minutes of inactivity, dramatically reducing power consumption
- **Rack-mountable 1U, half rack width enclosure** - The SPA2-60 and SPA4-60 can be mounted in 1/2 RU reducing rack space requirements. In addition their clever joining brackets enable easy under-table and wall-mounting.



The SPA Series amplifiers from QSC are two half rack 1U, convection cooled power amplifiers delivering two or four channels of 60 watts per channel into 4Ω and 8Ω. These amps can also be bridged to supply 200 watts into 4Ω and 8Ω, and up to 250 watts into 70V or 100V loads making them extremely flexible for Low-Z or High-Z applications. Utilizing an advanced Class-D amplifier design and Universal Power Supply the SPA Series are amazingly efficient allowing them to be convection cooled and are ENERGY STAR qualified with quiet auto-ramp standby functionality. The SPA2-60 and SPA4-60 are housed in an unobtrusive black painted 1/2 RU chassis with unique mounting hardware enabling rack, table and wall mounting capabilities.

SPA2-60

The SPA2-60 two channel amplifier delivers 60 watts rms per channel into 4 or 8 ohms; the two channels can also be bridged providing up to 200 watts rms into 4 or 8 ohms. When the channels are bridged they can be switched into 70V or 100V direct drive mode providing up to 250 watts rms into a mono 70V or 100V output. There is also a selectable 80Hz highpass filter for bridged operation ensuring that 70V or 100V loudspeakers transformers are not overdriven and saturated by too much low frequency content. The SPA2-60 is ideal for stereo or mono applications of voice or music audio content.

SPA4-60

The SPA4-60 four channel amplifier delivers 60 watts rms per channel into 4 or 8 ohms; the four channels can also be bridged in pairs, each pair providing up to 200 watts rms into 4 or 8 ohms. Like the SPA2-60, the bridged channels of the SPA4-60 can be switched into 70V or 100V direct drive mode providing up to 250 watts rms into a 70V or 100V output; each bridged output also features a selectable 80Hz highpass filter. The SPA4-60 is perfect for applications with mixed outputs such as four

SPA2-60 | SPA4-60  
Preliminary Specifications

low-Z outputs for a mix-minus system, a stereo TV reinforcement system with a 70V or 100V output for ceiling conferencing speakers, a stereo with mono Subwoofer system, or even two sets of 70V or 100V outputs for a zoned system.

Efficient Amplifier with Auto-Ramp

The SPA Series amplifiers utilize a highly efficient class-D design that conserves energy and requires no active cooling. They are ENERGY STAR qualified so they reduce operational costs. The auto-ramp Standby functionality is quiet with no audible pops or clicks when going into or coming out of Standby. The SPA2-60 consumes just 5 watts in Idle and less than 1 watt when in Standby, while the SPA4-60 consumes 10 watts in Idle, but still less than 1 watt in Standby.

Amplifier Protection

QSC has long been known as a company that makes robust products; it is not uncommon to find installations with fully operational QSC amplifiers that are decades old. With that sort of history, the SPA amplifiers would not be complete without extensive self protection schemes. Both amplifiers have internal thermal and peak limiting circuits ensuring continued operation for years to come.

Remote Control and Mounting

The SPA2 and the SPA4 offer general purpose inputs for remote Volume and Standby control for applications requiring external adjustment. They also come with multiple mounting options. Every SPA amplifier comes with a complete mounting kit allowing it to be rack mounted by itself or with a second unit in a 1RU space. Included connecting brackets provide additional strength when rack mounting two amps together, but also make for simple under-table or wall mounting (like behind a TV).



## SPA Series

Preliminary Specifications

	SPA2-60	SPA4-60
<b>Stereo Mode</b> (both channels driven)		
8Ω	60 W	60 W
4Ω	60 W	60 W
<b>Bridged Outputs</b>		
8Ω & 4Ω	200 W	200 W
70V	250 W	250 W
100V	250 W	250 W
Frequency Response	20 Hz - 20 KHz +/- 0.1 dB	20 Hz - 20 KHz +/- 0.1 dB
Signal to Noise (20 Hz - 20 KHz)	>100 dB	>100 dB
Input Sensitivity at 8Ω	1.23V (+4 dBu)	1.23V (+4 dBu)
Gain at 8Ω	25.0 dB	25.0 dB
Output Circuitry	Class D	Class D
Input Impedance	>10k, balanced or unbalanced	>10k, balanced or unbalanced
Maximum Input Level	12.3V (+24 dBu)	12.3V (+24 dBu)
Cooling	Convection	Convection
Input Connectors	3.5 mm	3.5 mm
GPIO Connectors	3.5 mm	3.5 mm
Output Connectors	5 mm	5 mm
Front Panel Indicators	Power, per channel Signal, per channel Protect/Limit.	
Rear Panel Indicators	Bi-Color LED Signal/Protect/Limit per channel	
Controls	4Ω/8Ω/70V Bridged Highpass On/100V Bridged Highpass On per channel pair	
General Purpose Inputs	Remote Volume, Remote Standby, on 3.5 mm connectors	
Highpass Filter	Switchable 80Hz when Bridged in 70V & 100V	
Dimensions	1.7" x 8.7" x 9.5" (43 mm x 220 mm x 241 mm)	
Net Weight	2.5 lb (1.1 kg)	
Shipping Weight	5 lb (3 kg)	
Power Requirements	Universal Power supply 100 - 240 VAC, 50 - 60 Hz	
Agency Approvals	UL, CE, Energy Star, RoHS/WEEE compliant, FCC Class B (Conducted and Radiated emissions), UL 2043 with PL-KIT	
Carton Contents	IEC Cable, Quick Start Guide, Connector Pack, Rack Mount Ears, Mounting Brackets	

Specifications subject to change without notice.

# QSC™

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SPA Series Spec Sheet 05/28/2015



# SHARP

PN-Y325

## This is Why



- ▶ 32" (80.0 CM) DIAGONAL SCREEN SIZE
- ▶ USB MEDIA PLAYER
- ▶ BUILT IN STEREO SPEAKERS 5 + 5W
- ▶ UV2A DISPLAY TECHNOLOGY
- ▶ 1920 X 1080 PIXEL RESOLUTION
- ▶ LED, EDGE LIT
- ▶ SLIM BEZEL DESIGN
- ▶ PORTRAIT & LANDSCAPE INSTALLATION SUPPORT

Sharp have created a new series of robust and easy to use professional monitors that are ideal for a wide range of applications including retail shops, hospitality, reception areas, lobbies and other corporate and public spaces. This brand new PN-Y 32" (80.0 cm) is designed for prolonged display application and is supported by an embedded USB media player – no need for extra hardware or software –thus; making displaying your messages and videos as easy as 1, 2, 3. As a hassle free solution with excellent image and sound quality, the PN-Y325 sets a new standard for easy and reliable display signage used anytime and anywhere.

## DISPLAY MODULE DATA

- ▶ Panel Technology: LCD UV2A
- ▶ Native Resolution (Pixels): 1920 X 1080
- ▶ Diagonal Size (inches / cm): 32/80.0
- ▶ Aspect Ratio: 16:9
- ▶ Backlight Technology: EDGE LED
- ▶ Brightness (cd/m<sup>2</sup>): 350
- ▶ Contrast Ratio: 3000:1
- ▶ Display Colours: 16.77Million
- ▶ Response Time (grey to grey avg) ms: 8
- ▶ Viewing Angle (H/V)0 CR >10: 178/178

## POWER SUPPLY AND OPERATING ENVIRONMENT

- ▶ Operating Voltage(ACV) / Frequency(Hz): 100 - 240/50-60
- ▶ Power Consumption (W) (Operating MAX): 56
- ▶ Power Consumption (W) (Standby): 0.5
- ▶ Operating Temperature (oC): 0 - 40
- ▶ Humidity (%): 20 - 80
- ▶ Heat Dissipation (BTU/h) MAX: 191.08

## INSTALLATION

- ▶ Landscape: ✓
- ▶ Portrait: ✓
- ▶ Mounting (VESA/Number of Points/Pitch mm): 4/200mm X 200mm

## CONNECTIVITY (AUDIO/VIDEO) OUTPUT

- ▶ DVI-D: 1
- ▶ Audio RCA R-L: 1

## KEY SPECIFICATIONS

- ▶ 24/7 Operation Certified: ✓
- ▶ Built-in Speakers (W): 5 + 5
- ▶ Computer Input - Plug and Play: ✓
- ▶ Power Management: ✓
- ▶ Cabinet Colour: BLACK
- ▶ Fanless: ✓
- ▶ Multi-Screen Function - Videowall Mode (Enlarge Feature): ✓
- ▶ Daisychain (Mirror mode): ✓
- ▶ Monitor Control Software Support: ✓

## WEIGHTS AND MEASURES

- ▶ Bezel Size (L/R) mm: 24
- ▶ Bezel Size (U/L) mm: 24
- ▶ Product Dimensions (W/H/D) mm: 750/444/48
- ▶ Product Weight Without Stand (Kg): 8.5

## CONNECTIVITY (AUDIO/VIDEO) INPUT

- ▶ HDMI: 1
- ▶ DVI-D: 1
- ▶ VGA: 1
- ▶ Component: 1
- ▶ Composite: 1
- ▶ Audio 3.5mm Jack: 1
- ▶ Audio RCA R-L: 1

## CONNECTIVITY (CONTROL/SERIAL DATA)

- ▶ RS232C IN: 1
- ▶ RS232C OUT: 1
- ▶ LAN Port: 1
- ▶ USB: 1

# SHARP

## PN-E™ SERIES COMMERCIAL LCD DISPLAY MONITORS

Sharp PN-E Series Professional LCD Display Monitors vs. Typical Consumer LCD TVs



Before selecting a consumer grade LCD TV for your high-reliability industrial application, please consider the advantages of Sharp PN-E series Professional LCD Display Monitors.

**All Models Offer Full High Bandwidth 1920 x 1080 1080p HD Resolution** from analog RGB, digital RGB and HD Video Sources. Pixel configuration also optimized for data use.

**Wide Choice of Screen Sizes** with higher brightness than typical consumer LCD TVs – for public display applications.

- ▶ **PN-E601:** 60" Class (60-1/16" diagonal) – 500 cd/m<sup>2</sup> brightness; 5000:1 contrast ratio
- ▶ **PN-E521:** 52" Class (52-1/16" diagonal) – 500 cd/m<sup>2</sup> brightness; 5000:1 contrast ratio
- ▶ **PN-E471R:** 47" Class (46-15/16" diagonal) – 700 cd/m<sup>2</sup> brightness; 1200:1 contrast ratio
- ▶ **PN-E421:** 42" Class (42-1/16" diagonal) – 700 cd/m<sup>2</sup> brightness; 3000:1 contrast ratio

**Industry-Leading 3-Year On-Site Limited Warranty** covering parts, labor and backlight. Can be upgraded to 5 years for nominal fee.

**"24/7" Commercial Design and Components.** Sharp "PN-E" series are designed for stable and dependable environments – including 24/7/365. Some of these enhancements include durable integrated carrying handles that are removable post installation. Fanless, ultra-quiet architecture with temperature sensor for protection. Extremely low power consumption and significant reduction of impact on HVAC systems.

**Fanless Operation** greatly minimizes dust accumulation in the unit ensuring superior reliability (including 24/7 applications) and provides virtually silent operation.

**Enlargement Function** By using an internal video wall processor, tiled video walls with 1 to 5 screens in either direction can be displayed without any external image processing or control equipment. This function can be extremely useful in both stand alone solutions as well as part of a larger full featured AV system design.

**DVI-D Daisy Chain Function Between Displays.** When using the optional PN-ZB01, Analog composite, S-Video and 5 wire RGB-Component signals can be used. Additionally, the PN-ZB01 supports DVI-D (w/ HDCP) input and relocked looping output. 100 Base T LAN support for control and external powered speaker outputs are also included. Designed to daisy chain up to five displays from a single DVI-D input., this DVI loop out can be extremely useful when designing installations systems that utilize less external interfaces and distribution systems.

**Picture-in-Picture (PiP) and Picture-by-Picture (PbP) Capabilities** with enhanced input compatibility compared to typical consumer displays.

**Built in an ISO 14000 Approved Environmentally Friendly Factory; ENERGY STAR® Qualified.**

**10 Watt Per Channel Stereo Amplifier with built-in space saving full range rear-firing speakers.**

**Compatible with Worldwide Video Systems including NTSC, PAL, PAL60 and SECAM.**

**Standard Interfaces** include HDMI®, D-Sub 15-pin RGB input, stereo audio input, selectable fixed or variable stereo audio line-output and RS-232C input/output.

**Optional Input/Output Expansion Board (PN-ZB01)** expands interfaces with DVI-D input/output, 5-BNC analog RGB input, component video input, S-Video input, BNC composite video input, two additional stereo audio inputs, RJ-45, and stereo speaker output (10W x 2). RJ-45 100 Base T Ethernet permits IP control and monitoring of one or more display's functions over LAN via SNMP protocol or other industry standard systems.

**Optional Signage Controller (PN-TPC1)** attaches to special mounting location on back of display. This mounting location is designed for use with external equipment such as the PN-TPC1 to more easily create an all-in-one digital signage system package. This mount's open and published specifications allow third-party manufacturers of appropriate support equipment to more easily design products that connect to Sharp PN-E series displays with minimum cost and effort.

**Lockable Key Panel; Low-Profile, Minimally Branded Appearance** with the additional ability to turn off the power-on LED (to minimize distraction from content when installed).

**Extensive Color Adjustments** including black level / brightness, contrast, tint, sharpness, white balance (RGB manual settings) and gamma.

**Powerful RS-232C Command Table** allows complete multi-level control of picture characteristics (including gamma, white balance, scheduling, enlargement, PiP, etc.). RS-232C further permits control, monitoring and diagnostics from central remote location - including "Power Off" command.

**Sophisticated Scheduling and Power Management Options** including real-time clock and multi-event scheduler [for programmable operation without an external control system] along with **adjustable power on delays** (to reduce in-rush of current when used in video wall applications).

**All Models Designed for Extended Use in Both Landscape and Portrait Mode Applications.**

**Thin Bezel Design (as slim as 19.5 mm)** for more appealing and effective video wall and signage displays. [Also ask about the new 60" class *ultra thin* bezel PN-V601 offering only 6.5mm total bezel width between neighboring monitors.]

**VESA DPMS, DVI DMPM Power Management; VESA Standard Mounting Configuration.**

**Versions Available in all Sizes with Integrated Protective Acrylic Overlays** for use in high-traffic areas. Versions also available in all sizes with Integrated 3<sup>rd</sup> Party Touch Screens.

**Full compatibility with Sharp SDSS™ Digital Signage Management Software and virtually all other industry leading PC based solutions.**

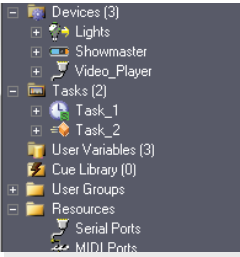
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# MEDIALON SHOWMASTER ST

> **Embedded Show Controller**

## FEATURES

- 4x Serial ports
- 16x Digital In
- 16x Digital Out
- 1x MIDI In/Out
- 1x DMX Out
- Ethernet
- 5x Web Panel connections
- Drag & drop programming
- 1x Timeline Programming
- Sync Accuracy 100th / Sec
- Device Position Tracking
- Logical Programming
- Real time testing (no Compile / Download / Test / Startover)
- Alarm via Email



## OVERVIEW

**Showmaster ST** is an all in one embedded Show Controller fitted with all necessary show protocol interfaces.

It controls and synchronizes dimmers, lighting desks, videoprojectors, video servers, sound processors etc.

Showmaster ST also provides digital I/O.

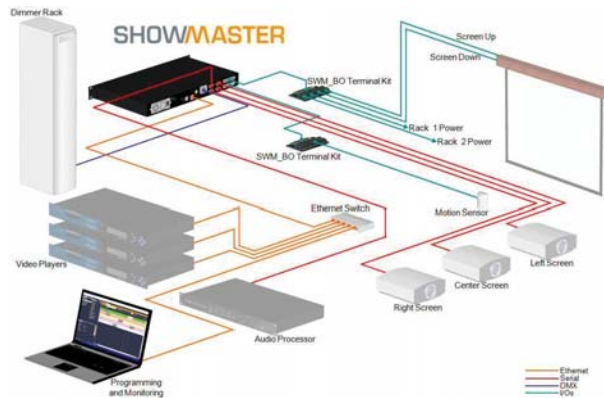
Its free editing software, Showmaster Editor, embeds most of the features of our award winning technology such as devices synchronization & logical programming as well as real time testing.

It allows the programming of one show at a time, and 5 Web Panel connections but does not support third party interfaces.

## APPLICATIONS

Showmaster ST is designed for small to medium Show Control application in Museums, Showrooms, Stores and Restaurants or attractions.

It can also be used as sub system in larger shows or attractions.



## MEDIALON SHOWMASTER ST

## Specifications

### Part Number

- **SWM** - Showmaster ST, Embedded Show Controller, with Showmaster Editor Software included.

### Dimensions

- Rack: 476 (W) x 44.5 (H) x 260 (D) mm (18.75" x 1.75" x 10.25"), Stand-alone: 441 (W) x 44.5 (H) 260 (D) mm (17.38" x 1.75" x 10.25"), Packing: 580 (W) x 145 (H) x 370 (D) mm (22.8" x 5.7" x 14.6")
- Rack size (1U)

### Weight

- Rack: 11 lbs/5 Kg
- Packaging: 17,2lbs/7,8Kg

### Power

- Auto-Ranging 100-240 VAC / 50-60Hz 250 Watts (Actual power requirement is usage dependent)

### Enclosure

- Metal with satin black finish

### Certifications

- FCC, CE, EN60950-1 FCC Class A - EN55022

### Front Panel

- 1x LCD Display 4x20 Characters
- 6x Power / Menu Navigation Buttons
- 4x Status LEDs

### Rear Panel

- 2x USB 2.0 Ports
- 1x IEC Power Connector
- 1x 10/100/1000 Base-T Ethernet Ports
- 4x RS-232 DB9 Male Serial Ports
- 1x DB-37 Male (Digital Inputs, optically-isolated and accept 3-31 Volts DC or AC RMS (40Hz-10kHz))
- 1x DB-37 Female (Relay Outputs, SPST form C electro-mechanical normally open relays. Rated Load: 0.5A @ 125VAC (62.5 VA max.) 1A @ 24VDC (30 W max.). Maximum switching voltage: 125VAC, 60 VDC / Current 1A). When using Breakout boxes (Part#SWM\_BO), the maximum electrical specifications are 150ma / 12VDC per relay with a maximum of 2A for the whole 16 relays.
- 1x DMX Output (5 Pin Female XLR)
- 1x Extension RCA Connector
- Hard Power Switch

### System

- 512 MB DDR2, SDRAM, 533 MHz
- 1x 80 GB 2,5" SATA Hard Drive, 5400 RPM
- Intel Celeron M 430, 1,73 GHz Processor

### Environmental

- Operating Temperature: 0°C/32°F to 50°C/122°F
- Operating Humidity: 10 to 80% at 25°C non-condensing
- Acoustic Noise: NC
- Heat Dissipation (Typical): NC BTU/hr

### Reliability

- NA

### Included Accessories

- 1x IEC Power Cord
- 1x USB-MIDI Adapter Cable
- 2x Rack Mounting Bracket

### Recommended Accessories

- Breakout Terminal Wiring Board and DB-37 Cable (Part# SWM\_BO)

### Software Specifications

- Drag & Drop Programming
- Multitasking: Several tasks can run simultaneously in synchronization or separately.
- 1x TimeLine for Synchronisation
- 1/100th Sec Sync Accuracy
- Device Positiontracking (Sync)
- Logical Programming Operators: +, -, \*, /, %, ^, =, ==, !=, >, <, >=, <=, |, &, #, ()
- Logical Programming Functions: Hours, Minutes, Seconds, Frames, Day, Day Of The Week As Name, Day Of The Week As Number, Month, Year, Lower Case, Upper Case, Length, Char At, Get Field Of Enum, Get Index Of Enum, Random, Sqrt, Round, Ceil, Floor, Abs, Max, Min, Sin, Asin, Tan, Atan, Cos, Acos, Ln, Log, Exp
- Variables Type: Integer, String, Time, Date, Enum. Unlimited number of variables.
- Real Time program testing
- Drivers Editor
- OpenCap Protocol
- Log Files
- 2x Panels (or Panel server)
- Alarm via Email

### Extensions Supported

- NA

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# OCV 6

## TECH SPEC

Model	OCV 6
<b>PERFORMANCE</b>	
Frequency Response (-3 dB) (1)	80 Hz - 20 kHz
Frequency Range (-10 dB) (1)	60 Hz - 30 kHz
System Sensitivity (1 W @ 1 m) (2)	88 dB
Dispersion (-6 dB)	90 degrees conical

Crossover	5.4 kHz - 2nd order LF, 2nd order HF
Directivity Factor (Q)	11.3 averaged 1 kHz to 6.3 kHz
Directivity Index (DI)	10.5 averaged 1 kHz to 6.3 kHz
Rated Maximum SPL (2)	Average: 105 dB Peak: 111 dB
Power Handling	Average: 60 W Programme: 120 W Peak: 240 W
Recommended Amplifier Power	120 W @ 16 Ohms
Nominal Impedance	16 Ohms
Transformer Taps (rear rotary switch)	70 V: 60 W / 30 W / 15 W / 7.5 W / OFF & Low Impedance operation 100 V: 60 W / 30 W / 15 W / OFF & Low Impedance operation

### DISTORTION

10% Full Power (9.8 V)	2nd Harmonic 250 Hz: 0.42%, 1 kHz: 0.11%, 10 kHz: 1.27% 3rd Harmonic 250 Hz: 0.14%, 1 kHz: 0.31%, 10 kHz: 0.16%
1% Full Power (3.1 V)	2nd Harmonic 250 Hz: 0.16%, 1 kHz: 0.05%, 10 kHz: 0.27% 3rd Harmonic 250 Hz: 0.16%, 1 kHz: 0.18%, 10 kHz: 0.27%

### TRANSDUCERS

Low Frequency	Coaxial 165 mm (6.50") mineral loaded cone material
High Frequency	20 mm (0.79")

### CONSTRUCTION

Enclosure	ABS / Steel
Grille	Steel, plated and powder coat painted
Connectors	Euroblock type removable locking

# TANNOY

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Packed quantity

Finish

Colour

White (Ral 9003)  
Black (Ral 9004)

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# Panasonic

ideas for life

Reference Exhibit  
**55-inch class TH-55LFV50**  
 Ultra-Narrow Bezel LCD Display



The narrow bezel design is ideal for large signage use.  
 This energy-saving display is gentle on the environment.

## 01 Narrow Bezel

**Bezel-to-Bezel: 0.21"(5.3 mm)**

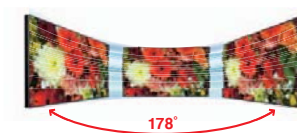
An ultra-narrow bezel design reduces the width of screen-joining borders to only 0.21"(5.3 mm) in wall videos. The borders are hardly visible even in very large-screen configurations, so images are more dynamic and natural.



## 02 High Visibility

**High 800 cd/m<sup>2</sup> brightness and a wide viewing angle**

LCD panels with a full 800 cd/m<sup>2</sup> of brightness ensure high visibility even in large public spaces. The IPS system also provides a wide viewing angle.



## 03 Low Power Consumption

**Highly efficient LED LCD panel provides high-level energy savings.**

In addition to producing crisp, clear images, they also offer highly uniform brightness when used as a video wall.



### Reference Exhibit

## 55-inch class TH-55LFV50

Ultra-Narrow Bezel LCD Display

### Breitband-Systeme / Fullrange Systems



# FR 8 JS - 8 Ohm

Art. No. 2000

### Product specification (Design and specification subject to change without notice)

Model No.	TH-55LFV50
<b>DISPLAY</b>	
Screen Size (Diagonal)	55-inch class
Aspect Ratio	16:9
Panel Type	DIRECT LED
Number of Pixels (H x V)	1,920 x 1,080 pixels
Brightness	800 cd/m <sup>2</sup>
Contrast Ratio	1,200:1
<b>CONNECTION TERMINAL</b>	
VIDEO IN	BNC x 1
Audio IN	RCA (L/R) x 1 (Shared with Component IN)
HDMI IN	HDMI x 1
Component IN	BNC x 1 set
Audio IN	RCA (L/R) x 1 (Shared with VIDEO IN)
DVI-D IN	DVI-D 24-pin x 1
Audio IN	M3 JACK x 1 set (Side) (Shared with PC IN)
PC IN	MINI D-SUB 15-pin x1 (Female)
AUDIO IN	M3 JACK x 1 set (Side) (Shared with DVI-D IN)
DVI-I OUT	DVI-I 29-pin x 1
<b>CONTROL</b>	
SERIAL IN / OUT	D-SUB 9-pin x 1 / x 1, RS-232C Compatible
LAN	RJ45 x 1 (Web browser control)
IR IN / OUT	M3 JACK x 1 / x 1
<b>ELECTRICAL</b>	
Power Requirements*	110-127 V AC, 50/60 Hz, 120 V AC, 50/60 Hz, 220-240 V AC, 50/60 Hz
Power Consumption	Less than 320 W
<b>AUDIO</b>	
Speaker OUT	External Speaker JACK (Side), 20 W [10 W + 10 W]
Line OUT	RCA pin (L/R) x 1 set (Side), Output level: Variable (-∞ - 0 dB)
<b>MECHANICAL</b>	
Dimensions (W x H x D)	47.9" x 27.1" x 4.8" (1,216 x 687 x 122 mm)
Weight	Approx. 79.4 lbs (36 kg)
<b>ENVIRONMENTAL</b>	
Operating Environment	Temperature: 32 °F to 104 °F (0 °C to 40 °C) Humidity: 20% to 80% (Non condensation)
<b>OPTIONS</b>	
-Remote Control Kit, - Cover Frame Kit	

\*Power requirements vary depending on the shipping destination.

### Features

- Ultra-narrow bezel
- 800-cd/m<sup>2</sup> brightness
- Wide viewing angle with IPS panel
- DVI, RS232-C daisy chain capability
- IR through for remote control
- ID control with serial control
- VESA 400 x 400-mm compatibility
- Landscape and portrait orientation



**8 cm (3.3") Breitbandlautsprecher** mit wasserfester Polypropylenmembran, guten Tieftoneigenschaften und ausgeglichenem Frequenzgang. Besonders geeignet als Einbaulautsprecher für die Musikwiedergabe sowie zur Bestückung von ELA-Zeilen.

\*) IP-Schutzklasse für Frontseite bei Einbau in ein abgedichtetes Gehäuse

**8 cm (3.3") full-range speaker** with waterproof polypropylene cone, good bass reproduction and balanced frequency response. Especially suitable as built-in speaker for music reproduction and as driver for 100 V network column speakers.

\*) IP protection class for front side when built into a sealed enclosure

### Anwendungsmöglichkeiten / Typical applications

- Schmale ELA-Zeilen
- Kontroll-Lautsprecher
- Deckenlautsprecher in Schienenfahrzeugen und Bussen
- Elektronische Musikinstrumente

- Narrow network column speakers
- Control speakers for electronic devices
- Ceiling-mounted speakers in railway carriages and busses
- Electronic musical instruments

Eigenschaften / Attributes

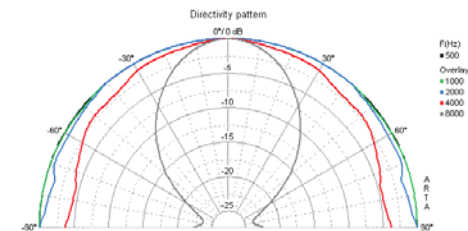
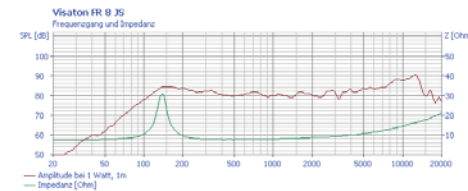
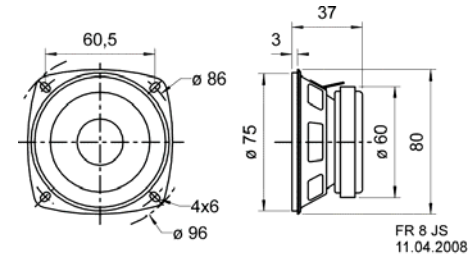
- Polypropylenmembran
- Metallausführung

- Polypropylene cone
- Metal basket

12.06.2013

# FR 8 JS - 8 Ohm

Art. No. 2000



Technische Daten / Technical data

Nennbelastbarkeit Rated power	10 W
Musikbelastbarkeit Maximum power	15 W
Nennimpedanz Z Nominal impedance Z	8 Ohm
Übertragungsbereich Frequency response	80-20000 Hz
Mittlerer Schalldruckpegel Mean sound pressure level	83 dB (1 W/1 m)
Abstrahlwinkel (-6 dB) Opening angle (-6 dB)	180°/4000 Hz
Grenzauslenkung Excursion limit	+/-2 mm
Resonanzfrequenz fs Resonance frequency fs	130 Hz
Magnetische Induktion Magnetic induction	1,4 T
Magnetischer Fluss Magnetic flux	200 µWb
Obere Polplattenhöhe Height of front pole-plate	3 mm
Schwingspulendurchmesser Voice coil diameter	15 mm
Wickelhöhe Height of winding	5 mm
Schallwandöffnung Cutout diameter	75 mm
Gewicht netto Net weight	0,24 kg
Gleichstromwiderstand Rdc D.C. resistance Rdc	7,2 Ohm
Mechanischer Q-Faktor Qms Mechanical Q factor Qms	4,30
Elektrischer Q-Faktor Qes Electrical Q factor Qes	1,74
Gesamt-Q-Faktor Qts Total Q factor Qts	1,24
Äquivalentes Luftnachgiebigkeitsvolumen Vas Equivalent volume Vas	0,84 l
Effektive Membranfläche Sd	

12.06.2013

Effective piston area Sd	30 cm <sup>2</sup>
Dynamische bewegte Masse Mms Dynamically moved mass Mms	2,3 g
Antriebsfaktor Bxl Force factor Bxl	2,77 Tm
Schwingspuleninduktivität L Inductance of the voice coil L	0,6 mH
Anschlüsse Connections	4,8 x 0,8 mm (+) 2,8 x 0,8 mm (-)
Schutzklasse Protective system	IP 64 *)
Temperaturbereich Temperature range	-25 ... 70 °C

## WATCHPAX 2

*WATCHPAX is a solid-state media player optimized for best performance with Dataton WATCHOUT multi-display production software. WATCHPAX features built-in WATCHOUT software and license.*

WATCHPAX gives you the power of WATCHOUT production tools without the hassle of fine-tuning computers or running long video cables. Create your show in WATCHOUT, and connect WATCHPAX. Add more units as you grow your show, from a single WATCHPAX and display to multiple units and display sources.

WATCHPAX is designed to match the demands of distributed systems and multi-room installs, offering full audio and video capabilities on a standard ethernet network. In installations running in several show areas or rooms, it keeps the hardware close to the display source.



*Use with WATCHOUT version 5.5 or later.*

### General

- » WATCHOUT pre-installed
- » Field upgrades
- » Includes WATCHOUT license
- » Audio sync with PICKUP WIRETAG
- » Hardware accelerated video play back (H.264)
- » Zero configuration
- » Clean shut-down and power-up
- » Dimensions: 127 x 148 x 22 mm
- » Two-year warranty
- » Line voltage 100 - 240 V
- » Windows 7

### Specifications

- » Approx. 20W power consumption at full operation
- » Active cooling
- » SSD (Solid State Disk), 64 GB
- » Mini DisplayPort. Resolutions up to 2560 x 1600 (WQXGA)
- » Processor: AMD G series GX 420CA, 2.0 GHz Quadcore
- » RAM: 4 GB
- » 3.5 mm stereo audio out
- » Two USB3 ports
- » Gigabit Ethernet – Optional WiFi

### External WATCHOUT features

- » Network video and Dynamic Image Server
- » Control and interactivity via MIDI (USB), DMX (via ArtNet), TCP/IP
- » DMX output (via ArtNet)

### Important

Install version 5.5 or above on the production computer before you connect the WATCHPAX.

[www.dataton.com/watchout/downloads](http://www.dataton.com/watchout/downloads)

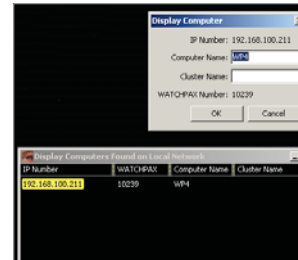


Power. 12V AC adaptor supplied (3) Audio out Mini Display Port (1) USB port USB port Ethernet port (2)

### Getting started

- 1 Connect the display
- 2 Connect the network
- 3 Connect to power (use adapter supplied)

Start WATCHOUT on the production computer (v5.5 or higher). The WATCHPAX and any WATCHOUT display computers on the local network will be listed in *Window > Network*. You can assign display and cluster names by double-clicking an item in the list, see screenshot.



### IP number assignment

WATCHPAX automatically retrieves an IP address via a DHCP server. If no DHCP server is available, the WATCHPAX will get a self-assigned IP address.

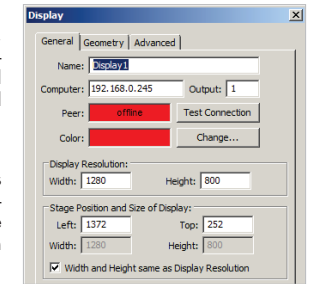
If you are using a control system, you may want to use a fixed IP address for WATCHPAX. Assign a fixed IP through the WATCHOUT protocol command "setIP" as shown below: `setIP "192.168.0.32"`

Make sure you choose an IP address in the correct subnet range. To remove the fixed IP number, give the same command again, specifying an empty string parameter.

You can also assign a fixed IP address by using the Startup Script (see next page).

### Resolution

Double-click the display in the Stage window and set the native resolution of your screen or projector, see screenshot.



If you want to use WATCHPAX without a display, e.g., as a sound server, set a "dummy" resolution of 640x480 pixels in WATCHOUT.

**Note:** Use an active MiniDisplayPort adapter to DVI/VGA/HDMI to ensure that the correct EDID information is transferred to WATCHPAX.

### Auto start

A WATCHOUT production computer has to be connected when you compose or create your show. Once that's done, you can replace the production computer with an external control system, or auto start the WATCHPAX by using the built-in Startup Script.

**Hint:** Use *Edit Startup Script* in WATCHOUT to define initial WATCHPAX settings. This lets you load shows and perform other WATCHOUT protocol commands. For more info, see the in-line description in the Startup Script.

### Delete files

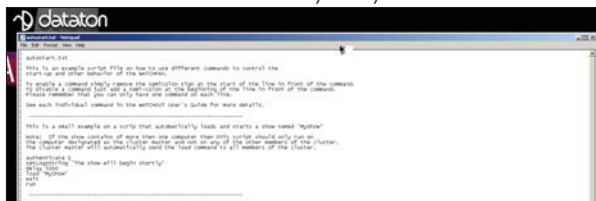
To remove unused files from the WATCHPAX:

*Stage > Manage Display Computer > Delete Other Shows*

This deletes files from online display computers for all shows, with the exception of the current (open) show.

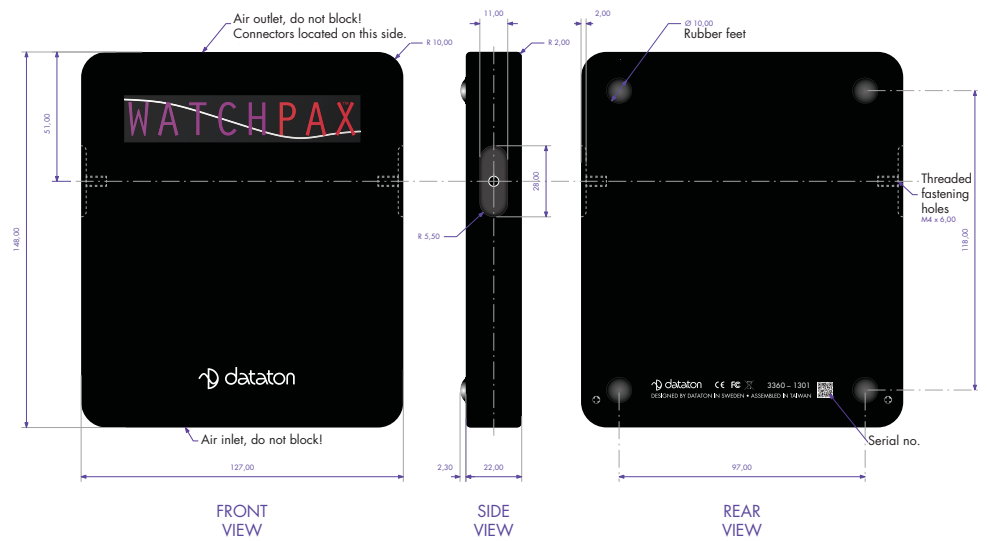
*Stage > Manage Display Computer > Re-build Show Cache*

This removes and rebuilds all cached data associated with the current (open) show. Note that the cache is usually managed automatically by WATCHOUT, but in some rare cases you may want to force it to rebuild.



*Stage > Manage Display Computer > Remote Access > File > Edit Startup Script*

### Measurements in mm



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SENSATION CREATION

WATCHPAX 2 Art No 3362

dataton

WATCHPAX 2 Art No 3362

dataton

SENSATION CREATION

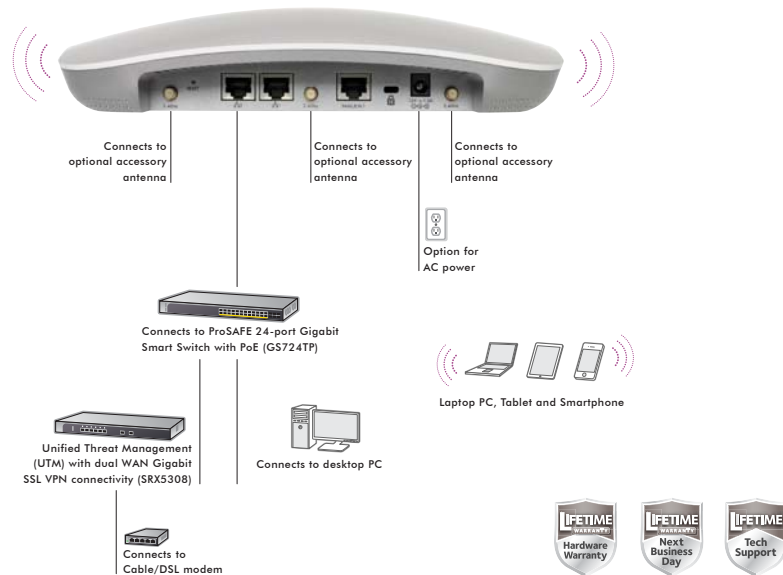


### Ultra High Throughput (900Mbps) and Superior Range with 802.11n 3x3 Access Point



- Dual band concurrent in 2.4 and 5 GHz radio band for maximum wireless throughput
- Stylish and elegant design with easy mounting options (e.g., ceiling, wall and desktop)
- Backward compatibility with 802.11a, 802.11g and 802.11b network devices
- Integrated Power over Ethernet (IEEE® 802.3af and 802.3at PoE) lowers deployment costs
- Deploy wireless coverage over large areas with point-to-point and point-to-multipoint bridging via Wireless Distribution System (WDS)
- Security features include WPA, WPA2, rogue AP detection and 802.1x with RADIUS support
- Internal antennas factory-optimized for maximum RF performance
- Advanced Security with Wireless Intrusion Detection (WIDS) and Wireless Intrusion Prevention (WIPS) support
- 802.11n beamforming to improve range and maximize data rates
- Device-based QoS to provide differentiated service level agreement to each user and device type
- Bandsteering to load balance clients between 2.4 and 5GHz
- Redundant dual Ethernet ports to ensure maximum reliability
- Centralized management with WC7600 and WC9500 Premium Wireless Controller

### Target Applications



Features	ProSAFE 3x3 Single Radio, Dual Band Wireless-N Access Point (WNDAP660)	ProSAFE 3x3 Single Radio, Dual Band Wireless-N Access Point (WNDAP620)	ProSAFE Dual Band Wireless-N Access Point (WNDAP360)	ProSAFE Wireless-N Access Point (WNAP320)
Frequency	2.4GHz and 5GHz	2.4GHz or 5GHz	2.4GHz and 5GHz	2.4GHz
Transmit x Receive Radio Chains	3 x 3	3 x 3	2 x 2	2 x 2
Maximum theoretical throughput	900Mbps	450Mbps	600Mbps	300Mbps
Power over Ethernet (PoE) IEEE 802.3af	Yes	Yes	Yes	Yes
PoE power consumption	10.51 Watts	10.51 Watts	10.75 Watts	5.8 Watts
Wireless Distribution System (WDS)				
Repeater	Yes	Yes	Yes	Yes
Bridge point-to-point/multi-point	Yes	Yes	Yes	Yes
Simultaneous bridge & wireless client association	Yes	Yes	Yes	Yes
Separate bridge and access point	Yes	Yes	Yes	Yes
Client Mode	Yes	Yes	Yes	Yes
SNMP	v1, v2c	v1, v2c	v1, v2c	v1, v2c
Antenna	Internal 5 dBi Three (3) External reverse SMA connectors	Internal 5 dBi Three (3) External reverse SMA connectors	Internal 5 dBi Two (2) External reverse SMA connectors	Internal 5 dBi Two (2) External reverse SMA connectors
User support with controller management	Up to 128 users	Up to 64 users	Up to 128 users	Up to 64 users
Security				
WiFi Protected Access (WPA/WPA2), 802.11i	Yes	Yes	Yes	Yes
Multiple VPN pass-through support	Yes	Yes	Yes	Yes
MAC address filtering with access control lists-up to 256 users	Yes	Yes	Yes	Yes
802.1x RADIUS support with EAP, TLS, TTLS, PEAP	Yes	Yes	Yes	Yes
Rogue AP detection	Yes	Yes	Yes	Yes
Block SSID Broadcast	Yes	Yes	Yes	Yes
Secure SSH Telnet	Yes	Yes	Yes	Yes
Secure Socket Layer (SSL)	Yes	Yes	Yes	Yes
Remote management login	Yes	Yes	Yes	Yes
Peer-to-peer blocking so users may not access another user's PC	Yes	Yes	Yes	Yes
MBSSID/VLAN Support	16/17	16/17	16/17	8/9
WPA Support (WPA2 - Enterprise, 802.11i)	Yes	Yes	Yes	Yes
User Interface	Yes	Yes	Yes	Yes
Browser-based Interface	Yes	Yes	Yes	Yes
Accepts accessory antennas	Yes	Yes	Yes	Yes
Easy ceiling mounting/wall mounting	Yes	Yes		
WIDS	Yes	Yes		
WIPS	Yes	Yes		
Bandwidth management	Yes	Yes		
LLDP	Yes	Yes		
Bandsteering	Yes			
Controller management	WC7600 and WC9500	WC7600 and WC9500	WC7520, WC7600, and WC9500	WC7520, WC7600, and WC9500

## Technical Specifications

### Wireless Characteristics

#### Standards

- IEEE 802.11a 5GHz
- IEEE 802.11g, IEEE 802.11b, 2.4GHz
- IEEE 802.11n standard, 2.4GHz and 5GHz
- WMM – Wireless MultiMedia prioritization
- WDS – Wireless Distribution System
- Power over Ethernet (PoE) IEEE 802.3af and 802.3at

#### Physical Specifications

- Physical Dimensions (W x D x H): 253.75 x 253.76 x 54.76 mm (10.0 x 10.0 x 2.16 in)
- Weight: 1.5 kg (3.31 lb)

#### Physical Interfaces

- Two (2) 10/100/1000BASE-T Gigabit Ethernet (RJ-45) ports with Auto Uplink™ (Auto MDI-X) with IEEE 802.3af and 802.3at Power over Ethernet (PoE) support
- Power adapter: 12V DC, 1.5A; plug is localized to country of sale
- One (1) console port with RJ45 Interface
- Three (3) reverse SMA antenna connectors
- Five (5) LED: Power, Link/ACT, LAN, 2.4GHz, 5GHz

### Security

- WiFi Protected Access (WPA, WPA2)
- Wired Equivalent Privacy (WEP) 64-bit, 128-bit, and 152-bit encryption
- IEEE 802.1x RADIUS authentication with EAP TLS, TTLS, PEAP
- Wireless access control to identify authorized wireless network devices
- MAC address authentication
- VPN pass-through support
- Secure SSH telnet
- Security Sockets Layer (SSL) remote management login

### Network Management

- Remote configuration and management through Web browser, SNMP or telnet with command line interface (CLI)
- SNMP management supports SNMP MIB I, MIB II, 802.11 MIB and proprietary configuration MIB

### Controller Management

- WC7600 and WC9500

### Advanced Wireless Features

#### Wireless Distribution System (WDS)

- Bridge mode: Point-to-point wireless WDS mode
- Bridge mode: Point-to-multipoint wireless WDS mode
- Repeater mode
- Adjustable Transmit Power Control (TPC) from 100 mW down to 0 mW

### System Requirements

- 2.4GHz/5GHz 802.11n specification or 2.4GHz 802.11b/g wireless adapter or 5 GHz 802.11a wireless adapter
- Microsoft® Windows® Vista™, XP, 2000, 98, Me, Mac® OS, UNIX®, or Linux®
- Internet Explorer® 6.0 or Mozilla Firefox® 1.5

### Package Contents

- ProSAFE® Premium Dual Band Wireless-N Access Point (WNDAP660)
- Ethernet cable
- Wall-mount kit
- Installation guide
- Resource CD
- 12V, 1.5A power supply
- Warranty/support information card

### NETGEAR Warranty\*

- This product is backed by a NETGEAR limited ProSAFE® Lifetime Hardware Warranty.
- ProSUPPORT™ Lifetime Chat Technical Support (Remote diagnostics performed by our technical experts for prompt resolution of technical issues).
- ProSUPPORT 90 days (24/7) Live Phone Technical Support during business hours.
- Lifetime Next Business Day (NBD) Hardware replacement (See <http://onsite.netgear.com> for coverage, availability and terms and conditions).

\* This product comes with a limited warranty that is valid only if purchased from a NETGEAR authorized reseller, and modifications to product may void the warranty; covers hardware, fans, and internal power supplies—not software or external power supplies; see <http://www.netgear.com/about/warranty/> for details. Lifetime technical support includes basic phone support for 90 days from purchase date and lifetime online chat support when purchased from a NETGEAR authorized reseller. This product was tested for quality and its components may be recycled. For indoor use only.

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### 3.0 Graphics List



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 +1 416 361 3338

Client: **Smithsonian Institution**  
 Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
 Project No.: **1403109**  
 Our ref: **9961-5a-MVON-Graphics List**  
 Revision: **D**                      **AB**                      Based on Script received December 8

Date: **December 16 2015**  
 Distribution: **Kathryn Campbell, Hal Aber, Harry Rubenstein (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis (HSD)**

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
<b>Section 1.0 Many Voices, One Nation (Digital Media Experience)</b>								
G.2.1.001	3600	x	3350	12.06	Main section label	MVON :000	Gallery Intro Text	Type 1
G.2.1.002	500	x	500		Glass/Acrylic Face image panels (No.x30)			Type 12 on 5mm acrylic
G.2.1.003			250 Cap height		Dimensional Lettering (Gallery Title) (23 characters)			Type 7
G.2.1.004	2300	x	3300	7.59	Donor Panel			Type 1
G.2.1.005	500	x	500		Glass/Acrylic Face image panels (No.x30)			Type 12 on 5mm acrylic
Case C2101								
G.2.1.006	200 Cap height				Case Title (within case) Dimensional Lettering (17 characters)	MVON: 110.1	How Do We Become Us	Type 7
G.2.1.007	550	x	580	0.32	Object Label (non standard)	Object 2587	... Already here	Type 4
G.2.1.008	530	x	400	0.21	Object Label (non standard)	Object 1361	...Came voluntarily	Type 4
G.2.1.009	620	x	340	0.21	Object Label (non standard)	Object 0449	...Forcibly brought	Type 4
G.2.1.010	500	x	780	0.39	Object Label (non standard)	Object 0526	...Remained in place	Type 4
G.2.1.011	810	x	230	0.19	Text Treatment (within Case)	No ref supplied	What happened when...	Type 4
G.2.1.012	250	x	300	0.08	Colored Acrylic Panel			5mm Colored acrylic
G.2.1.013	250	x	180	0.05	Colored Acrylic Panel			5mm Colored acrylic
G.2.1.014	150	x	200	0.03	Colored Acrylic Panel			5mm Colored acrylic
G.2.1.015	240	x	170	0.04	Colored Acrylic Panel			5mm Colored acrylic
G.2.1.016	180	x	200	0.04	Colored Acrylic Panel			5mm Colored acrylic
G.2.1.018	1720	x	2200	3.78	Backdrop panel			Type 1
G.2.1.022	1500	x	1950	2.93	Backdrop panel (Faces)			Sprayed Finish TBC
G.2.1.023	4000	x	1600	6.40	Backdrop panel (Orange)			Type 1
G.2.1.024	2300	x	2200	5.06	Backdrop panel			Type 1
G.2.1.025	1900	x	2200	4.18	Backdrop panel (Orange)			Sprayed Finish TBC

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if)	Materials
	W	x	H					
G.2.1.026	2000	x	2100	4.20	Backdrop panel (Faces)			Type 1
G.2.1.027	185 Cap height				Dimensional Lettering (How did we become us?) 17 Charactes			Type 7
G.2.1.028	20 letters	x	203 CAP height		External exhibition title - Many Voices, One Nation 20 letters		SECURED WITH VHB TAPE AND SILICONE SEALANT (NO OVER EDGE OR EXCESSIVE ADHESIVE TO BE VISIBLE)	13mm (1/2") DEEP HYDRO-CUT ALUMINUM LETTERS IN MYRIAD ROMAN WITH WHITE SATIN FINISH ON FACE AND RETURNS
<b>Section 2.0 Unsettling The Continent</b>								
G.2.2.001			52 Cap height		Main section label Dimensional Lettering (32 Characters)	MVON: 200		Type 7
G.2.2.002	600	x	600	0.36	Main section label body text (screen print)			Type 1
Case C2207								
G.2.2.003	230	x	130	0.03	Object Label	MVON: 200.1	African Cowrie Shell	Type 4
Case C2208								
G.2.2.004	230	x	130	0.03	Object Label	MVON: 200.2	Spanish Helmet	Type 4
Case C2209								
G.2.2.005	230	x	130	0.03	Object Label	MVON: 200.3	Tsimshian Crest Hat	Type 4
Case C2202								
G.2.2.006	560	x	2400	1.34	Subsection label (outside)	MVON: 220	Spanish New Mexico	Type 2
G.2.2.007	1600	x	2400	3.84	Image	i-2428	Image of Taos Pueblo...	Type 4
G.2.2.008	230	x	200	0.05	Gang Label	MVON: 220.1	Pecos Mission Church	Type 4
G.2.2.009	400	x	260	0.10	Image	i-1555	Drawing of Pecos	Type 4
G.2.2.010	240	x	260	0.06	Image	i-1556	Photograph of Pecos	Type 4
G.2.2.011	230	x	130	0.03	Object Label	MVON: 220.2	Painted Elk Hide 1693-1710	Type 4
G.2.2.012	230	x	130	0.03	Object Label	MVON: 220.3	Hybrid beliefs	Type 4
G.2.2.013	230	x	200	0.05	Gang Label	MVON: 220.4	Hawikuh Ceramics	Type 4
G.2.2.014	230	x	130	0.03	Object Label	MVON: 220.5	Spur, Mexico 1800's	Type 4
G.2.2.015	420	x	200	0.08	Sub-subsection Label	MVON: 221	The Pueblo Revolt	Type 4
G.2.2.016	350	x	200	0.07	Graphic Label	MVON: 221.1	Statue of Po'pay	Type 4
Inc. with above	120	x	200	0.02	Image	i-1557	Po'Pay image	Type 4
G.2.2.017	335	x	200	0.07	Graphic Label	MVON: 221.2	Diego De Vargas	Type 4
Inc. with above	105	x	200	0.02	Image	i-1230	portrait of Diego de Vargas	Type 4
Case C2203								
G.2.2.018	560	x	2400	1.34	Subsection label (outside)	MVON: 240	New France	Type 2
G.2.2.019	230	x	200	0.05	Gang Label	MVON: 240.1	New Identities	Type 4
G.2.2.020	230	x	410	0.09	Gang Label	MVON: 240.2	Fur Trade	Type 4
Inc. with above	230	x	160	0.04	Image	i-1564	Image of Fur Trading	Type 4
G.2.2.021	720	x	200	0.14	Sub-subsection Label	MVON: 241	A Middle Ground	Type 4
Inc. with above	150	x	200	0.03	Image on Sub-subsection Label above	i-1217	Image of Fox Indian Graphic	Type 4
Inc. with above	150	x	200	0.03	Image on Sub-subsection Label above	i-1218	Image of Coureur	Type 4
G.2.2.022	230	x	560	0.13	Gang Label	MVON: 241.1	marketing Moccasins in NA	Type 4
Inc. with above	230	x	360	0.08	Image	i-2380	Image of Canadian Woman Wearing	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
G.2.2.023	230	x	200	0.05	Gang Label	MVON: 241.2	Man's Moccasins North Mich.	Type 4
G.2.2.024	160	x	240	0.04	Case Back Graphic			Type 4
Case C2204								
G.2.2.025	560	x	2400	1.34	Subsection label (outside)	MVON: 230	Dutch New Amsterdam	Type 2
G.2.2.026	420	x	200	0.08	Sub-subsection Label	MVON: 231	Africans in New Amsterdam	Type 4
G.2.2.027	450	x	200	0.09	Gang Label	MVON: 231.1	Peiter Stuyvesant	Type 4
Inc. with above	220	x	200	0.04	Image	i-0670	Image of Peter Stuyvesant	Type 4
G.2.2.028	230	x	200	0.05	Object Label	MVON: 231.2	Dutch Reform Bible	Type 4
G.2.2.029	230	x	130	0.03	Object / Graphic Label	MVON: 231.3	Plan of New Amsterdam, 1660	Type 4
G.2.2.030	785	x	520	0.41	Image	i-2014	image of Castello / Cortyou Map	Type 4
G.2.2.031	230	x	200	0.05	Gang Label	MVON: 231.4	Adopting New Ways	Type 4
G.2.2.032	230	x	320	0.07	Object Label	MVON: 231.5	Identity of the City	Type 4
Inc. with above	230	x	190	0.04	Image	i-1565	Image of 2 Beavers (Crest)	Type 4
G.2.2.033	140	x	240	0.03	Case Back Graphic			Type 4
Case C2205								
G.2.2.034	560	x	2400	1.34	Subsection label (outside)	MVON: 250	British South Carolina	Type 2
G.2.2.035	230	x	90	0.02	Graphic Label (Image credit)	MVON: 250.1	Rice Production	Type 4
G.2.2.036	230	x	200	0.05	Gang Label	MVON: 250.2	British Immigration	Type 4
Inc. with above	430	x	200	0.09	Image	i-1573	Image of Indian Cession	Type 4
G.2.2.037	420	x	200	0.08	Sub-subsection Label	MVON: 251	Rice Culture	Type 4
G.2.2.038	230	x	405	0.09	Gang Label	MVON: 251.1	Rice Processing	Type 4
Inc. with above	230	x	155	0.04	Image	i-1572	Image of Mortar	Type 4
G.2.2.039	230	x	365	0.08	Image	i-2053	Image of Fanner	Type 4
G.2.2.040	540	x	720	0.39	Image	i-1571 (detail)	Rice Production	Type 4
G.2.2.041	230	x	200	0.05	Object Label	MVON: 251.2	Portrait of Mrs. Charles Lownd	Type 4
G.2.2.042	230	x	200	0.05	Gang Label	MVON: 251.3	High Style Goods	Type 4
G.2.2.043	420	x	200	0.08	Sub-subsection Label	MVON: 252	New Afr. American Cultures	Type 4
G.2.2.044	230	x	130	0.03	Gang Label	MVON: 252.1	Colonaware	Type 4
G.2.2.045	230	x	130	0.03	Gang Label	MVON: 252.2	Sea Island Baskets	Type 4
G.2.2.046	230	x	200	0.05	Gang Label	MVON: 252.3	Enslaved laborers	Type 4
G.2.2.047	225	x	250	0.06	Image	i-2055	image of Slaves for sale	Type 4
G.2.2.048	155	x	250	0.04	Image	i-2054	Image of Inventory	Type 4
G.2.2.049	230	x	410	0.09	Gang Label	MVON: 252.4	Seeking Freedom	Type 4
Inc. with above	230	x	160	0.04	Image	i-2069	Image of Fort Mose / St Augustine	Type 4
G.2.2.050	2500	x	2400	6.00	Image	i-1571	Image of Rice Production Etching (Case Back Graphic)	Type 4
G.2.2.051	800	x	2200	1.76	Case Back Graphic			Type 4
G.2.2.052	820	x	2200	1.80	Case Back Graphic			Type 4
Case C2206								
G.2.2.053	560	x	2400	1.34	Subsection label (outside)	MVON: 260	British South Pennsylvania	Type 2

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
G.2.2.054	590	x	200	0.12	Graphic Label	MVON: 260.1	Baptism in the Schuylkill	Type 4
Inc. with above	360	x	200	0.07	Image	i-1580	Forest Scene	Type 4
G.2.2.055	230	x	200	0.05	Gang Label	MVON: 260.2	Quakers	Type 4
G.2.2.056	350	x	300	0.11	Image	i-1582	Image of Quaker Worship	Type 4
G.2.2.057	230	x	200	0.05	Graphic Label	MVON: 260.3	Image of Religious Diversity	Type 4
G.2.2.058	1100	x	820	0.90	Image	i-2573	Skyline of Philadelphia	Type 4
G.2.2.059	230	x	200	0.05	Object Label	MVON: 260.4	Associating for improvement	Type 4
G.2.2.060	230	x	370	0.09	Graphic Label	MVON: 260.5	Conflict over the Backcountry	Type 4
Inc. with above	230	x	170	0.04	Image	i-1575	image of Claypoole Cartoon	Type 4
G.2.2.061	420	x	200	0.08	Sub-subsection Label	MVON: 261	Germans in Pennsylvania	Type 4
G.2.2.062	230	x	200	0.05	Object Label	MVON: 261.1	Ethnic Diversity (Stove Plate)	Type 4
G.2.2.063	230	x	200	0.05	Graphic Label	MVON: 260.5	Pennsylvania Statehouse	Type 4
G.2.2.064	340	x	470	0.16	Image	i-2482	Image of Pennsylvania Statehouse	Type 4
G.2.2.065	1700	x	2400	4.08	Case Back Graphic			Type 4
<b>Section 3.0 Voices of Debate Places of Negotiation</b>								
VOICES OF..								
G.2.3.001	750	x	2200		Main section label	MVON: 300	Voices of Debate Introduction Panel	Type 7
G.2.3.002	420	x	200	0.08	Sub-subsection Label (on Wall)	MVON: 311	Slavery and abolition	Type 2
G.2.3.003	200	x	200	0.04	Object ID (in Case)	MVON: 311.1 (new)	Metal Tag ID	Type 4
G.2.3.004	200	x	200	0.04	Object ID (in Case)	MVON: 311.2 (new)	Anti Slavery Medal ID	Type 4
G.2.3.005	420	x	200	0.08	Sub-subsection Label (on Wall)	MVON: 312	Nativism and Belonging	Type 2
G.2.3.006	200	x	200	0.04	Object ID (in Case)	MVON: 312.1 (new)	Fire Hat ID	Type 4
G.2.3.007	200	x	200	0.04	Object ID (in Case)	i-2459	Sheet Music ID	Type 4
G.2.3.008	420	x	200	0.08	Sub-subsection Label (on Wall)	MVON: 313	Exclusion and Inclusion	Type 2
G.2.3.009	200	x	200	0.04	Object ID (in Case)	MVON: 313.1 (new)	Porcelain Figure ID	Type 4
G.2.3.010	200	x	200	0.04	Object ID (in Case)	MVON: 313.2 (new)	Metal Statue of Liberty ID	Type 4
G.2.3.011	420	x	200	0.08	Sub-subsection Label (on Wall)	MVON: 314	Segregation and Integration	Type 2
G.2.3.012	200	x	200	0.04	Object ID (in Case)	MVON: 314.1 (new)	Tuition Card ID	Type 4
G.2.3.013	200	x	200	0.04	Object ID (in Case)	MVON: 314.2 (new)	School Bus Window ID	Type 4
G.2.3.014	420	x	200	0.08	Sub-subsection Label (on Wall)	MVON: 315	Deportation and Legalization.	Type 2

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
G.2.3.015	200	x	200	0.04	Object ID (in Case)	MVON: 315.1 (new)	pro Legalization print ID	Type 4
G.2.3.016	200	x	200	0.04	Object ID (in Case)	MVON: 315.2 (new)	Immigration Reform pamphlet ID	Type 4
PLACES OF...								
G.2.3.017			52 Cap Height		Main Section label (on education and Military cluster) Dimensional Lettering (19 Characters)	MVON: 370	Places of Negotiation	Type 7
G.2.3.018	500	x	210	0.11	Main Section label body text (screen print)			Type 1
Education								
G.2.3.019	260	x	300	0.08	Sub- Sub ( Cluster design)	MVON: 371	Education in the Schoolroom	Type 4
Case C2306								
G.2.3.020	230	x	590	0.14	Gang Label	MVON: 371.2	Assimilation thru Public Sch.	Type 4
Inc. with above	230	x	90	0.02	Graphic Label (Credit)	MVON: 371.1	Image of / Credit	Type 4
Inc. with above	230	x	200	0.05	Image	i-1713	Image of Early 20th C Patriotic pagnt.	Type 4
G.2.3.021	645	x	490	0.32	Image	i-2172	Chinese Heritage School	
G.2.3.022	230	x	300	0.07	Gang Label	MVON: 371.3	Resisting Assimilation	Type 4
G.2.3.023	230	x	200	0.05	Take A Closer Look Graphic (In Education Case)	MVON: 371.4	Patriotic Symbols Everywhere- Asso. With flag /	Type 4
G.2.3.024	230	x	200		Special (P2301 Interactive label interactive instruction)	Physical Interactive P2301	What Should an American Classroom look like?	Type 10 (HPL)
Military								
G.2.3.025	260	x	300	0.08	Sub- Sub ( Cluster design)	MVON: 372	Military: In the Barracks and On the Homefront	Type 4
Case C2307								
G.2.3.026	230	x	250	0.06	Gang Label	MVON: 372.1	Called to Service	Type 4
G.2.3.027	230	x	200	0.05	Image credit			Type 4
G.2.3.028	535	x	385	0.21	Image (on wall)	i-2249	Image of Americans All	Type 9
G.2.3.029	250	x	180	0.05	Image (on wall)	i-2237	Image of Barracks life	Type 9
G.2.3.030	250	x	310	0.08	Image (on wall)	i-2594	Women working....	Type 9
G.2.3.031	340	x	255	0.09	Image (on wall)	i-2597	WWII Troops	Type 9
G.2.3.032	420	x	300	0.13	Gang Label	MVON: 372.2	Fighting to Belong	Type 4
Inc. with above	190	x	300	0.06	Image (on label)	i-2384	Image of Japanese American	Type 4
G.2.3.033	230	x	130	0.03	Image Credit		Image credit	Type 4
G.2.3.034	230	x	305	0.07	Image (in case)	i-2251	Image of Yankee Doodle Tan	Type 4
G.2.3.035	590	x	365	0.22	Image (on wall)	i-2243	Image of African American Unit WWII	Type 9
G.2.3.036	725	x	1020	0.74	Image (on wall)	i-2250	Image of Dorie Miller	Type 9
G.2.3.037	415	X	310	0.13	Image (on wall)	i-2244	Japanese American Unit WWII	
G.2.3.038	350	x	500	0.18	Image (on Wall)	i-2595	Volunteer Newspaper	Type 9



## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
G.2.3.039	700	x	440	0.31	Interactive instruction panel	Physical Interactive P2303	Tactile Dog Tags 8 x tactile dog tags identical to those in case	Type 10 (HPL)
G.2.3.040	2600	x	2150	5.59	Large Background Graphic (dog tag)			Type 1
Work								
G.2.3.041	260	x	300	0.08	Sub- Sub ( Cluster design)	MVON: 373	Work: In the Garment Industry	Type 4
Case C2310								
G.2.3.042	230	x	200	0.05	Gang Label (for Graphics)	MVON: 373.1	supports 6x images below	Type 4
G.2.3.043	330	x	240	0.08	Image (in case Pair 1)	i-2331	Image of No more Sweatshops	Type 4
G.2.3.044	360	x	240	0.09	Image (in case Pair 1)	i-2327	Image of Seamstress picket line 1910	Type 4
G.2.3.045	390	x	250	0.10	Image (in case Pair 2)	i-2332	Image of El Monte Sweatshop	Type 4
G.2.3.046	330	x	250	0.08	Image (in case Pair 2)	i-2571	Image of Division Street Tenement	Type 4
G.2.3.047	300	x	225	0.07	Image (in case Pair 3)	i-2333	Image of Aftermath of El Monte	Type 4
G.2.3.048	325	x	225	0.07	Image (in case Pair 3)	i-2572	Image of Aftermath of Shirtwaist Fire	Type 4
G.2.3.049	230	x	200	0.05	Gang Label	MVON: 373.2	History of Fighting for Change	Type 4
G.2.3.050	230	x	200	0.05	Gang Label	MVON: 373.3	Uniting for Rights (Juki)	Type 4
G.2.3.051	230	x	200	0.05	Take A Closer Look Graphic (In Work Case)	MVON: 373.4	18 Hour Days- Assoc. with Sewing machine roll of thread	Type 4
G.2.3.052	950	x	1900	1.81	Case Back Graphic			Type 4
Physical P2302								
G.2.3.053	216	x	279	0.06	Physical interactive flipbook 1		Work related Content	Type 10 (HPL)
G.2.3.054	216	x	279	0.06	Physical interactive flipbook 2		Work related Content	Type 10 (HPL)
Sports								
G.2.3.055	260	x	300	0.08	Sub- Sub ( Cluster design)	MVON: 374	Sports: On the Baseball Field	Type 4
G.2.3.056	230	x	200		Graphic Label	MVON: 374.1	Negro Leagues	Type 4
G.2.3.057	2100	x	1900		Image	i-2493	Stadium Bleachers Image of Negro leagues B/W	Type 4
G.2.3.058	230	x	300	0.07	Gang Label	MVON: 374.2	All- American Game	Type 4
G.2.3.059	125	x	250	0.03	Image	i-2472	Image of Baseball card (Musial)	Type 4
G.2.3.060	125	x	250	0.03	Image	i-2473	Image of Baseball card (Yastrzemski)	Type 4
G.2.3.061	125	x	150		Image	i-2475	Baseball card (Player TBC)	Type 4
G.2.3.062	230	x	450	0.10	Gang Label	MVON: 374.3	A Segregated Game	Type 4
Inc. with above	235	x	150	0.04	Image	i-2494	Image of Ticket	Type 4
G.2.3.063	180	x	235	0.04	Image	i-2481	Image of Program	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
G.2.3.063	125	x	180	0.02	Image	i-2477	Image of Baseball card (Leonard)	Type 4
G.2.3.064	125	x	180	0.02	Image	i-2478	Image of Baseball card (Crutchfield)	Type 4
G.2.3.065	125	x	180	0.02	Image	i-2480	Image of Baseball card (Player TBC)	Type 4
G.2.3.066	180	x	230	0.04	Image	i-2481	Image of Program	Type 4
G.2.3.067	230	x	200	0.05	Take A Closer Look Graphic (In Sports Case)	MVON: 374.4	Second Hand Equipment- Assoc. with Baseball Cleats	Type 4
G.2.3.068	680	x	1700	1.16	Case Back Graphic 1 (left)	i-2473	Enlargement of Yastrzemski	Type 4
G.2.3.069	680	x	1700	1.16	Case Back Graphic 2(right)	i-2615	Segregated Game Background	Type 4
Religion								
G.2.3.070	260	x	300	0.08	Sub- Sub ( Cluster design)	MVON: 375	Religion: Places of Worship	Type 4
G.2.3.071	230	x	200	0.05	Graphic Label	MVON: 375.1	Refugees and Relig. (Somali)	Type 4
G.2.3.072	540	x	350	0.19	Image	i-2581	Image of Somali Refugee (S. Dakota)	Type 4
G.2.3.073	470	x	200	0.09	Gang Label	MVON: 375.2	Departing Cuba	Type 4
Inc. with above	250	x	200	0.05	Image	i-2512	Image of Pedro Pan	Type 4
G.2.3.074	470	x	200	0.09	Graphic Label	MVON: 375.3	Faith and Community	Type 4
Inc. with above	250	x	200	0.05	Image	i-2097	Image Open Circle Service Oregon	Type 4
G.2.3.075	230	x	200	0.05	Gang Label	MVON: 375.4	Baptist Church	Type 4
G.2.3.076	450	x	300	0.14	Image	i-2589	Image of Union Missionary 1960	Type 4
G.2.3.077	230	x	200	0.05	Gang Label	MVON: 375.5	Hindu Temple Society of NA	Type 4
G.2.3.078	460	x	200	0.09	Image	i-2073	Image of Hindu temple Image	Type 4
G.2.3.080	230	x	200	0.05	Gang Label	MVON: 375.6	Muslim Community Center	Type 4
G.2.3.081	255	x	200	0.05	Image	i-2099	Image of Union Missionary 1960	Type 4
G.2.3.082	230	x	200	0.05	Gang Label	MVON: 375.7	Washington National Cathedral	Type 4
G.2.3.083	280	x	350	0.10	Image	i-2460	Image of Washington Cathedral	Type 4
G.2.3.084	230	x	200		Take A Closer Look Graphic (as part of Tactile exhibit P2304)	MVON: 375.8 / P2304	Manual Interactive / Flip Panels Assoc. with Replica	Type 10 (HPL)
G.2.3.085	1900	x	1900	3.61	Case Back Graphic			Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
<b>Section 4.0 Peopling the Expanding Nation</b>								
G.2.4.001	52 Cap height				Main section label. Dimensional lettering (35 characters)	MVON: 400	Peopling the Expanding Nation Intro Panel	Type 7
G.2.4.002	640	x	530	0.34	Main section label body text (screen print)			Type 1
G.2.4.003	2650	x	1450		Threshold Case Panel (Outside Case)	MVON: 410	Establishing the United States	Type 7
Case 2408								
G.2.4.004	230	x	200	0.05	Object Label	MVON: 410.1	Columbia Figure 1860's	Type 4
Case 2407								
G.2.4.005	230	x	200	0.05	Object Label	MVON: 410.2	Uncle Sam Figure 1900's	Type 4
Case 2408								
G.2.4.006	420	x	200	0.08	Sub- Sub section label	Awaiting script no	Envisioning The New Nation	Type 4
G.2.4.007	230	x	130	0.03	Object Label	Awaiting script no	Census Pitcher	Type 4
G.2.4.008	230	x	130	0.03	Object Label	Awaiting script no	Emblem Of America Pitcher	Type 4
G.2.4.009	230	x	200	0.05	Gang Label	Awaiting script no	Great Seal of The US...Diplomatic Medal	Type 4
G.2.4.010	400	x	400		Image	i-2526	Image of line drawing of proposed seal design	Type 4
Case 2401								
G.2.4.011	560	x	2400		Subsection label (non standard Size of Label placed to side of case)	MVON: 420	Out of Many	Type 2
G.2.4.012	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.1	Decorated Egg Ukrainian	Type 4
G.2.4.013	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.2	Brooch With Shamrocks	Type 4
G.2.4.014	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.3	Sleigh bell	Type 4
G.2.4.015	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.4	Burano Venetian Italian Lace	Type 4
G.2.4.016	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.5	Passover Plate Jewish	Type 4
G.2.4.017	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.6	Stirring Spoon French	Type 4
G.2.4.018	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.7	Hair Comb Mexican	Type 4
G.2.4.019	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.8	Icon, Russian	Type 4
G.2.4.020	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.9	Drinking Bowl Norwegian	Type 4
G.2.4.021	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.10	Fanner Basket African Am.	Type 4
G.2.4.022	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.11	Face Vessel African Am.	Type 4
G.2.4.023	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.12	Indian Corn (Prop)	Type 4
G.2.4.024	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.13	Sewing Awl - Tribe/ Nebraska	Type 4
G.2.4.025	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.14	Tankard, English	Type 4
G.2.4.026	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.15	Abacus Chinese	Type 4
G.2.4.027	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.16	Clog Shoe, Swedish	Type 4
G.2.4.028	230	x	90	0.02	Object Label (Object ID Label)	MVON: 420.17	Eagle, around 1850	Type 4
G.2.4.029	3000	x	1750	5.25	Case Back image	No number	E Pluribus Unum Eagle- illustration from photo of object	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if)	Materials
	W	x	H					
Case 2402								
G.2.4.030	560	x	2400	1.34	Subsection label (outside case)	MVON: 430	Pushed and Pulled-European Immigration	Type 2
G.2.4.031	420	x	200	0.08	Sub- subsection label (Centre of Case)	MVON: 431	Germans in the Midwest	Type 4
G.2.4.032	230	x	130	0.03	Graphic Label	MVON: 431.1	Glass Family Homestead	Type 4
G.2.4.033	1600	x	1050	1.68	Image	i-1401	Image of Homestead	Type 4
G.2.4.034	230	x	430	0.10	Gang Label	MVON: 431.2	The Peter Glass Family	Type 4
Inc. with above	230	x	230	0.05	Image	i-1404	Image of Peter Glass and Second Wife	Type 4
G.2.4.035	230	x	350	0.08	Image	i-1402	Image of Peter and Marian Glass	Type 4
G.2.4.036	450	x	300	0.14	Gang Label	MVON: 431.3	Bringing The Old World to...	Type 4
Inc. with above	220	x	300	0.07	Image	i-1981	Image of Peter Glass	Type 4
G.2.4.037	420	x	200	0.08	Sub- subsection label (Right of Case)	MVON: 432	Land of Opportunity	Type 4
G.2.4.038	230	x	200	0.05	Graphic Label	MVON: 432.1	English and German Card	Type 4
G.2.4.039	230	x	300	0.07	Image	i-1405	Immigrant land brochure	Type 4
G.2.4.040	230	x	130	0.03	Object Label	MVON: 432.2	Handbook for Immigrants	Type 4
G.2.4.041	230	x	130	0.03	Object Label	MVON: 432.3	Apron, Swedish 1800s	Type 4
G.2.4.042	230	x	130	0.03	Object Label	MVON: 432.4	Folk Sculpture, Polish	Type 4
G.2.4.043	230	x	130	0.03	Object Label	MVON: 432.5	Boxing banner, John Sullivan	Type 4
G.2.4.044	230	x	130	0.03	Object Label	MVON: 432.6	Presentation Pitcher	Type 4
G.2.4.045	420	x	200	0.08	Sub- subsection label (Left of Case)	MVON: 433	Indian Removal in the Midwest	Type 4
G.2.4.046	230	x	130	0.03	Gang Label	MVON: 433.1	Indian Delegates	Type 4
G.2.4.047	138	x	190	0.03	Image	i-1406	Image of Daguerreotype	Type 4
G.2.4.048	138	x	190	0.03	Image	i-1407	Image of Daguerreotype	Type 4
G.2.4.049	138	x	190	0.03	Image	i-1408	Image of Daguerreotype	Type 4
G.2.4.050	75	x	95	0.01	Image	i-1409	Image of Daguerreotype	Type 4
G.2.4.051	230	x	200	0.05	Gang Label	MVON: 433.2	Inequalities of Trade	Type 4
G.2.4.052	1230	x	1010	1.24	Image	i-1410	Image of Caitlin Painting	Type 4
G.2.4.053	230	x	400	0.09	Image	i-1412	Image of Ft. Gibson Scrapbook	Type 4
G.2.4.054	230	x	130	0.03	Object Label	MVON: 433.3	Ledger Drawing	Type 4
G.2.4.055	375	x	300	0.11	Gang Label	MVON: 433.4	Interactions between...	Type 4
Inc. with above	145	x	200	0.03	Image	i-1413	Image of Peter Doughty	Type 4
Inc. with above	145	x	100	0.01	Image	i-1414	Image of Peter Doughty's house	Type 4
G.2.4.056	230	x	470	0.11	Image Label	MVON:433.5	Chief Aghosa, 1800	Type 4
Inc. with above	230	x	270	0.06	Image	i-2186	Image of Chief Aghosa	Type 4
G.2.4.057	1550	x	1700	2.64	Contextual Image			Type 4
G.2.4.058	1550	x	1900	2.95	Contextual Image			Type 4
G.2.4.059	1900	x	2400	4.56	Purple Background			Type 4
Case 2404								
G.2.4.060	560	x	2400	1.34	Subsection label (outside case)	MVON: 440	Western Migration to Mississippi	Type 2
G.2.4.061	230	x	90	0.02	Image Label (credit)	MVON: 440.1	Mississippi River	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
G.2.4.062	670	x	200	0.13	Sub- subsection label (Left of Case)	MVON: 441	The Slave Trade	Type 4
Inc. with above	250	x	200	0.05	Image	I-1428	slaves in the cotton field	Type 4
G.2.4.063	230	x	130	0.03	Object Label	MVON: 441.1	Steamboat Model	Type 4
G.2.4.064	230	x	250	0.06	Gang Label	MVON: 441.2	Virginia to Louisiana	Type 4
G.2.4.065	300	x	200	0.06	Image	i-1425	Image of Alexandra Slave Market	Type 4
G.2.4.066	300	x	260	0.08	Image	i-1426	Image of Slave Market Interior	Type 4
G.2.4.067	700	x	250	0.18	Gang Label	MVON: 441.3	Black New Orleans	Type 4
Inc. with above	185	x	250	0.05	Image	i-1985	Image of Latrobe Database	Type 4
Inc. with above	285	x	250	0.07	Image	i-1429	Image of Latrobe Market Square	Type 4
G.2.4.068	385	x	200	0.08	Gang Label	MVON: 441.4	Slavery Spreads West	Type 4
Inc. with above	155	x	200	0.03	Image	i-1422	Image of Hiram Wilson	Type 4
G.2.4.069	420	x	200	0.08	Sub- subsection label (Middle of Case)	MVON: 442	Migration of Free Frank Mc.	Type 4
G.2.4.070	230	x	250	0.06	Gang Label	MVON: 442.1	Free Frank Mc. Family	Type 4
G.2.4.071	305	x	255	0.08	Image	i-1416	Image of African American Man / Horse	Type 4
G.2.4.072	130	x	190	0.02	Image	i-1417	Image of Lucy McWorter (Wife)	Type 4
G.2.4.073	130	x	190	0.02	Image	i-1418	Image of Lucy McWorter (Daughter)	Type 4
G.2.4.074	130	x	190	0.02	Image	i-1419	Image of Solomon McWorter	Type 4
G.2.4.075	130	x	190	0.02	Image	i-1420	Image of Marie Thomas	Type 4
G.2.4.076	230	x	170	0.04	Graphic Label	MVON: 442.2	Receipt for Purchase	Type 4
Inc. with above	230	x	140	0.03	Image	i-1424	Image of Charlotte Cowan receipt	Type 4
G.2.4.077	230	x	90	0.02	Object Label	MVON: 442.3	Civil War Uniform Button	Type 4
G.2.4.078	230	x	130	0.03	Object Label	MVON: 442.4	Chair- Made By Solomon	Type 4
G.2.4.079	230	x	90	0.02	Object Label	MVON: 442.5	Wash Basin and Pitcher	Type 4
G.2.4.080	420	x	200	0.08	Sub- subsection label (Right of Case)	MVON: 443	The Town of New Philadelphia.	Type 4
G.2.4.081	925	x	700	0.65	Image	i-0562	Image (painting) of New Phil.	Type 4
G.2.4.082	260	x	270	0.07	Image	i-1421	Image (map)of New Philadelphia	Type 4
G.2.4.083	230	x	250	0.06	Gang Label	MVON: 443.1	The Integrated Town of NP.	Type 4
G.2.4.084	420	x	200	0.08	Sub- subsection label (Right of Case)	MVON: 444	Religious and Utopian...	Type 4
G.2.4.085	230	x	130	0.03	Object Label	MVON: 444.1	Book of Mormon	Type 4
G.2.4.086	230	x	500	0.12	Gang Label	MVON: 444.2	Mormons in Nauvoo	Type 4
Inc. with above	230	x	250	0.06	Image	i-1430	Image of Joseph Smith	Type 4
G.2.4.087	230	x	200	0.05	Gang Label	MVON: 444.3	Mormons Driven Out	Type 4
G.2.4.088	440	x	240	0.11	Image	i-1436	Image of Mormon Temple	Type 4
G.2.4.089	230	x	200	0.05	Gang Label	MVON: 444.4	The Icarian Community...	Type 4
G.2.4.090	230	x	200	0.05	Gang Label	MVON: 444.5	Immigrant Icarians	Type 4
G.2.4.091	120	x	160	0.02	Image	i-1431	Icarian Passport	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
G.2.4.092	230	x	250	0.06	Gang Label	MVON: 444.6	Icarians Becoming Americans	Type 4
G.2.4.093	600	x	480	0.29	Image	i-1433	Image of Nauvoo Under...	Type 4
G.2.4.094	230	x	320	0.07	Image	i-1435	Image of Nauvoo 4th July N..	Type 4
G.2.4.095	1000	x	1350	1.35	Case Back Graphics (Mississippi river 1 of 3)	I-1227 (part of)	Case back	Type 4
G.2.4.096	1450	x	2400	3.48	Case Back Graphics (Mississippi river 2 of 3)	I-1227 (part of)	Case back	Type 4
G.2.4.097	880	x	1550	1.36	Case Back Graphics (Mississippi river 3 of 3)	I-1227 (part of)	Case back	Type 4
<b>Case 2403</b>								
G.2.4.098	560	x	2400	1.34	Subsection Label (inside case)	MVON: 450	Incorporating Western Lands	Type 4 (inside case)
G.2.4.099	750	x	200	0.15	Sub- subsection Label (Left of Case)	MVON: 451	Incorporating Mexican Calif.	Type 4
Inc. with above	330	x	200	0.07	Image	i-2188	Image of Rancho and Mou.	Type 4
G.2.4.100	230	x	300	0.07	Gang Label	MVON: 451.1	The Del Valle Family	Type 4
G.2.4.101	185	x	300	0.06	Image	i-1443	Image of Ysabel	Type 4
G.2.4.102	195	x	300	0.06	Image	i-1441	Image of Ygnacio	Type 4
G.2.4.103	300	x	175	0.05	Image	i-1990	Image of Verandah with Daughters	Type 4
G.2.4.104	445	x	300	0.13	Image	i-1991	Image of house with Family	Type 4
G.2.4.105	230	x	300	0.07	Gang Label	MVON: 451.2	Rancho Cumulos	Type 4
G.2.4.106	350	x	300	0.11	Image	i-1440	Image of Rancho San Fran	Type 4
G.2.4.107	185	x	300	0.06	Image	i-1445	Image of Survey Doc	Type 4
G.2.4.108	230	x	315	0.07	Image	i-1444	Image of Branding Doc	Type 4
G.2.4.109	480	x	250	0.12	Gang Label	MVON: 451.3	Maintaining Califonio Culture	Type 4
Inc. with above	250	x	250	0.06	Image	i-1446	Image of Chapel	Type 4
G.2.4.110	230	x	130	0.03	Object Label	MVON: 451.4	Tatavism Sandstone Bowl	Type 4
G.2.4.111	1080	x	200	0.22	Sub- subsection Label	MVON: 452	Gold Rush and Peopling Calif.	Type 4
Inc. with above	330	x	200	0.07	Image	i-1449	Image of Gold Rush Miners	Type 4
Inc. with above	330	x	200	0.07	Image	i-1450	Image of San Francisco	Type 4
G.2.4.112	390	x	200	0.08	Gang Label	MVON: 452.1	A Connecticut Gold Miner	Type 4
Inc. with above	160	x	200	0.03	Image	i-1448	Image of A Letter	Type 4
G.2.4.113	230	x	250	0.06	Gang Label	MVON: 452.2	Chinese in California	Type 4
G.2.4.114	230	x	155	0.04	Image	i-1451	Image of Chinese Railroad	Type 4
G.2.4.115	500	x	630	0.32	Image	i-1454	Image of Chinatown	Type 4
G.2.4.116	230	x	155	0.04	Image	i-1453	Peters Print of Chinese	Type 4
G.2.4.117	230	x	200	0.05	Gang Label	MVON: 452.3	Chinese Exclusion	Type 4
G.2.4.118	560	x	2400	1.34	Subsection Label (inside case)	MVON: 460	Incorporating Nez Perce	Type 4
G.2.4.119	745	x	200	0.15	Sub- subsection Label	MVON: 461	Niimiipu- The Nez Perce	Type 4
Inc. with above	145	x	200	0.03	Image	i-2376	Chief Tamason	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
Inc. with above	180	x	200	0.04	Image	i-2378	Rabbit Skin of the Nez Perce	Type 4
G.2.4.120	230	x	440	0.10	Gang Label	MVON: 461.1	The Nez Perce and the Horse	Type 4
Inc. with above	230	x	190	0.04	Image	i-1531	Image of Nez Perce Horses	Type 4
G.2.4.121	410	x	300	0.12	Gang Label	MVON: 461.2	Chief Joseph's Surrender	Type 4
Inc. with above	180	x	300	0.05	Image	i-1530	Image of Chief Joseph	Type 4
G.2.4.122	440	x	170	0.07	Image	i-1533	Image of Surrender	Type 4
G.2.4.123	650	x	430	0.28	Image	i-1532	Image of Reservation	Type 4
G.2.4.124	1160	x	2400	2.78	Case Back Graphics			Type 4
G.2.4.125	1760	x	2400	4.22	Case Back Graphics			Type 4
G.2.4.126	1150	x	2400	2.76	Case Back Graphics			Type 4
Case 2405								
G.2.4.127	560	x	2400	1.34	Subsection Label (inside case)	MVON: 470	Expansion Beyond the Contin.	Type 4
G.2.4.128	230	x	90	0.02	Graphic ID	MVON: 470.1	image of Diamond Head Oahu Hawai'i	Type 4
G.2.4.129	1460	x	2400	3.50	Image	i-1514	Image of Diamond Head	Type 4
G.2.4.130	420	x	200	0.08	Sub- subsection Label	MVON: 471	From Hawaiian Nation to...	Type 4
G.2.4.131	230	x	640	0.15	Gang Label	MVON: 471.1	Native Hawaiian Culture and..	Type 4
Inc. with above	230	x	290	0.07	Image	i-1511	Image of King kalakaua	Type 4
G.2.4.132	255	x	170	0.04	Image	i-1517	Hula Dancers with Drum	Type 4
G.2.4.133	580	x	355	0.21	Image	i-1513	Canoe at Wahiawa	Type 4
G.2.4.134	230	x	595	0.14	Gang Label	MVON: 471.2	American Interests in Hawai'i	Type 4
Inc. with above	230	x	175	0.04	Image	i-2575	USS Boston Landing Force	Type 4
G.2.4.135	430	x	265	0.11	Image	i-1510	Hawaiian Pineapple plantation	Type 4
G.2.4.136	430	x	290	0.12	Image	i-1515	Whaling off islands of Hawaii...	Type 4
G.2.4.137	420	x	200	0.08	Sub- subsection Label	MVON: 472	Acquiring Puerto Rico From..	Type 4
G.2.4.138	230	x	90	0.02	Graphic ID	MVON: 472.1	With Governors palace image	Type 4
G.2.4.139	930	x	2400	2.23	Image (caseback)	i-1523	Image of Puerto Rico Postcard	Type 4
G.2.4.140	230	x	300	0.07	Gang Label	MVON: 472.2	Creole Culture In Puerto Rico	Type 4
G.2.4.141	750	x	550	0.41	Image	i-1524	Image of El Velorio	Type 4
G.2.4.142	230	x	300	0.07	Gang Label	MVON: 472.3	An American Commonwealth	Type 4
G.2.4.143	450	x	300	0.14	Image	i-2189	Image of Plantation Cutters	Type 4
G.2.4.144	175	x	165	0.03	Image	i-1529	Image Puerto Rican Military	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if)	Materials
	W	x	H					
<b>Section 5.0 Creating Community: Chicago &amp; Los Angeles 1900- 1965</b>								
G.2.5.001	52 Cap height				Main section label. Dimensional lettering (47 characters)	MVON: 500	Creating Community: Chicago to Los Angeles 1900- 1965	Type 7
G.2.5.002	630	x	565	0.36	Main section label body text (screen print)			Type 1
G.2.5.003	560	x	2400	1.34	Subsection Label (between cases)	MVON: 510	Chicago- City of Neighborhoods	Type 4
<b>Case 2501</b>								
G.2.5.004	1270	x	2145	2.72	Image	i-2579	Image of Chicago Skyline	Type 4
G.2.5.005	600	x	1300	0.78	Chicago Skyline			Type 4
G.2.5.006	1050	x	1900	2.00	Chicago Skyline			Type 4
G.2.5.007		x			Graphic ID	MVON: 510.1	Chicago 1931	Type 4
G.2.5.008	420	x	200	0.08	Sub- subsection Label	MVON: 511	Urban Landscape takes Sh..	Type 4
G.2.5.009	230	x	200	0.05	Gang Label	MVON: 511.1	Pilsen	Type 4
G.2.5.010	230	x	500	0.12	Gang Label	MVON: 511.2	Czech Pilsen	Type 4
Inc. with above	230	x	250	0.06	Image	i-2278	Portrait (photo) of Francis N.	Type 4
G.2.5.011	205	x	150	0.03	Image (In Prop Frame)	i-2280	Pizensky Sokol Portrait	Type 4
G.2.5.012	95	x	150	0.01	Image (in Prop Frame)	i-2279	Old Settlers Association	Type 4
G.2.5.013	230	x	250	0.06	Gang Label	MVON: 511.3	Mexican Pilsen Emerges	Type 4
G.2.5.014	340	x	450	0.15	Image	i-2284	Blanco's Family Market	Type 4
G.2.5.015	340	x	230	0.08	Image	i-2281	Children Watching Parade	Type 4
G.2.5.016	370	x	275	0.10	Image	i-2282	Vendor's cart	Type 4
G.2.5.017	370	x	245	0.09	Image	i-2283	Senate Theatre	Type 4
G.2.5.018	435	x	250	0.11	Gang Label	MVON: 511.4	Creating a New Chinatown	Type 4
Inc. with above	305	x	250	0.08	Image	i-2295	Architects rendering of On Leong	Type 4
G.2.5.019	230	x	465	0.11	Gang Label	MVON: 511.5	Chinese Immigration	Type 4
Inc. with above	230	x	265	0.06	Image	i-2296	Portrait of Kung	Type 4
G.2.5.003	335	x	670	0.22	Image	i-2297	Paper Son Training Book	Type 4
G.2.5.021	230	x	430	0.10	Gang Label	MVON: 511.6	Lake View- Swede town	Type 4
Inc. with above	230	x	230	0.05	Image	i-2300	Julian Theatre Program	Type 4
<b>CASE 2502</b>								
G.2.5.022	420	x	200	0.08	Sub- subsection Label	MVON: 512	Bronzeville	Type 4
G.2.5.023	795	x	250	0.20	Gang Label	MVON 512.1	Mecca Flats	Type 4
Inc. with above	275	x	250	0.07	Image	i-2289	Mecca Flats Atrium	Type 4
Inc. with above	290	x	250	0.07	Image	i-2290	Children in Mecca Flats	Type 4
G.2.5.024	230	x	300	0.07	Gang Label	MVON 512.2	Gospel Music in Bronzeville	Type 4
G.2.5.025	375	x	300	0.11	Image	i-2286	Pilgrim Baptist Church	Type 4
G.2.5.026	190	x	300	0.06	Image	i-2287	Georgia Tom	Type 4
G.2.5.027	230	x	300	0.07	Image	i-2288	Gospel Sheet Music	Type 4
G.2.5.028	565	x	250	0.14	Gang Label	MVON 512.3	Developing Bronzeville	Type 4
Inc. with above	175	x	250	0.04	Image	i-2291	Jordan Building	Type 4
Inc. with above	160	x	250	0.04	Image	i-2293	Joe Jordan Portrait	Type 4



## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
G.2.5.029	330	x	450	0.15	Image	i-2294	Pekin Rag Intermezzo	Type 4
G.2.5.030	2300	x	2400	5.52	Case Back Graphic			Type 4
Hull House Uncased								
G.2.5.031	1350	x	1000	1.35	Sub- subsection Label (As a table surface)	MVON: 513	Near West Side- Easing the..	Type 10 (HPL)
Inc. with above	410	x	340	0.14	Image	i-2590	Playground Ball	Type 10 (HPL)
Inc. with above	Part of Sub Section		Part of Sub Section		Gang Label	MVON 513.1	Jane Addams, Founder and..	Type 10 (HPL)
Inc. with above	350	x	230	0.08	Image	i-1825	Image of Jane Adams	Type 10 (HPL)
Inc. with above	300	x	185	0.06	Image	i-1824	Image of Hull House	Type 10 (HPL)
Inc. with above	Part of Sub Section		Part of Sub Section		Interactive Label	MVON 513.2	Hull House Map and Papers	Type 10 (HPL)
G.2.5.032	216	x	279	0.06	Physical Interactive Pages	M2501	Hull House Flip Book (maps)	Type 10 (HPL)
G.2.5.033	560	x	2400	1.34	Subsection Label (In LA section)	MVON: 520	Los Angeles- City of Promise	Type 2
G.2.5.034a	770	x	2300	1.77	Image	i-1671	Aerial Image of Los Angeles	Type 2 (inside structure)
G.2.5.034b	1010	x	2300	1.77	Image	i-1671	Aerial Image of Los Angeles	Type 2 (outside structure)
G.2.5.035	1150	x	1750	2.01	Image	i-1673	Sign on StoreFront	Type 2 (outside case)
G.2.5.036	230	x	90	0.02	Image Caption (attached)		Caption for images 1671 and 1673 above	Type 4
G.2.5.037	715	x	200	0.14	Sub- subsection Label	MVON: 521	La Plaza- Where Diverse...	Type 4
Inc. with above	295	x	200	0.06	Image	i-1670	La Plaza / City Hall	Type 4
G.2.5.038	965	x	200	0.19	Sub- subsection Label	MVON: 522	Coming Together in La Plaza	Type 4
Inc. with above	295	x	200	0.06	Image	i-1672	In Front of Store	Type 4
Inc. with above	250	x	200	0.05	Image	i-1675	Women	Type 4
G.2.5.039	230	x	130	0.03	Object Label	MVON: 522.1	Outdoor Neon Marquee sign	Type 4
Case C2503								Type 4
G.2.5.040	230		200	0.05	Gang Label	MVON 522.2	Dining At La Esperanza	Type 4
Case C2504								Type 4
G.2.5.041	900	x	200	0.18	Sub- subsection Label	MVON: 523	Japanese Americans in Los..	Type 4
Inc. with above	290	x	200	0.06	Image	i-1676	Shishima Child in Store	Type 4
Inc. with above	190	x	200	0.04	Image	i-2074	Shishima Family Internment..	Type 4
G.2.5.042	230	x	130	0.03	Object Label	MVON: 523.1	Internment Camp ID tag	Type 4
G.2.5.043	230	x	130	0.03	Object (graphic) Label	MVON: 523.2	Executive Order 9066 instruct..	Type 4
G.2.5.044	230	x	140	0.03	Image	i-2470	Executive Order 9066 instruct.poster	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if)	Materials
	W	x	H					
Physical 2502								
G.2.5.045	1010	x	470		Interactive Label	MVON: 524	Film Industry	Type 10 (HPL)
G.2.5.046	216	x	279	0.06	Flipbook Pages	No Ref given	image in flipbook Headshot	Type 10 (HPL)
G.2.5.047	216	x	279	0.06	Flipbook Pages	No Ref given	image in flipbook Headshot	Type 10 (HPL)
G.2.5.048	216	x	279	0.06	Flipbook Pages	No Ref given	image in flipbook Headshot	Type 10 (HPL)
G.2.5.049	216	x	279	0.06	Flipbook Pages	No Ref given	image in flipbook Headshot	Type 10 (HPL)
G.2.5.050	216	x	279	0.06	Additional Pages TBC	No Ref given	Placeholder page if required	Type 10 (HPL)
<b>Section 6.0 New Americans, Continuing Debates</b>								
G.2.6.001	52 Cap height				Main section label. Dimensional lettering (39 characters)	MVON: 600	New Americans, Continuing Debates, 1965-2000	Type 7
G.2.6.002	610	x	570	0.35	Main section label body text (screen print)			Type 1
G.2.6.004	700		200	0.14	Sub Sub section label	MVON 610	A New Era of Immigration: The Hart-Celler Act 1965	Type 2
Inc. with above	included in above		included in above		Graphic Label	610.1	President Lyndon B Johnson signing...Add to Sub Subsection Label (610.2) above	Type 2
Inc. with above	140	x	200	0.03	Image	i-2070 (full)	LBJ in front of Statue of Liberty	Type 2
Inc. with above	140	x	200	0.03	Image	i-2070 (Detail)	Detail of LBJ in front of Statue of Liberty	Type 2
Case C2601								
G.2.6.005	560	x	2400	1.34	Subsection Label (Inside Case)	MVON: 620	Changing Face of the American South	Type 4
G.2.6.006	230	x	90	0.02	Graphic Label	MVON: 620.1	New Immigrants gather at...	Type 4
G.2.6.007	300	x	200		Image	i-2077	Image of Changing Face of South group	Type 4
G.2.6.008	1800	x	2400	4.32	Image	i-1689	Image of No soccer allowed sign	Type 4
G.2.6.009	960	x	200	0.19	Sub- subsection Label	MVON: 621	The Fugees Soccer Team	Type 4
Inc. with above	270	x	200	0.05	Image	i-1684	Image of Team Photo (on field)	Type 4
Inc. with above	270	x	200	0.05	Image	i-1685	Image of Practice Image	Type 4
G.2.6.010	230		345	0.08	Gang Label	MVON 621.1	Kickin' It	Type 4
Inc. with above	230	x	145	0.03	Image	i-1688	Image of Kids Playing Soccer	Type 4
G.2.6.011	525	x	200	0.11	Gang Label	MVON 621.2	Game Changers	Type 4
Inc. with above	295	x	200	0.06	Image	i-2080	Image of Coach With Kids (yellow tops in front of Bus)	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
Case C2602 (costume rotating case)								
G.2.6.012	560	x	2400	1.34	Subsection Label (Placed Outside Case)	MVON: 630	Embracing Americas Cultural Diversity	Type 4
G.2.6.013	230	x	350	0.08	Gang Label	MVON 630.1	Heritage in Dress	Type 4
Inc. with above	included in above	x			Image	i-1668	Carnival Costume Performance	Type 4
Inc. with above	included in above	x			Image	i-2586	Image of Sweet Honey and The Rock	Type 4
G.2.6.014	1800	x	2400	4.32	Case Back Graphic			
LONG WALL WITH FENCE								
G.2.6.015	560	x	2400	1.34	Subsection Label (In front of Fence)	MVON: 640	Southwest Borderlands-Confluence and Conflict	Type 2
G.2.6.016	4700	x	4300	20.21	Map Image	MVON 640.1 / HSD DESIGN	Image of Southwestern Borderlands NO IMAGE GIVEN	Type 1 with 3 Dimensional Line applied over map- 1 Line
G.2.6.017	230	x	90	0.02	Graphic Label	MVON: 640.1	New Immigrants gather at...	Type 4
Case C2604								
G.2.6.018	575	x	200	0.12	Sub- subsection Label	MVON: 641	Border Debates	Type 4
Inc. with above	155	x	200	0.03	Image	i-2081	Image of Border Fence-Building a wall along our Mexican Border 1924	Type 4
G.2.6.019	230	x	200	0.05	Gang Label	MVON 641.1	The Border Patrol	Type 4
G.2.6.020	230	x	200	0.05	Gang Label	MVON 641.2	Lost in Transit	Type 4
G.2.6.021	230	x	130	0.03	Object Label	MVON: 541.3	Border Fence between Mexicali and Calexico NOTE: May need additional image credit for Border Fence image 640.1 Above	Type 4
Case C2605								
G.2.6.022	420	x	200	0.08	Sub- subsection Label	MVON: 642	Dynamic Border Culture	Type 4
G.2.6.023	230	x	200	0.05	Object Label	MVON: 642.1	La Virgen	Type 4
G.2.6.024	230	x	350	0.08	Gang Label	MVON 642.2	Accordion Used By Flaco	Type 4
Inc. with above	230	x	150	0.03	Image	i-1701	Image of Accordion in use	Type 4
G.2.6.025	230	x	330	0.08	Gang Label	MVON 642.3	Tarima and Shoes Used by Martha...	Type 4
Inc. with above	230	x	130	0.03	Image	i-1702	Image of Martha Gonzalez and Band	Type 4
G.2.6.026	230	x	350	0.08	Gang Label	MVON 642.4	Drum made and Used by Arnold..	Type 4
Inc. with above	230	x	150	0.03	Image	i-1704	Image of Drum being used in Easter Precession	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
G.2.6.027	230	x	530	0.12	Gang Label	MVON 642.5	Violin Made by Cirilo Guana..	Type 4
Inc. with above	230	x	330	0.08	Image	i-1703	Image of Cirilo Guana playing a folk Violin	Type 4
Case C2606								
G.2.6.028	560	x	2400	1.34	Subsection Label (In Case)	MVON: 650	Transnational Lives	Type 4
G.2.6.029	4050	x	2400	9.72	Image	No Ref.	World Map with routes marked Between the United States showing Migration routes. NOTE: US in centre-India on the Right, Philippines on the Left	Type 4 with 3 Dimensional Line applied over map- assume 10 Lines
G.2.6.030	230	x	200	0.05	Image Label	MVON: 650.1	Map of Routes Between the United States and Philippines and India	Type 4
G.2.6.031	420	x	200	0.08	Sub- subsection Label	MVON: 651	Remittances	Type 4
G.2.6.032	230	x	130	0.03	Object Label	MVON: 651.1	Western Union Sign (2040)	Type 4
G.2.6.033	230	x	300	0.07	Gang Label	MVON: 651.2	International Air Travel	Type 4
G.2.6.034	230	x	130	0.03	Gang Label	MVON 651.3	The BalikBayan Box- an International Care Package	Type 4
G.2.6.035	420	x	200	0.08	Sub- subsection Label	MVON: 652	Family Here and There	NOTE: This info marked in script as being in case 2609- this is a script error- should be part of 2606 above
G.2.6.036	495	x	200	0.10	Gang Label	MVON 652.1	The Lares family	Type 4
Inc. with above	265	x	200	0.05	Image	i-1770	Image of Father working US	Type 4
Inc. with above	500	x	260	0.13	Image	i-1769	Image of Young Jenny	Type 4
G.2.6.037	400	x	250	0.10	Gang Label	MVON: 652.2	Finding their way	Type 4
Inc. with above	170	x	125	0.02	Image	i-1766	Image of Father (in corridor)	Type 4
Inc. with above	170	x	125	0.02	Image	i-1767	Image of Children with Bag	Type 4
G.2.6.038	230	x	250	0.06	Gang Label	MVON: 652.3	Staying in Touch	Type 4
G.2.6.039	420	x	200	0.08	Sub- subsection Label	MVON: 653	Working Across Nations	Type 4
G.2.6.040	455	x	300	0.14	Gang Label	MVON: 653.1	Transnational Work	Type 4
Inc. with above	225	x	300	0.07	Image	i-2102	Image of Mr. Vattikuti receiving award	Type 4
G.2.6.041	230	x	200	0.05	Object / Graphic (Gang) Label	MVON: 653.2	Robotic Arm	Type 4
G.2.6.042	500	x	250	0.13	Image	i-2103	Image of robotic arm at work	Type 4
G.2.6.043	230	x	520	0.12	Object / Graphic (Gang) Label	MVON: 653.3	Lab coat (Dr Mani Menon)	Type 4
Inc. with above	230	x	320	0.07	Image	i-2089	Image of Dr Mani Menon	Type 4
G.2.6.044	230	x	200	0.05	Gang Label	MVON: 653.4	Giving Back at Home and Abroad	Type 4
Case C2603								
G.2.6.045	420	x	200	0.08	Sub- subsection Label	MVON: 660	Marching With Liberty	Type 4

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm)			SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
	W	x	H					
G.2.6.046	420	x	300	0.126	Image	i-1669	Image of coalition workers protesting for higher wages	Type 4
G.2.6.047	230	x	130		Image Label	MVON: 660.1	Image credit for image i-1669	Type 4
G.2.6.048	230	x	130	0.03	Object Label	MVON: 660.2	Immokalee Statue of Liberty by Katherine Rodriguez, 2000	Type 4
<b>Section 7.0 What does America sound like?</b>								
G.2.7.001	560	x	2400	1.34	Sub section label	MVON: 700	What Does America Sound Like?	Type 2
G.2.7.002		x			Backdrop Graphics TBC			TBC
G.2.7.003	230	x	200	0.05	Credit label			Type 2
						No	Image Credit Label	
<b>Section 8.0 Conclusion / Outro</b>								
G.2.8.001	2680	x	1450		Main section label	MVON: 800	Conclusion	Type 7
G.2.8.002	2680	x	1450		Main Statement Text		Conclusion	Type 1
G.2.8.002	2680	x	1450		Backdrop Graphics TBC		Conclusion	TBC

### Materials Glossary

#### Type 1 - Latex Wallcovering

DNA DW11 with Guardian coating

Type 1

#### Type 2 - Wrap mounted digital print 18mm

Matt laminated Lambda print, wrap mounted to 18mm FR Medite/MDF

Type 2

#### Type 3 - Wrap mounted digital print sign blank

Matt laminated Lambda print, wrap mounted to .080 sign blank

Type 3

#### Type 4 - Digital print 5mm acrylic

Matt laminated Lambda print, wrap mounted to 5mm acrylic

Type 4

#### Type 5 - Digital print 2mm acrylic 10mm acrylic sandwich

Lambda print, optically mounted to the reverse of 2mm non glare acrylic mounted to 10mm white acrylic

Type 5

#### Type 6 - Photographic Backlit Diffused Transparency/Duratrans

Photographic Backlit Diffused Transparency optically mounted to the reverse of 2mm non glare acrylic

Type 6

#### Type 7 - 3D letters

Laser-cut Fret-cut letters spray painted 5mm acrylic. Edges to be finished and sprayed

Type 7

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm) W x H	SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
<b>Type 8 - Illuminated 3D letters</b>						Type 8
Laser-cut Fret-cut letters spray painted 18mm acrylic. Edges to be finished and sprayed and backlit see reference						
<b>Type 9 - Wrap mounted digital print 12mm</b>						Type 9
Matt laminated Lambda print, wrap mounted to 12mm FR Medite/MDF						
<b>Type 10 - DHPL</b>						Type 10
Digitally Printed High pressure laminate						
<b>Type 11 - Vinyl-cuts</b>						Type 11
Vinyl cut lettering						
<b>Type 12 - Direct print</b>						Type 12
Direct digital print onto specified substrate						
<b>Type 13 - 2mm non glare</b>						Type 13
Lambda print, optically mounted to the reverse of 2mm non glare acrylic						

### General Requirements

1. All materials and services to be fit for intended purpose
2. All materials and services to conform to relevant national quality standards as appropriate
3. All materials to be used in conjunction with manufacturers' recommended stipulations
4. All permanent fixed works to conform to fire code unless otherwise stated.
5. All material selection and alternate services to be executed in accordance with ADA
6. All national and local regulations prevail
7. All material to be free from defects and distortion
8. All sharp edges to be removed unless otherwise specifically stated. In areas of extreme exposure between (0 and 1800mm ffl) all edges and corners to be rounded to a minimum of 6mm in radius
9. All reveals to be finished as appropriate
10. All goods to be inspected and correctly packed and labeled prior to arriving on site
11. All site works / activities are to be supervised by a competent person and assessed and signed off by a qualified person
  - **Competent person:** a person who is capable of identifying existing and predictable hazards in the workplace and who is authorized to take prompt corrective measures to eliminate them.
  - **Qualified person:** a person who by possession of a recognized degree or certificate of professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.
12. All fixings into historic buildings to confirm to listed buildings consent and be approved in writing prior to any site activity.
13. All printed graphics to be matt sealed in public access areas unless otherwise specifically stated.
14. All wrapped edges to overlap the rear the substrate by min 25mm with corners neatly folded.

### Print production

1. All digital print to be a minimum of 600 dpi
2. All digital prints to be matt seal laminated unless otherwise specifically stated.
3. All digital prints to be printed in maximum widths of 1470mm

## Graphics List For: NMAH-2W - Many Voices, One Nation

GP No.	Dimensions (mm) W x H	SQM	Content / Title	Script / Image Ref	Content (This column can be hidden if	Materials
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**Sheet Material Inc. Medite / Plywood (substrates)**

1. All sheet material to be handled and stored in accordance with manufacturers' specification
2. All reveals sealed against moisture ingress at least 200mm from finished floor level
3. All joints to be glued and screwed and filled and finished to manufacturers' specification
4. All wood to be obtained from sustainable sources
5. All sheet material used for graphics to be supplied free from edge details of fixing brackets until after the graphic finish has been applied

**Wood products (edging)**

1. All wood to be free from knot splits and deflection (warping)
2. All wood product to be suitably treated where exposed to moisture for prolonged periods
3. All graining to run long grain unless otherwise stated
4. All wood to be obtained from sustainable sources

**Steel (edging)**

1. All non-stainless material to be supplied finished in Epoxy powder coat unless otherwise specifically stated
2. All welded joints to be dressed and cleaned back prior to final finishing

**Glass**

1. All glass to be either toughened or laminated safety glass
2. All toughened glass to be encapsulated in a suitably profiled metal or wood frame
3. For specific display case glazing see case specification
4. All large format glazing exposed to the general public to include the appropriate decals at eye level

**Laminates**

1. All laminates to be suitably bonded and balanced
2. All edges to be lipped
3. All grain / pattern direction to be clarified if not specified

**Decoration / Finishing**

1. All surfaces to be appropriately prepared and primed prior to finishing
2. All manufacturers recommended curing times to be observed, respected and accounted for in the finishing of materials
3. Final finishes to be free from any visible defects at a distance of no more than 1 meter
4. All exposed finishes to be selected from only durable sources
5. All samples to be supplied in a format of 300mm x 300mm minimum for plain and for patterned finishes to include pattern repeats in both directions

**Polycarbonate / Plexi glass / Acrylic**

1. All edges to be polished where visible
2. All large format clear screening exposed to the general public to include the appropriate decals at eye level
3. All plastics to be fire retardant.
4. Acrylic not to be used in sections greater than 100 sqft.



#### 4.0 Physical Interactive List





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Client: **Smithsonian Institution**  
 Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
 Project No.: **1403109**  
 Our ref: **9961-5a-MVON-Interactives Outline Specification**  
 Revision: **C**

Date: **March 14, 2016**  
 Distribution: **Kathryn Campbell, Hal Aber, Harry Rubenstein (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis (hsd)**

### Physical Interactives Outline Specification For: NMAH-2W - Many Voices, One Nation

Exhibit Number	Exhibit Name	Drawing Reference	Location / Position in Gallery	Description	Exhibit Type	Performance Specification	Development Notes	Information Request from Client	Supply Cost	Install Cost
<b>0-Intro / Outro</b>										
<b>Section 1.0 MANY VOICES ONE NATION</b>										
<b>Section 2.0 UNSETTLING THE CONTINENT</b>										
<b>Section 3.0 CENTRAL WALL (VOICES OF DEBATE) AND CLUSTERS (PLACES OF NEGOTIATION)</b>										
P2301	What Should An American Classroom Look Like?		Education Cluster	Simple physical interactive game play-on screen based which allows children to build their own classroom. • “What should an American classroom look like?” is a manual interactive that allows visitors to build their own classroom by using a magnetized pen to move flat, magnetized pieces under plexiglass into a generic classroom scene. (see reference images.) Through this visitors will make decisions about whether they think a classroom should contain bilingual materials, religious objects, patriotic symbols, etc.	Interactive Game	SKEX-06	Refer to Physical Interactive Brief			
P2302	Work Flipbooks		Work Cluster	2 no Flip books of approximately 8 sides each giving a 'graphic novel' style account of working conditions in 19th century America and in modern America.	Flip Book x 2	SKEX-01	Refer to Physical Interactive Brief			
P2303	Out of Many, One		Military Cluster		Manual Interactive / Tactile	SKEX-02	Refer to Physical Interactive Brief			
P2304	A Community Icon		Religion Cluster		Manual Interactive	SKEX-03	Refer to Physical Interactive Brief			
<b>Section 4.0 PEOPLING THE EXPANDING NATION</b>										

## Physical Interactives Outline Specification For: NMAH-2W - Many Voices, One Nation

Exhibit Number	Exhibit Name	Drawing Reference	Location / Position in Gallery	Description	Exhibit Type	Performance Specification	Development Notes	Information Request from Client	Supply Cost	Install Cost
<b>Section 5.0 CREATING THE COMMUNITY- CHICAGO AND LOS ANGELES</b>										
P2501	Hull House Map Flipbook		With Hull House information in Chicago display- Part of Section 5.	Flipbook with three spreads reproducing maps from the "Hull House Maps and Papers" book.	Flip Book	SKEX-04	Refer to Physical Interactive Brief			
P2502	Hollywood Flipbook		Los Angeles display as part of Section 5	Flipbook will show headshots of famous actors and actresses, each labeled with their stage name, birth name, and country of origin. 8 sides (4 pages)	Flip Book	SKEX-05	Refer to Physical Interactive Brief			
<b>Section 6.0 NEW AMERICANS- CONTINUING DEBATES</b>										
<b>Section 7.0 WHAT DOES AMERICA SOUND LIKE?</b>										
<b>Section 8.0 CONCLUSION</b>										
P2801	Out Of Many- One- (Map Wall).		Conclusion- Left end of central wall immediately following Our Debates / What Kind Of Nation Will We Be media interactive	US and territories Map with thermochromatoc paint treatment that allows visitors to temporarily leave a hand print on the map.	Interactive Wall surface	Thermo chromatic paint- To be tested by Contractor with SI curatorial team for durability and visual affect SKEX-07 EX-5-18	Refer to Physical Interactive Brief			
									<b>Total:</b>	

**Performance Specification Key:**

- Low Level = Drawer / Flipbook / Lift-Up Flap / Etc.
- Medium Level = Interactives involving use of push buttons, levers, etc.
- High Level = Complex mechanical/electrical activity

**General Requirements for all Interactive Exhibits**

1. All materials and services to be suitable for intended purpose
2. All materials and services to conform to relevant ANSI (or equivalent) standards as appropriate
3. All materials to be used in conjunction with manufacturers' recommended stipulations
4. All permanent fixed works to be class A fire rated unless otherwise stated.
5. All material selection and services to be executed in accordance with ADA Standards for Accessible Design
6. All federal, state and local regulations prevail
7. The completed exhibit must be visibly free from defects from a distance of 1000mm. Defects include distortion of material, paint loss, surface scratching and discoloration.
8. All sharp edges to be removed unless otherwise specifically stated. In areas of extreme exposure between (0 and 1800mm aff) all edges and corners to be rounded to a minimum of 6mm in radius
9. All reveals to be finished as appropriate
10. Cable management separated into power by data to be included as accessible conduits with draw strings as required
11. Adequate and safe provision to be made in all exhibit structure for access to services (existing or new) and any required ongoing maintenance. Type of access to accommodate frequency of requirements.
12. All lighting (light box) and electrical compartments to be fully ventilated at the upper and lower areas promoting natural air flow.
13. All internal surfaces of the light box to be painted out white to promote uniformity and maximize the brightness of any lamp provided.

## Physical Interactives Outline Specification For: NMAH-2W - Many Voices, One Nation

Exhibit Number	Exhibit Name	Drawing Reference	Location / Position in Gallery	Description	Exhibit Type	Performance Specification	Development Notes	Information Request from Client	Supply Cost	Install Cost
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14. Any serviceable items to be clearly identified and stock provision checked / secured to provide ongoing maintenance for min 5 years from practical completion
15. All visible fasteners to be non-standard tamper proof unless specifically stated otherwise. Any necessary key bits etc. to be supplied to the client with spares as appropriate
16. All free standing exhibit structure to be supplied with self leveling feet and floor scribe.
17. In addition to the above all wall fixed exhibit structure to be supplied with scribe panels.
18. All goods to be inspected and correctly packed and labeled prior to arriving on site
19. All site works / activities are to be supervised by a competent person and assessed and signed off by a qualified person

- **Competent person:** a person who is capable of identifying existing and predictable hazards in the workplace and who is authorized to take prompt corrective measures to eliminate them.
- **Qualified person:** a person who by possession of a recognized degree or certificate of professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

20. All fasteners into historic buildings to confirm to listed buildings consent and be approved in writing prior to any site activity.
21. All joints where visible to be mitered unless specified otherwise.
22. As applicable, Contractor's performance shall conform to the following codes, standards, and regulations:
  - International Building Code 2012 Edition
  - Americans with Disabilities Act (ADA)
  - Architectural Barriers Act (ABA)
  - Casework - Architectural Woodwork Institute (AWI)
  - Electrical Work - National Electric Code (NEC)
  - Professional Standards for Museum Accreditation
  - U.S. Department of Energy - Architects and Engineers Guide to Energy Conservation
  - Illumination Engineers Society Standards
  - National Fire Protection Association Life Safety Code 2012
  - Occupational Safety and Health Standards
  - ASHRAE Handbook and Standards (for lighting)
  - All governing local, state, and national codes

### Miscellaneous

1. Instructions **must** be clearly associated with the interactive – no more than 0.5 meters away
2. Where possible, local contractors **should** be used to minimize cost and travel time when problem solving
3. Glare from internal lights **must** be minimized. Reflection angles **should** be considered for a range of heights, including small children and wheelchair users
4. Any loose components **must** be designed to not tempt deliberate theft or be of low cost and easily replenished
5. Functioning of any exhibit **must** not be heavily dependent on loose components that are likely to go missing without easily being replenished at low cost
6. The use of different head types of screws and Allen keys **must** be kept to a minimum across the site
7. The use of tamper proof screw head types **must** be maximized across the site
8. If polycarbonate is to be used, steps **must** be taken to avoid water absorption
9. The exhibits **should** be simple and easy to maintain for staff
10. Exhibits requiring electricity **must** have the capacity to be individually/easily switched off and electrically isolated for maintenance purposes and in emergency, but be secure enough to prevent visitors from doing so
11. Realistic engagement times **should** be considered for each exhibit. Exploration is more likely to achieve this than explanation.
12. Commercial off-the-shelf parts are preferable to custom-made components.

### Sound

1. Any sound effect used **must** not produce an excessively harsh, noisy general ambience
2. All sound-effects and electronic sounds **must** be agreed with designer and client
3. Local sounds **should** not impinge on the general sound environment unless they contribute to it positively
4. Staff **must** have volume control of all interactives, multimedia and audiovisuals. The controls **must** be out of sight and inaccessible to visitors

### Lighting

1. Any lighting effects required **must** be UV filtered, be of minimum functional intensity and not effect any museum object by more than 96000 lux-hours per year (approx. 260 lux-hours per day).
2. Lighting **must** have the capacity to be switched off
3. Generation of heat from lighting **must** be kept to a minimum
4. Any items requiring power **must** come to site pre wired and tested for simple installation
5. Where color rendition and intensity permit light source to be LED unless specifically stated otherwise.

## Physical Interactives Outline Specification For: NMAH-2W - Many Voices, One Nation

Exhibit Number	Exhibit Name	Drawing Reference	Location / Position in Gallery	Description	Exhibit Type	Performance Specification	Development Notes	Information Request from Client	Supply Cost	Install Cost
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### Durable surface-finishes

1. All surface finishes **must** be appropriate to the wear and tear to which they are likely to be subjected by children in a hands-on environment.
2. There **should** be no serious deterioration of surface finishes for at least one-year of public use.
3. Where appropriate, painted surfaces **should** have fully raised edges to minimize visible wear.
4. Parts **must** not be susceptible to 'picking" by children's fingers. E.g. plastic trim, rubber grommets etc.

### Maintenance

1. A full operation and maintenance (O&M) manual must be provided. This should include full descriptions and sources of any spare parts likely to be necessary and recommended schedule and instructions for routine maintenance and safe operation. It should identify all key safety features ,their function and maintenance requirements.
2. Training of staff on how to operate, examine and repair exhibits must be included as part of the installation agreement
3. Each interactive or set of interactives **must** have a safety information form and risk assessment completed and included as part of the O&M manual
4. The successful tenderer **must** make staff available to *immediately* assist with teething problems/malfunctions during the first month of opening.
5. The successful tenderer **must**, if required, be able to enter a maintenance contract with, requiring them to repair any reported problems and malfunctions that staff are unable to repair themselves
6. A number of spares of all component parts should be included as part of the installation agreement. This should include a minimum provision of one full replacement of any individual component/interactive, including all the tactile interactive/graphic elements (definition to be agreed as part of the contract). Fabricator to supply one full replacement of tactile elements to NMAH Exhibit Maintenance Coordinator at substantial completion of the project.
7. All serviceable items to be easily identified, accessed and replaced.

### Safety

Generally safe for prolonged, hands-on use by adults and children, paying attention to the following risks, for example:

1. Exhibits **must** be electrically safe
2. Exhibits requiring electricity **must** be earth bonded and confirm to local code/regulations. All wiring must be in conduit.
3. There **must** be no sharp edges or corners
4. Unavoidable corners **should** be placed above toddler head height or be cushioned
5. The possibility of children climbing on structures and barriers **should** be taken into account
6. The exhibits **must** not be foreseeably likely to encourage dangerously inappropriate use by children
7. Surface finishes, such as laminates, **must** not be used where they are likely to be damaged in such a way that sharp edges result
8. Interactives should be constructed with the same checks as children's play equipment. Clearances must be considered to avoid trapped fingers, hands, elbows, heads etc. Loose pieces must be too large to be swallowed and pass recommended choke tests, but not heavy enough to cause strain or damage when dropped

### Mechanisms

1. Exhibits **should** generally be suitable for prolonged, hands-on use by adults and children
2. Exhibits **should** have a minimum number of moving parts. All hands-on components **must** be stronger than they appear to the user and not weaker
3. The correct method of use **should** be apparent to the user from the design
4. All push-buttons, levers, crank-handles etc. **must** combine minimum size with maximum strength: if they are too large they will encourage users to apply more force than necessary, increasing wear and tear
5. Exhibits **should** be as simple as possible
6. Exhibits **must** be designed to minimize access to moving parts or machinery. All safety features **must** be clearly identified in the O&M documentation and identified in the supplied safety check proforma
7. Push buttons to be Bulgin MPI002 (see Exhibit Specification - Cut sheets for specification) - fabricator to provide 200% back-up push buttons to NMAH Exhibit Maintenance Coordinator at substantial completion of the project.

### Accessibility

1. All exhibits **must** conform to the ADA Standards of Accessible Design
2. Exhibits **must** be at an appropriate height for young children and wheelchair users to use
3. The comments made by user groups during the consultation phase **should** be taken into account
4. Any parts that require movement **should** be moved with minimum effort unless otherwise specifically stated.
5. Buttons and touch screens **should** be designed under the assumption that they will be used by individuals with no fingers
6. Any exhibits requiring spoken audio **must** also have subtitles



## 4.1 Physical Interactive Briefs



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## Physical Interactive Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation** Our ref: **9961-OAJ-Physical Interactive Brief-P2301**

Project Number: **1403109**

Contract Number: **F13CC10273**

Date of Issue: **September 29, 2015**

Distribution: **Nancy Davis, Debbie Schaffer-Jacobs, Megan Smith, Cassie Mancer, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: 9961-5a-OAJ-Physical Interactive Brief-P2301

Title: What Should an American Classroom Look Like? P2301	
<b>Area:</b>	Education Cluster
<b>Section:</b>	
<b>Type of Multimedia:</b> (i.e. Game, database, Audio, Video, etc.)	Physical Interactive
<b>Key Messages:</b>	Education is an arena in which everyday Americans have negotiated, influenced, or encountered many of the nation's most challenging debates, including: inclusion or exclusion? Segregation or integration? Prejudice or tolerance? Deportation or legalization?
<b>Look and feel:</b> (Visual references)	65% - HSD
<b>Access requirements:</b>	See Smithsonian Accessibility guidelines for further information.
<b>Trigger:</b>	65% - HSD
<b>Number of people using interactive at once:</b>	Individuals or visit social groups (small groups of 2-3 peers or family) clustering around a station; in either situation, we would require only a "single-user" interface.
<b>Target audience:</b>	The two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.
<b>Dwell Time:</b>	1-2 minutes

Title: What Should an American Classroom Look Like? P2301	
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	"What should an American classroom look like?" is a manual interactive that allows visitors to build their own classroom by using a magnetized pen or fixed mechanism that allows the visitor to move flat, magnetized pieces under plexiglass into a generic classroom scene. (see reference images.) Through this visitors will make decisions about whether they think a classroom should contain bilingual materials, religious objects, patriotic symbols, etc.
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	Visitors that approach the clusters will first be attracted to the interactives. The interactives will serve as entry point to the main concept of "arena of interaction." The interface will have a contemporary look that will appeal to the target audience of young adults in their twenties and thirties and families with children aged 12 or older. The cases of objects and labels that accompany the interactives will serve as concrete historical evidence of the larger concepts presented in the interactives.
<b>Learning Objectives:</b>	Visitors will learn about how education is an arena in which people have grappled with issues like segregation/integration, prejudice, tolerance, inclusion, exclusion.
<b>Emotional Objectives:</b>	Visitors will relate to the objects and stories in the exhibition on a personal level as entry points to understanding the role of education as a place where Americans come together.
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	The cluster interactives are located with each cluster down the center of the galley. It is important that the interactives are designed as a primary component of the cluster.
<b>Source:</b>	SI
<b>Copyright holder:</b>	SI or copyright obtained by SI
<b>Approximate length of footage required in minutes:</b>	n/a
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	n/a
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	Credits can be included onscreen.

<b>Title:</b> What Should an American Classroom Look Like? P2301	
<b>Power source requirements on gallery:</b>	HSD - Refer to AV-IT Specification document for hardware details
<b>Scope of work:</b>	
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	HSD - Refer to AV-IT Specification document for hardware details
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.





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## Physical Interactive Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices** Our ref: **9961-OAJ-Physical**  
 Project Number: **1403109** **Interactive Brief-P2302**  
 Contract Number: **F13CC10273**

Date of Issue: **December 8, 2015**  
 Distribution: **Nancy Davis, Joan Troyano, Margie Salazar-Porzio Megan Smith, Lauren Safranek, Naomi Coquillon, Cassie Mancer, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: 9961-5a-OAJ-Physical Interactive Brief-P2302

Title: Work Flipbooks P2302	
<b>Area:</b>	Work Cluster
<b>Section:</b>	
<b>Type of Interactive:</b> (i.e. Game, database, Audio, Video, etc.)	A pair of physical interactives: graphic novel style flip books.
<b>Key Messages:</b>	Work is an arena in which every day Americans have negotiated, influenced, or encountered many of the nation's most challenging debates, including: inclusion or exclusion? Segregation or integration? Prejudice or tolerance? Deportation or legalization?
<b>Look and feel:</b> (Visual references)	At 13 pages for a single narrative, this example is MUCH too long <a href="http://www.theguardian.com/us-news/2014/oct/28/-sp-techsplotation-labor-trafficking-graphic-novel">http://www.theguardian.com/us-news/2014/oct/28/-sp-techsplotation-labor-trafficking-graphic-novel</a> but the team likes the tone, and the graphic approach. We like the graphic novel approach, using a variety of panel configurations and elements that break up panel boundaries to tell the story. Text density should be pretty low, and the drawing style should be simple and clean.
<b>Access requirements:</b>	See Smithsonian Accessibility guidelines for further information.
<b>Trigger:</b>	Physical interactive, progress by flipping pages.
<b>Number of people using interactive at once:</b>	Individuals or visit social groups (small groups of 2-3 peers or family) clustering around a station; in either situation, we would require only a "single-user" interface.
<b>Target audience:</b>	The two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.
<b>Dwell Time:</b>	Approximately 2 minutes

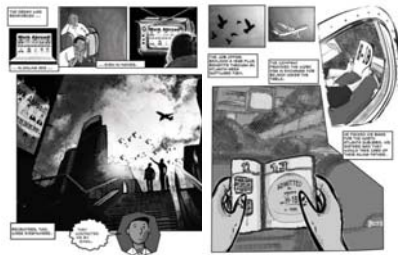
Title: Work Flipbooks P2302	
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	<ul style="list-style-type: none"> <li>One flipbook will likely be about immigration legislation, as the laws have close ties to restricting who could come into the U.S. to work. We will want to try and find a personal, human angle to make the legislation engaging. This definitely has ties to the debates of inclusion or exclusion, nativism or belonging, and segregation or integration at least.</li> <li>The second flipbook may be about organized labor/unions.</li> </ul> <p>Topics will be addressed as two page spreads within the flipbook.</p>
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	<p>The Work interactive will be two (2) unique physical flipbooks created, written, and illustrated in the style of a graphic novel.</p> <p>Each of the flipbooks will have 4-6 unique, two-page spreads, created with custom illustrations. The number of custom illustrations per page will probably average about 3-5, with no more than 8 panels per page [subject to agreement with SI and exhibition design team]</p> <p>The flipbooks should be made of a durable yet flexible material that will stand up to HEAVY visitor use and abuse.</p> <p>The styling should have a contemporary look that will appeal to the target audience of young adults in their twenties and thirties and families with children aged 12 or older.</p> <p>Visitors that approach the clusters will first be attracted to the interactives. The cases of objects and labels that accompany the interactives will serve as concrete historical evidence of the larger concepts presented in the interactives</p>
<b>Learning Objectives:</b>	Visitors will learn how everyday Americans have struggled to make a living while grappling with national debates and the impact of immigration legislation.
<b>Emotional Objectives:</b>	Visitors will likely have a personal connection to the stories of peoples' work experiences and struggles with national debates.
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.



<b>Title:</b> Work Flipbooks P2302	
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	The cluster interactives are located with each cluster down the center of the galley. It is important that the interactives are designed as a primary component of the cluster.
<b>Source:</b>	The illustrations will be custom artwork, but SI may need to provide low-resolution reference imagery and artistic guidance.
<b>Copyright holder:</b>	SI
<b>Approximate length of footage required in minutes:</b>	N/A
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	<ul style="list-style-type: none"> <li>Custom illustrations/artwork: Each of the flipbooks will have 4-6 unique, two-page spreads, featuring custom illustrations. The number of custom illustrations per page will probably average about 3-5, with no more than 8 panels per page [subject to mutual agreement with SI and exhibition design team]</li> </ul>
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	Credits shall be included in the flipbook.
<b>Scope of work:</b>	
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	Physical flipbook
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.

Art style reference:

*Techsploitation*



### Physical interactive Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation** Our ref: **9961-OAJ-Physical Interactive Brief-P2303**

Project Number: **1403109**

Contract Number: **F13CC10273**

Date of Issue: **March 15, 2016**

Distribution: **Nancy Davis, Joan Troyano, Margie Salazar-Porzio Megan Smith, Lauren Safranek, Naomi Coquillon, Cassie Mancer, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: P2303 MVON PI Brief 11.17.15

<b>Title:</b> Out of One, Many P2303	
<b>Area:</b>	Military cluster, section 3
<b>Section:</b>	
<b>Type of Interactive:</b> (i.e. Game, database, Audio, Video, etc.)	Manual interactive/tactile
<b>Key Messages:</b>	During World War II millions of men and women serving in the armed forced collaborated with others of different backgrounds and beliefs.
<b>Look and feel:</b> (Visual references)	WWII military dogtags
<b>Access requirements:</b>	See Smithsonian Accessibility guidelines for further information.
<b>Trigger:</b>	Physical interactive
<b>Number of people using interactive at once:</b>	Individuals or visit social groups (small groups of 2-3 peers or family) clustering around a station; in either situation, we require only a "single-user" interface.
<b>Target audience:</b>	The two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.
<b>Dwell Time:</b>	1 minute

<b>Title:</b> Out of One, Many P2303	
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	<p>In war and in peace, American military service has brought together people from across the nation. During World War II millions of men and women serving in the armed forces collaborated with others of different backgrounds and beliefs.</p> <p>This interactive will feature metal reproductions of the 8 dogtags displayed in the case:                  2540 - Mashidlauskay                  2539 - Speizman                  2193 – Kozera [purchase]                  2194 - Cicolani                  2199- Muller [purchase]                  2583- King                  2584- May                  2585- Chambers</p> <p>The Military panel will need a “de-coder” graphic indicating the information that’s on the dog tags:</p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; margin: 10px 0;"> <p>NAME</p> <p>○ SERVICE NUMBER/YEAR OF TETNUS SHOT/BLOOD TYPE</p> <p>[NEXT OF KIN]</p> <p style="text-align: right;">[RELIGION]</p> </div> <p>*Note that not all the dog tags include next of kin information or religion, hence the brackets above. There may be a better way to do this!</p>
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	The 8 reproduction dog tags should be made of metal, and affixed to a base using a strong metal ring or other method that will stand up to HEAVY visitor use and abuse. See Physical interactive sketch sheet for fixing proposal- to be tested as part of fabrication.
<b>Learning Objectives:</b>	Visitors will notice the diverse ethnic backgrounds and different religions identified by World War II soldiers on their personal dogtags.
<b>Emotional Objectives:</b>	Visitors will likely have a personal connection to the stories of peoples' experiences in the military and struggles with national debates.

<b>Title:</b> Out of One, Many P2303	
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	In Military subsection of section 3.
<b>Source:</b>	SI will provide graphics.
<b>Copyright holder:</b>	SI
<b>Approximate length of footage required in minutes:</b>	N/A
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	<p>The Military panel will need a “de-coder” graphic indicating the information that’s on the dog tags:</p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; margin: 10px 0;"> <p>NAME</p> <p>○ SERVICE NUMBER/YEAR OF TETNUS SHOT/BLOOD TYPE</p> <p>[NEXT OF KIN]</p> <p style="text-align: right;">[RELIGION]</p> </div> <p>*Note that not all the dog tags include next of kin information or religion, hence the brackets above. There may be a better way to do this!</p> <p>The ring (U-shaped or round?) or alternative fixing method must stand up to HEAVY visitor use and potential abuse.</p> <p>The eight dog tags will be exact replicas of those in the case; these will be on a graphic panel and mount. Note that the ring will need to be of a size and in a position that allows visitors to clearly see the information on the dog tag while also looking at the “de-coder” graphic. Note also that a magnifying lens would be desirable.</p>
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	N/A
<b>Power source requirements on gallery:</b>	N/A
<b>Scope of work:</b>	
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	Metal dogtags- Refer to Drawing SK-EX05 - 02

**Title:** Out of One, Many **P2303**

<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.
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**Physical interactive Brief**

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation**      Our ref: **P2304 MVON PI Brief 11.17.15**  
 Project Number: **1403109**  
 Contract Number: **F13CC10273**

Date of Issue: **March 15, 2016**  
 Distribution: **Nancy Davis, Joan Troyano, Margie Salazar-Porzio Megan Smith, Lauren Safranek, Naomi Coquillon, Cassie Mancer, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: P2304 MVON PI Brief 11.17.15

**Title:** A Community Icon **P2304**

<b>Area:</b>	Religion cluster, section 3
<b>Section:</b>	
<b>Type of Interactive:</b> (i.e. Game, database, Audio, Video, etc.)	Manual interactive/flip-panels with raised tactile element
<b>Key Messages:</b>	Freedom of religion has contributed to remarkable religious and cultural diversity in the United States. Although religious institutions sometimes divide people along ethnic or cultural lines, they can also bring diverse peoples together in shared faith and values.
<b>Look and feel:</b> (Visual references)	Prototype religious symbol for Hindu Temple Society, around 1970 (database number: 1856)
<b>Access requirements:</b>	See Smithsonian Accessibility guidelines for further information.
<b>Trigger:</b>	Physical interactive
<b>Number of people using interactive at once:</b>	Individuals or visit social groups (small groups of 1 user, 3-5 onlookers or family) clustering around a station; in either situation, we require only a "single-user" interface.
<b>Target audience:</b>	Visitors with an "Object" learning preference; the two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.
<b>Dwell Time:</b>	15-30 seconds

<b>Title:</b> A Community Icon P2304	
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	<p>Freedom of religion has contributed to remarkable religious and cultural diversity in the United States. Although religious institutions sometimes divide people along ethnic or cultural lines, they can also bring diverse peoples together in shared faith and values. The Hindu Temple Society of North America, founded in 1970, was among the first and most prominent in the New York City area. On display in the case, the prototype of the temple's religious symbol represents religious diversity through five of the world's major faiths illuminated by the lamp of knowledge and acceptance.</p> <p>The symbol sign is reproduced outside of the case as a physical interactive with flip panels and tactile raised symbols. The symbols are: Hindu Buddhist Christian Jewish Islam Lamp of Knowledge and Acceptance</p> <p>Each of the individual 5 religious symbols will be a push button or similar device that allows the visitor to discover a short statement identifying the religion each symbol represents when pushed. The center symbol will be a rotating panel with text that describes the meaning of the symbol centre symbol when the panel is rotated.</p>
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	The interactive will be a 3-dimensional version of the prototype sign that has five religious symbols on "petals" surrounding a center circle with a symbol of a candelabra. Each of the symbols needs to be a raised line graphic (an enhancement for blind and low vision visitors); each petal needs to be a hinged flap or other device that visitors can lift to reveal the identity of the symbol.
<b>Learning Objectives:</b>	Visitors will notice the diverse religions identified by symbols within the larger symbol of the Hindu Temple Society of North America.
<b>Emotional Objectives:</b>	Visitors will likely have a personal connection to the stories of peoples' experiences.
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.

<b>Title:</b> A Community Icon P2304	
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	In Religion subsection of section 3.
<b>Source:</b>	SI will provide graphics.
<b>Copyright holder:</b>	SI
<b>Approximate length of footage required in minutes:</b>	
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	The center hinged panel should be made of a durable material that will stand up to HEAVY visitor use and abuse. The styling should have a contemporary look that will appeal to the target audience of young adults in their twenties and thirties and families with children aged 12 or older.
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	N/A
<b>Power source requirements on gallery:</b>	Requires low voltage power
<b>Scope of work:</b>	
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	Illuminating back lit graphic- refer to Drawing SK EX-05-03
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.



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## Physical Interactive Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation** Our ref: **9961-OAJ-Physical**  
 Project Number: **1403109** **Interactive Brief-P2501**  
 Contract Number: **F13CC10273**

Date of Issue: **September 28, 2015**  
 Distribution: **Nancy Davis, Joan Troyano, Margie Salazar-Porzio Megan Smith, Lauren Safranek, Cassie Mancer, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: 9961-5a-OAJ-Physical Interactive Brief-P2501

Title: Hull House Flipbook P2501	
<b>Area:</b>	Hull House, Section 5
<b>Section:</b>	
<b>Type of Interactive:</b> (i.e. Game, database, Audio, Video, etc.)	Manual interactive/flipbook
<b>Key Messages:</b>	Hull House settlement workers mapped wages, child labor, ethnicity, and living conditions in Chicago neighborhoods. They hoped that by exposing troubling conditions, more Americans would be moved to advocate for social reform.
<b>Look and feel:</b> (Visual references)	Flipbook closed measurements need to be at least 8 ½ x 11. Does not need to look like the actual source book. Need to prototype size to make sure that maps are legible.
<b>Access requirements:</b>	See Smithsonian Accessibility guidelines for further information.
<b>Trigger:</b>	Physical interactive, progress by flipping pages.
<b>Number of people using interactive at once:</b>	Individuals or visit social groups (small groups of 2-3 peers or family) clustering around a station; in either situation, we require only a "single-user" interface.
<b>Target audience:</b>	The two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.
<b>Dwell Time:</b>	Approximately 2 minutes
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	Flipbook containing three full spreads from the "Hull House Maps and Papers" book, showing wages and nationalities.

Title: Hull House Flipbook P2501	
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	The flipbooks should be made of a durable yet flexible material that will stand up to HEAVY visitor use and abuse. The styling should have a contemporary look that will appeal to the target audience of young adults in their twenties and thirties and families with children aged 12 or older.
<b>Learning Objectives:</b>	Visitors will learn about how the maps created by Hull House changed the way people understood Chicago and its neighborhoods.
<b>Emotional Objectives:</b>	Visitors will think about the makeup and mapping of their own neighborhood.
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	With Hull House material in section 5.
<b>Source:</b>	SI will provide graphics.
<b>Copyright holder:</b>	SI
<b>Approximate length of footage required in minutes:</b>	N/A
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	n/a
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	Credits shall be included in the flipbook.
<b>Power source requirements on gallery:</b>	N/A
<b>Scope of work:</b>	
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	Refer to Drawing SK EX5 -04
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.



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## Physical interactive Brief

Client: **Smithsonian Institution – National Museum of American History**

Project Title: **Many Voices, One Nation** Our ref: **9961-OAJ-Physical Interactive Brief-P2502**

Project Number: **1403109**

Contract Number: **F13CC10273**

Date of Issue: **September 28, 2015**

Distribution: **Nancy Davis, Joan Troyano, Margie Salazar-Porzio Megan Smith, Lauren Safranek, Naomi Coquillon, Cassie Mancer, Kathryn Campbell (SI), David Donoghue, Kevin Callis, Cynthia Roberts, file (HSD).**

File ref: 9961-5a-OAJ-Physical Interactive Brief-P2502

Title: Hollywood Flipbook P2502	
<b>Area:</b>	Los Angeles, section 5
<b>Section:</b>	
<b>Type of Interactive:</b> (i.e. Game, database, Audio, Video, etc.)	Manual interactive/flipbook
<b>Key Messages:</b>	Attracted by the film industry, a steady stream of actors and actresses, immigrants and migrants in the early 20th century came to Los Angeles to make it big in Hollywood
<b>Look and feel:</b> (Visual references)	TBD, will send reference images.
<b>Access requirements:</b>	See Smithsonian Accessibility guidelines for further information.
<b>Trigger:</b>	Physical interactive, progress by flipping pages.
<b>Number of people using interactive at once:</b>	Individuals or visit social groups (small groups of 2-3 peers or family) clustering around a station; in either situation, we require only a "single-user" interface.
<b>Target audience:</b>	The two millennial generations—young adults in their twenties and thirties—and families with children, aged 12 and older.
<b>Dwell Time:</b>	1 minute

Title: Hollywood Flipbook P2502	
<b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.	<p>Attracted by the film industry, a steady stream of actors and actresses, immigrants and migrants in the early 20th century came to Los Angeles to make it big in Hollywood. Many actors changed their names and identities to succeed in this new industry.</p> <p>This flipbook will show large headshot-like images of famous actors and actresses, labelled with both their stage name and birth name. Will include:</p> <p>Lupe Velez (Mexican immigrant, formerly María Guadalupe Villalobos Vélez)          Peter Lorre (Austrian-Hungarian immigrant, formerly László Löwenstein)          Lauren Bacall (daughter of Romanian American immigrant, from New York, formerly Betty Joan Perske)          Jack Webb (son of Native American and Irish American parents)          Charles Laughton (British immigrant)          Danny Thomas (son of Lebanese immigrants, born Amos Muzyad Yakhooob Kairouz)          Jadin Wong (From Stockton, California)</p>
<b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)	The flipbooks should be made of a durable yet flexible material that will stand up to HEAVY visitor use and abuse. The styling should have a contemporary look that will appeal to the target audience of young adults in their twenties and thirties and families with children aged 12 or older.
<b>Learning Objectives:</b>	Visitors will learn about the immigrant roots of some of the most famous actors from the early 20th century.
<b>Emotional Objectives:</b>	Visitors will likely have a personal connection to the stories of peoples' work experiences and struggles with national debates.
<b>Behavioral Objectives:</b>	Visitors will <i>engage</i> more meaningfully with objects and exhibit content and <i>talk</i> about the histories of other Americans different from themselves.
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	In Los Angeles subsection of section 5.
<b>Source:</b>	SI will provide graphics.
<b>Copyright holder:</b>	SI

<b>Title:</b> Hollywood Flipbook <b>P2502</b>	
<b>Approximate length of footage required in minutes:</b>	N/A
<b>Production Requirements:</b> Actors, costume, set, props, location, etc	n/a
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.	Credits will be included in the flipbook.
<b>Power source requirements on gallery:</b>	N/A
<b>Scope of work:</b>	
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)	Physical flipbook- refer to Drawing SK EX5 -05
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?	HSD - 20yrs maintainable operational lifetime, maintained in house by trained SI operatives.



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### Physical Interactive Brief

Client: **Smithsonian Institution – National Museum of American History**


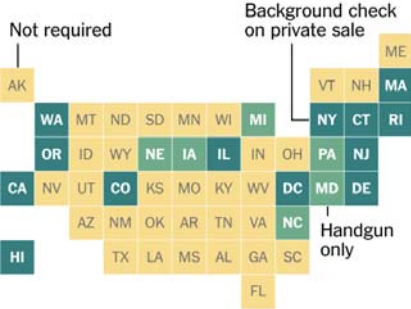
Project Title: **Many Voices, Once Nation**  
 MVON **1403109**  
 Project Number: **F13CC10273**

Our ref: **P2801 MVON Media Brief 3**  
**10 16 Update 1**

Date of Issue: **1/8/16**  
 Distribution:

File ref: P2801 MVON Media Brief 3 10 16 Update 1

<b>Title: Out Of Many- One</b>		<b>Reference #: P2801</b>
<b>Area:</b>	8- Conclusion	
<b>Section:</b>		
<b>Type of Interactive:</b> (i.e. Game, database, Audio, Video, etc.)	Physical Interactive	
<b>Key Messages:</b>	<p>The conclusion sums up the main messages of the show. We are one nation because we live with the legacies of our collective history, represented by the stories and cultures in the exhibition. Out of many, one.</p> <p>It answers the key question of the show, "How do we become us/How did we become US?"</p>	

Title: Out Of Many- One	Reference #: P2801
<p><b>Look and feel:</b> (Visual references)</p>	<p>Elegant, simple, and beautiful. The words should be large and legible. The map should be simple and abstract while allowing the audience to immediately recognize it as a map of the United States.</p>  <p>Not required</p> <p>Background check on private sale</p> 
<b>Access requirements:</b>	
<b>Trigger:</b>	
<b>Number of people using interactive at once:</b>	1-10 people at once
<b>Target audience:</b>	All visitors
<b>Dwell Time:</b>	10 seconds to 1 minute

Title: Out Of Many- One	Reference #: P2801
<p><b>Content outline:</b> Description of the content/ storyline including how it relates to the exhibition and messages.</p>	<p>“Out of Many, One.”</p> <p>Above text is paired with a large abstracted map (similar to the example shown on page 1) of the United States including Alaska, Hawaii, and territories (it can be creatively conceptualized and not necessarily to scale, accurate state borders and outlines also not required), installed with heat-sensitive ceramic tile or paint so visitors can leave handprints on the map. The handprints will fade in approximately 30 seconds to one minute. Final material selection will be contingent upon research and review of product durability.</p> <p><b>thermochromatic ceramic tile:</b> <a href="http://www.movingcolor.net/product-lines/touch-sensitive-product-line/">www.movingcolor.net/product-lines/touch-sensitive-product-line/</a></p> <p><b>thermochromatic tile outdoor bench (segment between 1:17-1:35):</b> <a href="https://vimeo.com/116682135#t=77s">https://vimeo.com/116682135#t=77s</a></p> <p><b>automotive finish thermochromatic paint:</b> <a href="https://www.paintwithpearl.com/shop-custom-paint/temperature-changing-paint/">https://www.paintwithpearl.com/shop-custom-paint/temperature-changing-paint/</a></p> <p>We will include a small label explaining the paint interactive feature with a graphic of a handprint as a visual cue to the intended action.</p> <p><u>On the back of the credit wall</u> “We live with the legacies of these stories. This is what makes us American. This is how we become US.”</p> <p>We would like to explore designing the above text with backlighting or design features that allow it to stand out more than flat text.</p> <p><u>Threshold</u> We would like to connect the two conclusion surfaces through lighting effects projected onto the floor.</p>
<p><b>Visitor experience:</b> Any comments on how visitors will experience the AV (e.g. to include sit-down/stand up/ immersive environment)</p>	<p>Visitors will walk up to the wall and press their hands into the map. They will perhaps make a mark where they live, where they are from, where they first arrived in the United States, or make a path with handprints.</p> <p>The experience should be communal. More than one visitor or small group/family can engage with the map at the same time.</p> <p>The installations should be visually compelling and large enough that visitors can get the message of the text and a sense of the message of the map by walking by and not engaging directly with it.</p>



<b>Title: Out Of Many- One</b>		<b>Reference #: P2801</b>
<b>Learning Objectives:</b>		
<b>Emotional Objectives:</b>	<p>By placing their handprint in the map, visitors will be acting out a key message of the show. Their story (and every Americans story past and present) is part of a larger whole of the culture and identity of the nation. By placing their handprint on the map, they will connect that message with their own experience.</p> <p>The text on the left of the exit refers back to stories from the larger exhibition. The visitors will think back to the case studies, arenas of interactions, and debates throughout the show, and think about how it has affected they world in which they live today.</p>	
<b>Behavioural Objectives:</b>		
<b>Position in gallery:</b> Links to text/other exhibition elements etc.	<p>Left side of central wall, immediately following the debates in Section 3.</p> <p>Right side of the exit, on the reverse side of the credit wall.</p>	
<b>Source:</b>	No outside source material required.	
<b>Copyright holder:</b>		
<b>Approximate length of footage required in minutes:</b>		
<b>Production Requirements:</b> Actors, costume, set, props, location, etc		
<b>Credit line/copyright information:</b> Include where will it go? Screen/text panel etc.		
<b>Power source requirements on gallery:</b>		
<b>Scope of work:</b>		
<b>Technical information/description:</b> (i.e. projection, speaker, etc.)		
<b>Maintenance:</b> Estimated operational life of components. Who will maintain equipment?		



## 5.0 Sculptures, Recon & Props List



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**NOTE: ALL OUTSTANDING INFORMATION TO BE DEVELOPED DURING 95%**



Client: **Smithsonian Institution**  
Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
Project No.: **1403109**  
Our ref: **9961-5a-MVON-Sculptures, Recon & Props List**  
Revision: **B**

Date: **March 15, 2016**  
Distribution: **Kathryn Campbell, Hal Aber, Harry Rubenstein (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis (HSD)**

### Sculptures, Recon & Props List for: NMAH-2W - Many Voices, One Nation

Item No.	Location	Type	Description	Quantity	Notes	Supply \$	Install \$	Total \$
			<b>NOTE: This list contains <u>only</u> items identified as Sculptures / Reconstructions and Props that are NOT Prop 'Objects'. All Prop 'objects' are captured in the Object and Props mount list and case layouts and will be free issue items or items installed by curaors. This list refers <u>only</u> to props and recons that form part of the contractors worksas exhibit items.</b>					
<b>SECTION 1- HOW DID WE BECOME US?</b>								
		N/A	NOTE: No Props identified in section 1 during 65% phase.	0	N/A			
<b>SECTION 2: UNSETTLING THE CONTINENT</b>								
			NOTE: No Props identified in section 2 during 65% phase, other than those in case which are prop objects	0	N/A			
<b>SECTION 3- PLACES OF DEBATE</b>								
S2301	Inside Case 2306 (Education)	Recon	Wooden flooring under School desk object. Approximately 1m x 1m of floor surface required. Distressed wood appearance. To be fully sealed, no offgassing issues.	Approximately 1 sq.m	Must conform to NMAH conservation requirements. 			

## Sculptures, Recon & Props List for: NMAH-2W - Many Voices, One Nation

Item No.	Location	Type	Description	Quantity	Notes	Supply \$	Install \$	Total \$
S2302	On exhibit structure (Sports)	Recon  Priop	Illuminated (LED) light gantry structure similar in appearance to those used in Outdoor sports stadia- Metal framework with light fittings attached.  Sign to read 'SPORTS' created from dimensional 3d letters. Sign to be approximately 800mm in length. Attached to Light gantry described above.	1  1				
S2303	On exhibit structure (Work)		2 x Fixed work lamps (1:1 scale) similar in style to those attached to sewing machine workstations in garment factories. Lamps will be accessible by the public and as such must be robust enough and fixed in a manner to avoid damage throughout the duration of the exhibition (20 years). Style of lamp visual reference will be supplied. Original lamp has articulated arm- these lamps will have similar appearance but will not allow articulation.	2				
SECTION 4: POPULATING THE EXPANDING NATION								
		n/a	NOTE: No Props identified in section 4 during 65% phase, other than those in case which are prop objects	0				-
SECTION 5: CREATING COMMUNITY- CHICAGO AND LOS ANGELES								
S2501	Inside case C2501		Self supported picture frame for graphics G.2.5.011 (i-2280) and G.2.5.012 (i-2279). Style of frame to be determined during 95% in collaboration with curators. 700x x 1000h hardwood, 30 x 75 frame section.	2				
S2502			Tactile Medal touch relief approx. 150mm diameter 3D printed fixed to base plinth. Spec drawing EX-5-19 and MVON Sculptures, Recon and Props List		Image to be provided			
SECTION 6: NEW AMERICANS. CONTINUING THE DEBATES								
S2601	On Exhibit Structure (Magazines)	Prop / Recon	30x magazine covers removed from the publication and applied as 'graphic' wallpaper to 3 x vertical support panels- magazines to appear as if 'rolling off' a printing press. In a 10 high x 1 wide configuration. Agreed Graphic layout and details to be supplied at 95%- Magazine covers to be back and wrapped, then bonded to 2mm straight signblank panels. Matt seals to front and edges of covers. Signblank panels to be bracketed off gallery wall. Covers to be mounted in 3 vertical columns, with no visible gaps between adjacent covers.	30 x magazines.	Magazines to be used in display are Free issue item by NMAH. All other support structure, protection and fixing by contractor.			

## Sculptures, Recon & Props List for: NMAH-2W - Many Voices, One Nation

Item No.	Location	Type	Description	Quantity	Notes	Supply \$	Install \$	Total \$
								-
Section 7: WHAT DOES AMERICA SOUND LIKE?								
		n/a	NOTE: No Props identified in section 7 during 65% phase.	0				-
Section 8: CONCLUSION								
		n/a	NOTE: No Props identified in section 8 during 65% phase.	0				-
								-
					<b>Totals</b>	\$ -	\$ -	\$ -



## 6.0 Fabrication List



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Client: **Smithsonian Institution**  
 Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
 Project No.: **1403109**  
 Our ref: **9961-5a-MVON-Fabrication List**  
 Revision: **Rev B**

Date: **February 29, 2016**  
 Distribution: **Kathryn Campbell, Hal Aber, Harry Rubenstein (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis (HSD)**

### Fabrication List For: NMAH-2W - Many Voices, One Nation

Item	Detail drawing	Elevation	Description	Quantity	Unit Cost	Carried Forward
<b>Section 1.0</b>						
1.0	EX-5-05	EX-2-01	Provision of partition walls fabricated in galvanized studding with 2no. faces of 12mm sheet gyproc material with integral wood blocking (fire retardant, pressure impregnated) at 0.9M and 1.8M FFL for connection of rigid graphic panels and case work. All joints to be taped and filled inclusive of perimeter and terminating edge trims, all decorated to specified finish. Base kicker in stainless steel bonded to all reveals with no visible fixings. Walls secured to floor and adjacent gallery walls with vertical bracing to the grid/slab as required. Walls to house AV screens.	16 lm		
1.1	TBD at 95%	EX-2-01	Provision of Donor panel fabricated in FR Medite sheet material with fire resistant pressure impregnated timber blocking. Base kicker in stainless steel bonded to all reveals with no visible fixings. Graphic application as detailed on graphics list.	1		
1.2	n/a	n/a	External gallery static sign to concourse fascia, (3D lettering)	1		
1.3	Case Layouts	EX-2-01	Provision of object mounts for 1no. display case(s)	Various		
1.4	Case Layouts		Provision for display case captions	Various		
1.5	Graphics List	EX-2-01	Provision for graphic interpretative panels	Various		
1.6	Case Layouts Graphics List		Provision for large format image panels / case backs	Various		
1.7	EX-5-08	EX-2-01	Provision of object/display plinths formed in sprayed FR Medite with steel framework and inclusive of steel EPC edge trims, all decorated to specified finish. Base kicker in stainless/EPCs steel bonded to all reveals with no visible fixings and adjustable leveling feet behind. Access for segregated conduited services 120v power/12v power / Alarms / AV and connections via lockable lift out concealed access panels to be coordinated with adjacent display cases and multimedia units as required.	Various		
1.8		EX-2-01	Provision for scribing in of specialist museum display cases to adjacent finishes. Scribe panel is either 2mm EPC steel or 12mm FR Medite to be finished to match adjacent connecting area(s)	Various		
<b>Section 2.0</b>						
2.0	EX-5-05	EX-2-02	Provision of partition walls fabricated in galvanized studding with 2no. faces of 12mm sheet gyproc material with integral fire resistant pressure impregnated timber blocking at 0.9M and 1.8M FFL for connection of rigid graphic panels and case work. All joints to be taped and filled inclusive of perimeter and terminating edge trims, all decorated to specified finish. Base kicker in stainless steel bonded to all reveals with no visible fixings. Walls secured to floor and adjacent gallery walls with vertical bracing to the grid/slab as required.	11 lm		
2.1	EX-5-08	EX-2-02	Provision of object/display plinths formed in sprayed FR Medite with steel framework and inclusive of steel EPC edge trims, all decorated to specified finish. Base kicker in stainless/EPCs steel bonded to all reveals with no visible fixings and adjustable leveling feet behind. Access for segregated conduited services 120v power/12v power / Alarms / AV and connections via lockable lift out concealed access panels to be coordinated with adjacent display cases and multimedia units as required.	Various		
2.2	EX-5-10	EX-2-02	Provision of touch screen monolith unit formed in sprayed FR Medite with fire resistant pressure impregnated timber blocking and inclusive of steel EPC accessible edge trims, all decorated to specified finish. Base kicker in stainless/EPCs steel bonded to all reveals with no visible fixings and screened ventilation slots above. Access for segregated conduited services 120v power/AV and connections via lockable hinged concealed access panel.	1		

## Fabrication List For: NMAH-2W - Many Voices, One Nation

Item	Detail drawing	Elevation	Description	Quantity	Unit Cost	Carried Forward
2.3	Case Layouts	EX-2-02	Provision of object mounts for 8no. display case(s)	Various		
2.4	Case Layouts		Provision for display case captions	Various		
2.5	Graphics List	EX-2-02	Provision for graphic interpretative panels	Various		
2.6	Case Layouts Graphics List		Provision for large format image panels/case backs	Various		
2.7		EX-2-02	Provision for scribing in of specialist museum display cases to adjacent finishes. Scribe panel is either 2mm EPC steel or 12mm FR Medite to be finished to match adjacent connecting area(s)	Various		
<b>Section 3.0</b>						
3.0	EX-5-08	EX-2-03	Provision of object/display plinths formed in sprayed FR Medite with steel framework and inclusive of steel EPC edge trims, all decorated to specified finish. Base kicker in stainless/EPCs steel bonded to all reveals with no visible fixings and adjustable leveling feet behind. Access for segregated conduited services 120v power/12v power / Alarms / AV and connections via lockable lift out concealed access panels to be coordinated with adjacent display cases and multimedia units as required.	Various		
3.1	EX-5-04	EX-2-03	Provision of base plinths to support table top display cases. Steel framework with sprayed FR Medite cladding.	5		
3.2	EX-5-06	EX-2-03	Provision of touch screen monitor lecterns formed in sprayed FR Medite with fire resistant pressure impregnated timber blocking and inclusive of steel EPC accessible edge trims, all decorated to specified finish. Base kicker in stainless/EPCs steel bonded to all reveals with no visible fixings and screened ventilation slots behind. Access for segregated conduited services 120v power/AV and connections via lockable hinged concealed access panel.	Various		
3.3	EX-5-10	EX-2-03	Provision of vertical blade to house AV screen. FR Medite construction with paint finish.	1		
3.4	Interactives Outline Specification	EX-2-03	Provision of physical interactives.	4		
3.5	EX-5-15	EX-2-03	Provision of table units to carry physical interactives. FR Medite construction, paint finish.	2		
3.6	Sculptures, Recon & Props List	EX-2-03	Provision of reconstructed 'jumbotron' unit to carry AV screen.	1		
3.7	Case Layouts	EX-2-03	Provision of object mounts for 10no. display case(s)	Various		
3.8	Case Layouts		Provision for display case captions	Various		
3.9	Graphics List	EX-2-03	Provision for graphic interpretative panels	Various		
3.10	EX-5-07		Provision for graphic interpretative panel Sub section Frame	Various		
<b>Section 4.0</b>						
4.0	EX-5-20	EX-2-04	Provision of table unit to receive projection from above formed in sprayed FR Medite with fire resistant pressure impregnated timber blocking and inclusive of steel EPC accessible edge trims, all decorated to specified finish. Base kicker in stainless/EPCs steel bonded to all reveals with no visible fixings.	1		
4.1		EX-2-04	Gallery recess, hinged and lockable full height access panels formed in sprayed FR Medite, secured to gallery wall and key locked to case return to provide unrestricted maintenance access behind.	4		
4.2	Case Layouts	EX-2-04	Provision of object mounts for 8no. display case(s)	Various		
4.3	Case Layouts		Provision for display case captions	Various		
4.4	Graphics List	EX-2-04	Provision for graphic interpretative panels	Various		
4.5	Case Layouts Graphics List		Provision for large format image panels/case backs	Various		
4.6		EX-2-04	Provision for scribing in of specialist museum display cases to adjacent finishes. Scribe panel is either 2mm EPC steel or 12mm FR Medite to be finished to match adjacent connecting area(s)	Various		
<b>Section 5.0</b>						
5.0	EX-5-05	EX-2-05	Provision of partition walls fabricated in galvanized studding with 2no. faces of 12mm sheet gyproc material with integral fire resistant pressure impregnated timber blocking at 0.9M and 1.8M FFL for connection of rigid graphic panels and case work. All joints to be taped and filled inclusive of perimeter and terminating edge trims, all decorated to specified finish. Base kicker in stainless steel bonded to all reveals with no visible fixings. Walls secured to floor and adjacent gallery walls with vertical bracing to the grid/slab as required.	5.7 lm		
5.1	EX-5-08	EX-2-05	Provision of object/display plinths formed in sprayed FR Medite with steel framework and inclusive of steel EPC edge trims, all decorated to specified finish. Base kicker in stainless/EPCs steel bonded to all reveals with no visible fixings and adjustable leveling feet behind. Access for segregated conduited services 120v power/12v power / Alarms / AV and connections via lockable lift out concealed access panels to be coordinated with adjacent display cases and multimedia units as required.	Various		
5.2	EX-5-15	EX-2-05	Provision of table unit to take graphics and interactive to top face. FR Medite construction. Base kicker in stainless steel bonded to all reveals with no visible fixings.	1		
5.3	Interactives Outline Specification	EX-2-05	Provision of physical interactives P2501 and P2502.	2		
5.4	Case Layouts	EX-2-05	Provision of object mounts for 4no. display case(s)	Various		
5.5	Case Layouts		Provision for display case captions	Various		
5.6	Graphics List	EX-2-05	Provision for graphic interpretative panels	Various		



## Fabrication List For: NMAH-2W - Many Voices, One Nation

Item	Detail drawing	Elevation	Description	Quantity	Unit Cost	Carried Forward
5.7	Case Layouts Graphics List		Provision for large format image panels/case backs	Various		
5.8		EX-2-05	Gallery recess, hinged and lockable full height access panels formed in sprayed FR Medite, secured to gallery wall and key locked to case return to provide unrestricted maintenance access behind.	2		
5.9		EX-2-05	Provision for scribing in of specialist museum display cases to adjacent finishes. Scribe panel is either 2mm EPC steel or 12mm FR Medite to be finished to match adjacent connecting area(s)	Various		
<b>Section 6.0</b>						
6.0	EX-5-05	EX-2-06	Provision of partition walls fabricated in galvanized studding with 2no. faces of 12mm sheet gyproc material with integral fire resistant pressure impregnated timber blocking at 0.9M and 1.8M FFL for connection of rigid graphic panels and case work. All joints to be taped and filled inclusive of perimeter and terminating edge trims, all decorated to specified finish. Base kicker in stainless steel bonded to all reveals with no visible fixings. Walls secured to floor and adjacent gallery walls with vertical bracing to the grid/slab as required.	2.1 lm		
6.1	EX-5-08	EX-2-06	Provision of object/display plinths formed in sprayed FR Medite with steel framework and inclusive of steel EPC edge trims, all decorated to specified finish. Base kicker in stainless/EPCs steel bonded to all reveals with no visible fixings and adjustable leveling feet behind. Access for segregated conduited services 120v power/12v power / Alarms / AV and connections via lockable lift out concealed access panels to be coordinated with adjacent display cases and multimedia units as required.	Various		
6.2	Case Layouts	EX-2-06	Provision of object mounts for 6no. display case(s)	Various		
6.3	Case Layouts		Provision for display case captions	Various		
6.4	Graphics List	EX-2-06	Provision for graphic interpretative panels	Various		
6.5	Case Layouts Graphics List		Provision for large format image panels/case backs	Various		
6.6		EX-2-06	Provision for scribing in of specialist museum display cases to adjacent finishes. Scribe panel is either 2mm EPC steel or 12mm FR Medite to be finished to match adjacent connecting area(s)	Various		
6.7	EX-5-07	EX-2-06	Sub section frame			
<b>Section 7.0</b>						
7.0	TBD at 95%	EX-2-06	Provision of FR Medite panels to wall to receive projection. All exposed surfaces to be painted.	TBD at 95%		
7.1	Graphics List	EX-2-06	Provision for graphic interpretative panels	Various		
7.2	Graphics List	EX-2-06	Provision for large format image panels	Various		
7.3	EX-2-06	EX-2-06	Provision of seating unit	3		
7.4	EX-5-07	EX-2-06	Sub section frame	1		
<b>Section 8.0</b>						
8.0	TBD at 95%	EX-2-06	Provision of wall panels formed in sprayed FR Medite, secured to exhibit partition walls. To house AV screens.	4.1 lm		
8.1	Graphics List	EX-2-06	Provision for graphic interpretative panels	Various		
8.2	Phyistical	EX-2-06	Physical Interactive Touch Wall	1		
				<b>Total:</b>		

### General Requirements

1. All materials and services to be suitable for intended purpose
2. All materials and services to conform to relevant ANSI (or equivalent) standards as appropriate
3. All materials to be used in conjunction with manufacturers' recommended stipulations
4. All permanent fixed works to be class A fire rated unless otherwise stated.
5. All material selection and services to be executed in accordance with ADA Standards for Accessible Design
6. All federal, state and local regulations prevail
7. The completed exhibit must be visibly free from defects from a distance of 1000mm. Defects include distortion of material, paint loss, surface scratching and discoloration.
8. All sharp edges to be removed unless otherwise specifically stated. In areas of extreme exposure between (0 and 1800mm aff) all edges and corners to be rounded to a minimum of 6mm in radius
9. All reveals to be finished as appropriate
10. Cable management separated into 110V, 12V and data to be included as accessible conduits with draw strings as required. Data should have 2no runs (1no to act as spare)
11. Adequate and safe provision to be made in all exhibit structure for access to services (existing or new) and any required ongoing maintenance. Type of access to accommodate frequency of requirements.
12. All lighting (light box) and electrical compartments to be fully ventilated at the upper and lower areas promoting natural air flow.
13. All internal surfaces of the light box to be painted out white to promote uniformity and maximize the brightness of any lamp provided.
14. Any serviceable items to be clearly identified and stock provision checked / secured to provide ongoing maintenance for min 5 years from practical completion
15. All visible fasteners to be non-standard tamper proof unless specifically stated otherwise. Any necessary key bits etc. to be supplied to the client with spares as appropriate
16. All free standing exhibit structures to be supplied with self leveling feet and floor scribe.
17. In addition to the above all wall fixed exhibit structures to be supplied with scribe panels.

## Fabrication List For: NMAH-2W - Many Voices, One Nation

Item	Detail drawing	Elevation	Description	Quantity	Unit Cost	Carried Forward
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18. All goods to be inspected and correctly packed and labeled prior to arriving on site

19. All site works / activities are to be supervised by a competent person and assessed and signed off by a qualified person

- **Competent person:** a person who is capable of identifying existing and predictable hazards in the workplace and who is authorized to take prompt corrective measures to eliminate them.
- **Qualified person:** a person who by possession of a recognized degree or certificate of professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

20. All fasteners into historic buildings to confirm to listed buildings consent and be approved in writing prior to any site activity by the COTR team.

21. All joints where visible to be mitered unless specified otherwise.

22. All dimensions to be checked on site prior to production.

23. As applicable, Contractor's performance shall conform to the following codes, standards, and regulations:

- International Building Code 2012 Edition
- Americans with Disabilities Act (ADA)
- Architectural Barriers Act (ABA)
- Casework - Architectural Woodwork Institute (AWI)
- Electrical Work - National Electric Code (NEC)
- Professional Standards for Museum Accreditation
- U.S. Department of Energy - Architects and Engineers Guide to Energy Conservation
- Illumination Engineers Society Standards
- National Fire Protection Association Life Safety Code 2012
- Occupational Safety and Health Standards
- ASHRAE Handbook and Standards (for lighting)
- All governing local, state, and national codes

### All Exhibit Fabrication

1. All fasteners to be glued and screwed.
2. Access panels required to all voids for running of services, fastening and maintenance of objects, and pest control.
3. All access panels to be discreet and locked with cam lock with square-profile key suited to entire gallery
4. All access panels able to be opened by one person, hinged where possible

### Sheet Material Inc. Formaldehyde-free Medite / Plywood

1. All sheet material to be handled and stored in accordance with manufacturers' specification
2. All reveals sealed against moisture ingress at least 200mm from finished floor level
3. All joints to be glued and screwed and filled and finished to manufacturers' specification
4. All wood to be obtained from sustainable sources
5. All sheet material used for graphics to be supplied free from edge details of fastening brackets until after the graphic finish has been applied
6. All cases over 100 cubic feet to be constructed of fire retardant materials.

### Wood Products

1. All wood products to be free from knot splits and deflection (warping)
2. All wood products product to be suitably treated where exposed to moisture for prolonged periods
3. All graining to run long grain unless otherwise stated
4. All wood products to be obtained from sustainable sources
5. Wood for all cases over 100 cubic feet to be fire retardant.

### Cabinet Hardware

1. All handles, knobs and associated fittings to be supplied in Stainless Steel (Grade 316) unless otherwise specified
2. All locks to be suited and keys labeled unless specifically stated otherwise
3. All drawer runners to be heavy duty steel and bearing type with stops and 100% extension
4. All hinged doors to have an appropriate number of hinges to accommodate the door weight / width and usage
5. All adjustable feet to have nylon locking units

### Steel

1. All visible or in-case material to be supplied in Stainless Steel (Grade 316) unless otherwise specified
2. All non-stainless material to be supplied finished in powder coat unless otherwise specifically stated
3. All welded joints to be dressed and cleaned back prior to final finishing

### Glass

## Fabrication List For: NMAH-2W - Many Voices, One Nation

Item	Detail drawing	Elevation	Description	Quantity	Unit Cost	Carried Forward
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1. All glass to be either tempered or laminated safety glass
2. All tempered glass to be encapsulated in a suitably profiled metal or wood frame
3. For specific display case glazing see case specification
4. All large format glazing exposed to the general public to include the appropriate decals at eye level
5. Glass thickness to reflect overall sheet dimensions

**Laminates**

1. All laminates to be suitably bonded and balanced
2. All edges to be lipped
3. All grain / pattern direction to be clarified if not specified

**Decoration / Finishing**

1. All surfaces to be appropriately prepared and primed prior to finishing
2. All manufacturers recommended curing times to be observed, respected and accounted for in the finishing of materials
3. Final finishes to be free from any visible defects at a distance of no more than 1 meter
4. All exposed finishes to be selected from only durable sources
5. All samples to be supplied in a format of 300mm x 300mm minimum for plain and for patterned finishes to include pattern repeats in both directions

**Polycarbonate / Plexi glass / Acrylic**

1. All edges to be polished where visible
2. All large format clear screening exposed to the general public to include the appropriate decals at eye level
3. All plastic to be fire retardant.
4. Acrylic not be used in sections greater than 100 sqft.

**Lighting and Power**

1. All display lighting to be dimmable unless otherwise stated.
2. All display lighting to be remotely switched from a central location. Any public accessible switch to be controlled with a key switch.



## 7.0 Finishes List



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**Client:** Smithsonian Institution

**Project:** National Museum of American History – 2nd Floor West Exhibit Design  
**Project No.:** 1403109

**Our ref:** 9961-5a-MVON-Finishes

**Revision:** Rev B

**Date:** March 15, 2016

**Distribution:** Kathryn Campbell, Hal Aber, Harry Rubenstein (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis (HSD)

## Finishes List For: NMAH-2W - Many Voices, One Nation

Finish Reference	Description	Finish	Supplier	Responsibility	Notes
<b>2nd Floor Generic</b>					
C1	Carpet to all Gallery spaces	Carpet Tile	Grunlies/SI	PSRPIII supply only, Contractor to install	
--	Ceramic tile to all Thresholds	Ceramic / Resin Floor	Grunlies	PSRPIII	Existing
B1	Perimeter wall kickers	Vinyl Base Strip	Grunlies	PSRPIII supply only, Contractor to install	
--	Column Clad East/West	Stainless steel	Grunlies	PSRPIII	Existing, no penetrations permitted.
--	Column Clad North/South	Spandrel Glass	Grunlies	PSRPIII	Existing, no penetrations permitted.
<b>Gallery-wide</b>					
M1	Exhibit structure kickers	Brushed Stainless Steel		Contractor	
M2	Powder Coating - Metalwork	RAL 7016 (Anthracite Grey) Gloss	Tiger Drylac	Contractor	
M3	Powder Coating - Metalwork	RAL 9002 (Grey White) Gloss	Tiger Drylac	Contractor	
M4	Powder Coating - Metalwork accent color	RAL 1037 (Yellow) Gloss	Tiger Drylac	Contractor	
P1	Paint - Gallery and Exhibit walls - Exhibit structure	Color: OC-43 Overcast Finish: Eggshell (off white)	Benjamin Moore	Contractor	All case interior paint: Two coats waterborne polyurethane seal & two coats low VOC latex eggshell
	- In-Case panels and display plinths		Benjamin Moore: Eco Spec		
P2	Paint - Gallery and Exhibit walls - Exhibit structure	Color: 2125-20 Deep Space Finish: Eggshell	Benjamin Moore	Contractor	All case interior paint: Two coats waterborne polyurethane seal & two coats low VOC latex eggshell
	- In-Case panels and display plinths		Benjamin Moore: Eco Spec		
P3	Paint - Exhibit structure	Color: OC-55 Paper White Finish: Eggshell	Benjamin Moore	Contractor	To be used where a 'white' paint finish is required
S1	Staron Solid Surface - Exhibit structure	Steel ST023	Samsung SDI	Contractor	
S2	Staron Solid Surface - Exhibit structure	Tusk ST015	Samsung SDI	Contractor	

## Finishes List For: NMAH-2W - Many Voices, One Nation

Finish Reference	Description	Finish	Supplier	Responsibility	Notes
G1	Glass - All display cases - All glass barriers	Low Iron Non reflective	Amiran Schott (or equal)	Contractor	
F1	Fabric wrapped panels to case decks and in-case display plinths	Unisono III-150 306 (Off White)	Creation Baumann	Contractor	
F2	Fabric wrapped panels to case decks and in-case display plinths	Unisono III 234 (Dark Gray)	Creation Baumann	Contractor	
V1	Vinyl Sheet - Exhibit Structure (low level plinth tops)	Color: LonFloor Parchment	Lonseal	Contractor	
--	Object Mounts	Various	See Mounts Lists	Contractor	
--	Graphics panels and edging.	Various	See Graphics list	Contractor	
<b>Intro / Section 1 / Section 8</b>					
P4	Paint - Gallery and Exhibit walls - Exhibit structure	Color: 2167-10 Burnt Caramel Finish: Eggshell (Dark Orange)	Benjamin Moore	Contractor	All case interior paint: Two coats waterborne polyurethane seal & two coats low VOC latex eggshell
	- In-Case panels and display plinths		Benjamin Moore: Eco Spec		
F3	Fabric wrapped panels to in-case display plinths	Ultra IV 306 (Dark Orange)	Creation Baumann	Contractor	
M5	Powder Coating - Metalwork	RAL 9010 Gloss (Dark Orange)	Tiger Drylac	Contractor	
<b>Section 2</b>					
P5	Paint - Gallery and Exhibit walls - Exhibit structure	Color: 2076-10 Crushed Velvet Finish: Eggshell (Dark Pink)	Benjamin Moore	Contractor	All case interior paint: Two coats waterborne polyurethane seal & two coats low VOC latex eggshell
	- In-Case panels and display plinths		Benjamin Moore: Eco Spec		
F4	Fabric wrapped panels to in-case display plinths	Ultra IV 419 (Dark Pink)	Creation Baumann	Contractor	
M6	Powder Coating - Metalwork	RAL 4002 Gloss (Dark Pink)	Tiger Drylac	Contractor	
<b>Section 3</b>					
P6	Paint - Gallery and Exhibit walls - Exhibit structure	Color: Color: 2007-10 Smoldering Red Finish: Eggshell (Dark Red)	Benjamin Moore	Contractor	All case interior paint: Two coats waterborne polyurethane seal & two coats low VOC latex eggshell
	- In-Case panels and display plinths		Benjamin Moore: Eco Spec		
F5	Fabric wrapped panels to in-case display plinths	Unisono III 64 (Dark Red)	Creation Baumann	Contractor	
M7	Powder Coating - Metalwork	RAL 3000 Gloss (Dark Red)	Tiger Drylac	Contractor	
<b>Section 4</b>					
P7	Paint - Gallery and Exhibit walls - Exhibit structure	Color: Color: 2072-30 Purple Lotus Finish: Eggshell (Dark Purple)	Benjamin Moore	Contractor	All case interior paint: Two coats waterborne polyurethane seal & two coats low VOC latex eggshell
	- In-Case panels and display plinths		Benjamin Moore: Eco Spec		

## Finishes List For: NMAH-2W - Many Voices, One Nation

Finish Reference	Description	Finish	Supplier	Responsibility	Notes
F6	Fabric wrapped panels to in-case display plinths	Unisono III 349 (Dark Purple)	Creation Baumann	Contractor	
M8	Powder Coating - Metalwork	RAL 4007 Gloss (Dark Purple)	Tiger Drylac	Contractor	
<b>Section 5</b>					
P8	Paint - Gallery and Exhibit walls - Exhibit structure	Color: Color: 2067-20 Starry Night Blue Finish: Eggshell (Dark Blue)	Benjamin Moore	Contractor	All case interior paint: Two coats waterborne polyurethane seal & two coats low VOC latex eggshell
	- In-Case panels and display plinths		Benjamin Moore: Eco Spec		
F7	Fabric wrapped panels to in-case display plinths	Unisono III 321 (Dark Blue)	Creation Baumann	Contractor	
M9	Powder Coating - Metalwork	RAL 5002 Gloss (Dark Blue)	Tiger Drylac	Contractor	
<b>Section 6</b>					
P9	Paint - Gallery and Exhibit walls - Exhibit structure	Color: Color: 2052-30 Tropical Turquoise Finish: Eggshell (Dark Green)	Benjamin Moore	Contractor	All case interior paint: Two coats waterborne polyurethane seal & two coats low VOC latex eggshell
	- In-Case panels and display plinths		Benjamin Moore: Eco Spec		
F8	Fabric wrapped panels to in-case display plinths	Ultra IV 449 (Dark Green)	Creation Baumann	Contractor	
M10	Powder Coating - Metalwork	RAL 6026 Gloss (Dark Green)	Tiger Drylac	Contractor	
<b>Section 7</b>					

### General Requirements

1. All materials and services to be suitable for intended purpose
2. All materials and services to conform to relevant ANSI (or equivalent) standards as appropriate
3. All materials to be used in conjunction with manufacturers' recommended stipulations
4. All permanent fixed works to be class A fire rated unless otherwise stated.
5. All material selection and services to be executed in accordance with ADA Standards for Accessible Design
6. All federal, state and local regulations prevail
7. The completed exhibit must be visibly free from defects from a distance of 1000mm. Defects include distortion of material, paint loss, surface scratching and discoloration.
8. All sharp edges to be removed unless otherwise specifically stated. In areas of extreme exposure between (0 and 1800mm aff) all edges and corners to be rounded to a minimum of 6mm in radius
9. All reveals to be finished as appropriate
10. Cable management separated into power by data to be included as accessible conduits with draw strings as required
11. Adequate and safe provision to be made in all exhibit structure for access to services (existing or new) and any required ongoing maintenance. Type of access to accommodate frequency of requirements.
12. All lighting (light box) and electrical compartments to be fully ventilated at the upper and lower areas promoting natural air flow.
13. All internal surfaces of the light box to be painted out white to promote uniformity and maximize the brightness of any lamp provided.
14. Any serviceable items to be clearly identified and stock provision checked / secured to provide ongoing maintenance for min 5 years from practical completion
15. All visible fasteners to be non-standard tamper proof unless specifically stated otherwise. Any necessary key bits etc. to be supplied to the client with spares as appropriate
16. All free standing exhibit structure to be supplied with self leveling feet and floor scribe.
17. In addition to the above all wall fixed exhibit structure to be supplied with scribe panels.
18. All goods to be inspected and correctly packed and labeled prior to arriving on site
19. All site works / activities are to be supervised by a competent person and assessed and signed off by a qualified person

## Finishes List For: NMAH-2W - Many Voices, One Nation

Finish Reference	Description	Finish	Supplier	Responsibility	Notes
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- **Competent person:** a person who is capable of identifying existing and predictable hazards in the workplace and who is authorized to take prompt corrective measures to eliminate them.
- **Qualified person:** a person who by possession of a recognized degree or certificate of professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

20. All fasteners into historic buildings to confirm to listed buildings consent and be approved in writing prior to any site activity.
21. All joints where visible to be mitered unless specified otherwise.
22. All dimensions to be checked on site prior to production.
23. As applicable, Contractor's performance shall conform to the following codes, standards, and regulations:
  - International Building Code 2012 Edition
  - Americans with Disabilities Act (ADA)
  - Architectural Barriers Act (ABA)
  - Casework - Architectural Woodwork Institute (AWI)
  - Electrical Work - National Electric Code (NEC)
  - Professional Standards for Museum Accreditation
  - U.S. Department of Energy - Architects and Engineers Guide to Energy Conservation
  - Illumination Engineers Society Standards
  - National Fire Protection Association Life Safety Code 2012
  - Occupational Safety and Health Standards
  - ASHRAE Handbook and Standards (for lighting)
  - All governing local, state, and national codes

### Sheet Material Inc. Medite / Plywood

1. All sheet material to be handled and stored in accordance with manufacturers' specification
2. All reveals sealed against moisture ingress at least 200mm from finished floor level
3. All joints to be glued and screwed and filled and finished to manufacturers' specification
4. All wood to be obtained from sustainable sources
5. All sheet material used for graphics to be supplied free from edge details of fixing brackets until after the graphic finish has been applied
6. All cases over 100 cubic feet to be constructed of fire retardant materials.

### Wood Products

1. All wood products to be free from knot splits and deflection (warping)
2. All wood product to be suitably treated where exposed to moisture for prolonged periods
3. All graining to run long grain unless otherwise stated
4. All wood products to be obtained from sustainable sources
5. Wood for all cases over 100 cubic feet to be fire retardant.

### Cabinet Hardware

1. All handles, knobs and associated fittings to be supplied in Stainless Steel (Grade 316) unless otherwise specified
2. All locks to be suited and keys labeled unless specifically stated otherwise
3. All drawer runners to be heavy duty steel and bearing type with stops and 100% extension
4. All hinged doors to have an appropriate number of hinges to accommodate the door weight and usage
5. All adjustable feet to have nylon locking units

### Steel

1. All material to be supplied in Stainless Steel (Grade 316) unless otherwise specified
2. All non-stainless material to be supplied finished in Epoxy powder coat unless otherwise specifically stated
3. All welded joints to be dressed and cleaned back prior to final finishing
4. Where brushed steel is used, grain direction to be clarified if not specified

### Glass

1. All glass to be either tempered or laminated safety glass



## Finishes List For: NMAH-2W - Many Voices, One Nation

Finish Reference	Description	Finish	Supplier	Responsibility	Notes
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2. All tempered glass to be encapsulated in a suitably profiled metal or timber frame
3. For specific display case glazing see case specification
4. All large format glazing exposed to the general public to include the appropriate decals at eye level
5. Glass thickness to reflect overall sheet dimensions

### Laminates

1. All laminates to be suitably bonded and balanced
2. All edges to be lipped
3. All grain / pattern direction to be clarified if not specified

### Decoration / Finishing

1. All surfaces to be appropriately prepared and primed prior to finishing
2. All manufacturers recommended curing times to be observed, respected and accounted for in the finishing of materials
3. Final finishes to be free from any visible defects at a distance of no more than 1 meter
4. All exposed finishes to be selected from only durable sources
5. All samples to be supplied in a format of 300mm x 300mm minimum for plain and for patterned finishes to include pattern repeats in both directions

### Polycarbonate / Plexi glass / Acrylic

1. All edges to be polished where visible
2. All large format clear screening exposed to the general public to include the appropriate decals at eye level
3. All plastics to be fire retardant.
4. Acrylic not to be used in sections greater than 100sqft.

### Carpet

1. Substrate/subfloor is to be sound and dust free prior to application of finishes.
2. Any defects in the subfloor to be addressed prior to finishing
3. Pile direction is to laid in accordance with proposed visitor flow and manufactures recommendations
4. Appropriate terminations and trims to be included in all doorways and accessible perimeters
5. Tiles to be install broad loom not checker board unless otherwise specifically stated
6. Water based tackifiers preferred over contact adhesives for on going tile maintenance and rotation
7. Trims and transition strips to be appropriate to relative floor finishes / thicknesses
8. Carpet C1 and wall base B1 are Government Furnished Equipment (GFE). The installation of the carpet and the wall base at the appropriate time is the responsibility of the exhibition fabricator and/or their subcontractors.

### Vinyl Flooring

1. Substrate/subfloor is to be sound and dust free prior to application of finishes
2. Appropriate terminations and trims to be included
3. Trims and transition strips to be appropriate to relative floor finishes / thicknesses



7.1 Finishes cut sheets

## 1035 series surface mount contacts

miniature magnetic contacts with wire leads

The 1035 series magnetic contacts save installation time through the use of a specially formulated 3M® adhesive tape. The tape, which establishes a permanent bond between the contact and the surface, can be repositioned in the first five minutes. A low profile and small footprint combine with reliable GE Security technology to make the 1035 series contacts a good choice for applications where drilling holes is impractical.

A wide gap model is available to protect against false alarms from loose-fitting doors and windows.



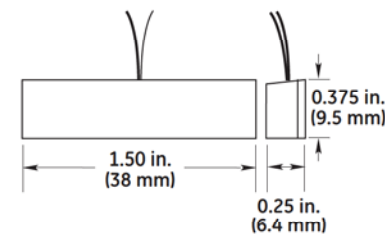
### Specifications

Voltage:	100 VAC/VDC max.
Current:	0.5 A max.
Power:	7.5 W max.
Loop type:	Closed
Electrical configuration:	Normally open
Gap distance:	1035: Up to 5/8 in. 1035W: Up to 1 in.
Lead type:	1 ft. #22 wire
Dimensions (WxHxD):	1.50 x 0.375 x 0.25 in. (38 x 9.5 x 6.4 mm)
Housing:	Flame retardant ABS plastic
Color:	White
Regulatory:	UL, CUL

### Ordering information

1035N-10PKG (-50BOX)	Surface mount miniature self-adhesive contact with wire leads, 5/8 in. gap size, closed loop, white, pk/10 (pk/50 -50BOX)
1035WN-10PKG	Surface mount miniature self-adhesive contact with wire leads, wide gap, 1 in. gap size, closed loop, white, pk/10

- Quick tape mounting; no screws or glue needed
- Urethane/acrylic tape bonding improves with age
- Attractive, low-profile design
- Ideal for thin-frame windows or on sliding glass doors
- Available wider gap distance helps prevent false alarms caused by loose-fitting doors and windows



## 1085T series surface mount contacts

screw mount magnetic contacts with terminals

The 1085T contact is ideal for residential and commercial applications where terminal connections are preferred. The contacts feature positive clamping terminals with anti-rotation lugs and captured screws with combination heads. These allow for easy, quick installations. The positive terminals do not require washers that can corrode or increase resistance. The captured screws cannot be accidentally removed and lost, and they incorporate heads that will accept both Phillips and flat-bladed screwdrivers.

Wide gap and extra wide gap models are available to protect against false alarms from loose-fitting doors and windows.



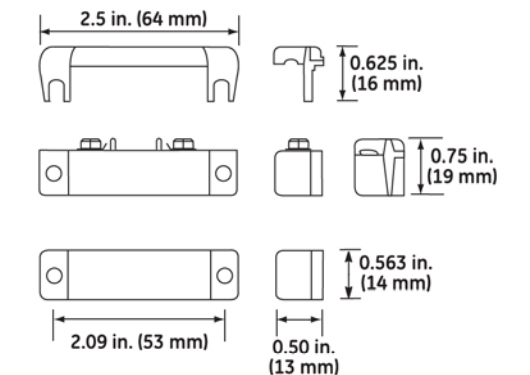
### Specifications

Voltage:	1085/1082: 100 VAC/VDC max.; 1086/1087: 30 VAC/VDC max.
Current:	1085/1082: 0.5 A max.; 1086/1087: 0.25 A max.
Power:	1085/1082: 7.5 W max.; 1086/1087: 3.0 W max.
Loop type:	1085/1082: Closed; 1086: Open; 1087: Open or Closed
Electrical configuration:	1085/1082: Normally open; 1086/1087: SPDT
Gap distance:	1085/1086: Up to 3/4 in.; 1085TW/1087TW: Up to 1-1/2 in.; 1082TW/1084TW: Up to 2 in.
Dimensions (WxHxD):	2.5 x 0.50 x 0.56 in. (64 x 13 x 14 mm)
Housing:	Flame retardant ABS plastic
Color:	White, brown, gray

### Ordering information

1085TN-10PKG (-50BOX)	Surface mount magnetic contact w/ terminals, closed loop, white, pk/10 (pk/50 -50BOX)
1085TM-10PKG (-50BOX)	Surface mount magnetic contact w/ terminals, closed loop, brown, pk/10 (pk/50 -50BOX)
1085TG-10PKG (-50BOX)	Surface mount magnetic contact w/ terminals, closed loop, gray, pk/10 (pk/50 -50BOX)
1085TWN-10PKG (-50BOX)	Surface mount magnetic contact w/ terminals, wide gap, closed loop, white, pk/10 (pk/50 -50BOX)
1085TWM-10PKG	Surface mount magnetic contact w/ terminals, wide gap, closed loop, brown, pk/10
1086T-N	Surface mount magnetic contact w/ terminals, open loop, white
1087TN-10PKG	Surface mount magnetic contact w/ terminals, SPDT, white, pk/10
1087TM-10PKG	Surface mount magnetic contact w/ terminals, SPDT, brown, pk/10
1087TG-10PKG	Surface mount magnetic contact w/ terminals, SPDT, gray, pk/10
1087TW-N	Surface mount magnetic contact w/ terminals, wide gap, SPDT, white
1082TWM-10PKG	Surface mount magnetic contact w/ terminals, extra wide gap, closed loop, brown, pk/10
1084TW-N	Surface mount magnetic contact w/ terminals, extra wide gap, SPDT, white
1084TW-M	Surface mount magnetic contact w/ terminals, extra wide gap, SPDT, brown
1084TW-G	Surface mount magnetic contact w/ terminals, extra wide gap, SPDT, gray
1087TH-N	Surface mount magnetic contact w/ terminals, 3/8 to 1-1/4 in. gap size, high security, SPDT, white

- Positive clamping terminals with captured screws and combination heads for easy installation
- Cover, spacers, and mounting hardware included
- Ideal for residential and commercial applications where terminal connections are preferred
- Available wider gap distance helps prevent false alarms caused by loose-fitting doors and windows





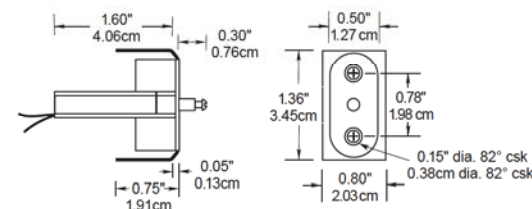
**Recessed Pin Plunger**  
**3010 Series**

**Applications**

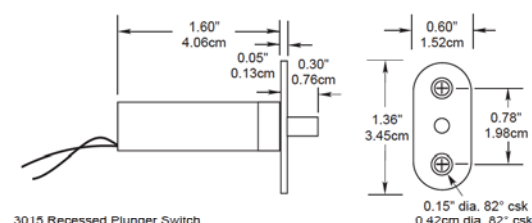
- Model 3015 available in plate mount or clip mount configuration
- Model 3025 plunger self-adjusts to proper reach
  - Pulling out on plunger shunts switch
  - Disconnection while servicing equipment is unnecessary

**General Specifications**

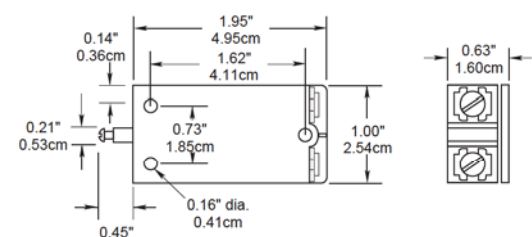
Enclosure	ABS plastic
Temperature Range	-40°F to 150°F (-40°C to 65°C)
Environmental	Contact Housing is made of flame-retardant ABS plastic. Reed switch is protected and held in place by a polyurethane potting material
NEMA Rating	1
Protection Class	IP 62
Response Time	1 msec max.
Life Cycles	100,000 Under Full Load, 10,000,000 Under Dry Circuit
Lead Types/O.D.	#22 wire / 0.05" (0.15cm)
Color Choices	Natural(N), Mahogany(M)
UL Listed	All Models



3012 Clip Mount Plunger



3015 Recessed Plunger Switch  
Includes: 1- Adjustable #6 x 3/2" Phillips screw



3025 Tamper Switch



Order Information		Electrical Specifications				
Part Number	Contact Configuration	Load Rating (AC/DC)	Switching Voltage (AC/DC)	Switching Current (AC/DC)	Contact Resistance	Lead Length
3012-M, N	N.O.	7.5W/VA	100V	0.5A	0.2 Ohms	1'
3015-M, N	N.O.	7.5W/VA	100V	0.5A	0.2 Ohms	1'
3027-M	SPDT	3W/VA	30V	0.25A	0.2 Ohms	1'
3025T-M	N.O.	7.5W/VA	100V	0.5A	0.2 Ohms	#6 Screw Terminal

**Warning— Each electrical rating is an individual maximum and cannot be exceeded!**  
<sup>1</sup> Configuration with plunger out.



**IEI 834L GLASSBREAK/VIBRATION DETECTOR**

The IEI 834L Viper Plus with Contact is a frame mount glassbreak/selective vibration detector. The Viper Plus contains a custom integrated circuit designed specifically to detect vibration signals associated with forced entry in a wide variety of surfaces including: windows, doors, walls and glass of all types. You can adjust the Viper Plus for sensitivity over a wide range, but it's immune to low frequency vibration. The Viper Plus is a standalone sensor with no additional processor required.

**IEI 834L Viper Plus Features**

- Patented Integrated Circuit Design
- Solid-State Piezoelectric Device
- No Separate Processor Required
- Latching Alarm LED
- Auto Reset Alarm Relay
- Simplified Calibration Test Mode
- Cover Tamper Contact
- Double Knock Feature For Alarm Verification
- Immune to Low Frequency Vibration
- High-Low Sensitivity Jumper

**Auto-Reset Relay**

When the Viper Plus goes into alarm, the relay contact remains open for 8 seconds before re-closing to detect a second independent attack, if necessary.

**Cover Tamper Contact**

The cover is monitored against unwanted sensitivity changes or tampering with a switch mounted on the circuit board. This switch is internally wired in series with the alarm relay. No additional wiring is necessary.

**Double Knock Mode**

Most unwanted signals fade within 200 milliseconds. Prolonged attack or breaking glass exceeds this time. When Double Knock Mode is enabled and the Viper Plus detects a signal above set sensitivity level it enters the active mode but ignores all levels of signal for approximately 200 milliseconds. If the vibration remains above the set sensitivity level for more than 200 milliseconds, or a second attack exceeds the set sensitivity level within 8 seconds, the Viper Plus goes into alarm.

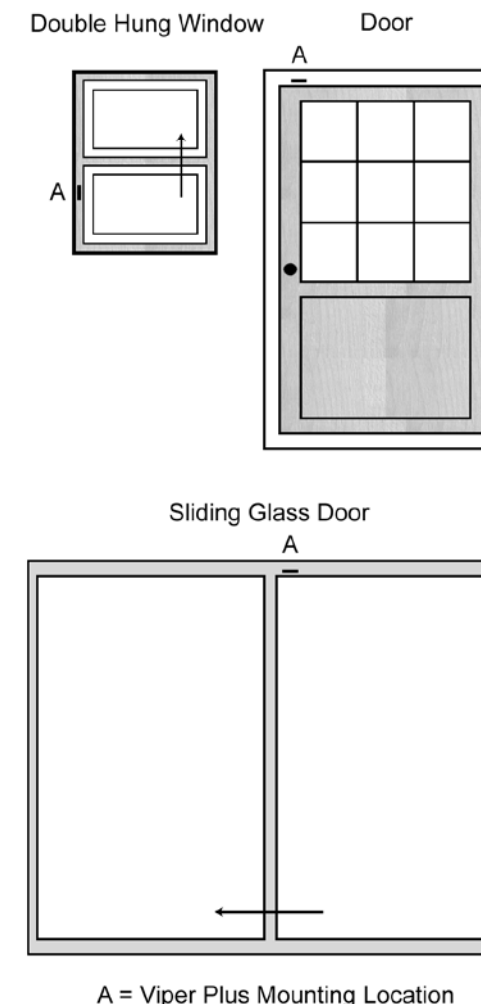
**Calibration Test Mode**

The first time you trip your Viper Plus there is an 8 second delay before the LED turns on (the relay opens for 8 seconds as it normally does). After this first trip the LED remains on and shows each subsequent trip by turning off for 8 seconds. When you are finished testing, interrupt the power to reset the LED for normal operation.

**Specifications**

Operating Voltage: 10-15VDC (filtered and regulated)  
 Power Consumption: 6mA (normal); 13mA (alarm)  
 Range: Up to 10 ft. radius  
 Voltage Monitor: Low or No Voltage cause alarm activation  
 Voltage Supervision: Alarm Relay  
 Relay Activation Time: 8 seconds  
 Alarm LED: Latch or auto-reset  
 Alarm Relay: SPST (form A) contacts, 0.5A @ 30VDC  
 Installation: Hardwire 4 wires  
 Operating Temperature: 0 ° to 120 ° F (-20° to 50°C)  
 Mounting: Surface – screws included  
 Sensor Size: 3.35" long x 0.90" wide x 1.00" high  
 Weight: 2.1 ounces  
 Color: White

**Installation Instructions**



A = Viper Plus Mounting Location

POSITION SENSORS

### Mounting the Viper Plus

Mount the Viper Plus on the door or window frame, as shown in the illustrated examples. Do not install across structural members or at joints in construction in frames or bridge any other two components in a structure. Make sure you mount the Viper Plus on a flat surface, clear of bumps or grit. Also verify the mounting surface is in good physical condition with no loose or rattling parts. You must take additional care when installing in areas accessible to the public. In areas where protection is required for larger areas and low sensitivity desired for better false alarm rejection (such as windows adjacent to a public sidewalk) use two Vipers.

To remove the cover, unscrew the retaining screw on the front. The unit consists of two pieces, the cover and the base plate with the circuit board. Position the base plate on the surface and mark the mounting holes. The self-tapping screws are suitable for most materials. For metal frames, drill a 3/32" pilot hole. Be careful not to damage the circuit board in the base plate when driving screws.

**Note:** When mounted, the cover must not make contact with another surface.

### Wiring the Viper Plus

You can run the wires either through the back of the base plate using the wire slot (for concealed wiring - see diagram), or through the bottom of the cover using the rubber grommet. To use the grommet you must cut out the area on the bottom of the cover indicated by the indentations on the inside.

When mounting vertically install the Viper Plus so the wires enter from the bottom of the unit, to prevent water entry. When mounting horizontally, remember to add a drip to loop to prevent water from running along the wires and entering the case.

The diagram below shows the four terminal strip connections. Attach power leads to +12VDC and GND terminals. When connecting the power, you must observe polarity. Also, use a filtered and regulated power supply, with at least four hours of standby time. You should also provide a switch or other circuit to interrupt power to reset a latched alarm LED (if selected).

Attach a normally closed loop from your control panel to the remaining tamper loop terminals. These are "open" until the Viper Plus is powered up. The cover tamper switch and magnetic reed switch are in series with the alarm relay circuit. These must be in place for the circuit to close.

When finished wiring, secure the cover onto the base plate and turn on the power.

### Calibrating the Viper Plus

The Viper Plus has a test feature that eliminates the need to manually reset power during testing. The first time you trip the Viper Plus there is an 8 second delay before the LED turns on (the relay opens for 8 seconds as it normally does). After the first trip the LED remains on and shows each subsequent trip by turning off for 8 seconds. When finished with testing, interrupt power to reset the LED for normal operation. To disable the LED turn dipswitch 2 off.

You should set the sensitivity as low as possible to reduce the change of false alarms. The Viper Plus has a High-Low jumper setting to increase or decrease its sensitivity. With the jumper in place, the Viper is set for Low sensitivity mode. By removing the jumper, the Viper becomes more sensitive. To set the sensitivity, use the IEI-815 calibration tool. This device puts a predetermined amount of shock into the window or doorframe. If you don't have the IEI-815 tool, simply protect the surface and impact it with a hard object like a small hammer or the back of a screwdriver, taking care not to damage the surface.

Trip the Viper Plus at the limit of protection desired. Remember that the Viper Plus will respond to one large blow or several small ones. Where it's likely that more than one blow is required to breach a window or door, apply several "hits" of the IEI 815 within an 8 second period to simulate the shock to set the sensitivity. Calibrate around the extremities of the area and progressively decrease sensitivity by rotating the sensitivity adjustment potentiometer counter clockwise. When you reach a point where the Viper Plus no longer trips, slightly increase the sensitivity until the LED response is obtained. **DO NOT USE THE CALIBRATION TOOL DIRECTLY ON GLASS!**

### Double Knock Setting

For increased resistance to false alarms use the "double knock" feature. After the initial shock, the Viper Plus continues to analyze the signal for another 8 seconds. If another large shock or several smaller ones occur within the next 8 seconds the Viper Plus goes into alarm. To enable this feature set dipswitch 1 to off. This feature is ideal for laminated and bulletproof glass.

### IEI Limited Warranty

Because the manufacturer does not install or connect this security device the manufacturer cannot guarantee its performance. Therefore, there are no warranties, expressed or implied (except as stated below), attached to the sale of this product.

The manufacturer warrants against defects in material and workmanship in this device for 3 years from the date of manufacture. During the warranty period the manufacturer, at its sole option, will repair or replace free of charge any defective unit returned freight prepaid. This warranty shall remain in force and effect for 3 years provided the unit was properly installed and operated, has not been subject to misuse and has not been repaired or altered other than by the original manufacturer.

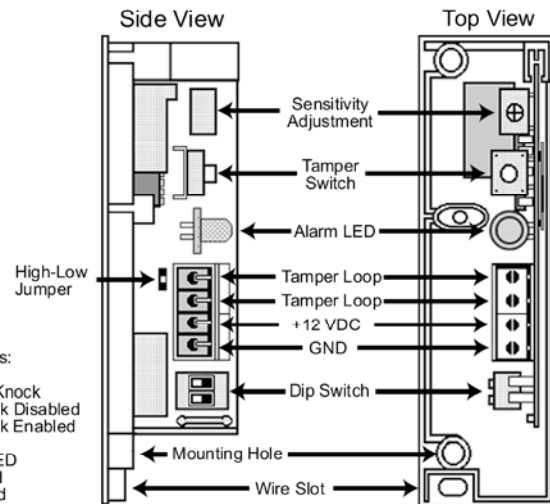
The forgoing states the buyer's sole and exclusive remedy for any breach of warranty or for any claim, whether sounding in contract, tort, strict liability, or negligence, based upon any defect in this security device.

The manufacturer shall in no event be responsible for any incidental or consequential damages incurred by the buyer.

This warranty supersedes all previous warranties.



International Electronics, Inc.  
427 Turnpike St.  
Canton, MA 02021  
1-800-343-9502 (outside MA)  
www.ieib.com



Dip Switch Settings:

Switch 1: Double Knock  
On = Double Knock Disabled  
Off = Double Knock Enabled

Switch 2: Alarm LED  
On = LED Enabled  
Off = LED Disabled



# ECO SPEC® WB

## INTERIOR LATEX

### EGGSHELL FINISH N374

### Features

- Minimal Odor
- Zero VOC's in any base and any color
- Quick return to service
- Provides a mildew resistant coating
- Dries quickly to a beautiful, washable and uniform eggshell finish
- Spatter resistant

### Recommended For

For use on primed or previously painted drywall, masonry, plaster, wood, metal and wallpapered surfaces. Use Eco Spec® WB Interior Latex Primer (N372) as a first coat when a low odor, solvent free primer/finish system is desired.

### General Description

A low odor, zero VOC (Volatile Organic Compounds), 100% acrylic interior latex eggshell finish that is high hiding has excellent touch up and a uniform eggshell finish. Eco Spec® WB Interior Latex Eggshell Finish is ideally suited for commercial, facility management and residential applications. Eco Spec® WB Interior Latex Eggshell Finish does not have the odor of conventional paints that contain ingredients known as VOC's. This product contains antimicrobial additives that inhibit the growth of mold and mildew on the surface of the paint film.

### Limitations

- Do not paint when temperature of air and surface is below 50°F (10°C).

### Product Information

Colors: —Standard:	Technical Data <sup>§</sup>	Pastel Base
White (01) (May be tinted with up to 2.0 fl. oz. of Gennex® Waterborne Colorants per gallon)	Vehicle Type	100% Acrylic Latex
—Tint Bases:	Pigment Type	Titanium Dioxide
Gennex® Waterborne Colorant Bases 1X, 2X, 3X and 4X.	Volume Solids	36%
—Special Colors:	Coverage per Gallon at Recommended Film Thickness	400 – 450 Sq. Ft.
Contact your Benjamin Moore representative	Recommended Film Thickness	– Wet 3.8 mils – Dry 1.4 mils
<b>Certification:</b>	Depending on surface texture and porosity. Be sure to estimate the right amount of paint for the job. This will ensure color uniformity and minimize the disposal of excess paint.	
<b>VOC compliant in all regulated areas</b>	Dry Time @ 77°F	– To Touch ½ to 1 Hour (25°C) @ 50% RH – To Recoat 1 to 2 Hours
Formulated to provide a zero VOC (Volatile Organic Compounds) finish system in any base and any color.	Painted surfaces can be washed after two weeks. High humidity and cool temperatures will result in longer dry, recoat and service times.	
Master Painters Institute MPI # 52, 52 X-Green, 139, 139 X-Green, 145, 145 X-Green	Dries By	Coalescence
Class A (0-25) over non-combustible surfaces when tested in accordance with ASTM E-84	Viscosity	99 ± 3 KU
Passed ASTM D3273 for mildew resistance with a rating of 8.3 after 4 weeks	Flash Point	None
	Gloss / Sheen	Eggshell (15-25 @ 85°)
	Surface Temperature	– Min. 50°F – Max. 90°F
	Thin With	See Chart
	Clean Up Thinner	Clean Water
	Weight Per Gallon	11.2 lbs
	Storage Temperature	– Min. 40°F – Max. 90°F
	<b>Volatile Organic Compounds (VOC)</b>	
	0 Grams / Liter	0 LBS / Gallon
	<b>-Zero VOC post tint (any base and any color)</b>	
	<b>Technical Assistance</b>	
	Available through your local authorized Benjamin Moore® retailer. For the location of the retailer nearest you, call 1-800-826-2623, see <a href="http://www.benjaminmoore.com">www.benjaminmoore.com</a> , or consult your local Yellow Pages	

<sup>§</sup>Reported values are for Pastel Base. Contact Benjamin Moore for values of other bases or colors.

## Eco Spec® WB Interior Latex Eggshell Finish N374

### Surface Preparation

Surfaces to be painted must be clean, dry, and free of dirt, dust, grease, oil, soap, wax, scaling paint, water soluble materials, and mildew. Remove any peeling or scaling paint and sand these areas to feather edges smooth with adjacent surfaces. Glossy areas should be dulled. Drywall surfaces must be free of sanding dust.

New plaster or masonry surfaces must be allowed to cure (30 days) before applying base coat. Cured plaster should be hard, have a slight sheen and maximum pH of 10; soft, porous or powdery plaster indicates improper cure. Never sand a plaster surface; knife off any protrusions and prime plaster before and after applying patching compound. Poured or pre-cast concrete with a very smooth surface should be etched or abraded to promote adhesion after removing all form release agents and curing compounds. Remove any powder or loose particles before priming.

**Difficult Substrates:** Benjamin Moore offers a variety of specialty primers for use over difficult substrates such as plaster, bleeding woods, grease stains, crayon markings, hard glossy surfaces, galvanized metal or other substrates where paint adhesion or stain suppression is a particular problem. Your Benjamin Moore® retailer or architectural representative can recommend the right problem-solving primer for your special needs.

**WARNING!** If you scrape, sand or remove old paint, you may release lead dust. **LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE.** Wear a NIOSH-approved respirator to control lead exposure. Carefully clean up with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the National Lead Information Hotline at 1-800-424-LEAD or log on to [www.epa.gov/lead](http://www.epa.gov/lead).

### Primer/Finish Systems

New surfaces should be fully primed, and previously painted surfaces may be primed or spot primed as necessary. Eco Spec® WB Interior Latex Primer (N372) is the preferred primer in most situations. For best hiding results use Eco Spec® WB Primer tinted to the approximate finish coat color. **Special Note:** Certain custom colors require a Deep Color Base Primer tinted to a special prescription formula to achieve the desired color. Consult your retailer.

#### Wood, and engineered wood products:

**Primer:** Eco Spec® WB Interior Latex Primer (N372) or Fresh Start® Alkyd Enamel Underbody (217)

**Finish:** 1 or 2 coats Eco Spec® WB Interior Latex Eggshell Finish (N374)

#### Drywall:

**Primer:** Eco Spec® WB Interior Latex Primer (N372), Fresh Start® All-Purpose 100% Acrylic Primer (N023) or Fresh Start® 100% Acrylic Superior Primer (046)

**Finish:** 1 or 2 coats Eco Spec® WB Interior Latex Eggshell Finish (N374)

#### Plaster:

**Primer:** Eco Spec® WB Interior Latex Primer (N372), Fresh Start® All-Purpose 100% Acrylic Primer (N023) or Fresh Start® 100% Acrylic Superior Primer (046)

**Finish:** 1 or 2 coats Eco Spec® WB Interior Latex Eggshell Finish (N374)

#### Rough or Pitted Masonry:

**Primer:** Super Spec® Latex Block Filler (160) or Super Spec® Masonry Interior/Exterior Hi-Build Block Filler (206)

**Finish:** 1 or 2 coats Eco Spec® WB Interior Latex Eggshell Finish (N374)

#### Smooth Poured or Pre-cast Concrete:

**Primer:** Super Spec® Masonry Interior/Exterior 100% Acrylic Masonry Sealer (N066), Fresh Start® All-Purpose 100% Acrylic Primer (N023) or Fresh Start® 100% Acrylic Superior Primer (046)

**Finish:** 1 or 2 coats Eco Spec® WB Interior Latex Eggshell Finish (N374)

#### Ferrous Metal (Steel and Iron):

**Primer:** Super Spec HP® Acrylic Metal Primer (P04) or Super Spec HP® Alkyd Metal Primer (P06)

**Finish:** 1 or 2 coats Eco Spec® WB Interior Latex Eggshell Finish (N374)

**Non-Ferrous Metal (Galvanized & Aluminum):** All new metal surfaces must be thoroughly cleaned with Super Spec HP® Oil & Grease Emulsifier (P83) to remove contaminants. New shiny non-ferrous metal surfaces that will be subject to abrasion should be dulled with very fine sandpaper or a synthetic steel wool pad to promote adhesion

**Primer:** Acrylic Metal Primer (P04)

**Finish:** 1 or 2 coats Eco Spec® WB Interior Latex Eggshell Finish (N374)

**Repaint, All Substrates:** Prime bare areas with the primer recommended above for the substrate.

### Application

Stir thoroughly before and during use. Apply one or two coats. Use the same brushing techniques as you would for any zero-VOC compliant interior coating. For best results, use a premium Benjamin Moore® custom-blended nylon/polyester brush, premium Benjamin Moore® roller or a similar product. Apply paint generously from unpainted area into wet area. Eco Spec® WB dries faster than other acrylic paints, so avoid lap marks by maintaining a wet edge. Roll out vertical sections in 3' to 4' widths. This product can also be sprayed; refer to the chart below for spray recommendations.

### Thinning/Cleaning

Conditioning with Benjamin Moore® 518 Extender may be necessary under certain conditions to adjust open time or spray characteristics.		
The chart below is for general guidance		
	Mild conditions	Severe Conditions
	Humid (RH> 50%) with no direct sunlight & with little to no wind	Dry (RH<50%), in direct sunlight, or windy conditions
<b>Brush:</b> Nylon / Polyester	No thinning necessary	Add 518 Extender or water:
<b>Roller:</b> Premium Quality		Max 8 fl. oz. to a gallon of paint
<b>Spray:</b> Airless Pressure: 1500 -2500 psi Tip: .013- .017		<b>Never add other paints or solvents.</b>

**Cleanup:** Wash brushes, rollers, and other painting tools in warm soapy water immediately after use. Spray equipment should be given a final rinse with mineral spirits to prevent rusting.

**USE COMPLETELY OR DISPOSE OF PROPERLY.** Dry, empty containers may be recycled in a can recycling program. Local disposal requirements vary; consult your sanitation department or state-designated environmental agency on disposal options.

### Environmental, Health & Safety Information

**Use only with adequate ventilation.** Do not breathe spray mist or sanding dust. Ensure fresh air entry during application and drying. Avoid contact with eyes and prolonged or repeated contact with skin. Avoid exposure to dust and spray mist by wearing a NIOSH approved respirator during application, sanding and clean up. Follow respirator manufacturer's directions for respirator use. Close container after each use. Wash thoroughly after handling.

**WARNING:** This product contains a chemical known to the state of California to cause cancer and birth defects, or other reproductive harm.

**FIRST AID:** In case of eye contact, flush immediately with plenty of water for at least 15 minutes; for skin, wash thoroughly with soap and water. If symptoms persist, seek medical attention. If you experience difficulty breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical attention immediately.

**IN CASE OF SPILL** – Absorb with inert material and dispose of as specified under "Cleanup".

**KEEP OUT OF REACH OF CHILDREN  
PROTECT FROM FREEZING**

**Refer to Material Safety Data Sheet for additional health and safety information.**

Benjamin Moore & Co., 101 Paragon Drive, Montvale, NJ 07645 Tel: (201) 573-9600 Fax: (201) 573-9046 [www.benjaminmoore.com](http://www.benjaminmoore.com) M72 N374 US 040612 Benjamin Moore, Eco Spec, Fresh Start, Gennex, Green Promise, Super Spec, Super Spec HP and the triangle "M" symbol are registered trademarks, licensed to Benjamin Moore & Co. © 2008, 2012 Benjamin Moore & Co. All rights reserved. All other trademarks belong to their respective owners.

**INTERCEPT**  
Silver & Jewelry Care Co.  
Simply better protection

Intercept Technology™  
Complete Filtration Unit



Intercept Technology™ is used by NASA, The British Royal Mint and jewelry manufacturers worldwide.

Intercept Silver & Jewelry Care Co. LLC proudly presents the latest in Intercept Technology™ for preventing tarnish and corrosion of precious metals in jewelry showcases and storage areas. Perfectly safe and non-toxic protection for all metals and gemstones and does not leave deposits on items it protects.

### Intercept Complete Filtration

Others may claim to be based on the Intercept Technology™, but only the ICF Filter, from Intercept Silver & Jewelry Care Co., is manufactured by a licensed Intercept Technology™ company.

Ideal for jewelry showcases, safes & breakfronts. Intercept Technology™ Filtration – 3 Products – based on your requirements, are:

- (1) ICF Filter with Corrosion Intercept® filter pads for atmospheric pollution.
- (2) ICF Filter with Corrosion Intercept® Plus for atmospheric pollution and organic gases (The filter pad starts off with a black color).
- (3) Passive filtration – filter pads for use with already existing recirculation units.

### How Does it Work:

- The Intercept Technology™ was developed by Lucent Technologies Bell Labs.

- Intercept Technology™ utilizes a solid state additive, reacted into a polymer structure providing extremely high surface area reactive elements that literally react with and permanently neutralize the corrosive gases – not merely absorbing like traditional filter systems do – as air flows through the filter pads.

- The ICF filters do not and cannot produce Ozone and do not out-gas (release corrosive gases) like charcoal based products.

- The Copper particles used in the Intercept filters do not react quickly with organic gases, so other materials are added to the Intercept filters and act in a synergy with the Copper to provide filtration for the organic gases.

### Advantages:

- The fan unit's filter can last up to 3 months providing the required continuous cleaning of the air space – simple short purging is not sufficient in most cases

- The filter unit does not require hermetic seals, though isolating the inside of a showcase from wood products, using RIBS MVTR or other equivalent barrier, is advised.

- The copper Corrosion Intercept® pad changes color from copper to gray when saturated, indicating it's time to replace the filter.



Static Intercept® and Corrosion Intercept® are compliant with All current European Environmental Packaging Legislation, including: TRGS-615 (Germany) • TRGS-90 (Germany)

139 Millburn Ave. • Millburn, NJ 07041 • Ph: 888-668-7674 • [www.interceptjewelrycare.com](http://www.interceptjewelrycare.com)

### Item Number

To determine your item number enter the **RED** option code for each section as in the example below.

A B C D E F G H I J  
CL H 05 1203 PN Y Y Y N 106

A Lock Style			
CL	Cam Lock		
B Core Type		Price	
M	Medeco® Biaxial	\$ 0.00	
H	Medeco® Biaxial m <sup>3</sup>	Std.	
R	Medeco® Biaxial Removable Core	6.15	
G	Medeco® Biaxial m <sup>3</sup> Removable Core	6.15	
C Housing Length			
		MAXIMUM MATERIAL THICKNESS	BARREL LENGTH
02		3/8"	11/16"
03		5/8"	7/8"
04*		7/8"	1-1/8"
05		1-1/4"	1-1/2"
10		1-5/8"	1-13/16"
11		1-13/16"	2"
12		2-1/8"	2-3/8"
13		2-1/2"	2-13/16"
14		2-11/16"	3"
15		3"	3-3/8"
D Cam Rotation			
		LOCKED	OPEN
0312		3	12
0306		3	6
0309		3	9
0612		6	12
0603		6	3
0609		6	9
0912		9	12
0903		9	3
0906		9	6
1203		12	3
1206		12	6
1209		12	9
E Plating Finish			
PN	Polished Nickel w/Satin Chrome Core	Std.	
PB	Polished Brass	3.35	
SB	Satin Brass	3.35	
BL	Matte Black	3.35	
ST	Statuary Bronze	3.35	
CF	Custom Finish	Call	
F Key Retaining			
N*	No	1.50	
Y	Yes	Std.	
G Keyed Different			
N	No	Std.	
Y	Yes	0.45	
H Stamp Lock			
N	No	Std.	
Y	Yes	0.45	
I Master Keyed			
N	No	Std.	
Y	Yes	2.15	
G	Grand Master	3.75	

Prices vary according to quantity ordered.

NOTE: Keys are not included with this lock. See page M4 to order keys.

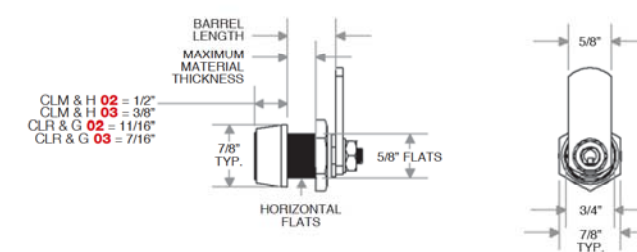


Note: All Cam Locks come with a 1-1/4" Straight Cam unless a different cam is chosen.

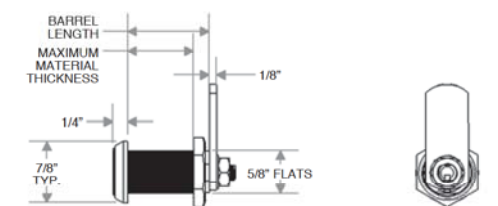
J Cam Type		
		Price
<b>STRAIGHT</b>		
101	5/8"	\$ 0.00
102	3/4"	0.00
103	7/8"	0.00
104	1"	0.00
105	1-1/8"	0.00
106	1-1/4"	Std.
107	1-3/8"	0.45
108	1-1/2"	0.45
110	1-3/4"	0.45
112	2"	0.50
116	2-1/2"	0.50
<b>1/8" OFFSET</b>		
303	7/8"	0.60
306	1-1/4"	0.65
308	1-1/2"	0.65
312	2"	0.70
<b>1/4" OFFSET</b>		
403	7/8"	0.60
404	1"	0.65
406	1-1/4"	0.65
408	1-1/2"	0.65
410	1-3/4"	0.65
412	2"	0.70
414	2-1/4"	0.70
<b>3/8" OFFSET</b>		
504	1"	0.65
506	1-1/4"	0.65
508	1-1/2"	0.65
512	2"	0.70
<b>1/2" OFFSET</b>		
606	1-1/4"	0.65
608	1-1/2"	0.65
610	1-3/4"	0.65
612	2"	0.70
<b>5/8" OFFSET</b>		
712	2"	2.00
<b>HOOK</b>		
202	3/4"	0.60
204	1"	0.65
206	1-1/4"	0.65
208	1-1/2"	0.65
210	1-3/4"	0.65
<b>FOR SWITCH KIT</b>		
SL	No Cam*	0.00
<b>CUSTOM CAM</b>		
CL		Call

\*Switch option available. See Page A10 to order switch kit.

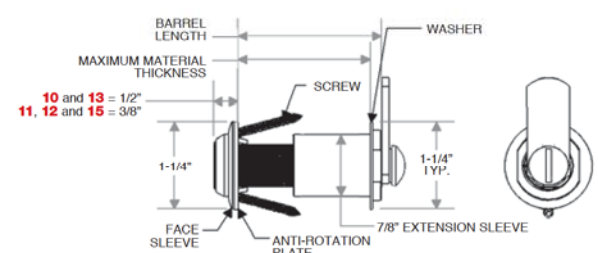
### HOUSING LENGTHS 02 and 03



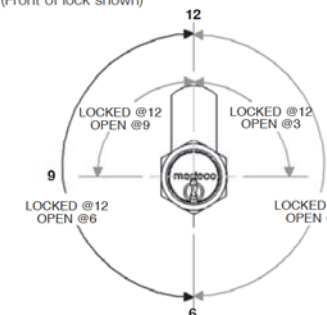
### HOUSING LENGTH 04 and 05



### HOUSING LENGTHS 10, 11, 12, 13, 14 and 15

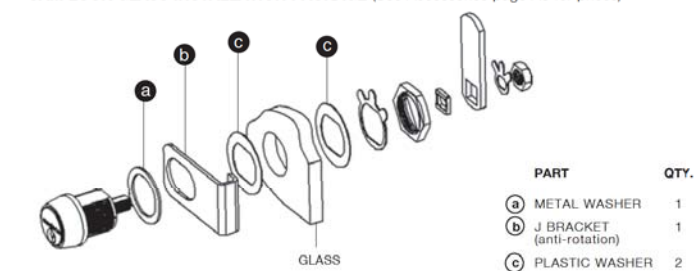


### CAM ROTATIONS (Front of lock shown)

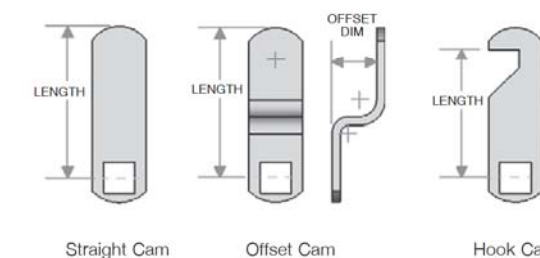


All non-key retaining 90 degree rotations are custom - call Kenstan. All 180 degree rotations are clockwise, unless specified.

### CAM LOCK GLASS INSTALLATION PACKAGE (See Accessories page A8 for prices)

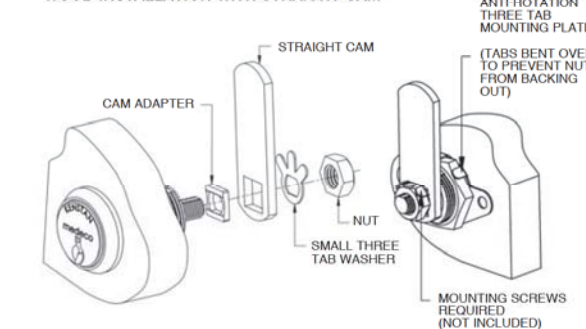


### Cam Type

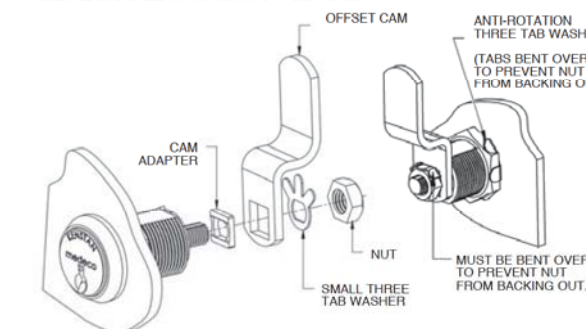


Note: All cams are reversible.

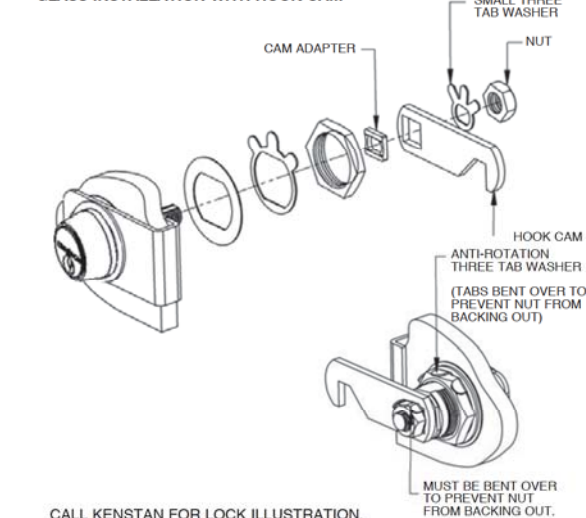
### WOOD INSTALLATION WITH STRAIGHT CAM



### METAL INSTALLATION WITH OFFSET CAM



### GLASS INSTALLATION WITH HOOK CAM



CALL KENSTAN FOR LOCK ILLUSTRATION.

## ANGUTEC MFH100 Specification Sheet

Load Capacity (kg)	100kg
Opening Angle	95°
Production Quality Standard	ISO9001
Cycle Rating	Grade 12a (100kg/200,000 cycles)
Adjustment Range	
Height	12mm
Sideways	12mm
Compression	6mm
Adjustment Mechanisms	Turnbuckle Linkage, Set Screws
Adjuster Mechanism Material	AISI 316 Stainless Steel – Self locking
Hinge Weight (Door Mount D01 & Frame Mount F01)	0.470 kg (16.6 oz.)
Recycling	Fully Recyclable
Colours	Black, Grey, Custom
Castings / Mouldings	
Material	Fibre Reinforced Polymer
Process	Injection Moulded
Machined Components	
Material	AISI 316 Stainless Steel
Emission Rating	Emission Free (Inert)
Corrosion Resistance	Exceeds ISO 9227 & BS EN 1670:1998
Door Installation Types	
Inset	✓
Overlay	✓
Curtain Wall	✓
Curtain Wall Back-To-Back	✓
Door Mounting Options	
Single Point Fixing	✓
Key Slot Mounting	✓
Surface Screw Mounting	✓
Mortised Insert Mounting	✓



FOR MORE INFORMATION GO TO  
[www.manfredfrank.com](http://www.manfredfrank.com)

CONTACT & SUPPORT:  
support@manfredfrank.com

Manfred Frank Systems Ltd., Unit C, 11 Echelon Place, East Tamaki 2013, Auckland, New Zealand  
PO Box 259239, Botany 2163, Auckland, New Zealand

+64 9 272 3690

## SCHOTT AMIRAN® – Anti-Reflective Glass

### Technical Data Sheet

**Base material:** Extra-clear low-iron float glass

**Processing:** Thermally toughened safety glass/heat strengthened glass/laminated safety glass/Curved glass/insulating glass/sun protection glass/sound protecting glass/alarm glass/security glazing/screen printing/drilling of holes/edge processing

	Max. net dimensions (min.) mm x mm	Thickness mm	Glass substrate	Luminous reflectance P <sub>0,065</sub> %	Luminous transmittance τ <sub>0,065</sub> %	Color rendering index R <sub>a</sub>	Thermal transmittance U <sub>g</sub> W/(m <sup>2</sup> ·K)	Total solar energy transmittance g %	UV-transmittance τ <sub>UV</sub> %
AMIRAN®	3,770 × 1,770	4, 6, 8, 10, 12	Extra-clear low-iron float glass	1	98	100	5.8	90	63
AMIRAN® Thermally toughened safety glass/heat strengthened glass	3,770 × 1,770	4, 6, 8, 10, 12	Extra-clear low-iron float glass	1	98	100	5.8	90	63
AMIRAN® LSG with a PVB film	3,770 × 1,770	Dependant on assembly	Extra-clear low-iron float glass	1	97	100	5.7	89	1
AMIRAN® Insulating glass optionally as thermally toughened safety glass	3,770 × 1,770 Dependant on the processor	Dependant on assembly	Extra-clear low-iron float glass	2	96	99	2.6	87	49
AMIRAN® Insulating glass with sun protection, optionally as thermally toughened safety glass	3,770 × 1,770 Dependant on the processor	Dependant on assembly	Extra-clear low-iron float glass	3	85	98	1.1	48	14
AMIRAN® Insulating glass with heat protection, optionally as thermally toughened safety glass								64	

### Conventional glass in comparison

	Dependant on the manufacturer	Dependant on the manufacturer	Float glass Extra-clear low-iron float glass	approx. 8	90	98	5.8	86	62
Thermally toughened safety glass				approx. 8	91	99	5.8	91	84
Insulating glass	Dependant on the manufacturer	Dependant on the manufacturer	Float glass Extra-clear low-iron float glass	approx. 15	80	97	2.6	75	39
				approx. 15	84	99	2.6	83	72

- Glass pane
- AMIRAN® anti-reflective coating
- PVB film
- Spacer
- Space between the panes (filled with air or gas)
- Solar control coating (Arcon Sunbelt Platin)

- The values refer to a glass thickness of 4 mm for monolithic glasses. The structure selected for laminated safety glass is 4/0.76/4 mm; for insulating glass units 4/16/4 mm filled with argon gas.
- The values are calculated based on the standards DIN EN 410 and DIN EN 673.

Advanced Optics  
SCHOTT AG  
Hattenbergstrasse 10  
55122 Mainz  
Germany  
Phone +49 (0)6131/66-1812  
Fax +49 (0)6131/66-2525  
info.architecture@schott.com

[www.schott.com/architecture](http://www.schott.com/architecture)

**SCHOTT**  
glass made of ideas





## MSDS (Materials Safety Data Sheet) - Staron® solid surfaces sheets

### 1. Product and Company Identification

- **PRODUCT NAME:** Staron® solid surfaces sheet
- **COMPANY:** Cheil Industries Inc.
- **EMERGENCY TELEPHONE:** 82-61-689-1526
- **ADDRESS:** Yeosu Plant, Chemicals Division, CHEIL INDUSTRIES INC.  
62, Pyong Yo-Dong, Yeosu-Shi, Cheon Nam, Korea

### 2. Composition/information on ingredients

- **INGREDIENT:** Acrylic Polymer
- **INGREDIENT SEQUENCE NUMBER:** 01
- **PERCENT:** 40 ~ 45
- **CAS NUMBER:** 9011 - 14 - 7
  
- **INGREDIENT:** Hydrated Alumina, Aluminum Hydroxide, Aluminum Trihydroxide
- **INGREDIENT SEQUENCE NUMBER:** 02
- **PERCENT:** 55 ~ 60
- **NIOSH(RTECS) NUMBER:** BD094000
- **CAS NUMBER:** 21645 - 51 - 2

### 3. Hazards identification

Staron® solid surfaces sheet is not hazardous when shipped. However, operations such as sawing, routing, drilling and sanding can generate dust. High concentrations of dust can irritate eyes, nose and respiratory passages and cause coughing and sneezing. Even though there are no exposure limits established for dust from Staron® solid surfaces sheet, avoid breathing dust. (See details in the Exposure Controls/Personal Protection section of this MSDS)

Staron® solid surfaces sheet does not off-gas at room temperature. At higher temperature, a small amount of methyl methacrylate can be released. The amount depends on temperature, time and other variables. Methyl methacrylate vapors can irritate eyes, skin, nose and throat and can cause allergic skin rashes. Over exposure to methyl methacrylate vapors can cause headaches, nausea, weakness, lung irritation and shortness of breath. Individuals with pre-existing lung or skin problems may be more susceptible to the effects of over exposure to methyl methacrylate.

### 4. First Aid Measures

- **INHALATION:** Move to fresh air
- **EYE CONTACT:** Not applicable
- **SKIN CONTACT:** Not applicable
- **INGESTION:** Not applicable



### 5. Fire Fighting Measures

- **AFTER SPILLAGE/LEAKAGE/GAS LEAKAGE:**  
Keep away from all of ignition sources. Ensure adequate ventilation. Use personal protective equipment. Soak up with inert absorbent material. Clean with detergents. Avoid solvents.
- **EXTINGUISHING MEDIA:**  
Dry powder, foam, carbon dioxide, water spray

### 6. Accidental Release Measures

Review **FIRE FIGHTING MEASURES** and **HANDLING AND STORAGE** sections before proceeding with clean-up. Use appropriate personal protective equipment during clean-up.

### 7. Handling and Storage

- **HANDLING:** Staron® solid surfaces sheet should be unloaded with a forklift or other lifting device capable of handling pallets safely. If a lifting device is not available, always carry single sheet in the vertical position, and wear heavy-duty protective gloves and proper safety shoes. Carrying should be done by two people facing each other on short sides with one hand under to support and the other hand on top to control the sheet.
- **STORAGE:** Keep capable of handling sheet flat and evenly supported at temperatures between 15° ~ 23°C (59° ~ 73°F), in a dry and well-ventilated indoor area.

### 8. Exposure Controls/Personal Protection

- **TECHNICAL PROTECTIVE MEASURES:**  
Provide for appropriate exhaust ventilation and dust collection at machinery.
- **PERSONAL PROTECTIVE EQUIPMENT:**  
**RESPIRATION (DURING MACHINING OPERATION):** In case of insufficient ventilation, wear appropriate respiratory equipment in compliance with local regulations.  
**EYES (DURING MACHINING OPERATION):** Use tightly fitting safety goggles or face-shield.  
**HANDS (DURING MACHINING OPERATION):** Wear protective gloves.  
**OTHERS (DURING MACHINING OPERATION):** Use ear protection, safety shoes. Those who are highly sensitivity should take precautions due to possible eye, nose or throat irritation from Staron® solid surfaces dust and fumes.

### 9. Physical and Chemical Properties

- **FORM:** Solid sheet
- **COLOR:** Various
- **ODORN:** None



- **BOILING POINT:** Not Applicable
- **MELTING POINT:** Not Applicable
- **SPECIFIC GRAVITY (WATER = 1):** 1.6 ~ 1.8
- **VAPOR PRESSURE (mmHg):** Not Applicable
- **VAPOR DENSITY (Air = 1):** Not Applicable
- **SOLUBILITY IN WATER:** Insoluble
- **pH:** Not Applicable
- **FLASH POINT:** Not Applicable
- **IGNITION TEMPERATURE:** Not Applicable
- **EXPLOSION LIMITS:** Lower = Not Applicable  
Upper = Not Applicable

#### 10. Stability and Reactivity

- **THERMAL DECOMPOSITION PRODUCT:**  
Frictional heat generated from sawing and routing Staron® solid surfaces sheet can reach or exceed a temperature of 300°C. This is high enough to release a small amount of methyl methacrylate vapor.
- **HAZARDOUS DECOMPOSITION PRODUCT:**  
Carbon monoxide, methyl methacrylate monomer, smoke
- **HAZARDOUS REACTION:** None
- **FURTHER INFORMATION:**  
Sprayed mist may be flammable at temperature below the flash point.

#### 11. Toxicological Information

- **METHYL METHACRYLATE**  
TLV-TWA = 100 ppm = 410 mg/m<sup>3</sup>; ACGIH (1991-2)  
LD50/oral/rat = 7872 mg/kg; RTECS, 47796

Methyl methacrylate can be present on the cutting tool face at a concentration exceeding the TLV of 100 ppm. However, it dissipates to very low levels with good ventilation.

#### 12. Ecological Information

Staron® solid surfaces sheet is manufactured by Cheil Industries in accordance with ISO-14001 standards.

#### 13. Disposal Considerations

Can be landfilled or incinerated, when in compliance with local regulations.



#### 14. Transport Information

Not classified as dangerous in the meaning of transport regulations.

#### 15. Regulatory Information

- **U.S. FEDERAL REGULATIONS**  
TSCA Inventory Status: In compliance with TSCA Inventory requirements for commercial purposes.

#### 16. Other Information

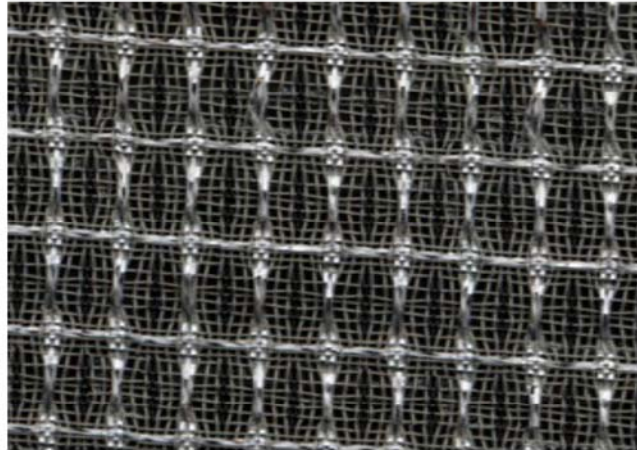
- **ADDITIONAL INFORMATION**  
Do not use in medical applications involving permanent implantation in the human body.

We hereby certify that the above statements are accurate.

Signature/Issued Date: Cheil Industries Inc. / DEC. 2009

**Staron® solid surfaces**  
**CHEIL INDUSTRIES INC.**

## ACOUSTONE AMPLIFIER GRILLE CLOTH



### TECHNICAL CHARACTERISTICS

Sizing Width 72" (By the Yard)  
Colors See Color Chart

### FEATURES

- Class 1 Fire Rated per ASTM E-84
- Mildew Proof - Perfects for Indoor and Outdoor Use
- Excellent Fade Resistance
- Easy to Clean with Vacuum or Washing
- Non-Fraying Edges after Cutting

### APPLICATIONS

- Covering of Speakers
- Studios
- Production Sets

**5 Yard Minimum Order**

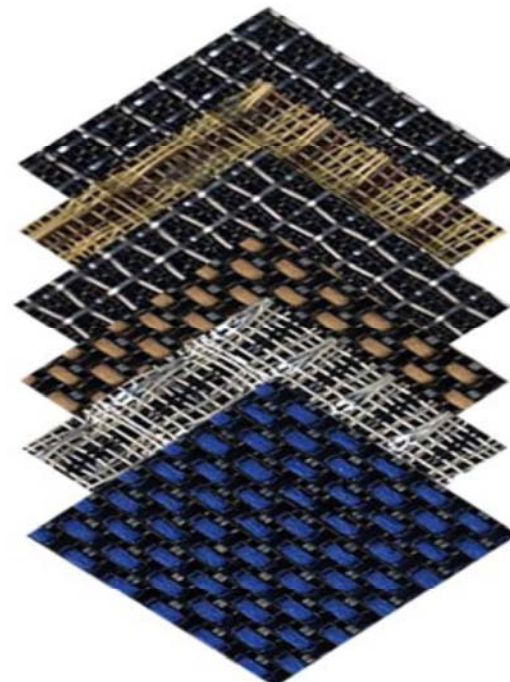
**For Pricing on 25 + Yards, Orders Must be Made by Phone**

### DESCRIPTION

Acoustone Amplifier Grill Cloth Cover is designed and engineered for sound transmissibility and aesthetic appearance.

The engineered fabric construction of the amplifier grill cloth cover allows the sound to pass through the synthetic round threads with minimum interference. The result is a top quality amplifier grill cloth engineered for sound reproduction.

Fabric Number	Width
P101, P102	72"
P211, P450, P511	72"
P297-01, P297-04, P297-10, P297-20	72"
P2000, P2700, P2702, P2703, P2704, P2710, P2711	72"
P3000, P3000-6, P7000-1, P9000	72"
P45-88-1, P45-88-2, P45-88-8, P45-88-11	72"
P4540, P4543	72"
P5000, P5000-2, P6000-3, P8000	72"



## SDF

sustainable design fiberboard

### Features & Benefits

- Awarded CARB NAF Exemption due to formaldehyde-free adhesive system. Meets CARB ATCM 93120 Phase 2 emission requirements.
- Class 1 certified MDF with performance characteristics comparable to standard MDF
- Meets physical properties of ANSI A208.2-009, Grade 130
- New York City MEA Approved
- 1/2" and thicker panels meet extended burn requirements
- Core is dyed red for easy identification of fire retardant panel
- FSC® certified panels available upon request

### Mill Capabilities

Panels available in the following dimensions:

- 4' and 5' widths, lengths up to 18'
- 1/4" - 1-1/4" thicknesses
- Minimum order may be required for some sizes

### Handling & Installation

- Store indoors on a flat, level surface with adequate support to prevent sagging.
- For best results, Medite® FR should be conditioned to the final environment 48-72 hours prior to installation.
- Refer to Architectural Woodwork Standards (AWS) for fabrication and installation procedures.

### Limitations

Medite® FR is not suitable for exterior or structural applications.

### How to Specify

Industrial Grade Medium Density Fiberboard (MDF), manufactured with a formaldehyde-free adhesive system and certified as a Class 1 Flame Retardant panel in accordance with ASTM E84-02011A and CAN/ULC-S102M to a Flame Spread of 15.

### Painting/Laminating

When choosing a coating or laminate system, confirm compatibility of the paint, laminate or adhesive with the respective manufacturer and ensure the Class 1 flame spread classification of the Medite® FR panel will not be adversely affected.

### Ideal Applications

LEED® Projects, Schools, Libraries, Hospitals, Theatres, Offices & Museums

SierraPine warrants that its products will meet the specifications applicable to such products in effect at the time of shipment as disclosed to customer and available on SierraPine's website at [www.sierrapine.com](http://www.sierrapine.com) under Terms & Conditions. Any claim for breach of such warranty must be received by SierraPine within 90 days after delivery of products to customer. SierraPine makes no other warranty or guarantee, either express or implied, including implied warranties of merchantability and of fitness for a particular purpose to the original purchaser or to any subsequent user of the products, except as expressly contained in our Terms & Conditions. In the event state or provincial law precludes exclusion or limitation of implied warranties, the duration of any such warranties shall be no longer than, and the time and manner of presenting any claim hereon shall be the same as, that provided in the express warranty stated therein. All warranty claims are void if the thickness of the panel is materially modified from the original thickness at time of shipment.

# medite FR®

Medite® FR is a sustainable Class 1 flame retardant medium density fiberboard (MDF) panel manufactured from pre-consumer recycled wood, meeting the most stringent formaldehyde emission standards in the world. SierraPine's patented manufacturing process utilizes a formaldehyde-free adhesive system to produce Medite® FR. During processing an additive is blended with the fibers to provide flame-retardant properties throughout the board. Unlike surface flame retardant coatings, the flame retardant properties of Medite® FR aren't compromised when the panel is machined or sanded. Medite® FR is the ideal product for interior applications that require a certified Class 1 product and where certain indoor air quality requirements are specified.

Technical Data	Imperial	Metric
Density	50 lb/ft <sup>3</sup>	801 kg/m <sup>3</sup>
Internal Bond	130 lb/in <sup>2</sup>	.90 N/mm <sup>2</sup>
Modulus of Rupture	3,500 lb/in <sup>2</sup>	24.13 N/mm <sup>2</sup>
Modulus of Elasticity	500,000 lb/in <sup>2</sup>	3,447.4 N/mm <sup>2</sup>
Modulus of Hardness	1200 lbf, Janka ball	545 kg
Screw Holding, Face	250 lbf	1,112 N
Screw Holding, Edge	200 lbf	890 N
Thickness Tolerance	± 0.005 inches	±0.127 mm
Thickness Swell	5%	
Linear Expansion	0.3%	
Water Absorption	15%	
Flame Spread Rating	Class 1 (A)	
Moisture Content	6 - 8%	
Formaldehyde Emissions	as low as 0.01 ppm	

Average physical properties for 3/4" panel, based on a 5 panel average, when tested in accordance with ASTM D1037. Specific design applications and technical data are available upon request. Emissions tested in accordance with ASTM E-1333.



SCS Certified  
SCS-MC-01093  
Pre-Consumer Recycled  
Wood Content



SCS Validation  
SCS-NAF-01329  
No-Added Formaldehyde



FSC® C014647  
The mark of responsible  
forestry  
(Available upon request)



ECC Certified  
Specification CPA ECC 4-11  
CARB Third Party Certifier TPC-2

LEED® 2009 Credits Supported  
Materials & Resources: 4, 5, 7  
Indoor Environmental Quality: 4.4

CHPS Compliant  
Meets Materials Specifications for  
VOC emissions section 01350



\*\* For panels produced on or after 9/6/12 \*\*

**SierraPine**  
COMPOSITE SOLUTIONS

1050 Melody Lane, Suite 160, Roseville, CA 95678  
[www.sierrapine.com](http://www.sierrapine.com)

800-676-3339



## HOOVER TREATED WOOD PRODUCTS, INC.

### TECHNICAL NOTE

FOR ADDITIONAL INFORMATION: [www.frtw.com](http://www.frtw.com) or 1-800-TEC-WOOD (832-9663)

## SPECIFICATION for PYRO-GUARD® Interior Fire Retardant Treated Wood

### PART 1 – GENERAL

#### 1.01 PRODUCT IDENTIFICATION

- A. Lumber and plywood bearing the **PYRO-GUARD®** mark has a flame spread rating of 25 or less (Class A) when tested in accordance with ASTM E 84, "Standard Test Method for Surface Burning Characteristics of Building Materials". **PYRO-GUARD®** fire retardant treated wood shows no evidence of significant progressive combustion when the test is extended for an additional 20 minute period. In addition, the flame front shall not progress more than 10½ feet beyond the centerline of the burners at any time during the test. The flamespread and smoke developed index for each species and product are classified by Underwriters Laboratories Inc. (UL).
- B. **PYRO-GUARD®** Fire retardant treated wood is manufactured under the independent third party inspection of Underwriters Laboratories Inc. (UL) Follow-Up Service and each piece shall bear the UL classified mark indicating the extended 30 minute ASTM E 84 test.
- C. **PYRO-GUARD®** shall be labeled kiln dried after treatment (KDAT). Timber Products Inspection, Inc. (TP) shall monitor the process and the TP mark shall appear on the label.
- D. **PYRO-GUARD®** shall be produced in accordance with ICC Evaluation Service Report 1791 (ESR-1791) latest version.
- E. **PYRO-GUARD®** meets the performance requirements of AWPA U1, Commodity Specification H for Use Category UCFA and AWPA C20/C27 (Type A, HT).
- F. **PYRO-GUARD®** is listed on the Department of Defense (DoD) Qualified Products List (QPL) and meets the requirements of MIL-L-19140-E as a Type 1 fire retardant treatment for lumber and plywood.

### PART 2 – PRODUCTS

#### 2.01 FIRE RETARDANT TREATMENT

- A. Treatment shall be **PYRO-GUARD®** manufactured by Hoover Treated Wood Products, Inc.
- B. **PYRO-GUARD®** is an Interior "Type A" fire retardant with individual surface burning characteristics for the species and products listed under UL Certifications.
- C. Structural performance of **PYRO-GUARD®** fire retardant treated wood has been evaluated in accordance with ASTM D 5664 for lumber and ASTM D 5516 for plywood. Evaluation of plywood data is in accordance with ASTM D 6305. Evaluation of lumber data is in accordance with ASTM D 6841. The resulting design value and span rating adjustments are published in ICC Evaluation Report ESR-1791, which includes evaluation of high temperature (HT) strength testing for roof applications.
- D. **PYRO-GUARD®** Interior fire retardant treated wood is kiln dried after treatment (KDAT) to maximum moisture content of 19% for lumber and 15% for plywood.
- E. **PYRO-GUARD®** does not contain VOC's, urea formaldehyde or formaldehyde, halogens, sulfates, chlorides, or ammonium phosphate.
- F. Plywood treated with **PYRO-GUARD®** shall be manufactured under US Product Standard PS 1 or PS 2. Panels shall have a minimum bond durability of Exposure 1.
- G. Grade marked lumber treated with **PYRO-GUARD®** shall be in accordance with PS 20.

### PART 3-EXECUTION

#### 3.01 INSTALLATION

- A. **PYRO-GUARD®** fire retardant treated wood used in structural applications shall be installed in accordance with the conditions and limitations listed in ESR-1791 as issued by the ICC Evaluation Service, Inc.
- B. **PYRO-GUARD®** fire retardant treated wood shall be installed in compliance with the requirements of the applicable building codes and product recommendations.
- C. **PYRO-GUARD®** shall not be installed in areas where in service it is exposed to precipitation, direct wetting, or condensation.
- D. As with untreated wood, avoid exposure to precipitation during shipping, storage or installation. Apply a water resistive barrier or underlayment over dry sheathing as soon as practical to avoid precipitation on the panel. Panels that get wet should be allowed to dry before covering, or be replaced.

DISCLAIMER OF LIABILITY FOR RELIANCE ON INFORMATION PROVIDED BY HOOVER TREATED WOOD PRODUCTS, INC.: The information contained herein is true and accurate to the best of our knowledge, but is provided without warranty or guarantee. Since the conditions of use are beyond our control, Hoover Treated Wood Products, Inc. ("Hoover") disclaims all liability and assumes no legal responsibility for damages resulting from use of or reliance upon the information contained herein.

PGD\_SPEC\_04\_15\_14

## SERIES 49 – INTERIOR AND EXTERIOR APPLICATIONS

Polyester TGIC weather resistant powder coating for interior and exterior applications.

### Typical Applications

- Residential windows and doors.
- Lawn mowers and garden equipment.
- Patio furniture.
- Automotive accessories.
- Bicycles and motorcycles.
- Agricultural machinery.
- Sporting goods.
- Internal ship components.

**Standard Packaging** 44 & 55 lb (20 & 25 kg) boxes.  
5 lb (2.5 kg) minipack.

**Specific Gravity (ASTM D792)** approximately 1.2-1.8 g/cm<sup>3</sup>  
depending on pigmentation.

**Theoretical Coverage** at 1.5 specific gravity and  
2.5 mils (60 µm) film thickness:  
**51.5 ft<sup>2</sup>/lb (11.1 m<sup>2</sup>/kg).**

Refer also to the latest edition  
of "Theoretic Powder Coating  
Coverage Chart".  
Version 00-1001 (imperial).  
Version 00-1000 (metric).

**Storage Stability** 6 months at no more than  
77 °F (25 °C).

### Features

- Good weather resistance.
- Good mechanical properties.
- Good flow.
- Good coverage.
- Good storage stability.
- Available in Out Gassing Forgiving (OGF) formulation.
- Underwriter Laboratories recognized component (UL approved) for non metallic finishes.



Underwriters Laboratories Inc., (UL) Recognition.

### Finish and Color

- Smooth glossy 80-95+\*.
- Smooth semi gloss 55-65\*.
- Smooth matte 15-25\*.
- Rough texture glossy.
- Rough texture matte.
- Fine texture.
- Fluorescent.
- Clear, Glitter and Candy tones.
- Dormant transparent.
- Holographic colors.
- Metallics and other special effects.

\* Gloss level according to ASTM 523 at 60° angle.

Available as stock product in a selection of colors and finishes (see color charts). It can be made to order in non stock colors (minimum order quantity applies).

# Series 49 - Interior and Exterior



TIGER Drylac U.S.A., Inc. | 3855 Swenson Avenue | St Charles, IL | T 800 243 8148 | F 877 926 8148 | office.us@tiger-coatings.us | www.tiger-coatings.us

## Pretreatment (alternatives)

The following table reflects the common methods of pretreatment with regards to various substrates and applications. In selecting the proper type of pretreatment the suitability of the type of powder coating for a desired application according to the guidelines on page one of this Product Data Sheet should be observed.

	Aluminum	Galvanized Steel	Steel
Degreasing	○	○	○
<sup>1)</sup> Chromating	○	○	○
<sup>2)</sup> Anodizing	○	○	○
<sup>2)</sup> Chrome free	○	○	○
Iron Phosphating	○	○	○
Zinc Phosphating	○	○	○
Blasting	○	○	○
<sup>3)</sup> Sweeping	○	○	○
	I E A	I E A S	I E S <sup>4)</sup>

**I** Interior.  
**E** Exterior.  
**A** Architectural.  
**S** Steel construction.

- 1) According to ASTM B 449.
- 2) According to GSB quality and test regulations.
- 3) Only for zinc coated parts >1.8 mils (>45 µm).
- 4) For a two-coat process/TIGER Shield®.

## Processing

Corona

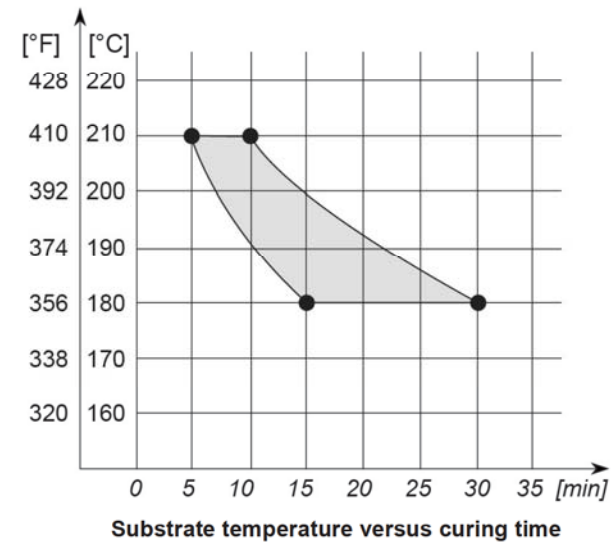
Tribo\*

\* For Tribo/Airstatic powder coatings please confirm before ordering. Suitability of metallic effects for Tribo processing must be verified prior to application. Please refer to the latest edition of the relevant Information Sheets.

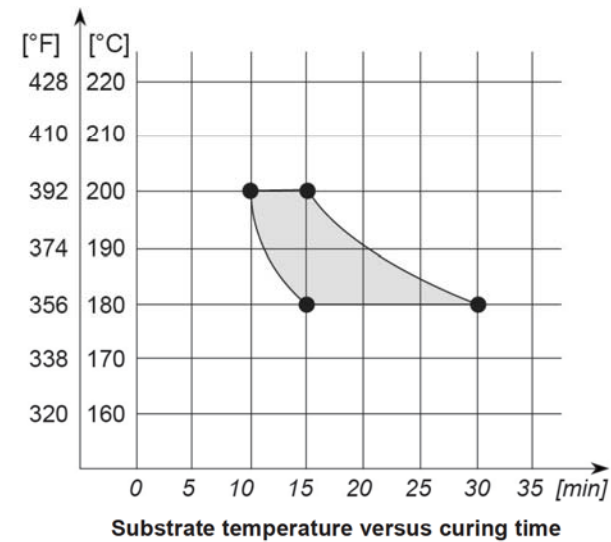
Since not all powder coatings are suitable for recycling/reclaim, please verify before ordering.

## Cure Parameters (substrate temperature)

TIGER Drylac® Series 49  
Cure Parameters | Smooth Glossy



TIGER Drylac® Series 49  
Cure Parameters | Smooth Matte



To achieve a full cure and the desired mechanical properties and weatherability the time/temperature combination must fall within the cure window.

# Series 49 - Interior and Exterior



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## Please Note

For metallic finishes it is recommended to observe the guidelines published in the latest edition of TIGER Drylac® "Application guidelines for metallic effect powder coatings".

Top coating with a clear exterior grade powder coating over an interior grade powder coating does not result into a weather resistant coating system.

Post-bending properties of any part must be verified prior to application. Minor cracks in the coated surface may lead to corrosion.

Joint sealants and any other auxiliary products, such as glazing aids, gliding waxes, drilling and cutting lubricants, which come in contact with the coated surface, must be pH-neutral and free of substances that may damage the finish. Therefore, a suitability test at the applicator's end, prior to coating, is highly recommended.

In general, colors in the red, orange and yellow range may require an increased film thickness to achieve full hiding.

Please read and understand the Material Safety Data Sheet (MSDS) before use.

## Test Results

Results are checked on iron phosphated steel test panels Bonderite B-1000 or equivalent. Cure conditions are according to the cure curves. When used as a two-coat system, the increase in film thickness will result in a decrease of mechanical properties.

Test results	Test method	Series 49 Glossy	Series 49 Semi Gloss	Series 49 Matte
Film thickness		2.5-3.5 mils (60-80 µm)	2.5-3.5 mils (60-80 µm)	2.5-3.5 mils (60-80 µm)
Gloss - 60°	ASTM D523	80-95+	55-65	15-25
Cross cut tape test	ASTM D3359 Method B	5B	5B	5B
Mandrel bending test	ASTM D522	≤1/8 inch (3 mm)	≤5/32 inch (4 mm)	≤3/16 inch (5 mm)
Impact test 80 in/lb	ASTM D2794	No appearance of cracks down to the substrate.	No appearance of cracks down to the substrate.	No appearance of cracks down to the substrate.
Pencil hardness	ASTM D3363	2H minimum.	2H minimum.	2H minimum.
Humidity resistance 1000 hours	ASTM D2247	Maximum undercutting 1/8 inch (3 mm). No blistering.	Maximum undercutting 1/8 inch (3 mm). No blistering.	Maximum undercutting 1/8 inch (3 mm). No blistering.
Salt spray resistance 1000 hours	ASTM B117	Maximum undercutting 1/8 inch (3 mm). No blistering.	Maximum undercutting 1/8 inch (3 mm). No blistering.	Maximum undercutting 1/8 inch (3 mm). No blistering.

**Cleaning recommendations:** Refer to the latest edition of TIGER "Cleaning Recommendations" information sheet, Version 00-1005.



## SAFETY DATA SHEET

**Product Name:** Formica™ Brand Laminates  
**MSDS Issue Date:** 11/17/12  
**SDS Revision Date:** 6/1/15

### Section 1: PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Formica® Brand Laminates  
(All Grades and Thicknesses, including Deco Metal, Basic Metal, ColorCore2, Compact Color Thru Compact, Access Floor Tiles, Chemtop2, Fire rated & High Pressure Laminate)

**Manufacturer:** Formica Corporation  
10155 Reading Road  
Cincinnati OH 45241, USA  
**INFORMATION PHONE:** 800-367-6422 (USA)

**Trade Name:** High-Pressure Decorative Laminate (HPDL)

**Materials Uses:** Decorative Laminate

**Manufacturer's Emergency Phone Number**  
**(CHEMTREC):** (800)-424-9300 (USA)  
**(703)-527-3887 (International)**

### Section 2: HAZARD IDENTIFICATION

**GHS Classification:** Not classified. Material is non-hazardous  
**GHS Signal Words with Hazard and Precautionary Statements:** Not Applicable  
**GHS Pictograms:** Not applicable

#### Precautionary Statements:

No known hazards for material as supplied. During fabrication operations such as sawing, sanding, drilling, routing, cutting etc. dust consisting of cured resin, paper fiber and minute amounts of formaldehyde are generated at the point of operation. Formaldehyde may be released in minute but detectable amounts when material is shipped or stored in bulk quantities.

**Appearance/Odor:** Thin to thick, rigid laminate sheets, various thicknesses/colors. No significant odor.

#### WARNING:

Sanding, sawing, drilling, routing, etc. of this material may generate airborne nuisance dust. This dust may cause eye, nose, skin, and upper respiratory tract irritation. Use of appropriate personal protection and/or engineering controls (such as local exhaust ventilation) should be employed whenever sanding, sawing, drilling, routing, etc. of this material.

**Potential Health effects:** Dust generated during fabrication of this material may cause irritation of the eyes, nose skin and upper respiratory tract. Asthmatic conditions may be aggravated by the dust generated.

**Likely Routes of Exposure:** Eye contact, skin contact and inhalation  
**Eyes:** Dust generated during installation or fabricating could cause eye irritation (tears, blurred vision and redness). In case of eye contact with dusts, rinse affected eye for at least 15 minutes with clean water. If irritation persists, seek medical attention.

## Chemical Resistance

The required chemical resistance of a powder coating depends, among other things, on its formulation. Chemical resistance requirements must be considered according to processing conditions and final use of the finished product. This is best established during the product specification process. Agreement between all parties involved must be reached about the requirements for such chemical resistance as well as the test method, which may be performed in accordance with PCI test method #8 "Solvent Cure Test". Furthermore, the test duration and concentration of the test media need to be agreed upon.

As part of TIGER Drylac® product information program, Product Data Sheets are updated periodically. It is recommended to always check for the latest editions on TIGER's website. TIGER's verbal and written recommendations for the use of its products are based upon experience and in accordance with current technological standards. These are given in order to support the buyer or user. They are non-committal and do not create any additional commitments to the purchase agreement. They do not release the buyer from verifying the suitability of TIGER products for the intended application. This Product Data Sheet supersedes all previous Product Data Sheet versions and notes published in relation to this product.

Certified according to  
ISO 9001 | 14001

**TIGER Drylac U.S.A., Inc.**  
3855 Swenson Avenue  
St Charles, IL 60174, USA  
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**E** office.us@tiger-coatings.us  
**W** www.tiger-coatings.us

**Skin:** The dust generated during installation or fabrication may cause moderate skin irritation. Avoid prolonged skin exposure to dust. Rinse skin with mild soap if contact occurs. If irritation persists, seek medical attention.

**Ingestion:** Not likely to occur and not expected to cause a significant toxic response. However, ingestion of dust could cause irritation of the mouth, throat and stomach. If this occurs, rinse mouth with clean water. If irritation persists, seek medical attention.

**Inhalation:** Sanding, sawing, drilling, routing or cutting of this material may generate airborne dust that may cause eye, nose and upper respiratory tract irritation. Use appropriate personal protection and/or engineering controls (such as local exhaust ventilation whenever sanding, routing, sawing, drilling, and cutting, etc. on this material.

**Medical Conditions Aggravated by Exposure:** Dust may cause skin irritation to people with pre-existing skin conditions. Asthmatic conditions may be aggravated by additional dust exposure.

**Target Organs:** Lungs (From dust generated during fabrication only)

### Section 3: COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

This product does not contain regulated levels of NTP, IARC, or OSHA listed carcinogens

Component	CAS #	% by Wt.
Paper/Fiber	NA	40-70
Resins	NA	30-50

### Section 4: FIRST AID AND MEASURES

**Eye contact:** If dust gets into the eyes, immediately rinse affected eye for at least 15 minutes with clean water. If irritation persists, seek medical attention.

**Skin contact:** If excess dust gets onto the skin, remove contaminated clothing and wash before reuse. Wash skin with soap and water. Seek medical attention if irritation occurs.

**Ingestion:** If dust gets into mouth, rinse mouth with clean water. Seek medical attention if necessary.

**Inhalation:** If excess dust is inhaled, move to fresh air. Seek medical attention if symptoms such as wheezing and/or shortness of breath occur.

### Section 5: FIRE FIGHTING MEASURES

This material is a Class A combustible material. Use water spray, carbon dioxide or dry chemical foam to extinguish flames. Use water to keep cool and prevent rekindling of material.

**Unusual Fire or dust:** Sanding, sawing, drilling, routing, cutting, etc. of this material may generate a Class ST-1

**Explosion Hazards:** Safety precautions and proper ventilation as recommended by NFPA-68 for Class ST-1 dusts should be followed to prevent this or any Class ST-1 dust from presenting a explosion hazard.

**Suitable Extinguishing Media:** CO2, water, foam.

**Possible Products of Combustion:** Various oxides of carbon and nitrogen, ammonia and formaldehyde.

**Protection of Firefighters:** Combustion products may be irritating to eyes, skin and the respiratory tract. Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

### Section 6: ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Material is non-hazardous as supplied. Review personal protection measures in Section 8.

**Methods for Clean-up:** Recover undamaged materials for reuse or reclamation. Sweep or pick up scrap material and place in disposal containers.

### Section 7: HANDLING AND STORAGE

**Handling:** Prevent dust from entering eyes. Do not breathe dust. Avoid prolong skin contact with dust and/or filings. Cut, drill, saw, sand and finish, etc. in well-ventilated areas.

**Storage:** Keep away from strong chemicals, solvents and excessive heat. Prolonged or extreme heat can cause damage to the surface.

### Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**Exposure Guidelines:** OSHA PEL 15mg/m<sup>3</sup> Total Dust  
ACGIH TLV 10mg/m<sup>3</sup> Inhalable  
5mg/m<sup>3</sup> Respirable Dust 3 mg/m<sup>3</sup> Respirable

**Engineering Controls:** Provide adequate ventilation to maintain exposure levels below applicable limits. The use of local exhaust ventilation is recommended during fabrication work. Dust generated is a Class ST-1 dust and precautions recommended by NFPA-68 should be followed.

**Eye/face Protection:** Wear safety glasses when sawing, sanding, drilling or routing.

**Skin Protection:** Wear appropriate gloves when installing, transporting, sawing, cutting, drilling, routing or handling uninstalled pieces.

**Foot Protection:** No special protection required.

**Respiratory Protection:** Where airborne concentrations of dust are expected to exceed the allowable exposures, a NIOSH-approved respirator should be worn, chosen based on the form and concentration of the contaminant. Respirator usage must be in accordance with the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

**General Hygiene Considerations:** Wash thoroughly after sawing, cutting, drilling, or routing. Have eyewash facilities immediately available.

Additional information is available in ASTM E1132-99a

### Section 9: PHYSICAL AND CHEMICAL PROPERTIES

**Color:** Various  
**Odor:** None  
**Physical State:** Solid sheet product  
**PH:** Not applicable  
**Freezing Point:** Not applicable  
**Boiling Point:** Not applicable  
**Flash Point:** Not applicable  
**Evaporation Rate:** Not applicable  
**Flammability:** Not applicable  
**Upper Flammability Limit:** Not applicable  
**Lower Flammability Limit:** Not applicable  
**Vapor Pressure:** Not applicable

Vapor Density: Not applicable  
Specific Gravity: 1.45  
Solubility (water): Not applicable  
Auto-ignition Temperature: Not applicable  
Percent volatile, wt %: Zero  
Volatile Organic Compound (VOC) content, wt. %: Zero. Product as supplied is fully cured and chemically inert, VOC release is extremely low.

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**Section 10: STABILITY AND REACTIVITY**

Stability: Stable

Conditions to Avoid: Avoid exposing to oxidizers, strong chemicals, alkaline solutions and solvents.  
Incompatible Materials: Avoid strong acids and alkaline solutions which will damage the surface appearance of the material. If spills occur, remove immediately from the material.

Hazardous Decomposition Products: Thermal decomposition product may include various oxides of carbon and nitrogen may be released.

Hazardous Polymerization: Will not occur.

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**Section 11: TOXICOLOGY INFORMATION****ACUTE EFFECTS**

Oral LD50: Not known  
Dermal LD50: Not known  
Inhalation: See Section 2  
Eye Irritation: See Section 2  
Skin irritation: See Section 2  
Sensitization: No data for product.

**CHRONIC EFFECTS**

Carcinogenicity: This product may contain trace amounts of formaldehyde which is listed by IARC as carcinogenic. The ACGIH lists formaldehyde as a suspect human carcinogen. NTP lists formaldehyde as carcinogenic. WARNING-Substance contained in this product known to the State of California to cause cancer, birth defects or other reproductive harm – formaldehyde.

Mutagenicity: No data for product.  
Reproductive Effects: No data for product.  
Developmental Effects: No data for product.

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**Section 12: ECOLOGICAL INFORMATION**

Eco toxicity: No data for product  
Persistence/Degradability: No data for product.  
Bioaccumulation/Accumulation: No data for product  
Mobility in Environment: No data for product

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**Section 13: DISPOSAL CONSIDERATIONS**

Disposal: Material is non-hazardous and no special treatment is required for disposal. Disposal in landfill must be in accordance with federal, state and local regulations.

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**Section 14: TRANSPORTATION INFORMATION**

DOT: Not Regulated

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**Section 15: REGULATORY INFORMATION**

WARNING-Substance contained in this product known to the State of California to cause cancer, birth defects or other reproductive harm - Formaldehyde.

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**Section 16: OTHER INFORMATION**

NFPA Labeling  
Health – 1                                      Fire – 0                                      Reactivity – 0  
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

**Section 16: OTHER INFORMATION(continued)**

Acronyms:  
ACGIH = American Conference of Governmental Industrial Hygienists  
ASTM = American Society for Testing and Materials  
DOT = Department of Transportation  
DOT = Department of Transportation  
IARC = International Agency for Research on Cancer  
NFPA = National Fire Protection Agency  
NIOSH = National Institute of Occupational Safety and Health  
NTP = National Toxicology Program  
OSHA = Occupational Safety and Health Administration  
PEL = Permissible Exposure Limit

**Section 16: OTHER INFORMATION(Continued)**

TLV = Threshold Limit Value  
TSCA = Toxic Substance Control Act  
TWA = Time Weighted Average  
Mg/m<sup>3</sup> = Milligrams per Cubic Meter of Air

Prepared by: Formica Corporation,

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for his own particular use.



# KODAK PROFESSIONAL Digital III Color Paper



—Paper for Digital Applications—

### NOTICE

KODAK PROFESSIONAL Digital III Color Paper was discontinued starting August 1, 2003. Some sizes may remain available for a few weeks, dependent on country, until stocks are depleted.

KODAK PROFESSIONAL ENDURA Papers provide excellent alternatives for most of the sizes and surfaces. The family of award winning ENDURA Papers outperforms Digital III Color Paper due to its innovative emulsion technology that delivers:

- Reduced developer process sensitivity
- Enhanced image stability (100 years home display/200 years dark storage)
- Reduced developer process sensitivity
- Improved latent image keeping and shelf life performance

With three ENDURA Papers to choose from, there's a paper for every application.

- **KODAK PROFESSIONAL PORTRA ENDURA Paper**—A lower contrast photographic paper with moderate color saturation that's ideal for studio portraiture, wedding photography and school photography.
- **KODAK PROFESSIONAL SUPRA ENDURA Paper**—A moderate contrast photographic paper with higher color saturation that's well suited for studio and location portraiture, event photography and fine-art photography.
- **KODAK PROFESSIONAL ULTRA ENDURA Paper**—A higher contrast photographic paper with enhanced color saturation that's ideal for commercial applications that require bold colors, deep blacks and sharp text.

KODAK PROFESSIONAL Digital III Color Paper is a resin-coated, silver-halide color paper designed for digital printers that use LED, CRT, or laser printing devices. Because it is optimized for the short exposure times used in digital applications, it yields prints with reduced text (image) flare and better color reproduction than optical silver-halide papers used in digital applications. It is *not* designed for optical exposure, although it may be suitable for some optical printing applications. It replaces KODAK PROFESSIONAL Digital Paper, Type 2976.

Digital III Color Paper is ideal for producing outstanding digital portrait and commercial prints, school portraits, wedding and studio photographs, and large-format display prints.

Use KODAK EKTACOLOR RA Chemicals for Process RA-4 to process this paper.

FEATURES	BENEFITS
• High D-max	• Deep, rich blacks
• Sensitivity optimized for digital writers	• Improved color reproduction with digital printers from Durst, Cymbolic Sciences, Kodak, Gretag, and other manufacturers
	• Significantly reduced text (image) flare

Compared to KODAK PROFESSIONAL Digital Paper, Type 2976, new Digital III Color Paper offers the following features:

• Improved color reproduction	• Greater color range
• Improved D-min	• Clean, saturated yellows
• Improved D-max	• Cleaner, whiter whites
• Improved text clarity	• Rich blacks
	• Sharp, crisp text/graphics

### SIZES AVAILABLE

PROFESSIONAL Digital III Color Paper is available in roll and sheet sizes in E (fine lustre), F (glossy), and N (smooth lustre) surfaces. Sizes and CAT numbers differ from country to country.

Rolls in. x ft	Rolls cm x m	Surface	Spec No.	CAT No.
3½ x 577	8.9 x 176	E	224	871 5989
3½ x 577	8.9 x 176	F	224	896 8570
4 x 577	10.2 x 176	E	224	892 4664
4 x 577	10.2 x 176	F	224	180 0036
4 x 577	10.2 x 176	N	224	855 1392
5 x 577	12.7 x 176	E	224	855 6276
5 x 577	12.7 x 176	N	224	115 3006
6 x 577	15.2 x 176	E	224	178 8710
6 x 577	15.2 x 176	F	224	178 3380

—continued next page—

Rolls in. x ft	Rolls cm x m	Surface	Spec No.	CAT No.
8 x 262	20.3 x 88	E	224	828 5041
8 x 262	20.3 x 88	F	224	802 9134
8 x 262	20.3 x 88	N	224	860 6014
8 x 577	20.3 x 176	E	224	886 1064
8 x 577	20.3 x 176	F	224	889 7290
8 x 577	20.3 x 176	N	224	804 3499
8½ x 577	21.6 x 176	E	224	835 6297
8½ x 577	21.6 x 176	F	224	883 5910
10 x 288	25.4 x 88	E	224	898 7034
10 x 288	25.4 x 88	F	224	107 0523
10 x 288	25.4 x 88	N	224	191 6816
10 x 577	25.4 x 176	E	224	831 0930
10 x 577	25.4 x 176	F	224	838 3432
10 x 577	25.4 x 176	N	224	866 7743
11 x 288	27.9 x 88	E	224	846 6740
11 x 288	27.9 x 88	F	224	864 9865
11 x 288	27.9 x 88	N	224	109 2105
11 x 577	27.9 x 176	E	224	870 5204
11 x 577	27.9 x 176	F	224	823 1730
11 x 577	27.9 x 176	N	224	832 1770
12 x 288	30.5 x 88	E	224	171 5127
12 x 288	30.5 x 88	F	224	192 2434
12 x 288	30.5 x 88	N	224	800 5670
20 x 288	50.8 x 88	E	224	858 8626
20 x 288	50.8 x 88	F	224	116 6941
20 x 288	50.8 x 88	F	223	871 0675
20 x 288	50.8 x 88	N	224	831 8255
30 x 164	76.2 x 50	E	223	867 2842
30 x 164	76.2 x 50	F	223	892 6115
32 x 164	81.3 x 50	E	223	136 3928
32 x 164	81.3 x 50	F	223	895 6336
40 x 164	101.6 x 50	F	223	118 2252
41.375 x 164	105.1 x 50	E	223	879 4463
41.375 x 164	105.1 x 50	F	223	190 2527
50 x 164	127 x 50	E	223	841 6091
50 x 164	127 x 50	F	223	169 0551

Rolls cm x m	Surface	Spec No.	CAT No.
21 cm x 80 m	F	224	894 0223
21 cm x 80 m	N	224	895 8019
61 cm x 50 m	F	223	194 6094
61 cm x 50 m	N	223	830 5146
85 cm x 50 m	N	223	860 6261

Size in. x in.	Surface	Spec No.	CAT No.
8 x 10	F	100	177 0999
8 x 10	N	100	191 1700
11 x 14	F	50	127 3002
11 x 14	N	50	848 6417

### STORAGE AND HANDLING

Store unexposed paper at 13°C (55°F) or lower in the original sealed package. High temperatures or high humidity may produce undesirable quality changes.

To avoid moisture condensation on paper that has been refrigerated, allow it to warm up to room temperature before opening the package. For best results, remove the paper from cold storage the day before you use it, or allow the paper to warm up for the appropriate time from the following table.

Size	Warm-Up Times (Hours) to Reach Room Temperature of (21°C [70°F])		
	From a Storage Temperature of		
	-18°C (0°F)	2°C (35°F)	13°C (55°F)
8 x 10-inch (100-sheet box)	4	3	2
11 x 14-inch (50-sheet box)	3	2	2
20-inch x 164-foot roll (50.8 cm x 50 m)	8	7	4
30-inch x 164-foot roll (76.2 cm x 50 m)	10	8	5
40-inch x 164-foot roll (101.6 cm x 50 m)	11	9	6
50-inch x 164-foot roll (127 cm x 50 m)	12	10	7

Handle paper carefully by the edges. The paper is packaged with the emulsion side of all sheets facing in the same direction.

**Note:** If you use the cardboard box to store or transport this paper in white light, be sure to use the inner bag *and* the two-part cardboard box to protect the paper.

### DARKROOM RECOMMENDATIONS

Handle this paper in *total darkness*. Be sure that your printing and processing darkrooms are lighttight. Carefully control stray light within your printing equipment.

**Note:** Using a safelight *will* affect your results. This paper is much faster than traditional color papers. It is very sensitive to safelights; sensitometric shifts can occur before you observe any changes in D-min.

## EXPOSURE

### Exposing Equipment

Expose this paper in various types of digital enlargers and printers, such as (but not limited to)—

- Durst Lambda and Gretag Printers
- Cymbolic Sciences International LightJet Printer
- KODAK LF CRT Color Printer
- KODAK LED Digital Color Printer
- Sienna Imaging Fotoprint Series

This paper is optimized for the short exposure times used with digital writers. Because there are numerous manufacturers and models of digital writers, we cannot provide starting-point recommendations for all equipment. We recommend that you test the paper and calibrate your printer to achieve optimum results. However, for Durst Lambda 130 or 76 and Cymbolic Sciences International Printers, you can use the charts that follow.

**Note:** This paper *is not* designed for optical printing. It *may* be suitable for some optical applications; however, this paper will not print at the same speed or color balance as papers designed for optical printing.

#### Calibration for KODAK PROFESSIONAL Digital III Color Paper on a Durst Lambda 130 or 76 Printer

Process	D-max	Basic Calibration (starting values)
RA-4	R = 235 G = 230 B = 225	Y = 95.5 M = 66.3 C = 0.0 D = 119.0

#### Calibration for KODAK PROFESSIONAL Digital III Color Paper on a Cymbolic Sciences International Printer

D-max			D-min			Exposure Levels		
Red	Green	Blue	Red	Green	Blue	Red	Green	Blue
2.40	2.40	2.25	0.08	0.08	0.04	-30	-50	-50

## LATENT-IMAGE KEEPING

For best results, process paper on the same day you expose it. (If latent-image shifts occur, minimize them by keeping the time between exposure and processing the same for all paper.)

## PROCESSING

Use KODAK EKTACOLOR RA Chemicals for Process RA-4 to process this paper in continuous or roller-transport processors. Use the same replenishment rates that you currently use to process KODAK PROFESSIONAL ULTRA III Paper. For more processing information, see KODAK Publication Z-130, *Using KODAK EKTACOLOR RA Chemicals*.

Use a drying temperature below 96°C (205°F).

## VIEWING

Evaluate prints under light of the same color and brightness that you will use to view the final prints. A good average viewing condition is a light source with a color temperature of 5000 ± 1000 K and a Color Rendering Index (CRI) of 85 to 100 (we recommend a CRI greater than 90).

Fluorescent lamps such as the cool white deluxe (made by several manufacturers) meet these conditions. You can also use warmer lamps such as the Phillips 5000 K Ultralume, or a mixture of incandescent and fluorescent lamps. For each pair of 40-watt cool white deluxe fluorescent lamps, use a 75-watt frosted tungsten bulb.

## RETOUCHING

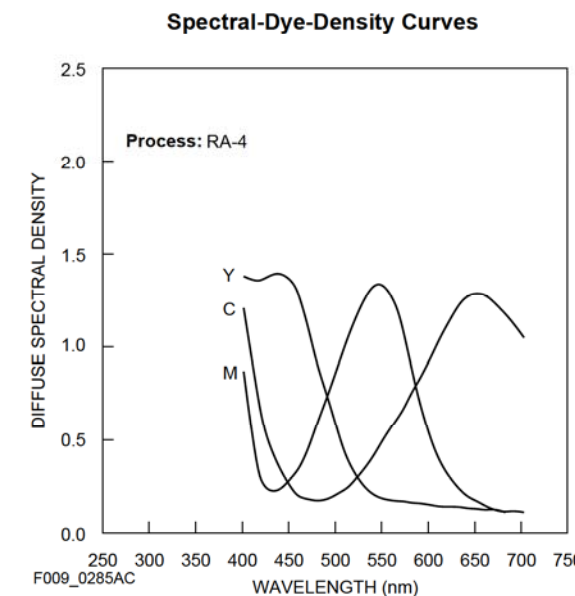
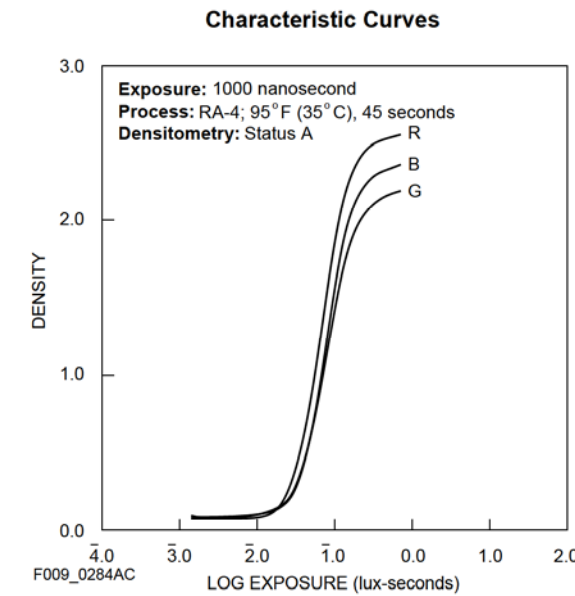
To retouch prints on this paper, use the same techniques and methods that you use with traditional color papers.

## MOUNTING

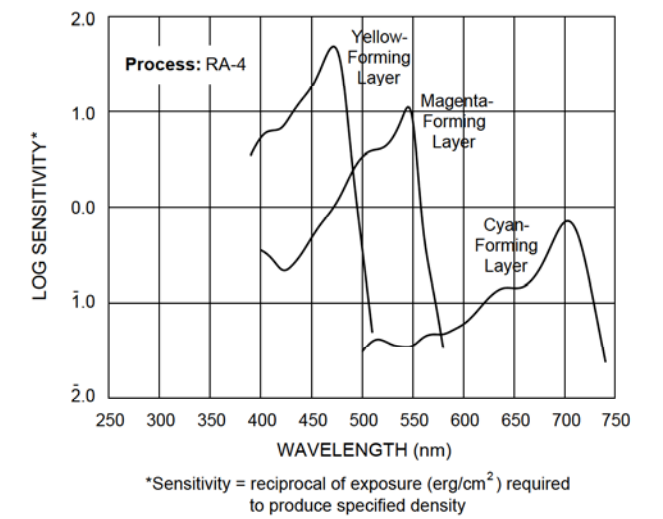
You can mount prints with KODAK Dry Mounting Tissue, Type 2. The temperature across the heating platen of the mounting press should be between 79 and 93°C (175 and 200°F). Temperatures above 93°C (200°F) or high pressure may cause physical and color changes in prints. Preheat the cover sheet that you use over the face of the print to remove moisture. Apply pressure for 30 seconds or longer for a thick mount.

## KODAK PROFESSIONAL Digital III Color Paper

### CURVES



### Spectral-Sensitivity Curves



**NOTICE:** The sensitometric curves and data in this publication represent product tested under the conditions of exposure and processing specified. They are representative of production coatings, and therefore do not apply directly to a particular box or roll of photographic material. They do not represent standards or specifications that must be met by Eastman Kodak Company. The company reserves the right to change and improve product characteristics at any time.

For the latest version of technical support publications for KODAK PROFESSIONAL Products, visit Kodak on-line at:  
<http://www.kodak.com/go/professional>

If you have questions about KODAK PROFESSIONAL Products, call Kodak.

In the U.S.A.:

1-800-242-2424, Ext. 19, Monday–Friday  
9 a.m.–7 p.m. (Eastern time)

In Canada:

1-800-465-6325, Monday–Friday

**Note:** The Kodak materials described in this publication for use with KODAK PROFESSIONAL Digital III Color Paper are available from dealers who supply KODAK PROFESSIONAL Products. You can use other materials, but you may not obtain similar results.



# PERFORMANCE GUIDE

www.Mactac.com

Version #4 (0709)

Approved by J. S.

**PRODUCT:** PermaPrint® IP5000

## PERMACOLOR®

The **Permacolor** system is a series of pressure sensitive products for mounting and overlaminating in the imaging industries. Pressure sensitive **Permacolor** provides fast, efficient processing through cold roll lamination techniques without the need for heat, drying or messy coating operations.

## PRODUCT DESCRIPTION

The **PermaPrint® mounting films** consist of acrylic mounting adhesives with and without film carriers. These smooth, adhesive constructions permit distortion-free mounting of photographic prints and other graphic images to a wide variety of substrates including Fome-Cor®, Gatorfoam®, Crescent® board, Masonite® and Sintra®.

**IP5000** consists of a thin, opaque plastic film coated on both sides with an acrylic pressure sensitive adhesive. A moisture stable, polycoated kraft liner protects the adhesive.

**IP5000** was designed for quick adhesion to a variety of mounting surfaces and can be used in both indoor and outdoor applications. The single release liner permits easy lamination and eliminates the need to remove a second liner in applications where that may be difficult or impossible.

<u>PHYSICAL PROPERTIES</u>	<u>TYPICAL VALUES*</u>	<u>TEST METHOD</u>
<b>Thickness, inches (mm)</b> Carrier plus adhesive	0.0038 (90)	ASTM D-645
<b>Quick Tack, lb./in.<sup>2</sup> (N/25 mm)</b> Stainless Steel	4.0 (17.5)	Mactac CTM-25
<b>Peel Adhesion, lb./in. (N/25 mm)</b> Stainless Steel - 30 minutes 24 hours	4.5 (19) 5.0 (22)	PSTC - 3
<b>Shear, Hours to Fail</b> Stainless Steel	150	PSTC - 7
<b>Temperature Range Guidelines</b>		
Application:	50° to 120°F (10° - 49°C) for best results.	
End Use:	-20° to 200°F (-29° to 93°C)	
<b>Adhesive pH</b>	Neutral	TAPPI-529

## GENERAL COMMENTS

- ⇒ Where exposure to chemicals, solvents or high pressure wash is anticipated, Mactac recommends sealing the edges with varnish, silicone or other sealant to prevent penetration by these liquids.
- ⇒ Prints should not be applied onto dusty, dirty, oily or oxidized surfaces.
- ⇒ The mounting board must be properly prepared prior to mounting the image. This may include wiping with alcohol, light sanding or surface sealing depending on the board. Contact your board supplier for their recommendation.
- ⇒ Mactac's pressure sensitive mounting films are intended for "Cold Roll Lamination" (50°F - 120°F). The addition of heat while simultaneous mounting with Thermal Overlaminates may result in curl or have other detrimental effects on the finished product.
- ⇒ Whenever possible, always test first to ensure end-use capability.

## SHELF LIFE

Two years when stored at 75°F (24°C) and 50% relative humidity or less. Note: Mactac recommends that rolls be stored on end or suspended from the core.

- 1) **The user is responsible for determining the product's suitability, including adhesion and if needed, removal characteristics when used in applications other than listed specifically in this Performance Guide.**
- 2) **If there are any questions about applications, please contact your Mactac sales representative to discuss your requirements for recommendations.**
- 3) **If this is a printed Performance Guide it is an uncontrolled document. Please check the Mactac website for the latest, most up-to-date version.**

- **Values given are typical and are not necessarily for use in specification.**
- **Product reinforced with 2-mil polyester during adhesion testing.**

- ® Permacolor is a registered trademark of Morgan Adhesives Company LLC
- ® Fome-Cor is a registered trademark of Monsanto Company.
- ® Gatorfoam is a registered trademark of Alussuisse Metal, Inc.
- ® Crescent is a registered trademark of the Crescent Cardboard Company.
- ® Masonite is a registered trademark of Masonite Corp.
- ® Sintra is a registered trademark of Alussuisse Metal, Inc.

**CALL 1-800-321-8834 for additional product information**

**IMPORTANT NOTICE:** The information given and the recommendations made herein are based on our research and are believed to be accurate, but no guarantee of their accuracy or completeness is made. In every case, user shall determine before using any product in full scale production, or in any way, whether such product is suitable for user's intended use for their particular purpose under their own operating conditions. User assumes all risk and liability whatsoever in connection with their use of any product. The products discussed herein are sold without any warranty as to merchantability or fitness for a particular purpose, or any other warranty, express or implied. No representative of ours has any authority to waive or change the foregoing provisions, and no statement or recommendation not contained herein shall have any force of effect unless in an agreement signed by the officers of seller and manufacturer. Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute a permission, inducement or recommendation to practice any invention covered by any patent without authority from the owner of the patent. The following is made in lieu of all warranties, express or implied: Seller's and manufacturer's only obligation shall be to replace or credit such quantity of the product proved to be defective at its discretion.

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www.Mactac.com





# PERFORMANCE GUIDE

www.Mactac.com

Version #10 (0114)

Approved by J. S.

**PRODUCT:** PermaGard® IP7200 Matte

## PERMACOLOR®

The **Permacolor** system is a series of pressure sensitive products for mounting and overlaminating in the imaging industries. Pressure sensitive **Permacolor** provides fast, efficient processing through cold roll lamination techniques without the need for heat, drying or messy coating operations.

## PRODUCT DESCRIPTION

The **PermaGard® overlaminating films** are a family of pressure sensitive adhesive coated, optically clear overlaminating films that are available in a variety of surface finishes. These films can be laminated to photographic prints, transparencies and digital images (inkjet, electrostatic, and thermal) to impart protection from abrasion, moisture and other potentially damaging effects in both indoor and outdoor environments.

**IP-7200 Matte** is a high performance polymeric vinyl film coated on one side with a clear acrylic pressure sensitive adhesive. An easily removed white paper liner protects the adhesive. **IP7200** provides a uniform, matte surface that protects from abrasion, moisture and other potentially damaging effects. It also helps retard color fade caused by ultra violet (UV) light exposure.

<u>PHYSICAL PROPERTIES</u>	<u>TYPICAL VALUES*</u>	<u>TEST METHOD</u>
<b>Thickness, inches (µm)</b>		ASTM D645
Film plus adhesive	0.0047 (119)	
Total product	0.0097 (246)	
<b>Quick Tack, lb./in.<sup>2</sup> (N/25 mm)</b>		Mactac CTM-25
Stainless Steel	2.8 (12.5)	
<b>Peel Adhesion, lb./inch (9n/25 mm)</b>		PSTC - 1
Stainless Steel - 30 minutes	4.0 (17.5)	
<b>Shear, Hours to Fail</b>		PSTC - 7
Stainless Steel - 1000g @ 72°F (22°C)	150	
<b>White Light Transmission, %</b> (Note: Glass = 100)	90	Mactac CTM - 67
<b>Gloss (60° angle)</b>	10	ASTM D-523
<b>Temperature Range Guidelines</b>		
Application:	Above 50°F (10°C) for best results.	
End Use:	-20° to 150°F (-29° to 66°C)	
<b>Adhesive pH</b>	Neutral	TAPPI -529

## DURABILITY:

The durability of the film is 2-3 years in vertical (90±5°) applications outdoors and 5+ years indoors. While all Permacolor overlaminating films have UV resistance built in to help extend the life of your image, the durability of the image is mainly dependent upon the quality of the inks (see technical data sheets given by the ink manufacturers) and pressure sensitive media being used.

## GENERAL COMMENTS

- ⇒ Where exposure to moisture, chemicals, solvents or high pressure wash is anticipated, Mactac recommends sealing the edges with varnish, silicone or other sealant to prevent penetration by these liquids.
- ⇒ Overlaminates should not be applied onto dusty or dirty prints.
- ⇒ The mounting board must be properly prepared prior to mounting the image. This may include wiping with alcohol, light sanding or surface sealing depending on the board. Contact your board supplier for their recommendation.
- ⇒ Mactac's pressure sensitive mounting films are intended for "Cold Roll Lamination" (40°F - 104°F). The addition of heat while simultaneous mounting with Thermal Overlaminates may result in curl or have other detrimental effects on the finished product.
- ⇒ Whenever possible, always test first to ensure end-use capability.

- 1) **The user is responsible for determining the product's suitability, including adhesion and if needed, removal characteristics when used in applications other than listed specifically in this Performance Guide.**
- 2) **If there are any questions about applications, please contact your Mactac sales representative to discuss your requirements for recommendations.**
- 3) **If this is a printed Performance Guide it is an uncontrolled document. Please check the Mactac website for the latest, most up-to-date version.**

## SHELF LIFE

Two years when stored at 75°F (24°C) and 50% relative humidity or less. Note: Mactac recommends that rolls be stored on end or suspended from the core.

*\* Values given are typical for unprocessed product and are not for use as specifications. Processing may change the values.*

**CALL 1-800-321-8834 for additional product information**

**IMPORTANT NOTICE:** The information given and recommendations made herein are based on our research and are believed to be accurate. In every case, user shall determine before using any product in full scale production, whether such product is suitable for their particular purpose under their own operating conditions. The products discussed herein are sold without any warranty as to merchantability, expressed or implied. User assumes all risk and liability whatsoever in connection with their use of any product. When used as recommended in this Performance Guide, some types of graphics and end uses may be warranted by the MACTac Open Image Warranty™. Contact MACTac for specific warranty information. Ultimately, sellers and manufacturers only obligation shall be to replace or credit such quantity of the product proved to be defective at its discretion.

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# Avery® HP 700 High Performance Calendered Series

Opaque Permanent Kraft  
 (formerly: A6 Opaque Series – 78# )  
 Revision: 1 Dated: 7/23/2010

## Uses:

Avery HP-700 series calendered films are premium quality, flexible, opaque solid color medium gloss vinyl films designed for use in a wide range of signmaking making applications. This product is ideal for a variety of intermediate term outdoor projects.



**Face:** 3.0 mil (76 microns) high gloss cast film



**Adhesive:** Permanent Clear Acrylic



**Liner:** 78# Bleached Kraft



**Durability:** Up to 6 years

**Application Surfaces:**

Flat, Simple Curves

## Features:

- Outstanding durability and outdoor performance
- Dimensionally stable liner for easy converting
- Medium gloss finish
- Excellent conversion on CAD plotters
- Easy cutting & weeding
- Good dimensional stability
- Good UV, temperature, humidity, and salt-spray resistance

## Conversion:

- |                                                            |                                                      |                                                  |
|------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------|
| <input checked="" type="checkbox"/> Thermal Die-Cutting    | <input checked="" type="checkbox"/> Thermal Transfer | <input type="checkbox"/> Solvent based inkjet    |
| <input checked="" type="checkbox"/> Flat Bed Sign-Cut      | <input type="checkbox"/> Screen Printing             | <input type="checkbox"/> Mild/Eco Solvent inkjet |
| <input checked="" type="checkbox"/> Drum Roller Sign-Cut   | <input type="checkbox"/> Cold Overlaminating         | <input type="checkbox"/> UV inkjet               |
| <input checked="" type="checkbox"/> Steel Rule Die-Cutting | <input type="checkbox"/> Water based inkjet          |                                                  |

## Common Applications:

- |             |                       |                     |
|-------------|-----------------------|---------------------|
| Trucks      | Banners               | Trains & light rail |
| Trailers    | Architectural Signage | Buses               |
| Cars & Vans | Directional Signage   | Outdoor advertising |

## Product Data Sheet

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# Avery® HP 700 High Performance Calendered Series

Opaque Permanent Kraft  
 (formerly: A6 Opaque Series – 78# )  
 Revision: 1 Dated: 7/23/2010

## Physical Characteristics:

Property	Value
Caliper, face	3.0 mil (76 µm)
Caliper, adhesive	1.0mil (25 µm)
Dimensional stability	<0.03"(0.765mm)
Tensile at Yield	9.0 -15.0 lb/in (1.6 - 2.7 kg/cm)
Elongation	100% min.
Gloss	70%
Adhesion: 15 min.	3.0 lbs/in (525 N/m)
24 hr.	4.4 lbs/in (770 N/m)
Flammability	Self Extinguishing
Shelf-Life	1 year
Durability	Vertical Exposure Up to 6 years
Min. Application Temperature	50° F (10° C)
Service Temperature	-40° - 180°F (-40° - 82° C) (Reasonable range of temperatures which would be expected under normal environmental conditions).
Chemical resistance	Resistant to most mild acids, alkalis, and salt solutions.

## Important:

Information on physical and chemical characteristics are based on tests believed to be reliable. The values are intended only as a source of information. This information is given without guaranty and do not constitute a warranty. The purchaser should independently determine, prior to use, the suitability of any material for their specific purpose. (Data represents average values where applicable, and is not intended for specification purposes)

## Warranty:

All statements, technical information and recommendations about Avery Dennison products are based upon tests believed to be reliable but do not constitute a guarantee or warranty. All Avery Dennison products are sold with the understanding that Purchaser has independently determined the suitability of such products for its purposes. Avery Dennison products are warranted to be free from defects in material and workmanship for either one year (or the period stated on the specific product information literature in effect at time of delivery, if longer) from date of shipment if said product is properly stored and applied. It is expressly agreed and understood that Avery Dennison's sole obligation and Purchaser's exclusive remedy under this warranty, under any other warranty, express or implied, or otherwise, shall be limited to repair or replacement of defective product without charge at Avery Dennison's plant or at the location of product (at Avery Dennison's election), or in the event replacement or repairs is not commercially practical, to Avery Dennison's issuing Purchaser a credit reasonable in light of the defect in the product.

Avery Dennison's liability for defective products shall not exceed the purchase price paid therefore by Purchaser and in no event shall Avery Dennison be responsible for any incidental or consequential damages whether foreseeable or not, caused by defects in such product, whether such damage occurs or is discovered before or after replacement or credit, and whether or not such damage is caused by Avery Dennison's negligence.

NO EXPRESS WARRANTIES AND NO IMPLIED WARRANTIES, WHETHER OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, OR OTHERWISE (EXCEPT AS TO TITLE), OTHER THAN THOSE EXPRESSLY SET FORTH ABOVE WHICH ARE MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, SHALL APPLY TO PRODUCTS SOLD BY AVERY DENNISON. AVERY DENNISON SPECIFICALLY DISCLAIMS AND EXCLUDES ALL OTHER SUCH WARRANTIES. NO WAIVER, ALTERATION, ADDITION OR MODIFICATION OF THE FOREGOING CONDITIONS SHALL BE VALID UNLESS MADE IN WRITING AND MANUALLY SIGNED BY AN OFFICER OF AVERY DENNISON.

## Product Data Sheet

Page 2 of 4  
 Graphics & Reflective Products Division  
 250 Chester Street  
 Painesville, OH 44077



AnswerLine: 800-231-4654  
 www.averygraphics.com

**Avery® HP 700 High Performance Calendered Series**  
 Opaque Permanent Kraft  
 (formerly: A6 Opaque Series – 78# )  
 Revision: 1 Dated: 7/23/2010

**Colors: Cross Reference**

A6 OPAQUE SERIES - 78#	AVERY 700 PREMIUM CALENDERED OPAQUE PERMANENT KRAFT	A6 OPAQUE SERIES - 78#	AVERY 700 PREMIUM CALENDERED OPAQUE PERMANENT KRAFT
A6001-O White	HP 700-101-O White	A6533-O Cool Blue	HP 700-633-O Cool Blue
A6002-O Matte White	HP 700-102-O Matte White	A6540-O Light Blue	HP 700-640-O Light Blue
A6003-O Clear	HP 700-103-O Clear §	A6542-O Cascade Blue	HP 700-642-O Cascade Blue
A6005-O True White	HP 700-105-O True White	A6573-O Medium Blue	HP 700-655-O Medium Blue
A6080-O Matte Black	HP 700-180-O Matte Black	A6570-O Vivid Blue	HP 700-670-O Vivid Blue
A6090-O Black	HP 700-190-O Black	A6583-O Royal Blue	HP 700-683-O Royal Blue
A6110-O Primrose Yellow	HP 700-210-O Primrose Yellow	A6587-O Impulse Blue	HP 700-687-O Impulse Blue
A6247-O Gold	HP 700-215-O Gold ±	A6595-O Dark Blue	HP 700-695-O Dark Blue
A6125-O Rubber Duckie	HP 700-225-O Rubber Duckie	A6597-O Dark Navy Blue	HP 700-697-O Dark Navy Blue
A6135-O Yellow	HP 700-235-O Yellow	A6615-O Real Teal	HP 700-715-O Real Teal
A6150-O Dark Yellow	HP 700-250-O Dark Yellow	A6620-O Teal	HP 700-720-O Teal
A6152-O Mustard	HP 700-252-O Mustard	A6625-O Turquoise	HP 700-725-O Turquoise
A6250-O Imitation Gold	HP 700-253-O Imitation Gold	A6658-O Iguana Green	HP 700-758-O Iguana Green
A6315-O Tangerine	HP 700-315-O Tangerine Δ	A6665-O Olive Green	HP 700-765-O Olive Green
A6180-O Bright Orange	HP 700-380-O Bright Orange Δ	A6666-O Sherwood Green	HP 700-766-O Sherwood Green
A6325-O Tomato Red	HP 700-425-O Tomato Red Δ	A6670-O Kelly Green	HP 700-770-O Kelly Green
A6330-O Cardinal Red	HP 700-430-O Cardinal Red	A6678-O Green	HP 700-778-O Green
A6332-O True Red	HP 700-432-O True Red	A6680-O Yellow Green	HP 700-780-O Yellow Green
A6340-O Red	HP 700-440-O Red	A6685-O Forest Green	HP 700-785-O Forest Green
A6345-O Fire Red	HP 700-445-O Fire Red	A6693-O Dark Green	HP 700-793-O Dark Green
A6350-O Dark Red	HP 700-450-O Dark Red	A6077-O Silver	HP 700-801-O Silver ±
A6360-O Spectra Red	HP 700-460-O Spectra Red	A6030-O Slate Gray	HP 700-830-O Slate Gray
A6370-O Burgundy	HP 700-470-O Burgundy	A6035-O Medium Gray	HP 700-835-O Medium Gray
A6408-O Soft Pink	HP 700-508-O Soft Pink	A6055-O Dark Gray	HP 700-855-O Dark Gray
A6415-O Blossom	HP 700-515-O Blossom	A6070-O Battleship Gray	HP 700-870-O Battleship Gray
A6419-O Blush	HP 700-519-O Blush	A6220-O Beige	HP 700-920-O Beige
A6465-O Purple	HP 700-565-O Purple	A6260-O Terra Cotta	HP 700-960-O Terra Cotta
A6470-O Berry	HP 700-570-O Berry	A6273-O Carmel	HP 700-973-O Carmel
A6508-O Vibrant Blue	HP 700-608-O Vibrant Blue §	A6283-O Dark Brown	HP 700-983-O Dark Brown
A6525-O Majestic Blue	HP 700-625-O Majestic Blue	A6290-O Chocolate Brown	HP 700-990-O Chocolate Brown
A6530-O Olympic Blue	HP 700-630-O Olympic Blue	A6533-O Cool Blue	HP 700-633-O Cool Blue
A6532-O Wedgwood Blue	HP 700-632-O Wedgwood Blue	A6540-O Light Blue	HP 700-640-O Light Blue

**COMMENTS:**

NOTE: Some color fade may occur in severe environmental areas. Reference IB 1.30 for durability guidelines.

▪ - pigmented adhesive, not reversible

**Gloss Exceptions:** 50 at 60°

- A6077-O Silver
- A6247-O Gold
- A6508-O Vibrant Blue
- ± - 3 year durability
- § - 4 year durability
- Δ - 5 year durability

**Dimensional stability:**

Is measured on a 6" x 6" (150 x 150 mm) aluminum panel to which a specimen has been applied; 72 hours after application the panel is scored in a cross pattern, exposed for 48 hours to 150°F (65°C), after which the shrinkage is measured.

**Product Data Sheet**

Page 3 of 4  
 Graphics & Reflective Products Division  
 250 Chester Street  
 Painesville, OH 44077



AnswerLine: 800-231-4654  
 www.averygraphics.com

**Avery® HP 700 High Performance Calendered Series**  
 Opaque Permanent Kraft  
 (formerly: A6 Opaque Series – 78# )  
 Revision: 1 Dated: 7/23/2010

**Adhesion:**

(FTM-1, FINAT) is measured by peeling a specimen at a 180° angle from a stainless steel panel, 24 hours after the specimen has been applied under standardized conditions. Initial adhesion is measured 15 minutes after application of the specimen.

**Flammability:**

A specimen applied to aluminum is subjected to the flame of a gas burner for 15 seconds. The film should stop burning within 15 seconds after removal from the flame.

**Temperature range:**

A specimen applied to stainless steel is exposed at high and low temperatures and brought back to room temperature. 1 hour after exposure the specimen is examined for any deterioration. Note: Prolonged exposure to high and low temperatures in the presence of chemicals such as solvents, acids, dyes, etc. may eventually cause deterioration.

**Chemical Resistance:**

All chemical tests are conducted with test panels to which a specimen has been applied. 72 hours after application the panels are immersed in the test fluid for the given test period. 1 hour after removing the panel from the fluid, the specimen is examined for any deterioration.

*Revisions are italicized*

Avery Dennison is a registered trademark of Avery Dennison Corp.

**Product Data Sheet**

Page 4 of 4  
 Graphics & Reflective Products Division  
 250 Chester Street  
 Painesville, OH 44077



AnswerLine: 800-231-4654  
 www.averygraphics.com

Designtex Made to Measure wallcovering is manufactured by our Surface Imaging division, operating out of a state-of-the-art, 26,000 square foot facility in Portland, Maine. All of our Made to Measure wallcovering is produced using DNA, an environmentally preferred alternative to vinyl composed of reclaimed wood fibers fused with synthetic latex, resulting in high durability. The construction and finishing are proprietary.

This alternative to vinyl offers a PVC-free, low-VOC wallcovering material with a smooth, matte finish and Type II commercial performance wallcovering characteristics. Printed via UV-curable inkjet technology. 5-year warranty unless noted otherwise in project documentation for specific applications (indoor use only).

**DNA**  
DW11

Use	<b>Wallcovering</b>
Content	<b>40% Latex, 30% Cellulose (Postconsumer Recycled), 20% Cellulose, 10% Polyester</b>
Cleaning	<b>Water-based (W)</b>
Weight	<b>15 ounces/linear yard (465 g/lm)</b>
Width	<b>50 inches (127 cm)</b>
Hanging Method	<b>Straight Hang, Straight Across Match</b>
Flammability	<b>ASTM E 84 Adhered Class A</b>
Lightfastness	<b>40 hours</b>
Wallcovering Class	<b>Type II Characteristics</b>
ACT	<b>☘ ☙ ☼ *</b>
Optimized Chemistry	<b>Alternative to PVC</b>
LEED	<b>Recycled Content</b>
Sustainable Logistics	<b>Ships Carbon Neutral **</b>
Warranty	<b>5 years</b>
Origin	<b>United States</b>



## 8.0 Mounts Type Document



# Mounts & Brackets Catalog

Haley Sharpe Design

# Mounts & Brackets: Types

Object-specific Custom Mounts		Non-fitted Modular Mounts	
Brackets, Rods and Pins	BC0-	Display Plinths and Cubes	BM0-
Shaped and Moulded Panels	BC1-	Display Boards	BM1-
Forms and Figures	BC2-	Shelves	BM2-
Suspension	BC3-	Suspension System	BM3-
Frames and Wrapping	BC4-	Protective Film	BM4-
Structural Support	BC5-		

# Mounts & Brackets: Notes

- A mount may consist of a combination of materials to provide the object with the required support necessary for display.
- Plexi – use cast clear plexi as standard, thickness chosen to suit application.
- Metalwork – use brushed stainless steel as standard.
- Suspension cable thickness or gauge to be chosen to suit application.
- Avoid, glue lines on plexi and unfinished edges on worked surfaces.
- Conceal screw fixings.
- Silicone tubing to be used on all metal rods and wires to cushion contact points with object.
- Drill holes should not be visible.
- Polyester film (Melinex/Mylar) should be uncoated, thickness appropriate to use.
- Textiles, inert, as approved.
- Paint (approved paint systems & colours for use outside display cases only - to be confirmed)
- Dacrylate (water based plexi lacquer) should be applied to minimum of three layers to ensure adequate sealing of Medite/approved wood based products.
- Moistop barrier film should be used over Medite/approved wood based products.
- Nylon thread – use clear or neutral.

# Object-specific Custom Mounts

# Object-specific Custom Mounts

## Brackets, Rods and Pins

Type		Description
Metal bracket stand-off	BC00	Horizontal spacers welded to fixing plate for use on a vertical plane (artifact could be secured to plate with tabs or stainless steel wire claws with silicone tubing on points of contact).
Plexi or metal rod support	BC01	Artifact to be displayed using claw mount and vertical rod to base or friction-fitted through to display surface.
Metal ring or cradle	BC02	Rod with welded cradle or ring to accept artifact; can be epoxied to base or friction-fitted through display surface or fitted to display surface; use steel and Medite sealed with Dacrylate for heavy artifacts.
Tabs, claws and L-pins	BC03	Artifact held around the perimeter with discreet claws either by shaped stainless steel rods/wires to a stainless steel back plate ("spider" type mount) or other backboard with one or two fixing points. Other methods could include 'L' or 'Z' shaped adjustable metal tabs.

# Object-specific Custom Mounts

## Brackets, Rods and Pins

BC00 Metal bracket stand-off	
Description:	Horizontal spacers welded to fixing plate for use on a vertical plane (artifact could be secured to plate with tabs or stainless steel wire claws with silicone tubing on points of contact).
Materials:	Stainless steel; silicone rubber tubing as needed; or steel with powder coat finish; closed cell polyethylene foam padding where appropriate.
Examples:	

# Object-specific Custom Mounts

## Brackets, Rods and Pins

BC01 Plexi or metal rod support	
Description:	Artifact to be displayed using claw mount and vertical rod to base or friction-fitted through to display surface.
Materials:	Rod in cast plexi, diameter determined by object size and weight. Stainless Steel with silicone rubber tubing; or steel with powder coat finish; plexi base (rounded or polished edges); or solid core display surface; padding as required (inc. inert closed cell polyethylene foam).
Examples:	

# Object-specific Custom Mounts





## Brackets, Rods and Pins

BC02 Metal ring or cradle	
Description:	Rod with welded cradle or ring to accept artifact; can be epoxied to base or friction-fitted through display surface or fitted to display surface; use steel and Medite sealed with Dacrylate for heavy artifacts.
Materials:	Stainless steel with silicone rubber tubing or inert closed cell polyethylene foam pads; or steel with powder coat finish; clear (as standard) cast plexi base (rounded and polished edges); under or behind display surface; approved padding material as required e.g. closed cell polyethylene foam.
Examples:	   



# Object-specific Custom Mounts

## Brackets, Rods and Pins

BC03 Tabs, claws and L-pins	
Description:	Artifact held around the perimeter with discreet claws either by shaped stainless steel rods/wires to a stainless steel back plate ("spider" type mount) or other backboard with one or two fixing points. Other methods could include 'L' or 'Z' shaped adjustable metal tabs.
Materials:	Stainless steel; silicone rubber tubing as needed; or steel with powder coat finish; plexi as needed.
Examples:	   

Object-specific Custom Mounts

Brackets, Rods and Pins

Shaped and Moulded Panels

Forms and Figures

Suspension

Frames and Wrapping

Structural Support

Non-fitted Modular Mounts

Display Plinths and Cubes

Display Boards

Shelves

Modular Display System

Protective Film



# Object-specific Custom Mounts

## Shaped and Moulded Panels

Type		Description
Moulded Planes	BC10	Objects placed directly on vertical, horizontal or angled plane; areas can be moulded, notched or carved to suit object.
Plexi Rings	BC11	Narrow section cut as a ring and raised on rod supports if required; angled as needed to support artifact.
Shaped Back Panel and Cradle	BC12	Panel cut to suit profile of artifact; can be attached to the object by a method approved by the relevant conservator; mounted to display surface as required.
Book Cradle	BC13	Cradle for open books to be constructed to profile at appropriate angle with ledge to support book block. Mount angled to suit for closed books. Pages can be secured with polyester strapping.

Object-specific Custom Mounts

Brackets, Rods and Pins

Shaped and Moulded Panels

Forms and Figures

Suspension

Frames and Wrapping

Structural Support

Non-fitted Modular Mounts

Display Plinths and Cubes

Display Boards

Shelves



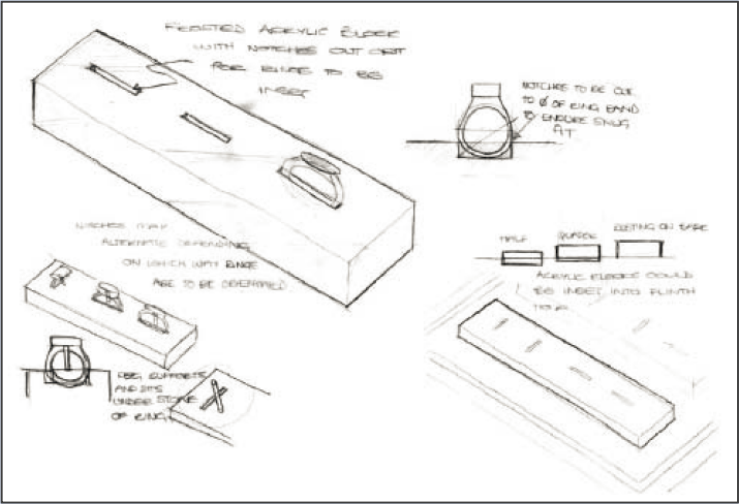
Modular Display System

Protective Film



# Object-specific Custom Mounts

## Shaped and Moulded Panels

BC10 Moulded Planes	
<b>Description:</b>	Objects placed directly on vertical, horizontal or angled plane; areas can be moulded, notched or carved to suit object.
<b>Materials:</b>	Clear (as standard) cast plexi (rounded and polished edges); plexi feet as necessary.
<b>Examples:</b>	  

# Object-specific Custom Mounts

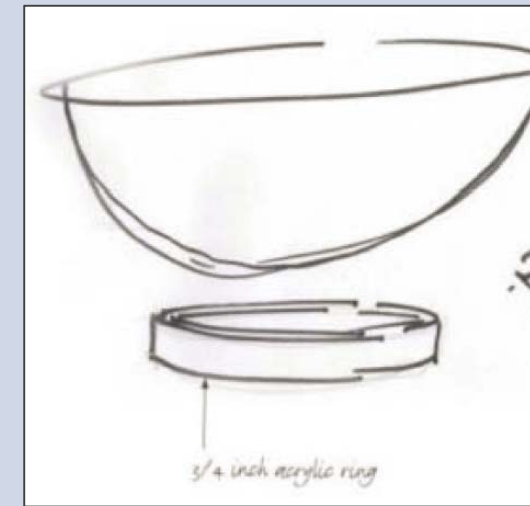
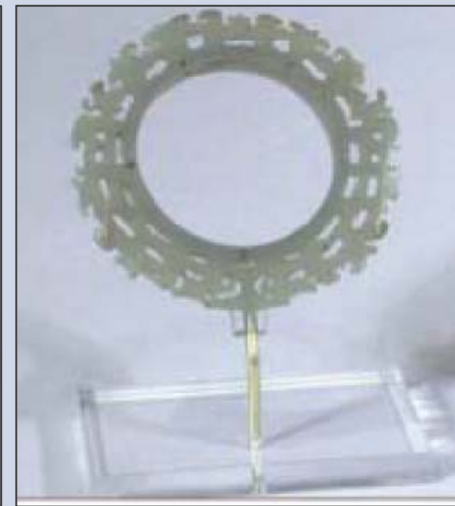
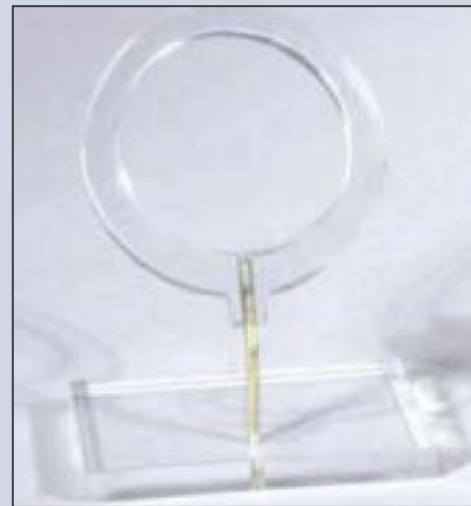
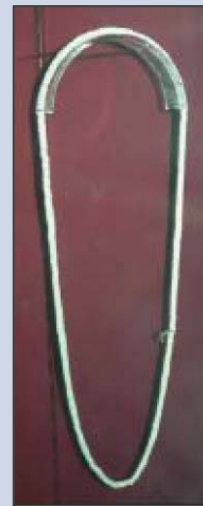
## Shaped and Moulded Panels

### BC11 Plexi Rings

**Description:** Narrow section cut as a ring and raised on rod supports if required; angled as needed to support artifact.




**Materials:** Clear (as standard) cast plexi (rounded and polished edges); inert closed cell polyethylene foam padding; plexi or stainless steel rod.

**Examples:**



# Object-specific Custom Mounts

## Shaped and Moulded Panels

BC12 Shaped Back Panel and Cradle	
Description:	Panel cut to suit profile of artifact; can be attached to the object by a method approved by the relevant conservator; mounted to display surface as required.
Materials:	Clear (as standard) cast plexi (rounded and polished edges); stainless steel with silicone rubber tubing; closed cell polyethylene foam or padding, inert ties as required.
Examples:	  

Object-specific Custom Mounts

Brackets, Rods and Pins

Shaped and Moulded Panels

Forms and Figures

Suspension

Frames and Wrapping

Structural Support

Non-fitted Modular Mounts

Display Plinths and Cubes

Display Boards

Shelves

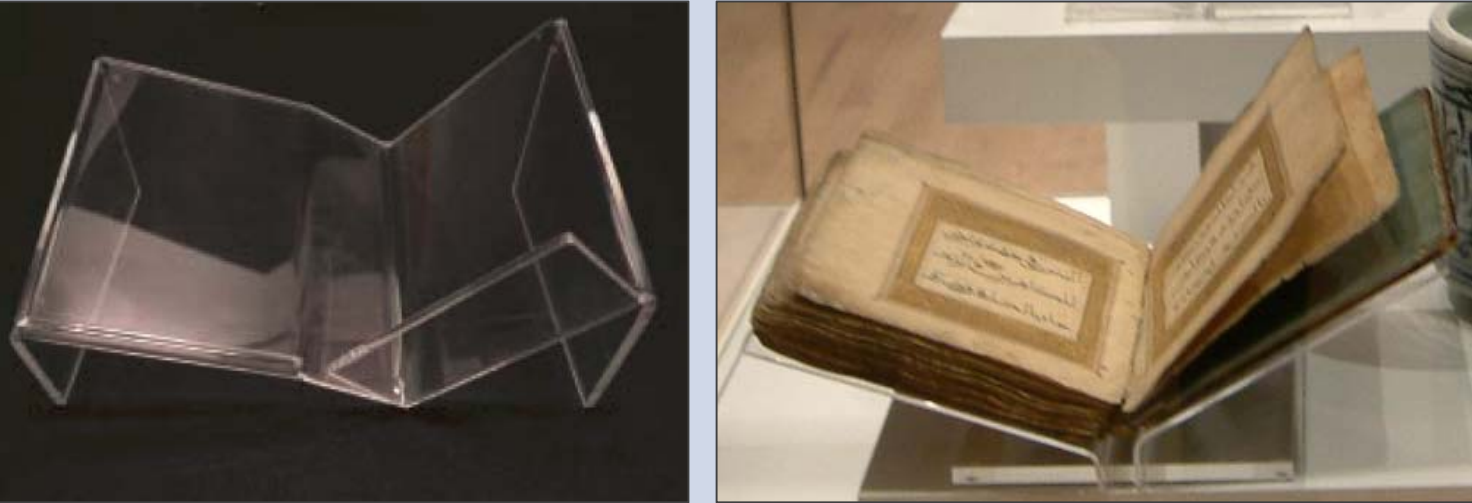
Modular Display System

Protective Film



# Object-specific Custom Mounts

## Shaped and Moulded Panels

BC13 Book Cradle	
Description:	Cradle for open books to be constructed to profile at appropriate angle with ledge to support book block. Mount angled to suit for closed books. Pages can be secured with polyester strapping.
Materials:	Plexi (clear, polished edges); foam padding; mylar / melinex strips; frosted plexi may be used in some cases if less obtrusive in terms of reflection from polished edges.
Examples:	

Object-specific Custom Mounts

Brackets, Rods and Pins  
Shaped and Moulded Panels

**Forms and Figures**

Suspension  
Frames and Wrapping  
Structural Support

Non-fitted Modular Mounts

Display Plinths and Cubes  
Display Boards  
Shelves  
Modular Display System  
Protective Film



# Object-specific Custom Mounts Forms and Figures

Type		Description
Conservation Figure	BC20	Artifact fastened directly to museological-standard figure, selected and padded to be appropriate to artifact dimensions and requirements.
Flat Figure	BC21	Artifact fastened directly to figure, selected to be appropriate to artifact dimensions and requirements), padded as required.
Formed Padded Mount	BC22	Artifact fastened directly to museological-standard shaped mount (such as head-shaped), padded as required, that may reflect the time period; supported by rod secured to base or friction-fitted in display surface.
Formed Padded Insert	BC23	Padded inserts placed in or under artifact to provide form; placed on display surface with or without attachment post & base.
Stabilizing Mount	BC24	Custom shaped wedges, pads or blocks to stabilise furniture pieces, sculptures or other uneven artifacts.

Object-specific Custom Mounts

Brackets, Rods and Pins  
Shaped and Moulded Panels

Forms and Figures

Suspension  
Frames and Wrapping  
Structural Support


Non-fitted Modular Mounts

Display Plinths and Cubes  
Display Boards  
Shelves  
Modular Display System  
Protective Film



# Object-specific Custom Mounts

## Forms and Figures

BC20 Conservation Figure	
Description:	Artifact fastened directly to museological-standard figure, selected and padded to be appropriate to artifact dimensions and requirements.
Materials:	Conservation material (i.e. ETHAFOAM™ Plastic Foam)
Examples:	



Object-specific Custom Mounts

Brackets, Rods and Pins  
Shaped and Moulded Panels

Forms and Figures

Suspension  
Frames and Wrapping  
Structural Support

Non-fitted Modular Mounts

Display Plinths and Cubes  
Display Boards  
Shelves  
Modular Display System  
Protective Film

# Object-specific Custom Mounts

## Forms and Figures

BC21 Flat Figure	
Description:	Artifact fastened directly to figure, selected to be appropriate to artifact dimensions and requirements), padded as required.
Materials:	Approved textile cover; polyester wadding.
Examples:	

Object-specific Custom Mounts

Brackets, Rods and Pins  
Shaped and Moulded Panels

Forms and Figures

Suspension  
Frames and Wrapping  
Structural Support


Non-fitted Modular Mounts

Display Plinths and Cubes  
Display Boards  
Shelves  
Modular Display System  
Protective Film



# Object-specific Custom Mounts

## Forms and Figures

BC22 Formed Padded Mount	
Description:	Artifact fastened directly to museological-standard shaped mount (such as head-shaped), padded as required, that may reflect the time period; supported by rod secured to base or friction-fitted in display surface.
Materials:	Cotton cover; polyester wadding; closed cell polyethylene foam or acid free tissue; powder coated steel or rod support; plexi (rounded and polished edges) or finished/painted Medite base; fiberglass. Or could use Synthetic FOSSHAPE™ felt-like fabric.
Examples:	

Object-specific Custom Mounts

Brackets, Rods and Pins  
Shaped and Moulded Panels

Forms and Figures

Suspension  
Frames and Wrapping  
Structural Support

Non-fitted Modular Mounts

Display Plinths and Cubes  
Display Boards  
Shelves  
Modular Display System  
Protective Film



# Object-specific Custom Mounts

## Forms and Figures

BC23 Formed Padded Insert	
Description:	Padded inserts placed in or under artifact to provide form; placed on display surface with or without attachment post & base.
Materials:	Approved textile cover; polyester wadding; closed cell polyethylene foam or acid-free tissue; acrylic base (rounded and polished edges); mylar/melinex or tyvek as needed.
Examples:	

Object-specific Custom Mounts

Brackets, Rods and Pins  
Shaped and Moulded Panels

Forms and Figures

Suspension  
Frames and Wrapping  
Structural Support


Non-fitted Modular Mounts

Display Plinths and Cubes  
Display Boards  
Shelves  
Modular Display System  
Protective Film



# Object-specific Custom Mounts

## Forms and Figures

BC24 Stabilizing Mount	
Description:	Custom shaped wedges, pads or blocks to stabilise furniture pieces, sculptures or other uneven artifacts.
Materials:	Closed cell polyethylene foam; acrylic; metal; silicone sheet.
Examples:	

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures

**Suspension**

- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Object-specific Custom Mounts Suspension

Type		Description
Cable with Eyelets	BC30	Steel eyelet screwed into exhibit soffit or base building ceiling or case ceiling; or cable attached directly to artifact using silicone rubber tubing at points of contact; may need approval from structural engineer.
Nylon Thread	BC31	Thread to support weight of artifact or parts of an artifact; to suspend artifact from case top or horizontal or vertical display surface; to provide additional stability; using silicone rubber tubing at points of contact.

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping**
- Structural Support



Non-fitted Modular Mounts

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Object-specific Custom Mounts

## Frames and Wrapping

BC30 Cable with Eyelets	
Description:	Steel eyelet screwed into exhibit soffit or base building ceiling or case ceiling; or cable attached directly to artifact using silicone rubber tubing at points of contact; may need approval from structural engineer.
Materials:	Pre-finished stainless steel cable with nylon eyelet; silicon tubing / closed cell polyethylene foam; nylon coated stainless steel cable; silicone rubber tubing as required.
Examples:	 

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping**
- Structural Support

Non-fitted Modular Mounts

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Object-specific Custom Mounts

## Frames and Wrapping

BC31 Nylon Thread	
Description:	Thread to support weight of artifact or parts of an artifact; to suspend artifact from case top or horizontal or vertical display surface; to provide additional stability; using silicone rubber tubing at points of contact.
Materials:	Polyester or clear nylon thread, eyelet screws and fasteners as required; silicone rubber tubing as required.
Examples:	

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping**
- Structural Support

Non-fitted Modular Mounts

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Object-specific Custom Mounts

## Frames and Wrapping

Type		Description
Painting or Print Frame	BC40	Institutional standard frame with matting as necessary, suited to artifact and display needs. Brackets to secure framed artifacts to vertical display surfaces; affix to side or back of frame to suit.
Mat Frame	BC41	Institutional standard matting, conservation backing, or historic framing can be incorporated; can be integrated with mount system by using suspension system.
Back and Wrap	BC42	Institutional standard mat board backing cut to shape and scale of artifact; encapsulated in mylar; can be placed directly on display surface or secondary angled plane.
Box Frame	BC43	Institutional standard frame with matting as necessary, suited to artifact and display needs. Brackets to secure framed artifacts to vertical display surfaces; affix to side or back of frame to suit.



**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping**
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Object-specific Custom Mounts Frames and Wrapping

BC40 Painting or Print Frame	
Description:	Institutional standard frame with matting as necessary, suited to artifact and display needs. Brackets to secure framed artifacts to vertical display surfaces; affix to side or back of frame to suit.
Materials:	Timber finished and / or painted (with approved paint system & colour).
Examples:	

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping**
- Structural Support

Non-fitted Modular Mounts

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Object-specific Custom Mounts

## Frames and Wrapping

BC41 Mat Frame	
Description:	Institutional standard matting, conservation backing, or historic framing can be incorporated; can be integrated with mount system by using suspension system.
Materials:	Acid-free, archival mat board. Suspension system with stainless steel rod or stock; plexi strip battens.
Examples:	   

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping**
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film

# Object-specific Custom Mounts Frames and Wrapping

BC42 Back and Wrap	
Description:	Institutional standard mat board backing cut to shape and scale of artifact; encapsulated in mylar; can be placed directly on display surface or secondary angled plane.
Materials:	Mylar (clear polyester film) and archival mat board.
Examples:	

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping**
- Structural Support

Non-fitted Modular Mounts

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Object-specific Custom Mounts

## Frames and Wrapping

BC43 Box Frame	
Description:	Institutional standard frame with matting as necessary, suited to artifact and display needs. Brackets to secure framed artifacts to vertical display surfaces; affix to side or back of frame to suit.
Materials:	Timber finished and / or painted (with approved paint system & colour); plexi or glass.
Examples:	

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping

**Structural Support**

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Object-specific Custom Mounts

## Structural Support

Type		Description
Structural Rods	BC50	Rods fastened directly to base building structure (concrete floor, ceiling, etc.); for heavy artifacts; reviewed by structural engineer.
Clamps and Frames	BC51	Metal clamps fastened directly to base building structure (gallery/building wall, etc.); for heavy and/or open display artifacts; reviewed by structural engineer and conservator.

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping



**Structural Support**

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film

# Object-specific Custom Mounts

## Structural Support

<b>BC50 Structural Rods</b>	
<b>Description:</b>	Rods fastened directly to base building structure (concrete floor, ceiling, etc.); for heavy artifacts; reviewed by structural engineer.
<b>Materials:</b>	Steel with powder-coating finish.
<b>Examples:</b>	<div style="display: flex; justify-content: space-around;">   </div>

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping

**Structural Support**

Non-fitted Modular Mounts

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Object-specific Custom Mounts

## Structural Support

BC51 Clamps and Frames	
Description:	Metal clamps fastened directly to base building structure (gallery/building wall, etc.); for heavy and/or open display artifacts; reviewed by structural engineer and conservator.
Materials:	Steel with powder-coating finish.
Examples:	

# Non-fitted Modular Mounts



# Non-fitted Modular Mounts

## Display Plinths and Cubes

Type		Description
Display Box	BM00	Boxes dimensioned to suit display requirements; artifact(s) with or without mount(s) to sit directly on top of or fastened into display box. Surfaces can be finished/painted according to display requirements.
Plexi Cube	BM01	Cubes dimensioned to suit display requirements; artifact(s) with or without mount(s) to sit directly on top of or fastened into plinth; can be folded plexi (as a box) or a solid cube.

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

Non-fitted Modular Mounts


Display Plinths and Cubes

- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Non-fitted Modular Mounts

## Display Plinths and Cubes

BM00 Display Box	
Description:	Boxes dimensioned to suit display requirements; artifact(s) with or without mount(s) to sit directly on top of or fastened into display box. Surfaces can be finished/painted according to display requirements.
Materials:	MDF finished and/or painted (with approved paint system & colour); requires 6 weeks to off gas and 3 coats of Dacrylate or Moistop barrier film heat applied to surfaces.
Examples:	

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

Non-fitted Modular Mounts

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular Display System
- Protective Film



# Non-fitted Modular Mounts

## Display Plinths and Cubes

BM01 Plexi Cube	
Description:	Cubes dimensioned to suit display requirements; artifact(s) with or without mount(s) to sit directly on top of or fastened into plinth; can be folded plexi (as a box) or a solid cube.
Materials:	Clear cast acrylic (rounded and polished edges).
Examples:	

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards**
- Shelves
- Modular Display System
- Protective Film

# Non-fitted Modular Mounts Display Boards

Type		Description
Display Panel	BM10	Vertical panel with object(s) mounted.
Fabric Wrapped Board	BM11	Hard-backed, inert padded board wrapped with archival fabric; board can then be mounted to vertical or angled display surface. Objects can be attached by pinning or sewing.
Plexi Slope	BM12	Sloped panel with or without stainless steel legs or plexi rod supports. Angle of slopes determined by display heights of objects; Could include Lectern style mount with lower lip (plexi sloped pane on upright plexi or stainless steel rod support).
Plexi Sandwich	BM13	Vertical plexi panel with object face mounted. Plexi or dibond back panel.

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support


Non-fitted Modular Mounts

- Display Plinths and Cubes
- Display Boards**
- Shelves
- Modular Display System
- Protective Film



# Non-fitted Modular Mounts

## Display Boards

BM10 Display Panel	
Description:	Panel, horizontal or vertical with object(s) mounted.
Materials:	MDF finished and/or painted (with approved paint system & colour); requires 6 weeks to off gas and 3 coats of Dacrylate or Moistop barrier film heat applied to surfaces; Plexi panel; plexi or stainless steel pegs; stainless steel or plexi legs/supports as required.
Examples:	

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support


Non-fitted Modular Mounts

- Display Plinths and Cubes
- Display Boards**
- Shelves
- Modular Display System
- Protective Film



# Non-fitted Modular Mounts

## Display Boards

BM11 Fabric Wrapped Board	
Description:	Hard-backed, inert padded board wrapped with archival fabric; board can then be mounted to vertical or angled display surface. For A-frame/pommel use two flat padded boards, attached at top. Objects can be attached by pinning or sewing.
Materials:	Color-fast, inert approved fabric; cotton, polyester or closed cell polyethylene foam padding; hexlite; stretcher; Di-bond board; foamex; acid free card.
Examples:	

Object-specific Custom Mounts

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support


Non-fitted Modular Mounts

- Display Plinths and Cubes
- Display Boards**
- Shelves
- Modular Display System
- Protective Film



# Non-fitted Modular Mounts

## Display Boards

BM12 Plexi Slope	
Description:	Sloped panel with or without stainless steel legs or plexi rod supports. Angle of slopes determined by display heights of objects; Could include Lectern style mount with lower lip (plexi sloped pane on upright plexi or stainless steel rod support).
Materials:	Plexi panel; plexi or stainless steel pegs; stainless steel or plexi legs/supports as required.
Examples:	

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards**
- Shelves
- Modular Display System
- Protective Film

# Non-fitted Modular Mounts

## Display Boards

BM13 Plexi Sandwich	
Description:	Vertical plexi panel with object face mounted. Plexi or dibond back panel.
Materials:	Plexi and dibond panels; adhesive, silicone or metal cleats to mount panels together.
Examples:	



**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves**
- Modular Display System
- Protective Film

# Non-fitted Modular Mounts Shelves

Type		Description
Slotted Shelf	BM20	Shelf slotted or fixed into display wall.
Pedestal Shelf	BM21	Shelf supported below on rod.

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves**
- Modular Display System
- Protective Film



# Non-fitted Modular Mounts Shelves

BM20 Slotted Shelf	
Description:	Shelf slotted or fixed into display wall.
Materials:	Plexi or MDF finished and/or painted (with approved paint system & colour); requires 6 weeks to off gas and 3 coats of Dacrylate or Moistop barrier film heat applied to surfaces; plexi or stainless steel pegs as necessary.
Examples:	

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves**
- Modular Display System
- Protective Film



# Non-fitted Modular Mounts Shelves

BM21 Pedestal Shelf	
Description:	Shelf supported below on rod.
Materials:	MDF finished and/or painted (with approved paint system & colour); requires 6 weeks to off gas and 3 coats of Dacrylate or Moistop barrier film heat applied to surfaces; plexi or stainless steel pegs as necessary; stainless steel or plexi legs.
Examples:	

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves

**Modular DisplaySystem**

- Protective Film

# Non-fitted Modular Mounts

## Modular Display System

Type		Description
Shelving System	BM30	Modular shelving system within case.
Suspension System	BM31	Modular hanging system within case or along wall.
Hanging System	BM32	Frame with wire grid to allow hanging/mounting of objects.

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves

**Modular DisplaySystem**

- Protective Film

# Non-fitted Modular Mounts

## Modular Display System

BM30 Shelving System	
Description:	Modular shelving system within case.
Materials:	Stainless steel rod or stock suspension system; glass or plexi shelves.
Examples:	

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**


- Display Plinths and Cubes
- Display Boards
- Shelves

**Modular DisplaySystem**

- Protective Film

# Non-fitted Modular Mounts

## Modular Display System

BM31 Suspension System	
Description:	Modular hanging system within case or along wall.
Materials:	Stainless steel rod or stock suspension system.
Examples:	

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves

**Modular DisplaySystem**

- Protective Film



# Non-fitted Modular Mounts

## Modular Display System

BM32 Suspension System	
Description:	Frame with wire grid to allow hanging/mounting of objects.
Materials:	Stainless steel frame.
Examples:	

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular DisplaySystem
- Protective Film**

# Non-fitted Modular Mounts

## Protective Barrier

Type		Description
Vitrine	BM40	Cover for artifacts on open display; can be a box or with spacers off the display surface; can cut holes for touchable artifacts.
Protective Film	BM41	Barrier between objects and painted Surfaces cut to shape of artifact base/feet.



**Object-specific Custom Mounts**


- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular DisplaySystem
- Protective Film**



# Non-fitted Modular Mounts Protective Barrier

BM40 Vitrine	
<b>Description:</b>	Cover for artifacts on open display; can be a box or with spacers off the display surface; can cut holes for touchable artifacts.
<b>Materials:</b>	Clear (as standard) cast plexi (rounded and polished edges); archival quality adhesive; plexi, Medite or other approved inert materials spacers/framing as necessary.
<b>Examples:</b>	

**Object-specific Custom Mounts**

- Brackets, Rods and Pins
- Shaped and Moulded Panels
- Forms and Figures
- Suspension
- Frames and Wrapping
- Structural Support

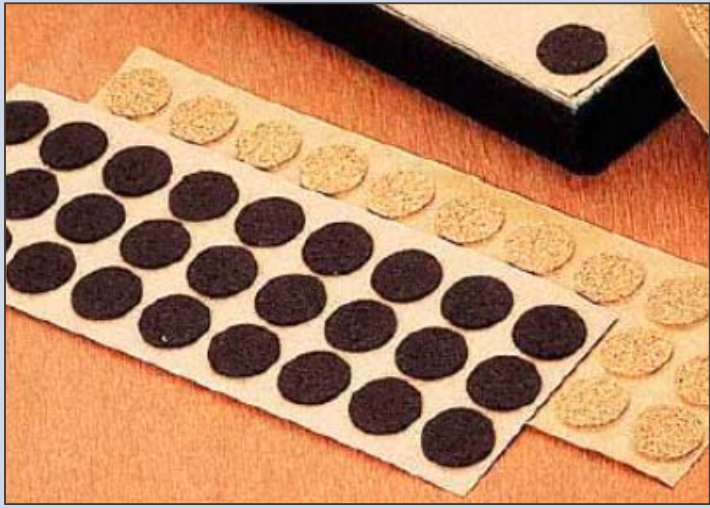
**Non-fitted Modular Mounts**

- Display Plinths and Cubes
- Display Boards
- Shelves
- Modular DisplaySystem
- Protective Film**



# Non-fitted Modular Mounts

## Protective Barrier

BM41 Protective Film	
Description:	Film as barrier between objects and painted surfaces, cut to shape of artifact base/feet.
Materials:	Mylar/Melinex; felt; mat board.
Examples:	

**HSD**



8.1 Objects & Prop Mounts List



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Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
 Project No.: **1403108**

Our ref: **9961-5a-MVON-01-Object+Prop Mounts List**

Revision: **9**

Date: **April 07, 2016**  
 Distribution: **Kathryn Campbell, Nancy Davis, Hana Kim, Tanya Garner (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis, Cynthia Roberts (HSD)**

### Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 1

Drawing Number	Case No.	Key No. (on dwg)	Serial No.	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-01	C2101	3	449		shackles; Grilletes De Esclavo	slave? Chain with ankle shackle and small U shaped end.	TBD	TBD	TBD					BM10 BC03	Type 2 Fixed to display surface	C2101.C	
EX-8-01	C2101	4	526		retablo; Our Lady of Guadalupe	Split slab of roughly hewn face, pine wood. Crudely painted with figure of Our Lady of Guadalupe. Crowned Virgin in red gown, blue star-strewn robe with nimbus of flames. Scalloped aureole surrounded by dots. Red-robed angel at Virgin's feet. Painted frame with broken, wavy line and dash pattern. Shell lunette.	432	300	20					BM10 BC00	Type 2 Fixed to display surface	C2101.D	
EX-8-01	C2101	1	1361		Statue of Liberty	Dark green gound. Painted gold band encircles the bottom of the crown. Front: red banner at top with scrolling edges and gold border. "HIBERNIA" in gilt block lettering within banner.	2540	1060	711.2	90.72		H: 100" W: 40" D: 28" Weight: 200 pounds.		A stabilizing mount may be needed; type TBD in collaboration with conservation	Sits on case deck	-	
EX-8-01	C2101	2	2587		pouch, lizard	pouch in the shape of a lizard, beaded bottom, green leather top with slit running from the lizard's head to its tail.  presented to US Grant during Peace Policy talks	150	120	50			The conservators and curators have decided it is best to display the lizard in the corridor case on an angled mount (previously discussed at the workshop)		BM10 BC03	Type 1 Angled 45 degrees; fixed to display surface	C2101.B	

Mount codes listed above are specified in the 'Mounts & Brackets Catalog' document. Refer back to the document for mount details.  
 Please refer to case layout drawings for angles and dimensions of display surfaces where applicable. Surface ID numbers are indicated as C2XXX.X (e.g. C2201.A) where the first part indicates the display case number followed by a letter identifier.

## Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 1

Drawing Number	Case No.	Key No. (on dwg)	Serial No.	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							

*Info by NMAH*

*See notes at end of document*

### Mounts / Display Surface Detail Types

#### **Type 1**

Painted Angled Display Panel on a rod / fold support, fixed to case baseboard or back panel. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 2**

Painted vertical display blade, fixed to case baseboard, back or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 3**

Painted vertical display blade with angled surface, fixed to case baseboard or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 4**

Display box (folded surface), painted. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 5**

Display box with angled surface (folded surface). Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 6**

Pedestal on rod – Horizontal display panel on rod, fixed to case baseboard. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 7**

Slotted shelf fixed to case back. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

### Finishes & Fixing

All Brackets, Rods and Pins to be painted metal to match case backs. See Case List for details on case back finishes. All mounts to provide a minimum object offset of 25 mm from display surfaces unless otherwise specified.

All Shaped and Moulded Panels to be plexi unless otherwise specified by NMAH Conservation.

All supports for Forms and Figures to be painted metal to match case backs. See Case List for details on case back finishes.

All costume mounts will be either fully three dimensional or flat with little depth (as specified in the drawings). The mounts will be minimally visible and fully support the garment. The three-dimensional mounts will be supported by an adjustable metal pole on a metal base. The mounting of the costumes is a NMAH responsibility.

All Painting or Print Frames to have a painted simple and thin profile (no ornaments; max W 25.4 mm). Thickness and color (including mat where applicable) to be determined on a case by case basis in consultation with NMAH. Brackets or ledge (lip) to secure framed object to display surface affixed to sides or back to suit object.

All display boxes (folded surfaces) to be painted medite; a fabric wrapped top panel is optional. Paint color to follow P1 specs unless otherwise specified. Fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.

All Fabric Wrapped Boards fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.



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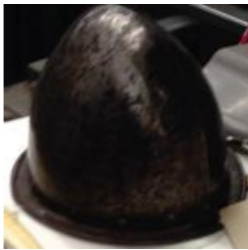

Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
 Project No.: **1403108**

Our ref: **9961-5a-MVON-02-Object+Prop Mounts List**









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Date: **April 07, 2016**  
 Distribution: **Kathryn Campbell, Nancy Davis, Hana Kim, Tanya Garner (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis, Cynthia Roberts (HSD)**

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 2**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<b>Subsection: Unsettling the Continent</b>																	
EX-8-02	C2209	1	1427		shells, cowrie	Necklace/String of Shells			10	250			Can be mounted using clear plexi brackets. Case needs break alarm		BM00 BC11	Type 4 Angled 45 degrees	C2209.A
EX-8-02	C2207	3	2064		headdress, eagle	Tsimshian Dance headdress representing an eagle and its chicks Native term:amiilk Date created:circa 1875 Place:Port Simpson; Skeena-Queen Charlotte Regional District; British Columbia; Canada	350		585		18 (est)		58.5 L x 35 cm H (Christine 5.8) Estimated 35-40 pounds. Display at an angle (tilted upwards) as we see in picture. Length of Display: Ann McMullen 8.20.2015 email said 20 years.		BC22	Fixed to case deck	-
EX-8-02	C2208	2	2390		Cabasset Helmet		203.2		273.05				10 3/4" in diameter and 8" high		BC22	Type 4 Fixed to display surface	C2208.A
<b>Subsection: Spanish New Mexico</b>																	
EX-8-02	C2202	2	355	Y (1 of 2)	painting, hide; Saint Anthony of Padua	St Anthony of Padua w/ Christ Child; stalk of lilies; zig-zag sky and cloud effect, folds of tree-dotted hills in background; scroll across foreground w/ inscription; plain brown border on four sides. Made with local materials as substitutes for oils on canvas.	1212.85	698.5					47.75 in H x 27.5 in W Display Upper Right Side of Case. Make sure nothing is in front of the hide painting.		BM11	Fixed to case back Angle 10 degrees	-








**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 2**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2202	NA - Rotation	354	Y (2 of 2)	painting, hide; Saint Anthony of Padua	Saint Anthony of Padua in a blue habit holding Christ Child as infant in his arms; corner swags in Baroque style; spongy felt-like fabric is in character of buffalo hide, though it could be mistaken for felt on first glance. Used in Tesuque Mission Church.	520	400	5				52 cm H x 39.5 cm W x .5 cm D		NA - Rotation	-	-
EX-8-02	C2202	8	1021		spur	Enormous rowels were used in the N. Mexico region. Probably of Spanish manufacture and used by the Pueblo Indians.	104	225	125				22.8cm x11.6cm x 91cm		BM00 BC03	Type 4 Secured to display surface	C2202.C
EX-8-02	C2202	4	1022		bowl, soup	Hawiku soup bowl with cross decoration.	42.5			210			approx 21cmDIAMx4.5cmH Display on a mid-level shelf at good level for close up viewing		BC03	Fixed to case back	-
EX-8-02	C2202	5	1025		candlestick	Hawiku. Pair of small candlesticks	200			130			Hawiku. Post 1680 Revolt / approx. 22.5cmH x 12 cm diam Display on a mid-level shelf at good level for close up viewing		BM00 BC03	Secured to display surface; held around perimeter with discreet claws	C2202.A
EX-8-02	C2202	6	1026		candlestick	Hawiku. small candlestick (single) with cross shapes. Post 1680 Revolt.	90			80			Display on a mid-level shelf at good level for close up viewing approx. 83cmH x 8.5cm diam		BM21 BC03	Type 6 Secured to display surface; held around perimeter with discreet claws	C2202.B
EX-8-02	C2202	1	1027		corbel, church		228.6	596.9	160				Flat side is the top. Display horizontal.		BC00	Fixed to case back	-
EX-8-02	C2202	3	2367	Y (1 of 4)	Cross	Front surface of cross has been painted black and ornamented over with bits of corn husk straw. It was used by the Spanish from 1850-1900 in Gallupo, N. Mexico.	165	102.5	12.5				16.5 cm H x 10.25 cm W x 1.25 cm D Part of New Mexico cross rotation. Rotation 1: (2367), Rotation 2: (1432), Rotation 3: (2370), Rotation 4: (2369)		BC03	Fixed to case back	-
NA - Rotation	C2202	NA - Rotation	1432	Y (2 of 4)	cross	Wooden cross with straw inlay.	250	142.5	10				Display near hide painting (0355). 25 cm h X 14.25 cm w X 1 cm D Part of New Mexico cross rotation. Rotation 1: (2367), Rotation 2: (1432), Rotation 3: (2370), Rotation 4: (2369)		NA - Rotation	-	-








*Info by NMAH See notes at end of document*










**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 2**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2202	NA - Rotation	2370	Y (3 of 4)	cross	Wooden cross with straw inlay.	320	222.5	17.5			32 cm H x 22.25 cm W x 1.75 cm D Part of New Mexico cross rotation. Rotation 1: (2367), Rotation 2: (1432), Rotation 3: (2370), Rotation 4: (2369)		NA - Rotation	-	-	
NA - Rotation	C2202	NA - Rotation	2369	Y (4 of 4)	cross	Wooden cross with straw inlay.	412.5	170	20			41.25 cm h x 17 cm w x 2 cm D Part of New Mexico cross rotation. Rotation 1: (2367), Rotation 2: (1432), Rotation 3: (2370), Rotation 4: (2369)		NA - Rotation	-	-	
EX-8-02	C2202	7	2507		bowl	Zuni Reservation. Hawikku (Hawikuh) Pueblo ruins. Cibola County, New Mexico. Collected and Excavated/Acquired 1/1/1917. Cemetery ceremonial deposit. Painted/Tinted/Coated. Pottery/ceramics	230	220	110			23 cm x 22 cm x 11 cm (provided by NMAI on 8/25/15)  MAY REQUIRE PERMISSION FROM THE PUEBLO OF ZUNI - Ann McMullen		BC11	Secured to display surface	C2202.A	
<b>Subsection:</b>		<b>New France</b>															
EX-8-02	C2203	11	1239 PROP		Beaver Pelt	medium sized pelt is 47" - 51"		1295.4						BM10	Mount fitted to object; Fixed to case back	-	
EX-8-02	C2203	9	2516		Bag, shoulder	Bandolier bag. Deerhide/Deerskin. Glass bead/beads. Porcupine quills. Quill embroidered, Quilled (lane stitched), Quill-wrapped (flat), Edge beaded. Acquisition Source: Heye, Thea (Donor); Heye, Thea (Previous owner), Dyer, Alice (selling agent); Dyer, Alice (Previous owner); Marsh, Mrs. (Previous owner).	790	145	60			need to know if we have to extend the strap all the way.  NMAI Dimensions: 79 cm x 14.5 cm x 6 cm		BM10	Type 3 Fixed to display surface	C2203.A	
EX-8-02	C2203	12	1108		Cross pendant		147.5	70				NMAI #1/2140 doesn't appear to be the right number, did you mean 1/2137		BM10 BC03 BM40	Type 2 Fixed to display surface	C2203.B (See EX-5-16 for details)	
EX-8-02	C2203	14	2115	Y (1 of 2)	trade moccasins		160	120	310			There are two pairs of moccasins that will be compared - the ones worn by Indians and another pair worn by Canadians.  31 x 12 x 16 cm		BM00 BC23	Type 4 Sits on display surface	C2203.C	









**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 2**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2203	NA - Rotation	2524	Y (2 of 2)	Moccasins, Man		160	120	310			Will display pair of moccasins		NA - Rotation	-	-	
EX-8-02	C2203	10	2518		tomahawk, pipe	Pewter and wood. Inlaid. Acquisition Source: Oldman, William Ockelford (Seller), William Ockelford (Previous owner)	570	165	30			NMAI measurements: 57 cm x 16.5 cm x 3 cm		BC03	Fixed to display surface; Add extra support to head due to weight imbalance	C2203.B	
EX-8-02	C2203	13	2522	Y (1 of 3)	Moccasins	Two moccasins. Deerhide/deerskin, Metal Cones, Horsehair, Porcupine quills. Quilled (lane stitched), Quill embroidered. Acquisition source. Heye, George Gustav. Museum purchase/purchased 1/1/1937	80		285			When moccasins are facing you (toes pointing at you) the best side is the left side of the moccasin (better condition and less fading). May also consider to display moccasin(s) to show back of the shoe's design (very detailed). Will display a pair of moccasins. Height of 80mm H taken by Ann during collections visit.		BC23	Sits on display surface	C2203.C	
NA - Rotation	C2203	NA - Rotation	2520	Y (2 of 3)	Moccasins	Pair of moccasins. Hide, Porcupine quills, metal cones, deer hair, glass bead/beads. Dye. Textile technique sewn. Dyed. Quill embroidered. Edge beaded. Karl May Museum (Exchanging Organization); Karl May Museum (previous owner).	60	140	260			There are two pairs of moccasins that will be compared - the ones worn by Indians and another pair worn by Canadians.  31 x 12 x 16 cm		NA - Rotation	-	-	
NA - Rotation	C2203	NA - Rotation	2523	Y (3 of 3)	Moccasins	Two moccasins. hide, metal cones, silk ribbon, glass beads, porcupine quills, deer hair, dyes, and hide thong/babiche. Embroidered with dyed quills, edge beaded, quill-wrapped (flat). Museum purchase/purchased 1/1/1937.	40	100	270			Will display a pair of moccasins. Image only shows one.  NMAI Dimensions of ONE moccasin: 27 cm x 10 cm x 7 cm. Need measurement of other shoe.		NA - Rotation	-	-	
<b>Subsection:</b>		<b>Dutch New Amsterdam</b>															
EX-8-03	C2204	1	1042 (2538)		Deed, Styvesant	Deed written in Dutch from Peter Stuyvesant to the inhabitants of the town of Midwout in New Amsterdam.	324	415				16.5 inches W x 12.875 inches H 32.4 cm H x 41.5 cm W		BM10 BC42	Type 2 Mounted on plex backboard fixed to display surface	C2204.A	
EX-8-03	C2204	2	1043		Bible, dutch	Open to Exodus xvi Early 18th century Dutch	425.45	546.1 (in cradle)	38.1 (R) 50.8 (L)		Placeholder 	Dimensions Open: 21.5 inches W (largely open in a cradle) x 16 3/4 inches H x Depth of each side of book when open. (left side) 1.5 inches D, (right side) 2 inches D Displayed Open.		BM00 BC13	Type 4 Angled 45 degrees; Book open 90 degrees; fixed to display surface	C2204.C	

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 2**


Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-03	C2204	3	1044		wampum, loose pieces	5 pieces of loose wampum	25	5	5				2.5 cm x .5 cm (each) (provided by NMAI on 8/25/15)  Mounting Notes: 5 pieces of wampum. Mount/Sew to backer Board. (Ann McMullen during collections visit to NMAI)		BM11 BM40	Sewn onto fabric board; Fixed to display surface	C2204.B (See EX-5-16 for details)
EX-8-03	C2204	4	1045		drill	non-indian, metal and wood.	227.5	30					Display near wampum bag (1003) and loose wampum pieces (1044)		BC03	Fixed to display surface	C2204.B
EX-8-03	C2204	5	2509	Y (1 of 2)	Choker necklace	Beads: Helk shall beads (white wampum), Quahog clam shall beads (purple wampum). Twine/string/cord (cordage). Cloth/fabric (cotton cloth). Collected 1/1/1907. Technique: beaded (loom beadwork), stitched.	530 (extended)		45	330.2 (rounded)			56 cm x 4 cm (provided by NMAI on 8/25/15)  can be 13 inches diameter when displayed rounded like a choker. Waiting on NMAI conservator to confirm that choker can be displayed rounded.		BC11	Fixed to display surface	C2204.B
NA - Rotation	C2204	NA - Rotation	2510	Y (2 of 2)	Choker necklace	Beads: Helk shall beads (white wampum), Quahog clam shall beads (purple wampum). Twine/string/cord (cordage). Cloth/fabric (cotton cloth). Collected 1/1/1907. Technique: beaded (loom beadwork), stitched.	530 (extended)		45	330.2 (rounded)			53 cm x 4.5 cm (provided by NMAI on 8/25/15)  Can be 13 inches diameter when displayed rounded like a choker.  Part of Choker Necklace Rotation: Rotation 1 (2509), Rotation 2 (2510).		NA - Rotation	-	-
<b>Subsection: British South Carolina</b>																	
EX-8-03	C2205	14	1054		bowl, Colonoware		57.15			171.45		Placeholder 	2.25 in H x 6.75 in D  Not object, image placeholder		BM21 BC11	Type 6 Secured to display surface	C2205.D
EX-8-03	C2205	13	1055		jar, Colonoware		127	158.75	107.95			Placeholder 	**Christine confirm dimensions when objects arrive		BM00 BC10	Type 4 Secured to display surface	C2205.D
EX-8-03	C2205	6	1123		Mortar		850.9			431.8			17 diameter Diameter, 33.5 high		NA	Sits on case deck	-

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 2**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-03	C2205	9	1125	Y (1 of 2)	Fanner basket	Shallow fanner basket. Coils of rush sewn with palmetto leaves. Coils of longleaf pine straw at center of bottom.	70			560					BC12	Fixed to case deck	-
NA - Rotation		NA - Rotation	1457	Y (2 of 2)	basket, rice fanning		127	355.6	361.95			Placeholder 	not object, image placeholder Dimensions 14 in x 14.25 in x 5 in		NA - Rotation	-	-
EX-8-03	C2205	15	1127		Sea Island basket		76.2	355.6	336.55				7.5 cm H x 36.5 cm W x 34 cm D		BC12	Fixed to case back	-
EX-8-03	C2205	16	1128		Sea Island basket		76.2	304.8	298.45				7 cm H x 31 cm Diameter *Basket marked in pen "American N." for American Negro. Look at object to see if this is fully written anywhere on the basket.		BC12	Fixed to case back	-
EX-8-03	C2205	10	1447		portrait	Jeremiah Theus. Mrs. Garner Greene.	864 (with frame)	743 (with frame)	60.3 (with frame)				30 inches H x 25 inches W PORTRAIT 34 in H x 29.25 in W x 2.375 in D WITH FRAME		NA	Fixed to display surface	C2205.A
EX-8-03	C2205	7	2386 PROP		Pestle		1524						Estimated max size 60 inches. Probably smaller. Display in mortar (1123)		BC02	Fixed to case deck; Object displayed inside mortar (1123)	-
EX-8-03	C2205	11	2408		ladle, toddy ladle with antler handle	Toddy ladle with antler handle. An English coin is embedded in the spoon. Possible to see slight markings from Spanish coins (pirated by the English) that were melted down to create the spoon.	355	65					35.5 cm H x spoon width 6.5 cm W spoon length - 5.5 cm The Charleston Museum will likely loan this object for one year, though we want as long as possible. The object can then be replaced with another loan object from the Charleston Museum.		BM00 BC03	Type 4 Fixed to display surface	C2205.B
EX-8-03	C2205	12	2410		Marrow scoop	Marrow scoop, silver. Only the wealthiest households had this item, so it is a good artifact to illustrate the material culture of the planter class.	210	15					21 cm x 1.5 cm The Charleston Museum will likely loan this object for one year, though we want as long as possible. The object can then be replaced with another loan object from the Charleston Museum.		BC03	Fixed to display surface	C2205.B






*Info by NMAH See notes at end of document*

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 2**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-03	C2205	17	2496		Blue Glass Seed Bead				2.8		Placeholder 			BM10 BC03	Type 3 Fixed to display surface	C2205.E	
EX-8-03	C2205	18	2497		Pipe Stem		44		7		Placeholder 			BC03	Fixed to display surface	C2205.E	
EX-8-03	C2205	19	2498		Pipe Stem		32		8		Placeholder 			BC03	Fixed to display surface	C2205.E	
EX-8-03	C2205	20	2499		Pipe Stem		32		8		Placeholder 			BC03	Fixed to display surface	C2205.E	
EX-8-03	C2205	21	2500		Button, bone				17			1.7cm diameter **Christine check dimensions when object arrives		BC03	Fixed to display surface	C2205.E	
EX-8-03	C2205	22	2501		Gun flint		16	21			Placeholder 	2.1x1.6cm **Christine check dimensions when object arrives		BC03	Fixed to display surface	C2205.E	
EX-8-03	C2205	23	2502		Shard, Spanish olive jar		95	110			Placeholder 	** Christine check diameter when she arrives		BC03	Fixed to display surface	C2205.E	
EX-8-03	C2205	24	2503		Shard, British black lead glaze		105	114			Placeholder 	Two pieces glued together 11.4x10.5cm apart 9.4x2.8cm 10.2x4.6cm		BC03	Fixed to display surface	C2205.E	

*Info by NMAH See notes at end of document*

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 2**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<p align="right"><i>Info by NMAH See notes at end of document</i></p>																	
<b>Subsection: British Pennsylvania</b>																	
EX-8-04	C2206	2	2015		fire mark	Plain sawn single board of American white pine. Originally a square board which shrank longitudinally. Quarter rounded edges. Evidence of a carved frame around the edges in about 1/16 inch relief.	327.025	311.15	22				overall: 12 7/8 in x 12 1/4 in x 7/8 in; 32.7025 cm x 31.115 cm x 2.2225 cm decoration: 10 1/2 in x 9 1/2 in x 1 5/8 in; 26.67 cm x 24.13 cm x 4.1275 cm		BM00 BC12	Type 4 Mount angled 30 degrees; Fixed to display surface	C2206.B
EX-8-04	C2206	1	2142	Y (1 of 3)	Bonnet, Quaker	Navy blue velvet; quilted maroon lining with net; 2 sets of ribbon, 1 black in two pieces and 1 maroon in one piece; bonnet curatin, quilted	279.4	279.4	304.8				Part of Quaker Bonnet rotation. Rotation 1: 2142, Rotation 2: 2150, Rotation 3: 2151.		BC10 BC22	Type 2 Fixed to display surface; mount to be concealed to back	C2206.A
NA - Rotation	C2206	NA - Rotation	2150	Y (2 of 3)	Bonnet cover		279.4	279.4	355.6				I placed the bonnet on a mannequin head to get dimensions- this bonnet's depth is the greatest of the 3 rotations  Part of Quaker Bonnet rotation. Rotation 1: 2142, Rotation 2: 2150, Rotation 3: 2151.		NA - Rotation	-	-
NA - Rotation	C2206	NA - Rotation	2151	Y (3 of 3)	Bonnet cover	Bonnet Cover	266.7	228.6	279.4				I put this on a mannequin to measure .  Part of Quaker Bonnet rotation. Rotation 1: 2142, Rotation 2: 2150, Rotation 3: 2151.		NA - Rotation	-	-
EX-8-04	C2206	3	2144		Stove plate	Iron stove plate or fireback "WB* KR // 48"	609.6	609.6	19.05	2.51					BM10 BC12	Type 2 Fixed to display surface	C2206.C

Mount codes listed above are specified in the 'Mounts & Brackets Catalog' document. Refer back to the document for mount details. Please refer to case layout drawings for angles and dimensions of display surfaces where applicable. Surface ID numbers are indicated as C2XXX.X (e.g. C2201.A) where the first part indicates the display case number followed by a letter identifier.

**Mounts / Display Surface Detail Types**

**Type 1**  
Painted Angled Display Panel on a rod / fold support, fixed to case baseboard or back panel. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

**Type 2**  
Painted vertical display blade, fixed to case baseboard, back or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

**Type 3**  
Painted vertical display blade with angled surface, fixed to case baseboard or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

**Type 4**  
Display box (folded surface), painted. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

**Type 5**  
Display box with angled surface (folded surface). Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

## Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 2

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							

*Info by NMAH*

*See notes at end of document*

**Type 6**

Pedestal on rod – Horizontal display panel on rod, fixed to case baseboard. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

**Type 7**

Slotted shelf fixed to case back. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

**Finishes & Fixing**

All Brackets, Rods and Pins to be painted metal to match case backs. See Case List for details on case back finishes. All mounts to provide a minimum object offset of 25 mm from display surfaces unless otherwise specified.

All Shaped and Moulded Panels to be plexi unless otherwise specified by NMAH Conservation.

All supports for Forms and Figures to be painted metal to match case backs. See Case List for details on case back finishes.

All costume mounts will be either fully three dimensional or flat with little depth (as specified in the drawings). The mounts will be minimally visible and fully support the garment. The three-dimensional mounts will be supported by an adjustable metal pole on a metal base. The mounting of the costumes is a NMAH responsibility.

All Painting or Print Frames to have a painted simple and thin profile (no ornaments; max W 25.4 mm). Thickness and color (including mat where applicable) to be determined on a case by case basis in consultation with NMAH. Brackets or ledge (lip) to secure framed object to display surface affixed to sides or back to suit object.

All display boxes (folded surfaces) to be painted medite; a fabric wrapped top panel is optional. Paint color to follow P1 specs unless otherwise specified. Fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.

All Fabric Wrapped Boards fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.



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Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
 Project No.: **1403108**

Our ref: **9961-5a-MVON-03-Object+Prop Mounts List**

Revision: **6**

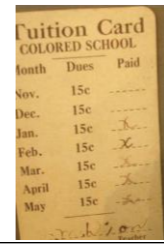
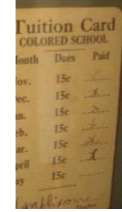


Date: **April 07, 2016**  
 Distribution: **Kathryn Campbell, Nancy Davis, Hana Kim, Tanya Garner (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis, Cynthia Roberts (HSD)**

### Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 3







Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<b>Subsection: Voices of Debate</b>																	
<b>Grouping: Slavery and Abolition</b>																	
EX-8-06	C2301	1	2457		Slave Tag	Brass servant tag; flat diamond shape with hole in top corner and text: "Charleston [ ] No. 1812 [ ] Servant [ ] 1833."	51	51					53-cm x 53-cm x 6-cm Display with anti-slavery medal from Great Britain along the section-3 wall.		BM10 BC03	Type 1 Fixed to display surface	C2301.A
EX-8-06	C2301	2	2458		Anti-slavery Medal		43.9	30	43.6				Display with slave tag (2357) along section 3 wall. Object does not have record in XG H- 4.39 cm D- .3 cm W - 4.39 cm Weight -24.449g		BC03	Fixed to display surface	C2301.A
<b>Grouping: Nativism and Belonging</b>																	
EX-8-06	C2302	3	553		Fire Hat, "Hibernia"	Dark green gound. Painted gold band encircles the bottom of the crown. Front: red banner at top with scrolling edges and gold border. "HIBERNIA" in gilt block lettering within banner.	155			300			6 inches H x 12.375 in W		BC22	Fixed to display surface	C2302.A
<b>Grouping: Exclusion and Inclusion</b>																	
EX-8-07	C2303	1	525		Figure Group	Porcelain figure group consisting of nest with Eagle, an Anglo child (Liberty?) with its hand on the back of a supine African American child.	282.575	203.2	160				Display Figure Group with Metal statue of liberty along section 3 wall.  11.125 inches H x 8 inches W  **CHRISTINE DOUBLE CHECK DIMENSIONS WHEN OBJECT ARRIVES		BM00	Type 4 Sits on display surface	C2303.A
EX-8-07	C2303	2	2462		Statuette, Statue of Liberty	Bronze colored Statue of Liberty miniature, the statue and base are two pieces	152.4	40.64	38.1				6 inches H x 1.6 inches W x 1.5 inches D  Display with porcelain figure (0565) along section 3 wall.		BM10 BC03	Type 2 Fixed to display surface	C2303.B



**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 3**



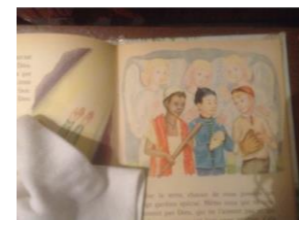





Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH See notes at end of document</i>																	
<b>Grouping:</b>	<b>Segregation and Integration</b>																
EX-8-07	C2304	3	1008	Y (1 of 2)	Tuition card	colored school tuition case.	85.725	50.8					2 inches W x 3 3/8 inches H Display with school bus window along section 3 wall		BM10 BC42	Type 1 Fixed to display surface	C2304.B
NA - Rotation	C2304	NA - Rotation	1009	Y (2 of 2)	Tuition card		85.725	50.8					Display with school bus window along section 3 wall 2 inches W x 3 3/8 inches H rotate with fellow tuition card (1008) will have to be rotated with possible loaned tuition cards. loan items not yet selected. largest of the loaned items may be a letter jacket, estimated at 9 W inches x 12 inches H		NA - Rotation	-	-
EX-8-07	C2304	4	1013		Broken Bus Window	Broken school bus window from Boston desegregation violence.  Window from rear emergency door of school bus involved in desegregation violence in Boston, probably in late 1974 but possibly as late as 1977. Window was broken by white students protesting placing of black students in white high school in south Boston- Roxbury- Dorchester area. The bus was a 1974 GMC 65-passenger. Robert E. White was president of Rewhit Transport, Inc. in 1974, predecessor of Auto-Bus, inc.	508	508 (window) 600 (housing)					Display with Tuition Card along section 3 wall. ***Case cannot be bumped by visitors. Glass window is extremely fragile.*** 20 inches H x 20 inches W. When window is in protective housing, Estimated to be 600 mm W. Consult scale drawings NMAH issued to HSD. EXTREMELY CHALLENGING INSTALLATION PROCESS*** Display History: For the Artifact Walls it was displayed at an angle on a sheet of plexiglass supported along the bottom edge by a lip. The plexiglass was secured to an angled build-up. It is extremely important that the window be fully supported under it's entire surface. Displaying fully upright and/or bracketed in any way is not advisable. At the time of the Artifact Wall development the window was stored on a piece of Masonite which was used for all it's movement within the museum. The process of transferring the window from the Masonite to the plex was rather tricky and required coordination with Preservation Services.		BM10 (object mounted to existing plexi; fixing support is only needed)	Type 1 Angled 50 degrees; Secured to display surface with lip	C2304.A (additional back support for display surface will be needed to minimize effect of vibration)
<b>Grouping:</b>	<b>Deportation and Legalization</b>																
EX-8-07	C2305	5	2463	Y (1 of 3)	Print, "Education-not-Deportation"	Brittany Stieffmen-print	228.6	304.8							BM10 BC42	Type 4 Fixed to display surface	C2305.A
NA - Rotation	C2305	NA - Rotation	2464	Y (2 of 3)	print, "Keep Families Together"	Brittany Stieffmen-print	228.6	304.8				Placeholder			NA - Rotation	-	-
NA - Rotation	C2305	NA - Rotation	2465 PROP	Y (3 of 3)	Print, Deportation of Mexicans	Judy Baca mural.	TBC	TBC							NA - Rotation	-	-
EX-8-07	C2305	6	2466		Pamphlet, Americans for Immigration Control	CPAC - Family Research Council, Immigration Control Let Freedom Ring	234.95	401.6	0.508						BC42	Fixed to display surface	C2305.A
<b>Subsection:</b>	<b>Places of Negotiation</b>																
<b>Sub-subsection:</b>	<b>Education</b>																
EX-8-08	C2306	11	1056	Y (1 of 2)	catholic school uniform		661.988	495.3	304.8				Dress - 25.5 inches H x 19.5 inches W Shirt - 16.5 inches H x 22.5 inches W Dress and shirt together 26 1/16 inches H x 19.5 inches W		BC20	Fixed to case deck	-

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 3**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2306	NA - Rotation	1537	Y (2 of 2)	catholic school uniform		1041.4	444.5				Placeholder 	estimated total dimensions 41 inches H x 17.5 inches W  socks - estimated 19.75 inches H x 2.25 inches W  not object, image placeholder		NA - Rotation	-	-
EX-8-08	C2306	14	1205	Y (1 of 4) Brushes to rotate	pens, calligraphy	Display one pen at the time	88.9 (holder)	120.65 (holder)	57.15 (holder)				Diameter of each pen: 1/8 in., Width of each: 8 in.; Pen holder: (HxWxD): 3 1/2 in. x 4 3/4 in. x 2 1/4 in Display one pen at a time.		BM20 BC02	Fixed to display surface	C2306.F
EX-8-08	C2306	2	1333	Y (1 of 3)	book, Sequel to Webster's Elementary Spelling Book, A	A SEQUEL TO WEBSTER'S ELEMENTARY SPELLING BOOK, OR A SPELLER AND DEFINER...By William G. Webster. (Philadelphia, PA: Lippincott, Crambo & Co., 1844), 172 pgs. Blue cover of printed paper on cardboard; leather spine, and linen tape binding. Pencil inscriptions on the on outside and inside covers.	190	116	12				Display closed. 19 cm H x 11.6 cm W x 1.2 cm D Part of Webster book rotation. Books involved in rotation is 1018, 1333		BM00 BM12	Type 4 Angled 60 degrees; Fitted to object and secured with lip; Fixed to display surface	C2306.B
NA - Rotation	C2306	NA - Rotation	2491	Y (2 of 3)	book	Lodish collection speller	175	210	10			TBC	17.5 cm H x 1 cm D 11 cm W (closed) 21 cm W (open) Will be displayed open and closed. First display the book closed so visitors can view the cover, then when a rotation is needed display the book open.		NA - Rotation	-	-
NA - Rotation	C2306	NA - Rotation	2492	Y (3 of 3)	Book, a dictionary for primary school	New York, Hungtinton and Savage (1833)	135	220	27.5			TBC	Great condition. 13.5 cm H x 11 cm W closed x 2.75 cm D open 22 cm width in cradle **christine confirm dimensions when object arrives Loan submitted		NA - Rotation	-	-
EX-8-08	C2306	3	1550 PROP		Flag, American	48 star flag	914.4	1542					Estimated 3ft H x 5 ft W This flag is scalable and can be purchased to fit the size of the case. We identified two options: one that is 2ft x 3 ft and one that is 3ft x 5ft. Please design the case to fit the smaller one (2'x3') and we will move forward from there as necessary.)		BC01 BC12	Mount to resemble a flag pole with shaped back support to articulate flag; mount in combination with the one for prop 2537; Fixed to case back	-
EX-8-08	C2306	8	1507	Y (1 of 3)	Box, patriotic pencil ABC (least damage)	Patriotic	30.1625	206.375	55.5625				8.125 inches W x 2.1875 inches D x 1.1875 inches H  Display on student desk (PROP 2037) Part of pencil school box rotation.		NA	Sits on prop desk 2063.	-
NA - Rotation	C2306	NA - Rotation	1508	Y (2 of 3)	Box, patriotic pencil ABC (most damage)	Patriotic	30.1625	215.9	53.975				Display on student desk (PROP 2037)  8.5 inches W x 2.125 inches D x 1.1875		NA - Rotation	-	-








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**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 3**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2306	NA - Rotation	1587	Y (3 of 3)	Box, patriotic pencil (not ABC)	Patriotic	38.1	206.375	53.975				8.125 inches W x 2.125 inches D x 1.5 inches H Display on student desk (PROP 2037)		NA - Rotation	-	-
EX-8-08	C2306	10	1547	Y (1 of 5)	book, catechism		101.6	69.85	25.4				4 inches H x 2 3/4 inches W x 1 inches D Display Closed Part of Catholic School Religious book rotation. Largest book in rotation be rotation 4. 7.5 inches H x 5.5 inches W closed. Rotation Order: Rotation 1: (1547), Rotation 2 (1551), Rotation 3: (1591), Rotation 4: (1552), Rotation 4 (1559).		BM00 BM12	Type 4 Angled 60 degrees; Fitted to object and secured with lip; Fixed to display surface	C2306.D
NA - Rotation	C2306	NA - Rotation	1551	Y (2 of 5)	book, mon ange gardien	Miniature stories of saints	146.05	292.1					5.75 inches H x 11.5 W open (not measured in cradle. 11.5 width is maximum wide of book fully open) Display Open. Part of Catholic School Religious book rotation. Largest book in rotation be rotation 4. 7.5 inches H x 5.5 inches W closed. Rotation Order: Rotation 1: (1547), Rotation 2 (1551), Rotation 3:		NA - Rotation	-	-
NA - Rotation	C2306	NA - Rotation	1591	Y (3 of 5)	book, miniature stories of saints	Miniature stories of saints	120.65	241.3	2.5				Display book open. Open dimensions in cradle is 200 mm. One rotation should be the book displayed closed so the visitors can see the cover. Saint Book closed. 4 1/8 " w x 4 3/4" h Part of Catholic School Religious book rotation. Largest book in rotation be rotation 4. 7.5 inches H x 5.5 inches W closed. Rotation Order:		NA - Rotation	-	-
NA - Rotation	C2306	NA - Rotation	1552	Y (4 of 5)	book, saint elizabeth		190.5	139.7					Display closed. 7.5 h inches X 5.5 inches closed Part of Catholic School Religious book rotation. Largest book in rotation be rotation 4. 7.5 inches H x 5.5 inches W closed. Rotation Order: Rotation 1: (1547), Rotation 2 (1551), Rotation 3: (1591), Rotation 4: (1552), Rotation 4 (1559).		NA - Rotation	-	-
NA - Rotation	C2306	NA - Rotation	1559	Y (5 of 5)	book, linear prayer		230	320	10				23 cm H x 32 cm W x 10 cm D (open) 23 cm H x 17 cm W x 3.75 D (closed) Part of School Religious book rotation. Largest book in rotation be rotation 4. 7.5 inches H x 5.5 inches W closed. Rotation Order: Rotation 1: (1547), Rotation 2 (1551), Rotation 3: (1591), Rotation 4: (1552), Rotation 4 (1559).		NA - Rotation	-	-
EX-8-08	C2306	7	1589	Y (1 of 3)	Student slate		215.9	258.76	12.7				8.5 inches H x 10 3/16 inches W x .5 inches W Display on student desk (0432) Part of student slate rotation: Rotation 1: 1589, Rotation 2: 1590, Rotation 3: 2034.		NA	Sits on prop desk 2063.	-
NA - Rotation	C2306	NA - Rotation	1590	Y (2 of 3)	Student slate		211.13	266.7	12.7				8 5/16 inches H x 10.5 inches W x .5 inches D Display on student desk (0432) Part of student slate rotation: Rotation 1: 1589, Rotation 2: 1590, Rotation 3: 2034.		NA - Rotation	-	-


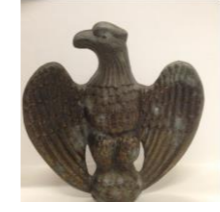

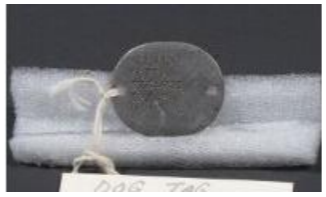



*Info by NMAH See notes at end of document*

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 3**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2306	NA - Rotation	2034	Y (3 of 3)	Student slate		25	19.75	0.6			Display on desk (2063) Part of student slate rotation: Rotation 1: 1589, Rotation 2: 1590, Rotation 3: 2034.		NA - Rotation	-	-	
EX-8-08	C2306	12	1604	Y (1 of 3)	book, Pupils Workbook For	Jewish School Book Related to Hebrew	254	381			Placeholder 	7.5 inches W x 10 inches H (dimensions of book closed)  Display Open.  not object, image placeholder		BC13	Angled 60 degrees; opened 90 degrees; Fixed to display surface	C2306.E	
NA - Rotation	C2306	NA - Rotation	1605	Y (2 of 3)	book, school	Jewish School Book Related to Jewish History	248	368				Display open.  Open dimension (open as widest as possible): 24.8 cm H x 36.8 cm W		NA - Rotation	-	-	
NA - Rotation	C2306	NA - Rotation	1606	Y (3 of 3)	book, school	Jewish School Book Related to the torah	200	290				Display open.  Display Open. (dimensions taken with book fully open to widest point. should be shorter): 20 cm H x 29 cm W.		NA - Rotation	-	-	
EX-8-08	C2306	13	2038	Y (1 of 2)	Block, Alphabet		269.875	330.2	9.525					BC12	Fixed to display surface	C2306.E	
NA - Rotation	C2306	NA - Rotation	2039	Y (2 of 2)	Block, Alphabet		165.1	79.375						NA - Rotation	-	-	
EX-8-08	C2306	5	2040 PROP		Print, George Washington		495	419	23			Display to PROP flag (PROP 1550) above desk (PROP 2037) This graphic will be a prop. It is scalable depending on the size of the space. We will use dimensions that fit in the space as recommended by HSD.)		NA	Fixed to case back	-	
EX-8-08	C2306	1	2063		Desk, school	Samuel Moulthrop designed desk by langston, Fowler Co. Rochester, NY	660.4	457.2	508			20 inches D (508mm) x 18 inches W (457.2mm). Chair is 26 inches (660.4 mm) H. Desk top surface 18 inches W (457.2mm) x 13 inches (330.2) D. chair estimated to be 12.5 inches D (317.5mm)		NA	Sits on display surface	C2306.A	
EX-8-08	C2306	9	2377		Bell, school	Brass	150		80			15 cm H x 8 cm diameter  Display on desk (2063), open to displaying it elsewhere though.		NA	Sits on display surface	C2306.B	








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Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-08	C2306	6	2467 PROP		Slate pencil		133.35	1.5875				Display only one pencil on student slate (1589, 1590, 2034). one pencil is 5.25 inches w x 1/16 diameter		NA	Sits on prop desk 2063.	-	
EX-8-08	C2306	4	2537 PROP		Figure, flag pole topper		127	101.6	50.8			not prop. image placeholder. estimated 4 inches W x 5 inches H x 2 inches D place on top of prop flag pole in education		BC02	Mount in combination with the one for prop flag 1550	-	
EX-8-08	C2306	27	2653		game, scrabble	blocks - 6 blocks, each .75x.75x.75 in box- 4 in tall, 2.75 in. diameter	101			69.85		the measurements listed are for the box, we will measure the blocks when the object arrives. we will not display the instructions		BC03	Pieces individually mounted; fixed to display surface.	C2306.D	
<b>Sub-subsection:</b>		<b>Military</b>															
EX-8-08	C2307	15	2193		dog tag	Dog tag worn by Melvin Kozera, USN	31.75	38.1				No chain		BM10 BC03	Type 2 Add plexi ring for chain support where needed; Fixed to display surface.	C2307.A	
EX-8-08	C2307	16	2194		dog tag	dog tag for Angelo Cicolani, 1963- USN	54	28.5						BC03	Add plexi ring for chain support where needed; Fixed to display surface.	C2307.A	
EX-8-08	C2307	17	2199		Dog tag	One of two "dog tags" worn by Fred P. Muller when he served in the U. S. Military c. 1941; ovoid shape; text reads: "Fred P Muller [/] 39008598 T41 430	50.8	28.5				tag is silver metal		BC03	Add plexi ring for chain support where needed; Fixed to display surface.	C2307.A	
EX-8-08	C2307	25	2204		insignia, metal and enamel	Metal insignia for 332nd Fighter group- Tuskegee Airmen	31.75	25.4	12.7					BC03	Fixed to display surface	C2307.B	

*Info by NMAH See notes at end of document*








**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 3**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-08	C2307	26	2230		Insignia, African American army unit	761st Tank Battalion	32	25	12					BC03	Fixed to display surface	C2307.B	
EX-8-08	C2307	48	2417		tag, dog		28.956	50.8				Dog tag has chain – 50.8 in length 1.14 in H x 2 inches W		BC03	Add plexi ring for chain support where needed; Fixed to display surface.	C2307.A	
EX-8-08	C2307	19	2539		Dog tag	Dog tag, U.S. Marine Corps. Donor Speizman, Alice B., wearer. [SPEIZMAN / A.B. / W217 46 87 93 AB / USMC S / JEWISH]	50.8	28.5				No chain		BC03	Add plexi ring for chain support where needed; Fixed to display surface.	C2307.A	
EX-8-08	C2307	20	2540		Dog tag	two dog tags on chain worn by AGNES MASHIDLAUSKY, 1942/44	63.5	38.1				On chain		BC03	Add plexi ring for chain support where needed; Fixed to display surface.	C2307.A	
EX-8-08	C2307	21	2583		Dog tag	dog tag for John H King, WWII	51	38				No chain		BC03	Add plexi ring for chain support where needed; Fixed to display surface.	C2307.A	
EX-8-08	C2307	22	2584		Dog tag	dog tag for Marjorie May, ANC, Post 1956	50.8	38				On chain		BC03	Add plexi ring for chain support where needed; Fixed to display surface.	C2307.A	
EX-8-08	C2307	23	2585		Dog tag	Single dog tag, USNR 1945, Moreau Browne Chambers	32	38				No chain		BC03	Add plexi ring for chain support where needed; Fixed to display surface.	C2307.A	
EX-8-08	C2307	24	2596		uniform, jacket, WWII	WWII Ike jacket, belonged to Rochambeau Herosian, paratrooper. Jacket, OD 1944, R -101st, L-1st Allied Abn; lower R-82 Abn !! & OS bars	648	560	102 (flat)			(padded) 25 1/2 in x 22 in x 4 in		BC20	Fixed to case deck	-	








Info by NMAH

See notes at end of document

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Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-08	C2307	27	2663		dog tag	Paul A Tolovi	51	39	6.5					BC03	Add plexi ring for chain support where needed; Fixed to display surface.	C2307.A	
<i>Info by NMAH See notes at end of document</i>																	
<b>Sub-subsection:</b>	<b>Sports</b>																
EX-8-09	C2308	5	1212	Y (1 of 2)	Shoes, Crutchfield	Black leather shoes with black laces and metal cleats. Worn by Jimmie Crutchfield of the Negro Leagues.		101.6	279.4			4 in W x 11 in D Display with Chicago items in in half of case C2505. Related to contract (1209). Other half of case C2505 dedicated to the topic of WWII. may be first in Chicago negro league baseball textle rotations. other rotations not yet selected. **Christine double check dimensions when objects arrive.		BM10 BC23	Type 4 Sits on display surface	C2308.B	
NA - Rotation	C2308	NA - Rotation	2485	Y (2 of 2)	shoes, baseball	Black leather baseball shoes with metal cleats on the bottom. These were the first shoes to be worn by Monte Irvin in the major leagues as a player for the New York Giants after leaving the Newark Eagles of the Negro Leagues. In 1949 the New York Giants paid \$5000 for his contract and Irvin became on of the first African American players to play in the major leagues.	292.1	101.6	88.9		Placeholder image 	**Christine double check dimensions when object arrives.  not object, image placeholder  11.5 inches H x 4 inches W x 3.5 inches D		NA - Rotation	-	-	
EX-8-09	C2308	1	2469		Baseball Bat	Wooden baseball bat used by Stan Musial during the 1957-1958 baseball season and used to break the 3000 hit on May 13, 1958, in Chicago's Wrigley Field.	876.3			57.15		34.5 inches H x 2.25 inches Diameter		BC02	Angled 60 degrees Fixed to case deck	-	
EX-8-09	C2308	2	2471		Helmet, Yastrzemski	Red and blue plastic batting helmet, worn by Boston Red Sox outfielder Carl Yastrzemski (b.1939).	285.75	190.5	228.6			11.25 inches H x 7.5 inches W x 9 in D		BC22	Fixed to display surface	C2308.A	
EX-8-09	C2308	3	2474		Baseball Mitt		260	190	130			Estimated dimensions from Stall and Dean baseball glove of the 1960's and 1970's (1998.0324.21). *caution measurements in XG is the object laying down. 10.2362 inches H (26cm) 7.48 inches W (19cm) 5.118 inches D (13cm)		BC23	Fixed to display surface	C2308.A	
EX-8-09	C2308	4	2484		Helmet, Leonard	Red leather wrap around head protector with elastic band. Padding around the inside rim. This was an early version of a batting helmet and was worn under a soft baseball cap.	95.25	177.8	120.65		Placeholder image 	**Christine double check dimensions when objects arrive. 3.75 inches H x 7 inches W x 4.75 inches D		BC22	Fixed to case back	-	

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 3**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-09	C2308	6	2487		Baseball Bat		890			65		Placeholder image 	estimated dimensions taken from a louisville slugger 89 cm H x 6.5 cm W.		BC02	Angled 70 degrees Fixed to case back	-
<i>Info by NMAH See notes at end of document</i>																	
<b>Sub-subsection:</b>	<b>Work</b>																
EX-8-10	C2310	1	850		sewing machine, juki surging	Full table measurement : 47.5 inches W x 23 inches D x 53.5 inches H	1410 (with spool)	1321 (with spool)	559 (with spool)				display with light and spool holder Table WITH spool: 55.5 in H x 52 in W x 22 in D (1410x1321x559mm) Table WITHOUT spool: 29.625 in H x 47.75 in W x 20 in D (752.475 x 1212.85 x 508); Lamp to floor: 45 in (lamp to tabletop: 15.25 -387.35mm); Dimensions are currently for full sewing machine. Full table measurement : 47.5 inches W x 23 inches D x 53.5 inches H		NA	Sits on case deck	-
EX-8-10	C2310	2	851		chair, sewing machine		850.9	431.8	488.95				display behind sewing machine (0850) Total depth of table and chair together: 31 inches Deep Chair Back sits 8 inches from sewing machine table. The back legs of the chair sit 8.5 inches away from the front legs of the table.		NA	Sits on case deck	-
EX-8-10	C2310	3	2166		mug, coffee	Mug from El Monte sweatshop:	98.425	123.825	82.55				3.875 inches H x 4.875 in W x 3.25 inches D		NA	Sits on sewing machine table (0850)	-
EX-8-10	C2310	4	2389	Y (1 of 3)	shirtwaist	white with red patterned woven stripe; Fisk Clark & Flagg New York label	615.95	463.296 (sleeves)	355.6				H 24.25 inches (top of collar to sleeve) W 18.24 inches (sleeve to sleeve) D 14 inches (back to sleeve)  (Can be up for 6 months display) Part of Shirtwaist Rotation. Rotation 1: (2389), Rotation 2: (2387), Rotation 3: (2388).		BC20	Fixed to display surface	C2310.B
NA - Rotation	C2310	NA - Rotation	2387	Y (2 of 3)	shirtwaist		711.2	482.6 (sleeves)	323.85				H 28 inches (top of collar to end of sleeve) W 19 inches (sleeve to sleeve) W 12.25 (waist) D 12 .75 inches  (3 months only display) Part of Shirtwaist Rotation. Rotation 1: (2389), Rotation 2: (2387), Rotation 3: (2388).		NA - Rotation	-	-
NA - Rotation	C2310	NA - Rotation	2388	Y (3 of 3)	shirtwaist	Blue with pattern	596.9	495.3	336.55				H 23.5 inches (collar to bottom of shirt) W 19.5 inches (sleeve to sleeve) W 14.25 inches (waist) D 13.25 inches  Part of Shirtwaist Rotation. Rotation 1: (2389), Rotation 2: (2387), Rotation 3: (2388).		NA - Rotation	-	-




**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 3**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-10	C2310	9	2601		stamp holder		57	34	10					BM10 BC42	Type 1 Fixed to display surface	C2310.C	
EX-8-10	C2310	10	2603		ribbon, ILGWU		76	38						BC12	Fixed to display surface	C2310.C	
<b>Sub-subsection:</b>		<b>Religion</b>															
EX-8-10	C2309	5	838		Dress, cuban child's		647.7	393.7	292.1			25.5 inches H x 14.25 inches (sleeve to sleeve) W x 11.5 inches D. Width of skirt is 15.5 inches wide.  Represents Cuban-Adoption Story		BC20	Fixed to case deck	-	
EX-8-10	C2309	6	1856		sign, Ecumenical Symbol	Interfaith ecumenical symbol from Hindu Temple in Queens, New York				6.35	304.8		12 inches Diameter x .25 inches D (Depth estimated)		BC12	Fixed to display surface	C2309.A
EX-8-10	C2309	8	1858 PROP		address book, Muslim Community Center		215.9	139.7	12.7			8.5 inches H x 5.5 inches W x .5 inches D (dimensions when closed) Display closed NON-ACCESSION		BC42 BM12	Angled 60 degrees; Fixed to display surface	C2309.A	
EX-8-10	C2309	7	2488	Y (1 of 2)	fan, hand		307.975	190.5	3.175			** Christine double check object dimensions when object arrives  12.125 inches H x 7.5 inches W x 0.125 inches		BC42 BC12	Mounted on plex backboard; Fixed to display surface	C2309.A	
NA - Rotation	C2309	NA - Rotation	2447	Y (2 of 2)	fan, hand	Flat, rounded cut-out cardboard piece with taped bottom staple into a slatted wooden stick. Chromolithographed pale gree woven wicker print on tan ground to imitate wicker fans.	368.3	241.3	3.175			14.5 inches H x 9.5 inches W x .125 inches D		NA - Rotation	-	-	

*Info by NMAH See notes at end of document*

## Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 3

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-10	C2309		2588 PROP		Service Booklet	Interfaith Service Booklet to celebrate the 25th anniversary of the Names Project AIDS Memorial Quilt, 2012	279.4	215.9	1.5875						BC42	Mounted on plex backboard; Fixed to display surface	C2309.A

*Info by NMAH*

*See notes at end of document*

Mount codes listed above are specified in the 'Mounts & Brackets Catalog' document. Refer back to the document for mount details.

Please refer to case layout drawings for angles and dimensions of display surfaces where applicable. Surface ID numbers are indicated as C2XXX.X (e.g. C2201.A) where the first part indicates the display case number followed by a letter identifier.

### Mounts / Display Surface Detail Types

#### **Type 1**

Painted Angled Display Panel on a rod / fold support, fixed to case baseboard or back panel. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 2**

Painted vertical display blade, fixed to case baseboard, back or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 3**

Painted vertical display blade with angled surface, fixed to case baseboard or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 4**

Display box (folded surface), painted. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 5**

Display box with angled surface (folded surface). Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 6**

Pedestal on rod – Horizontal display panel on rod, fixed to case baseboard. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 7**

Slotted shelf fixed to case back. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

### Finishes & Fixing

All Brackets, Rods and Pins to be painted metal to match case backs. See Case List for details on case back finishes. All mounts to provide a minimum object offset of 25 mm from display surfaces unless otherwise specified.

All Shaped and Moulded Panels to be plexi unless otherwise specified by NMAH Conservation.

All supports for Forms and Figures to be painted metal to match case backs. See Case List for details on case back finishes.

All costume mounts will be either fully three dimensional or flat with little depth (as specified in the drawings). The mounts will be minimally visible and fully support the garment. The three-dimensional mounts will be supported by an adjustable metal pole on a metal base. The mounting of the costumes is a NMAH responsibility.

All Painting or Print Frames to have a painted simple and thin profile (no ornaments; max W 25.4 mm). Thickness and color (including mat where applicable) to be determined on a case by case basis in consultation with NMAH. Brackets or ledge (lip) to secure framed object to display surface affixed to sides or back to suit object.

All display boxes (folded surfaces) to be painted medite; a fabric wrapped top panel is optional. Paint color to follow P1 specs unless otherwise specified. Fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.

All Fabric Wrapped Boards fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.



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Client: **Smithsonian Institution**





Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
Project No.: **1403108**

Our ref: **9961-5a-MVON-04-Object+Prop Mounts List**








Revision: **13**

Date: **April 07, 2016**  
Distribution: **Kathryn Campbell, Nancy Davis, Hana Kim, Tanya Garner (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis, Cynthia Roberts (HSD)**

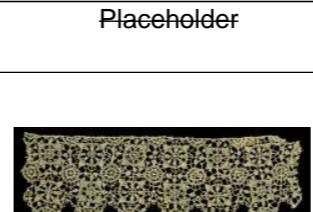




### Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<b>Grouping: Threshold</b>																	
EX-8-11	C2406	2	466		Goddess of Liberty	Made of painted wood. Standing figure of a woman (Liberty) is wearing a cap with a crest of stars, a tunic with a high waist sash. Left hand holds a shield with stars and stripes and right hand points upward. The back is hollowed out.	2006.6	609.6	533.4				79 in H x 24 in W x 21 in D		NA	Sits on case deck	-
EX-8-11	C2407	1	1972	Y (1 of 2)	Figure of Uncle Sam		1879.6	787.4	561.975				Base 14.5 inches H x 31 inches W x 22 1/8 inches D Display on base. Base is like a trapezoid. The figure sits into base 3 cm. Figure 59.5 inches H x 24 inches W x 14 3/4 deep		NA	Sits on case deck	-
NA - Rotation	C2407	NA - Rotation	737	Y (2 of 2)	Figure of Uncle Sam	This carved Uncle Sam is a "serving statue," made to carry a tray of food or drinks. The character of Uncle Sam dates from the War of 1812 and was based on "uncle" Samuel Wilson, of Troy, New York, whose firm provided the army with meat during the war.	1510	267	546				151.0 x 26.7 x 54.6 cm		NA - Rotation	-	-
<b>Grouping: Envisioning a New Nation</b>																	
EX-8-11	C2408	4	608		Census Jug, circa 1790	Made in England for the American market, this creamware pitcher commemorates the first census of the United States taken in 1790.	165.1			111.12			17.2 inches H Diameter dimension—at base of artifact.		NA	Sits on case deck	-









**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-11	C2408	3	1371		medal, diplomatic medal	object not yet chosen. small enough that the seal must be blown up graphically for visitors to see clearly.			6.3	67.9			From Numismatics collections manager: "For these objects we would ask that there be alarms on the cases. I don't think these objects need anything further, like break alarms, so pretty straightforward."		BM10 BC03	Type 2 Fixed to display surface	C2408.A
EX-8-11	C2408	5	2535		pitcher, "An Emblem of America"	Creamware pitcher with transfer print of Coopers' Arms, the emblem of the barrelmaking trade. It contains the decorative motifs of American views and the emblem of America.	260.35	254					10.25 inches H x 10 in W		NA	Sits on case deck	-
<b>Subsection:</b>		<b>Out of Many</b>															
EX-8-12	C2401	8	986	Y (1 of 2)	brooch	Carved with harp in center and small shamrocks on outside; shamrocks and harp are highlighted with gold paint. 1840-70	44.45	38.1	3.175				1 3/4" in H x 1.5" in W x 1/8" in D  1.5 inches W x 1 3/4 inches height, 1/8 inches deep. (Christine's dimensions)  Part of Irish Brooch rotation. First rotation (0986) second rotation (1253).		BC03	Fixed to case back	-
NA - Rotation	C2401	NA - Rotation	1253	Y (2 of 2)	brooch, irish	Onyx in center with gold leaf set on top; set with gold plate with geometric design; outer edge set with bog oak carved in shamrocks; shamrocks highlighted with gold paint	50.8	44.45	12.7				2 inches H x 1.75 inches W x .5 inches D  jewels. must be secure case.  Part of Irish Brooch rotation. First rotation (0986) second rotation (1253).		NA - Rotation	-	-
EX-8-12	C2401	7	989	Y (1 of 2)	Easter egg	Decorated egg	50.8	45					Object is extremely fragile		BC03	Fixed to case back; Add extra support and/or padding as needed and indicated by Conservtaion	-
NA - Rotation	C2401	NA - Rotation	988	Y (2 of 2)	Easter egg	Decorated egg	50.8	45					Object is extremely fragile		NA - Rotation	-	-
EX-8-12	C2401	6	991		Finnish immigrant's sleigh bell	Silver-plated sleigh bell mounted on leather strap. Made in Finland c. 1911. Brought to America from Ouln, Finland c. 1911-1914 by August Koskela as a gift for his uncle, Andrew Kungas, a Finnish immigrant living in Phelps, Wisconsin.  <i>*wrong dims in database</i>	72.5	305	125				7.25 cm H x 30.5 cm W x 12.5 cm D		BC03	Fixed to case back	-

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**








Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-12	C2401	16	992	Y (1 of 2)	Italian lace	Venetian Point, fine quality for period	419.1	381	3.175			There are two sizes of lace to choose from for first rotation (0992 or 2374). Designers may choose which one to use. The lace not chosen will not be used in the exhibit. 0992 is the larger piece between the two.		BC11	Fixed to case deck	-	
NA - Rotation	C2401	NA - Rotation	2374	Y (2 of 2)	Italian lace	Venetian Point, fine quality for period	63.5	342.9	3.175					NA - Rotation	-	-	
NA - Rotation	C2401	NA - Rotation	2648	Y (2 of 2)	Lace, Greek	Greek lace, reticella and punto in aria style needle lace. Coarse. Medium quality. Border	TBD	TBD	TBD					NA - Rotation	-	-	
EX-8-12	C2401	3	993		Passover plate	A Passover plate made of pewter, decorated with engraved inscriptions and symbols added at different periods.				356		Microenvironment and scavengers might be needed		BC03	Fixed to case back	-	
EX-8-12	C2401	1	1370		Eagle Figure	Made of painted wood. Figure of a spread eagle with flags and banner that reads "E Pluribus Unum."  Painted wood	730	1230	100			123 cm x 73 cm x 10 cm		BC00	Fixed to case back	-	
EX-8-12	C2401	13	1861		Spoon, stirring	Large copper spoon, believed to have been used in Napoleon's commissary. Stamped on handle: "Crown "N" and "Voyages"	41	320	60					BC03	Angled 45 degrees Fixed to case deck	-	
EX-8-12	C2401	15	1864		Russian orthodox religious icon	Russian orthodox religious icon	95	70	5			8 cm H x 6.5 cm W x 0.5 cm D		BC03	Fixed to case deck	-	
EX-8-12	C2401	5	1865	Y (1 of 3)	Bowl, drinking	Boat shape, with goose (dragon?) figurine, head and tail, carving projecting from ends. Flat bottom. Painted in vermillion, with floral designs in several colors. (Made in Norway)  Rotation 1	127	124	281			5 in x 4 3/4 in x 11 in; 12.7 cm x 12.065 cm x 27.94 cm  <b>Not object, image placeholder. Display in center cluster of section four. Represents Norwegian immigrants.</b>		BC03	Fixed to case back	-	

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2401	NA - Rotation	1867	Y (2 of 3)	Bowl, drinking	Appears to be horse heads on either side (common to this type of vessel), decorations painted on interior, looks to be words written on lip of exterior. Wood.  Rotation 3	128	145	240			Placeholder 	ESTIMATED 5 in x 4 3/4 in x 11 in; 12.7 cm x 12.065 cm x 27.94 cm or smaller  <b>Not object, image placeholder. Display in center cluster of section four. Represents Nowegian immigrants.</b>		NA - Rotation	-	-
NA - Rotation	C2401	NA - Rotation	1866	Y (3 of 3)	Bowl, drinking	Dragon heads on either side (common to this type of vessel), unadorned interior, appears to have some decoration on vessel's interior. Wood.  Rotation 2	113	130	240			Placeholder 	ESTIMATED 5 in x 4 3/4 in x 11 in; 12.7 cm x 12.065 cm x 27.94 cm  <b>Not object, image placeholder. Display in center cluster of section four. Represents Nowegian immigrants.</b>		NA - Rotation	-	-
EX-8-12	C2401	2	1868		Basket	Coarse coiled basketry tray made of bundles of grass (called locally "basketry grass") and palmetto strips. The only tool used is a common nail. This type of basket is called a "fanner," and was formerly used for winnowing rice USA: Georgia, Sapelo Island	125			375			12.5 cm H x 37.5 cm W diameter		BC12	Fixed to case back	-
EX-8-12	C2401	4	1870 PROP		Indian Corn	Coarse coiled basketry tray made of bundles of grass (called locally "basketry grass") and palmetto strips. The only tool used is a common nail. This type of basket is called a "fanner," and was formerly used for winnowing rice USA: Georgia, Sapelo Island	215.9	76.2	63.5			Placeholder 	estimated 8.5 inches H x 3 inches W x 2.5 inches Diameter. Display in center cluster of 4.		BC03	Fixed to case back	-
EX-8-12	C2401	11	1946		Clog, wooden		88.9	114.3	290.51				3.5 inches H x 4.5 inches W x 11.4375 L		BC03	Fixed to case deck	-
EX-8-12	C2401	17	1973		abacus	This abacus fits in a black wooden box with a wooden cross piece. There are 11 parallel bamboo rods, with beads on each rod. Two beads are above the cross piece, 5 below. The beads are rounded, like those on Chinese abacuses.	184.15	120.65	17.4625				7 1/4 inches H x 4 3/4 inches W x 11/16 inches D		BC03	Fixed to case deck	-
EX-8-12	C2401	10	1980		English tankard	Mocha ceramic tankard overall: 5 13/16 in x 6 1/2 in x 4 1/2 in; 14.732 cm x 16.51 cm x 11.43 cm	145	156		110			overall: 5 13/16 in x 6 1/2 in x 4 1/2 in; 14.732 cm x 16.51 cm x 11.43 cm		BC03	Fixed to case back	-
EX-8-12	C2401	9	2059		comb, ornamental	Mexican	228.6	180.975	31.75				9" (high) x 7 1/8" wide and 1 1/4" deep		BC03	Fixed to case back	-

*Info by NMAH See notes at end of document*

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**








Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-12	C2401	14	2358		Face vessel	Small, alkaline glazed stoneware face jug with kaolin eyes and teeth. Attributed to slaves at Lewis Miles plantation pottery in Edgefield, South Carolina..	120	110		110					BC03	Fixed to case deck	-
EX-8-12	C2401	12	2525		Awl	Iron point. Antler. Carved and Incised.	15	115	15				11.5 cm long x 1.5 cm H x 1.5 W cm (NMAI sent on 8.19.2015)		BC03	Fixed to case deck	-
<b>Subsection:</b>		<b>Northwest Territories</b>															
<b>Sub-subsection:</b>		<b>Germans in the Midwest</b>															
EX-8-13	C2402	6	27		tilt-top table; Center Table, octagonal	Octagonal tilt-top table, inlaid with scroll-cut decorations of portrait busts, birds, flowers and scrolls; shows 4 generals of successive wars: George Washington (Revolution), William H. Harrison (War of 1812), John E. Wool (Mexican War) and Benjamin Butler (Civil War).	1295.4	946.15	615.95		68.04Kg		75.5 cm H x 104 cm W 51 in h x 37.25 in w x 24.25in D  Will require low light levels at 30-50 lux		BM00	Type 4 Sits on display surface	C2406.H
EX-8-13	C2402	7	565	Y (1 of 2)	wood clamp (1)	Clamp with tapered nose operated by 2 threaded handles; from the workshop of Peter Glass; one of two.	311.15	133.35	25.4				12.25 in H x 5.25 in W x 1 in D Center of case C2402. 11 in H x 5.25 in W x 1 in D (Christine's dimensions) First in Peter Glass wood clamp rotation. Rotate with clamp 0566.		BC03	Fixed to display surface	C2406.H
NA - Rotation	C2402	NA - Rotation	566	Y (2 of 2)	wood clamp (2)	Clamp with tapered nose operated by 2 threaded handles; from the workshop of Peter Glass; one of two.	304.8	133.35	25.4				12" in H x 5.25" in W x 1" in D Center of case C2402 11 in H x 5.25 in W x 1 in D (Christine's dimensions) Second in Peter Glass wood clamp rotation. Rotate with clamp 0565.		NA - Rotation	-	-
EX-8-13	C2402	8	567		scroll-saw blade (1)	One of 17 scroll-saw blades used for marquetry work by Peter Glass.	6.35	127	1.5875				0.25" in H x 5" in W in 1/16" D Center of case C2402 various sizes 4-7/8" to 6" long		BM21 BC03	Type 6 Fixed to display surface	C2406.J
EX-8-13	C2402	9	568		scroll-saw blade (2)	One of 17 scroll-saw blades used for marquetry work by Peter Glass.	1.5875	152.4	1.5875				1/16" in H x 6" in W x 1/16" in D Center of case C2402 various sizes 4-7/8" to 6" long		BC03	Fixed to display surface	C2406.J

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**








Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-13	C2402	10	569		Scroll work	Inlay frangment: A cut piece of foliate scroll.	38.1	133.35	1.5875			1.5" in H x 5.25" in W x 1/16" in D Center of case C2402		BC12	Mount fitted to object; Angled 15 degrees; Fixed to display surface	C2406.J	
EX-8-13	C2402	13	570		award medallion (1)	In relief, "WISCONSIN STATE AGRICULTURAL SOCIETY...AWARDED TO Peter Glass, Beechwood, Wis. for Mosaic Centre Table composed of 96,000 distinct pieces of colored wood and evincing remarkable skill. Exhibition of 1868."			1.5875	44.45		1/16 in D x 1.75 in Diameter Center of case C2402		BC03	Angled 60 degrees Fixed to display surface	C2406.J	
EX-8-13	C2402	11	571		medallion (2)	Medal of award given to Peter Glass for rosewood work table, exhibition of 1850.				50.8		Center of case C2402 5 cm Diameter		BC03	Fixed to display surface	C2406.J	
EX-8-13	C2402	12	572		medallion (3)	Award medal. Obverse: "American Institute, New York"; reverse: "Award to Glass & Co. for the best Inlaid Furniture, 1856."				153.2255		Center of case C2402 6.0325 in		BC03	Fixed to display surface	C2406.J	
EX-8-13	C2402	14	574		panel, veneer (1)	Rectangular veneer boards backed with paper, tinted and partially cut; American shield with cornucopia & eagle.	76.2	431.8				Center of case C2402 17 inches long x 3 inches Wide		BC12	Mount fitted to object; Angled 45 degrees; Fixed to display surface	C2406.H	
NA - Rotation	C2402	NA - Rotation	575		panel, veneer (2)	Rectangular veneer boards backed with paper, tinted and partially cut; American shield flanking figure of Justice.	76.2	431.8				Center of case C2402 17 inches long x 3 inches Wide		NA - Rotation	-	-	
<b>Sub-subsection:</b>		<b>Land and Opportunity in the Midwest</b>															
EX-8-13	C2402	19	395	Y (1 of 2)	book; Iowa As It Is in 1855 ... Hand-Book for Emmigrants ...	Full Title: "Iowa as it is in 1855... a gazetteer for citizens, and a hand-book for immigrants, embracing a full description of the state of Iowa ... Information for the immigrant respecting the selection, entry, and cultivation of prairie soil: a list of unentered lands in the state."	193	228 (open)	101			display OPEN book open at approx 120 degrees is 7.625x9x4 Part of German language book rotation. Rotation 1: (0395), Rotation 2: (0741)		BM00 BC13	Type 4 Book open 120 degrees; Fixed to display surface	C2402.O	











**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2402	NA - Rotation	407	Y (2 of 2)	book; Das Amerikamische A-B-C-Buch	DAS AMERIKAMISCHE A-B-C-BUCH. (Cincinnati, Ohio: T. & Wilde Eggers, 1854). Pencil inscription inside front cover: "Anne E. Veazey."	165.1	230 (open)	4.7625			6.5 inches H x 4.25 inches W x .1875 inches D Display open. Will turn pages for rotations. Ride side of case C2402 open dims 23 cm W. About 107 mm W closed		NA - Rotation	-	-	
EX-8-13	C2402	15	739	Y (1 of 3)	Swedish Apron	Swedish Apron. Striped orange, red, and black.	800	800				to lay flat in case, not on form  First object in Swedish apron rotation. Involved in rotation with CL*247648 (0740) and CL*247638 (0741).		BM11	Type 3 Secured to display surface	C2402.P	
NA - Rotation	C2402	NA - Rotation	740	Y (2 of 3)	Swedish Apron	Swedish Apron. Red with blue striped diamond design.	400	511	35			Second object in Swedish apron rotation. Involved in rotation with CL*247637 (0739) and CL*247638 (0741).		NA - Rotation	-	-	
NA - Rotation	C2402	NA - Rotation	741	Y (3 of 3)	Swedish Apron	Swedish Apron. Blue apron with yellow design.	805	675				Third object in Swedish apron rotation. Involved in rotation with CL*247637 (0739) and CL*247648 (0740).		NA - Rotation	-	-	
EX-8-13	C2402	17	1342	Y (1 of 2) Rotation 2 to be Graphic 2185	banner, boxing	Dark blue silk boxing banner with green border. American Eagle at center over American shield. Four pairs of flags, Irish and American. The American flags have St. Andrews crosses.	508	508				this object is already framed		BM10 BC40	Type 2 Fixed to display surface	C2406.K	
EX-8-13	C2402	16	1982	Y (1 of 3)	Woodcarving, Polish, Old Couple's Rest	Woodcarving, Polish, Old Couple's Rest	147.5	125	90			1st rotation  14.75 cm H x 12.5 cm W x 9 cm D		BM21	Type 6 Sits on display surface	C2406.M	
NA - Rotation	C2402	NA - Rotation	1983	Y (2 of 3)	Wood carving, Polish	Melchior Magi figure	127	50.8						NA - Rotation	-	-	
NA - Rotation	C2402	NA - Rotation	1992	Y (3 of 3)	Wood carving, The Fiddler	Polish wood carving, The Fiddler	355	135	105			3rd rotation CL*292231.46 (previously cat. number E71.36)  35.5 cm H x 13.5 w x 10.5 d		NA - Rotation	-	-	







**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-13	C2402	18	1984		Silver pitcher		311.15	158.75	215.9			12.25 in high x 6.25 in wide x 8.5 in deep (this is oriented to see inscription at front).		BM21	Type 6 Sits on display surface	C2406.N	
<b>Sub-subsection:</b>		<b>Indian Removal in the Midwest</b>															
EX-8-13	C2402	1	542	Y (1 of 8)	Daguerreotype portrait of Native American man	A half-length daguerreotype portrait of Native American man wearing turban, coat with collar up and blanket wrapped around his middle. He has rings on his fingers.	117.475	190.5	12.7					BM10	Type 2 Mounted on plex board; Fixed to display surface	C2406.A	
NA - Rotation	C2402	NA - Rotation	543	Y (2 of 8)	Daguerreotype with Bow and Arrow	A half-length daguerreotype portrait of Native American man, in frilled shirt and lap blanket. He has three necklaces and a bangle, and is holding a bow and arrow.	120.65	190.5	12.7			Second daguerreotype in native American portrait rotation.		NA - Rotation	-	-	
NA - Rotation	C2402	NA - Rotation	1305	Y (3 of 8)	daguerreotype, Native American Portrait	A half-length daguerreotype portrait of Native American man in check shirt and lap blanket. He has hair ornaments and neck band and a ring on his middle finger, and is holding a rifle.	119.38	190.5	12.7			There are 4-8 daguerreotypes artifacts. Each on rotation with each other. Nancy wants to have a graphic of four daguerreotypes and cover one graphic up at a time with the actual artifact. Based on what the conservator says, 4 can be used for rotations or if their display life is shorter than a total of eight will be used before circling back to rotation 1 to satisfy a 20 year show. Therefore,		NA - Rotation	-	-	
NA - Rotation	C2402	NA - Rotation	545	Y (4 of 8)	daguerreotype; Appanoose, The Children's Chief	Appanoose, Sauk, 1847 A half-length daguerreotype portrait of Native American man, bare chested with lap blanket and striped turban, necklace of bear claws and an amulet, holding an object hand-tinted blue.	120	95	15			Bracketing Note: Graphics Curator recommended that the Native American Portraits be removed from their cases and displayed in a frame that can safely accommodate all the sizes involved in the portrait rotations. 12 cm H x 9.5 cm W x 1.5 cm D		NA - Rotation	-	-	
NA - Rotation	C2402	NA - Rotation	1306	Y (5 of 8)	ambrotype, R' Lary Bear Yanetonic Band,	Black and white framed ambrotype of two Native American men with the caption: "Bone necklace 'R' Lary Bear Yanetonic Band, Dakota Nation."	114.3	85.725	6.35			There are 4-8 daguerreotypes artifacts. Each on rotation with each other. Nancy wants to have a graphic of four daguerreotypes and cover one graphic up at a time with the actual artifact. Based on what the conservator says, 4 can be used for rotations or if their display life is shorter than a total of eight will be used before circling back to rotation 1 to satisfy a 20 year show. Therefore,		NA - Rotation	-	-	
NA - Rotation	C2402	NA - Rotation	1307	Y (6 of 8)	ambrotype, portrait of indian man in native dress	Portrait of Indian man in native dress with necklaces. Matted, not cased.	111.125	85.725	6.35			There are 4-8 daguerreotypes artifacts. Each on rotation with each other. Nancy wants to have a graphic of four daguerreotypes and cover one graphic up at a time with the actual artifact. Based on what the conservator says, 4 can be used for rotations or if their display life is shorter than a total of eight will be used before circling back to rotation 1 to satisfy a 20 year show. Therefore,		NA - Rotation	-	-	








**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2402	NA - Rotation	1308	Y (7 of 8)	tintype, Pawnee Man	Portrait of unidentified Pawnee man, seated, short hair, bare chested, wearing many beads, bracelets and earrings. Face, chest and arms, trousers hand-tinted pink and beads are white, blue, red and gold. Matted, not cased.	111.125	85.725	6.35				There are 4-8 daguerreotypes artifacts. Each on rotation with each other. Nancy wants to have a graphic of four daguerreotypes and cover one graphic up at a time with the actual artifact. Based on what the conservator says, 4 can be used for rotations or if their display life is shorter than a total of eight will be used before circling back to rotation 1 to satisfy a 20 year show. Therefore,		NA - Rotation	-	-
NA - Rotation	C2402	NA - Rotation	1309	Y (8 of 8)	daguerreotype, Native American man, wearing hat with feathers	Bum-bemsue, Sauk or Fox, 1847. A half-length daguerreotype portrait of Native American man, wearing hat with feathers, necklace of bones, holding a bow and arrow and an ax. His face is painted with stripes and his shirt is hand-tinted pink.	140	105	5				There are 4-8 daguerreotypes artifacts. Each on rotation with each other. Nancy wants to have a graphic of four daguerreotypes and cover one graphic up at a time with the actual artifact. Based on what the conservator says, 4 can be used for rotations or if their display life is shorter than a total of eight will be used before circling back to rotation 1 to satisfy a 20 year show. Therefore,		NA - Rotation	-	-
EX-8-13	C2402	2	744	Y (1 of 8)	Cheyenne Ledger Drawing	"Ledger" drawing on note paper with image of U.S. Cavalry riding left at the crest of a hill one [Kiowa] Indian scout, holding bow and field glasses, running down from the hill.	152.4	228.6					Left Side of case C2402  Part of Ledger Drawing Rotation. Drawing involved in rotation are: (0744), (1310-1317)		BM10	Type 3 Use corner captures to secure object to display surface	C2406.D
NA - Rotation	C2402	NA - Rotation	1310	Y (2 of 8)	drawing, buffalo chase	"Ledger" drawing on note paper with image of American Indian chasing buffalo herd. Back of sheet of paper reads: "Drawn by Wohaw - Kiowa."	114.3	180.975					Display left side of case C2402  11.4 cm H x 18.1 cm W  Part of Ledger Drawing Rotation. Drawing involved in rotation are: (0744), (1310-1317)		NA - Rotation	-	-
NA - Rotation	C2402	NA - Rotation	1312	Y (3 of 8)	drawing, "In Pursuit of Game"		114.3	180.975					11.4 cm H x 18 cm W  Display left side of case C2402  Part of Ledger Drawing Rotation. Drawing involved in rotation are: (0744), (1310-1317)		NA - Rotation	-	-
NA - Rotation	C2402	NA - Rotation	1314	Y (4 of 8)	drawing, "Hunting Buffalo"	"Ledger" drawing on note paper with image of five American Indians riding left with a buffalo herd, below, and one warrior riding left with an antelope, above. Four of the buffalo have been shot with arrows and are bleeding; the antelope has also been shot and is bleeding. Indians are riding with stirrups and [horse collars]. Horses are solid colors two are red, two yellow, and a fourth green.	127	203.2					Display left side of case C2402  12.8 cm H x 20.5 cm W  Part of Ledger Drawing Rotation. Drawing involved in rotation are: (0744), (1310-1317)		NA - Rotation	-	-
NA - Rotation	C2402	NA - Rotation	1315	Y (5 of 8)	drawing, "on the lookout for game"	"Ledger" drawing on note paper with image of fourteen American Indians walking right with guns and packs strapped over the chest.	127	203.2					12.7 cm H x 20.5 cm W  Display left side of case C2402  Part of Ledger Drawing Rotation. Drawing involved in rotation are: (0744), (1310-1317)		NA - Rotation	-	-
NA - Rotation	C2402	NA - Rotation	1316	Y (6 of 8)	drawing, Buffalo Chase (2)	"Ledger" drawing on note paper with image of four American Indians riding with a herd of buffalo. Some have been hit with arrow and are bleeding. Indians carry bow and arrow.	114.3	177.8					11.4 cm H x 18.1 cm W  Display left side of case C2402  Part of Ledger Drawing Rotation. Drawing involved in rotation are: (0744), (1310-1317)		NA - Rotation	-	-









**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-13	C2402	3	1373		hatband, Odawa	Silver Hat Band.	65			170			High Security. Strict environmental controls. Needs cleaning and for the coating to be taken off. No new coating should be added. Requires a mount to go inside the headband. Headband is very thin and light. 6.5 cm x 17 diam cm		BM00 BC11 BM40	Type 4 Plexi ring support on inside of object; Fixed to display surface	C2406.B (See EX-5-16 for details)
EX-8-13	C2402	4	1374		bowl, Odawa Feast	Oval bowl with two handles, one representing an animal's head, inlaid with brass tacks.  Collection history unknown; formerly in the collection of Dr. W.C. Barnard (William Clark Barnard, 1870-1945); acquired by MAI in 1930.	167	426					May need clearance from tribe for use.  Odawa Feast Bowl: Rotation 1: Bowl (1374), Rotation 2: Bowl (1381), Rotation 3: (1382), Rotation 4 (1383)		BM21	Type 6 Sits on display surface	C2406.F
EX-8-13	C2402	5	2532		cradleboard	Wood. Bark. Hide/leather. Hide thong/babiche. Techniques: Techniques: Carved, bent, drilled, laced, braided. Acquisition source: Heath, Albert Green. Collected 1/1/1918 Strap on cradle board went over mother's forehead or neck to support cradle board.	740	380	230				Strap on cradle board went over mother's forehead or neck to support cradle board. NMAI suggested displaying the cradle board 3/4 view. 60 cm x 38 cm x 23 cm x 74 cm (NMAI provided these dimensions in this format on 8.19.2015 without indicating H,W,D). Assume 74 cm is height of cradle when strap is up? Strap should be displayed outward influencing width/depth not height.		BM00 BC03	Type 4 Extra plexi ring support for strap; Fixed to display surface	C2406.E
<b>Subsection:</b>		<b>Western Migration in the Mississippi Valley</b>															
<b>Sub-subsection:</b>		<b>The Migration of Free Frank McWorter</b>															
EX-8-14	C2404	6	745		McWorter Family Civil War Uniform Buttons	Two Civil War uniform Buttons.				19.05			Estimated size of civil war buttons is 3/4 inch diameter each. Not actual size of object.		BM10 BC03	Type 3 Fixed to display surface	C2404.E
EX-8-14	C2404	7	2062		Child's chair	Made by Solomon McWorter  Dimensions approximate until we hear from lender.	533.4	304.8	520.7				Gerald McWorter: 21" high  12" wide  20.5" depth		BM00	Type 4 Sits on display surface	C2404.F
EX-8-14	C2404	8	2109		basin and pitcher, wash		323.85			406.4					BM20	Type 7 Sits on display surface	C2404.G

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Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH See notes at end of document</i>																	
<b>Sub-subsection: The Town of New Philadelphia on the Mississippi River</b>																	
EX-8-14	C2404	23	471		Pig mandible with teeth		177.8	101.6	57.15					BM21 BC03	Type 6 Fixed to display surface	C2404.L	
EX-8-14	C2404	24	751		Bone, cow	Scapula fragment, middle posterior portion, left side; chopped and having knife cut marks	152.4	63.5	31.75					BM00 BC03	Type 4 Fixed to display surface	C2404.I	
EX-8-14	C2404	25	752		Bone, cow, Ilium	Ilium, anterior portion of right pelvis, sawed	101.6	101.6	44.45					BC03	Fixed to display surface	C2404.I	
EX-8-14	C2404	18	754a		slate fragment and two pencils (pencil 1)		39.6875	50.8		4.7625		Slate fragment 2-1/8 long x 2" w x 1/8" thick with One pencil is 1-9/16" long x 3/16" dia the other pencil is 1-1/8" long x 1/8" dia		BM10 BC03	Type 3 Fixed to display surface	C2404.K	
EX-8-14	C2404	19	754b		slate fragment and two pencils (pencil 2)		28.575			3.175		Slate fragment 2-1/8 long x 2" w x 1/8" thick with One pencil is 1-9/16" long x 3/16" dia the other pencil is 1-1/8" long x 1/8" dia		BC03	Fixed to display surface	C2404.K	
EX-8-14	C2404	20	754c		slate fragment and two pencils (slate)		53.975	50.8		3.175		Slate fragment 2-1/8 long x 2" w x 1/8" thick with One pencil is 1-9/16" long x 3/16" dia the other pencil is 1-1/8" long x 1/8" dia		BC03	Fixed to display surface	C2404.K	
EX-8-14	C2404	21	766a		Two marbles (#1)					25.4		Placeholder Image is place holder Using 2 marbles		BC03	Fixed to display surface	C2404.K	

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**








Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-14	C2404	22	766b		Two marbles (#2)					19.05		Placeholder 	Image is place holder Using 2 marbles		BC03	Fixed to display surface	C2404.K
EX-8-14	C2404	9	1995		Blue and white transfer print cup		76.2			101.6					BM00 BC10	Sits on display surface	C2404.J
EX-8-14	C2404	10	1996		patent medicine bottle	Dr Kings New Discovery	114.3	31.496	15.875						BC10	Sits on display surface	C2404.J
EX-8-14	C2404	11	1997		patent medicine bottle	Kendall's Spavin Cure	139.7			50.8					BC10	Sits on display surface	C2404.J
EX-8-14	C2404	12	1998		patent medicine bottle	clear, round glass bottle with horizontal ridges	221.996			50.8					BC10	Sits on display surface	C2404.J
EX-8-14	C2404	13	2001		Turk's head pipe	Pipe	38.1	34.925	22.225						BC03	Fixed to display surface	C2404.K
EX-8-14	C2404	14	2004		Lice comb		53.975	34.925	22.225						BC03	Fixed to display surface	C2404.K
EX-8-14	C2404	15	2005		Buckle	Brass buckle for stock collar, dress, or hat	47.625	34.925	1.5875						BC03	Fixed to display surface	C2404.K

*Info by NMAH See notes at end of document*

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Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-14	C2404	16	2006a		Sewing thimbles, (1)		19.05			19.05				BC03	Fixed to display surface	C2404.K	
EX-8-14	C2404	17	2006b		Sewing thimbles, (2)		19.05			17.4625				BC03	Fixed to display surface	C2404.K	
EX-8-14	C2404	26	2007		Bone, cow	Atlas vertabra, first cervical	133.35	76.2	82.55					BC03	Fixed to display surface	C2404.I	
EX-8-14	C2404	27	2008		Bone, cow	Rib, sawed and/or chopped on ends	190.5	38.1	25.4					BC03	Fixed to display surface	C2404.I	
<b>Sub-subsection:</b>		<b>The Slave Trade</b>															
EX-8-14	C2404	2	307	Y (1 of 2) Rotation 2 to be graphic 2187	Ship manifest	This is a lengthy ship's manifest for a schooner "LaFayette" transporting 83 enslaved men, women, and children from Alexandria Virginia to Natchez, Mississippi via New Orleans. This manifest is from a well-known company, Franklin and Armfield, operating out of Alexandria, Virginia.	1095 (matted) 1020 (no mat)	480 (matted) 404 (no mat)					15.75 in H x 38 in W can only be on displayed short time, will have to substitute as a graphic after short display time. (Graphic #2187) Measurement of matte mount - 1095 mm x 480 mm; Size of document (without mount): 1020 mm H x 404 mm W	BM10 BC42 (currently on a sunk mat)	Type 2 Display panel fitted to object; Fixed to display surface	C2404.D	
EX-8-14	C2404	4	347	Y (1 of 2) Rotation 2 to be PROP 1388	basket	Sage grass basket from Louisiana, c. 1850-1899.	152.4			305			Left side of case C2404 Will be replaced with PROP 1388 after rotation is over.	BM00 BC12	Type 4 Angled 15 degrees	C2404.A	
NA - Rotation	C2404	NA - Rotation	1388	Y (2 of 2)	basket, cotton	Prop of a cotton basket used along the Mississippi.	6	12.25	11.25				Will replace accession cotton basket (0347) when it comes off rotation with this PROP. Dimensions are from cotton basket this PROP replaces. Image not PROP. Image of accessioned basket 0347.	NA - Rotation	-	-	

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Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-14	C2404	5	604		Hiram Wilson stoneware jar	Remarks re Pieces = Stoneware storage jar w/lid. Exterior of jar covered with brown salt glaze & darker brown runs and drips. Interior covered w/brown Albany slip glaze.	245			160			16 cm Diameter x 24.5 cm H		BM21	Type 6 Sits on display surface	C2404.B
EX-8-14	C2404	3	1377	Y (1 of 4)	bill of sale, slave	Slave sale 1833 New Orleans	342.9	215.9							BC42	Mounted on plex panel fixed to display surface	C2404.D
NA - Rotation	C2404	NA - Rotation	1378	Y (2 of 4)	bill of sale, slave	Slave sale 1840	352.425	215.9							NA - Rotation	-	-
NA - Rotation	C2404	NA - Rotation	1379	Y (3 of 4)	bill of sale, slave	New Orleans 1835	330.2	215.9							NA - Rotation	-	-
NA - Rotation	C2404	NA - Rotation	2412 PROP	Y (4 of 4)	bill of sale, slave	Slave sale 1833 New Orleans	342.9	215.9					Reproduction of slave of bill sale: (1377)  Part of slave bill rotation. Rotation 1: 1377, Rotation 2: 1378, Rotation 3: 1379, Rotation 4: Prop p-2412		NA - Rotation	-	-
EX-8-14	C2404	1	1298		ship model, George W. Neare	This boat is named after George W. Neare, a former steamboat master. Steamboats on the western rivers were notoriously bad risks, having relatively explosive high-pressure engines, wooden hulls, and flammable cargo.	546.1	1117.6	368.3				Confirmed Dimensions By Conservator: L: 44", W: 14.5", H: 21.5"		NA	Sits on display surface	C2404.C
<b>Sub-subsection:</b>		<b>Religious and Utopian Communities in the Mississippi</b>															
EX-8-14	C2404	29	524		Ceramic Plate	Ceramic Plate showing Nauvoo temple.  Remarks re Manufacture: 1841 00 00+, 1846 00 00=. Decorative motif: american views, mormon temple, navroo, illinois				234.95			9.25" diameter		BM20 BC03	Type 2 Fixed to display surface	C2404.N










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Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-14	C2404	30	576	Y (1 of 2) Rotate one shoe at the time	Mormon Temple Shoes	White linen. Used in Mormon church service. Celebrants would wear instead of street shoes while in the Mormon temple.	266.7	152.4	50.8				Use one shoe at a time and rotate.  One slipper is 10 inches D x 6 inches W x 2 inches H. The other is 10.5 inches D x 6 inches W x 2 inches Deep.		BC23	Sits on display surface	C2404.N
EX-8-14	C2404	28	1389	Rotate by turning pages	book, The Book of Mormon	Display open	155	235	40				we want to display this open but the book binding is tight so we can't open it too far. will be able to update when loan request is received. Closed: 10 cm wide 15 1/2 cm long 4 cm deep 23 1/2 cm wide when open- book binding		BM00 BC13	Type 4 Angled 15 degrees; Book open 90 degrees; Fixed to display surface	C2404.M
EX-8-14	C2404	31	2342		Chair, dining	Chair used in the 1850s Icarian dining room in Nauvoo	724	368	419				in order to display this chair for the public observation, it would be possible to show both the engraved number on the back and the seat configuration, by using a mirror configuration Height of chair overall from floor to back of chair. 724mm/28.5" Height of seat from floor: 368mm/14.5" Thickness of seat:19mm/0.75" Seat width:368mm/14.5" Back width (large): 368mm/14.5" Back width (small): 267mm/10.5" Thickness of chair back:19mm/0.75" Measurement from wall to edge of seat: 419mm/16.5" Dimensions of chair back oval hole: 114mmWx64mmH/4.5"W X 2.5"H		BM00	Type 4 Sits on display surface	C2404.O
EX-8-14	C2404	32	2343		clothes hanger	woman's clothes hanger used in Icarian dining room in Nauvoo	292.1	387.35	12.7				15 1/4" wide; 11 1/2" high with the curvature; 1/2" depth  Provided by Raymond Siegrist.		BC03	Fixed to display surface	C2404.O
<b>Subsection:</b>		<b>Incorporating Western Lands</b>															
<b>Sub-subsection:</b>		<b>The Del Valle Family</b>															
EX-8-15	C2403	13	470		Tataviam sandstone bowls	Set of two sandstone bowls with flat squared rims, Tataviam bowls that were common in Piru Calif area, Rancho Camulos. Mortar : 5 1/4" high, 8" in diameter at top, 2" in diameter at the base Pestle: 8 1/2" long , bottom diameter 2 1/2" , top of pestle 1 1/8"	133.35			219.07					BM00	Type 4 Sits on display surface	C2403.H
EX-8-15	C2403	12	478		Sacred heart	Large glass heart surrounded by metal spikes, from Camulos chapel altar	342.9	279.4	101.6						BC03	Fixed to case back	-








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Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-15	C2403	11	759		Cross	Wooden cross stood on grounds of ranch.	1828.8	1219.2					6 feet H x 4 feet W		BC00	Fixed to case back	-
EX-8-15	C2403	10	1989		Cattle brand		647.7	95.25	57.15				Del Valle cattle brand 25.5" long, 3.75" wide at brand 2.25" high at brand		BM00 BC03	Type 4 Angled 15 degrees; Fixed to display surface	C2403.G
EX-8-15	C2403	8	1987		Spanish comb		254	152.4	25.4				10" long x 6" wide x 1" high good condition worn by Isabel Del Valle		BC03	Fixed to case back	-
EX-8-15	C2403	9	1988		Man's rebozo		711.2	355.6					folded in quarters, fold to fringe is 28" textile scarf wrapped around man's waist worn by Ygnacio Del Valle		BM11	Type 3 Concealed rear cradle to support rolled up fabric; Sits on display surface See sketch on drawing EX-8-15	C2403.E
<b>Sub-subsection:</b>		<b>Gold Rush and the Peopling of California</b>															
EX-8-15	C2403	4	210		sign, shop; Chinese-American Shop Sign	Wooden painted shop sign of Chinese-American origin and used in California, c. 1890.	1150	310	25				Red boarder around object in preview graphic not part of object. Painted wood 115 cm H x 31 cm W x 2.5 cm D		BC00	Fixed to case back	-
EX-8-15	C2403	3	326		trunk; travel trunk	The trunk is made of wood, covered in leather, and held together with metal braces and metal studs. The leather on the top of the lid and sides of the lid is tooled with a curvilinear almost floral like design.	425	650	420				42.5 cm H x 65 cm W x 42 cm Diameter  Poor Condition		BM00	Type 4 Sits on display surface	C2403.B
EX-8-15	C2403	1	539		ingot; 41.68 dollar	California issues; Kohler bar, California State Assay Office. Taxay p324	24	41	4				Case needs to be alarmed.		BM00 BC03	Type 4 Fixed to display surface	C2403.A

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Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-15	C2403	2	540		ingot; 36.55 dollar	California issues; Kohler bar, State Assay Office, Sacramento. Reference Taxyp p324	24	33	4				Case needs to be alarmed.		BC03	Fixed to display surface	C2403.A
EX-8-15	C2403	6	446		Heathen-Chinese pitcher	Remarks re Pieces = White-bodied porcelain pitcher with relief-molded decoration, known as "Heathen Chinese" pitcher. "O"-shaped spout molded to represent sealion, handle molded in shape of polar bear. White bisque relief figures of King Gambrinus and U.S.; and "Heathen Chinese" figures.	247.65	266.7	161.925				Right side of Case 25.07 cm H x 17.145 cm W x 26.67 cm D		BM00	Type 4 Sits on display surface	C2403.D
EX-8-15	C2403	5	532		pan; wok	Spun steel or iron Chinese cooking pan (wok); curving sides, very narrow foot, two upstanding handles welded to inside of rim.	195	525	510				Right side of case 17.75 in H x 20.125 in Diameter		BC03	Fixed to case back	-
EX-8-15	C2403	7	764		Brett Harte Book		184	136					7.25 in x 5.375 in (hwx or wxh, depending on direction of card) display one at a time, rotate through nine cards		BM10 BC42	Type 3 Fixed to display surface	C2403.C
<b>Sub-subsection:</b>		<b>Incorporating Nez Perce Lands</b>															
EX-8-15	C2403	18	1167		rifle, winchester	Said to have been owned by the Nimi'ipuu (Nez Perce) leader Chief Joseph (Hinmuuttu-yalatlat, 1840-1904); probably surrendered to General Nelson A. Miles (1839-1925, U.S. Army) in 1877;	115	990	50				99 x 11.5 cm exhibited with gun case (1390). gun to be shown outside of the gun case. case dimensions unknown, but bigger than rifle.		BM00 BC02	Type Fixed to display surface	C2403.K
EX-8-15	C2403	17	1392		arrows (four)	Nez Perce Largest arrow 31.5 in H x 1.5 in W x 1.75 in D	800.1	38.1	44.45				Largest arrow 31.5 in H x 1.5 in W x 1.75 in D  Curators must pick a bundle of arrows. They suggested 4. Design studio may suggest number. **Christine confirm dimensions when object arrives.		BM10 BC02	Type 2 Arrows should point up; Individually fixed to display surface	C2403.J
EX-8-15	C2403	16	1485	Y (1 of 2)	bow, Nez Perce		1143	50.8	146.05				45 in H x 2 in W x 5.75 in D		BC02	Fixed to display surface	C2403.J

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**

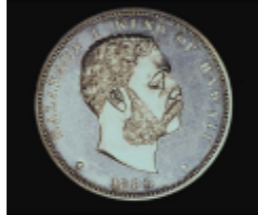






Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2403	NA - Rotation	1486	Y (1 of 2)	bow, Nez Perce		755.65	38.1	88.9				29.75 inches L x 1.5 inches W x 3.5 in D		NA - Rotation	-	-
EX-8-15	C2403	14	1396	Y (1 of 6)	ornament, horse's neck	Nez Perce bead worked ornament for horse's neck. 40.5 inches H x 18.5 inches W x 4 inches D	1028.7	469.9	101.6				Needs full support on padded panel. 30 degree or less exhibit angle. Weight of bells an issue. Pad out curved area		BM11	Type 3 Angled 30 degrees; Sits on display surface	C2403.I
NA - Rotation	C2403	NA - Rotation	1398	Y (2 of 6)	saddle trimming, nez perce	43.75 in H x 19.25 in W x 1 D	1111.25	488.95	25.4				Part of Nez Perce Horse Rotation. The horse mask (1395) can appear no sooner than Jan 2018. Rotation 1: Horse Neck Ornament (1396), Rotation 2: Saddle Trimming (1398), Rotation 3: Saddle Trimming (1399), Rotation 4: Bridle Trimmings (1397), Rotation 6: Horse Mask (1395).		NA - Rotation	-	-
NA - Rotation	C2403	NA - Rotation	1399	Y (3 of 6)	saddle trimming, nez perce	50.5 H X 26 in W x 1.75 in D	1282.7	660.4	44.45				Part of Nez Perce Horse Rotation. The horse mask (1395) can appear no sooner than Jan 2018. Rotation 1: Horse Neck Ornament (1396), Rotation 2: Saddle Trimming (1398), Rotation 3: Saddle Trimming (1399), Rotation 4: Bridle Trimmings (1397), Rotation 6: Horse Mask (1395).		NA - Rotation	-	-
NA - Rotation	C2403	NA - Rotation	1397	Y (4 of 6)	Bridle Trimmings	17 in H x 18 in W x 1 in D	431.8	457.2	25.4				Part of Nez Perce Horse Rotation. The horse mask (1395) can appear no sooner than Jan 2018. Rotation 1: Horse Neck Ornament (1396), Rotation 2: Saddle Trimming (1398), Rotation 3: Saddle Trimming (1399), Rotation 4: Bridle Trimmings (1397), Rotation 6: Horse Mask (1395).		NA - Rotation	-	-
NA - Rotation	C2403	NA - Rotation	1395	Y (6 of 6)	horse mask	Wool cloth, cotton cloth, glass bead/beads, glass pony beads, silk ribbon, wool felt, wool twill tape, hide, brass bell/bells, sinew, cotton thread Exhibited in "Song for the Horse Nation that closed Jan 2013. May have to be down for 5 years before being exhibited again.	560	620	10				Part of Nez Perce Horse Rotation. The horse mask (1395) can appear no sooner than Jan 2018. Rotation 1: Horse Neck Ornament (1396), Rotation 2: Saddle Trimming (1398), Rotation 3: Saddle Trimming (1399), Rotation 4: Bridle Trimmings (1397), Rotation 6: Horse Mask (1395).		NA - Rotation	-	-
<b>Subsection: American Expansion Across the Oceans</b>																	
<b>Sub-subsection: American Interests in Hawaii</b>																	
EX-8-16	C2405	1	867	Y (1 of 2)	drum, Hawaiian drum "pahu"	estimated 17.5 in H x 14 in D	444.5		355.6				Display next to Ukulele (1156). Two drums may exist under this number. will probably want to rotate one at a time for conservation reasons. both are of similar size, but must confirm. Both drums shown in image (G0680). Drum E93607-0 graphic (G0420) is first choice.		BM00	Type 4 Sits on display surface	C2405.B

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**









Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-16	C2405	2	1059	Y (1 of 2)	tapas (1)			457.2					18 inches wide		BM10 BC03	Type 3 Fixed to display surface	C2405.A
NA - Rotation	C2405	NA - Rotation	1060	Y (2 of 2)	tapas (2)			457.2							NA - Rotation	-	-
EX-8-16	C2405	3	1137		lore, octopus			190.5	101.6	50.8			7 1/2 inches up, 4 inches across, 2 inches wide		BC03	Fixed to display surface	C2405.A
EX-8-16	C2405	4	1139	Y (1 of 2)	bowl with lid, wood, Hawaii	Two parts. Bowl and Lid. Koa Wood?, KK branding on lid.  "Bowl height (without lid) 10" (254mm); breadth base 9" (228.6mm); diameter at rim 18" (457.2mm); rim thickness 5/8" (15.875mm).	254			482.6 (top) 228.6 (base)			Bowl is 18 inches in diameter. and 18 inches H 10 inches H x 9 inches Base x diameter 19 inches  Display lid behind bowl (and slightly above the bowl, so the lid is visible to the viewer) in far left of case C2502 with 'Hawaii Objects'		BM00 BC01	Type 4 Separate rod / basket support for lid; Sits on display surface	C2405.C
NA - Rotation	C2405	NA - Rotation	1140	Y (2 of 2)	bowl, KK "secret society"	Marked KK.	228.6	139.7					9 inches up, 5 1/2 diameter  Display far left of case C2502 with 'Hawaii Objects'		NA - Rotation	-	-
EX-8-16	C2405	7	1159		knife, pineapple trimming	This knife was used by Carolyn Fujita to trim pineapples at Maui Pineapple Company.	50.8	254	20				Placeholder  estimated to be 10 inches W x 2 inches H  Display far left of case C2502 with 'Hawaii Objects'.		BC03	Fixed to case back	-
EX-8-16	C2405	10	1180		book, queen liliuokalani	Book on the history of Hawaii, written and signed by Queen Liliuokalani.	210	140	50				Display closed.		BM00 BM12	Type 4 Angled 60 degreeed; Fixed to display surface	C2405.F
EX-8-16	C2405	9	1400		harpoon, Swivel Gun	Head, wrought iron, double-barbed. Shank, malleable iron, cast; double or slotted. Loop with two eyes, wire, wrapped with wire; iron thimble attached with rope for making fast the whale line. Cut from a dead whale. Double shank.  U.S. Fish Commission through J. T. Brown	876.3	177.8	38.1				34.5 in long Toggle up - 7 in h / Closed - 2 in h 1.5 in deep **width of object changes whether the toggle is open (up) or closed. Width of object ranges from 7-2 inches. Suggested by fisheries curator to display it open. Can display toggle closed if we have to.		BC02	Fixed to case back	-

*Info by NMAH See notes at end of document*

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**



Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-16	C2405	5	1491		coin, Hawaiian cent	The islands of Hawaii were united into one kingdom by King Kamehameha during the first decade of the 19th century. This kingdom was to last until 1893 at which point Queen Liliuokalani was deposed and a pro-American provisional government was set up.				38.0	0.027		From Numismatics collections manager: "For these objects we would ask that there be alarms on the cases. I don't think these objects need anything further, like break alarms, so pretty straightforward."		BM00 BC03	Type 4 Fixed to display surface	C2405.D
EX-8-16	C2405	6	1492		coin, Hawaiian cent		27.5	27.55	2				From Numismatics collections manager: "For these objects we would ask that there be alarms on the cases. I don't think these objects need anything further, like break alarms, so pretty straightforward."		BC03	Fixed to display surface	C2405.D
EX-8-16	C2405	8	2421		ukulele, baritone	Made by The Vega Co. Boston, MA. 1950s. 4 course (4x1). Serial #6322 Arthur Godfrey Model.	749.3	254	82.55				29-1/2" H x 10" W x 3-1/4" D		BC03	Fixed to case back	-
EX-8-16	C2405	19	2610	Y (1 of 2)	bible, hawaiian		193	130 (closed) 340 (open)	120				Display open; able to display open with both covers and spine flat on display surface. open bible- 340mm (W) x 193mm (H) x 110mm (D)		BM00 BC13	Type 4 Book open 120 degrees; Fixed to display surface	C2405.E
NA-Rotation	C2405	NA-Rotation	2599 <i>*Marked 'N' in database</i>	Y (2 of 2)	bible, hawaiian		160	110	30						NA - Rotation	-	-
<b>Sub-subsection:</b>		<b>Acquiring Puerto Rico from Spain</b>															
EX-8-16	C2405	14	1324	Y (1 of 3)	tiple	five keys present, bridge separate. Sent to NMAH 12 Sept. 1997 for Latino Luncheon. Sent to Conservation/Preservation for cleaning and repairs for possible use in exhibit. Small guitar with carved/scored sides and back; side decorations include triangle; back decoration consists of two bands diverging from neck. Missing strings.	82	480	155				Part of Tiple Rotation. Rotation 1 is (1324), Rotation 2 is (1065), Rotation 3 (1066)		BM00 BM03	Type 4 Fixed to display surface	C2405.H
NA - Rotation	C2405	NA - Rotation	1065	Y (2 of 3)	tiple	Tiple; Wood tiple with six metal strings and six wood tuning pegs; bone or nut bridge just below head; small hole on each side of the waist and at tail (sound holes ?);	795	230	75				Part of Tiple Rotation. Rotation 1 is (1324), Rotation 2 is (1065), Rotation 3 (1066)		NA - Rotation	-	-

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	C2405	NA - Rotation	1066	Y (3 of 3)	tiple	This is a "tiple" guitar. It was collected in Ponce, Puerto Rico by Paul Beckwith in 1899. Glue has been applied to the base of the guitar probably to keep the "tiple" intact.	790	235	70				overall: 79 x 23.5 x 7 cm cat.# needs to verify. could be a,c, or d. NMNH has the rest of the instruments but XG has records for these.  Part of Tiple Rotation. Rotation 1 is (1324), Rotation 2 is (1065), Rotation 3 (1066)		NA - Rotation	-	-
EX-8-16	C2405	12	1068		drum	The drum is called a bomba and was completely handmade from female goatskin and ironwood. The female hide of skin as opposed to the male hide of skin is thought to produce a softer tone.	630			430			overall: 26 cm x 26 cm x 6.5 cm; 10 1/4 in x 10 1/4 in x 2 9/16 in Collected after a Folklife Festival. Displayed in the center of case C2502 with the Puerto Rican objects Updated measurements from Janet Rockenbaugh from exhibit installation.		BM00	Sits on display surface	C2405.G
EX-8-16	C2405	15	1070	Y (1 of 4)	santo, Tres Reyes Magos	Maker: Rivera Group: made and/or found in Morovis, Puerto Rico. Three standing Kings.	176	207	60				overall: 17.6 cm x 20.7 cm x 6 cm; 6 15/16 in x 8 1/8 in x 2 3/8 in.  Part of religious Statue Rotation:		BM21	Type 6 Sits on display surface	C2405.I
NA - Rotation	C2405	NA - Rotation	1071	Y (2 of 4)	santo, San Jose	Maker: unidentified Espada follower, possibly made and/or found in San German, Puerto Rico. Espada book pg. 183. Standing bearded male figure holding child in left hand, holding out right hand. San Jose has metal halo and is wearing red robe and yellow cape. Child wearing red.	312	150	148				overall: 31.2 cm x 15 cm x 14.8 cm; 12 5/16 in x 5 7/8 in x 5 13/16 in.		NA - Rotation	-	-
NA - Rotation	C2405	NA - Rotation	1074	Y (3 of 4)	santo, San Antonio de Padua	Maker: Unidentified, 18 th century. Probably Espada. Standing male figure (Saint Anthony) holding child (Jesus) that sits on book in left hand. Child holds globe and has right hand and fingers held in blessing. Saint wears Franciscan clothing, blue habit and robe. Stands on 2 tier red base.	483	204	162				overall: 48.3 cm x 20.4 cm x 16.2 cm; 19 in x 8 1/16 in x 6 3/8 in.		NA - Rotation	-	-
NA - Rotation	C2405	NA - Rotation	1072	Y (4 of 4)	santo, Virgen de Monserrate	Made in the mid to late 19th century by an Espada follower or made by an Espada family member. Maker: Espada Follower, p. 182 Espada Book. Seated female holding globe in right hand, left hand outstretched, missing child from lap.	287	179	158				overall: 28.7 cm x 17.9 cm x 15.8 cm; 11 5/16 in x 7 1/16 in x 6 1/4 in.		NA - Rotation	-	-
EX-8-16	C2405	18	1171		knife, cane	Machete: Long blade machete with slightly curving wood handle and slightly curving blade;	130	705	35						BM10 BC03	Type 2 Fixed to display surface	C2405.K
EX-8-16	C2405	16	1993		Brooch with flag	Large silver religious medal that has been transformed (brooch with backing missing) into a milagro/offering for a santo. The shape is of a crown with cross on top and crest below.	62	35	5						BM20 BC03	Type 7 Fixed to display surface	C2405.J

*Info by NMAH See notes at end of document*

## Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 4

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-16	C2405	17	2016		Sack, sugar	Puerto Rican sugar sack. Is actually 36.5 inches high but we plan to fold over the bottom and top edge. Also, we'll fill with stuffing to get to this depth. Porto Rican American Sugar Refinery Inc, Snow White Pure sugar cane	762	463.55	63.5				flat form		BM11	Fixed to display surface	C2405.K
EX-8-16	C2405	13	2021		Guiro	Guiro: "J" shaped tapering gourd with incised ridges on one side; and had painted diamonds delineated in black with red dots inside, on both side of ridges; black and red decoration on tapered end as well; two holes carved on opposite side of ridges; tag reads: "guiro or guicharo, hand decorated in the countryside"	78	305	160						BM03	Fixed to display surface	C2405.H

*Info by NMAH See notes at end of document*

Mount codes listed above are specified in the 'Mounts & Brackets Catalog' document. Refer back to the document for mount details.

Please refer to case layout drawings for angles and dimensions of display surfaces where applicable. Surface ID numbers are indicated as C2XXX.X (e.g. C2201.A) where the first part indicates the display case number followed by a letter identifier.

### Mounts / Display Surface Detail Types

#### **Type 1**

Painted Angled Display Panel on a rod / fold support, fixed to case baseboard or back panel. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 2**

Painted vertical display blade, fixed to case baseboard, back or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 3**

Painted vertical display blade with angled surface, fixed to case baseboard or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 4**

Display box (folded surface), painted. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 5**

Display box with angled surface (folded surface). Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 6**

Pedestal on rod – Horizontal display panel on rod, fixed to case baseboard. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 7**

Slotted shelf fixed to case back. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

### Finishes & Fixing

All Brackets, Rods and Pins to be painted metal to match case backs. See Case List for details on case back finishes. All mounts to provide a minimum object offset of 25 mm from display surfaces unless otherwise specified.

All Shaped and Moulded Panels to be plexi unless otherwise specified by NMAH Conservation.

All supports for Forms and Figures to be painted metal to match case backs. See Case List for details on case back finishes.

All costume mounts will be either fully three dimensional or flat with little depth (as specified in the drawings). The mounts will be minimally visible and fully support the garment. The three-dimensional mounts will be supported by an adjustable metal pole on a metal base. The mounting of the costumes is a NMAH responsibility.

All Painting or Print Frames to have a painted simple and thin profile (no ornaments; max W 25.4 mm). Thickness and color (including mat where applicable) to be determined on a case by case basis in consultation with NMAH. Brackets or ledge (lip) to secure framed object to display surface affixed to sides or back to suit object.

All display boxes (folded surfaces) to be painted medite; a fabric wrapped top panel is optional. Paint color to follow P1 specs unless otherwise specified. Fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.

All Fabric Wrapped Boards fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.





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Client: **Smithsonian Institution**

Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
 Project No.: **1403108**

Our ref: **9961-5a-MVON-05-Object+Prop Mounts List**





Revision: **11**

Date: **April 07, 2016**  
 Distribution: **Kathryn Campbell, Nancy Davis, Hana Kim, Tanya Garner (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis, Cynthia Roberts (HSD)**



### Props & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 5

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							








Info by NMAH See notes at end of document

Subsection: Chicago, City of Neighborhoods																		
<b>Grouping:</b>																		
EX-8-17	Pilsen	C2501	1	2024		candlestick, Brass	Immigrant's brass candlestick with round base and finger loop. Brought from Bohemia by Josef Benes and his wife, Katherine Syrwy Benes, when they immigrated to the United States in 1882.	75			85					BM20	Type 6 Sits on display surface	C2501.D
EX-8-17		C2501	2	2025		Pipe, smoking	Drop-stem smoking pipe with meerschaum bowl carved into a bird's claw. According to Carol Benes Miller, the donor, "The pipe was from Montgomery Ward's as Dad worked there 27 yrs. as their gunsmith."	45	205	110						BC02	Fixed to display surface	C2501.D
EX-8-17		C2501	3	2029		mirror, Compact	small compact mirror that was given out to costumers of a Czech				57.15					BM00 BC03	Type 4 Fixed to display surface	C2501.F
<b>Grouping:</b>		<b>Chinatown</b>																
EX-8-17		C2501	4	2030		architectural fragment of On Leong Merchant Association building	From On Leong Merchant home (built 1929) Waiting for weight.	304.8	533.4	63.5	18.5976					BM10 BC00	Type2 Fixed to display surface	C2501.A

**Props & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 5**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-17	C2501	5	2060		Won Kow teacup	1940s, oldest continually operated restaurant in chinatown opened 1928.	50.8			76.2					BM20	Type 7 Sits on display surface	C2501.B
EX-8-17	C2501	6	2061		Ashtray	From Sun Chong Lung Chinese merchandise and Grocery, Wentworth Avenue	25.4	101.6	101.6						NA	Sits on display surface	C2501.B
EX-8-17	<b>Lakeview, Swedetown</b>																
EX-8-17	C2501	7	2031		Architectural element, Lion head figure from Julian Theater	This is from the Julian Theater, first art house movie theater in Chicago where hipsters would go to watch Swedish movies.  dimensions forthcoming	457.2	508	203.2		5.4432				BM10 BC00	Type 2 Mount to support weight of object; Fixed to display surface	C2501.E
<b>Grouping:</b>	<b>Bronzeville</b>																
EX-8-17	C2502	10	2026		architectural element, Star of David	Beautiful object. This is from the synagogue, designed by Dankmar Adler and Louie Sullivan. Frank Lloyd Wright was an assistant. Part of the German Jew neighborhood, Adler was the rabbi's son, and so they got their start in this affluent neighborhood.			38.1	571.5			Not heavy.		BM00 BC03	Type 4 Angled 60 degrees; Fixed to display surface	C2502.C
EX-8-17	C2502	9	2027		Record, Gospel	Thomas A Dorsey, father of Gospel music at Pilgrim Baptist Church (formerly Adler and Sullivan Jewish Synagogue)				254					BM00 BC12	Type 4 Angled 45 degrees; Fixed to display surface	C2502.A
EX-8-17	C2502	8	2028		Architectural stairway railing element, Mecca Flats	From Mecca flats. Started with a strictly all-white tenancy, but quickly changed to some middle class African Americans, but also others that abused the apartment regulations and rented out rooms. Became famous for promiscuity, fights in the corridor. It was the type of building where you could see the comings and goings easily.	1333.5	1308.1	50.8		48.5352				BC00	Mount to support weight of object; Fixed to case back	-
EX-8-17	C2502	11	2058		architectural terra cotta, Jordan building	three piece glazed white terra cotta, includes lyre as a music motif reflecting musical origins of Joe Jordan's "fortune" as a performer, musical director, and songwriter. Shiny white.	508	635	152.4		34.9272				BC00	Pieces individually mounted; Mount to support weight of object; Fixed to case back	-
EX-8-17 EX-8-18	Open display	12	2456 PROP		Nobel Prize		76.2								BC00	Part of Physical interactive table & P2501	-

**Props & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 5**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<b>Subsection: Los Angeles, City of Promise</b>																	
EX-8-18	C2504	10	848		Sign, Esperanza Bakery	Hollow sign made from sheet metal formed like a shallow, closed box. Mounted on metal, two-sided (one side has working neon)	2667	1524	304.8		63.50		Loan from Natural History Museum of Los Angeles 105 in H x 60 in W x 12 D		BM40	See drawing EX-5-14 for mount details	-
EX-8-18	C2504	2	1859 PROP		Menu, Esperanza	Facsimile	215.9	279.4					estimated 8.5 inches L x 11 inches W Will be second rotation to replace actual object (0849). Display "half open" in a way that both the front and back covers and the interior menu are visible.		BC42	Sits on case deck	-
EX-8-18	C2504	3	1860		bowl, Esperanza restaurant	6.5 diameter x 1.75 inches H	44.45			165.1			Display bowls (1860) and (1896) stacked on top of each other with (1896) at the bottom. Part of esperanza restaurant place setting. Display restaurant bowls (1860, 1896), restaurant platter (1900), Pan Dulce (PROP 1902), Coffee Cup (1904), Creamer Pot (1906), and sugar container (1909) together.		NA	Sits on plate (1896)	-
EX-8-18	C2504	4	1896		bowl, Esperanza restaurant	estimated 9 inches diameter				228.6			Display bowls (1860) and (1896) stacked on top of each other with (1896) at the bottom. Part of esperanza restaurant place setting. Display restaurant bowls (1860, 1896), restaurant platter (1900), Pan Dulce (PROP 1902), Coffee Cup (1904), Creamer Pot (1906), and sugar container (1909) together.		NA	Sits on case deck	-
EX-8-18	C2504	5	1900		Platter, Esperanza restaurant		177.8	279.4					estimated 11 inches W x 7 inches H Display prop bread on this platter.		NA	Sits on case deck	-
EX-8-18	C2504	6	1902 PROP		Pan Dulce			114.3					Display on esperanza restaurant platter (1900) 4.5 inches diameter Part of esperanza restaurant place setting. Display restaurant bowls (1860, 1896), restaurant platter (1900), Pan Dulce (PROP 1902), Coffee Cup (1904), Creamer Pot (1906), and sugar container (1909) together.		NA	Sits on plate (1900)	-
EX-8-18	C2504	7	1904		Cup, Esperanza restaurant		63.5	107.95		82.55			4.25 inches W x 3.25 inches Diameter x 2.5 inches H Part of esperanza restaurant place setting. Display restaurant bowls (1860, 1896), restaurant platter (1900), Pan Dulce (PROP 1902), Coffee Cup (1904), Creamer Pot (1906), and sugar container (1909) together.		NA	Sits on case deck	-

**Props & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 5**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-18	C2504	8	1906		Pot, Esperanza Creamer		88.9	158.75		82.55		3.5 inches H x 3.25 diameter x 6.25 inches W Part of esperanza restaurant place setting. Display restaurant bowls (1860, 1896), restaurant platter (1900), Pan Dulce (PROP 1902), Coffee Cup (1904), Creamer Pot (1906), and sugar container (1909) together.		NA	Sits on case deck	-	
EX-8-18	C2504	9	1909		Container, sugar		76.2			76.2		3 inches H with top x 3 inch diameter Part of esperanza restaurant place setting. Display restaurant bowls (1860, 1896), restaurant platter (1900), Pan Dulce (PROP 1902), Coffee Cup (1904), Creamer Pot (1906), and sugar container (1909) together.		NA	Sits on case deck	-	
<b>Grouping:</b>		<b>Japanese Americans in Los Angeles</b>															
EX-8-18	C2503	1	1913	Y (1 of 5)	ID, Japanese Internment, War Relocation Authority		50	80	1.25			8 cm long 5 cm wide 1/8 cm depth		BM10 BC03	Type 1 Fixed to display surface	C2503.A	
NA - Rotation	NA - Rotation	NA - Rotation	1915	Y (2 of 5)	pass, amache special meal		60	90				9 cm long x 6 cm wide		NA - Rotation	-	-	
NA - Rotation	NA - Rotation	NA - Rotation	1914	Y (3 of 5)	tag, WRA		47.625	73.025	6.35			2 7/8 inches L x 1 7/8 inches W x 1/4 inches D		NA - Rotation	-	-	
NA - Rotation	NA - Rotation	NA - Rotation	1916	Y (4 of 5)	tag, Bill Fuchigami baggage	Bill Fuchigami	38.1	123.825				4 7/8 W x 1.5 inches H		NA - Rotation	-	-	
NA - Rotation	NA - Rotation	NA - Rotation	1917	Y (5 of 5)	tag, Heita Fuchigami baggage		60.325	123.825				4 7/8 inches W x 2 3/8 inches H		NA - Rotation	-	-	

Mount codes listed above are specified in the 'Mounts & Brackets Catalog' document. Refer back to the document for mount details.

Please refer to case layout drawings for angles and dimensions of display surfaces where applicable. Surface ID numbers are indicated as C2XXX.X (e.g. C2201.A) where the first part indicates the display case number followed by a letter identifier.

## Props & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 5

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							

### Mounts / Display Surface Detail Types

#### **Type 1**

Painted Angled Display Panel on a rod / fold support, fixed to case baseboard or back panel. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 2**

Painted vertical display blade, fixed to case baseboard, back or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 3**

Painted vertical display blade with angled surface, fixed to case baseboard or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 4**

Display box (folded surface), painted. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 5**

Display box with angled surface (folded surface). Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 6**

Pedestal on rod – Horizontal display panel on rod, fixed to case baseboard. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 7**

Slotted shelf fixed to case back. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

### Finishes & Fixing

All Brackets, Rods and Pins to be painted metal to match case backs. See Case List for details on case back finishes. All mounts to provide a minimum object offset of 25 mm from display surfaces unless otherwise specified.

All Shaped and Moulded Panels to be plexi unless otherwise specified by NMAH Conservation.

All supports for Forms and Figures to be painted metal to match case backs. See Case List for details on case back finishes.

All costume mounts will be either fully three dimensional or flat with little depth (as specified in the drawings). The mounts will be minimally visible and fully support the garment. The three-dimensional mounts will be supported by an adjustable metal pole on a metal base. The mounting of the costumes is a NMAH responsibility.

All Painting or Print Frames to have a painted simple and thin profile (no ornaments; max W 25.4 mm). Thickness and color (including mat where applicable) to be determined on a case by case basis in consultation with NMAH. Brackets or ledge (lip) to secure framed object to display surface affixed to sides or back to suit object.

All display boxes (folded surfaces) to be painted medite; a fabric wrapped top panel is optional. Paint color to follow P1 specs unless otherwise specified. Fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.

All Fabric Wrapped Boards fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.





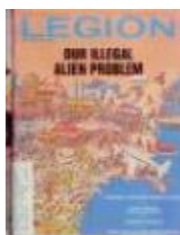


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Client: **Smithsonian Institution**  
Project: **National Museum of American History – 2nd Floor West Exhibit Design**  
Project No.: **1403108**  
Our ref: **9961-5a-MVON-06-Object+Prop Mounts List**  
Revision: **13**

Date: **April 07, 2016**  
Distribution: **Kathryn Campbell, Nancy Davis, Hana Kim, Tanya Garner (SI-NMAH) Bill Haley, David Donoghue, Kevin Callis, Cynthia Roberts (HSD)**

### Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6









Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH See notes at end of document</i>																	
<b>Subsection:</b>		<b>A New Era of Immigration: The Hart-Celler Act of 1965</b>															
EX-8-19	-	6	802 PROP		magazine, American Heritage "Go Back Where You Came From"	estimated 8 in W x 11 in D	279.4	203.2						BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	7	804 PROP		magazine, Business Week "The Immigrants"		279.4	203.2					estimated 8 in w x 11 in H	BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	8	805 PROP		magazine, Legion "Our Illegal Alien Problem"		279.4	203.2						BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	9	807 PROP		magazine, Newsweek "Everybody's Search for Roots"		266.7	206.375	3.175				10 13/16 in H x 8 3/16 in W x 1/8 inches D	BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	10	808 PROP		magazine, Newsweek "The New Immigrants"		266.7	206.375	3.175				8.25 in W x 10.75 in H x 1/8 inches	BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-19	-	11	809 PROP		magazine, Newsweek "Closing the Door?"		273.05	206.375	3.175					BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	12	810 PROP		magazine, Newsweek "Immigration Backlash"		266.7	206.38	3.175					BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	13	812 PROP		magazine, Time "The New Face of America"		273.05	206.375	3.175			10.75 inches H x 8 1/8 inches W x 1/8 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	14	814 PROP		magazine, Time "Hispanic Americans"		276.225	209.55	0.1875			10 7/8 inches H x 8.25 inches W x 3/16 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	15	815 PROP		magazine, Time "Los Angeles"		276.225	207.962	3.175			10 7/8 inches X 8 3/16 X 1/8 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	16	816 PROP		magazine, Time "Immigrants: The Changing Face of America"		273.05	207.962	3.175			10.75 inches H x 8 3/16 inches W x 1/8 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	17	817 PROP		magazine, Time "America's Changing Colors"		276.225	206.375	3.175			8 1/8 IN W x 10 7/8 inches H x 1/8 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	
EX-8-19	-	18	821 PROP		magazine, US News and World Report "Boarder Crisis"		276.225	207.962	3.175			10 7/8 inches H x 8 3/16 inches W x 1/8 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-	

*Info by NMAH See notes at end of document*


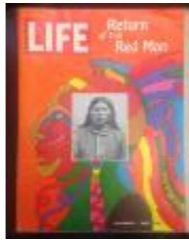





**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-19	-	19	822 PROP		magazine, U.S. News & World Report "Illegal Aliens"		274.637	206.375	3.175				10 13/16 inches H x 8 1/8 inches W x 1/8 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
EX-8-19	-	20	824 PROP		magazine, U.S. News & World Report "Will U.S. Shut the Door on Immigrants?:"		271.462	207.962	3.175				10 11//16 H x 8 3/16 in W x 1/8 in D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
EX-8-19	-	21	826 PROP		magazine, U.S. News % World Report "English Sometimes Spoken Here"		273.05	207.962	3.175				10.75 inches H x 8 3/16 inches W x 1/8 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
EX-8-19	-	22	829 PROP		magazine, U.S. News & World Report "The New Refugees"		273.05	206.375	3.175				10 12/16 x 8 1/8 inches W x 1/8 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
EX-8-19	-	23	831 PROP		magazine, U.S. News & World Report		265.112	203.2	4.7625				10 7/16 h x 8 in W x 3/16 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
EX-8-19	-	24	1845 PROP		magazine, Newsweek "The Black Mood:"		280.988	209.55	3.175				11 1/16 inches H x 8.25 inches W x 1/8 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
EX-8-19	-	25	1841 PROP		magazine, Time "magnifico"		276.225	203.2	3.175				10 7/8 inches H x 8 3/16 inches W x 1/8 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
EX-8-19	-	26	1846 PROP		magazine, sunset "burrito on the barbecue"		276.225	209.55	6.35				10 7/8 inches H x 8.25 inches W x .25 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-






*Info by NMAH See notes at end of document*







**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH See notes at end of document</i>																	
EX-8-19	-	27	1847 PROP		Magazine, Newsweek "Our America"		277.812	203.2	3.175				10 15/16 inches H x 8 3/16 x 1/8 inches.		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
EX-8-19	-	28	1848 PROP		Magazine, Life, Return of the Red Man		346.075	266.7	4.763				13 5/8 inches H x 10.5 inches W x 3/16 inches D		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
EX-8-19	-	29	1873 PROP		magazine, ebony "50,000 march on montgomery"		338.137	257.175	4.7625				13 5/16 inches H x 10 1/8 x 3/16 in deep		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
EX-8-19	-	30	2071 PROP		magazine, Bread and Roses		277.812	212.725	6.35				10 15/16 H x 8 3/8 W x .25 inches		BC42	Fixed to newsreel recon. See drawing EX-5-213 for mount details	-
<b>Subsection: Embracing America's Cultural Diversity</b>																	
EX-8-20	C2602		997	Y (1 of 8)	mask, vidal (2)	Careta de vejigante; Paper mache mask; Small black face with yellow streaks; red horns with black streaks, and silver painted teeth, each horn tip has either a black, red or yellow crescent shaped (some sort of seed pod) and jingle bell decoration.	399	446	212				39.9 cm H x 44.6 cm W x 21.2 cm D top of horn to bottom of chin - 399 ear to ear - 446 back of head to tip of nose - 212 Part of costume rotation 2 for case C2602. There will be a total of 8 rotation groups. Nearly all of the rotations will have two costumes at a time.		BC22	Fixed to case deck	-
EX-8-20	C2602		1207	Y (1 of 8)	costume, vidal	Traje de vejigante: Red and yellow one piece polyester costume, with "wing" arms, and cape; 12 jingle bells sewn to sides, and back of neck. Right arm and wing is yellow, red leg; Left arm and wing red, yellow leg.	1780	1170	500				178 cm H x 117 cm W x 50 cm D (depth is estimated) Part of costume rotation 1 for case C2602. Display with Vidal Mask 0096 and 0997		BC20	Costume form to the articulated; Final display to be determined in consultation with NMAH; Fixed to case deck	-
EX-8-20	C2602		2489	Y (1 of 8)	smock (sweet honey and the rock)	Smock; hand-dyed purple and pale green cotton knit with other applied colors; wide round neckline; long set-in sleeves; gathered skirt below yoke seam; patch pocket on right front of skirt.	1524	939.8	584.2				full costume: 60 inches H (estimated total height with shoes. shoes about 4 inches below pants leg), 37 inches W (sleeve tip to sleeve tip), x 23 inches D. Width of Body (not including arms) 27 inches wide.		BC20	Fixed to case deck	-






**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH See notes at end of document</i>																	
<b>Subsection: Changing Face of the American South</b>																	
EX-8-19	C2601	1	955	Y (1 of 2)	Jersey, Fugee	Soccer jersey. no shorts	787.4 (on mount)	711.2 (on mount)	355.6 (on mount)				Mounted textile dimensions: H 31 inches W 28 inches (arm width) D 14 inches <i>NOTE: Dimensions on email from C. Keppler dated 09/10/2015</i>		BC21	Fixed to case back	-
NA - Rotation	C2601	NA - Rotation	1921	Y (2 of 2)	Jersey, soccer		635	762					jersey 30 inches from sleeve to sleeve, 25 inches shoulder to hem. No shorts. Part of High School soccer team rotation that replaces the fugees soccer team after its rotation. Objects involved in second soccer team rotation is jersey (1921), cleats		NA - Rotation	-	-
EX-8-19	C2601	2	1918	Y (1 of 2)	ball, soccer (fugees)					304.8			Size 5 or 4. Estimated 12 or 11 inches diameter.		BC03	Discreet plexi claw-like mount supporting top and bottom; Fixed to case back	-
NA - Rotation	C2601	NA - Rotation	1923	Y (2 of 2)	ball, soccer (not fugees)					304.8			Size 5 or 4. Estimated 12 or 11 inches diameter.		NA - Rotation	-	-
EX-8-19	C2601	3	956	Y (1 of 2)	uniform, cleats, Fugee soccer	cleats	76.2	279.4					ESTIMATED 11 inches heel to toe, 3 inches H		BM00 BC23	Type 4 Sits on display surface	C2601.A
NA - Rotation	C2601	NA - Rotation	1922	Y (2 of 2)	Cleats, soccer		76.2	279.4					ESTIMATED 11 inches heel to toe, 3 inches H		NA - Rotation	-	-
NA - Rotation	C2601	NA - Rotation	1924	Y (2 of 2) There will be no rotation 1	Chain			3657.6					estimated 12 ft chain can be coiled up *Will only appear in second rotation- No first rotation of a similar type		NA - Rotation	-	-
EX-8-19	C2601	4	2012	Y (1 of 2)	Trophy		482.6	127	127				Part of refugee soccer team trophy rotation. Rotation 1 is the trophy belonging to The Fuggee's soccer team: trophy 2012, and Rotation 2 is the trophy is the trophy that belongs to the new south soccer team, trophy (2084).		BM21 BC03	Type 7 Secured to display surface	C2601.B

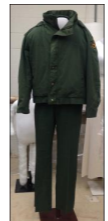






**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH</i>													<i>See notes at end of document</i>				
NA - Rotation	C2601	NA - Rotation	2084	Y (2 of 2)	Trophy		457.2	152.4	431.8			Placeholder image 	Part of refugee soccer team trophy rotation. Rotation 1 is the trophy belonging to The Fuggee's soccer team: trophy 2012, and Rotation 2 is the trophy is the trophy that belongs to the new south soccer team, trophy (2084).		NA - Rotation	-	-
EX-8-19	C2601	5	1920		planner, fugees		279.4 275 (database)	215.9 220 (database)					estimated 8.5 inches w x 11 inches H.		BM00 BM12	Type 4 Angled 75 degrees; Fixed to display surface	C22601.C
<b>Subsection:</b>		<b>Southwest Borderlands: Confluence and Conflict</b>															
<b>Grouping</b>		<b>Border Fence Between Mexicali and Calexico</b>															
EX-8-21	C2606	1	0005		Mexican border fence	U.S. Mexico Border Fence. Vintage metal chain link fencing mesh circa 1950's, with military tarmats, and new hardware from the U.S.-Mexico boarder. Four 10 foot sections of cyclone fencing and mesh overlap to form a thirty foot wall as follows: one horizontal 2 x 2 square support i-beam pole 17 feet in length, one horizontal 2 x 2 square support i-beam pole 13 feet in length, four verticle 2 x2 sqaure support i-beam poles, each 10 feet in length, four sections of Cyclone galvanized chain-link fencing mesh 10 foot height by 30 feet lenth when combined and attached together as suspended from horizontal support, six strands barbed wire, appprox 30 feet each, four cyclone barb-wire holders (arrowhead structures atop each of four verticle support structures), three military tarmats bolted to bottom of 2 x 2 verticle i-beams support poles, four welded metal anchors: one apiece for base of each 2 x 2 verticle i-beam support pole, additional hardware to bring the entire piece together as a solid structural sound whole.	3556	3200	508		200.94	 	Fence will be displayed on a plinth between the wall and the Border Patrol, Lost in Transit, and Dynamic Border Culture cases. There will be approximately 22 inches of space between the wall and the fence, and the fence and the cases. Keeping 22 inches of space free around the fence will make it easier to access and clean. In addition, the fence should be moved as far away from the side wall as possible, (HSD recommends 450 mm in workshop 14 notes but 550 mm would be better).  The assembled fence weighs approximately 400 pounds. It has not been decided how the weight should be distributed on the plinth.  We also need to consider how we will mount each of the horizontal fence patches. It might be possible to use the small hooks on the edges of the patches to hang them from a rod, (see G2199 for closeup of patch edges). Each of the horizontal patches weighs approximately 100 pounds.  Approximate dimensions of assembled fence (including triangular piece on top): 140 in (h) x 126 in (w) x 20 in (d). This will be updated as we get a better idea of how we're going to display the object.  Chain Link Section: Section "D" is 120 in (h) x approx. 120 in (w). chain-link patch on top left is 30 in (h) x 27 in (w) and sits 31 inches from the top of the fence/60 inches from the bottom. Webbing is slightly wider at the top		See drawing EX-5-13 for mount details	-	-

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH See notes at end of document</i>																	
<b>Grouping</b>	<b>The Border Patrol</b>																
EX-8-21	C2604					(1925-1929) Border Patrol Uniform without shoes <b>With T-shirt - ROTATION 1</b> H (without cap) 62.5" (without shoes -1587.50mm), estimated 63.5" (with shoes -1612.90mm) H (with cap) 73.5" (estimated total height with shoes -1866.9mm) W 16.5 inches (waist with belt -419.1mm) W 27.75 inches (sleeve to sleeve -704.85mm) D 14.5 inches (with belt -368.3mm) <b>With Jacket - ROTATION 2</b> W 28 (cuff to cuff -711.2mm) D 18inches (including arms slightly in front and hood on jacket -457.2mm)  <i>NOTE: Dimensions on email from C. Keppler dated 09/10/2015</i>								BC20	Fixed to case deck	-	
EX-8-21	C2604	11	1925		uniform, hat, baseball cap, border patrol officer	baseball cap style, solid back.	120	210	270				Invisible Mount for Hats		BC22	Plexi mount bonded to glass surface	-
EX-8-21	C2604	1	1927	Y (1 of 3) (2 of 3) (3 of 3)	badge, 1994 border patrol	J. Banco badge. Part of border patrol uniform.	76.2	50.8				TBD	estimated 3 inches H x 2 inches W		-	Entire uniform mounted on costume form.	-
EX-8-21	C2604	2	1928	Y (1 of 3) (2 of 3) (3 of 3)	pants, 1994 border uniform	size 36R. J. Banco	1040	440					approx 39 inches H x 16 inches W		-	Entire uniform mounted on costume form.	-
EX-8-21	C2604	3	1929	Y (1 of 3) (2 of 3) (3 of 3)	belt, 1994 border uniform	belt with utility/gadget holders	240			914.4			belt width is 5 cm but holster is 24 cm H. estimated 36 inch waist Part of 1994 Border Patrol Officer Uniform. Objects that make up border patrol uniform include: hat (1925), shirt (1926), badge (1927), pants (1928), belt (1929), shoes (1930), vest (1932)		-	Entire uniform mounted on costume form.	-
EX-8-21	C2604	4	1930	Y (1 of 3) (2 of 3) (3 of 3)	shoes, 1994 border uniform					254		TBD	estimated 10 inches long. USA size 9 woman's shoes. Part of 1994 Border Patrol Officer Uniform. Objects that make up border patrol uniform include: hat (1925), shirt (1926), badge (1927), pants (1928), belt (1929), shoes(1930), vest (1932)		BC23	Sits on case deck	-
EX-8-21	2604	5	2398	Y (1 of 3)	uniform, shirt, short sleeved	short sleeved Border Patrol shirt with RJ Fortunato name tag and captain bars on collar. Would need to add shoulder epaulet BP shields and badge from Banco.	860	550							-	Entire uniform mounted on costume form.	-

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**








Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
NA - Rotation	2604	NA - Rotation	2580	Y (2 of 3)	uniform, coat, border patrol	Border Patrol uniform coat, J Banco	TBD	TBD	TBD					NA - Rotation	-	-	
NA - Rotation	2604	NA - Rotation	1926	Y (3 of 3)	shirt, long sleeve border patrol (1994)	J. Banco Border Patrol shirt from 1995-2003 uniform. Just has shoulder patch	860	560						NA - Rotation	-	-	
<b>Grouping</b>	<b>Lost in Transit</b>																
EX-8-21	C2604	21	621	Y (1 of 2)	Fila sneakers	Pair of women's size 8 black lace-up sneakers; light fabric inside is discolored from dirt; 10 loops for laces are surrounded by discolored white stitching...	120	279.4	113				overall (toe to heel): 11 in; 27.94 cm another pair of sneakers may be selected for exhibition in it's place. decision pending.	BM00 BC23 BC12	Type 4 Angled 30 degrees; Fixed to display surface	C2604.A	
NA - Rotation	C2604	NA - Rotation	1971	Y (2 of 2)	Shoes, children's		101.6	101.6	203.2				per shoe: 8" long; 4" wide; 4" high	NA - Rotation	-	-	
EX-8-21	C2604	10	786		#1 Dad Frame	Metal picture frame that reads "#1 Dad". No picture inside.	161.925	101.6	15.875				6.25 inches H x 5.375 inches W x .75 inches D	BM21	Type 6 Sits on display surface	C2604.C	
EX-8-21	C2604	17	787		Deodorant	White 2.6 oz. stick of Sure Regular Scent Anti-Perspirant and Deodorant; white case is discolored and dirty;	140	55	40					BM00 BC10	Type 4 Sits on display surface	C2604.D	
EX-8-21	C2604	18	788		Razor	Black plastic two-blade disposable razor; rectangular handle has ridges and one open side; "DORUSA" inscribed on top of handle on side opposite blades; found in Buster's Wash in Tucson desert area near Mexican border.	104	41	20					BC02	Fixed to display surface	C2604.D	

*Info by NMAH See notes at end of document*

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**







Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-21	C2604	19	789		Toothbrush	White toothbrush with green grip down middle of handle on front and back sides; white and green bristles; found in Buster's Wash in Tucson desert area near Mexican border.	180	18	12						BC02	Fixed to display surface	C2604.D
EX-8-21	C2604	20	790		Toothpaste Tube	Small, travel-sized tube of Colgate Total	101	40	25						BC02	Fixed to display surface	C2604.D
EX-8-21	C2604	15	791		Comb found in the desert		150	30	5						BC02	Fixed to display surface	C2604.D
EX-8-21	C2604	6	1936	Y (1 of 2)	shirt, statue of liberty	Found in desert	812.8 (on mount)	685.8 (on mount)	355.6 (on mount)				Mounted textile dimensions: H 32 inches W 27 inches D 14 inches <i>NOTE: Dimensions on email from C. Keppler dated 09/10/2015 (different from database)</i>		BC20	Fixed to display surface  Invisible Mount for Tops Only	C2604.A
NA - Rotation	C2604	NA - Rotation	1942	Y (2 of 2)	jersey, orlando	Found in desert	692.15	438.15					27.25 inches H x 17.25 inches W		NA - Rotation	-	-
EX-8-21	C2604	12	1951		eye shadow		77.788	63.5	127				3 1/16 inches H x 2.5 inches W x 5 inches D (measured open)		BC12	Fixed to display surface	C2604.D
EX-8-21	C2604	16	1952		hair clips	two hair clips	12.7	44.45	12.7				each hair clip is: .5 inches H x 1.75 in W x .5 inches D		BC03	Fixed to display surface	C2604.D
EX-8-21	C2604	13	1955		mascara		114.3	19.05	12.7				4.5 inches H x .75 inches W x .5 inches D		BC02	Fixed to display surface	C2604.D

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-21	C2604	14	1960		make-up, lip gloss (red)		109.538	12.7	12.7				4 5/16 inches H x .5 inches W x .5 inches D (measured standing up)		BC02	Fixed to display surface	C2604.D
EX-8-21	C2604	8	1962	Y (1 of 2)	backpack	found in desert.	539.75	355.6	209.55				21 1/4 inches H x 14 inches W x 8 1/4 inches D		BM00 BC23	Type 4 Sits on display surface	C2604.B
NA - Rotation	C2604	NA - Rotation	623	Y (2 of 2)	Desert Crossing Backpack	Empty camouflage backpack; two zippered pockets on front; one zippered pocket on proper right side;	444.5	343	150				overall (left front side seam to right front side seam): 13 1/2 in; 34.29 cm; overall (top to bottom): 17 1/2 in; 44.45 cm		NA - Rotation	-	-
EX-8-21	C2604	9	1963	Y (1 of 2)	bottle, water		292	190.5	190.5				7.25 INCHES h X 7.5 INCHES d X 6.75 INCHES w		NA	Sits on display surface	C2604.A
NA - Rotation	C2604	NA - Rotation	785	Y (2 of 2)	Black Water Bottle	Black jug with handle; empty; probably held water; cap is missing;	317.5			5.809			12.5 inches H x 18.25 inch Circumference		NA - Rotation	-	-
EX-8-21	C2604	7	2419	Y (1 of 2)	Hat, baseball		127	228.6	317.5			Placeholder 	12. 5" from back to beak 9" wide from side to side 5" deep if filled out with a form Part of Desert Hat rotation:  Invisible Mount for Hats		BC22	Plexi mount bonded to glass surface	-
NA - Rotation	C2604	NA - Rotation	2483	Y (2 of 2)	hat, baseball		152.4	203.2	330.2				13" from back to beak 8" wide from side to side 6" deep – I sort of filled it out to see what it might look like if it were on a form Part of Desert Hat rotation: Rotation 1: (2419), Rotation 2: (2483)		NA - Rotation	-	-



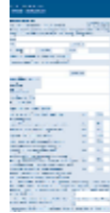




*Info by NMAH See notes at end of document*

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**





Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<p align="right"><i>Info by NMAH See notes at end of document</i></p>																	
<b>Sub-subsection: Dynamic Border Culture</b>																	
EX-8-21	Open Display	22	1964		hood, car	Remarks re Pieces = Modified 1959 El Camino.; Remarks re Pieces = Image of Virgin of Guadalupe in center, flanked by 1951 Chevy on left and 1959 El Camino on right; red rose in each corner, dove of peace in upper right corner, two white roses below, either side of center below white cloud; sparkle red background.	812.8	1390.7	12.7		68.04		Hood will flex if not properly braced.		See drawing EX-5-21 for mount details	-	-
EX-8-21	C2605	27	1967		accordion (yellow), Flaco Jimenez	Falco Jimenez	368.3	336.55	196.85		4		Display closed. 31 cm H x 19 cm W 14.5 inches H x 13.25 inches W x 7 3/4 inches D		BM20	Type 7 Sits on display surface	C2605.B
EX-8-21	C2605	23	1968		Tarima		139.7	571.5	460.375				5.5 inches H x 22.5 inches W x 18 1/8 inches D		NA	Sits on case deck	-
EX-8-21	C2605	24	1969		shoes, tarima		120.65	88.9	241.3				4.75 inches H x 3.5 inches W x 9.5 inches D		NA	Sits on Tarima (1968)	-
EX-8-21	C2605	25	1965		drum		280						11 inches H x 10 inches D		BM21	Type 6 Sits on display surface	C2605.A
EX-8-21	C2605	26	1966		Violin		609.6	127 482.6 (With bow)	127				24 inches H x 19 inches W (width of violin and bow together)		BC03	Support for both violin and bow; Fixed to case deck	-





**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH See notes at end of document</i>																	
<b>Subsection:</b>	<b>Transnational Lives</b>																
<b>Sub-subsection:</b>	<b>Remittances</b>																
EX-8-22	C2606	9	2420		Sign, Western Union		342.9	1016 (w or w/o arm? - NMAH to confirm)	158.75					BC00	Fixed to case back	-	
<b>Grouping:</b>	<b>International Air Travel</b>																
EX-8-22	C2606	10	952		passport		190.5 (open)	139.7					To display open: 4.875 W x 6.875 inches H open 7.5 inches H x 5.5 inches W	BM10 BC42	Type 2 Mounted on plex board; Fixed to display surface	C2606.F	
EX-8-22	C2606	13	953		Customs declaration form		254	101.6					estimated 8 1/8 H x 4 in W	BC42	Mounted on plex board; Fixed to display surface	C2606.F	
EX-8-22	C2606	11	836		card, Brocero Guest Worker		61.9125	96.8375					2 7/16 inches h x 3 13/16 inches w	BC03	Mounted on plex board; Fixed to display surface	C2606.F	
EX-8-22	C2606	8	998		model, 747 airplane	NMAH is being offered the use of two different model airplanes. Will the large plane fit? Will the smaller one be two small? Can HSD choose which one is best to use?	393.7	1651	1422	27.22			smaller plane: 56"L x 65" W x 15.5 - see note in hierarchy about positioning of cutout window - 1.42 x 1.651 x .393 meters) estimated weight 60 lbs.	BC03	Angled 50 degrees; Fixed to case back	-	
EX-8-22	C2606	12	2325	Y (1 of 2)	ticket, airlines	Maggie Lora's pan american air line ticket	112	197						BC42	Mounted on plex board; Fixed to display surface	C2606.F	
NA - Rotation	C2606	NA - Rotation	2328	Y (2 of 2)	ticket, airline baggage	Donation from Maggie Lora. Two pieces. Cover and ticket.	203.2	101.6					Estimated Dimensions: Cover: 4 inches W (101.6 mm) x 8 inches L (203.2), Ticket: 4 inches (101.6 mm) W x 6.5 inches L (165.1 mm)	NA - Rotation	-	-	

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH See notes at end of document</i>																	
<b>Grouping:</b>		<b>The Balikbayan Box, A Care Package</b>															
EX-8-22	C2606	14	2085 PROP		box, balikbayan		609.6	609.6	457.2			Placeholder 	Display with PROP contents. Contents yet to be chosen.		BM00	Type 4 Sits on display surface	C2606.G
EX-8-22	C2606	15	2361 PROP		Balikbayan Packing list		279.4	215.9					estimated 8.5 W by 11 inches H. Display next to Balikbayan box		BM10 BC42	Type 3 Fixed to display surface	C2606.H
<b>Sub-subsection:</b>		<b>Family Here and There</b>															
EX-8-22	C2606	7	1899		T-Shirt	Maryland is for Crabs	470	610					Invisible Mount.		BC21	Fixed to case back	-
EX-8-22	C2606	4	1901	Y (1 of 3)	Letter, Jenny to Daddy	Letter Jenny to Daddy, \$50.	212	168					Portrait.		BM10 BC42	Type 2 Mounted on plex board; Fixed to display surface	C2606.D
NA - Rotation	C2606	NA - Rotation	1912	Y (2 of 3)	Letter, Jenny to Daddy	Letter 8, Jenny to Daddy, Happy Birthday	175	214					Landscape		NA - Rotation	-	-
NA - Rotation	C2606	NA - Rotation	2067 PROP	Y (3 of 3)	Letter, Jenny to Daddy	Facsimile of object (1901). "Thank you for the \$50"	212	168					Image not facsimile. Image of object it is modeled after. Letter (1901)  21.2 cm H x 16.8 cm W  Will be third in Lares Family Letters rotation. Rotation 1: 1901, Rotation 2: 1912, Rotation 3: PROP 2067)		NA - Rotation		
EX-8-22	C2606	3	1910		Bag	Lares Family bag used to travel between Philippines and US.	690	390	230						BC22	Shaped padded insert; Extra plexi ring to support strap up; Sits on case deck	-

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**


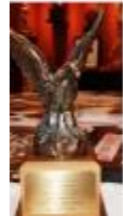



Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
EX-8-22	C2606	5	1935	Y (1 of 8)	cassette tape	Lares family cassette tapes .	64	101	12						BC03	Fixed to display surface	C2606.D
NA - Rotation	C2606	NA - Rotation	1938	Y (2 of 8)	cassette tape	Lares family cassette tapes .	64	101	12						NA - Rotation	-	-
NA - Rotation	C2606	NA - Rotation	1939	Y (3 of 8)	cassette tape	Lares family cassette tapes .	64	101	12						NA - Rotation	-	-
NA - Rotation	C2606	NA - Rotation	1940	Y (4 of 8)	cassette tape	Lares family cassette tapes .	64	101	12						NA - Rotation	-	-
NA - Rotation	C2606	NA - Rotation	2086	Y (5 of 8)	cassette tape	Lares family cassette tapes .	64	101	12						NA - Rotation	-	-
NA - Rotation	C2606	NA - Rotation	2095	Y (6 of 8)	cassette tape	Lares family cassette tapes .	64	101	12						NA - Rotation	-	-
NA - Rotation	C2606	NA - Rotation	2101	Y (7 of 8)	cassette tape	Lares family cassette tapes .	64	101	12						NA - Rotation	-	-
NA - Rotation	C2606	NA - Rotation	1937	Y (8 of 8)	cassette tape	Lares family cassette tapes .	64	101	12						NA - Rotation	-	-

*Info by NMAH See notes at end of document*

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH See notes at end of document</i>																	
EX-8-22	C2606	6	2002		Slam Book	Dim opened . Jenny Lares little notebook closed dims: 12.5 cm x 8.5 cm	250 (open)	85					Display open		BM00 BM12	Type 4 Angled 15 degrees; Include lower lip and support for pages when open (V- shaped); Fixed to display surface	C2606.E
EX-8-22	C2606	2	2003		Instruction card	Lares Family instruction card for travel, pinned to clothes. in plastic sleeve/holder Dims with clip	105	95					Dims with clip. Without clip: 10.5 x 8.5		BM00 BM12	Type 4 Angled 45 degrees; Fixed to display surface	C2606.B
EX-8-22	C2606	1	2066	Y (1 of 5)	ID, Lares Radiowealth		56	80					Part of Lares ID rotation. Rotation 1: 2006, Rotation 2: 1874, Rotation 3: 1876, Rotation : 1875, Rotation 5: 1897)		BM10 BC03	Type 3 Fixed to display surface	C2606.A
NA - Rotation	C2606	NA - Rotation	1874	Y (2 of 5)	Training Assistant ID	Manila Technician Institute	56	80							NA - Rotation	-	-
NA - Rotation	C2606	NA - Rotation	1876	Y (3 of 5)	Electronic Dept. ID Card	ID Card with Red border	64	105							NA - Rotation	-	-
NA - Rotation	C2606	NA - Rotation	1875	Y (4 of 5)	Student ID Card	University of the East (with glasses)	92	60							NA - Rotation	-	-
NA - Rotation	C2606	NA - Rotation	1897	Y (5 of 5)	Student ID Card	University of the East (without glasses)	93	58							NA - Rotation	-	-

**Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6**

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							
<i>Info by NMAH See notes at end of document</i>																	
<b>Grouping:</b>	<b>Working Across Nations</b>																
EX-8-22	C2606	17	926		coat, south Asian doctor's white		1016	762					30 inches wide from sleeve to sleeve, 40 inches from shoulder to hem.  image place holder not object.		BM00 BC20	Type 4 Fixed to display surface.  Invisible Mount for Tops Only	C2606.I
EX-8-22	C2606	18	1933		Dreamers Award	Vattikuti award	355.6	330.2	25.4				Height is 14"x Width is 13", Depth is 1"		BM00 BC12	Type 4 Angled 75 degrees; Fixed to display surface	C2606.J
EX-8-22	C2606	19	2111		Award, CBSI		400.05	222.25 (wings) 171.45 (base)	171.45				Base is 6 3/4" on all four sides, Wingspan is 8 3/4" wide, Height is 15 3/4"		NA	Sits on display surface	C2606.J
EX-8-22	C2606	16	1934		Robotic Arm		630	730	180				Dimensions by hsd as shown in photo  NOTE: final display articulation to be determined by NMAH in consultation with the manufacturer		BC01	Add extra support as needed to help articulate pieces; Fixed to display surface	C2606.I
EX-8-22	C2606	21	2426		visa, special		57.15	88.9	1.5875				Not object, image placeholder ***May have to block out personal information. estimated 3.5 inches W x 2.25 inches H x 1/16 inches D		BM10 BC42	Type 3 Mounted on plex board; Fixed to display surface	C2606.K
EX-8-22	C2606	20	2434 PROP		magazine, insight		276.225	400.05 (open)					Dimension Open: 10 7/8 inches H x 15 3/4 inches W. Only one page thick. Display Open.		BC12	Angled 15 degrees; Fixed to display surface	C2606.J
<b>Sub-subsection:</b>	<b>Marching with Liberty</b>																
EX-8-20	C2603		643		Tomato Lady Liberty	Folk art representation of Statue of Liberty holding a tomato instead of a torch. Used in march from Ft. Myers to Orlando, Florida in February 2000.	2514.6 (with base)	1130.3	1066.8		136.078		base to be covered with black fabric  Immokalee: H- 99 inches with base. Base is 1 inch H (thick) W – 44.5 inches D – remains the same. NOTE: Dimensions on email from C. Keppler dated 12/11/2015		BC01	Plexi rod as additional support for arm and basket; Fabric covered at base	-

Mount codes listed above are specified in the 'Mounts & Brackets Catalog' document. Refer back to the document for mount details.

Please refer to case layout drawings for angles and dimensions of display surfaces where applicable. Surface ID numbers are indicated as C2XXX.X (e.g. C2201.A) where the first part indicates the display case number followed by a letter identifier.

## Prop & Object Mounts List For: NMAH-2W - Many Voices, One Nation - Section 6

Drawing Number	Case No.	Key No. (on dwg)	Serial No. ↓	Rotation Y(#)	Object Name	Object Description	Dimensions (mm)				Weight (kg)	Image	Object Notes	Lighting (fc)	Mount / Support	Mount Details	Display Surface
							H	W	D	Diam							

*Info by NMAH*

*See notes at end of document*

### Mounts / Display Surface Detail Types

#### **Type 1**

Painted Angled Display Panel on a rod / fold support, fixed to case baseboard or back panel. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 2**

Painted vertical display blade, fixed to case baseboard, back or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 3**

Painted vertical display blade with angled surface, fixed to case baseboard or plinth top. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 4**

Display box (folded surface), painted. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 5**

Display box with angled surface (folded surface). Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 6**

Pedestal on rod – Horizontal display panel on rod, fixed to case baseboard. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

#### **Type 7**

Slotted shelf fixed to case back. Paint color to follow P1 specs unless otherwise specified. See Finishes List for details. All display surfaces and folds to have a consistent thickness of 32 mm.

### Finishes & Fixing

All Brackets, Rods and Pins to be painted metal to match case backs. See Case List for details on case back finishes. All mounts to provide a minimum object offset of 25 mm from display surfaces unless otherwise specified.

All Shaped and Moulded Panels to be plexi unless otherwise specified by NMAH Conservation.

All supports for Forms and Figures to be painted metal to match case backs. See Case List for details on case back finishes.

All costume mounts will be either fully three dimensional or flat with little depth (as specified in the drawings). The mounts will be minimally visible and fully support the garment. The three-dimensional mounts will be supported by an adjustable metal pole on a metal base. The mounting of the costumes is a NMAH responsibility.

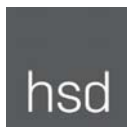
All Painting or Print Frames to have a painted simple and thin profile (no ornaments; max W 25.4 mm). Thickness and color (including mat where applicable) to be determined on a case by case basis in consultation with NMAH. Brackets or ledge (lip) to secure framed object to display surface affixed to sides or back to suit object.

All display boxes (folded surfaces) to be painted medite; a fabric wrapped top panel is optional. Paint color to follow P1 specs unless otherwise specified. Fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.

All Fabric Wrapped Boards fabric color to follow F1 specs unless otherwise specified. See Finishes List for details.



## 9.0 Lighting Design Narrative



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## Many Voices One Nation Gallery (95% Package Lighting Narrative)

April 7<sup>th</sup>, 2016

### Exhibition Lighting Intent

Many Voices One Nation is located within a 'black box' exhibition space with predominantly dark floor coverings. This gallery is one of two gallery experiences flanking a central concourse space in the 2<sup>nd</sup> Floor West area of the museum. Maintaining a continuity of lighting systems throughout this exhibit area will be of importance to ensure that the visitor experience flows seamlessly from one gallery to another. It will also serve to standardise operation and maintenance efforts from one gallery to another. While the two galleries contained in the 2<sup>nd</sup> Floor West area will share significant commonalities in their approach to lighting systems and technologies, the visual feel may be slightly different.

The Many Voices One Nation Gallery is an artifact sensitive area and careful lighting application and controls will be implemented to ensure the lighting systems do not adversely affect the objects on display. One area of note is the south side of the gallery where the space abuts the 2 West Concourse area and where spill light from this intermediate space must be considered. The thresholds and display walls have been configured to mitigate unwanted light spill from the concourse. Also, to the East end of the exhibition, two windows will remain glazed and will require a light abatement treatment to allow these spaces to be used for display.

### General lighting

The lighting design will be developed to both guide visitors through the space and illuminate section titles and graphics throughout the gallery. Many Voices One Nation is intended to be a dramatic and colorful exhibition which will make use of a harmonious gallery-wide color palette. General lighting will be balanced against in-case conservation requirements to ensure that walkways and walls are illuminated to a level that creates a dramatic atmosphere in which to present the collection and stories being told. A circulation lighting range of 5-10 foot-candles (54-108lux) may be appropriate but these levels will need to be coordinated and discussed as the design development continues. A portion of the general illumination will be from above, with light focused downward as required to create the appropriate level of illumination at floor level to guide visitors through the exhibition.

The illumination of graphics throughout the gallery will be carefully considered based on both the size and location of each graphic. While larger section titles and overall wall murals may be lit in a more general way, careful luminaire positioning and selection will be required for smaller graphics and object captions. More complex graphics will be illuminated in a layered approach, combining a wash of light to illuminate the overall field of the graphic and carefully chosen accents to highlight interpretive text or images within the graphic composition. Graphic lighting will also be sensitive to adjacent objects ensuring that spill light and bounce light do not adversely affect conservation requirements for nearby artifacts. In densely arranged cases, fiber optic systems will be employed to allow for very precise differentiation between artifacts and adjacent graphics.

The gallery's large display cases will be comprised of non-reflective panes of glass to minimize reflection concerns. In addition, lighting around cases will be carefully positioned with an eye to eliminating reflective issues.



Color temperature (CCT) has been considered to ensure the lighting works in harmony with the objects on display. Provisions will also be made for approximately one third of overhead lighting systems to be provided with color filters and/or spread lenses to allow for further refinement of the lighting design based on exhibit requirements.

The gallery lighting systems will be operated on a distributed dimming system controlled via DMX-512 from the gallery lighting control system and powered via the single phase lighting power distributed throughout the ceiling of the gallery space. This system will employ Electronic Theater Controls SmartBar dimmer sticks to remain in line with the base building lighting control intent.

The luminaires will be a mix of general use spotlights, very tight beam accent spotlights, and a limited number of pattern projectors, all located and coordinated per the lighting requirements of the exhibits and artifacts in each section of the gallery. The luminaires for this gallery are capable of receiving both halogen and LED PAR sources but will employ LED PAR 38 lamps by Soraa and Halogen AR 111's by Osram/Sylvania at the time of gallery opening. The luminaires in the gallery will connect via cord and plug to the distributed dimming system allowing for ease of relocation, adjustment, or replacement at any point in the future.

### Case Lighting

Case lighting within the gallery will be of key importance with focus being given to conservation requirements (which have been stated at between 3 and 5 foot candles for many objects), providing flexibility to allow for object change out and meeting accessibility guidelines.

Some of the display cases within the gallery are to be lit externally from above, taking care to not cast shadows from the case structures onto objects inside the case. Lighting levels for conservation within these cases will be managed through the gallery's distributed dimming system. The remaining cases will be lit with internal fiber optic systems. Fiber optic lighting systems will be supplied by Luxam Lighting and tailored to each individual case. Per the requirements of the Smithsonian Institute, no substitutions of specified Luxam fiber optic equipment will be accepted on this project. Careful consideration is required when lighting inside the cases to retain careful lighting control for sensitive objects yet allow the included graphics to be adequately illuminated. For larger cases, multiple fiber optic illuminators may be employed to allow for different light output levels between those illuminators tasked for artifacts and those tasked for graphics illumination.

Key artifacts should be *perceived* as being lit at a greater intensity than neighbouring artifacts with appropriate consideration given to the conservation requirements. This effect may be aided by placing key artifacts in front of graphics that are predominantly dark in color and directing this more intense light onto the graphic.

### Audio/Visual

In a number of locations, AV screens and projections are interspersed among the artifacts and graphics. Lighting will not hamper the AV screen visibility and will not detract from the dramatic impact of the projections. This will be accomplished via aiming angles, anti-glare accessories and dimmed levels of light as required.



**Gobos (theatrical lighting effects)**

A provision for textured lighting effects (gobos and pattern projectors) in a limited number of locations has been included in the lighting design. For example, patterns evocative of light shining through a chain link fence has been employed as a textural element around the display platform holding the Border Fence in Section 6: Changing Face of a Nation.

**Gallery Lighting Controls**

All lighting systems within the gallery will be controlled via a central gallery lighting control system as provided in the Ewing Cole base building package. This lighting control system will provide all necessary digital control signals to the gallery lighting systems as well as lighting "preset" playback capabilities allowing for the quick recall of pre-programmed lighting levels. The lighting control system provided in the Ewing Cole drawings includes an LCD touch-screen control panel. The exact location of this panel will be confirmed in the field and coordinated with the placement of exhibit graphics.

The gallery lighting control system will be programmed with such presets as are required by the Smithsonian Institute operations staff. These presets will include, but are not limited to, the following:

- Morning Maintenance – All display cases and exhibit lighting on at a low level to check the functionality of all gallery lighting systems.
- Exhibit Open – Lighting systems on to their proper levels for normal museum operations.
- Evening Maintenance – Exhibit lighting systems turned on to a low level. All fiber optic lighting systems turned off.
- Overnight Security – 1 foot-candle (10lux) average along the path of egress and in any areas which need to be illuminated for safety reasons.

All lighting presets will be further coordinated on site with the museum staff and exhibit design team to ensure that the programmed lighting levels comply with all curatorial requirements.

**Gallery Lighting Sequence of Operations**

The following is the standard sequence of operations for the lighting systems in the gallery based on the above noted lighting presets. It is assumed that, barring any action by Smithsonian personnel, the "Overnight Security Lighting" preset activated the previous evening will be active at the start of this sequence.

<i>Time/Event</i>	<i>Lighting Operation &amp; Triggering Method</i>
<b>6:00am</b>	<ul style="list-style-type: none"> <li>• "Morning Maintenance" preset activates</li> <li>• Triggered by internal time clock</li> </ul>
<b>Gallery Opens</b>	<ul style="list-style-type: none"> <li>• "Exhibit Open" preset activates</li> <li>• Triggered by dry contact closure from A/V system when media and interactives power on for the day</li> </ul>
<b>Gallery Closes</b>	<ul style="list-style-type: none"> <li>• "Evening Maintenance" preset activates</li> <li>• Triggered by dry contact closure from A/V system when media and interactives power off for the day</li> </ul>
<b>Gallery Closes +90 Minutes</b>	<ul style="list-style-type: none"> <li>• "Overnight Security" preset activates</li> <li>• Triggered automatically on a 90 minute internal delay from the activation of the "Evening Maintenance" preset.</li> </ul>

This sequence of events is to be confirmed with Smithsonian personnel prior to final implementation of the lighting control systems in this gallery.



9.1 Lighting matrix

<i>Luminaire Type</i>	<i>Design Qty</i>	<i>10% Spares</i>	<i>Total Luminaires Required</i>
<b>DIM</b>	28	3	<b>31</b>
<b>DMX-4</b>	5	1	<b>6</b>
<b>GA</b>	49	5	<b>54</b>
<b>LA</b>	9	1	<b>10</b>
<b>T</b>	1	1	<b>2</b>
<b>TA</b>	44	5	<b>49</b>
<b>TA-S</b>	2	1	<b>3</b>
<b>TA-W</b>	3	1	<b>4</b>
<b>TB</b>	46	5	<b>51</b>
<b>TB-S</b>	1	1	<b>2</b>
<b>TB-W</b>	1	1	<b>2</b>
<b>TC</b>	15	2	<b>17</b>
<b>TF</b>	17	2	<b>19</b>
<b>TG</b>	4	1	<b>5</b>



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															VLT	LW	TLW	PANEL TYPE	GFI	CONTROL TYPE	DMX Start			DMX Qty
	001	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	002	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	003	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	004	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	005	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	006	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	007	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	008	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	009	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
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	012	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	013	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	014	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	015	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	016	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.



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															VLT	LW	TLW	PANEL TYPE	GFI	CONTROL TYPE	DMX Start			DMX Qty
	017	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	018	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	019	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	020	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	021	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	022	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	023	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	024	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	025	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	026	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	027	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	101	TB	Lighting Services Inc. (LSI)	LN36	LN36-2G-B		Black	100% Glass Color Filter Size A 75% C990 Linear Spread Lens	0.7	Unistrut Mounted	Osram Sylvania: 35AR111/SSP4/12V	3000	3,000	1	120 prim. 12 sec.	35	35	SmartBar 2		DIM				
	102	TB	Lighting Services Inc. (LSI)	LN36	LN36-2G-B		Black	100% Glass Color Filter Size A 75% C990 Linear Spread Lens	0.7	Unistrut Mounted	Osram Sylvania: 35AR111/SSP4/12V	3000	3,000	1	120 prim. 12 sec.	35	35	SmartBar 2		DIM				
	103	TB	Lighting Services Inc. (LSI)	LN36	LN36-2G-B		Black	100% Glass Color Filter Size A 75% C990 Linear Spread Lens	0.7	Unistrut Mounted	Osram Sylvania: 35AR111/SSP4/12V	3000	3,000	1	120 prim. 12 sec.	35	35	SmartBar 2		DIM				
	104	TB	Lighting Services Inc. (LSI)	LN36	LN36-2G-B		Black	100% Glass Color Filter Size A 75% C990 Linear Spread Lens	0.7	Unistrut Mounted	Osram Sylvania: 35AR111/SSP4/12V	3000	3,000	1	120 prim. 12 sec.	35	35	SmartBar 2		DIM				
	105	TB	Lighting Services Inc. (LSI)	LN36	LN36-2G-B		Black	100% Glass Color Filter Size A 75% C990 Linear Spread Lens	0.7	Unistrut Mounted	Osram Sylvania: 35AR111/SSP4/12V	3000	3,000	1	120 prim. 12 sec.	35	35	SmartBar 2		DIM				
	106	TB	Lighting Services Inc. (LSI)	LN36	LN36-2G-B		Black	100% Glass Color Filter Size A 75% C990 Linear Spread Lens	0.7	Unistrut Mounted	Osram Sylvania: 35AR111/SSP4/12V	3000	3,000	1	120 prim. 12 sec.	35	35	SmartBar 2		DIM				
	107	TB	Lighting Services Inc. (LSI)	LN36	LN36-2G-B		Black	100% Glass Color Filter Size A 75% C990 Linear Spread Lens	0.7	Unistrut Mounted	Osram Sylvania: 35AR111/SSP4/12V	3000	3,000	1	120 prim. 12 sec.	35	35	SmartBar 2		DIM				
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	109	TB	Lighting Services Inc. (LSI)	LN36	LN36-2G-B		Black	100% Glass Color Filter Size A 75% C990 Linear Spread Lens	0.7	Unistrut Mounted	Osram Sylvania: 35AR111/SSP4/12V	3000	3,000	1	120 prim. 12 sec.	35	35	SmartBar 2		DIM				















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REV	Luminaire Number	Type	Manufacturer	Name	Catalog No.	Power Supply	Finish	Accessories	WEIGHT kg (each)	Install Height (m)	LAMP	LED Lamp Lumens	LL hrs	LQ	Lighting Power			Control				FOCUS	NOTES	
															VLT	LW	TLW	PANEL TYPE	GFI	CONTROL TYPE	DMX Start			DMX Qty
	406	LA	Tokistar	Exhibitor Series	EXC-6-WW-G19-F + EXC-EC		Satin Aluminum			Exhibit Mount	LED by Manufacturer	62.5	40,000	5	120 prim. 24 sec.	0.48	2.4	SmartBar 2		DIM			Thematic Sports Light	Fixture length to be 1 meter with 5 lamps, spaced 150mm on center, starting from one end. Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	407	LA	Tokistar	Exhibitor Series	EXC-6-WW-G19-F + EXC-EC		Satin Aluminum			Exhibit Mount	LED by Manufacturer	62.5	40,000	5	120 prim. 24 sec.	0.48	2.4	SmartBar 2		DIM			Thematic Sports Light	Fixture length to be 1 meter with 5 lamps, spaced 150mm on center, starting from one end. Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	408	LA	Tokistar	Exhibitor Series	EXC-6-WW-G19-F + EXC-EC		Satin Aluminum			Exhibit Mount	LED by Manufacturer	62.5	40,000	5	120 prim. 24 sec.	0.48	2.4	SmartBar 2		DIM			Thematic Sports Light	Fixture length to be 1 meter with 5 lamps, spaced 150mm on center, starting from one end. Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	409	LA	Tokistar	Exhibitor Series	EXC-6-WW-G19-F + EXC-EC		Satin Aluminum			Exhibit Mount	LED by Manufacturer	62.5	40,000	5	120 prim. 24 sec.	0.48	2.4	SmartBar 2		DIM			Thematic Sports Light	Fixture length to be 1 meter with 5 lamps, spaced 150mm on center, starting from one end. Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	410	TA-W	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring. No Cross Baffle)	C-15187-2-SSL238-C2		White	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Track Mount	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	411	TA-W	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring. No Cross Baffle)	C-15187-2-SSL238-C2		White	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Track Mount	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	412	TA-W	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring. No Cross Baffle)	C-15187-2-SSL238-C2		White	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Track Mount	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	413	TB-W	Lighting Services Inc. (LSI)	LN36	LN36-00-W		White	100% Glass Color Filter Size A 75% C990 Linear Spread Lens	0.7	Track Mount	Osram Sylvania: 35AR111/SSP4/12V	3000	3,000	1	120 prim. 12 sec.	35	35	Track		DIM				
	414	TA-S	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring. No Cross Baffle)	C-15187-3-SSL238-C2		Silver	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Existing Track mount	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	415	TA-S	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring. No Cross Baffle)	C-15187-3-SSL238-C2		Silver	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Existing Track mount	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM				Luminaire to include Louver and Backer Ring, no Cross Baffle.
	416	TB-S	Lighting Services Inc. (LSI)	LN36	LN36-00-S		Silver	100% Glass Color Filter Size A 75% C990 Linear Spread Lens	0.7	Existing Track mount	Osram Sylvania: 35AR111/SSP4/12V	3000	3,000	1	120 prim. 12 sec.	35	35	Track		DIM				
	417	T	Lighting Services Inc. (LSI)	Surface Track	32320		White		1.8	Surface Mounted	N/A	N/A	N/A	N/A	120	N/A	N/A	DRd Paradigm		DIM			Threshold Track	Length = 2400mm Exact Bill of Materials to be coordinated by Electrical Contractor with Manufacturer.
	501	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring. No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	502	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring. No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	503	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring. No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	504	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring. No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	505	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring. No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.



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95% Package Lighting Matrix

REV	Luminaire Number	Type	Manufacturer	Name	Catalog No.	Power Supply	Finish	Accessories	WEIGHT kg (each)	Install Height (m)	LAMP	LED Lamp Lumens	LL hrs	LQ	Lighting Power			Control				FOCUS	NOTES	
															VLT	LW	TLW	PANEL TYPE	GFI	CONTROL TYPE	DMX Start			DMX Qty
	506	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	507	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	508	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	509	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	510	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	511	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	512	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	513	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	514	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	515	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	516	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	517	TA	Lighting Services Inc. (LSI)	SSL238 (Includes Louver and Backer Ring, No Cross Baffle)	C-15187-1-SSL238-C2		Black	100% Glass Color Filter Size C 75% C995 Spread Lens 25% C990 Linear Spread Lens	0.7	Unistrut Mounted	Soraa: SP38-18-09D-930-03	1000	35,000	1	120	18.5	18.5	SmartBar 2		DIM			Security Lighting	Luminaire to include Louver and Backer Ring, no Cross Baffle.
	901	DIM	Electronic Theater Controls (ETC)	SmartBar 2	SB4-10-A + 400SC		Black		8.2	Above Ceiling Grid	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX	105		Distributed Dimmed Power	Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	902	DIM	Electronic Theater Controls (ETC)	SmartBar 3	SB4-10-A + 400SC		Black		8.2	Above Ceiling Grid	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX	101		Distributed Dimmed Power	Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	903	DIM	Electronic Theater Controls (ETC)	SmartBar 4	SB4-10-A + 400SC		Black		8.2	Above Ceiling Grid	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX	097		Distributed Dimmed Power	Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	904	DIM	Electronic Theater Controls (ETC)	SmartBar 5	SB4-10-A + 400SC		Black		8.2	Above Ceiling Grid	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX	093		Distributed Dimmed Power	Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	905	DIM	Electronic Theater Controls (ETC)	SmartBar 6	SB4-10-A + 400SC		Black		8.2	Above Ceiling Grid	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX	089		Distributed Dimmed Power	Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	906	DIM	Electronic Theater Controls (ETC)	SmartBar 7	SB4-10-A + 400SC		Black		8.2	Above Ceiling Grid	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX	085		Distributed Dimmed Power	Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.


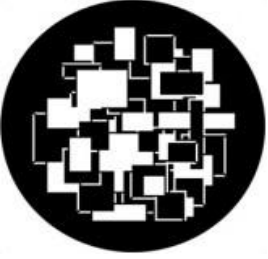




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95% Package Lighting Matrix

REV	Luminaire Number	Type	Manufacturer	Name	Catalog No.	Power Supply	Finish	Accessories	WEIGHT kg (each)	Install Height (m)	LAMP	LED Lamp Lumens	LL hrs	LQ	Lighting Power			Control				FOCUS	NOTES	
															VLT	LW	TLW	PANEL TYPE	GFI	CONTROL TYPE	DMX Start			DMX Qty
	926	DIM	Electronic Theater Controls (ETC)	SmartBar 27	SB4-10-A + 400SC		Black		8.2	Above Ceiling Grid	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX	013		Distributed Dimmed Power	Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	927	DIM	Electronic Theater Controls (ETC)	SmartBar 28	SB4-10-A + 400SC		Black		8.2	Above Ceiling Grid	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX	005		Distributed Dimmed Power	Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	928	DIM	Electronic Theater Controls (ETC)	SmartBar 29	SB4-10-A + 400SC		Black		8.2	Above Ceiling Grid	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX	001		Distributed Dimmed Power	Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.
	951	DMX-4	Elation	Opto Branch	Opto Branch-4		Black		2.4	In Cable Tray	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX			DMX Distribution	Exact layout of DMX-512 distribution equipment to be confirmed by Systems Integrator prior to final order.
	952	DMX-4	Elation	Opto Branch	Opto Branch-4		Black		2.4	In Cable Tray	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX			DMX Distribution	Exact layout of DMX-512 distribution equipment to be confirmed by Systems Integrator prior to final order.
	953	DMX-4	Elation	Opto Branch	Opto Branch-4		Black		2.4	In Cable Tray	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX			DMX Distribution	Exact layout of DMX-512 distribution equipment to be confirmed by Systems Integrator prior to final order.
	954	DMX-4	Elation	Opto Branch	Opto Branch-4		Black		2.4	In Cable Tray	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX			DMX Distribution	Exact layout of DMX-512 distribution equipment to be confirmed by Systems Integrator prior to final order.
	955	DMX-4	Elation	Opto Branch	Opto Branch-4		Black		6.4	In Cable Tray	N/A	N/A	N/A	N/A	120	N/A	N/A	Non-Dim		DMX			DMX Distribution	Exact layout of DMX-512 distribution equipment to be confirmed by Systems Integrator prior to final order.

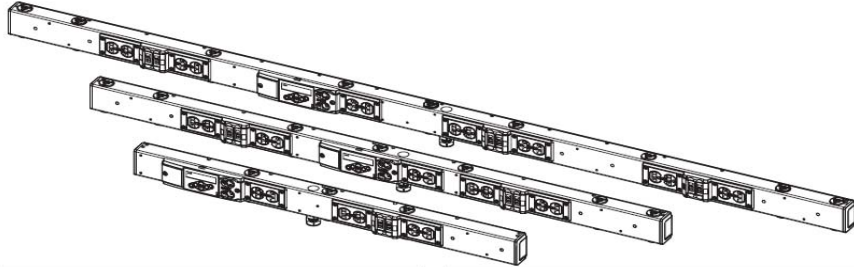
2 West - Many Voices One Nation Gallery  
 Washington DC  
 95% Lighting Accessory Matrix

Gallery #	REV	Types	Manufacturer	Catalog No.	Name	Size	Image	Quantity	NOTES
Many Voices One Nation		TC	Rosco	78258	Chain Link	A		2	
" "		TC	Rosco	74009	Symmetric 9	A		16	
" "		TA, TA-S, TA-W	LSI	C995	Universal Spread Lens	C		42	
" "		TA, TA-S, TA-W	LSI	C990	Linear Spread Lens	C		14	
" "		TA, TA-S, TA-W	LSI	TBD	Glass Color Filter	C		56	Exact colored glass selection to be coordinated by Fabricator with Lighting Designer during shop drawing review.
" "		TB, TB-S, TB-W	LSI	TBD	Glass Color Filter	A		55	Exact colored glass selection to be coordinated by Fabricator with Lighting Designer during shop drawing review.
" "		TB, TB-S, TB-W	LSI	A990	Linear Spread Lens	A		42	



9.2 Lighting cut sheets





GENERAL INFORMATION

SmartBar 2 is ETC's latest innovation in ETC's Smart Solutions Family, giving you next generation dimming for portable or permanent installations without busting your budget.

Set up your system and light like a pro. Just plug in and play anytime, anywhere.

APPLICATIONS

- Applications requiring distributed dimming and position flexibility:
  - Industrial productions
  - Rental productions
  - Convention and conference centers
  - Museums
  - Casinos
  - Discos
  - Multi-use venues: Gymnasiums, Cafeteriums, Multimedia rooms

FEATURES

- Convection cooled
  - No fans required
- Fixture Mount
  - Integrated fixture suspension points
- Easy Focus
  - Integrated nylon bushings
- Top or bottom feed
- Up to 1200 watts max per output
- Easy Reset
  - Resettable breaker output protection
- RDM Enabled
  - DMX512A w/RDM Remote Addressing
- Smart UI
  - Graphic level display
  - Quick setup menus
  - Button shortcut for manual control
  - User-selectable dimmer curves
  - 20 chases (preprogrammed sequences)

ORDERING INFORMATION

SmartBar 2

MODEL	DESCRIPTION
SB2-10-A	2 Circuit SmartBar 2, 1 x 20A Cable in, Dual Edison output
SB2-10-B	2 Circuit SmartBar 2, 1 x 20A Cable in, Stage Pin output
SB2-10-C	2 Circuit SmartBar 2, 1 x 20A Cable in, Twist-Lock* output
SB4-10-A	4 Circuit SmartBar 2, 1 x 20A Cable in, Dual Edison output
SB4-10-B	4 Circuit SmartBar 2, 1 x 20A Cable in, Stage Pin output
SB4-10-C	4 Circuit SmartBar 2, 1 x 20A Cable in, Twist-Lock output
SB4-10X-A*	4 Circuit SmartBar 2, Bi-phase (2 x 20A) Single Cable in, Dual Edison output
SB4-10X-B*	4 Circuit SmartBar 2, Bi-phase (2 x 20A) Single Cable in, Stage Pin output
SB4-10X-C*	4 Circuit SmartBar 2, Bi-phase (2 x 20A) Single Cable in, Twist-Lock output
SB6-10X-A*	6 Circuit SmartBar 2, Bi-phase (2 x 20A) Single Cable in, Dual Edison output
SB6-10X-B*	6 Circuit SmartBar 2, Bi-phase (2 x 20A) Single Cable in, Stage Pin output
SB6-10X-C*	6 Circuit SmartBar 2, Bi-phase (2 x 20A) Single Cable in, Twist-Lock output
SB6-10Y-A	6 Circuit SmartBar 2, 3 phase Cable in, Dual Edison output
SB6-10Y-B	6 Circuit SmartBar 2, 3 phase Cable in, Stage Pin output
SB6-10Y-C	6 Circuit SmartBar 2, 3 phase Cable in, Twist-Lock output

Note: For top feed, add a T to the input code (example: SB4-10XTB)

\* (-10X) Bi-phase models split Auxiliary, 1, and 2 circuits on phase 1 with circuits 3-6 on incoming phase 2.



project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: **abernathy lighting design**

Issue Date: 04/07/16  
 95% PACKAGE

type

**DIM**

SPECIFICATIONS

GENERAL

- 2, 4 or 6 dimmer versions available
- 1200 watt max per channel output
- UL / cUL Listed
- Installation requires attachment of safety cables, main power via flexible cable and data via DMX

MECHANICAL

- Manufactured of strong, thick walled aluminum with a black baked powder-coat finish
- Integrated, sleeved suspension points for fixtures and for mounting hardware
- Supplied with 4-1/2" long, 1/2" bolts and appropriate hardware for fixture mounting
- Convection cooled - operates without cooling fans or filters
- Sealed enclosure prevents dirt and dust intrusion

ELECTRICAL

- 85-140V phase to neutral 47-63Hz
- Input power feed (top or bottom feed)- 20A max per phase
- 2 Circuit - Single phase 2-wire Plus ground
- 4 Circuit- Choice of power entry
  - Single 12/3 50 cable for 120V hot/neutral/ground feed
  - Single 12/4 50 cable for 120/240V single (bi/2) phase feeds
- 6 Circuit - Choice of power entry
  - Single 10/5 50 cable for 120/208V three phase feeds
  - Single 12/4 50 cable for 120/240V single (bi/2) phase feeds
- Input power via an attached flexible 12' 50 feed cord and bare-ends (connector not supplied)
- 2500V isolation between control and power components
- Total load can not exceed capacity of main power connection (wall outlet, 15A, 20A per phase)
- 75W minimum load per dimmer
- Dual Edison, Stage Pin or Twist-Lock outlets (1 per circuit)
- Single duplex auxiliary outlet centered on bar
- 10A magnetic supplemental circuit breaker for each output

THERMAL

- Maximum ambient temperature of 104°F (40° C)
- Humidity between 10 - 95% non-condensing
- Natural convection cooling
- Optimum cooling when mounted horizontally

CONTROL FEATURES

- DMX512 In and Thru via 5 Pin XLR connectors
- Supports up to 32 SmartBar 2s on one DMX line
- High contrast 2-line by 20-character backlit LCD with graphic channel level indication
- 6-button smart style keypad
- 2 status LED indicators: Power and Valid DMX
- Soft patch any dimmer to any DMX channel
- Five selectable dimmer output curves:
  - IES modified square law
  - Linear
  - Switched (50% threshold)
  - Fluorescent with adjustable cut-off
  - Adjustable Pre-Heat
- Local manual control and 20 chase patterns for stand alone operation
- Multi-Language capability - English, Spanish, German, and French

ADDITIONAL INFORMATION

SmartBar 2 Accessories

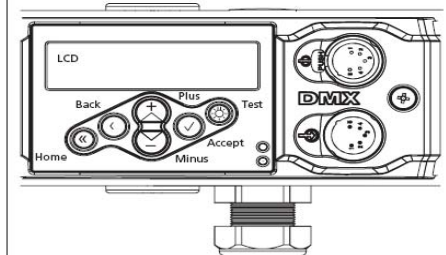
MODEL	DESCRIPTION
400CC	C-Clamps
400SC	Safety cable
ST	SmartStand and adapter (casters optional)
SB2-2BOLTS	Spare Bolt kit for two circuit SmartBar 2
SB2-4BOLTS	Spare Bolt kit for four circuit SmartBar 2
SB2-6BOLTS	Spare Bolt kit for six circuit SmartBar 2

Suggested Fixtures

MODEL	DESCRIPTION
S4 jr	Source Four junior or junior zoom ellipsoidals
S4 PAR	Source Four PAR EA or MCM*
S4	Source Four ellipsoidals*

\* Suggested lamp size of 375W or 575W for the single phase 4 channel bar based on 16A constant power capacity of most 20A branch breakers.

CONTROL PANEL



project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: **abernathy lighting design**

Issue Date: 04/07/16  
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type

**DIM**

PHYSICAL

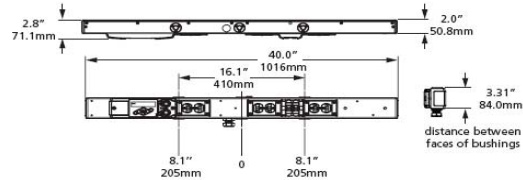
SmartBar 2 Dimensions

MODEL	HEIGHT		WIDTH		LENGTH	
	inches	mm	inches	mm	inches	mm
SB2	3.31	84.0	2.0	50.8	40.0	1016
SB4	3.31	84.0	2.0	50.8	59.7	1516
SB6	3.31	84.0	2.0	50.8	87.3	2216

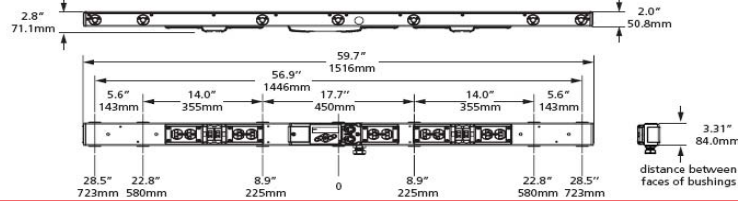
SmartBar 2 Weights

MODEL	WEIGHT		SHIPPING WEIGHT	
	lbs	kgs	lbs	kgs
SB2	14	6.4	19	8.6
SB4	18	8.2	23	10.4
SB6-10	29	13.2	34	15.4

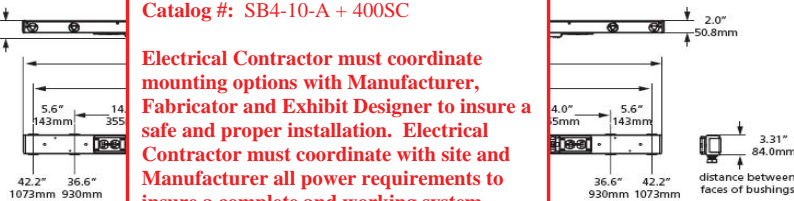
SB2



SB4



SB6



**Catalog #: SB4-10-A + 400SC**  
**Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.**



- Opto Branch 4**
- 4-way DMX distributor
  - 19" rack mountable - single space
  - 1 x DMX input, 4 x DMX outputs & 1 DMX thru
  - All outputs are electronically & optically isolated
  - 3 & 5 pin XLR DMX connectors
  - Data + & Data - L.E.D. indicators
  - Link out/terminate button for troubleshooting
  - 50mA internal fuse
  - Dimensions: 19" L x 5.5"W x 1.73"H
  - Weight: 3.29 lbs
  - Power input: 120VAC ~ 60Hz
  - Internal fuse: OSA 250V (5x20m)

www.elationlighting.com  
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**Catalog #: Opto Branch - 4**



Corporate Headquarters • 2031 Pleasant View Rd, PO Box 620979, Middleton WI 53562 0979 USA • Tel +1 608 831 4116 • Fax +1 608 836 1736  
 London, UK • Unit 25-28, Victoria Industrial Estate, Victoria Road, London W3 6UJ, UK • Tel +44 (0)20 8896 1000 • Fax +44 (0)20 8896 2000  
 Rome, IT • Via Pieve Torina, 48, 00156 Rome, Italy • Tel +39 (06) 32 111 683 • Fax +44 (0)20 8752 8486  
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 Web • www.etcconnect.com • Copyright©2011 ETC. All Rights Reserved. All product information and specifications subject to change. 7543L1001 Rev. D Printed in USA 03/11

project: Many Voices One Nation project #: 14.600.01 prepared for: Haley Sharpe Design Limited prepared by: <b>abernathy lighting design</b>	Issue Date: 04/07/16 95% PACKAGE	type <h1>DIM</h1> page 3 of 3
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project: Many Voices One Nation project #: 14.600.01 prepared for: Haley Sharpe Design Limited prepared by: <b>abernathy lighting design</b>	Issue Date: 04/07/16 95% PACKAGE	type <h1>DMX-4</h1> page 1 of 2
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**OPTO BRANCH-4**  
4 Way DMX Distributor/Booster

User Instructions

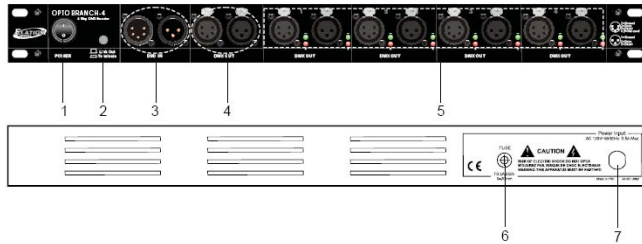
**Product Description**

This is a 19" single rack space, 4-way DMX distributor/booster with 3 and 5 pin XLR input jacks. This unit takes the incoming DMX signal and splits it to four separate outputs. All outputs include 3 & 5 pin XLR sockets and are electronically isolated from each other to ensure uninterrupted data. In addition, each output has dedicated drivers to boost the incoming signal. Finally, a Link Out/Terminate switch is in place to help make any troubleshooting easier.

**Technical specifications**

**Power Input** ..... AC 120V~50/60Hz, 0.5A  
**DMX Connectors** ..... 3 and 5-pin XLR sockets  
**Fuse** ..... F0.5A 250V 5x20mm  
**Dimensions** ..... 19"x5.51"x1.73" (482x140x44mm)  
**Weight** ..... 5.3lbs.(2.4kg.)

**Product Overview:**



1. **Power Switch:** This switch turns the device ON and OFF.
2. **Link Out / Terminate switch:** This switch is primarily used for troubleshooting. When the switch is in the "Terminate" position, DMX output (4) is disabled. When the switch is in the "Link Out" position, signal to output (4) is enabled and additional devices can be linked.
3. **DMX Input:** These jacks are used to receive incoming DMX512 signal.
4. **DMX Output:** These sockets should be used to link out to standard DMX512 devices.
5. **DMX Output/ W Driver:** These four DMX outputs should be connected to DMX512 compatible fixtures or packs.
6. **Fuse:** F0.5A 250V 5x20mm (There are five total fuses. One main external and four internal, one for each output.)
7. **Power Input:** AC 120V~50/60Hz, 0.5A

**WARNING!!!**

1. This device must be grounded.
2. To prevent fire, shock or hazard, do not expose this device to water or high levels of humidity.
3. This product is intended for indoor use only.
4. Always replace with the same type fuse.

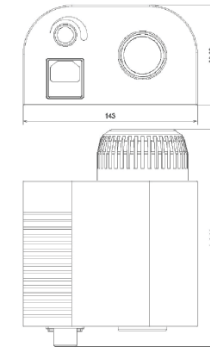
24-004-1543  
Rev 1.2

project: Many Voices One Nation project #: 14.600.01 prepared for: Haley Sharpe Design Limited prepared by: <b>abernathy lighting design</b>	Issue Date: 04/07/16 95% PACKAGE	type <b>DMX-4</b> page 2 of 2
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**35W Fiber Optic Power Led Illuminator**

**ED-PLG01**

**Fiber Optic Case Lighting System**



**Museum Showcase Lighting**

- Intended specifically for a Museographic use.
- Case in 1mm steel sheet, indoor use, in dry environment.
- Black powder coating
- Electronic transformer
- Built in dimmer
- Multivoltage : 120V to 240V
- Total power consumption: 35W
- Color temperature : 3100°K
- Cooling by ultra silent Synjet® cooler
- High efficiency: the power of a 150W halogen for only 35W of total consumption
- High fiber optic capacity: Ø12mm effective diameter / 24 — Ø2mm fibers
- Life span: over 40000 Hours

Weight: 2.5Kg Dimensions: 82 X 143 X 178 (mm)

CE (EN60598-1, EN60598-2-6, EN60598-2-19)

Order code : 10-610



project: Many Voices One Nation project #: 14.600.01 prepared for: Haley Sharpe Design Limited prepared by: <b>abernathy lighting design</b>	Issue Date: 04/07/16 95% PACKAGE	type <b>GA</b> page 1 of 7
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Recommended fiber tails per bundle

Series	Nano/Micro	Micro	Mini	Mini	Mini
Lamp	1.5mm	2mm	3mm	4mm	5mm
Tails	Optimal/max	Optimal/max	Optimal/max	Optimal/max	Optimal/max
35W	14/19	10/14	6/8	4/6	N/A
50W	50/70	32/40	18/26	12/16	7/10
100W	28/32	16/24	11/14	7/10	5/7
150	54/76	34/44	22/28	12/18	9/12
MH					
LED	N/A	24	N/A	N/A	N/A
24					

To specify bundles :

Fiber active diameter x # tails x length

Example – 2mm x 16 x 12'

Individual staggered tail lengths available. Mixed bundles of fiber diameters available. 1.5mm and 2mm tails can be cut and polished on site.

**Custom fiber bundles of any length and combination of diameters available as standard order.**

Maximum tail length for optimal performance is recommended to be less than 20'.



Micro/Nano Bundle



Mini bundle w/ferrules



Common connector—factory polished

**Features :**

		10-610
Voltage	V	120 / 240
Frequency	Hz	47 / 63
Total power consumption	W	35
Electric class		Classe I
Protection index		IP20
Transformer with thermal fuse		Electronic
Lamp type		Power LED
LED wattage	W	27 W
Color temperature	K	3100
Life	h	40 000
Light level measured at the output	Lumen	1000
Maximum number of tails		100 fibers CAX1 / 25 fibers CAX2
Effective output diameter	mm	12
Operating temperature	°C	+5 < t <sub>a</sub> < +40
Dimensions	Mm / inch	82 x 143 x 178 / 3.22 x 5.62 x 7
Weight	Kgs / lbs	2,5 / 5

Luxam, Inc.

1-800-995-8926 p. 434-352-0084 fax 434-352-0089

WWW.Luxam.com

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 project #: 14.600.01  
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# Luxam

Lighting for Museums

Active diameter	1.5mm	2mm	3mm	4mm	5mm
O.D.	2.0mm	2.8mm	6mm	7mm	8mm
Minimum turning radius	20mm (¾")	30mm (1 ¼")	40mm (2")	50mm (3")	65mm (4")
*Optimal fibers/connector	30	16	12	7	4

**\*Optimal number of fibers per connector varies according to lamp type. Quantities shown above were calculated for our 100 watt halogen lamp 19-143.**

Typical fiber bundles:

1.5mm x 24 tails x X meters, to common connector

2.0mm x 16 tails x X meters, to common connector

Combo – 20 tails, 10 x 1.5mm, and 10 x 2mm, x X meters to common connector

3.0mm x 12 tails x X meter, to common connector

**Custom fiber bundles of any length and combination of diameters available as standard order.**

Maximum tail length for optimal performance is recommended to be less than 20'.

2246 Country Club Rd  
Appomattox, VA 24522

Ph. 800-995-8926 [www.luxam.com](http://www.luxam.com) e-mail: info@luxam.com

NMAH – Many Voices – 65% - Bill of materials

C2101	3 – 10-710 LED illuminator DMX 13– bundle fiber 2mm x 24 tails x 3M 72 – Micro fixtures w/accessories 3 – 6mm support rod system to fit
C2202	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 24 tails x 3M 24 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2203	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 24 tails x 3M 24 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2204	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 24 tails x 3M 24 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2205	2 – 10-710 LED illuminator DMX 2 – bundle fiber 2mm x 24 tails x 3M 48 – Micro fixtures w/accessories 2 – 6mm support rod system to fit
C2206	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 24 tails x 3M 24 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2207	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 16 tails x 3M 16 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2208	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 16 tails x 3M 16 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2209	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 16 tails x 3M 16 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2301	1 – 15-130 compact illuminator LED 1 – Bundle fiber 2mm x 8 tails x 2.5M 6 – Micro fixtures w/accessories 1 – 6mm support rod system
C2303	1 – 15-130 compact illuminator LED 1 – Bundle fiber 2mm x 8 tails x 2.5M 6 – Micro fixtures w/accessories

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	1 – 6mm support rod system
C2304	1 – 15-130 compact illuminator LED 1 – Bundle fiber 2mm x 8 tails x 2.5M 6 – Micro fixtures w/accessories 1 – 6mm support rod system
C2306	2 – 10-710 LED illuminator DMX 2 – bundle fiber 2mm x 24 tails x 3M 48 – Micro fixtures w/accessories 2 – 6mm support rod system to fit
C2307	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 24 tails x 3M 24 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2308	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 24 tails x 3M 24 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2309	2 – 10-710 LED illuminator DMX 2 – bundle fiber 2mm x 24 tails x 3M 48 – Micro fixtures w/accessories 2 – 6mm support rod system to fit
C2310	2 – 10-710 LED illuminator DMX 2 – bundle fiber 2mm x 24 tails x 3M 48 – Micro fixtures w/accessories 2 – 6mm support rod system to fit
C2401	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 24 tails x 3M 24 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2402	3 – 10-710 LED illuminator DMX 13– bundle fiber 2mm x 24 tails x 3M 72 – Micro fixtures w/accessories 3 – 6mm support rod system to fit
C2403	3 – 10-710 LED illuminator DMX 13– bundle fiber 2mm x 24 tails x 3M 72 – Micro fixtures w/accessories 3 – 6mm support rod system to fit
C2404	3 – 10-710 LED illuminator DMX 13– bundle fiber 2mm x 24 tails x 3M 72 – Micro fixtures w/accessories 3 – 6mm support rod system to fit
C2405	3 – 10-710 LED illuminator DMX 13– bundle fiber 2mm x 24 tails x 3M 72 – Micro fixtures w/accessories 3 – 6mm support rod system to fit

C2406	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 16 tails x 3M 16 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2407	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 16 tails x 3M 16 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2408	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 16 tails x 3M 16 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2501	2 – 10-710 LED illuminator DMX 2 – bundle fiber 2mm x 24 tails x 3M 48 – Micro fixtures w/accessories 2 – 6mm support rod system to fit
C2502	2 – 10-710 LED illuminator DMX 2 – bundle fiber 2mm x 24 tails x 3M 48 – Micro fixtures w/accessories 2 – 6mm support rod system to fit
C2601	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 16 tails x 3M 16 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2602	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 16 tails x 3M 16 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2603	1 – 10-710 LED illuminator DMX 1 – bundle fiber 2mm x 16 tails x 3M 16 – Micro fixtures w/accessories 1 – 6mm support rod system to fit
C2606	3 – 10-710 LED illuminator DMX 13– bundle fiber 2mm x 24 tails x 3M 72 – Micro fixtures w/accessories 3 – 6mm support rod system to fit

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## Design Guidelines

### Socket Spacing

Consider line of sight and viewing perspective when deciding on socket spacing. More distant spacings (18"-24") are the best choice for most festoon applications. Closer spacings (6"-12") are appropriate for applications at closer viewing range. Any custom spacing is available on request.

### Light Sources

#### 0.48 Watt LEDs

With incredible life ratings, all Tokistar LEDs are ideally suited for continuous operation in commercial applications. LEDs rated at 0.48 watts provide a softer lighting effect and are the most energy-efficient choice. These LEDs consume so little energy they can span much greater distances from a single feed point.

0.48 Watt LEDs				
Part#	Watts/Volts	Hours	Lumens	Color
EX-WW	0.48 Watts / 24VAC	40K - 50K	12.5	2500K
EX-WH	0.48 Watts / 24VAC	40K - 50K	18.0	5500K
EX-BL	0.48 Watts / 24VAC	40K - 50K	1.4	Blue
EX-GR	0.48 Watts / 24VAC	40K - 50K	4.6	Green
EX-OR	0.48 Watts / 24VAC	40K - 50K	2.5	Orange
EX-PL	0.48 Watts / 24VAC	40K - 50K	3.8	Purple
EX-RD	0.48 Watts / 24VAC	40K - 50K	2.6	Red
EX-YG	0.48 Watts / 24VAC	40K - 50K	8.0	Yellow-Green



#### LEDs Shown with Frosted Globes



### Virtual Incandescent and Ultra Bright LEDs

Virtual Incandescent™ LEDs do a remarkable job of emulating traditional incandescent filaments.

Ultra Bright LEDs do the same, while providing a brighter light source.

Both LEDs are rated at 1.8 watts.



Ultra Bright and Virtual Incandescent LEDs				
Part#	Watts/Volts	Hours	Lumens	Color
EX-UB	1.8 Watts / 24VAC	40K - 50K	45	2400K
EX-VI	1.8 Watts / 24VAC	40K - 50K	40	2400K

### Xenon Lamp

Tokistar's Exhibitor Series was originally introduced with incandescent xenon lamps, and we still offer them as an option. Due to the efficiency and exceptional life of LED sources, xenon lamps are no longer the most popular choice.



Xenon Lamp				
Part#	Watts/Volts	Hours	Lumens	Color
EX-124	7.5 Watts / 24VAC	10K	65	2500K

### Globe Selection

Three different shapes are available: G-19, G-14 and S-14. Clear globes have excellent clarity and will emphasize distinct points of light. Frosted globes diffuse light and have a softer appearance. Each globe includes two O-rings for a secure and weatherproof seal to the socket. G-19 transparent colored globes create vibrant color. Virtual Incandescent LEDs are not recommended for use with frosted globes, and our xenon lamp is not for use with G-14 globes.



G-19 globes are also available in transparent Green, Amber, Blue, Red and Violet.

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## How to Specify

When specifying an Exhibitor Lighting System, take into consideration: Socket Spacing, LED Style and Globe Selection.

### The Basic System

The Exhibitor Series consists of sockets permanently sealed to flexible cable. All components are rated for wet-location use.

#### EXBK - 6 - VI - S14 - C

Cable / Socket Color		Socket Spacing		LED			Globe Style		Globe Color	
Code	Color	Code	Inches (mm)	Code	Color	Watts/Volts	Code	Style	Code	Color
BK	Black	6	6" (150 mm)	UB	2400K White	1.8 W / 24 VAC	G19	G-19	C	Clear
WH	White	12	12" (300 mm)	VI	2400K White	1.8 W / 24 VAC	G14	G-14	F	Frosted
		18	18" (450 mm)				S14	S-14	A	Amber
		24	24" (600 mm)						B	Blue
									R	Red
									V	Violet
									M	Multi-Color
Virtual Incandescent (VI) not for use with Frosted Globes										
				WW	2500K White	0.48 W / 24 VAC	G-14 & S-14 in clear and frosted only			
				WH	5500K White	0.48 W / 24 VAC				
				BL	Blue	0.48 W / 24 VAC				
				GR	Green	0.48 W / 24 VAC				
				OR	Orange	0.48 W / 24 VAC				
				PL	Purple	0.48 W / 24 VAC				
				RD	Red	0.48 W / 24 VAC				
				YG	Yellow-Green	0.48 W / 24 VAC				
				(Any Combination of 0.48 Watt Colors is Possible)						
<b>Xenon Lamp</b>										
		124				2500K				7.5 W / 24 VAC
Xenon lamp not for use with G-14 globes										



### EXC Series

EXC Series incorporates Exhibitor Series into a 2" x 2" satin aluminum profile for use in all environments. Custom finishes are available upon request. Fixtures can be wired for single circuit or chasing effects.

#### EXC - 6 - UB - G19 - F

Extrusion Finish		Socket Spacing		LED			Globe Style		Globe Color	
Code	Color	Code	Inches (mm)	Code	Color	Watts/Volts	Code	Style	Code	Color
EXC	Satin Aluminum	6	6" (150 mm)	UB	2400K White	1.8 W / 24 VAC	G19	G-19	C	Clear
		12	12" (300 mm)	VI	2400K White	1.8 W / 24 VAC	G14	G-14	F	Frosted
		18	18" (450 mm)				S14	S-14	A	Amber
		6C	6" Chaise (150 mm)						B	Blue
		12C	12" Chaise (300 mm)						R	Red
									V	Violet
									M	Multi-Color
Virtual Incandescent (VI) not for use with Frosted Globes										
				WW	2500K White	0.48 W / 24 VAC	G-14 & S-14 in clear and frosted only			
				WH	5500K White	0.48 W / 24 VAC				
				BL	Blue	0.48 W / 24 VAC				
				GR	Green	0.48 W / 24 VAC				
				OR	Orange	0.48 W / 24 VAC				
				PL	Purple	0.48 W / 24 VAC				
				RD	Red	0.48 W / 24 VAC				
				YG	Yellow-Green	0.48 W / 24 VAC				
				(Any Combination of 0.48 Watt Colors is Possible)						
<b>Xenon Lamp</b>										
		124				2500K				7.5 W / 24 VAC
Xenon lamp not for use with G-14 globes										



Custom curving available upon request.



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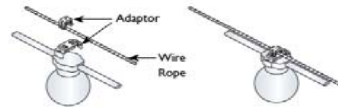


## Mounting Options

### Festoon Mounting

Part# **EX-MDA-WH (White)**  
Part# **EX-MDA-BK (Black)**

For festoon applications to a catenary cable, our wire-rope adaptors securely hold each socket in place to a 1/16" or 1/8" diameter wire rope. Wire rope and all of its associated mounting hardware is not provided with the system.



### Surface Mounting with Disks

Part# **EX-MD-WH (White)**  
Part# **EX-MD-BK (Black)**

Exhibitor Series can be surface mounted to structures using mounting disks. One disk is required for mounting each socket. The socket can be snapped into the disk first, and the entire assembly screwed in place to the structure.



### Surface Mounting with Straps

Part# **EX-MS-WH (White)**  
Part# **EX-MS-BK (Black)**

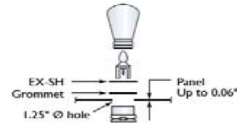
Exhibitor Series may be surface mounted to structures using our mounting straps. Two straps are required for mounting each socket. Straps are positioned on either side of the socket, and then screwed securely to the structure.



### Panel-Extrusion Mounting

Part# **EX-SH**

For installations to flat panels or extrusions up to 0.06", we offer stainless-steel panel fasteners. The socket assembly is inserted from below, then the panel fastener and grommet are pressed in place from above.

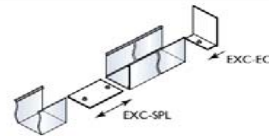


### EXC Series

Part# **EXC-SPL (Exhibitor Splice)**

Part# **EXC-EC (Exhibitor End Caps)**

End Caps are required at the end and beginning of each run of fixture. When EXC fixtures are positioned end-to-end, a splice is needed to seam them together.



## Sizes and Lengths

To minimize voltage drop and keep conductors safely within their ratings, do not exceed the maximum lengths shown for each independent fixture.

Socket Spacing	Maximum Run Lengths		
	LEDs 0.48 Watt / 24VAC	UB & VI LEDs 1.8 Watt / 24VAC	Xenon Lamp 7.6 Watt / 24VAC
6" (150 mm)	250' (76 M)	125' (38 M)	32' (10 M)
12" (300 mm)	350' (106 M)	200' (60 M)	56' (17 M)
18" (450 mm)	420' (128 M)	225' (68 M)	72' (22 M)
24" (600 mm)	500' (152 M)	250' (76 M)	80' (24 M)

project: Many Voices One Nation  
project #: 14.600.01  
prepared for: Haley Sharpe Design Limited  
prepared by: abernathy lighting design

Issue Date: 04/07/16  
95% PACKAGE

type

**LA**

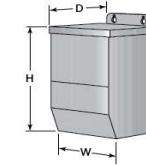
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## Transformers

Tokistar transformers operate from a 120 VAC/60 Hz input and are fully dimmable. They are provided in a Nema 3R enclosure suitable for wet locations. The secondary outputs are protected by circuit breakers. Transformers should be installed in an accessible location where there is free air circulation.

24VAC Transformers					
Number	Outputs	D	H	W	Weight
C2-40-24V	1 @ 40 Watt / 24 VAC	2.25"	5.75"	2.25"	2 lbs
C2-96-24V	1 @ 96 Watt / 24 VAC	2.5"	6.5"	3.0"	3 lbs
T24-150	1 @ 150 Watt / 24 VAC	3.0"	9.0"	3.0"	5 lbs
T24-300	1 @ 300 Watt / 24 VAC	3.5"	9.5"	4.5"	8 lbs
T24-600	1 @ 600 Watt / 24 VAC	4.5"	10.5"	4.5"	15 lbs
T24-1200	2 @ 600 Watt / 24 VAC	5.0"	11.5"	7.0"	28 lbs

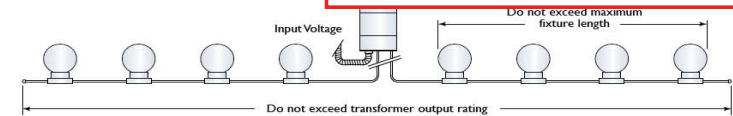


Transformers can be centrally located and feed fixtures in either direction.

Catalog #: EXC-6-WW-G19-F + EXC-EC  
Transformer: T24-150

\*Fixture length to be 1 meter with 5 lamps, spaced 150mm o/c, starting from one end\*

Electrical Contractor must coordinate mounting options with Manufacturer, Fabricator and Exhibit Designer to insure a safe and proper installation. Electrical Contractor must coordinate with site and Manufacturer all power requirements to insure a complete and working system.



## Specifications



All plastic components comply with UL746C in respect to Ultraviolet Light and Water Absorption testing.

Light Sources include LED and Xenon lamps

Polycarbonate Globe with flammability rating UL 94V-2

Flexible Conductors #12 AWG stranded and plated wire

Two O-Rings on each globe for weatherproof seal

Sockets permanently fastened to cable with sealant

Insulation is flexible PVC with flammability rating UL 94 HB



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# SURFACE TRACK (120/250V) · SPECIFICATIONS

**GENERAL** Lighting Track shall allow fixtures to be located anywhere along the track length. Fixtures shall be easily focused, switched, dimmed, accessorized and removed as desired. Track system shall have a ten year warranty from date of shipment.

**MECHANICAL** Lighting Track shall be constructed of .070 (2mm) extruded aluminum with overall height of 1.42 (36mm) and overall width of 1.812 (46mm). Track shall have same overall dimensions and physical appearance for both one and two circuit models.

Track shall be available in nominal 4 foot (1.2m), 8 foot (2.4m), and 12 foot (3.7m) lengths, in Silver, Black, White, or Graphite high temperature baked paint finish. Track shall be field cuttable to any length with a single cut.

Track system shall be available with End Feed, End Cap, Straight Mini-Joiner, Straight Joiner/Feeder, Flexible Joiner and L, T, and X Joiner/Feeders as standard components.

Track shall have the ability to be directly surface mounted. Track shall have pre-punched mounting slots for direct mounting to any surface. Track shall have the ability to be mounted 1/2 inch (13mm) from a surface by extruded aluminum mounting clips, be suspended from a surface by a field cuttable stainless steel cable system, be suspended from a surface by a field cuttable steel stem system, and be mounted into UniTrack housing.

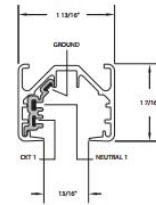
**ELECTRICAL** Lighting Track and components shall be UL and CUL listed, CE Certified, and comply with the National Electric Code standards for Lighting Track. One and two circuit Lighting Track shall be rated at 120/250 volt, 50/60 Hz. 2400 watts maximum each circuit. Each 20 amp/120 volt circuit shall be comprised of flat copper busbars and have a separate neutral busbar for each circuit busbar. The neutral busbar shall be oversized to be comparable to #10 gauge 30 amp wire to reduce the possibility of overheating due to non-linear loads and harmonics. **Track shall have integral wiring channels for six (6) additional #12 THHN wires to create three (3) additional 20 amp/120 volt circuits, which can be dropped into any Joiner/Feeder, for a total track power capacity of 100 amps.** A separate grounding busbar shall be integral in all track lengths. All busbars shall be insulated to prevent contact with aluminum extrusion.

Track shall have electric feed capability through all Joiner/Feeders (except Flexible Joiner and Straight Mini-Joiner) using either 1/2 or 3/4 U.S. trade size knock-outs (.875 diameter [22mm] or 1.125 diameter [29mm]). Joiner/Feeders can be electrically field modified by removing the Lexan™ cover and rerouting internal pre-wired jumpers. All Joiner/Feeders shall be available in Black, White, Silver, and Graphite GE fiber reinforced Lexan™.

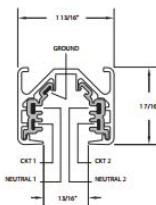
One and two circuit Lighting Track with separate neutral busbars shall have the ability to have each circuit separately dimmed as required when using standard voltage and low voltage fixtures with either magnetic or electronic transformers. Track shall have the ability to be dimmed or switched in selected sections in addition to dimming or switching an entire track configuration or track run.

**FIXTURE FITTING INTERFACE** Track shall accept GE fiber reinforced Lexan™ fixture fittings which positively lock into track and cannot be energized by the integral switch until safety interlock handle is in the closed position. Safety interlock shall also prevent fixture fitting removal from track unless the switch is in the "off" position. Upon insertion of fixture fitting into track, grounding connection from fixture fitting to track shall be automatically completed before any electrical contact is made with busbars. When removing fixture fitting from track, the grounding connection shall automatically be disconnected last. The fixture fitting shall recess into the track, creating a minimal profile below the track. Fixture fittings for magnetic low voltage fixtures shall be furnished with fuse of the correct ampere rating for integral transformer protection, and shall not be fused as a branch circuit.

One Ckt 120/250V Track



Two Ckt 120/250V Track



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# SURFACE TRACK (120/250V) · COMPONENTS

## Key Features / Applications

UL and CUL listed, CE Certified, Dry Location • IBEW union made at LSI plant in USA • Specification grade heavy duty .070 (2mm) extruded aluminum track • 4 foot (1.2m), 8 foot (2.4m) and 12 foot (3.7m) field cuttable lengths • One circuit 20 amp or two circuit 40 amp capacity/120/250 volt • 100 amp total capacity when using integral wireways • Copper busbars equivalent to #12 AWG wire used as circuit and ground track conductors • Oversized copper busbars equivalent to #10 AWG wire used as neutral track conductors • Separate neutral track conductor used for each circuit • Separate copper grounding busbar used throughout track system • Black, White, Silver, and Graphite finishes • All Joiner/Feeders, Flexible Joiners, Mini-Joiners, End Feeds and End Caps are injection molded of GE fiber reinforced Lexan™ • All Joiner/Feeders and Flexible Joiners are prewired and simply couple into track • All Joiner/Feeder circuits can be easily field modified by changing internal jumper wires • Fixture fitting recesses into track for minimum profile • LSI surface track can be mounted directly to any surface 5'-0" above finished floor.

### Surface Track Sections

120/250V Surface Track Sections are used in conjunction with an End Feed, End Cap and a variety of Joiner/Feeders to form track runs and configurations. Track Section lengths are nominal 4 foot (1.2m), 8 foot (2.4m) and 12 foot (3.7m) which are field cuttable.



Finish		Nominal Length		
		4 ft	8 ft	12 ft
Silver	One Ckt	31010	31020	31030
	Two Ckt	32010	32020	32030
Black	One Ckt	31210	31220	31230
	Two Ckt	32210	32220	32230
White	One Ckt	31310	31320	31330
	Two Ckt	32310	32320	32330
Graphite	One Ckt	31410	31420	31430
	Two Ckt	32410	32420	32430

### Bridge Track

120/250V Bridge Track is a complete, portable, field cuttable, surface UniTrack system that mechanically and electrically mounts to and spans parallel runs of LSI Track. Bridge Track provides an additional range of striking angles for track lighting fixtures or for centering a fixture over a target located between parallel runs of track up to 8 foot (2.4m) on center.



Finish		9 ft
Silver	One Ckt	31025
Black	One Ckt	31225
White	One Ckt	31325
Graphite	One Ckt	31425

### Emergency/WorkLite Track

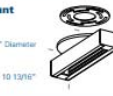
120/250V Emergency/WorkLite Track is a separately fed one circuit Track Section, suitable for most LSI track fixtures, that integrates into any LSI Track run or configuration at any location. Consult fixture cutsheet. LSI fixtures (add suffix EF) mechanically lock into Emergency/WorkLite Track by means of special hardware and do not have on/off switches.



Finish	All One Ckt				
	18" Joiner Section	18" End Feed Section	18" End Cap Section	18" End Feed Section	18" Conduit Section
Silver	31050	31051	31052	31053	
Black	31250	31251	31252	31253	
White	31350	31351	31352	31353	
Graphite	31450	31451	31452	31453	

### Unimount

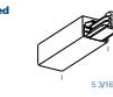
120/250V Unimount is a compact canopy mount Track section which will accept most single LSI Track fixtures up to 500 watts.



Finish		
Silver	One Ckt	31161
Black	One Ckt	31261
White	One Ckt	31361
Graphite	One Ckt	31461

### End Feed

120/250V End Feed is used in conjunction with a Canopy Kit for top feeding from a recessed outlet box and can also be top fed directly with cable.



Finish		
Silver	One Ckt	31100
	Two Ckt	32100
Black	One Ckt	31200

Catalogue #: 32320 (2400mm)  
 Exact Bill of Materials to be coordinated by Electrical Contractor with Manufacturer.

project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: abernathy lighting design

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# SSL238 SERIES · 120V · LED PAR38

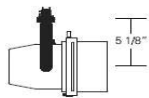


**This medium and long throw unit is perfect for areas requiring visually quiet, high intensity light.**

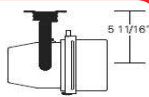
- Designed for all PAR38 medium screw base Solid State LED Retrofit lamps up to 20 watts
- Sturdy aluminum housing
- Rugged steel self-locking yoke allows for horizontal and vertical focusing
- On/off safety switch (on most mounting types)
- Equipped with beam rotation and relamping handle for easy lamp changing
- Front rotation lock for alignment of directional accessories
- Has beam rotation lock for applications that require positive focus locking
- Removable front hinge assembly allows fixture to be transformed from spotlight to wallwash in seconds
- Internal accessory cartridge holds up to three size C LSI filters and accessories
- Removable cross-baffle eliminates glare (45 degree cutoff)
- Finishes: LSI Black, White, and Silver
- Fixture weight: 1.5 lbs.

## MOUNTING OPTIONS

**SSL238-00**  
 Lexan fitting for 1 and 2 circuit LSI Track. With On/Off switch.

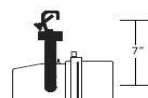


**SSL238-BUS**  
 Lexan fitting for 1 and 2 circuit LSI Busway. With On/Off switch.

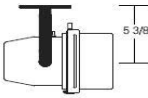


**SSL238-2G**  
 Universal fitting for Unistrut Systems and any screw or bolt-up applications. With switch, straight 6-foot 3-wire grounding cord and NEMA 5-15P plug.

**SSL238-3G**  
 C-clamp for pipes from 5/8" to 2" O.D. With switch, straight 6-foot 3-wire grounding cord and NEMA 5-15P plug.



**SSL238-5A**  
 Canopy for permanent mounting on standard 4" octagonal outlet boxes.



**Other Options (Consult Factory):**

- Stems, specify length
- Custom color, RAL palette
- Security/Worklight Fixture, add suffix **EF**. For use with -EF00 (Track) and -EFBUS (Busway) mounting options only.

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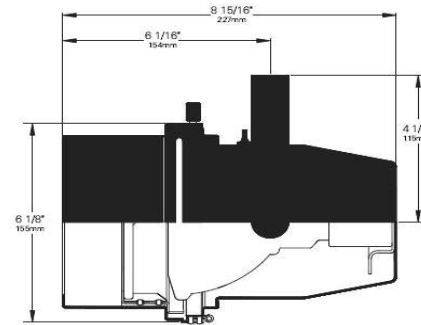
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## ORDERING INFORMATION

1. Select your **Mounting Option**.
2. Choose other fixture **Options** (add suffix):
  - For Coiled Cord, add **CC**  
 Coiled Cord is 18/3 105°C, 18" retracted, 6 foot extended. White fixtures are supplied with white cord, all other finishes are supplied with black cord. Available only with **2G** and **3G** mounting options. (When a coiled cord is not specified, a straight cord is provided.)
  - For Wrench Locking, add **WL**
3. Choose a **Finish** for your fixture:  
 Black (B) White (W) Silver (S)  
 Example: **SSL238 - 2G CC WL B**  
FINISH FITTING COILED CORD WRENCH LOCKING  
 Blue fields are optional. Leave blank if not required.
4. Don't forget your **Accessories!**  
 LSI features the widest range of accessories in the industry to help you modify the light's intensity, color, texture and pattern.



## LED PAR38 LAMPS

W	SP	CCT	CBCP	
12	20°	27K	4800	CREE LRP38A92-20D40
12	16°	3K	6750	MSI IPAR3830160

[Click for detailed photometrics](#)

LSI recommends that only CREE™ or MSI Lamps be used.

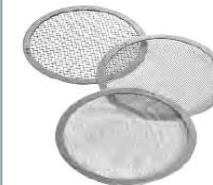
**Catalog #:** C-15187-1-SSL238-C2

Custom project catalogue number above represents unistrut mounted black finish track head provided with hex cell louver and backer ring but without cross baffle accessory.

**Accessories:** See Accessory Matrix

**Lamp:** Sora: SP38-18-09D-930-03

## ACCESSORIES



Other accessories:

- **Louver C**
- **Glass Color Filters C**
- **Spread Lens** C990, C992, C995, C996
- **Beam Softener** C998
- **OPTIVEX™ UV Filter** C962

### Light Blocking Screens C801S, C802S, C803S

Stainless steel screens, used to reduce transmitted light without changing its color temperature.

[Click for complete list of color filters](#)

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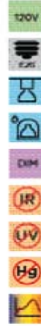
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# SORAA LED PAR 38 18.5W



OUTPUT RANGE: VIVID SERIES	930-1050 lumen; CRI-95, R9>90
OUTPUT RANGE: BRILLIANT SERIES	1190-1280 lumen; CRI-80
BEAM ANGLE RANGE	9°, 25°, 36°, 60°
COLOR TEMPERATURE RANGE	2700K, 3000K, 4000K, 5000K
APPLICATION	Halogen replacement for indoor & outdoor applications



### POINT SOURCE OPTICS

Exceptional beam control enables unique 9° narrow spot and smooth uniform beams  
Single light source, single crisp shadow

### VP<sub>3</sub> VIVID COLOR AND VP<sub>3</sub> NATURAL WHITE

VIVID series provides accurate color rendering across the visible spectrum from 400nm to 700nm, CRI-95, R9>90  
Accurate white rendering based on >70% excitation of Optical Brightening Agents with emission between 400nm & 440 nm

### ENERGY EFFICIENCY AND LONG LIFE

85% more energy efficient than standard halogen lamps  
Typical payback of one year or less  
Rated lifetime of 35,000 hours. Three year warranty

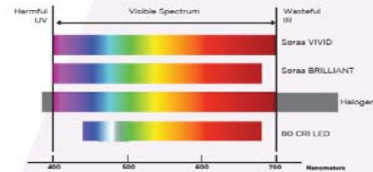
### CERTIFICATIONS

UL/CUL Class 2 and non-Class 2, FCC Title 47 Part 15B, RoHS, CE

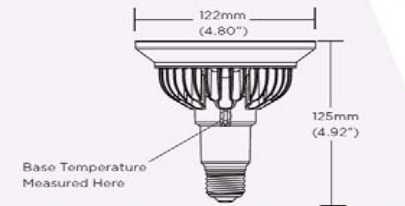
### GENERAL SPECIFICATIONS

Form Factor	Operating Temperature	Electrical	
Width: 122mm (4.80")	Minimum: -40°C (ambient)	Wattage: 18.5W	Dimmable to <10%
Height: 125mm (4.92")	Typical: 70°C - 80°C (base)	Power factor: 0.95	Flicker index < 0.1
Weight: 305g	Maximum: 90°C (base)	Voltage: 120V +/- 12V	Percent Flicker: 31%

### COLOR RENDERING



### DIMENSIONS



Soraa Inc., 6500 Kaiser Drive, Suite 110, Fremont, CA 94555  
855 GO-SORAA / 855 467-6722 www.soraa.com



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## SORAA LED PAR 38 18.5W

### BEAM DIAGRAM

Narrow Spot 9°			Narrow Flood 25°			Distance to Floor (Foot)	Flood 36°			Wide Flood 60°		
Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)	Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)		Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)	Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)
0.5	0.8	11.1%	1.3	2.2	11.1%	3	1.9	3.5	11.1%	3.5	6.0	11.1%
0.9	1.7	2.8%	2.7	4.4	2.8%	6	3.9	6.9	2.8%	6.9	12.0	2.8%
1.4	2.5	1.2%	4.0	6.6	1.2%	9	5.8	10.4	1.2%	10.4	18.0	1.2%
1.9	3.4	0.7%	5.3	8.7	0.7%	12	7.8	13.9	0.7%	13.9	24.0	0.7%
2.4	4.2	0.4%	6.7	10.9	0.4%	15	9.7	17.3	0.4%	17.3	30.0	0.4%

### SPECIFICATIONS BY MODEL NUMBER\*

Model Number	Product Code	CCT (K)	Beam Angle (°)	Field Angle (°)	CBCP (cd)	Halogen Equivalent** (Watts)	Total Flux (Lm)	Efficacy (lm/W)	CRI/R9	White Point (McA)
<b>SORAA VIVID SERIES</b>										
SP38-18-09D-927-03 <sup>SNAP</sup>	00977	2700	9	16	17200	110	930	50	95 / 95	3
SP38-18-25D-927-03	00979	2700	25	40	5020	90	930	50	95 / 95	3
SP38-18-36D-927-03	00981	2700	36	60	2320	90	930	50	95 / 95	3
SP38-18-60D-927-03	00983	2700	60	90	1020	90	930	50	95 / 95	3
SP38-18-09D-930-03 <sup>SNAP</sup>	00993	3000	9	16	18500	110	1000	54	95 / 95	3
SP38-18-25D-930-03	00995	3000	25	40	5400	90	1000	54	95 / 95	3
SP38-18-36D-930-03	00997	3000	36	60	2500	90	1000	54	95 / 95	3
SP38-18-60D-930-03	00999	3000	60	90	1100	90	1000	54	95 / 95	3
SP38-18-09D-940-03 <sup>SNAP</sup>	01009	4000	9	16	19240	110	1040	56	95 / 95	4
SP38-18-25D-940-03	01011	4000	25	40	5600	90	1040	56	95 / 95	4
SP38-18-36D-940-03	01013	4000	36	60	2600	90	1040	56	95 / 95	4
SP38-18-60D-940-03	01015	4000	60	90	1140	90	1040	56	95 / 95	4
SP38-18-09D-950-03 <sup>SNAP</sup>	01017	5000	9	16	19420	110	1050	57	95 / 90	5
SP38-18-25D-950-03	01019	5000	25	40	5660	90	1050	57	95 / 90	5
SP38-18-36D-950-03	01021	5000	36	60	2620	90	1050	57	95 / 90	5
SP38-18-60D-950-03	01023	5000	60	90	1140	90	1050	57	95 / 90	5

### SORAA BRILLIANT SERIES

SP38-18-09D-827-03 <sup>SNAP</sup>	00985	2700	9	16	22000	120	1190	64	80 / >0	3
SP38-18-25D-827-03	00987	2700	25	40	6420	110	1190	64	80 / >0	3
SP38-18-36D-827-03	00989	2700	36	60	2960	110	1190	64	80 / >0	3
SP38-18-60D-827-03	00991	2700	60	90	1300	110	1190	64	80 / >0	3
SP38-18-09D-830-03 <sup>SNAP</sup>	01001	3000	9	16	23680	120	1280	69	80 / >0	3
SP38-18-25D-830-03	01003	3000	25	40	6900	110	1280	69	80 / >0	3
SP38-18-36D-830-03	01005	3000	36	60	3200	110	1280	69	80 / >0	3
SP38-18-60D-830-03	01007	3000	60	90	1400	110	1280	69	80 / >0	3

\*Specifications are at stable warm operating conditions (25°C ambient) \*\*Energy Star Minimum <sup>SNAP</sup>SORAA SNAP System Compatible  
CCT = Correlated Color Temperature CRI = Color Rendering Index (Ra-8) White Point = White Point Accuracy in McA step

### SAFETY NOTE ON HEAT

Although Soraa's lamps operate at cooler temperatures than halogen lamps, it is recommended that gloves be worn when handling bare lamps that have been energized.

Information and specifications subject to change. SP38 18W Rev 1 9.30.14  
Soraa Inc., 6500 Kaiser Drive, Suite 110, Fremont, CA 94555  
855 GO-SORAA / 855 467-6722 www.soraa.com

project: Many Voices One Nation  
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Job Name Here      Fixture Type Here  
 Designer/Firm Name Here      Ordering Information Here

## SSL238 SERIES · 120V · LED PAR38



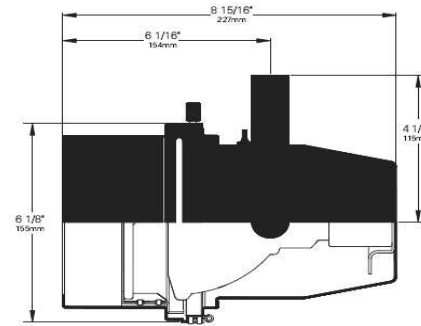
**This medium and long throw unit is perfect for areas requiring visually quiet, high intensity light.**

- Designed for all PAR38 medium screw base Solid State LED Retrofit lamps up to 20 watts
- Sturdy aluminum housing
- Rugged steel self-locking yoke allows for horizontal and vertical focusing
- On/off safety switch (on most mounting types)
- Equipped with beam rotation and relamping handle for easy lamp changing
- Front rotation lock for alignment of directional accessories
- Has beam rotation lock for applications that require positive focus locking
- Removable front hinge assembly allows fixture to be transformed from spotlight to wallwash in seconds
- Internal accessory cartridge holds up to three size C LSI filters and accessories
- Removable cross-baffle eliminates glare (45 degree cutoff)
- Finishes: LSI Black, White, and Silver
- Fixture weight: 1.5 lbs.

Job Name Here      Fixture Type Here  
 Designer/Firm Name Here      Ordering Information Here

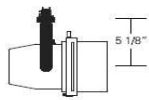
### ORDERING INFORMATION

1. Select your **Mounting Option**.
  2. Choose other fixture **Options** (add suffix):
    - For Coiled Cord, add **CC**  
Coiled Cord is 18/3 105°C, 18" retracted, 6 foot extended. White fixtures are supplied with white cord, all other finishes are supplied with black cord. Available only with **2G** and **3G** mounting options. (When a coiled cord is not specified, a straight cord is provided.)
    - For Wrench Locking, add **WL**
  3. Choose a **Finish** for your fixture:  
Black (**B**) White (**W**) Silver (**S**)
- Example: **SSL238 - 2G CC WL B**
- Blue fields are optional. Leave blank if not required.
4. Don't forget your **Accessories!**  
LSI features the widest range of accessories in the industry to help you modify the light's intensity, color, texture and pattern.

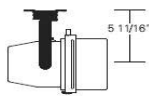


### MOUNTING OPTIONS

**SSL238-00**  
Lexan fitting for 1 and 2 circuit LSI Track. With On/Off switch.

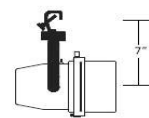


**SSL238-BUS**  
Lexan fitting for 1 and 2 circuit LSI Busway. With On/Off switch.



**SSL238-2G**  
Universal fitting for Unistrut Systems and any screw or bolt-up applications. With switch, straight 6-foot 3-wire grounding cord and NEMA 5-15P plug.

**SSL238-3G**  
C-clamp for pipes from 5/8" to 2" O.D. With switch, straight 6-foot 3-wire grounding cord and NEMA 5-15P plug.



**SSL238-5A**  
Canopy for permanent mounting on standard 4" octagonal outlet boxes.

#### Other Options (Consult Factory):

- Stems, specify length
- Custom color, RAL palette
- Security/Worklight Fixture, add suffix **EF**. For use with -EF00 (Track) and -EFBUS (Busway) mounting options only.

### LED PAR38 LAMPS

W	SP	CCT	CBCP	
12	20°	27K	4800	CREE LRP38A92-20D40
12	16°	3K	6750	MSI IPAR3830160

[Click for detailed photometrics](#)

LSI recommends that only CREE™ or MSI Lamps be used.

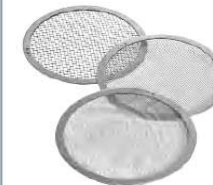
**Catalog #: C-15187-3-SSL238-C2**

Custom project catalogue number above represents track mounted silver finish track head provided with hex cell louver and backer ring but without cross baffle accessory.

**Accessories: See Accessory Matrix**

**Lamp: Sora: SP38-18-09D-930-03**

### ACCESSORIES



Other accessories:

- **Louver C**
- **Glass Color Filters C**
- **Spread Lenses C990, C992, C995, C996**
- **Beam Softener C998**
- **OPTIVEX™ UV Filter C962**

#### Light Blocking Screens C801S, C802S, C803S

Stainless steel screens, used to reduce transmitted light without changing its color temperature.

[Click for complete list of color filters](#)

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03/13 www.LightingServicesInc.com

project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: abernathy lighting design

Issue Date: 04/07/16  
 95% PACKAGE

type  
**TA-S**  
 page 1 of 4

project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: abernathy lighting design

Issue Date: 04/07/16  
 95% PACKAGE

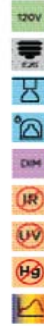
type  
**TA-S**  
 page 2 of 4



# SORAA LED PAR 38 18.5W



OUTPUT RANGE: VIVID SERIES	930-1050 lumen; CRI-95, R9>90
OUTPUT RANGE: BRILLIANT SERIES	1190-1280 lumen; CRI-80
BEAM ANGLE RANGE	9°, 25°, 36°, 60°
COLOR TEMPERATURE RANGE	2700K, 3000K, 4000K, 5000K
APPLICATION	Halogen replacement for indoor & outdoor applications



### POINT SOURCE OPTICS

Exceptional beam control enables unique 9° narrow spot and smooth uniform beams  
Single light source, single crisp shadow

### VP<sub>3</sub> VIVID COLOR AND VP<sub>3</sub> NATURAL WHITE

VIVID series provides accurate color rendering across the visible spectrum from 400nm to 700nm, CRI-95, R9>90  
Accurate white rendering based on >70% excitation of Optical Brightening Agents with emission between 400nm & 440 nm

### ENERGY EFFICIENCY AND LONG LIFE

85% more energy efficient than standard halogen lamps  
Typical payback of one year or less  
Rated lifetime of 35,000 hours. Three year warranty

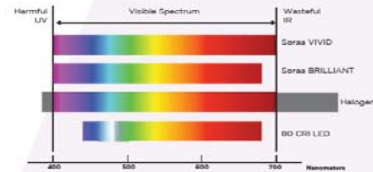
### CERTIFICATIONS

UL/CUL Class 2 and non-Class 2, FCC Title 47 Part 15B, RoHS, CE

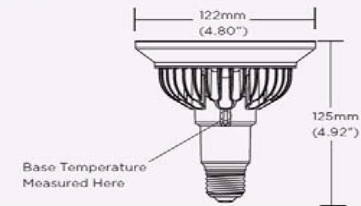
### GENERAL SPECIFICATIONS

Form Factor	Operating Temperature	Electrical	
Width: 122mm (4.80")	Minimum: -40°C (ambient)	Wattage: 18.5W	Dimmable to <10%
Height: 125mm (4.92")	Typical: 70°C - 80°C (base)	Power factor: 0.95	Flicker index < 0.1
Weight: 305g	Maximum: 90°C (base)	Voltage: 120V +/- 12V	Percent Flicker: 31%

### COLOR RENDERING



### DIMENSIONS



Soraa Inc., 6500 Kaiser Drive, Suite 110, Fremont, CA 94555  
855 GO-SORAA / 855 467-6722 www.soraa.com



project: Many Voices One Nation  
project #: 14.600.01  
prepared for: Haley Sharpe Design Limited  
prepared by: abernathy lighting design

Issue Date: 04/07/16  
95% PACKAGE

type

# TA-S

page 3 of 4

## SORAA LED PAR 38 18.5W

### BEAM DIAGRAM

Narrow Spot 9°			Narrow Flood 25°			Distance to Floor (Foot)	Flood 36°			Wide Flood 60°		
Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)	Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)		Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)	Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)
0.5	0.8	11.1%	1.3	2.2	11.1%	3	1.9	3.5	11.1%	3.5	6.0	11.1%
0.9	1.7	2.8%	2.7	4.4	2.8%	6	3.9	6.9	2.8%	6.9	12.0	2.8%
1.4	2.5	1.2%	4.0	6.6	1.2%	9	5.8	10.4	1.2%	10.4	18.0	1.2%
1.9	3.4	0.7%	5.3	8.7	0.7%	12	7.8	13.9	0.7%	13.9	24.0	0.7%
2.4	4.2	0.4%	6.7	10.9	0.4%	15	9.7	17.3	0.4%	17.3	30.0	0.4%

### SPECIFICATIONS BY MODEL NUMBER\*

Model Number	Product Code	CCT (K)	Beam Angle (°)	Field Angle (°)	CBCP (cd)	Halogen Equivalent** (Watts)	Total Flux (Lm)	Efficacy (lm/W)	CRI/R9	White Point (McA)
<b>SORAA VIVID SERIES</b>										
SP38-18-09D-927-03 <sup>SNAP</sup>	00977	2700	9	16	17200	110	930	50	95 / 95	3
SP38-18-25D-927-03	00979	2700	25	40	5020	90	930	50	95 / 95	3
SP38-18-36D-927-03	00981	2700	36	60	2320	90	930	50	95 / 95	3
SP38-18-60D-927-03	00983	2700	60	90	1020	90	930	50	95 / 95	3
SP38-18-09D-930-03 <sup>SNAP</sup>	00993	3000	9	16	18500	110	1000	54	95 / 95	3
SP38-18-25D-930-03	00995	3000	25	40	5400	90	1000	54	95 / 95	3
SP38-18-36D-930-03	00997	3000	36	60	2500	90	1000	54	95 / 95	3
SP38-18-60D-930-03	00999	3000	60	90	1100	90	1000	54	95 / 95	3
SP38-18-09D-940-03 <sup>SNAP</sup>	01009	4000	9	16	19240	110	1040	56	95 / 95	4
SP38-18-25D-940-03	01011	4000	25	40	5600	90	1040	56	95 / 95	4
SP38-18-36D-940-03	01013	4000	36	60	2600	90	1040	56	95 / 95	4
SP38-18-60D-940-03	01015	4000	60	90	1140	90	1040	56	95 / 95	4
SP38-18-09D-950-03 <sup>SNAP</sup>	01017	5000	9	16	19420	110	1050	57	95 / 90	5
SP38-18-25D-950-03	01019	5000	25	40	5660	90	1050	57	95 / 90	5
SP38-18-36D-950-03	01021	5000	36	60	2620	90	1050	57	95 / 90	5
SP38-18-60D-950-03	01023	5000	60	90	1140	90	1050	57	95 / 90	5

### SORAA BRILLIANT SERIES

SP38-18-09D-827-03 <sup>SNAP</sup>	00985	2700	9	16	22000	120	1190	64	80 / >0	3
SP38-18-25D-827-03	00987	2700	25	40	6420	110	1190	64	80 / >0	3
SP38-18-36D-827-03	00989	2700	36	60	2960	110	1190	64	80 / >0	3
SP38-18-60D-827-03	00991	2700	60	90	1300	110	1190	64	80 / >0	3
SP38-18-09D-830-03 <sup>SNAP</sup>	01001	3000	9	16	23680	120	1280	69	80 / >0	3
SP38-18-25D-830-03	01003	3000	25	40	6900	110	1280	69	80 / >0	3
SP38-18-36D-830-03	01005	3000	36	60	3200	110	1280	69	80 / >0	3
SP38-18-60D-830-03	01007	3000	60	90	1400	110	1280	69	80 / >0	3

\*Specifications are at stable warm operating conditions (25°C ambient) \*\*Energy Star Minimum <sup>SNAP</sup>SORAA SNAP System Compatible  
CCT = Correlated Color Temperature CRI = Color Rendering Index (Ra-8) White Point = White Point Accuracy in McA step

### SAFETY NOTE ON HEAT

Although Soraa's lamps operate at cooler temperatures than halogen lamps, it is recommended that gloves be worn when handling bare lamps that have been energized.

Information and specifications subject to change. SP38 18W Rev 1 9.30.14  
Soraa Inc., 6500 Kaiser Drive, Suite 110, Fremont, CA 94555  
855 GO-SORAA / 855 467-6722 www.soraa.com

project: Many Voices One Nation  
project #: 14.600.01  
prepared for: Haley Sharpe Design Limited  
prepared by: abernathy lighting design

Issue Date: 04/07/16  
95% PACKAGE

type

# TA-S

page 4 of 4

# SSL238 SERIES · 120V · LED PAR38

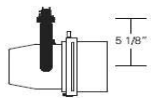


**This medium and long throw unit is perfect for areas requiring visually quiet, high intensity light.**

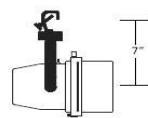
- Designed for all PAR38 medium screw base Solid State LED Retrofit lamps up to 20 watts
- Sturdy aluminum housing
- Rugged steel self-locking yoke allows for horizontal and vertical focusing
- On/off safety switch (on most mounting types)
- Equipped with beam rotation and relamping handle for easy lamp changing
- Front rotation lock for alignment of directional accessories
- Has beam rotation lock for applications that require positive focus locking
- Removable front hinge assembly allows fixture to be transformed from spotlight to wallwash in seconds
- Internal accessory cartridge holds up to three size C LSI filters and accessories
- Removable cross-baffle eliminates glare (45 degree cutoff)
- Finishes: LSI Black, White, and Silver
- Fixture weight: 1.5 lbs.

## MOUNTING OPTIONS

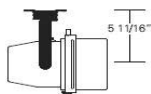
- SSL238-00**  
 Lexan fitting for 1 and 2 circuit LSI Track. With On/Off switch.
- SSL238-BUS**  
 Lexan fitting for 1 and 2 circuit LSI Busway. With On/Off switch.



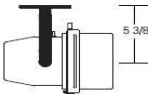
**SSL238-3G**  
 C-clamp for pipes from 5/8" to 2" O.D. With switch, straight 6-foot 3-wire grounding cord and NEMA 5-15P plug.



**SSL238-2G**  
 Universal fitting for Unistrut Systems and any screw or bolt-up applications. With switch, straight 6-foot 3-wire grounding cord and NEMA 5-15P plug.



**SSL238-5A**  
 Canopy for permanent mounting on standard 4" octagonal outlet boxes.



- Other Options (Consult Factory):**
- Stems, specify length
  - Custom color, RAL palette
  - Security/Worklight Fixture, add suffix **EF**. For use with -EF00 (Track) and -EFBUS (Busway) mounting options only.

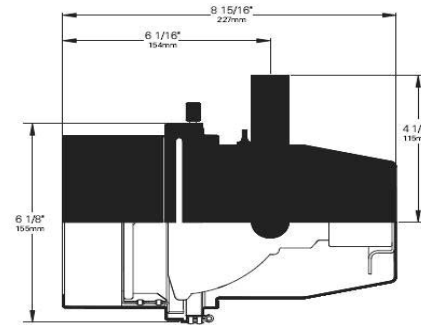
project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: abernathy lighting design

Issue Date: 04/07/16  
 95% PACKAGE

type  
**TA-W**  
 page 1 of 4

## ORDERING INFORMATION

1. Select your **Mounting Option**.
  2. Choose other fixture **Options** (add suffix):
    - For Coiled Cord, add **CC**  
 Coiled Cord is 18/3 105°C, 18" retracted, 6 foot extended. White fixtures are supplied with white cord, all other finishes are supplied with black cord. Available only with **2G** and **3G** mounting options. (When a coiled cord is not specified, a straight cord is provided.)
    - For Wrench Locking, add **WL**
  3. Choose a **Finish** for your fixture:  
 Black (**B**), White (**W**), Silver (**S**)
- Example: **SSL238 - 2G CC WL B**
- Blue fields are optional. Leave blank if not required.
4. Don't forget your **Accessories!**  
 LSI features the widest range of accessories in the industry to help you modify the light's intensity, color, texture and pattern.



## LED PAR38 LAMPS

W	SP	CCT	CBCP	
12	20°	27K	4800	CREE LRP38A92-20D40
12	16°	3K	6750	MSI IPAR3830160

[Click for detailed photometrics](#)

LSI recommends that only CREE™ or MSI Lamps be used.

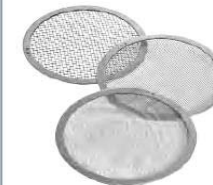
**Catalog #: C-15187-2-SSL238-C2**

Custom project catalogue number above represents track mounted white finish track head provided with hex cell louver and backer ring but without cross baffle accessory.

**Accessories:** See Accessory Matrix

**Lamp:** Sora: SP38-18-09D-930-03

## ACCESSORIES



- Other accessories:**
- **Louver C**
  - **Glass Color Filters C**
  - **Spread Lens: C990, C992, C995, C996**
  - **Beam Softener C998**
  - **OPTIVEX™ UV Filter C962**

### Light Blocking Screens C801S, C802S, C803S

Stainless steel screens, used to reduce transmitted light without changing its color temperature.

[Click for complete list of color filters](#)

project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: abernathy lighting design

Issue Date: 04/07/16  
 95% PACKAGE

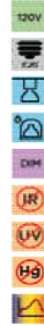
type  
**TA-W**  
 page 2 of 4



# SORAA LED PAR 38 18.5W



OUTPUT RANGE: VIVID SERIES	930-1050 lumen; CRI-95, R9>90
OUTPUT RANGE: BRILLIANT SERIES	1190-1280 lumen; CRI-80
BEAM ANGLE RANGE	9°, 25°, 36°, 60°
COLOR TEMPERATURE RANGE	2700K, 3000K, 4000K, 5000K
APPLICATION	Halogen replacement for indoor & outdoor applications



### POINT SOURCE OPTICS

Exceptional beam control enables unique 9° narrow spot and smooth uniform beams

Single light source, single crisp shadow

### VP<sub>3</sub> VIVID COLOR AND VP<sub>3</sub> NATURAL WHITE

VIVID series provides accurate color rendering across the visible spectrum from 400nm to 700nm, CRI-95, R9>90

Accurate white rendering based on >70% excitation of Optical Brightening Agents with emission between 400nm & 440 nm

### ENERGY EFFICIENCY AND LONG LIFE

85% more energy efficient than standard halogen lamps  
Typical payback of one year or less

Rated lifetime of 35,000 hours. Three year warranty

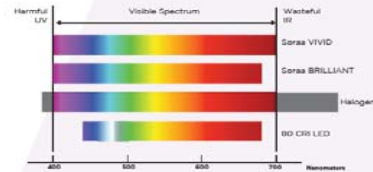
### CERTIFICATIONS

UL/CUL Class 2 and non-Class 2, FCC Title 47 Part 15B, RoHS, CE

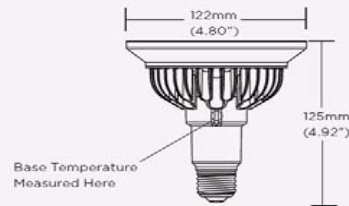
### GENERAL SPECIFICATIONS

Form Factor	Operating Temperature	Electrical	
Width: 122mm (4.80")	Minimum: -40°C (ambient)	Wattage: 18.5W	Dimmable to <10%
Height: 125mm (4.92")	Typical: 70°C - 80°C (base)	Power factor: 0.95	Flicker index < 0.1
Weight: 305g	Maximum: 90°C (base)	Voltage: 120V +/- 12V	Percent Flicker: 31%

### COLOR RENDERING



### DIMENSIONS



Soraa Inc., 6500 Kaiser Drive, Suite 110, Fremont, CA 94555  
855 GO-SORAA / 855 467-6722 www.soraa.com



project: Many Voices One Nation  
project #: 14.600.01  
prepared for: Haley Sharpe Design Limited  
prepared by: abernathy lighting design

Issue Date: 04/07/16  
95% PACKAGE

type  
**TA-W**  
page 3 of 4

## SORAA LED PAR 38 18.5W

### BEAM DIAGRAM

Narrow Spot 9°			Narrow Flood 25°			Distance to Floor (Foot)	Flood 36°			Wide Flood 60°		
Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)	Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)		Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)	Beam Dia at 50% CBCP (ft)	Field Dia at 10% CBCP (ft)	Foot-candles (% of CBCP)
0.5	0.8	11.1%	1.3	2.2	11.1%	3	1.9	3.5	11.1%	3.5	6.0	11.1%
0.9	1.7	2.8%	2.7	4.4	2.8%	6	3.9	6.9	2.8%	6.9	12.0	2.8%
1.4	2.5	1.2%	4.0	6.6	1.2%	9	5.8	10.4	1.2%	10.4	18.0	1.2%
1.9	3.4	0.7%	5.3	8.7	0.7%	12	7.8	13.9	0.7%	13.9	24.0	0.7%
2.4	4.2	0.4%	6.7	10.9	0.4%	15	9.7	17.3	0.4%	17.3	30.0	0.4%

### SPECIFICATIONS BY MODEL NUMBER\*

Model Number	Product Code	CCT (K)	Beam Angle (°)	Field Angle (°)	CBCP (cd)	Halogen Equivalent** (Watts)	Total Flux (Lm)	Efficacy (lm/W)	CRI/R9	White Point (McA)
<b>SORAA VIVID SERIES</b>										
SP38-18-09D-927-03 <sup>SNAP</sup>	00977	2700	9	16	17200	110	930	50	95 / 95	3
SP38-18-25D-927-03	00979	2700	25	40	5020	90	930	50	95 / 95	3
SP38-18-36D-927-03	00981	2700	36	60	2320	90	930	50	95 / 95	3
SP38-18-60D-927-03	00983	2700	60	90	1020	90	930	50	95 / 95	3
SP38-18-09D-930-03 <sup>SNAP</sup>	00993	3000	9	16	18500	110	1000	54	95 / 95	3
SP38-18-25D-930-03	00995	3000	25	40	5400	90	1000	54	95 / 95	3
SP38-18-36D-930-03	00997	3000	36	60	2500	90	1000	54	95 / 95	3
SP38-18-60D-930-03	00999	3000	60	90	1100	90	1000	54	95 / 95	3
SP38-18-09D-940-03 <sup>SNAP</sup>	01009	4000	9	16	19240	110	1040	56	95 / 95	4
SP38-18-25D-940-03	01011	4000	25	40	5600	90	1040	56	95 / 95	4
SP38-18-36D-940-03	01013	4000	36	60	2600	90	1040	56	95 / 95	4
SP38-18-60D-940-03	01015	4000	60	90	1140	90	1040	56	95 / 95	4
SP38-18-09D-950-03 <sup>SNAP</sup>	01017	5000	9	16	19420	110	1050	57	95 / 90	5
SP38-18-25D-950-03	01019	5000	25	40	5660	90	1050	57	95 / 90	5
SP38-18-36D-950-03	01021	5000	36	60	2620	90	1050	57	95 / 90	5
SP38-18-60D-950-03	01023	5000	60	90	1140	90	1050	57	95 / 90	5

### SORAA BRILLIANT SERIES

SP38-18-09D-827-03 <sup>SNAP</sup>	00985	2700	9	16	22000	120	1190	64	80 / >0	3
SP38-18-25D-827-03	00987	2700	25	40	6420	110	1190	64	80 / >0	3
SP38-18-36D-827-03	00989	2700	36	60	2960	110	1190	64	80 / >0	3
SP38-18-60D-827-03	00991	2700	60	90	1300	110	1190	64	80 / >0	3
SP38-18-09D-830-03 <sup>SNAP</sup>	01001	3000	9	16	23680	120	1280	69	80 / >0	3
SP38-18-25D-830-03	01003	3000	25	40	6900	110	1280	69	80 / >0	3
SP38-18-36D-830-03	01005	3000	36	60	3200	110	1280	69	80 / >0	3
SP38-18-60D-830-03	01007	3000	60	90	1400	110	1280	69	80 / >0	3

\*Specifications are at stable warm operating conditions (25°C ambient) \*\*Energy Star Minimum <sup>SNAP</sup>SORAA SNAP System Compatible  
CCT = Correlated Color Temperature CRI = Color Rendering Index (Ra-8) White Point = White Point Accuracy in McA step

### SAFETY NOTE ON HEAT

Although Soraa's lamps operate at cooler temperatures than halogen lamps, it is recommended that gloves be worn when handling bare lamps that have been energized.

Information and specifications subject to change. SP38 18W Rev 1 9.30.14  
Soraa Inc., 6500 Kaiser Drive, Suite 110, Fremont, CA 94555  
855 GO-SORAA / 855 467-6722 www.soraa.com

project: Many Voices One Nation  
project #: 14.600.01  
prepared for: Haley Sharpe Design Limited  
prepared by: abernathy lighting design

Issue Date: 04/07/16  
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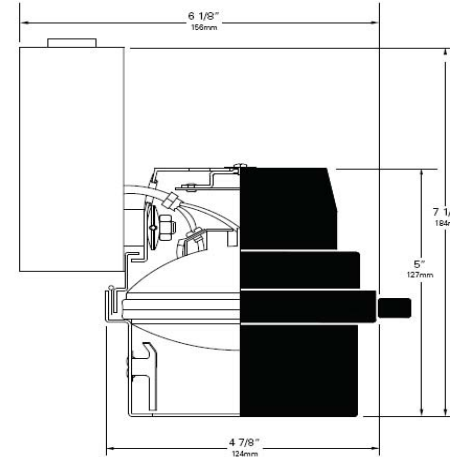
type  
**TA-W**  
page 4 of 4

# LN36 SERIES • 12V • PAR36/AR111



**A simple muted design and sturdy aluminum construction make this fixture a perfect solution to a host of architectural needs.**

- Designed for Tungsten Halogen screw terminal base PAR36 and AR111 lamps up to 75 watts
- Can be configured for use on 120V or 277V systems
- Adjustable and self-locking in all horizontal and vertical planes
- On/off safety switch (on most mounting types)
- Hinged front with relamping handle for easy lamp changing
- Internal multiple accessory clips accept all size-A LSI filters and accessories
- Extruded aluminum transformer housing with Integral 75VA 120V or 277/11.6V electronic transformer
- Finishes: LSI Black, White, Silver and Graphite
- Fixture weight: 1.5 lbs.
- IBEW



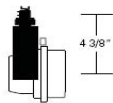
## ORDERING INFORMATION

1. Select your **Mounting Option**.
  2. If a 277V unit is required, add a **V** before the unit number.
  3. Choose other fixture **Options** (add suffix):
    - For Coiled Cord, add **CC**  
Coiled Cord is 18/3 105°C, 18" retracted, 6 foot extended. White fixtures are supplied with white cord, all other finishes are supplied with black cord. Available only with **2G, 3G** and **4G** mounting options. (When a coiled cord is not specified, a straight cord is provided.)
    - For Wrench Locking, add **WL**
  4. Choose a **Finish** for your fixture:  
 Black (**B**) White (**W**) Silver (**S**) Graphite (**G**)  
 Example: **V LN36 - 2G CC WL B**  
277V UNIT FINISH FITTING COILED CORD WRENCH LOCKING FINISH
- Blue fields are optional. Leave blank if not required.
5. Don't forget your **Accessories!**  
LSI features the widest range of accessories in the industry to help you modify the light's intensity, color, texture and pattern.

## MOUNTING OPTIONS

### LN36-00

Lexan Fitting for 1 and 2 circuit LSI Track. With On/Off switch.



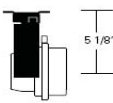
### \* LN36-4G

Cushioned weighted base for floor or table use. With switch, 6-foot 3-wire grounding cord and plug.



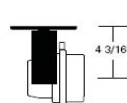
### LN36-2G

Universal fitting for Unistrut Systems and any screw or bolt-up applications. With switch, and 6-foot 3-wire grounding cord and plug.



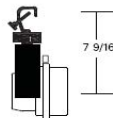
### LN36-5A

Canopy for permanent mounting on standard 4" octagonal outlet boxes.



### LN36-3G

C-clamp for pipes from 5/8" to 2" O.D. With switch, 6-foot 3-wire grounding cord and plug.



### Other Options (Consult Factory):

- Stems, specify length
- Custom color, RAL palette
- Emergency Fixture, add suffix **EF** (for use with 00 Mounting Option only)

\* Non-UL and Non-CUL.

project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: **abernathy lighting design**

Issue Date: 04/07/16  
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type

# TB

page 1 of 2

## PAR36/AR111 LAMPS

Watts	Spread	CBCP	
35	5°	25000	35PAR36/H/SP5
35	8°	20000	35PAR36/H/SP8
35	30°	900	35PAR36/H/FL30
50	5°	35000	50PAR36/H/SP5
50	8°	30000	50PAR36/H/SP8
50	30°	1300	50PAR36/H/FL30
50	4°	30000	50AR111/4/SSP
50	8°	23000	50AR111/8/SP
50	25°	4000	50AR111/25/FL

**Catalog #: LN36-2G-B**  
**Accessories: See Accessory Matrix**

**Lamp: Osram/Sylvania: 35AR111/SSP4/12V**

## ACCESSORIES



**Delta Baffle AIN**  
 Cylindrical metal hood with delta blade baffle. Controls spill light and glare. Exterior finish to match fixture, black interior.

### Other accessories:

- Louver A
- Hood AIN
- Barndoor AIN
- Cross Baffle AIN
- **Glass Color Filters A**
- **Spread Lenses A990, A992, A995, A996**
- Beam Softener A998
- Light Blocking Screens A801S, A802S, A803S
- OPTIVEX™ UV Blocking Filter A962

[Click for complete accessories and descriptions](#)

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 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: **abernathy lighting design**

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# TB

page 2 of 2



# LN36 SERIES • 12V • PAR36/AR111



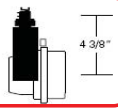
**A simple muted design and sturdy aluminum construction make this fixture a perfect solution to a host of architectural needs.**

- Designed for Tungsten Halogen screw terminal base PAR36 and AR111 lamps up to 75 watts
- Can be configured for use on 120V or 277V systems
- Adjustable and self-locking in all horizontal and vertical planes
- On/off safety switch (on most mounting types)
- Hinged front with relamping handle for easy lamp changing
- Internal multiple accessory clips accept all size-A LSI filters and accessories
- Extruded aluminum transformer housing with Integral 75VA 120V or 277/11.6V electronic transformer
- Finishes: LSI Black, White, Silver and Graphite
- Fixture weight: 1.5 lbs.
- IBEW

## MOUNTING OPTIONS

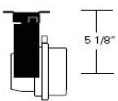
### LN36-00

Lexan Fitting for 1 and 2 circuit LSI Track. With On/Off switch.



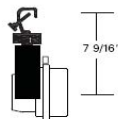
### LN36-2G

Universal fitting for Unistrut Systems and any screw or bolt-up applications. With switch, and 6-foot 3-wire grounding cord and plug.



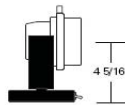
### LN36-3G

C-clamp for pipes from 5/8" to 2" O.D. With switch, 6-foot 3-wire grounding cord and plug.



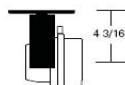
### \* LN36-4G

Cushioned weighted base for floor or table use. With switch, 6-foot 3-wire grounding cord and plug.



### LN36-5A

Canopy for permanent mounting on standard 4" octagonal outlet boxes.



### Other Options (Consult Factory):

- Stems, specify length
- Custom color, RAL palette
- Emergency Fixture, add suffix **EF** (for use with 00 Mounting Option only)

\* Non-UL and Non-CUL.

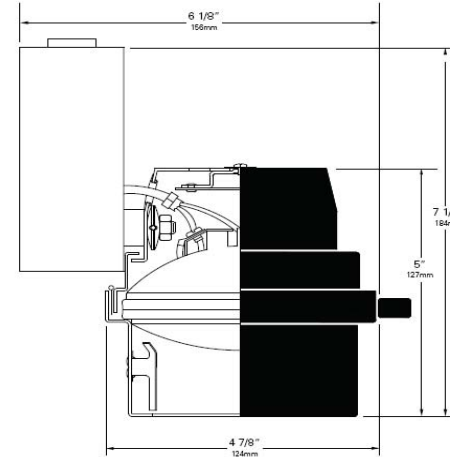
project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: **abernathy lighting design**

Issue Date: 04/07/16  
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type

# TB-S

page 1 of 2



## ORDERING INFORMATION

1. Select your **Mounting Option**.
  2. If a 277V unit is required, add a **V** before the unit number.
  3. Choose other fixture **Options** (add suffix):
    - For Coiled Cord, add **CC**  
Coiled Cord is 18/3 105°C, 18" retracted, 6 foot extended. White fixtures are supplied with white cord, all other finishes are supplied with black cord. Available only with **2G, 3G** and **4G** mounting options. (When a coiled cord is not specified, a straight cord is provided.)
    - For Wrench Locking, add **WL**
  4. Choose a **Finish** for your fixture:  
 Black (**B**) White (**W**) **Silver (S)** Graphite (**G**)  
 Example: **V LN36 - 2G CC WL B**  
277V UNIT FINISH FITTING COILED CORD WRENCH LOCKING FINISH
- Blue fields are optional. Leave blank if not required.
5. Don't forget your **Accessories!**  
 LSI features the widest range of accessories in the industry to help you modify the light's intensity, color, texture and pattern.

## PAR36/AR111 LAMPS

Watts	Spread	CBCP	
35	5°	25000	35PAR36/H/SP5
35	8°	20000	35PAR36/H/SP8
35	30°	900	35PAR36/H/FL30
50	5°	35000	50PAR36/H/SP5
50	8°	30000	50PAR36/H/SP8
50	30°	1300	50PAR36/H/FL30
50	4°	30000	50AR111/4/SSP
50	8°	23000	50AR111/8/SP
50	25°	4000	50AR111/25/FL

**Catalog #: LN36-00-S**  
**Accessories: See Accessory Matrix**  
**Lamp: Osram/Sylvania: 35AR111/SSP4/12V**

## ACCESSORIES



**Delta Baffle AIN**  
 Cylindrical metal hood with delta blade baffle. Controls spill light and glare. Exterior finish to match fixture, black interior.

### Other accessories:

- Louver A
- Hood AIN
- Barndoor AIN
- Cross Baffle AIN
- **Glass Color Filters A**
- **Spread Lenses A990, A992, A995, A996**
- **Beam Softener A998**
- **Light Blocking Screens A801S, A802S, A803S**
- **OPTIVEX™ UV Blocking Filter A962**

[Click for complete accessories and descriptions](#)

project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: **abernathy lighting design**

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type

# TB-S

page 2 of 2

# LN36 SERIES • 12V • PAR36/AR111



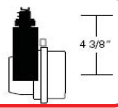
A simple muted design and sturdy aluminum construction make this fixture a perfect solution to a host of architectural needs.

- Designed for Tungsten Halogen screw terminal base PAR36 and AR111 lamps up to 75 watts
- Can be configured for use on 120V or 277V systems
- Adjustable and self-locking in all horizontal and vertical planes
- On/off safety switch (on most mounting types)
- Hinged front with relamping handle for easy lamp changing
- Internal multiple accessory clips accept all size-A LSI filters and accessories
- Extruded aluminum transformer housing with Integral 75VA 120V or 277/11.6V electronic transformer
- Finishes: LSI Black, White, Silver and Graphite
- Fixture weight: 1.5 lbs.
- IBEW

## MOUNTING OPTIONS

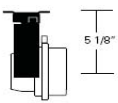
### LN36-00

Lexan Fitting for 1 and 2 circuit LSI Track. With On/Off switch.



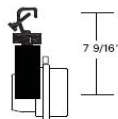
### LN36-2G

Universal fitting for Unistrut Systems and any screw or bolt-up applications. With switch, and 6-foot 3-wire grounding cord and plug.



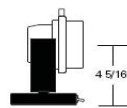
### LN36-3G

C-clamp for pipes from 5/8" to 2" O.D. With switch, 6-foot 3-wire grounding cord and plug.



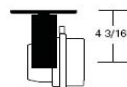
### \* LN36-4G

Cushioned weighted base for floor or table use. With switch, 6-foot 3-wire grounding cord and plug.



### LN36-5A

Canopy for permanent mounting on standard 4" octagonal outlet boxes.



### Other Options (Consult Factory):

- Stems, specify length
- Custom color, RAL palette
- Emergency Fixture, add suffix **EF** (for use with 00 Mounting Option only)

\* Non-UL and Non-CUL.

04/08 [www.LightingServicesInc.com](http://www.LightingServicesInc.com)

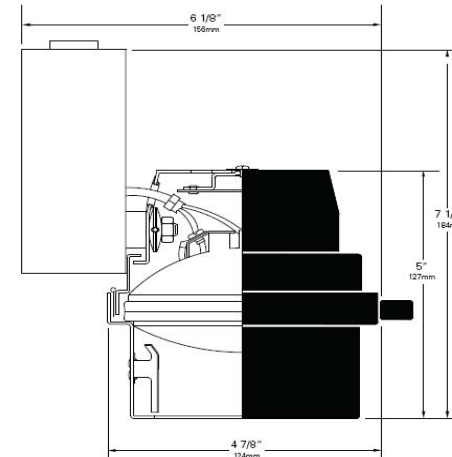
project: Many Voices One Nation  
project #: 14.600.01  
prepared for: Haley Sharpe Design Limited  
prepared by: **abernathy lighting design**

Issue Date: 04/07/16  
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type

# TB-W

page 1 of 2



## ORDERING INFORMATION

1. Select your **Mounting Option**.
  2. If a 277V unit is required, add a **V** before the unit number.
  3. Choose other fixture **Options** (add suffix):
    - For Coiled Cord, add **CC**  
Coiled Cord is 18/3 105°C, 18" retracted, 6 foot extended. White fixtures are supplied with white cord, all other finishes are supplied with black cord. Available only with **2G, 3G** and **4G** mounting options. (When a coiled cord is not specified, a straight cord is provided.)
    - For Wrench Locking, add **WL**
  4. Choose a **Finish** for your fixture:  
Black (B) **White (W)** Silver (S) Graphite (G)  
Example: **V LN36 - 2G CC WL B**  
277V UNIT FINISH FITTING COILED CORD WRENCH LOCKING FINISH
- Blue fields are optional. Leave blank if not required.
5. Don't forget your **Accessories!**  
LSI features the widest range of accessories in the industry to help you modify the light's intensity, color, texture and pattern.

## PAR36/AR111 LAMPS

Watts	Spread	CBCP	
35	5°	25000	35PAR36/H/SP5
35	8°	20000	35PAR36/H/SP8
35	30°	900	35PAR36/H/FL30
50	5°	35000	50PAR36/H/SP5
50	8°	30000	50PAR36/H/SP8
50	30°	1300	50PAR36/H/FL30
50	4°	30000	50AR111/4/SSP
50	8°	23000	50AR111/8/SP
50	25°	4000	50AR111/25/FL

**Catalog #: LN36-00-W**  
**Accessories: See Accessory Matrix**

**Lamp: Osram/Sylvania: 35AR111/SSP4/12V**

## ACCESSORIES



### Delta Baffle AIN

Cylindrical metal hood with delta blade baffle. Controls spill light and glare. Exterior finish to match fixture, black interior.

### Other accessories:

- Louver A
- Hood AIN
- Barndoor AIN
- Cross Baffle AIN
- **Glass Color Filters A**
- **Spread Lenses A990, A992, A995, A996**
- Beam Softener A998
- Light Blocking Screens A801S, A802S, A803S
- OPTIVEX™ UV Blocking Filter A962

[Click for complete accessories and descriptions](#)

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Issue Date: 04/07/16  
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type

# TB-W

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GENERAL INFORMATION

Source 4WRD (Watt Reduction Device) LED is a replacement for a standard Source Four® burner assembly that will convert the HPL source to a white-light LED and provides a significant reduction in power consumption. The simple and quick upgrade is nondestructive and takes less than a minute. In most cases it can even be done without breaking the fixture's focus. Source 4WRD LED is theatrically dimmable via DMX or line dimmable, with a traditional LED curve, to allow flexibility for your installation. And, because it is an LED source, your fixtures will run cool and efficiently without lamp replacements.

APPLICATIONS

- Energy saving retrofits
- Houses of worship
- Universities and schools
- Hospitality
- Retail
- Exhibition centers
- Meeting rooms
- Clubs
- Cafeteriums
- Theaters

ORDERING INFORMATION

Source 4WRD

MODEL	DESCRIPTION
S4WRD	Source 4WRD Retrofit kit
S4WRDFB*	Source 4WRD w/ Fixture Body

\*S4WRDFB ships with a fixture body, barrel and c-clamp. Lens tubes are sold separately.

Connector Designation

Use Suffixes below to specify Factory-Fitted Connector type

MODEL	DESCRIPTION
-A	Parallel-blade U-ground connector
-B	Two-pin and ground, 20 amp connector
-C	Grounded, 20 amp, twistlock connector

See back page for Source Four Accessories



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 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
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SPECIFICATIONS

PHYSICAL

- Rugged, die cast aluminum construction
- Can be fitted to any Source Four fixture body (not for Source Four Par/nel, Fresnel or jr.)
- Seven segment display for simple DMX setup
- Two button user interface
- Easy mounting with single screw attachment
- Replaces Source Four burner assembly
- Available in black, white, silver and custom color
- IP20 rating for indoor use only
- UL and cUL Listed
  - S4WRD: UL1598C
  - S4WRDFB: UL1573
- US patents issued and pending
- Three-year warranty

ELECTRICAL

- 114-125V, 60Hz
- 155 watt draw at full (182 watt theoretical max. draw)
- 30,000 hour L70 Rating (ETC estimate)
  - Life testing under way. Results pending
- DMX in and thru via RJ45 connector
  - DMX is not self terminating
- One-meter power cord
- AC and DMX dimmable (see 'Dimming Performance' note)
- Two fixtures per circuit (D20 Module) when using AC dimming
- 14 fixtures per non-dim circuit (R20 Module) when using DMX dimming
- Inrush: 30A (First half-cycle) at 120V
- Typical Power Consumption at 120V
  - Idle Power / Current:
    - DMX Mode: 1.2W/.046A
    - AC Mode: 0W
  - Full Intensity Power / Current: 155.7W/1.35A

OPTICAL

- Tool free field adjustment
- LED lamp consisting of four CREE LED Modules
  - LED lamp is fragile and should not be touched
- 3000K, 80CRI output
- Uses the Source Four ellipsoidal's existing reflector and optical system

THERMAL

- 5-40° C (41-104° F) operating range
  - Fixture must be above freezing temperatures for one hour before being energized.
- Quiet fan cooling
- Fixture is designed for continuous operation up to 104° F (40°C) ambient temperature and requires free flow of air around fixture housing

SPECIFICATIONS

DIMMING PERFORMANCE

- Source 4WRD LED is capable of being both DMX or line-dimmed by a conventional SCR dimmer. In AC dimming mode, performance can vary based on the dimmer used and its control settings. For this reason, AC dimming is best suited for level setting or traditional LED quality dimming situations. When high-performance dimming is required, DMX mode should be used. We recommend testing Source 4WRD LED on existing dimmers you may wish to use.

PHOTOMETRICS

For full Source 4WRD photometry data, please view the Source 4WRD Photometry Guide at [www.etcconnect.com](http://www.etcconnect.com)

DEGREE	S4WRD LED LUMENS	HPL 575W/120X LUMENS	HPL 750W/115V LUMENS
5	6,577	5,247	9,370
10	7,482	6,678	11,925
14	7,696	7,196	12,850
19	6,818	6,261	11,180
19 EDLT	8,008	7,287	13,012
26	7,597	7,666	13,690
26 EDLT	9,502	8,631	15,412
36	8,959	7,974	14,240
36 EDLT	9,006	7,992	14,271
50	8,652	7,829	13,980
50 EDLT	8,446	8,085	14,437
70	9,909	9,033	16,130
90	9,843	7,395	13,205



project: Many Voices One Nation  
 project #: 14.600.01  
 prepared for: Haley Sharpe Design Limited  
 prepared by: abernathy lighting design

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type

TC

page 2 of 4

ORDERING INFORMATION

Continued from front page...

Source Four Accessories

MODEL	DESCRIPTION
400CC	C-clamp
400PH-A	Pattern holder (A size)
400PH-B	Pattern holder (B size)
400PH-G	Glass pattern holder
400SC	Safety cable
400RS	Drop-in iris
400CF	Colorframe (6.25")
400DN	Donut (6.25")
400TH	Top hat
400HH	Half hat
400GE	Gel extender (Recommended for 19° and 26° only)
407GE	Conical gel extender (requires 407CF below)
407CF	7.5" Square color frame (required for 14°, 70°, 90° and 407GE)
400FB	Source Four fixture body, single clutch

Note: For colors other than black or white, please call ETC.

Fixed Beam Lenses

MODEL	DESCRIPTION
LED5OLT	LED-specific 50° EDLT with lenses installed
LED5OLT-1	LED-specific 50° EDLT (white) with lenses installed
436EDLT	36° EDLT w/lens installed
436EDLT-1	36° EDLT (white) w/lens installed
426EDLT	26° EDLT w/lens installed
426EDLT-1	26° EDLT (white) w/lens installed
419EDLT	19° EDLT w/lens installed
419EDLT-1	19° EDLT (white) w/lens installed
49OLT	90° w/lens installed
49OLT-1	90° (white) w/lens installed
47OLT	70° w/lens installed
47OLT-1	70° (white) w/lens installed
414LT	14° w/lens installed
414LT-1	14° (white) w/lens installed
41OLT	10° w/lens installed
41OLT-1	10° (white) w/lens installed
405LT	5° w/lens installed
405LT-1	5° (white) w/lens installed

project: Many Voices One Nation  
project #: 14.600.01  
prepared for: Haley Sharpe Design Limited  
prepared by: **abernathy lighting design**

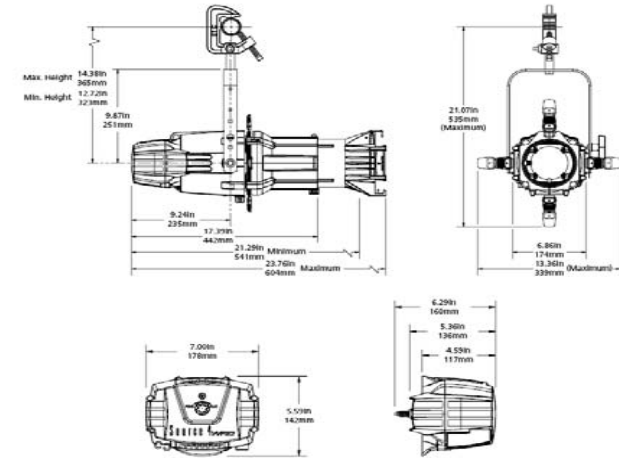
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type

**TC**

page 3 of 4

PHYSICAL



Source 4WRD Dimensions

MODEL	HEIGHT		WIDTH		DEPTH	
	Inches	mm	Inches	mm	Inches	mm
S4WRD	5.59	142	7.00	178	6.29	160
S4WRDFB w/ 26 deg. lens	21.07	535	13.36	339	23.76	604

Source 4WRD Weights\*

MODEL	WEIGHT		SHIPPING WEIGHT	
	lbs	kgs	lbs	kgs
S4WRD	3.73	1.69	4.25	1.93
S4WRDFB (no lens)	13.2	5.99	14	6.35

\*Source 4WRD adds 2.05 lbs to the total fixture weight over a standard burner assembly.

Catalog #: S4WRDFB-A + 47OLT + 400SC + 400PH-A

Accessories: See Accessory Matrix

Lamp: LED by Manufacturer



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project: Many Voices One Nation  
project #: 14.600.01  
prepared for: Haley Sharpe Design Limited  
prepared by: **abernathy lighting design**

Issue Date: 04/07/16  
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type

**TC**

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GENERAL INFORMATION

The Source Four Mini LED can go where no full-sized Source Four® has gone before. ETC's 12W Source Four Mini LED features the same crisp optics, user-friendly functionality and sleek look of the legendary Source Four fixture, but in a compact format at a fraction of the size.

The Source Four Mini LED has four field-angle choices and comes in a portable version with a miniature C-clamp and a canopy-mount or track-mount design. Surprisingly bright for its size, the Mini LED offers crystal-clear image projection and a bright, even field.

VENUES

- Museums
- Retail stores
- Restaurants
- Lobbies
- Light labs
- Theaters

FEATURES

- Rugged, die-cast fixture body
- Interchangeable lens tubes permit selection of 19°, 26°, 36° and 50° field angles
- Uniquely efficient optical system
- Long-life dimmable white LED source in two CRI values
  - Source Four Mini LED: 80+ CRI
  - Source Four Mini LED Gallery: 90+ CRI
- Three-plane shutters
- Multiple accessories available for color, pattern, and filtering
- Multiple mounting options: C-clamp, canopy and track
- Custom paint colors available; contact ETC

GENERAL

- ETL listed to the following standards
  - Portable UL/cUL153
  - Track mount UL/cUL1574
  - Canopy mount UL/cUL1598

ORDERING INFORMATION

Source Four Mini LED

MODEL	DESCRIPTION
4M19L	19° Source Four Mini LED (black)
4M26L	26° Source Four Mini LED (black)
4M36L	36° Source Four Mini LED (black)
4M50L	50° Source Four Mini LED (black)
*G	90+ CRI Gallery version
COLOR OPTIONS	
-1	White
-5	Silver

Additional Ordering Information

MODEL	DESCRIPTION
N/A	Portable
-I	Install canopy mount
-T	Track mount adapter
LSI or Global Track Adapters	Available with LSI (00FIT-BAL18) and Global (GA 69) track adapters upon request

Example: 4M19L-IT for a Source Four Mini LED with a 19° lens in white with a track-mount adapter



SPECIFICATIONS

PHYSICAL

- Die-cast aluminum construction (A380 grade)
- Fine-texture, high-temperature powder-coated paint
- Steel yoke with 0.406" diameter mounting hole
- Rotating shutter assembly ±175°
  - 37.5mm with a 25.4mm image area
- Stainless steel, full hard shutters in a tri-plane assembly, 0.40mm (A301 grade)
- Fixed-beam angles to suit a range of throw distances
- Tool-free tilt and beam adjustment
- High-impact resistant, thermally insulated knobs and shutter handles
- Captive accessory slot for pattern holder (included)
- Dual captive accessory slots for media frame (included)
- Portable -
  - Yoke-mounted LED driver in color-matched enclosure (black adapter for silver fixtures)
  - Miniature C-clamp mounting (included)- for use with 3/8" to 1" pipe (0.675" to 1.315" OD)
  - 6'6" power cable with NEMA 5-15P connector
- Install canopy -
  - Color-matched, powder-coated canopy mount with LED driver (included)
  - Canopy dimensions: 5.31" (W) x 1.04" (H)
  - Installation hardware included
  - Fixture to canopy factory pre wired for easy install
  - Built-in rotation stop to prevent cable damage
- Track mount -
  - Compatible and ETL-listed for EUTRAC brand track
  - EUTRAC (#98-549) two-circuit track adapter included
  - LED factory-installed in color-matched adapter (black adapter for silver fixtures)
- Black or white power lead
- IP20 for Portable and Canopy versions
- IP40 for Track version

ELECTRICAL

- Power at full intensity: 12W typical, 14W max
- 18 AWG input wire size
- Input voltage options:
  - 90-135V, 50/60Hz
  - 190-250V, 50/60Hz
- Dimmable (forward and reverse phase)
- Inrush (first half-cycle)
  - 120V: <1A
  - 240V: <1A

SPECIFICATIONS (CONT.)

LAMP

- Cree LED (Available in 80+ and 90+ CRI)
- Long-life lamp: 35,000 hours L70 lumen maintenance
- 3000K color temperature

OPTICAL

- Fixed-beam options of 19°, 26°, 36° and 50° field angles
- Projector-quality, high-contrast lenses
- Beam edge continually adjustable hard to soft

THERMAL

- 0°C to +40°C

project: Many Voices One Nation project #: 14.600.01 prepared for: Haley Sharpe Design Limited prepared by: abernathy lighting design	type <b>TF</b> page 1 of 4
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ACCESSORIES

MODEL	DESCRIPTION
4MPH	Pattern holder
4MCF	Color frame
4MD	Donut
4MTH	Top hat
4MTHS	Top hat short
4MHH	Half hat
4MHHS	Half hat short

400SC- Safety Cable



4MTHS - TOP HAT SHORT



4MD - DONUT



4MHH - HALF HAT



4MTH - TOP HAT



4MHHS - HALF HAT SHORT

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PHYSICAL

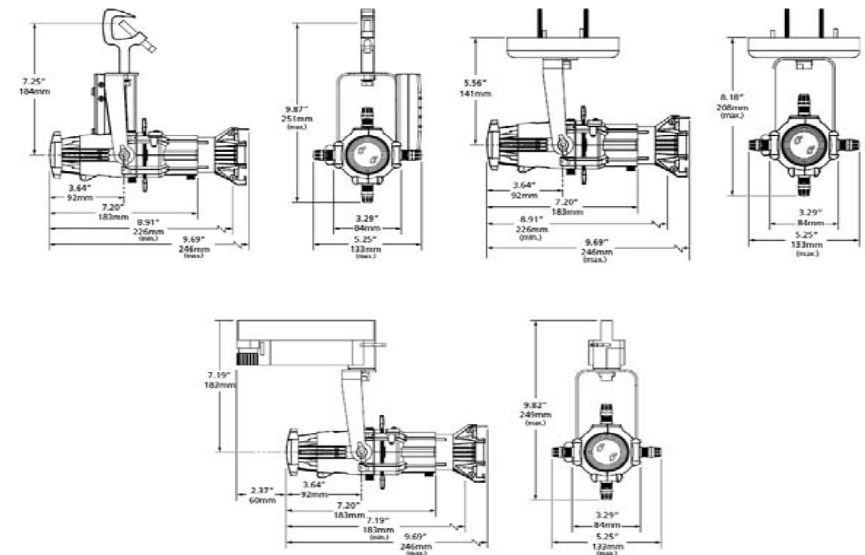
Source Four Mini LED Weights and Dimensions

	WEIGHT		SHIPPING WEIGHT	
	lbs.	kgs	lbs.	kgs
Portable	2.7	1.2	3.8	1.7
Install Canopy	2.6	1.2	3.7	1.7
Track Mount	2.4	1.1	3.6	1.6

\*Shipping Dimensions: TBD

Catalog #: 4M50L-G  
Accessories: 4MCF + 400SC

Lamp: LED by Manufacturer



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U.S. and international patent pending.

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GENERAL INFORMATION

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The Source Four Mini LED has four field-angle choices and comes in a portable version with a miniature C-clamp and a canopy-mount or track-mount design. Surprisingly bright for its size, the Mini LED offers crystal-clear image projection and a bright, even field.

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- Museums
- Retail stores
- Restaurants
- Lobbies
- Light labs
- Theaters

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- Rugged, die-cast fixture body
- Interchangeable lens tubes permit selection of 19°, 26°, 36° and 50° field angles
- Uniquely efficient optical system
- Long-life dimmable white LED source in two CRI values
  - Source Four Mini LED: 80+ CRI
  - Source Four Mini LED Gallery: 90+ CRI
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  - Track mount UL/cUL1574
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Source Four Mini LED

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4M50L	50° Source Four Mini LED (black)
*G	90+ CRI Gallery version
COLOR OPTIONS	
-1	White
-5	Silver

Additional Ordering Information

MODEL	DESCRIPTION
N/A	Portable
-I	Install canopy mount
-T	Track mount adapter
LSI or Global Track Adapters	Available with LSI (00FT-BAL18) and Global (GA 69) track adapters upon request

Example: 4M19L-IT for a Source Four Mini LED with a 19° lens in white with a track-mount adapter



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- Rotating shutter assembly ±175°
  - 37.5mm with a 25.4mm image area
- E-size nobo pattern holder (included)
- Stainless steel, full hard shutters in a tri-plane assembly, 0.40mm (A301 grade)
- Fixed-beam angles to suit a range of throw distances
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- Black or white power lead
- IP20 for Portable and Canopy versions
- IP40 for Track version

ELECTRICAL

- Power at full intensity: 12W typical, 14W max
- 18 AWG input wire size
- Input voltage options:
  - 90-135V, 50/60Hz
  - 190-250V, 50/60Hz
- Dimmable (forward and reverse phase)
- Inrush (first half-cycle)
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SPECIFICATIONS (CONT.)

LAMP

- Cree LED (Available in 80+ and 90+ CRI)
- Long-life lamp: 35,000 hours L70 lumen maintenance
- 3000K color temperature

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- Fixed-beam options of 19°, 26°, 36° and 50° field angles
- Projector-quality, high-contrast lenses
- Beam edge continually adjustable hard to soft

THERMAL

- 0°C to +40°C

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ACCESSORIES

MODEL	DESCRIPTION
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4MTH	Top hat
4MTHS	Top hat short
4MHH	Half hat
4MHHS	Half hat short

400SC- Safety Cable



4MTHS - TOP HAT SHORT



4MD - DONUT



4MHH - HALF HAT



4MTH - TOP HAT



4MHHS - HALF HAT SHORT

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PHYSICAL

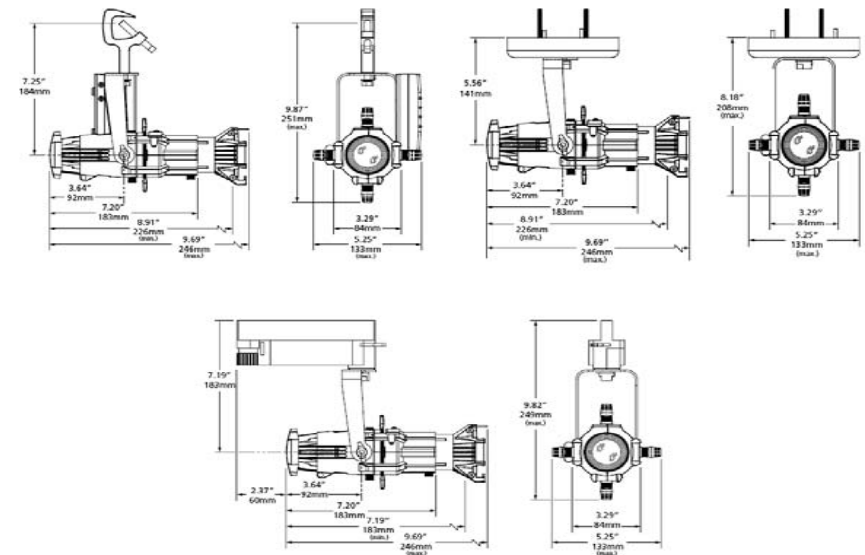
Source Four Mini LED Weights and Dimensions

	WEIGHT		SHIPPING WEIGHT	
	lbs.	kgs	lbs.	kgs
Portable	2.7	1.2	3.8	1.7
Install Canopy	2.6	1.2	3.7	1.7
Track Mount	2.4	1.1	3.6	1.6

\*Shipping Dimensions: TBD

Catalog #: 4M26L-G  
Accessories: 4MCF + 400SC

Lamp: LED by Manufacturer



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## 10.0 Graphic hierarchy

# Hierarchy

This top line hierarchy shows how a range of information can be broken down into different interpretive levels.

Word counts are provided as a guide of universal best practice.

<p><b>Level 0</b> Gallery title</p>			
<p><b>Level 0a</b> Main Label (100 words)</p>	<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.</p>		
<p><b>Level 1</b> Main Section Title (1-5 words max excluding dates)</p>	<p><b>UNSETTLING THE CONTINENT</b></p>	<p><b>Level 2</b> Subsection Title (1-8 words max)</p>	<p><b>Spanish New Mexico</b></p>
<p><b>Level 1a</b> Main Section Label (100 words)</p>	<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad.</p>	<p><b>Level 2a</b> Subsection Label (100-125 words max)</p>	<p><small>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim.</small></p> <p><small>ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio digni ssim qui blandit praesent.</small></p> <p><small>Luptatum zzril delenit augue duiis dolore te feugait nulla facilisi. Epsum factorial non deposit quid pro quo hic escorol. Olypian quarrels et gorilla congolium sic ad nauseum.</small></p>
<p><b>Level 3</b> Titles for Object Label, Graphic Label, Subsub Label (1-8 words max)</p> <p><b>Level 3a</b> Object Label, Graphic Label, Subsub Label (100 words max)</p>	<p>Object/Graphic Label:</p> <div> <p><b>Object/graphic caption title</b></p> <p><small>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci.</small></p> <hr/> <p><small>Object name one Gift of Xxxxxx</small></p> </div> <p>Subsub Label:</p> <div> <p><b>Subsub label title on two lines</b></p> <p><small>Dolos amet lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea. Commodore consequat duiis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue duiis dolore te feugait nulla facilisi. Epsum factorial non deposit quid pro quo hic escorol. Olypian quarrels et gorilla congolium sic.</small></p> </div>	<p><b>Level 4</b> Photo/AV credits (25 words max)</p>	<div> <p>Gift of Xxxxxxxx</p> </div>
<p><b>Quote/statement</b> To be written for any level (Word length whatever is needed)</p>	<p>Remember, remember always, that all of us, and you and I especially, <b>ARE DESCENDED</b> from <b>IMMIGRANTS</b> and <b>REVOLUTIONISTS</b></p> <p><b>FRANKLIN D. ROOSEVELT</b></p>		

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