Landmark Environmental, Inc.
7881 Shaffer Parkway ♦ Littleton, Colorado 80127 ♦ 720-283-8975 ♦ Fax: 720-283-8666

Lead Paint Inspection Form

Client: Anderson Hallas Architects NPS Contract	Project: 17075.001.001 Kawuneeche Visitor Center	Date: 10/4/17 Inspector: Tristan Fitzpatrick

Sample #	Location	Component	Substrate	Color	Condition	Result RES 391516
SVC-A-117-LBP01	South wall at west of door, 4' up. Main Building, ~1963 Construction Era	Wall	Drywall	White	Good	BRL
SVC-B-102-LIP02	North wall at 103 door, 1' up. Visitors Center Addition, ~1989 Construction Era	Wall	Wood	Army Green	Good	BRL
SVC-B-105-LIP03	South wall at east of entry door. Visitors Center Addition, ~1989 Construction Era	Wall	Drywall	White	Good	BRL
SVC-B-105-LIP04	Half wall in room, on trim board. Visitors Center Addition, ~1989 Construction Era	Trim	Wood	Brown	Good	BRL
SVC-B-EXT-LBP05	At south-west corner, exterior of room 103. Visitors Center Addition, ~1989 Construction Era	Exterior Wall	Wood	Dark Green/Brown	Good	BRL
SVC-B- EXT-LBP06	At south-west corner, exterior of room 103. Visitors Center Addition, ~1989 Construction Era	Exterior Trim	Wood	Light Green/Grey	Good	BRL
SVC-A-EXT-LBP07	At south-east corner, exterior of room 121. Main Building, ~1963 Construction Era	Exterior Wall	Wood	Dark Green/Brown	Good	0.070 %
SVC-A-EXT-LBP08	At south-east corner, exterior of room 121. Main Building, ~1963 Construction Era	Exterior Trim	Wood	Light Green/Grey	Good	0.076 %
SVC-C-EXT-LBP09	At south west corner, exterior of room B1. Detached Bathroom / Comfort Building, ~1963 Construction Era	Exterior Wall	Wood	Dark Green/Brown	Good	0.069 %
SVC-C-EXT-LBP10	At south west corner, exterior of room B1. Detached Bathroom / Comfort Building, ~1963 Construction Era	Exterior Trim	Wood	Light Green/Grey	Good	0.083 %

BRL – Below Reporting Limit at the laboratory

REI LAB **Reservoirs Environmental, Inc.**

October 9, 2017

Laboratory Code:	**RES**
Subcontract Number:	**NA**
Laboratory Report:	**RES 391516-1**
Project # / PO #:	**17075.001.001**
Project Description:	**Kawuneeche Visitors Center**

Tristan Fitzpatrick
Landmark Environmental, Inc.
7881 Shaffer Parkway
Littleton CO 80217

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the American Industrial Hygiene Association, Lab ID 101533 - Accreditation Certificate #480. The laboratory is currently proficient in both IHPAT & ELPAT programs respectively.

Reservoirs has analyzed the following sample(s) using Atomic Absorption Spectroscopy (AAS) / Atomic Emission Spectroscopy - Mass Spectrometry (ICP-MS) per your request. Reported sample results were not blank corrected. The analysis has been completed in general accordance with the appropriate methodology as stated in the analysis table. Results have been sent to your office.

RES 391516-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those authorized by the client. The results described in this report only apply to the samples analyzed. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you should have any questions about this report, please feel free to call me at 303-964-1986.

Sincerely,

Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL, INC.

5801 Logan St., Suite 100
Denver CO 80216

TABLE ANALYSIS: LEAD IN PAINT

RES Job Number: **RES 391516-1**
Client: **Landmark Environmental, Inc.**
Client Project Number / P.O.: **17075.001.001**
Client Project Description: **Kawuneeche Visitors Center**
Date Samples Received: **October 6, 2017**
Analysis Type: **USEPA SW846 3050B / AA (7420)**
Turnaround: **24 Hour**
Date Samples Analyzed: **October 9, 2017**

Client ID Number	Lab ID Number	Reporting Limit (%)	LEAD CONCENTRATION (%)
SVC-A-117-LBP01	EM 1967186	0.0092	BRL
SVC-B-102-LBP02	EM 1967187	0.0082	BRL
SVC-B-105-LBP03	EM 1967188	0.0055	BRL
SVC-B-105-LBP04	EM 1967189	0.020	BRL
SVC-B-EXT-LBP05	EM 1967190	0.0059	BRL
SVC-B-EXT-LBP06	EM 1967191	0.0030	BRL
SVC-A-EXT-LBP07	EM 1967192	0.0034	0.070
SVC-A-EXT-LBP08	EM 1967193	0.0048	0.076
SVC-C-EXT-LBP09	EM 1967194	0.0054	0.069
SVC-C-EXT-LBP10	EM 1967195	0.0074	0.083

*** Unless otherwise noted all quality control samples performed within specifications established by the laboratory.**

Analyst / Data QA: Renee A. Cortez

BRL = Below Reporting Limit

Due Date: 10-7-17
Due Time: _____

REI LAB Reservoirs Environmental, Inc.

RES 391516

Pager : 303-509-2098

INVOICE TO: (IF DIFFERENT)

Company: Landmark Environmental, Inc.	Company: Same	Contact: Brandy Howard	Contact: Tristan Fitzpatrick
Address: 7881 Shaffer Parkway	Address:	Phone: 720.878.6475	Phone: 303.880.6215
Littleton, CO 80127		Fax:	Fax:
		Cell/pager:	Cell/pager:
Project Number and/or P.O. #: 17075.001.001		Final Data Deliverable Email Address: bhoward@landmarkenviro.com tfitzpatrick@landmarkenviro.com	
Project Description/Location: Kawuneeche Visitors Center		hkruse@landmarkenviro.com ssoulia@landmarkenviro.com	

CONTACT INFORMATION:

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm

PLM / PCM / TEM ___ RUSH (Same Day) ___ PRIORITY (Next Day) ___STANDARD
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust ___ RUSH X 24 hr. ___3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___10 day
Organics ___ 24 hr. ___ 3 day ___5 Day

Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___2 Day ___3-5 Day
Salmonella, Listeria, E.coli, APC, Y & M ___ 48 Hr. ___3-5 Day
Mold ___ RUSH ___24 Hr ___48 Hr ___3 Day ___5 Day

Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.

REQUESTED ANALYSIS

Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) AAS/ICT/PB RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Salmonella: +/-	E.coli O157:H7: +/-	Listeria: +/-	Aerobic Plate Count: +/- or Quantification	E.coli: +/- or Quantification	Coliforms: +/- or Quantification	S.aureus: +/- or Quantification	Y & M: +/- or Quantification	Mold: +/-, Identification, Quantification	SAMPLER'S INITIALS OR OTHER NOTES
1 SVC-A-117-LBP01					X											
2 SVC-B-102-LBP02					X											
3 SVC-B-105-LBP03					X											
4 SVC-B-105-LBP04					X											
5 SVC-B-EXT-LBP05					X											
6 SVC-B-EXT-LBP06					X											
7 SVC-A-EXT-LBP07					X											
8 SVC-A-EXT-LBP08					X											
9 SVC-C-EXT-LBP09					X											
10 SVC-C-EXT-LBP10					X											

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
	P		10/4/2017	N/A	1967186
	P		10/4/2017	N/A	7
	P		10/4/2017	N/A	8
	P		10/4/2017	N/A	9
	P		10/4/2017	N/A	90
	P		10/4/2017	N/A	1
	P		10/4/2017	N/A	2
	P		10/4/2017	N/A	3
	P		10/4/2017	N/A	4
	P		10/4/2017	N/A	5

Number of samples received: 10 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: [signature] Date/Time: 10/6/2017 10:48AM

Laboratory Use Only
Received By: [signature] Date/Time: 10-6-17 11:00 Carrier: Grad

Sample Condition: On Ice Sealed Intact
Temp. (F°) _____ Yes / No Yes / No Yes / No

Results:	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials
	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials

REI LAB **Reservoirs Environmental, Inc.**

October 9, 2017

Laboratory Code:	**RES**
Subcontract Number:	**NA**
Laboratory Report:	**RES 391517-1**
Project # / PO #:	**17075.001.001**
Project Description:	**Kawuneeche Visitors Center**

Brandy
Landmark Environmental, Inc.
7881 Shaffer Parkway
Littleton CO 80217

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the American Industrial Hygiene Association, Lab ID 101533 - Accreditation Certificate #480. The laboratory is currently proficient in both IHPAT & ELPAT programs respectively.

Reservoirs has analyzed the following sample(s) using Atomic Absorption Spectroscopy (AAS) / Atomic Emission Spectroscopy - Mass Spectrometry (ICP-MS) per your request. Reported sample results were not blank corrected. The analysis has been completed in general accordance with the appropriate methodology as stated in the analysis table. Results have been sent to your office.

RES 391517-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those authorized by the client. The results described in this report only apply to the samples analyzed. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you should have any questions about this report, please feel free to call me at 303-964-1986.

Sincerely,

Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL, INC.

5801 Logan St., Suite 100
Denver CO 80216

TABLE ANALYSIS: LEAD IN SOIL

RES Job Number:	**RES 391517-1**
Client:	**Landmark Environmental, Inc.**
Client Project Number / P.O.:	**17075.001.001**
Client Project Description:	**Kawuneeche Visitors Center**
Date Samples Received:	**October 6, 2017**
Analysis Type:	**USEPA SW846 3050B / AA (7420)**
Turnaround:	**24 Hour**
Date Samples Analyzed:	**October 9, 2017**

Client ID Number	Lab ID Number	Reporting Limit (mg/kg)	LEAD CONCENTRATION (mg/kg)
SVC-EX-SOIL	EM 1967185	13.4	13.4

*** Unless otherwise noted all quality control samples performed within specifications established by the laboratory.**

Analyst / Data QA: Renee A. Cortez

BRL = Below Reporting Limit

Due Date: 10-6-17
Due Time:

REI LAB Reservoirs Environmental, Inc.

RE: 391517

Pager : 303-509-2098

INVOICE TO: (IF DIFFERENT)

Company:	Landmark Environmental, Inc.
Address:	7881 Shaffer Parkway
	Littleton, CO 80127

Company:	Same
Address:	

CONTACT INFORMATION:

Contact:	Brandy Howard
Phone:	720.878.6475
Fax:	
Cell/pager:	

Contact:	Tristan Fitzpatrick
Phone:	303.880.6215
Fax:	
Cell/pager:	

Project Number and/or P.O. #: 17075.001.001
Project Description/Location: Kawuneeche Visitors Center

Final Data Deliverable Email Address: bhoward@landmarkenviro.com tfitzpatrick@landmarkenviro.com hkruse@landmarkenviro.com ssoulia@landmarkenviro.com

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm

PLM / PCM / TEM ___ RUSH (Same Day) ___ PRIORITY (Next Day) ___STANDARD (Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust ___ RUSH ___ 24 hr. ___3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___10 day
Organics ___ 24 hr. ___ 3 day ___5 Day

Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___2 Day ___3-5 Day
Salmonella, Listeria, E.coli, APC, Y & M ___ 48 Hr. ___3-5 Day
Mold ___ RUSH ___24 Hr ___48 Hr ___3 Day ___5 Day

Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.

REQUESTED ANALYSIS

Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan AAS/ICT/PB	ORGANICS - METH	MICROBIOLOGY: Salmonella: +/-	E.coli O157:H7: +/-	Listeria: +/-	Aerobic Plate Count: +/- or Quantification	E.coli: +/- or Quantification	Coliforms: +/- or Quantification	S.aureus: +/- or Quantification	Y & M: +/- or Quantification	Mold: +/-, Identification, Quantification	SAMPLER'S INITIALS OR OTHER NOTES	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1 SVC-EX-SOIL					X													S		10/4/2017	N/A	196715
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

Number of samples received: 1 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: Date/Time: 10/6/17 10:48 am

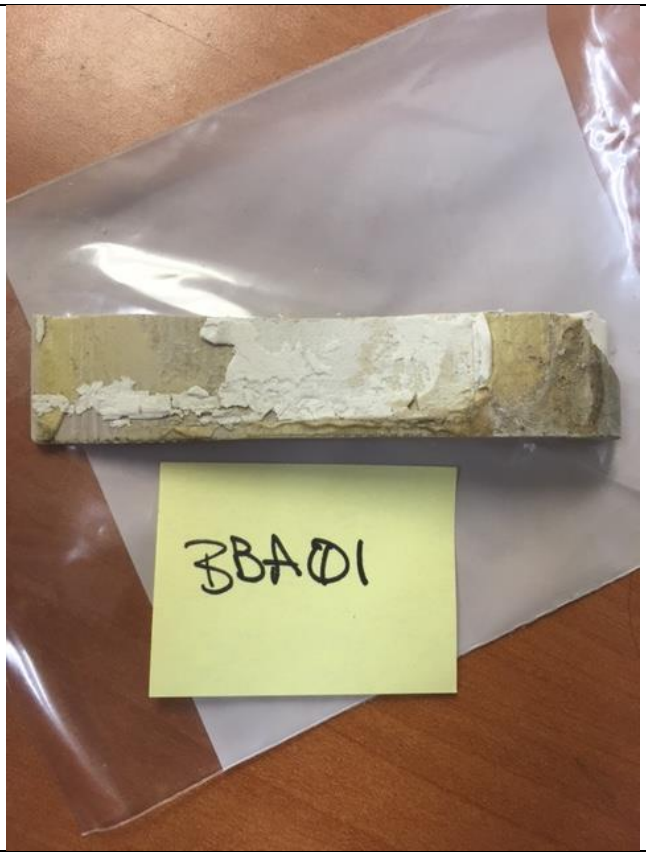
Sample Condition: Temp. (F°) ____ On Ice Yes / No Sealed Yes / No Intact Yes / No

Laboratory Use Only
Received By: Date/Time: 10-6-17 Carrier: Hand

Results:	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials
	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials

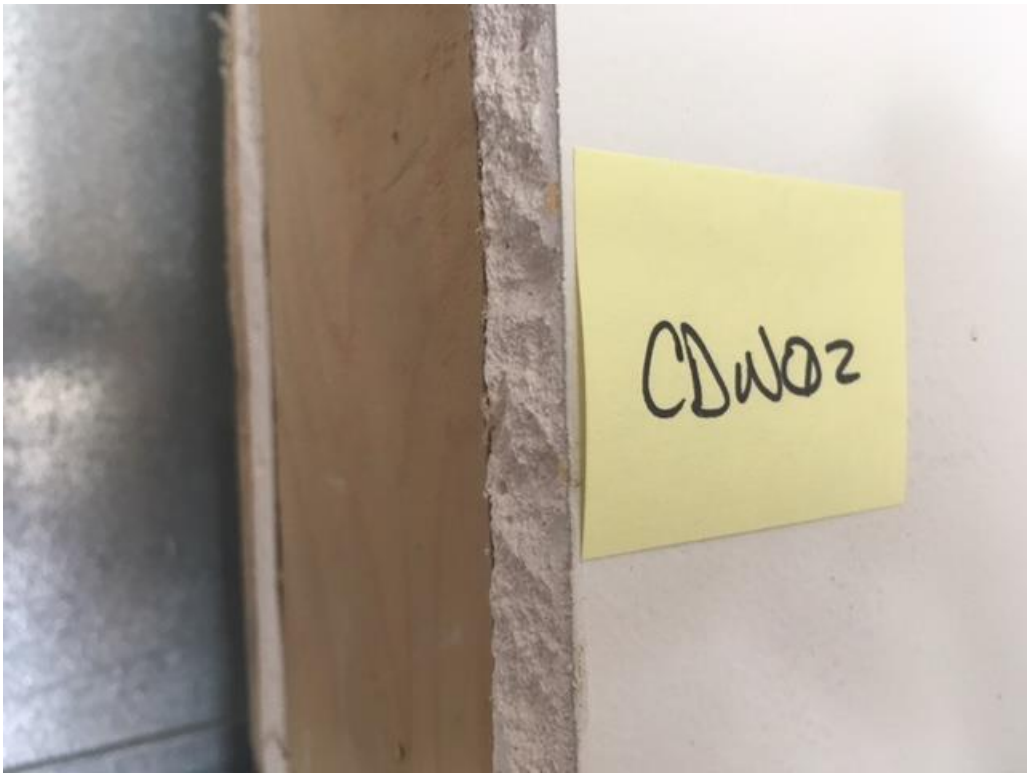
Attachment C

PHOTOGRAPHS

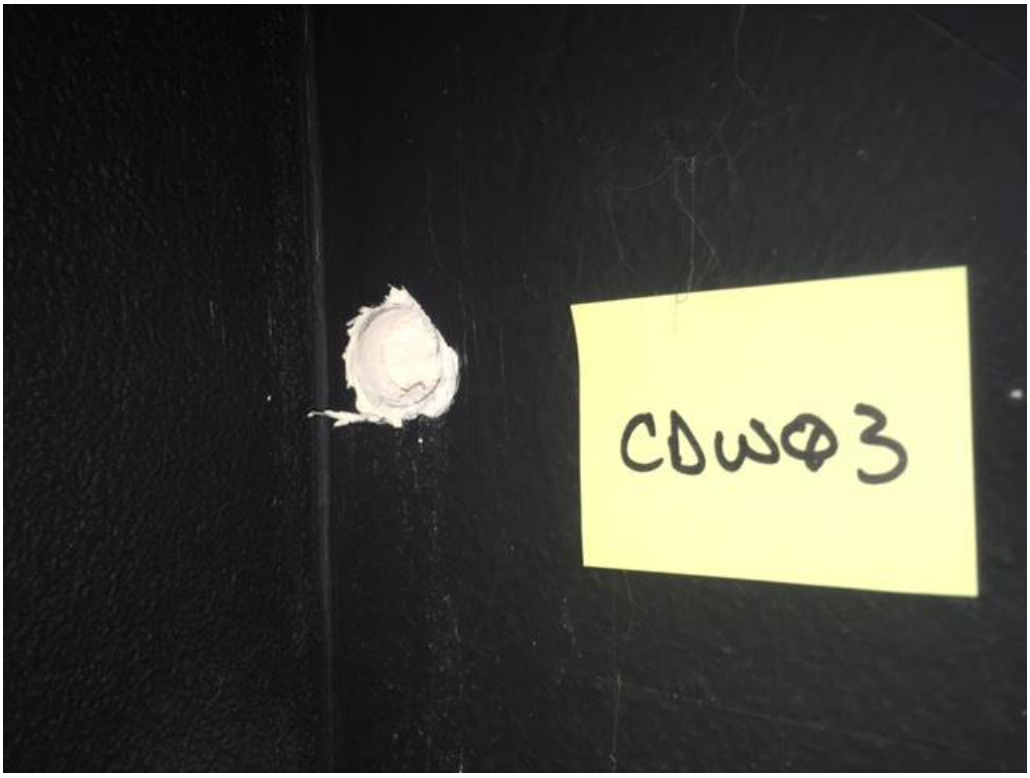


LANDMARK Project No. 17075.001.001	Description	BBA01	Photo 1
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017

LANDMARK Project No. 17075.001.001	Description	CDW01	Photo 2
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017

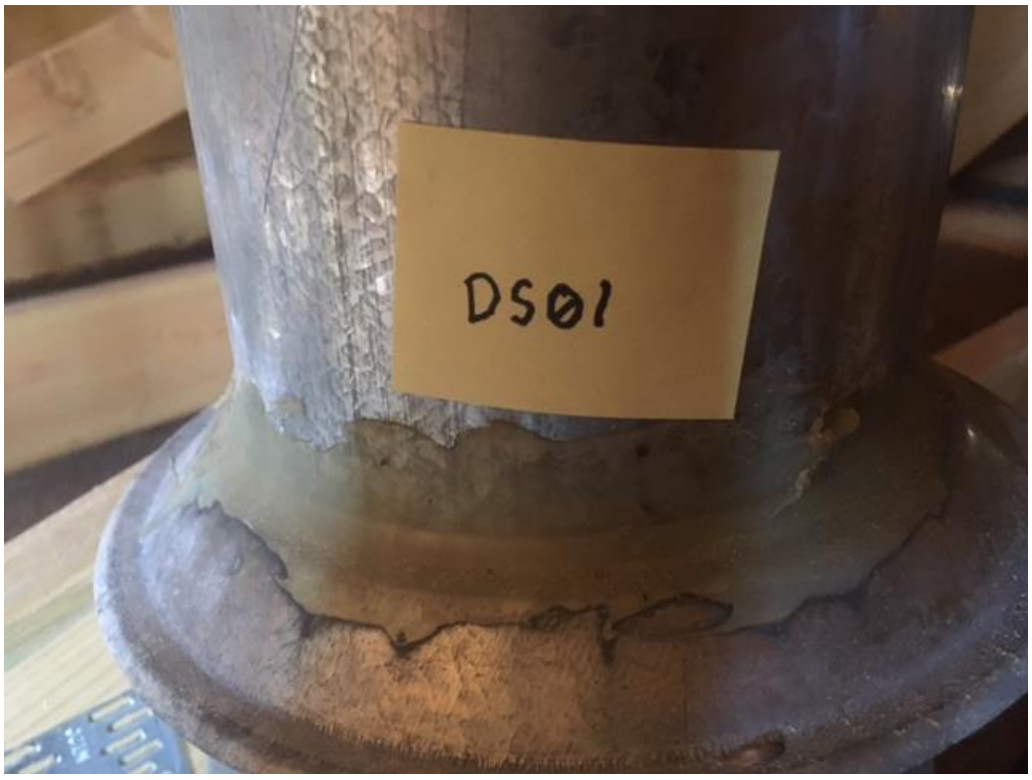


LANDMARK Project No. 17075.001.001	Description	CDW02	Photo 3
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017

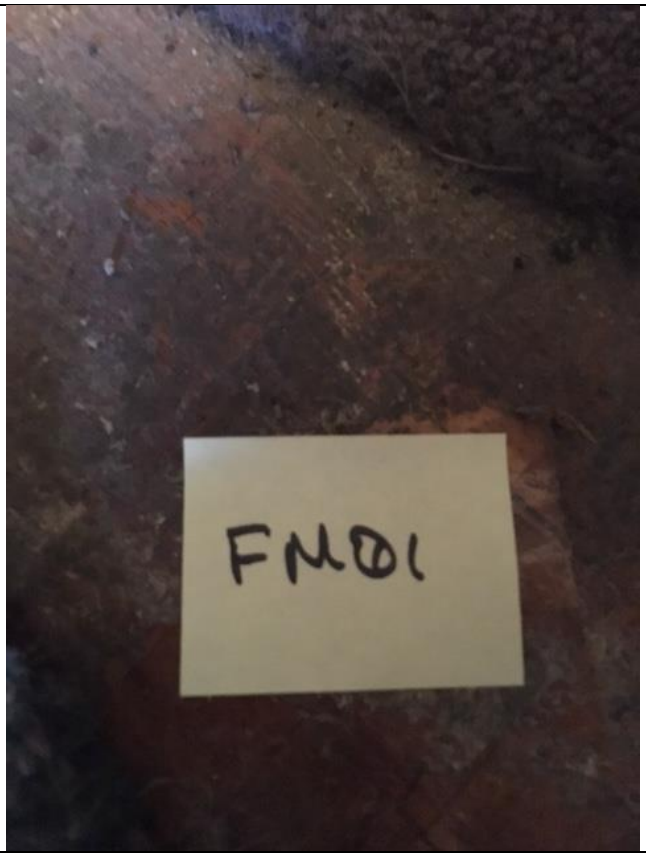


LANDMARK Project No. 17075.001.001	Description	CDW03	Photo 4
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017

LANDMARK Project No. 17075.001.001	Description	CDW04	Photo 5
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017



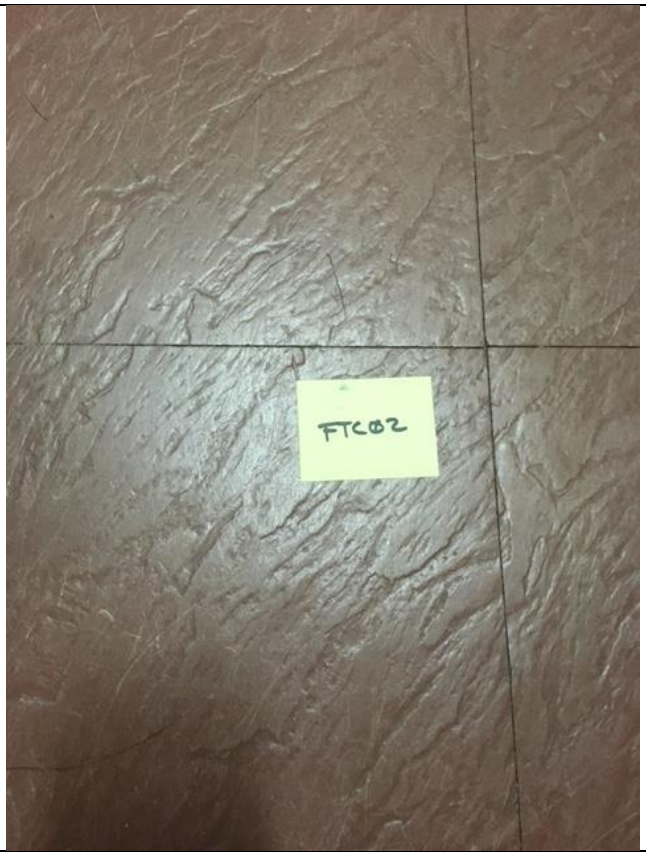
LANDMARK Project No. 17075.001.001	Description	DS01	Photo 6
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017



LANDMARK Project No. 17075.001.001	Description	FM01	Photo 7
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017

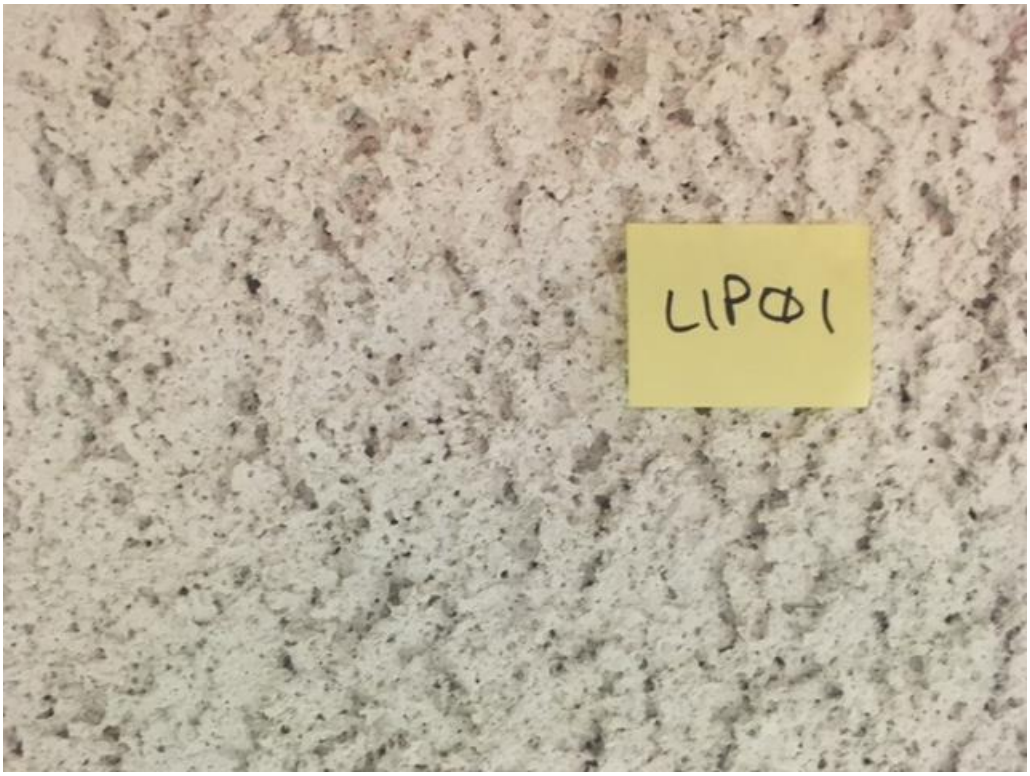
LANDMARK Project No. 17075.001.001	Description	FM02	Photo 8
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017

LANDMARK Project No. 17075.001.001	Description	FTC01	Photo 9
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017

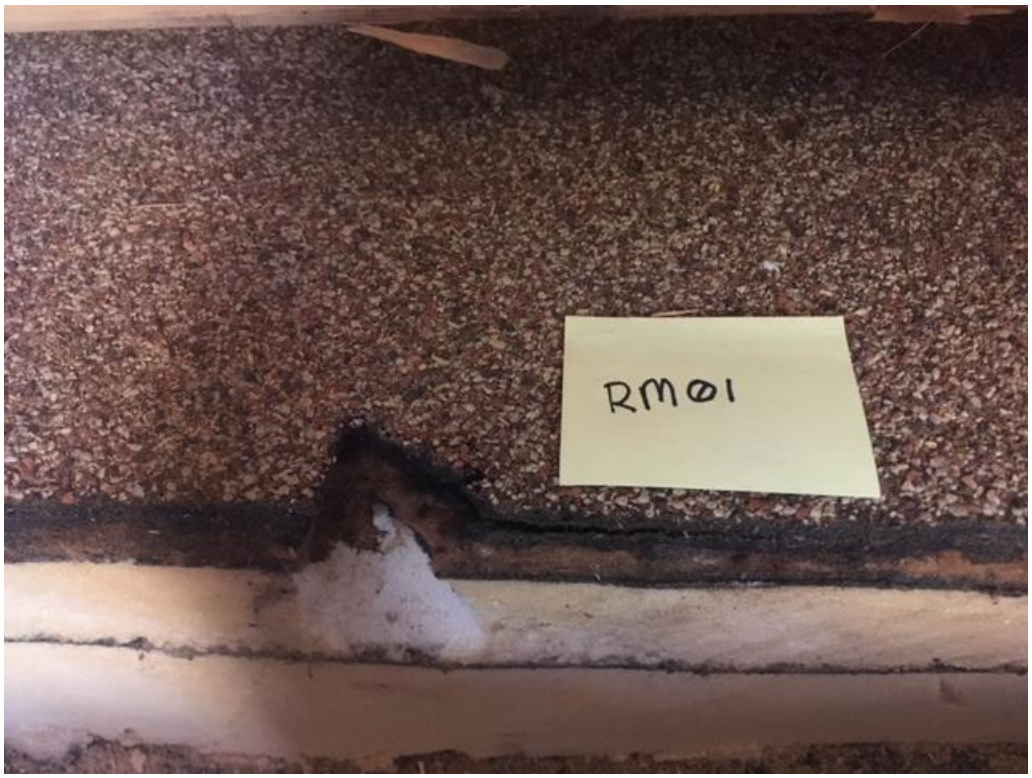


LANDMARK Project No. 17075.001.001	Description	FTC02	Photo 10
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017

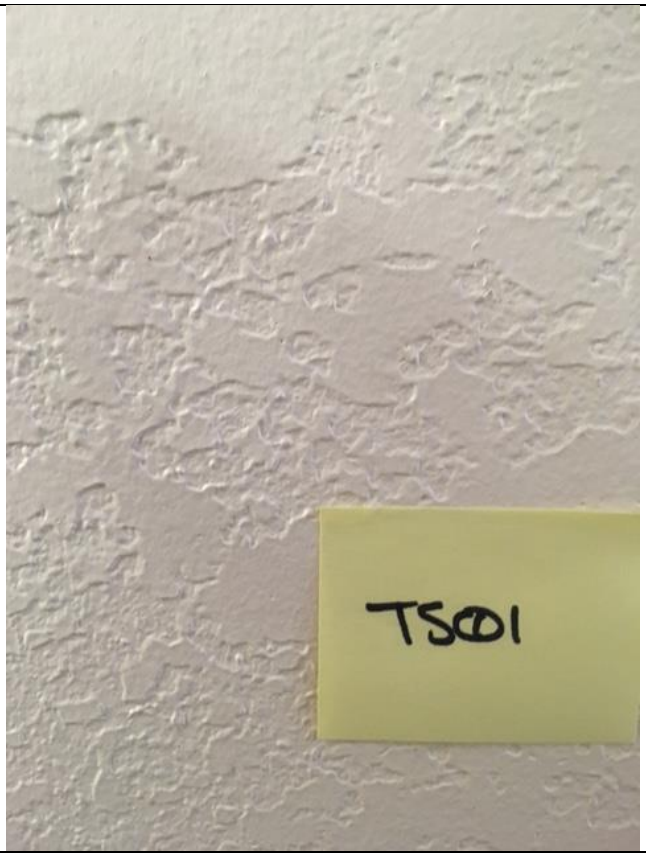
LANDMARK Project No. 17075.001.001	Description	IB01	Photo 11
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017



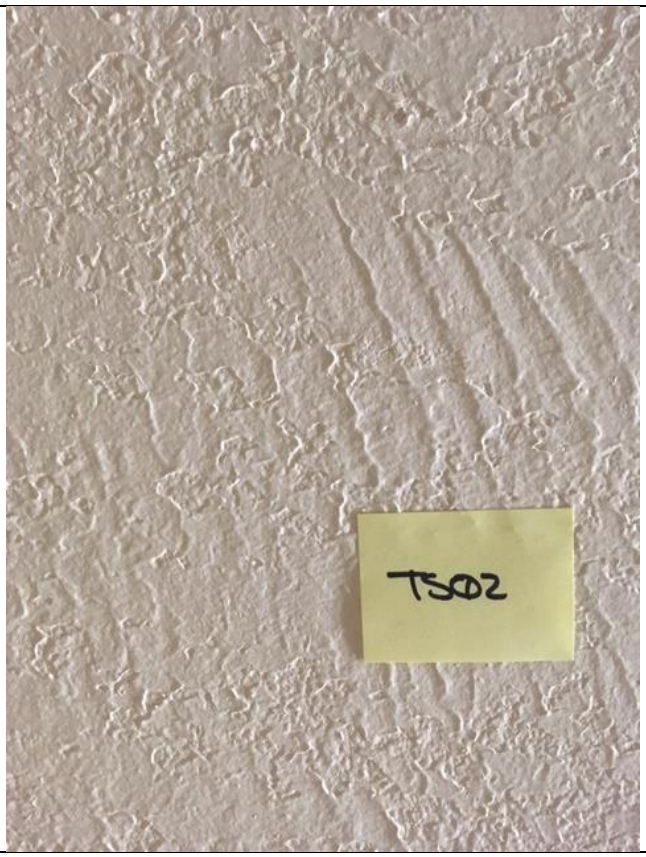
LANDMARK Project No. 17075.001.001	Description	LIP01	Photo 12
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017



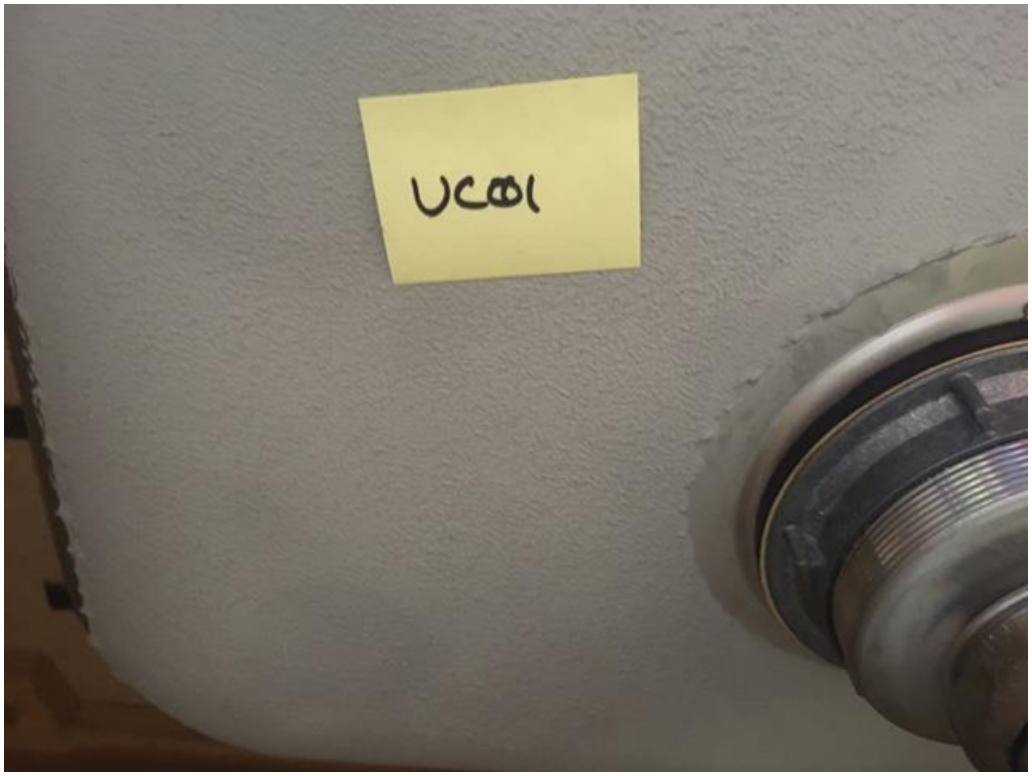
LANDMARK Project No. 17075.001.001	Description	RM01	Photo 13
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017



LANDMARK Project No. 17075.001.001	Description	TS01	Photo 14
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017



LANDMARK Project No. 17075.001.001	Description	TS02	Photo 15
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017



LANDMARK Project No. 17075.001.001	Description	UC01	Photo 16
	Site Name	Kawuneeche Visitors Center	Photo Date 10/06/2017

National Park Service | Harpers Ferry Center

Exhibit Planning, Design, and Fabrication Specifications

ATTACHMENT 1 - IDIQ Exhibit Planning & Design Contract

April 2020

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1. Definitions

ABAAS: Architectural Barriers Act Accessibility Standards are the accessibility standards which pertain to the Federal sector. The ABA, or Architectural Barriers Act of 1968, requires access to facilities designed, built, altered, or leased with federal funds. (See also "Accessible," "ADA," and "Rehabilitation Act.")

Accessible: In context with the requirements of this contract, accessible is defined as in compliance with accessibility standards as specified in the Programmatic Accessibility Guidelines for National Park Service Interpretive Media. Federal laws, including the Architectural Barriers Act Accessibility Standards (ABAAS) and Sections 504 and 508 of the Rehabilitation Act, shall be followed. Universal Design and its seven principles shall be applied as a part of the NPS definition and requirements.

Accessioned Objects (AO): Objects accessioned into the park collection, or objects on loan from other institutions. These items require the highest level of preservation and security criteria. Historic objects also include original period items acquired as part of the exhibit project to enhance interpretation. Park staff determines whether to accession these objects on a case by case basis.

ADA: Americans with Disabilities Act of 1990. This law prohibits discrimination against individuals on the basis of disability. It applies to state and local governments, and public accommodations operated by the private sector. While there are exceptions, it does not generally apply to media and exhibitions that are federally funded and installed in federal facilities. Therefore, the term "ADA" or "ADA compliant" should not be used when referring to accessibility compliance in Federal Government owned and operated facilities. (See also "ABAAS" and "Rehabilitation Act.")

Artifacts: See "Accessioned Objects."

As-Built AV Drawings: Final design and detail drawings updated by the contractor to reflect all changes that occur during installation and provide a record of the "as-built" condition of the AV, or Electronic Equipment, systems. Drawings include all equipment, cables, connectors, connections points, and devices.

As-Built Exhibit Plan: The fabrication contractor updates exhibition content data (e.g., text, content schedules, technical data, etc.) to reflect all changes that occur during fabrication and installation, and provides a record of the "as-built" condition of the exhibits, which may vary from the final design documents prepared by the exhibit planning & design contractor.

As-Built Exhibit Drawings: Final design and detail drawings updated by the fabrication contractor to reflect all changes that occur during fabrication and installation and provide a record of the "as-built" condition of the exhibits, which may vary from the final design documents prepared by the exhibit planning & design contractor.

As-Built Lighting Plan: A final plan drawing for the installed exhibit lighting system showing fixture placement, focusing information, and itemized lists detailing fixture, accessory, and lamp data.

Assistive Listening Systems: Assistive listening is used by persons with mild to profound hearing loss who may or may not use a hearing aid. These systems are a suite of equipment used to deliver sound directly from its source to the person receiving it. The receiving person can also amplify the sound based on their needs. The amplified sound is transmitted via radio frequency or infrared to a receiver connected to the person's headset, ear buds, or an induction loop that transmits the sound to the person's hearing aid.

Audience-Centered Experience (ACE): Audience Centered Experiences are the practice of eliciting participation and contribution from an audience and community.

Audience-centered interpretation can infuse any and all park experiences by providing opportunities for audience members to contribute to the meaning-making process, engage with each other, and

explore the current social context of national park resources.

AV Program Concept Treatment: A narrative overview of the proposed production's creative approach and storyline prepared during the exhibit planning and design process. AV Concept Treatments typically include a description of the actors and/or participants, their roles and general dialogue or narration, and a general description of the scenes, locations, graphics, artwork, and animation to be used in the production with sufficient detail to provide a sense of the proposed production; the basis of the production plan and script.

Audio Description (AD): Through words, AD describes visual content essential for understanding the content of a program. Audio description is used for a variety of media, including video, digital interactive programs and exhibits. People who are blind or have low vision are the primary audience, but audio description can also be used by people who have print disabilities or auditory learning styles. AD is typically scripted and recorded by a professional. In some cases, AD text may be read by a screen reader and synthesized voice. Specific delivery systems and techniques vary based on the media and venue. AD is also referred to as video description, verbal description, descriptive video and descriptive audio.

AV Program Production Plan: A document which presents the major categories of work to be performed in the planning, production, and post-production phases of the program. The Production Plan shall describe all of the elements required to produce the program as outlined in the Treatment and/or Scope of Work, including, but not limited to: production personnel (including the use and identification of sub-contractors, consultants, and other salaried employees of the firm), equipment, post-production facilities, travel, transportation, and a cost estimate of all materials expenses such as capture and storage media, and archival images. Within the Production Plan, the contractor shall confirm that they understand the "Rights in Data—Special Works" requirements of the contract, including rights for music, stock footage, and other elements.

AV Program Production Treatment: A narrative description of the proposed production elements to include an estimated percentage of the program that will be comprised of original, archival, or stock materials (including footage, photographs, or audio); reenactments; interviews; animation; graphics; and illustrations; and the proposed source(s) for such materials. It shall also include a description of the narration, sound effects, and musical score, to include whether the score shall be comprised of original or stock music. The AV Production Treatment provides the basis of the AV Production Plan and script.

Audiovisual (AV) program: One type of Electronic Program (EP). AV programs include linear programs with fixed running times. Through the use and/or integration of numerous elements such as sound effects, music, voice-overs, interviews, moving and historic images, AV programs can be innately dynamic. They are especially effective in eliciting emotional responses, telling stories, and conveying concepts where motion and/or sound are important or particularly effective. Throughout these specifications "AV" is also used an as umbrella term to refer collectively to Audiovisual Programs, Digital Interactive Programs, and Electromechanical Programs.

Bubble Diagrams: Diagrams that use labeled shapes (bubbles) identifying exhibit themes and concepts to show how they relate to each other and/or to their location on the exhibit floor plan.

Captions: Captions are designed for persons who are deaf or have hearing loss. The terms "captions" and "Subtitles for the Deaf and Hard of Hearing" (SDH) are used interchangeably in these specifications. They display spoken dialogue and non-speech information as printed words on television screens, computer monitors, projection screens, caption boards and other visual displays. Non-speech information is audible information essential to understanding the content. Examples of non-speech information include speaker identification, sound effects, music, manner of speaking (whispering, word emphasis, emotion, etc.) and audience reactions (laughing, booing, etc.) Captions may hold secondary benefits for people who are learning a foreign language, learning how to read,

watching a program in a noisy area, or understand best by processing visual information. While used as a catch-all term, different types of "captions" have their own unique technical production, programming, coding, playback, and/or decoding processes. Captions are either closed or open:

> **Closed Captions (CC):** Closed captions do not appear on screen unless the viewer has selected them to appear. They require decoding technology. Closed captions are generally produced for online videos and DVD/BluRay discs. Closed captions shall not be used for audiovisual programs shown in NPS venues.
>
> **Open Captions (OC):** Open captions are displayed on the screen at all times automatically as part of the video. There is no option to turn the captions on or off. They are "burned" into the picture. All audiovisual programs shown within NPS venues must display captions on-screen at all times. For NPS productions requiring open captions, contractors shall use a production process which allows control of font selection, size, color, edging, and other design parameters.

Charette: A meeting to brainstorm and fully explore all possible design directions for presentation and communication of content in the exhibition. Differs from the Exhibit Planning Workshop in that it is more focused on design solutions.

Class A Production Cost Estimate: Detailed cost estimate which includes an itemized breakdown, at a minimum, of labor hours and rates, material costs, shipping, and travel, based on specifications for all exhibit elements found in the Production Documents.

Class B Production Cost Estimate: An intermediate level cost estimate based on allocating an overall cost for each exhibit Scene or Content Group in the exhibition plan, and including allowances for all high-cost exhibit elements currently identified, contingency, shipping, and installation. Class B Production Cost Allowances/Estimates are used during the Schematic and Design Development phases of work, and become increasingly detailed as the design progresses.

Class C Production Cost Estimate: An initial cost estimate based on the cost of the exhibition per square foot. Class C estimates are used during the Pre-Design phase of work.

Closed Captions: See "Captions"

Comprehensive Exhibit Plan: A report from a Content Management Database that includes a comprehensive list of all exhibit elements, including AOs, CAs, CEs, EEs, EPs, GLs, IMs, and LAs.

Content Development: See Exhibit Planning.

Content Group: A discrete thematic story or information set within an exhibition that, together with adjacent related Content Groups, is part of a larger Scene. A Content Group tells one aspect of the larger story or information presented in the overall Scene.

Content Management: A system to organize and track all media elements to be featured in the exhibition, organized by unique exhibit element number.

Content Management Numbering System: A system that identifies each exhibit element with a unique number (the Element Identification Number) made up of three parts, separated by hyphens, as follows: Element Type - Scene - Content Group Number - Item Number. For example, IM-02-04-101

Content Specialties: Any exhibit element that requires detailed subject matter, creative, technical, and/or artistic input to inform and direct its production by a creative or technical specialist. These elements include, but are not limited to, original artwork, sculptures, models, reproductions, objects, dioramas, life-sized figures, and electronic programs.

Content Specialties Reference Package: A document consisting of written descriptions and graphic depictions that together provide the background information and design intent needed for

an artist, craftsman, or technical specialist to produce a custom element. Prepared during the Design Development and Production Design phases of exhibit planning and design.

Contracting Officer's Representative (COR): For Federal Government contracts, an authorized representative of the Contracting Officer responsible for monitoring the quality and performance of work performed under individual contracts.

Custom Element (CE): General category for three-dimensional content in an exhibition that is not otherwise categorized. Custom Elements may be commercially available items, but more often are specifically created for the exhibition, requiring creative design, and/or artistic development and execution. Examples include sculptures, architectural models, natural history models, reproduction historic objects, dioramas, manipulatives, electrical and mechanical interactive devices, mannequins, and topographic maps. Custom Elements are tracked in the Content Management Numbering System, and are inventoried in FMSS where they are designated as "Custom Three-Dimensional Exhibit Elements."

Custom Three-Dimensional Exhibit Element: Term used for FMSS inventory. See Custom Element.

Design Alternatives: Distinct approaches to the exhibit content, its organization and presentation in the given exhibition space. Multiple Design Alternatives (usually three) are developed in the Schematic Design 1 phase of work as part of the process used to arrive at a Preferred Design Alternative.

Design Development: The phase of the exhibit development process in which all major content and design details of the project are completed. Technical details required for Production are not included in this phase of work.

Digital Interactive program: One type of Electronic Program (EP), which is often non-linear. These programs encourage users to become engaged through interaction, exploration, and learning at their own pace and may include multiple layers of information.

Electromechanical program: One type of Electronic Program (EP). Electromechanical programs include but are not limited to electronic programming such as LED lights within a map, diorama, or other exhibit element; lighting programmed to be synchronous or otherwise function in concert with exhibits or exhibit elements; and motion sensors programmed to trigger lighting, audiovisual, digital interactive, or mechanical exhibit elements.

Electronic Equipment (EE): All electronic and ancillary equipment required to present or support the presentation of Electronic Programs, Assistive Listening, and Audio Description, in an exhibition, including any programmed lighting and electromechanical devices. Electronic Equipment is tracked in the Content Management Numbering System, and is inventoried in FMSS where it is designated as "Exhibit Audiovisual System."

Electronic Program (EP): Electronic Programs may include Audiovisual (linear) programs, Digital Interactive (non-linear) programs, and electromechanical programs. "Programs" refers to the media content, as well as the software and control code used to run them.

Exhibition: The overall interpretive presentation which may consist of several Scenes. Each Scene may consist of several Content Groups. Each Content Group may consist of a number of individual exhibit elements such as graphic panels, manipulative devices, AV programs and equipment, cases, etc.

Exhibit Audiovisual System: Term used for FMSS inventory. See "Electronic Equipment."

Exhibit Case: Term used for FMSS inventory. An exhibit component used for display of three-dimensional objects that require controlled environmental conditions and/or additional security. They typically include a transparent window or enclosure called a vitrine, and a base or other support

structure. Exhibit Cases are detailed in the exhibit drawings. They are tracked in the Content Management Numbering System, and are inventoried in FMSS.

Exhibit Design: Development of the physical organization of the exhibit space, integration of all exhibit elements into a cohesive presentation, functional characteristics and visual appearance of exhibit elements, and development of technical details for fabrication.

Exhibit Designer: The person who typically takes the lead with design tasks.

Exhibit Developer: The person who typically takes the lead with content development tasks.

Exhibit Evaluation: The process for better understanding the audience by using social science methods to produce effective exhibitions.

Exhibit Lighting System: Term used for FMSS inventory. Lighting dedicated to illumination of the overall exhibition, generally using high-quality fixtures and lamps to enhance the visual appearance of the display. Does not include lighting that is internal to individual exhibit elements such as cases. Lighting Systems are detailed in the exhibit drawings and specifications. They are also inventoried in FMSS as an exhibit component. They are not tracked in the Content Management Numbering System.

Exhibit Objective: A statement specific to the intent of each exhibit that directs the entire exhibit development process, including decisions about content, interpretation, media selection, and presentation techniques.

Exhibit Planning: Story development, content research, organization of content, text writing, and other tasks associated with the interpretive content of an exhibit. May also be referred to as Content Development.

Exhibit Planning Workshop: A meeting to review and analyze the space and propose recommendations, review existing planning documents, review and/or develop design criteria, conduct research, review and/or develop themes, goals, and objectives, define target audience, and discuss the desired visitor experience. Differs from the Charette in that it typically does not explore design solutions.

Exhibit Structure: Term used for FMSS inventory. A physical component of an exhibition whose primary purpose is structural rather than interpretive or informational (although it may contribute to interpretation and information through its design). Platforms, rails, bases, and walls are examples. Exhibit structures are detailed in the exhibit drawings. They are not tracked in the Content Management Numbering System, however they are inventoried in FMSS.

Facility Management Software System/FMSS: An NPS system-wide database for managing physical assets. Physical components of an exhibition are inventoried after installation for maintenance purposes within FMSS.

Front-end Evaluation: Evaluation conducted at the beginning of a project that seeks input from potential visitors to find out what kinds of information they already know, what visitors would like to know, and explores how exhibits can best present this interpretive information.

Formative Evaluation: Evaluation conducted before the fabrication of exhibits, when mock-up testing can be carried out to reveal problems and successes with proposed designs.

FPO: For Position Only. Placement images in a Graphic Layout used for design and review purposes. FPO images are not suitable for final production purposes.

Graphic Layout (GL): The design of content appearing on the face of a two-dimensional exhibit graphic component. Graphic Layout is an element type in the Content Management Numbering System. It includes the text, images, arrangement, and graphic treatment. It does not include the physical panel or other surface to which the Graphic Layout is applied.

Graphic Pre-Production: All work required to create graphic production files for all Graphic Layouts. These files shall be as complete as possible without having access to the actual graphic production equipment used for output. All production-quality images shall be in place, and any Photoshop treatments applied.

Graphic Production: All work required to print Graphic Layouts, including optimizing graphic production files for the specific production environment, output onto the specified substrate, and any substrate finishing, mounting and laminating required to prepare the output for mounting onto its associated panel or other two-dimensional exhibit graphic component.

Graphic Production Files: Computer files that are complete and ready for output of Graphic Layouts by the exhibit fabricator or their graphics subcontractor.

High-complexity Exhibits: Exhibits that include but are not limited to elements such as multiple custom 3D elements, interactive technology, dioramas, conservation-grade artifact cases, and/or immersive exhibit environments. Exhibit structures in high-complexity exhibits consist primarily of high quality materials and require complex and specialized planning, design, and fabrication solutions. As compared to other areas of the exhibit, high-complexity exhibits have a greater impact on budget.

Indefinite Delivery, Indefinite Quantity (IDIQ) Contract: A contract established for the purpose of awarding multiple individual projects over an extended period of time. The IDIQ contract establishes basic parameters for the type of work to be done, hourly rates, mark-up, contractor capabilities, and performance standards. Task Orders are negotiated under the IDIQ contract for individual projects and include a detailed scope of work describing the project's technical requirements and schedule.

Interpretive Writing: A writing approach that draws from technical, informational, scientific, historical, and cultural sources; it incorporates creative techniques and seeks to connect readers emotionally and intellectually to the meanings and significance of the resource(s).

Label (LA): Exhibit text, organized in a hierarchy, such as titles, subheads, body, and captions. Label is an element type in the Content Management Numbering System.

Life-cycle Costs: An estimate that identifies ongoing costs associated with operating and maintaining the exhibit, including staffing, consumables, maintenance contracts, service-life and long-term replacement costs.

Low-complexity Exhibits: Exhibits that consist primarily of two-dimensional (2D) graphic elements and basic display furniture. Structures in low-complexity exhibits consist of woods and plastics, and/or other readily available materials and require simple planning, design, and fabrication solutions. As compared to other areas of the exhibit, low-complexity exhibits have a lesser impact on budget.

Maintenance Manual, AV: A detailed document or set of documents that contains all pertinent information about each piece of Electronic Equipment and describes all required service and maintenance for the equipment. Includes the AV Operations Manual (see Operations Manual, AV).

Maintenance Manual, Exhibits: A detailed document or set of documents that contains all pertinent information about the maintenance and operation of exhibits. The Maintenance Manual also includes product lists, catalog cuts, finish samples, and as-built drawings.

Mock-ups: In planning and design, mock-ups are working models of proposed exhibit elements that are fabricated simply, quickly, and at minimal cost in order to test a concept. In fabrication, mock-ups are full-scale representations of portions of an exhibit for the purpose of review and testing of exhibit elements that are undeveloped and need further evaluation. Mock-ups are for review only, and not used in the final exhibit.

Moderate-complexity Exhibits: Exhibits that include but are not limited to 2D graphic elements, three-dimensional (3D) interpretive elements, audio visual programs, artifact cases, and/or theatrical lighting. Structures in moderate-complexity exhibits consist of woods and plastics, as well as some higher quality materials, and require advanced planning, design, and fabrication solutions.

Open Captions: See "Captions"

Operations Manual, AV: Included with the AV Maintenance Manual. A detailed document or set of documents aimed at providing park staff information necessary for the normal operation of all Electronic Equipment and systems. The manual includes a troubleshooting guide.

Original graphic content: Original illustrations, photography, maps, and other two dimensional images created specifically for an exhibit project.

Personal Protective Equipment (PPE): Clothing, footwear, and hearing and eye protection designed for the health and safety of workers while working in fabrication shops or on construction sites. Examples include hard hats, safety glasses, respirators, and safety-toed shoes.

Pre-Design Phase: The initial phase of a project that logically structures the work that follows; provides a clear understanding of the project's history, the park's resources, and the roles of other project team members and stakeholders; and ensures that it's goals are understood and realistically attainable within the budget, schedule, and other specified parameters.

Preferred Design Alternative: The design solution that is chosen from several different alternatives and/or developed either through group consensus or the NPS Value Analysis Process.

Production Design: The phase of work where technical drawings, specifications, and content details are completed to the level required for exhibit production firms to propose on the project and begin fabrication.

Production Support: Creative and technical support by the original planning and design team during fabrication of the project to ensure adherence to the project's design intent.

Production-ready Files: See Graphic Production Files.

Project Brief: A consolidated overview of project information developed during the Pre-Design phase of work.

Project Goals: The project's interpretive objectives and the desired visitor experience.

Prototype: Prototypes are portions of an exhibit such as an artifact case or an interactive mechanism that has a particular need to be reviewed and tested prior to fabrication of more elements of the same design. Successful prototypes are usually incorporated into the final exhibit along with the other elements of the same design.

Punch List: A list of deficiencies to be corrected by the fabrication contractor before final acceptance of the exhibition. The punch list is generated during an inspection by the COR during a final walk-through inspection.

Reference Package: See "Content Specialties Reference Package"

Rehabilitation Act: The 1973 Rehabilitation Act as amended prohibits discrimination on the basis of disability in programs and activities conducted by federal agencies or receiving federal financial assistance. It is one of the primary laws specifying accessibility requirements for NPS exhibitions. Section 504 of this law requires effective communication and accessibility for individuals with disabilities to programs and activities conducted or funded by Federal agencies. Section 508 of this law focuses on requirements for information and communication technology (ICT).

Reproduction Historic Objects: Accurate copies of collections objects or period objects fabricated for use in the exhibit. Typically the park does not accession these objects.

Resource Package: A compilation of available, potential, and needed graphics, objects, and media elements that may be considered for use in the exhibit. Usually prepared during the Schematic Design phase of exhibit planning and design.

Scene: A major area or section of an exhibition, usually establishing one visual setting, and/or encompassing one major content or informational theme. A Scene consists of a set of individual but related Content Groups, which further break down and organize the content in the Scene.

Schematic Design: The phase of work where several conceptual alternatives for the exhibition are explored and a preferred alternative selected.

Shop Inspection: Government review of completed or in-progress work at the fabricator's facility. At the final shop inspection, completed work is inspected and approved by the COR prior to shipment to the installation site.

Submittal (planning and design): All documents (i.e., drawings, schedules, facsimiles), electronic files, and other materials that together represent the level of development of work at a given time, and provided by the contractor to the COR for review and approval.

Submittal (fabrication): All samples, drawings, proofs, or other intermediate or final stage material provided to the COR for review and approval. Inspections of work at the contractor's shop or installation site are by definition also submittals.

Subtitles: Subtitles translate spoken dialogue from one language to another as printed words on screen. When spoken dialogue is difficult to understand, subtitles may also be used to transcribe this portion of the dialogue in the same language. Depending on their playback, subtitles may be produced as open or closed captions. Subtitles are intended for hearing audiences and do not convey non-speech elements. For NPS productions, subtitles alone do not meet accessibility requirements. Foreign language translations shall follow the specification for Captions/SDH. (See Captions)

Subtitles for the Deaf and Hard of Hearing (SDH): This term is used interchangeably with "captions" in these specifications. (See Captions)

Summative/Remedial Evaluation: Evaluation conducted after final installation, when the entire exhibition can be evaluated and final adjustments can be made.

Sustainability: Generally refers to minimizing maintenance, operations, and life-cycle costs. The concept has evolved to be defined as design and production practices which balance the needs of the present with those of future generations and include recycling, energy conservation and pollution reduction.

Task Order (TO): See IDIQ Contract.

Two-Dimensional Exhibit Graphic: Term used for FMSS inventory. The physical exhibit component consisting of a Graphic Layout image, the surface to which it is applied, and any other closely associated panel, backing materials, and hardware. Two-dimensional exhibit graphic components are detailed in the exhibit drawings and inventoried as physical components in FMSS. It is important to distinguish between the Graphic Layout, which is managed as interpretive / informational content, and its associated Two-Dimensional Exhibit Graphic component, which is managed as a physical component.

Universal Design: The design of products and environments to be usable by all people, to the greatest extent possible, without assistance, adaptation or specialized design. For a detailed description see Attachment 5, Programmatic Accessibility Guidelines for National Park Service Interpretive Media.

Value Analysis Process: An organized effort directed by a Certified Value Specialist (CVS) trained in NPS Value Analysis Techniques to analyze the functions and effectiveness of the Schematic Design alternatives for the purpose of achieving the essential functions at the lowest initial and life cycle costs consistent with the required performance, reliability, quality and safety.

Visualization Materials: Sketches, renderings, presentation boards, booklets, models, computer simulations, or other media that provide a holistic view of the exhibition, and give a sense of how the exhibition will be experienced by the visitor. Visualization materials allow project team members to quickly grasp how individual elements work together.

Walkthrough Inspection: A final inspection of the installed exhibits by the COR and park staff. During a walkthrough inspection, a punch list is generated.

Warranty Period: A time period after completion of an exhibit fabrication contract, usually a period of one year from installation and acceptance by the government, when the contractor's work is guaranteed against any defects in workmanship.

2. Project Management

2.1 Introduction

The purpose of the following Project Management tasks is to ensure that scheduling, coordination, oversight, and communication is effectively accomplished for all work produced under this contract.

2.2 General Requirements

The contractor's s Project Manager oversees the Base IDIQ contract and also assigns a Project Manager for each task order written under this Base IDIQ contract.

2.3 Specific Requirements for Base Contract Project Management

The contractor's Base Contract Project Manager is the primary point of contact between the contractor and the National Park Service (NPS) Contracting Officer and Contracting Officer's Representative (COR) for the Base Contract. The Base Contract Project Manager performs the following work:

A. Notify the Contracting Officer of any changes to the contractor's business operations that affect work under this contract, including but not limited to:

   1. Changes to contractor's address, telephone, and other contact and business information (e.g., banking account information, email address, etc.).

   2. Proposed changes to key personnel.

   3. Workload or capacity issues affecting the ability of the contractor to accept additional work.

B. Communicate with the Contracting Officer and Base Contract COR regarding major or broad issues affecting Task Orders written under this contract, including but not limited to:

   1. Clarification of work processes that are acceptable or unacceptable to the government under this contract.

   2. Misunderstandings, inconsistencies, or conflicting instructions encountered when working with different parks and different task order CORs.

C. Prepare and submit an electronic status report every six months which lists all active task orders by number and includes, at a minimum, the name of the park and/or client, type of work being performed and results achieved during the reporting period, identification of any current problems that may impede performance, the proposed corrective action, and the completion date.

2.4 Specific Requirements for Task Order Project Management

The contractor's task order Project Manager is the primary point of contact between the contractor and task order COR for individual task orders and performs the following work:

A. The Contractor's task order Project Manager has full authority to act for the Contractor on all matters relating to a specific task order. The Project Manager maintains contact with the task order COR as necessary, including:

1. Be available to take or respond to telephone calls or electronic mail messages during normal hours of operation (8:30 am–5:00 pm local time).

2. Establish office procedures to ensure that messages are relayed to the Project Manager when out of the office or because of time zone differences.

3. Respond to emergency messages from the COR on the same day they are received. All non-urgent messages from the COR are responded to within two business days.

B. Provide quality control to ensure that all elements of project work meet the requirements of the contract specifications as follows:

1. Provide routine inspections of ongoing work, including review of all submittals prior to delivery. This includes final inspection of exhibits prior to shipment and delivery for installation.

2. Inform the COR of any issues that could affect work quality or schedule.

3. Ensure that all work is complete and compliant with the specifications prior to submittal to the COR.

C. Track work progress to ensure that the project is completed according to the schedule. Coordinate and confirm the dates for all submittals and meetings with the COR. Provide a monthly status report to the task order COR that includes the status of the project, issues that affect the schedule and budget, and an updated schedule based on the information at hand. For Fabrication and Design/Build projects, coordinate and confirm dates with the COR for shipment, delivery, and installation at the exhibit site.

D. Meet with the Contracting Officer and COR in accordance with Section 4, Travel, Meetings, Presentations, and as specified in individual task orders. For all meetings and presentations, the Project Manager performs the following work:

1. Document all issues discussed and decisions made relative to the project.

2. Provide the COR with a trip report or meeting minutes from all conference calls, site visits, and in-person meetings throughout the life of the project.

E. Receive, inspect, and inventory all Government-Furnished materials and ensure that this material is forwarded to the appropriate unit or person within the contractor's organization for use in the project. Notify the COR within seven days after receipt if Government-Furnished materials are not satisfactory for their intended purpose. Notify the COR as soon as possible, but no later than three business days, if government- furnished materials are lost or damaged while in the contractor's possession. The contractor is responsible for the security and protection of government-furnished property or materials in connection with this contract. Following acceptance of all work by the government, return to the COR all government-furnished property in accordance with Section 30, Closeout.

F. Identify and compile all resource material into a Production Package and ensures that this material is forwarded to the appropriate unit or person within the contractor's organization for use in the project.

G. Coordinate and ensure that all specifications for submittals are in accordance with Section 5, Submittals and Reviews, and as specified in individual task orders.

3. Exhibit Planning, Design, and Fabrication Process

3.1 Introduction

The process followed in this contract is organized into several phases of work. These phases are based on commonly used architectural terminology and methods for structuring work, with adaptations to fit the specialized requirements of exhibit development.

Exhibit planning, design, and fabrication is a complex iterative process requiring a team approach. Tasks typically involve specialized skills: creative ability, highly specialized technical skills, organizational skills, research ability, and subject matter expertise. Each task builds on those previously completed, adding detail and refinement. Milestones are established throughout the process as a means of communicating, assessing, and recording the project's progress.

Planning as used in this contract includes, but is not limited to, story development, content research, organization of content, text writing, and other tasks associated with the interpretive content of an exhibit. An Exhibit Developer typically takes the lead with planning tasks.

Design, as used in this contract includes, but is not limited to, development of the physical organization of the exhibit space, integration of all exhibit elements into a cohesive presentation, functional characteristics and visual appearance of exhibit elements, and development of technical details for fabrication. An Exhibit Designer typically takes the lead with design tasks. Together, the Exhibit Developer and Exhibit Designer establish the primary creative direction and media approach for the project.

Fabrication, as used in this contract includes, but is not limited to, production of technical drawings used to build exhibit structures, production of all exhibit elements, and delivery and installation of all exhibit structures and elements. An Exhibit Fabricator typically takes the lead with fabrication tasks.

Phases of work are as outlined in 3.2 through 3.11

3.2 Pre-Design

In Pre-design, the project team gains a clear understanding of the project's history, the park's resources, and the roles of other project team members and stakeholders. Work in this phase focuses on preparing a solid foundation for all work that follows, ensuring that the project is logically structured, and its goals are understood and realistically attainable within the budget, schedule, and other specified parameters. Work includes:

A. Review Government furnished materials

B. Travel to Site (see Section 4, Travel, Meetings, and Presentations)

1. Orientation to park experience.

2. Identify and document media and object resources at park.

3. Orientation to architectural space.

    a. Document architectural space.

4. Conduct Exhibit Planning Workshop.

    a. Analyze space and propose recommendations.

    b. Review existing planning documents.

    c. Review and/or develop design criteria.

5. Review and/or develop themes, goals, and objectives.

    a. Define target audience.

    b. Define the desired visitor experience.

    c. Document results of workshop.

C. Identify sources for existing media resources.

1. Develop Resource Package Abstract. (see Section 10, Resource Packages)

D. Develop Project Brief including:

1. Current overview of project, including updated information and understandings.

2. Interpretive themes and objectives.

3. Identification and analysis of all project goals in terms of their effect on the development and successful completion of the exhibit.

4. Analysis of the project budget, including review and/or development of a Class C Production Estimate. (see Section 8, Production Cost Estimates)

5. Analysis of the project schedule, and all other known parameters on the development and successful completion of the project.

E. When required in the Individual Task Order, conduct Front-End Evaluation. (see Section 7, Exhibit Evaluation)

3.3 Schematic Design

Work in this phase is organized into two sub-phases: Schematic 1 (SD1) and Schematic 2 (SD2). Schematic 1 includes development of several alternative schemes for organizing both the interpretive content and physical layout of the exhibits. Schematic 2 includes

development of a preferred alternative. Major stories, exhibit elements, and presentation techniques are illustrated and described.

A. Schematic 1 tasks include:

1. Content Research

    a. Survey repositories of relevant resources.

    b. Develop Resource Package Level 1 (see Section 10, Resource Packages)

2. Conduct Charette (see Section 4, Travel, Meetings, and Presentations)

3. Develop Schematic 1 – unless otherwise specified in task order, develop three design alternatives, each including:

    a. Bubble diagrams that identify themes and concepts, placed in relationship to each other and to the physical space.

    b. At a minimum, one preliminary sketch for each alternative that communicates the overall design intent.

    c. A title for each alternative, with written descriptions of how each scheme accomplishes the established project goals, including working titles and narrative of all exhibit scenes.

    d. A narrative addressing preliminary Universal Design and accessibility approaches, including proposed approach for audio description.

    e. Class B Production Cost Estimate and life-cycle cost estimates for each alternative. (see Section 8, Production Cost Estimates)

4. Present Schematic 1. (see Section 4, Travel, Meetings, and Presentations)

5. When required in the Individual Task Order, participate in NPS Value Analysis process. (see Section 4 Travel, Travel, Meetings, and Presentations)

6. Participate in a conference call to reconcile COR review comments, and provide written documentation of all decisions made.

B. Schematic 2

1. Develop and submit Schematic 2 with Preferred Design Alternative including:

a. Written exhibit walkthrough.

b. Overall design approach including:

i. Media style and appearance.

ii. Universal design/accessibility approach. (see Section 6, Accessibility)

iii. Audio description narrative approach and Production Plan. (see Section 31, Audio Description)

iv. Floor plan with individual exhibit Scenes, Content Groups, and major elements identified.

v. Overview of Electronic Programs (see Section 19, Electronic Programs).

c. Perspective view renderings that communicate design intent of each scene (See Section 9, Exhibit Visualization)

i. When required in the Individual Task Order, provide an animated walkthrough or physical scale model of the exhibition.

d. Resource Package Level 2, with its content integrated into exhibit walkthrough description. (see Section 10, Resource Packages)

e. Class B Production Cost Estimate and revised life-cycle cost estimates for preferred alternative. (see Section 8, Production Cost Estimates)

2. Present Schematic 2. (see Section 4, Travel, Meetings, and Presentations)

3. Participate in a conference call to reconcile COR review comments, and provide written documentation of all decisions made.

3.4 Design Development

Work in this phase is organized into three sub-phases: Design Development 1 (DD1), Design Development 2 (DD2), and Design Development 3 (DD3). Design Development 1 builds on the plan approved in the Schematic Design phase. Its emphasis is on confirming all major elements of the design, and also includes continued content planning.

Design Development 2 focuses on the two-dimensional exhibit content, including the first full drafts of graphic layouts and all exhibit text.

Design Development 3 focuses heavily on developing all interpretive content in detail,

with continued design refinement to ensure effective presentation of the content within the exhibit.

A. Design Development 1

1. Develop and submit the following:

a. Overview with narrative description, including interpretive purpose statements and objective, for each exhibit Scene and Content Group.

b. Perspective view renderings that communicate design intent of each Scene and Content Group. (See Section 9, Exhibit Visualization)

c. Exhibit Design Drawings (see Section 13, Exhibit Drawings).

d. Sample graphic layouts/graphic approach/typography. (see Section 15, Two-Dimensional Exhibit Graphics)

e. Text Level 1. (see Section 12, Text)

f. Preliminary material, finish, and color selections. (see Section 14, Material, Color, and Finishes)

g. AV Concept Treatment, and proposed program type and display format for each proposed Electronic Program. (see Section 19, Electronic Programs; and Section 20, Electronic Equipment)

h. Revised Audio Description Production Plan, to include proposed audio description trigger types, trigger locations, and Table of Contents main menu selections. (see Section 31, Audio Description)

i. Preliminary Content Management Database (see Section 11, Content Management) including entries for the following:

i. AO - accessioned objects

ii. CE - custom elements, including any non-accessioned objects

iii. EE and EP - audiovisual and digital interactive elements

iv. IM - images

v. LA - text labels

j. Updated Class B Production Cost Estimate and life-cycle cost estimate. (see Section 8, Production Cost Estimates)

2. Present Design Development 1. (see Section 4, Travel, Meetings, and Presentations)

3. When required in the Individual Task Order, conduct Formative Evaluation. (see Section 7, Exhibit Evaluation)

4. Participate in a conference call to reconcile COR review comments, and provide written documentation of all decisions made.

B. Design Development 2

1. Develop and submit the following:

   a. Full draft of all graphic layouts. (see Section 15, Two-Dimensional Exhibit Graphics)

   b. Text Level 2. (see Section 12, Text)

   c. A first draft of the AV Program Production Treatment for each Electronic Program. (see Section 19, Electronic Programs)

   d. Selected Exhibit Design Drawing sheets, as required to show major design changes requested at Design Development 1. (see Section 13, Exhibit Drawings)

2. Present Design Development 2. (see Section 4, Travel, Meetings, and Presentations)

3. When required in the Individual Task Order, conduct Formative Evaluation. (see Section 7, Exhibit Evaluation)

4. Participate in a conference call to reconcile COR review comments, and provide written documentation of all decisions made.

C. Design Development 3

1. Develop and submit the following:

   a. Graphic Layouts Package, organized according to exhibit Scenes, to include:

      i. Overview with narrative description, including interpretive purpose statements and objective, for each exhibit Scene and Content Group.

      ii. Perspective view renderings that accurately show the placement of graphic layouts within the three-dimensional exhibits. (See Section 9, Exhibit Visualization)

iii. Complete graphic layouts, showing full layouts as well as enlarged sections with text and image at legible size for review. (see Section 15, Two-Dimensional Exhibit Graphics)

iv. Text Level 3. (see Section 12, Text)

b. Exhibit Design Drawings. (see Section 13, Exhibit Drawings)

c. Content Management Database to include the following reports (see Section 11, Content Management):

i. Comprehensive Exhibit Plan

ii. AO - Accessioned Objects Schedules

iii. AO - Accessioned Objects Facsimile Sheets

iv. CE - Custom Elements Schedules

v. CE - Custom Elements Facsimile Sheets

vi. EE - Electronic Equipment Schedules

vii. EP - Electronic Program Schedules

viii. GL - Graphic Layout Schedules

ix. IM - Image Schedules

x. IM - Image Facsimile Sheets

d. Electronic Programs Report including:

i. Updated AV Program Concept Treatments and AV Program Production Treatments for AV Programs and Digital Interactives. (see Section 19, Electronic Programs)

ii. Flow charts for Electromechanical Programs. (see Section 19, Electronic Programs)

iii. Electronic Equipment locations, wiring paths, circuit and switch locations. (see Section 20, Electronic Equipment)

iv. Audiovisual, digital interactive, and electromechanical technical specifications. (see Section 19, Electronic Programs and Section 20, Electronic Equipment)

e. Updated Audio Description Production Plan, to include audio description trigger types, trigger locations, and Table of Contents segment titles and sub-menu selections. (see Section 31, Audio Description)

f. Content Specialties Reference Package. (see Section 16, Content Specialties)

g. Material, finish, and color samples. (see Section 14, Material, Colors, and Finishes)

h. Updated Class B Production Cost Estimate and life- cycle cost estimate. (see Section 8, Production Cost Estimates)

2. Present Design Development 3. (see Section 4, Travel, Meetings, and Presentations)

3. When required in the Individual Task Order, conduct Formative Evaluation. (see Section 7, Exhibit Evaluation)

4. Participate in a conference call to reconcile COR review comments, and provide written documentation of all decisions made.

3.5 Production Design

Work in this phase is organized into two sub-phases: Production Design 1 (PD1) and Production Design 2 (PD2). Production Design 1 includes preparation of all documents needed for exhibit fabricators to understand and price the project. Production Design 2 includes completion of all other outstanding design and content development tasks.

A. Production Design 1

1. Develop and submit the following:

a. Graphic Layouts Package, organized according to exhibit Scenes, to include:

i. Overview with narrative description, including interpretive purpose statements and objective, for each exhibit Scene and Content Group.

ii. Perspective view renderings that accurately show the placement of graphic layouts within the three-dimensional exhibits. (See Section 9, Exhibit Visualization)

iii. Complete graphic layouts, showing full layouts as well as enlarged sections with text and image at legible size for review. (see Section 15, Two-Dimensional Exhibit Graphics)

iv. Text Level 4. (see Section 12, Text)

b. Exhibit Design Drawings. (see Section 13, Exhibit Drawings)

c. Content Management Database to include the following reports (see Section 11, Content Management):

i. Comprehensive Exhibit Plan

ii. AO - Accessioned Objects Schedules

iii. AO - Accessioned Objects Facsimile Sheets

iv. CE - Custom Elements Schedules

v. CE - Custom Elements Facsimile Sheets

vi. EE - Electronic Equipment Schedules

vii. EP - Electronic Program Schedules

viii. IM - Image Schedules

ix. IM - Image Facsimile Sheets

d. Electronic Programs Report including:

i. Final AV Program Concept Treatments and AV Program Production Treatments for AV programs and Digital Interactive Programs. (see Section 19, Electronic Programs)

ii. Final flow charts for Electromechanical Programs. (see Section 19, Electronic Programs)

iii. Detailed technical specifications and cut sheets for all audiovisual, digital interactive, and electromechanical programs and equipment. (see Section 20, Electronic Equipment)

e. Audio Description Production Plan. (see Section 31, Audio Description)

f. Content Specialties Reference Package. (see Section 16, Content Specialties)

g. Acquire use-rights and production-quality copies of all third party images and other intellectual property. (see Section 17, Use Rights and Licenses)

h. Class A Production Cost Estimate and life- cycle cost estimate. (see Section 8, Production Cost Estimates)

2. Present Production Design 1. (see Section 4, Travel, Meetings, and Presentations)

3. Participate in a conference call to reconcile COR review comments, and provide written documentation of all decisions made.

B. Production Design 2

At Production Design 2, all exhibit firm logos and other firm-identification are removed from Production Design 2 submittals. Production-ready files are provided to the COR and become government property.

1. Develop and submit the following:

a. Graphic Layouts Package, organized according to exhibit Scenes, to include:

i. Complete graphic layouts, showing full layouts as well as enlarged sections with text and image at legible size for review. (see Section 15, Two-Dimensional Exhibit Graphics)

ii. Text Level 4 corrections. (see Section 12, Text)

b. Production-ready graphic files. (see Section 15.5 Requirements for Graphic Production Files)

c. Exhibit Design Drawings. (see Section 13, Exhibit Drawings)

d. Content Management Database. (See Section 11, Content Management)

e. Electronic Programs Report including:

i. Final Concept and Production Treatments for AV programs, and Digital Interactive Programs. (see Section 19, Electronic Programs)

ii. Flow charts for Electromechanical Programs. (see Section 19, Electronic Programs)

iii. Updated detailed technical specifications, cut sheets, and wiring diagrams, for all audiovisual, digital interactive, and electromechanical programs and equipment. (see Section 20, Electronic Equipment)

f. Content Specialties Reference Package. (see Section 16, Content Specialties)

g. Use-rights documents package, with signed original content licenses. (see Section 17, Use Rights and Licenses)

h. For Design-Build exhibit projects, the contractor prepares and submits a completion schedule for all pre-fabrication tasks.

2. Provide all corrections to Production Design 2 submittal, as provided by the COR. Pprepare and organize all exhibit material and submit to the COR. For Planning and Design task orders, the exhibit materials provided at the end of Production Design 2 are considered as the project closeout. All final, corrected, and production-ready files become government property.

3.6 Production Support

Work in this phase includes creative and technical support during fabrication of the project. Planning and Design task orders specify follow-ons to complete development of specific exhibit elements, Fabrication/Installation Support to ensure adherence to the project's design intent, and may include Summative/Remedial Evaluation to review and evaluate the project. These production support tasks are a requirement for all Design/Build projects. (see Section 25, Planning and Design Support During Fabrication)

3.7 Production

Work in this phase includes production of all exhibit elements in accordance with the design intent as described in the Production Design documents. Work in this phase is organized into two sub-phases: Pre-Fabrication Submittals and Fabrication. Pre-Fabrication includes the development of project documents that must be approved before production can occur. Fabrication includes all tasks required to complete the production of exhibit elements.

A. Pre-Fabrication Submittals

1. Attend a post-award meeting as follows:

a. Travel to the site. (see Section 4, Travel, Meetings, and Presentations)

b. Orientation to the site and exhibit space, including key personnel, location, and special conditions onsite.

c. Conduct general project review, including the exhibit design drawings and work requirements.

d. Receive, review, inspect, document, and secure all government-

furnished material, including drawings, planning documents, reference and source materials, and other project-related material.

e. When required in the individual task order, inspect, measure, and document accessioned and non-accessioned objects to be used in the exhibits, verifying final dimensions.

2. Prepare and submit an Exhibit Production Plan, as follows:

a. Establish key project milestones and timeframes for review for 25%, 40%, 80%, and 95% completion.

b. At each milestone, provide a revised exhibit production plan that reflects the current status of production.

c. The Exhibit Production Plan includes the AV Production Plan. (see Section 19, Electronic Programs; and Attachment 6, National Park Service Standard Specifications for Planning, Design, Production, and Installation of Electronic Programs)

3. Fabrication Shop Drawings. (see Section 13.6, Fabrication Shop Drawings)

4. Electronic Equipment submittals (see Section 20, Electronic Equipment) including plan drawings, wiring diagrams, and catalog cuts.

5. Material Sample Boards. (see Section 14, Materials, Colors, and Finishes)

B. Fabrication

Each fabrication task may require a sub-series of steps to complete, and the contractor is not required to complete tasks in the order outlined below. All tasks are in accordance with Section 27, Quality Standards and Safety for Fabrication. Fabrication tasks include:

1. Produce any Content Specialties as specified in individual Task Orders. (see Section 16, Content Specialties)

2. Produce and test any mock-ups and prototypes as specified in individual Task Orders. (see Section 24, Mock-ups and Prototypes)

3. Produce exhibit structures, cabinetry, and casework. (see Section 18, Object Preservation and Protection)

4. Produce exhibit graphics (see Section 15, Two-Dimensional Exhibit Graphics) including:

a. Sample 11 x 17 proofs

b. Full-sized, unlaminated graphic proofs

c. Revised, full-sized, unlaminated graphic proofs at Preliminary Shop Inspection

d. Final graphic media at Final Shop Inspection

e. Installation-ready graphic media

5. Produce electronic programs and all associated electronic equipment (see Section 19, Electronic Programs and Section 20, Electronic Equipment) including:

   a. AV Production Plan, script, narrative, or storyboard

   b. AV Production samples. (see Attachment 6, National Park Service Standard Specifications for Planning, Design, Production, and Installation of Electronic Programs)

   c. Electronic Equipment testing

   d. Installation-ready Electronic Programs and Equipment

6. Produce the Audio Description draft script. (see Section 31, Audio Description)

7. Produce case layouts and artifact mounts (see Section 18, Object Preservation and Protection) as specified in Individual Task Orders.

8. Produce any additional exhibit elements as specified in Individual Task Orders.

3.8 Shop Inspection

Work in this phase includes the facilitation of visits by the COR to the contractor's facility to view and inspect work on all exhibit elements. Unless otherwise specified in individual task orders, facilitate two shop inspections by the COR.

The Shop Inspection phase includes the following work:

A. Preliminary Shop Inspection (see Section 28, Shop Inspections and Installation)

Facilitate review of exhibit elements at the 40% completion milestone or as specified in individual Task Orders.

Unless otherwise specified, provide the following:

1. Primary exhibit structures without final finishes

2. Representative sample of exhibit casework

3. Full-sized, unlaminated graphic proofs

4. 40% completion milestone for Content Specialties

5. Mock-ups and prototypes, per individual Task Order

B. Final Shop Inspection (see Section 28, Shop Inspections and Installation)

All exhibit structures, graphics, and content specialties are complete and fully operational for the final inspection. Provide the following:

1. To the greatest extent possible, all exhibit units are configured in a dimensioned area similar to that into which they will be installed.

2. All operations of each Custom Element, Electronic Program, and Electronic Equipment are demonstrated to be fully functional in accordance with the design intent and applicable fabrication techniques.

3. All exhibit units with built-in lighting, electrical, mechanical, and electronic equipment are connected to power sources and demonstrated to be fully functional.

4. Document all shop inspection review comments and provide a shop inspection punch list to the COR. All punch list items identified at the Final Shop Inspection are corrected by the contractor prior to shipping exhibits to the installation site.

5. While at the Final Shop Inspection, conduct the Pre-Installation meeting.

3.9 Building Prep

Most changes to the building structure, finishes, and utilities fall outside the scope of the typical exhibit fabrication contract. However, detailed coordination between the exhibit contractor and those responsible for building work is required for a successful installation.

Work in this phase includes verification of existing conditions at the installation site, such as changes or additions to electrical circuits, outlets, conduit, room lighting, AV equipment rack or closet, HVAC systems, and security and life safety systems. Unless otherwise specified in individual Task Orders, the Building Prep includes the following work:

A. Travel to the installation site. (see Section 4, Travel, Meetings, and Presentations)

B. Verify whether exhibits, as approved for production, require any adjustments ahead of Installation.

C. Prepare and submit documentation of any changes or updates to the installation site that impact the as-designed exhibits.

3.10 Installation

At Installation, exhibit elements are delivered to the installation site in as complete a state as possible to minimize the amount of on-site work to be done. Work in this phase includes installation of all exhibit elements on site, and installation of all audio description equipment. Work is organized into three sub-phases: Primary Installation, Installation Punch list, and Audio Description Installation.

Installation includes the following work:

A. Primary Installation

1. Crate and ship all exhibit elements to the installation site. (see Section 28, Shop Inspections and Installation)

2. Travel to the installation site with installation crew. (see Section 4, Travel, Meetings, and Presentations)

3. Install all exhibit elements at the installation site in accordance with the design intent, the approved shop drawings, and in consultation with the COR.

4. Clean worksite of debris and dust.

5. When applicable, clean artifact cases, install artifacts, perform all conservation requirements, and seal and secure cases. (see Section 18, Object Preservation and Protection)

6. Aim and adjust lighting of the installed exhibits and objects, as specified in the lighting plan. (see Section 23, Exhibit Lighting; and Section 28, Shop Inspections and Installation)

7. Test and verify the audio description draft script against installed exhibits, and install audio description triggers. (see Section 31, Audio Description)

8. Conduct a walk-through inspection of completed and installed exhibits and provide operational training. (see Section 28, Shop Inspections and Installation; and Section 29, Operational Training and References)

9. Supply a draft Maintenance Manual. (see Section 29, Operational Training and References)

10. Provide the park with specialized keys, tools, and maintenance supplies. (see Section 29, Operational Training and References)

11. Photograph the completed exhibit. (see Section 29, Operational Training and References)

B. Installation Punch List

1. Prepare and submit an installation punch list to the COR. (see Section 28, Shop Inspections and Installation)

2. When required, travel to installation site and complete or correct punch list items.

C. Audio Description Installation (see Section 31, Audio Description)

1. Provide audio description script revisions

2. Provide audio description narration samples, when required.

3. Produce the final audio description content and system.

4. Travel to the installation site. (see Section 4, Travel, Meetings, and Presentations)

5. Install, test, and demonstrate the audio description content and system to be fully functional.

3.11 Closeout

Work in this phase includes the preparation and organization of all final exhibit materials and documentation. New exhibits include a one-year warranty for defects in materials and workmanship.

Closeout includes the following work:

A. Prepare Maintenance Manuals, including the following: (see Section 29, Operational Training and References)

1. As-built lighting plan. (see Section 29, Operational Training and References)

2. As-built drawings. (see Section 29, Operational Training and References)

3. Final Graphic Layout files, including all revisions and corrections made during production.

4. Production-quality photography of installed exhibits. (see Section 29, Operational Training and References)

5. Instructions for maintenance of exhibits.

6. Instructions for operation of exhibits.

7. High-resolution scans of artwork and photography.

B. Prepare an Audiovisual Operations and Maintenance Manual. (see section 29, Operational Training and References; and Section 31, Audio Description)

C. Provide all samples produced under the contract.

D. Return any government-furnished property. (see Section 30, Closeout)

E. Prepare a Component Inventory Schedule. (see Section 30, Closeout)

4. Travel, Meetings, and Presentations

4.1 Introduction

National parks are located throughout the United States and its territories. Most exhibit planning and design projects require travel to national parks to conduct site visits, present submittals, and participate in review and development work sessions. Based on a particular project's requirements, travel may also be required to other sites to research, conduct evaluations, and participate in meetings with subject matter experts, partners, and stakeholders.

4.2 General Requirements

A. Travel

1. Coordinate all travel with the COR.

2. The travel labor rate is one-half the hourly rate while in travel status to and from a site.

3. The contractor is responsible for all their own equipment required for work while on travel and at the job site (for example, measuring instruments, computers, projectors, ladders, lifts, dumpsters, etc.).

4. The contractor is responsible for all of their own transportation while on travel.

5. Adhere to government per diem requirements while on travel.

B. Meetings and Presentations

1. Develop agenda in coordination with COR.

2. Discuss with COR expectations for work to be presented.

3. Identify key participants for meeting.

4. Facilitate meetings, unless otherwise specified by the COR.

5. Document discussions and outcomes.

6. Unless specified otherwise in the individual task order, schedule and facilitate bi-weekly conference calls or virtual meetings with the COR to provide project status updates.

7. For telephone/video/web-based meetings and presentations, provide and manage the remote meeting application, provide instructions to all participants for joining, and host the meeting.

4.3 Specific Requirements for Design Charettes, Exhibit Planning Workshops, and Public Meetings

A. Plan and facilitate the activity. Communicate with the COR, park and/or client to set the date, time, and meeting locations. Coordinate travel and meeting locations and times. Submit agenda to the COR for review and approval, one business day or as coordinated with the COR, prior to the activity. At a minimum, provide a description of the goals, an agenda, a list of materials to be provided by the contractor for use by the participants, and any special facilities or government-furnished Equipment or materials needed. Ensure that the facility and materials are ready. Record and collect all relevant information, comments, ideas, and products generated.

B. Attend activity planned and facilitated by others. Coordinate travel, times, and locations with the COR. Discuss the contractor's role, and review the background information provided. Take notes during the activity.

C. Prepare and submit a report using information and materials collected during the activity summarizing the proceedings.

4.4 Specific requirements for Value Analysis

A. Where specified in individual task orders for National Park Service value analysis studies, the contractor is required to use a facilitator(s) with Certified Value Specialist (CVS as certified by SAVE International) or approved equal. The facilitator must have demonstrated expertise in conducting value analysis at early exhibition design phases. The facilitator also must have demonstrated expertise in utilization of value methods in decision making, e.g., choosing by advantages or other method of evaluating non-monetary benefits; allowing the NPS to make benefit cost decisions and comparisons.

B. The Contractor and the CVS both travel to the specified site for the duration specified in the task order to participate in a Value Analysis workshop and SD1 Presentation.

C. Provide information regarding the interpretive intent and proposed visitor experience desired.

D. Provide a Class B Production Cost Estimate.

E. Explain and verify estimated budget costs of the media elements.

F. Provide an estimate of life-cycle costs and reliability of elements.

G. Participate in the discussion regarding alternatives to the proposed interpretive plans.

H. Document the results of the Value Analysis Workshop using the recommendations and revisions contained in the government-furnished report to develop the selected design alternative.

4.5 Specific Requirements for Exhibit Fabrication Meetings

A. Project Award Conference Call -- The minimum agenda for this meeting includes an overview of contract requirements and procedures, as follows:

1. Contracting Officer and COR responsibilities
2. Special contract requirements
3. Correspondence procedures
4. Subcontractors
5. Delays and extensions
6. Contract modifications
7. Changes
8. Submittals
9. Billing and payment procedures

B. Postaward Conference - The minimum agenda for this meeting includes the following:

1. Orientation to the site and exhibit space, including key personnel, location, and special conditions onsite.
2. Conduct general project review, including the exhibit design drawings and work requirements.
3. Receive, review, inspect, document, and secure all government-furnished material, including drawings, planning documents, reference and source materials, and other project-related material.
4. When required in the individual task order, inspect, measure, and document accessioned and non-accessioned objects to be used in the exhibits, verifying final dimensions.

C. Progress Meetings and Inspections - The COR schedules progress meetings to coincide with project work inspections at the contractor's facility. The minimum agenda for the progress meetings includes the following:

1. Inspection of work in progress and completed work

2. Identification of problem areas and discussion of proposed solutions

3. Review of schedule

4. Discussion of planned progress during succeeding work period

5. Discussion of work standards and practices to maintain quality

D. Pre-Installation Meeting - The COR meets with the Project Manager, Installation Team, and others of the contractor's staff, at the contractor's facility, prior to shipping and installation of the exhibits. The minimum agenda for the Pre-Installation Meeting includes the following:

1. Inspection of the fully set up staged exhibits as specified in Section 28, Shop Inspections and Installation.

2. Review of existing conditions at the installation site, identifying potential problems and proposed solutions. Discuss safety, work zones, and control of dirt/debris at the site in accordance with Section 28, Shop Inspections and Installation.

3. Review of installation schedule, including:

   a. Sequence in which work will be shipped, unloaded, set up, and installed

   b. Projected work schedule onsite, including working days and hours

   c. Schedule for final walkthrough inspection, completion of punch list work and operational training sessions

4. Review of preliminary maintenance manual in accordance with Section 29, Operational Training and References.

4.6 Travel During Exhibit Fabrication and Installation

The Project Manager travels to Harpers Ferry Center (Harpers Ferry, West Virginia), to the park site, or to other locations as specified in individual task orders in order to attend meetings and perform other duties required under the contract.

A. Postaward Conference - The Project Manager travels to attend the postaward conference. The location will be specified in individual task orders.

B. Site Visits - The Project Manager travels to the park to review existing conditions prior to fabrication of the exhibits. The Project Manager makes additional trips to the site as specified in individual task orders in order to review conditions

that have changed or to examine objects not available to be viewed previously. At a minimum, the site visits include the following:

1. Assess existing conditions for onsite work. Take detailed measurements of the exhibit space to ensure proper fit of all exhibit elements. Assess locations of heating and ventilation ducts, doors, windows, lighting fixtures, wall switches and controls, security system alarms and sensors, changes in floor level, floor finishes, ceiling beams, building structures and finishes, and other elements which impact on proper fit and operation of the exhibits.

2. Assess existing conditions which impact on the installation of the exhibits, including: unloading areas, doorway clearances, curbs, stairs, elevators, available storage areas, available areas for setup of power tool work stations, offsite facilities for disposal of debris, parking, and local availability of food, gas, hardware, and other supplies and services.

3. Assess existing electrical and lighting systems for determination of their impact on installation and operation of all exhibit elements.

4. Inspect and measure objects, verifying final dimensions.

5. Meet with the general contractor, as specified in individual task orders, to exchange contact information for future coordination of work and to review and inspect the ongoing progress of the general contractor's work as it relates to the exhibits.

C. Installation - The Project Manager travels to the park to oversee installation of exhibits at the site by the Installation Team. At the conclusion of the installation, the Project Manager facilitates a walkthrough inspection of the completed on-site work in accordance with Section 28, Shop Inspections and Installation, and provides onsite training for the park personnel on maintenance and operation of the new exhibits, as specified in Section 29, Operational Training and References. Correct any deficiencies noted by the COR during installation, or schedules a return trip to resolve all Punch List items.

D. Audio Description Installation - The Project Manager and Audio Describer travel to the park to install, test, and demonstrate the final audio description content and system in accordance with Section 31, Audio Description.

5. Submittals and Reviews

5.1 Introduction

Submittals and reviews are the key communication points between the contractor and the COR which document a project's overall progress and any remedial actions necessary to produce complete and acceptable deliverables. For the purpose of this contract, a submittal is defined as all samples, documents (i.e., drawings, schedules, facsimiles), electronic files, and other materials that together represent the level of development of work at a given time, and is provided by the contractor to the COR for review and approval. At any point in the exhibit planning and design process the COR may require informal submittals of the contractor's work-in-progress to document the current status and level of development of the project.

5.2 General Requirements

A. Coordinate all submittals and review them for legibility, accuracy, completeness, and compliance with contract requirements.

B. Unless otherwise specified elsewhere in this contract or in the individual task order, provide via email or NPS-approved file transfer, one electronic pdf copy of each submittal document to the COR; following COR approval upon receipt, provide three hard copies which are sent to the site(s) designated in the individual task order.

C. Delivery submittals via overnight delivery service unless otherwise specified in the task order. All submittals are accompanied by a transmittal to include the following:

1. "From" (contractor's name and contact information)

2. "To" (recipient's name)

3. Date submittal was shipped

4. Project name and park name

5. Itemized list of contents

6. List of copied recipients who received the same submittals

D. Provide electronic submittals seven calendar days prior to scheduled presentations of the material unless otherwise specified in the task order.

E. Receive all review comments from the COR and take appropriate action as stated below:

1. Approved Submittals – Ensure that all changes, revisions, or additions

required by review comments are addressed and incorporated into future submittals.

2. Rejected Submittals - When submittals are rejected, the COR notifies the contractor, in writing, identifying the reasons for rejection. The contractor ensures that the submittal is completed and/or revised as required and resubmitted within the time scheduled by the COR. Reasons for rejection include:

    a. Incomplete Submittals – Approval of the submittal is delayed because required elements are missing. Submit all missing elements.

    b. Unacceptable Submittals – The submittal is rejected due to poor quality of work or work that does not otherwise meet the established project goals. Submit new material.

5.3 Specific Requirements for Accessibility

Provide copies of any Microsoft Office submittals in an accessible 508 compliant format.

5.4 Specific Requirements for Closeout Package

At the conclusion of work, return all government-furnished property and all other outstanding materials as specified in individual task orders. All material generated by the contractor in the process of completing a task order is the property of the government.

Content of a Closeout Package is as specified in Section 30, Closeout.

6. Accessibility

6.1 Introduction

Exhibits planned, designed, and fabricated for the National Park Service follow the latest published version of the Programmatic Accessibility Guidelines for National Park Service Interpretive Media (Attachment 5). These Guidelines are a combination of best practices, NPS and Department of the Interior directives, and federal laws. Federal laws include the Architectural Barriers Act, Sections 504 and 508 of the Rehabilitation Act as amended, and the 21st Century Communications and Video Accessibility Act.

6.2 General Requirements

The contractor is responsible for addressing accessibility requirements for visitors with specific disabilities. If the site or criteria of the project pose particular challenges to accessibility, additional attention is paid to a full description of the accessibility solutions. See the Programmatic Guidelines for National Park Service Interpretive Media for requirements addressed under specific disabilities.

6.3 Specific Requirements for Schematic Design

As part of Schematic Design 1 and 2, describe how the interpretive themes, messages, and information presented within the exhibition meet accessibility requirements by effectively communicating to visitors with sensory, mobility, and cognitive disabilities.

The Accessibility Approach described in Schematic 1 and 2 directly references elements of the contractor's Schematic Design and any other relevant project information that addresses accessibility within the exhibition. The Accessibility Approach includes:

A. A description of how access to the exhibition's goals and themes will be accomplished for people with sensory, mobility, and intellectual disabilities:

   1. These goals are achieved and articulated through a combination of universal design approaches, assistive technology, and techniques specific to accessibility and meeting the needs of visitors with disabilities.

   2. The primary approaches and solutions for accessibility allow all visitors to participate in the same programs and experiences. Where an alternative approach to accessibility is necessary, the rationale and decision-making process leading to the alternative approach is explained in the narrative.

B. A description of how the exhibit design meets the relevant laws, including the Architectural Barriers Act and Sections 504 and 508 of the Rehabilitation Act

C. At a minimum, the the following accessibility requirements are addressed:

   1. Describe how the layout of the physical space and the proposed exhibit elements utilize universal design principles, including identifying where the tactile floorplan is located within exhibits.

2. Confirm that there are accessible routes into, within, and out of the exhibition, and that all exhibit elements are physically accessible.

3. Describe what multisensory opportunities are provided to engage the diversity of visitors with and without disabilities.

4. Describe how the main goals and themes of the exhibition communicate in multiple and layered modes to engage the diversity of visitors with and without disabilities.

5. Describe how the proposed mechanical interactives meet universal design and accessibility requirements, including heights, reach ranges, weight and required force to operate.

6. Describe how visual components of the exhibits are conveyed to people who are blind or have low vision.

7. Describe how audio components within the exhibit are conveyed to people who are deaf or hard of hearing.

8. Propose what types of assistive technology will be employed.

6.4 Specific Requirements for Design Development and All Subsequent Phases of Work

A. Fully develop and implement all approved accessibility-related solutions during subsequent phases of work. Submit all accessibility-related revisions, updates, and design details to the COR as part of the overall project submittal, review, and approval process.

6.5 Specific Requirements for Interior Directional and Informational Signs

A. Integrate accessibility signage within the exhibition and develop the signage as part of the exhibition's graphic package. This includes an accessible, raised relief floorplan of the exhibits and exhibit spaces (see Section 21, Tactile Exhibit Elements and Mechanical Interactives).

B. Use universal symbols to identify the accessibility of exhibit elements and, where appropriate, other related places, programs, and activities. Digital files for these universal symbols are available for download at: https://www.nps.gov/carto/app/#!/maps/symbols. Add accompanying text as appropriate and focus on the service, not the user (for example "Hearing Loop Installed. Switch hearing aid to T-coil" may accompany the T-coil assistive listening symbol).

C. Interior building signage (such as identification of restrooms, elevators, and other permanently designated spaces) is not included in this specification. If this type of signage is included in an individual task order, refer to the appropriate

sections of Attachment 4, Americans with Disabilities Act (ADA) Standards, the most current version of which is also available at https://www.access-board.gov/guidelines-and-standards/buildings-and-sites.

7. Exhibit Evaluation

7.1 Introduction

Exhibit Evaluation is the process for better understanding the audience, and using this information to produce effective exhibits. Evaluations help exhibits better address visitors' needs and expectations while carrying out the parks' interpretive missions. Three typical stages of evaluation include:

Front-End Evaluation is conducted at the beginning of a project, when themes, goals, and initial design solutions are being considered. Front-End Evaluation seeks input from potential visitors to find out what kinds of information they already know, what visitors would like to know, and explores how exhibits can best present this interpretive information.

Formative Evaluation is conducted before the fabrication of exhibits, when mock-up testing can be carried out. Formative Evaluation can reveal problems with proposed designs and is especially important for interactive exhibits.

Summative/Remedial Evaluation is conducted after final installation, when the entire exhibition can be evaluated and final adjustments can be made.

7.2 General Requirements

A. Base Evaluation on Established Objectives for Exhibits: In addition to developing broad exhibition goals, the team must have clearly defined objectives for each exhibit that shall be identified during the Schematic Phase. Objectives guide not only the way the exhibit is tested at the formative and summative/remedial stages, but direct the entire exhibit development process, including decisions about content, interpretation, media selection, and presentation techniques.

B. Define the Audience: The exhibit evaluation process requires the planning team to identify the intended target audience in terms of their ages, educational levels, and levels of entering knowledge of the subject matter of the exhibit (e.g., facts, concepts, controversies, comparisons).

C. Develop an Evaluation Methodology Plan: Prepare a written Evaluation Methodology Plan for conducting each evaluation phase as called for in the individual task order. The methodologies employed may include any or all of the following social science research and diagnostic tools: literature review, personal interviews, focus groups, survey research, descriptive data collection methods (including observations and tracking studies), as well as other methodologies.

Describe any Government-Furnished personnel and facilities required to accomplish the evaluations. Submit the plan to the COR for review and approval prior to finalization.

D. Adhere to Office of Management and Budget (OMB) Regulations and the Park Permitting Process: Individual task orders specify whether the evaluation requires submittal to OMB for approval to comply with the Paperwork

Reduction Act (PRA). This applies when conducting an evaluation that asks 10 or more visitors the same type of questions over the entire course of the evaluation; note that OMB approval may still be necessary when conducting evaluations with less than 10 respondents. Prepare all paperwork associated with the OMB requirements for the expedited approval process and submit to the COR for preliminary review prior to submittal to the NPS Office of Social Science for their input and review. Any park-based social science inquiry (be it observation or survey research) also requires that a Research Permit be reviewed and approved by the park; prepare the Research Permit for submittal to the COR, who will then facilitate its review with the park.

Scheduling parameters for the National Park Service (NPS) Office of Social Science and the OMB to review and approve the request are specified in the task order. More information regarding the requirements to comply with the PRA, and the guidelines for completing the required forms, and information regarding the Research Permit can be found at the NPS Social Science Program website: https://www.nps.gov/subjects/socialscience/infocollection.htm

After reading the related information on the NPS Social Science website, participate in telephone conference calls with representatives from the NPS Office of Social Science, facilitated by the COR, as necessary to discuss any OMB requirements particular to the task order, and to review draft documents being prepared for submittal.

E. Conduct Evaluation

1. Travel to sites specified in the Evaluation Methodology Plan

2. Logistics

   a. Coordinate the travel, date, time, and meeting locations with the COR

   b. Individual task orders may specify that the contractor be responsible for recruiting the evaluation study participants

   c. Individual task orders may specify that contractors make logistical arrangements for use of non-NPS sites (e.g. local schools, museums, and other institutions)

F. Prepare and Submit Evaluation Report and Implementation Plan

1. Evaluation Report: Collect and organize responses to the evaluation including information regarding methodology used to gather information, demographics and size of study groups, and a summary and analysis of the information collected.

2. Evaluation Implementation Plan

Document proposed methods for incorporating the results of the evaluation in the planning and design process to enhance the effectiveness of the interpretive media.

7.3 Specific Requirements for Front-End Evaluation

Conduct a Front-End Evaluation, concentrating on getting input from potential visitors to find out what kinds of information they need and would like to know, and how this information could be presented in a meaningful, interesting, and cost-effective way. In addition to the General Requirements, identify any objectives and concepts that will be especially challenging to communicate in the exhibits or that require special sensitivity in presenting to the public.

7.4 Specific Requirements for Formative Evaluation

Conduct a Formative Evaluation on specific exhibit elements to determine design and/or content problems before they become a part of the final exhibition. Mock-ups and working prototypes are tested; the number of mock-ups and prototypes are specified in individual task orders. In addition to the General Requirements, the following work is required:

A. Propose exhibit elements to be evaluated for review and approval by the COR.

B. Build the mock-ups for selected exhibit elements to be tested, and ship them to testing site(s). All exhibit layouts consist of actual text and proposed graphics; any three-dimensional elements are identified in the layout.

C. Be responsible for removing the mock-ups from the test site(s) and disposition in accordance with the individual task order.

7.5 Specific Requirements for Summative/Remedial Evaluation

Conduct a Summative/Remedial Evaluation study to reveal problems that were not, or could not be, identified during the earlier stages of development and to determine the extent to which the original objectives have been met. In addition to the General Requirements, the evaluation shall include the following:

A. Evaluation of visitor traffic, identifying any crowd-flow, orientation, and signage problems (e.g. traffic study utilizing an annotated floor plan) and proposing remedial solutions.

B. Evaluation of exhibit effectiveness to determine the degree to which content is communicated with visitors. Propose remedial changes for those exhibits needing improvement.

8. Production Cost Estimates

8.1 Introduction

Individual task orders specify a target production cost or "design-to" figure for the project. Production Cost Estimates are used early in the design process before specific details have been determined. They are based on industry standards and a reasonable allocation of project funding, for example per square foot of space or per exhibit area. In the later phases of the exhibit development process, Production Cost Estimates are prepared from detailed design specifications for individual project elements.

Since budget formulations vary by project, the contractor consults with the COR if there are any questions about what is included in the design-to figure. Generally, the design-to figure includes all costs for fabricating, transporting, and installing exhibit structures and graphic elements.

Depending on the project, estimates may also include media development costs such as image acquisition, original artwork, audiovisual, and multimedia programs, and non-interpretive elements such as an information desk and sales area fixtures. Exhibit-related modifications to the space are included in the design-to figure when such work will be performed under the exhibit fabrication contract. Some costs may be split, for example, the cost of exhibit lighting fixtures may be part of the exhibit budget, while new electrical wiring required for the lighting is excluded.

The contractor is required to submit increasingly detailed production cost estimates as planning and design work proceeds. The purpose is to ensure that the project, as designed, can be built within the available budget. Estimates are determined by the contractor's professional experience and/or by researching the cost of similar recent projects.

Exhibit production cost estimates are designated as Class A, B, and C based on level of detail. Class B and C contain less detail, while Class A is an accurate estimate based on detailed design specifications. They are described in 8.3 through 8.5 of this Section.

The contractor is also required to provide life-cycle cost estimates. The purpose of these estimates is to identify ongoing costs associated with operating and maintaining the exhibit.

8.2 General Requirements

A. All levels of production cost estimating adhere to the following criteria:

1. Provide the most accurate pricing information available for the current stage of project development.

2. The Production Cost Estimates are equal to or less than the design-to cost and are a realistic representation of the cost for producing the exhibit as designed. Estimates are not arbitrarily priced to match the target budget, and do not include a contingency.

   All design changes that increase the Production Cost Estimate above

the target production budget, whether initiated by the contractor or requested by the government, are documented and appended to the Production Cost Estimate as alternate/additional items.

3. Production Cost Estimates are itemized by category and prepared in a computer file that can be translated or opened by the most current versions of Microsoft Word or Microsoft Excel.

4. All cost data related to the project are considered proprietary information that will not be shared outside of the government. Federal regulations preclude outside firms from bidding on production of the project if they have received project-specific details in advance of other potential bidders.

8.3 Specific Requirements for Class C Production Cost Estimates

A. Unless specified otherwise in individual task orders, provide a Class C Production Cost Estimate in the Pre-Design phase, that includes the following information:

1. The total area (including circulation space) in square feet of the exhibition space.

2. The total exhibition cost and the cost of the exhibition per square foot. Where exhibit zones have been identified and the basic characteristics of the elements within those zones are known, a separate per square foot cost is specified for each zone. Examples of zones include, but are not limited to lobby, information/orientation space, sales area, and primary exhibition space.

3. In instances where one or more high-cost exhibit elements have already been identified, they are priced as a separate line item. Examples include, but are not limited to, a complex exhibit case required to house a valuable and sensitive artifact, a large scale diorama, an original artwork mural, a topographic map with light program, and extensive use of audiovisual or interactive programs.

8.4 Specific Requirements for Class B Production Cost Estimates

A. Unless specified otherwise in individual task orders, provide a Class B Production Cost Estimate in the Schematic 1 phase. An updated Class B Production Cost Estimate is provided in the Schematic 2, Design Development 1, and Design Development 3 phases. Class B Production Cost Estimates are typically used in the Value Analysis process and include the following information:

1. Class B Production Cost Estimate prepared in the Schematic 1 phase includes, at a minimum, the estimated overall cost for each exhibit area identified in the exhibition plan. In instances where individual exhibits

or exhibit elements have already been identified, they are individually itemized.

2. Class B Production Cost Estimate prepared in the Schematic 2, Design Development 1, and Design Development 3 phases are further itemized at a level of detail consistent with the current level of the exhibition's development as follows:

    a. A short description of proposed exhibits and major exhibit elements within each exhibit area

    b. The cost associated with each proposed exhibit and/or exhibit element

3. Class B Production Cost Estimate includes allowances for shipping and installation as separate line items.

8.5 Specific Requirements for Class A Production Cost Estimates

A. Unless specified otherwise in individual task orders, provide a Class A Production Cost Estimate in the Production Design 1 phase. Class A Production Cost Estimates is prepared based on the detailed specifications for all exhibit elements found in the Production Design 1 submittal and includes the following categories:

1. Exhibition fabrication costs organized according to exhibit scene, content group, and exhibit elements within each content group. For each individual exhibit element, the estimate itemizes and prices each material, labor cost, and mark-up costs for an exhibit fabricator to produce the element, or the cost for acquiring an element that is commercially available, or the cost of custom elements fabricated by a specialty sub-contractor.

2. Media costs for all content purchased specifically for the exhibition, and not already accounted for in the exhibit planning and design budget. This may include but is not limited to:

    a. Image acquisition

    b. Original artwork and photography

    c. Electronic Programs

3. All Graphic Production costs not included in the exhibit planning and design budget.

4. Commercially obtained items including but not limited to:

a. Audiovisual and other electronic equipment

b. Lighting equipment

5. Exhibit installation cost including:

a. Fabricator site visits

b. Samples, mock-ups

c. Shipping

d. Exhibit installation travel and labor costs

6. Miscellaneous Production Costs itemizing all costs not otherwise accounted for. For example, shop drawings, as-built drawings and project closeout costs.

8.6 Life-cycle Cost Estimates

A. Provide a life-cycle cost estimate customized to the proposed design in the Schematic 1 and 2 phases (ie, not generic life-cycle costs). Updated life-cycle cost estimates are required in the Design Development 1 and 3 and Production Design 1 phases.

Life-cycle cost estimates include the following information:

1. Operational costs associated with the exhibition including but not limited to:

a. Staffing required to operate and maintain the exhibit on a daily basis

b. Costs for consumable items including but not limited to video projector bulbs, specialty exhibit lighting, printed hand-outs, touchable “discovery” items

c. Maintenance contracts

2. Long-term replacement costs associated with the exhibition including but not limited to:

a. Service life and replacement cost for commercially available audiovisual, electrical, and electronic equipment

b. Service life and replacement cost for custom made exhibit elements such as mechanical interactive devices

3. Lifespan of the exhibition including but not limited to:

    a. Effective life of the exhibition's physical structure and graphics

    b. Effective life of the exhibition's content and message

    c. Effective life of the exhibition's style of presentation

9. Exhibit Visualization

9.1 Introduction

Exhibit Visualizations include sketches, renderings, computer simulations, or other media as specified in individual task orders. This media is designed to visually describe the proposed exhibition to a diverse audience, which may include the project team, general public, sponsors, and stakeholders.

In contrast to two-dimensional plan and elevation views contained in the Exhibit Drawings that describe specific details, these three-dimensional rendered views provide a holistic view of the exhibition. They give a sense of how the exhibition will be experienced by the visitor. They also allow project team members to quickly grasp how individual elements work together and identify issues that may not be apparent when those elements are considered individually.

9.2 General Requirements

A. Unless specified in individual task orders, exhibit visualizations are perspective-view renderings of exhibit scenes, content groups, or particular exhibit details.

B. Submit preliminary designs to the COR for review and approval. Make all changes and/or additions to the preliminary design prior to preparing the final visualization materials.

9.3 Specific Requirements for Renderings

A. Provide examples of the proposed style for the renderings to the COR for approval prior to beginning work.

B. Renderings accurately depict the proposed exhibits and the architectural space in which they will be placed in perspective view.

C. The specified level of detail may range from impressionistic to photo realistic. Traditional styles of illustration done by hand must be approved in advance by the COR. Computer generated illustrations may include images generated in 3D modeling and rendering programs, illustration programs, and photo-composition programs.

9.4 Specific Requirements for Animated Walkthroughs

A. Prior to beginning work, provide an example showing the level of detail and proposed rendering style for the walkthrough. The approximate running time (or navigation method for interactive walkthroughs) must be approved by the COR in advance.

B. The walkthrough accurately depicts the proposed exhibits and architectural elements in three-dimensional space. Unless otherwise specified in individual task orders, camera points of view include an exhibit overview from above and

an eye-level view as seen by an observer walking through the exhibition.

C. Propose the walkthrough's storage media and format for approval in advance by the COR.

9.5 Specific Requirements for Scale Models

Fabricate exhibit models and carrying cases specified in the task order. Individual task orders will specify the level of detail required for each model. All models conform to the following specifications:

A. Models are fabricated at a level of detail consistent with their intended use, including, but not limited to:

1. Study Models: Fabricate a scale model of all visitor center areas related to the project. The purpose of this model is to assist the project team in understanding the proposed exhibit layout and issues related to the use and possible modification of the visitor center. Models prepared for such purposes are accurate in form and dimension, but do not need to be fully representative of material, color, and architectural detail.

2. Presentation Models: Based on the visual and narrative descriptions presented in the Schematic or Design Development phases of work, fabricate a scale model of the visitor center, exhibit areas, and the exhibits within. The purpose of this model is to provide a dimensional representation of the form, placement, and style of the exhibits. Such models are accurate in form and dimension, contain facsimiles of object, graphic, and typographic content, and include indications of color, texture, and material.

3. Selected Exhibit Models: Fabricate scale models of specific exhibits. The level of detail required is specified in individual task orders.

B. To the extent specified in individual task orders, the contractor may be required to revise exhibit models to reflect updates in the exhibition plan.

C. When specified in the task order, the contractor may fabricate storage and transport cases for models.

10. Resource Packages

10.1 Introduction

Resource Packages begin with the preparation of a Resource Package Abstract in the Pre-Design phase that identifies and organizes the media elements that will bring the exhibition to life. During the Schematic Design phase, Resource Package Level 1 and Level 2 build upon the abstract by providing more detailed information about those media elements and organizing them into the appropriate thematic categories. After the Schematic Design Phase, information in the Resource Package informs Design Development, including the Content Specialties Reference Package, and subsequent submittals as the final media elements are selected and obtained.

10.2 General Requirements

A. All the information is accurate and reflects the most recent scholarship.

B. General source information (described below) for every media element listed in the Resource Packages and/or proposed in design solutions is included.

10.3 Specific Requirements for Resource Package Abstract.

The Resource Package Abstract typically occurs as part of the Pre-Design phase. At this early stage, the abstract identifies the existing and potential media resources that could become the specific elements featured in the exhibition. The Resource Package Abstract includes the following:

A. Identify and list any available artifact and image collections at the park.

B. Identify and list any potentially available artifact and image collections owned or managed by individuals and other institutions (e.g., special collection at the National Archives).

C. Develop a bibliography, noting the books, periodicals, and other literature of potential use in developing the exhibition.

D. Identify and list subject matter experts.

E. Identify and list any potential resources that might exist or that need to be created for featuring in the exhibition (e.g., new artwork, photography).

F. Note special challenges (e.g., new park with no collection) and special opportunities (e.g., an existing oral history collection of significant relevance).

10.4 Specific Requirements for Schematic Design Phase

The Resource Package Abstract is further developed in the Schematic Design Phase, with Resource Package Level 1 associated with Schematic 1, and Resource Package Level 2 associated with Schematic 2.

A. Resource Package Level 1: Organize the media elements according to the established themes that match the corresponding bubble diagram(s) prepared in Schematic 1.

1. Unless otherwise specified in the task order, submit two hard paper copies of the Resource Package Level 1 or one electronic pdf copy that is organized according to the established themes, and describe how the material is organized and managed within the work process (e.g. paper copies, database). The package include a diverse range of media types (e.g. artifacts, photographs, video footage, quotes, and potential low-tech interactives) that are existing and available, existing and potentially available, and those that need to be created. At this stage of the Resource Package, the goal is not to have every available and potential item listed but rather to provide enough of a sampling that corresponds to the bubble diagram(s) to demonstrate the choices available to the project team.

2. Provide the following information for every item listed in the Resource Package Level 1: name of item, photocopy/thumbnail (for existing images and objects), original source, and description.

B. Resource Package Level 2: Organize the media elements according to specific Scenes and Content Groups that match the corresponding floor plans, elevations, and perspective view renderings in Schematic 2.

1. Submit two hard paper copies or one electronic pdf copy of the Resource Package Level 2 that are organized according to the established exhibit areas, and describe how the material is organized and managed within the work process (e.g. paper copies, database). The package includes a diverse range of media types (e.g., artifacts, photographs, video footage, quotes) that are existing and available, existing and potentially available, and those that need to be created. At this stage of the Resource Package, the goal is to further refine the number of media elements proposed, and relate them to the corresponding floor plans, elevations, and perspective view renderings in Schematic 2.

2. Provide the following information for every item listed in the Resource Package Level 2: name of item, photocopy/thumbnail (for images and objects), original source, and description.

3. Provide an updated bibliography and list of Subject Matter Experts, incorporating additional resources that have been identified during work on Schematic 1 and Schematic 2.

11. Content Management

11.1 Introduction

The purpose of Content Management is to organize, track, manage, and document media elements to be featured in an exhibition, organized by unique identification numbers.

Content Management is a developmental process, and not a static file or document. During the course of exhibit development, media elements being developed are identified, and a series of Content Schedules communicate how they relate to associated media elements and to the exhibition as a whole.

The Content Management specifications below identify the data needed for generating Content Schedules during the exhibit development process, and how this data is to be identified, named, and organized. The National Park Service has a FileMaker Pro-based Content Management application called the Museum Exhibit Planner. Contractors may use the Museum Exhibit Planner or an approved software application of their choice in managing project content and generating Content Schedules, although the NPS does not provide any technical support for the Museum Exhibit Planner.

The NPS numbering system and NPS naming conventions for data fields (as described in Attachment 7, Content Management Data Fields Guidelines) are used within any Content Management system.

11.2 General Requirements

A. Content Management Numbering System

A simple, logical, and consistent numbering system is essential to managing the many elements that go into an exhibition. Every element must have its own unique number to facilitate effective identification and communication of all elements throughout the planning, design, and fabrication stages of a project.

The numbering system organizes and tracks information at the "exhibit element" level of detail – individual objects, images, etc. – as well as graphic layouts and audiovisual packages, which can be thought of as compound elements containing other elements.

The NPS numbering system uses the format "XX-XX-XX-XXX" as described in more detail in sub-section (3) below.

Exhibit element categories and the numbering system are specified as follows:

1. Exhibit Element Types

a. AO (Accessioned Object): Accessioned Objects are cataloged items from NPS resources or loan items from other museums, historical associations, libraries, etc. (see Section 1, Definitions; and Section 18, Object Preservation and Protection). They include historic objects, natural history specimens, and other objects that have been accessioned into the park's collection.

b. CA (Case): Exhibit cases and vitrines for displaying objects and other exhibit elements.

c. CE (Custom Element): General category for three-dimensional elements that are not Accessioned Objects. These include: models, tactile and mechanical interactive elements such as flip books, optical viewers, and low-technology interactive devices; non-accessioned natural history specimens; and, non-accessioned historic objects (such as antiques) and reproduction historic objects (such as replicas).

d. EE (Electronic Equipment): Equipment or devices which will run, control, or display electronic programs. This is one umbrella number that identifies an associated set of audiovisual equipment for running a particular Electronic Program (see Section 20, Electronic Equipment).

e. EP (Electronic Programs): Audiovisual, digital interactive, and electromechanical programs (see Section 19, Electronic Programs).

f. GL (Graphic Layout): Panel layouts which usually contain multiple graphic elements such as labels, images, and placeholder indicators for embedded three-dimensional and audiovisual elements.

g. IM (Image): Individual, existing or custom photographs, illustrations, art, maps, charts, diagrams, or other display images.

h. LA (Label): Text labels, organized in a hierarchy, such as titles, subheads, body, and captions.

2. Scenes and Content Groups

NPS exhibits are organized into Scenes and Content Groups, which are established in the Schematic Design phase of work.

a. Scenes: A Scene establishes one visual setting in the exhibition, and is one holistic set of individual but related Content Groups; the Scenes taken together form the overall exhibition. For example, a Scene could be a marsh habitat diorama that consists of the following Content Groups: introductory graphic panel, large background mural, natural history specimens and models, a reader rail, and a touch area – all physically and/or thematically connected to each other.

Another Scene in the same exhibition could feature how early settlers lived in the area, consisting of these Content Groups: a vignette of a cabin interior, reader rail with tactile reproduction items, a large artifact case, and an oral history station. In addition,

Scenes can be thematically-linked Content Groups in a defined space, such as a set of orientation panels and a terrain model in a lobby, or a series of Content Groups in one room of a historic building.

b. Content Groups: A Content Group is a discrete thematic story or information set that, together with adjacent related Content Groups, is part of a larger Scene. The above examples of a habitat Scene and a cabin Scene describe their respective Content Groups. A Content Group tells one aspect of the larger story or information presented in the overall Scene.

3. Numbering System

The numbering system is based on the "Element Identification Number" which has three parts, separated by hyphens. "IM-02-04-101" is an example of an Element Identification Number. All NPS exhibit projects shall use this numbering system.

IM-02-04-101: The first part of the Element Identification Number is the Element Type. It occupies two character spaces for the acronyms of the element categories. In the example shown here the "IM" indicates this element is an image.

IM-**02-04**-101: The second part of the Element Identification Number is the Scene-Content Group Number; it occupies four numeric spaces consisting of two two-digit numbers separated by a hyphen (single-digit numbers are preceded by a zero). The first two-digit number refers to the Scene number in the exhibition. In this example, the "02" refers to Scene 02 in the exhibition. The second two-digit number refers to the Content Group number. In this example, the "04" refers to Content Group 04 in the Scene.

IM-02-04-**101**: The third part of the Element Identification Number is the Item Number. It occupies three numeric spaces (single-digit and two-digit numbers are preceded by zeroes or a zero, as in "003" or "024"). It is best to have item number sequences reflect some logical order in the exhibit, such as from top to bottom, or from left to right. Using this method, "IM-02-04-001" would likely be a primary image in its respective graphic layout. Item numbers may repeat within an exhibit if there is a logical reason for doing so. For example, Accessioned Object "AO-04-03-005" and Image "IM-04-03-005" may be assigned to associate the historic image of an object with that actual object on display.

Item Numbers need not be consecutive. It is permissible to leave gaps, perhaps to leave room for items to be added later. It is also useful to use 100, 200, 300, 400,…series Item Numbers which correspond to sections of a Content Group. For example, all elements with 100 series numbers might be located on the top half of a Content Group, with 200 series numbers on the bottom half. In another example, all 100 series elements in a Content Group might be located on or associated with the same Graphic Layout.

A useful protocol is to use Item Number "999" to indicate an element which does not yet have a place in the exhibit. Such items stack up at the end of an exhibit awaiting the opportunity to be placed or deleted. Also, if there are several images that are candidates for a place in the exhibit, but the final selection has not been made, identical Item Numbers may be assigned to hold the choices on a temporary basis.

B. Data Fields and Naming Conventions

The NPS numbering system and NPS naming conventions for data fields, as described in Attachment 7 are used for all NPS projects. Individual task orders may specify additional data and Content Schedule requirements for a particular project.

C. Content Schedules

Provide the required data as specified in Attachment 7 in the form of Content Schedules beginning at Design Development 3 through Production Design (and through Production Support, if included in the task order); see specific requirements per project phase below.

Content Schedule categories include the following:

1. Accessioned Objects
2. Cases
3. Custom Elements
4. Electronic Equipment
5. Electronic Programs
6. Graphic Layouts
7. Images

11.3 Specific Requirements for Schematic Phase

A. Schematic Design 1: The NPS numbering system is not required.

Design alternatives propose Scenes, including a narrative description of proposed media elements.

B. Schematic Design 2: The NPS numbering system is not required.

The preferred design alternative is established with Scenes and their respective Content Groups listed, including a narrative description of proposed media elements.

11.4 Specific Requirements for Design Development Phase

A. Design Development 1: The NPS numbering system includes preliminary entries for AOs, CEs, EE/EPs, GLs, IMs, and LAs.

B. Design Development 3: The NPS numbering system is required.

Provide Content Management Database reports in the form of Schedules and Facsimiles, as follows:

1. Comprehensive Exhibit Plan – A single report or schedule, organized by Scene and Content Group, that includes a comprehensive listing of all exhibit elements, including AOs, CAs, CEs, EEs, EPs, GLs, IMs, and LAs.

2. AO – Accessioned Objects Schedules.

3. AO – Accessioned Objects Facsimile Sheets.

4. CE - Custom Elements Schedules.

5. CE - Custom Elements Facsimile Sheets.

6. EE - Electronic Equipment Schedules.

7. EP - Electronic Program Schedules.

8. GL - Graphic Layout Schedules.

9. IM - Image Schedules.

10. IM - Image Facsimile Sheets.

See Attachment 7 for required exhibit element data fields and examples of schedules and facsimiles.

11.5 Specific Requirements for Production Design Phase

A. Production Design 1: The NPS numbering system is required.

Provide updates for all components of the Content Management Database listed in item 11.4 above.

B. Production Design 2: The NPS numbering system is required.

Update all components of the Content Management Database and provide the COR with a packaged version of the raw database file.

11.6 Specific Requirements for Production Support Phase

Specific task orders may require the contractor to update the project's Content Management data.

12. Text

12.1 Introduction

The contractor is responsible for developing and preparing all written text that will appear in the exhibition. Write text with reference to the project goals, exhibit objectives, the resource package, the Schematic Design phase planning documents, and based on the consolidated review comments from the COR as the project develops.

Exhibit text is integrally related to other elements experienced by visitors. Text must relate to and function within the specific physical and graphic design of the exhibit as a whole. Text must contribute to achieving the project goals, but it cannot contribute as a stand-alone element. In every instance, consider whether text is the most effective means of achieving project goals.

Text is developed in stages, usually beginning in the Design Development phase of work. Work progressing in increasingly refined drafts of text, showing the text's relationship to other exhibit elements through the content outlines and graphic layouts.

The stages of text development include:

A. Text Level 1 – A written description of the subject and purpose of each label or block of text, and includes draft titles for primary blocks of text; and a sample draft of text that demonstrates style, tone, and reading level (required for Design Development 1).

B. Text Level 2 – The first full draft of all text, to be reviewed for writing style, content, and interpretive effectiveness (required for Design Development 2).

C. Text Level 3 – A more refined draft, revised or re-written as necessary in response to review comments (required for Design Development 3).

D. Text Level 4 – Edited, proofed, and further refined text close to what will appear in the completed exhibition. Level 4 text usually requires additional revisions that were not identified in earlier reviews (required for Production Design 1).

12.2 General Requirements

A. Text Submittals

1. All stages of text submittals are provided to the COR as an accessible Microsoft Word document in addition to appearing in graphic layouts as the project progresses. Text submittals include updated footnotes or sources, and text intent is carried forward into Text Levels 1, 2, and 3. Wherever text occurs throughout exhibit deliverables, it is the most up-to-date version.

2. The Word document includes individual text label numbers, as described in Section 11, Content Management (ie, LA-XX-XX-XXX). Having individual labels identified with numbers assists reviewers in organizing

comments; it can also be used to track labels featured in the audio description. This numbering system is used within the text submittal Word document, but is not required to be included on Graphic Layouts.

B. Style Guide

All exhibits are planned, designed, and produced in accordance with the most recent NPS Editorial Style Guide. (see https://www.nps.gov/subjects/hfc/national-park-service-style-guides.htm)

C. Proofread all text

Proofread all text for correct spelling, punctuation, and grammar prior to submittal to the COR.

D. Interpretive writing style

The NPS assumes that our audiences seek more than information and learning, that they seek meaningful experiences. Text, in coordination with all exhibit elements, creates opportunities for visitors to form their own intellectual and emotional connections with meanings and significances inherent in the park's resource.

Interpretive writing, rather than informational or creative writing, is required for many exhibit labels. For the purpose of NPS exhibits, "informational writing" is defined as providing factual data for reference or other use; "creative writing" is artistic expression in written form and evokes sensory impressions and images; and, "interpretive writing" draws from technical, informational, scientific, historical, and cultural sources; it incorporates creative techniques and seeks to connect readers emotionally and intellectually to the meanings and significance of the resource(s). A successful NPS exhibit uses accurate and comprehensive information, but conveys more than facts.

The writing style for exhibits must be interpretive and informative, and apply the principle of Plain Language as defined at www.plainlanguage.gov. Active voice is preferred in exhibit text writing.

E. Hierarchy of text

Establish a consistent hierarchy for the content and purpose of text in the exhibit. This hierarchy is reflected in the appearance of text in the exhibit's design. Define characteristics of each level in the hierarchy, such as length, style, etc. Examples of hierarchical levels are: titles, subtitles, primary and secondary body text, interpretive captions, identification captions, and text for interactives.

F. Sources

1. All information provided in exhibit text must be accurate and reflect the most recent scholarship.

2. Exhibit text must be confirmed not to be plagiarized and not to violate intellectual property rights law.

3. Beginning with Text Level 1 (the first draft of text), provide footnotes within the Word document, citing references where necessary for fact checking purposes.

G. Audience

Unless a more specific audience is defined for an exhibit or portions of an exhibit, the general visiting public is the audience for whom exhibits are produced, not scholars, historians, scientists, or administrators. Unless otherwise specified in the task order, exhibit text should be written to an eighth grade (academic) reading level, and use available standard software tools for evaluating the reading level (i.e., Flesch-Kincaid Reading Level); the contractor shall inform the COR of the software tool used and the results obtained.

H. Length of text

Exhibit text is kept as brief as possible while achieving project goals.

I. Quotations

All quotations must be attributed, verified, and the source documented in the footnotes. Graphic layouts clearly show what is a quotation.

J. Multiple perspectives

Text, in coordination with all exhibit elements, must accommodate and present multiple points of view regarding the resource, and rely on accurate information and avoid the tendency to exaggerate or slant information to present a personal or particular viewpoint.

12.3 Specific Requirements for Multi-Lingual Exhibits

Unless otherwise specified in the individual task order, for exhibits requiring other languages in addition to English the text shall be translated and displayed as follows:

A. Text at all levels of the hierarchy must be provided in each language, including captions, text for interactives, and map labels.

B. Text in all languages shall be equally accessible.

12.4 Specific Requirements for Design Development Phase

A. For Design Development 1, develop Text Level 1, including:

1. Draft titles for all primary text.

2. A description of text intent for all labels, consisting of purpose

statements, and descriptions of the topics or information to be presented in each Content Group.

3. Sample text to demonstrate style and reading level for one representative Content Group, as approved in advance by the COR, showing each hierarchical level of text.

B. For Design Development 2, develop Text Level 2, including a complete draft of all text, which shall include:

1. Blocks of text placed in, or adjacent to, the associated Graphic Layout Draft.

2. A copy of the text as an NPS-approved word processing document. This text must be identical to the text shown in the graphic layouts, must include footnotes, and carry forward the text intent purpose statements.

C. For Design Development 3, develop Text Level 3, including a complete revised draft of all text as follows:

1. Text placed directly into each graphic layout.

2. A copy of the text as an NPS-approved word processing document. This text must be identical to the text shown in the graphic layouts, must include footnotes, and carry forward the text intent purpose statements.

12.5 Specific Requirements for Production Design Phase

A. For Production Design 1, develop Text Level 4, consisting of all edited, proofed text.

B. For Production Design 2, correct text errors identified in COR review comments of the PD1 deliverable. In addition, perform independent proofing of all text, notify COR of any additional errors found, and correct them as part of preparing Graphic Production Files. Text appearing in the PD2 Graphic Layout Package must be identical to text in the Graphic Production Files.

C. Additionally, submit a copy of the final text as an NPS-approved word processing document. This text must be identical to the text shown in the graphic layouts, must include footnotes, and carry forward the text intent purpose statements.

12.6 Specific Requirements for Production Support Phase

Individual Task Orders may require the contractor to make additional changes to text in the Production Support Phase as specified in the task order.

13. Exhibit Drawings

13.1 Introduction

Exhibit Drawings describe how the exhibition is organized within the allotted architectural space, its physical shape, dimensions, materials, and construction details.

Exhibit Drawings (prepared in the Planning and Design phases) are distinguished from Fabrication Drawings (prepared in the Production phases) by their level of detail. They must, at a minimum, communicate design intent. Details specifying how the exhibit is built, for example specific construction techniques and hardware, are necessary only to the extent required to clarify design intent, and to describe non-standard, unusual or critical materials and processes.

Fabrication Drawings maintain the design intent of the previously prepared Exhibit Drawings.

13.2 General Requirements

A. Exhibit Drawings are coordinated with other project documents to ensure consistency in identifying individual exhibit elements. All labeling and numbering of elements conform to the exhibit Content Management specifications. Section 11, Content Management.

B. The latest and most accurate available version of the architectural floor plan drawings is used as a guide when developing exhibit design drawings.

   1. When individual task orders specify a site visit, the contractor will measure and document the existing architectural space.

C. Unless approved in advance by the COR, all drawings are created at 11" x 17" page size.

D. All drawings are prepared at a standard architectural scale appropriate to the information being communicated on the drawing and include a graphical scale indicator.

E. All Exhibit Drawings include a legend with the project name, phase of work, issue date, and revision number.

F. Exhibit Drawings are submitted as both paper copies and electronic files. All drawings are submitted in their original file format and in pdf format.

13.3 Specific Requirements for Schematic Design Phases

A. At a minimum, prepare and submit diagrams and plan-view drawings of the exhibition's content and physical layout at a level of detail consistent with the current level of exhibit planning and design. During Schematic Design this includes:

1. For Schematic 1, diagrammatic studies (Bubble Diagrams) for each design alternative. The diagrams are organized to best fit the project according to one of the following methods:

    a. As labeled shapes (bubbles) and lines identifying exhibit themes and concepts and how they relate to each other. The weight, importance, or emphasis of individual elements is indicated by their size and location on the diagram.

    b. As labeled shapes (bubbles) on an exhibit floor plan, indicating the approximate size and location of each Scene (major exhibit area).

2. For Schematic 2:

    a. A floor plan with an accurate footprint of all proposed Scenes. All Scenes and Content Groups within each Scene are labeled on the floor plan.

    b. Rendered, three-dimensional views for a minimum of two Content Groups selected to communicate the proposed appearance and style of the exhibition.

13.4 Specific Requirements for Design Development Phases

A. For Design Development 1, prepare and submit drawings of the developed design. The primary use of these drawings is for project team review and approval, and to serve as the basis for Production Documents in a later phase of work. Designs shown in the drawings must meet the specifications for Exhibit Structures identified in Section 22, Design Guidelines for Exhibit Structures. At a minimum, the drawings include:

1. Cover sheet identiying the project name, project location and site plan, date of submission, and table of contents.

2. Floor plan of the facility showing location of the exhibition site, the primary exhibit area with name and location of each Scene, and references to exhibit detail drawings.

3. Floor plans and elevations of existing conditions indicating any modifications such as demolition and new construction.

4. Plan and elevation views of each Scene/Content Group identified by title and identification number, and showing exhibit structures and all graphic panels, artifact locations, and all other interpretive content with identification numbers. Include a floor plan on each sheet indicating the location of the views shown.

5. Proposed fabrication details for unusual exhibit structures. (Section 22, Design Guidelines for Exhibit Structures, requirements apply.)

6. Reflected ceiling plan of the exhibition space showing proposed lighting plan (Section 23, Exhibit Lighting).

7. Proposed colors, materials, and finishes.

8. Proposed furnishings or other off-the-shelf items and equipment.

9. Proposed data and electrical wiring plans for the exhibition space, indicating floor and wall outlets, ceiling junction boxes, and locations of switches and controls.

10. Location of remote audiovisual equipment.

B. For Design Development 2, prepare and submit any major design changes requested by the COR in review of DD1 Exhibit Drawings.

C. For Design Development 3, prepare and submit a revised set of drawings incorporating all planning and design changes. Design Development 3 also includes additional details developed during this phase of work, including but not limited to:

1. Lighting equipment schedule. (Section 23, Exhibit Lighting, requirements apply.)

2. Case Schedule. (Section 11, Content Management, requirements apply.)

13.5 Specific Requirements for Production Design Phase

A. As part of document preparation within the Production Design phase of work, prepare and submit final Exhibit Drawings. Designs shown in the drawings must meet the specifications for Exhibit Structures identified in Section 22, Design Guidelines for Exhibit Structures. The drawings, when combined with other elements of Production Design, provide sufficient information for exhibit fabricators to prepare detailed Fabrication Drawings. At a minimum, the Production Design Exhibit Drawings include:

1. Cover sheet that identifies the project name, project location and site plan, date of submission, and table of contents.

2. Floor plan of the facility showing location of the exhibit site, the primary exhibit space with name and location of each Scene, and references to exhibit detail drawings.

3. Floor plans and elevations of existing conditions indicating any modifications such as demolition and new construction.

4. Plan and elevation views of each Scene/Content Group identified by title and number, and showing exhibit structures and all graphic panels, case locations, and all other interpretive content with identification numbers. Include a floor plan on each sheet indicating the location of the view shown.

5. Typical fabrication details including plan, elevation, sectional, and isometric views.

6. Fabrication details of unusual exhibit structures.

7. Case Schedule. (Section 11, Content Management, requirements apply.)

8. Reflected ceiling plan of the exhibit area(s) identifying existing and new lighting fixtures and hardware. Include a lighting schedule for all new lighting indicating type of fixture, track, or associated hardware required.

9. An electrical plan of the exhibit area indicating floor and wall outlets and ceiling junction boxes, power circuits, and power load for each exhibit or audiovisual element.

10. Specification of all colors, materials, and finishes to be used.

11. Identification of all furnishing or other "off-the-shelf" items and equipment including the name, address, and telephone number of the supplier and/or manufacturer of each item.

12. Location of remote audiovisual equipment and routing of audiovisual signal wiring.

13. Exhibit power, lighting, and audiovisual control switch locations.

14. Description of exhibit start-up, operation, and shut-down procedures.

B. Revise and resubmit the final exhibit design drawings to address review comments provided by the COR.

C. The contractor's name and other identifying information may not appear on the final submittal of Exhibit Drawings intended for release to potential exhibit production offerors.

13.6 Fabrication Shop Drawings

A. General Requirements:

1. During the Pre-Fabrication Submittals phase of work, provide Fabrication Shop Drawings and Revised Fabrication Shop Drawings as follows:

    a. Submit Fabrication Shop Drawings for review and approval. Fabrication Shop Drawings incorporate all changes or additions as specified in individual task orders or modifications for elements which were not included in the Exhibit Design Drawings. The contractor may propose alternate production techniques in accordance with design intent for review and approval by the COR.

    b. Provide Revised Fabrication Shop Drawings to incorporate changes in accordance with review comments and prior to fabrication of exhibits.

2. Review all measurements relating to the fabrication and installation of work required under this contract. Provide corrected dimensions on the drawings.

B. Fabrication Drawings include the following changes or additions to the government-furnished Exhibit Design Drawings:

1. Plan, elevation, and section view drawings indicating final dimensions and layouts;

2. Materials, finishes, colors, and hardware identified, including manufacturer's name and associated color, finish, or product identification number. Provide up-to-date information on all colors, finishes, and products; and

3. Exhibit elements in drawings identified and numbered in accordance with Section 11, Content Management.

C. Catalog Cuts: Provide legible scanned and printed copies of catalog cuts for all off-the-shelf products, and include its corresponding identification number in accordance with the content management system. When more than one product is shown on a page, highlight, circle, or otherwise identify the specific product, including all appropriate specifications such as model or part number, color, size, etc. Off-the-shelf products requiring catalog cuts include:

1. Lighting fixtures and associated hardware.

2. Electronic and electrical equipment and hardware, including audiovisual

equipment, computer systems, control systems, cables, pushbuttons, and ventilation fans.

3. Security hardware and locks.

4. Specialized cabinet hardware, including hinges, casters, drawer pulls, door handles, levelers, etc.

5. Specialized fasteners, including cable hanging systems, wall or floor anchors, and other fasteners specified for anchoring or supporting exhibit structures in place.

D. Isometric Drawings: Provide isometric or 3D projection drawings to illustrate access into the exhibits for maintenance and repairs by the park staff. Drawings include, but are not limited to, access into all exhibit artifact cases, audiovisual equipment, lighting equipment, and storage areas inside the exhibits. The isometric drawings are incorporated into all copies of the Maintenance Manual.

E. Artifact Mount Drawings: Provide drawings for review and approval of artifact mounts in accordance with Section 18, Object Preservation and Protection.

F. Preliminary Maintenance Manuals

1. Provide preliminary submittals of the following, with content specific to the exhibit to be fabricated and installed under the task order:

   a. Maintenance Manual

   b. As-Built Lighting Plan

   c. Audiovisual Operations Manual

2. In accordance with Section 29, Operational Training and References, provide the following for each Preliminary Manual, at a minimum:

   a. Title page

   b. Table of Contents

   c. Contract information

   d. Placeholder pages for items listed in the Table of Contents, with notes identifying intent for final contents. Include draft of all sections available

13.7 As-Built Drawings

A. General Requirements: The As-Built Drawings are prepared and submitted as part of the final closeout package. The As-Built Drawings document the final, completed, installed condition of the exhibits and serve as an accurate representation of the design, as it was executed.

B. Specific Requirements:

1. The drawings include a complete set of Exhibit Design Drawings, in accordance with this Section, 13.5.

2. The drawings incorporate fabrication detail drawings in accordance with this Section, 13.5.

3. The drawings incorporate revisions or modifications which took place during, or after, the on-site installation.

4. The drawing sheets for the lighting plan, reflected ceiling plan, audiovisual program locations, electrical plan, power plan, etc., are updated to match the corresponding information in the separate As-Built Lighting Plan and the Audiovisual Operations Manual.

5. Organization of Drawings:

   a. Clearly identify the drawings as "AS-BUILT" on the cover page, along with the date of completion of the drawing set.

   b. Number sheets in accordance with the original design drawings. If additional sheets or revised sheets are added to the set, use a numbering system that is based on the original system, such as adding a letter to the number. Do not use a completely separate, internal numbering system.

6. Identify the date of completion on each of the revised and new drawings.

14. Materials, Colors, and Finishes

14.1 Introduction

A Material, Color, and Finish sample board is required at several points during Planning and Design, and again during Fabrication. The intent of the sample board is to provide increasingly detailed specifications and samples of the physical materials, and the exact colors, to be used in fabricating the exhibits.

The visual theme or style of an exhibition is proposed during the Schematic 2 phase of work, with refinements and detail added during the Design Development phases. In the Production Design phase, the final design specifications for all visible elements in the exhibition are provided. In Production, the final material, color, and finish samples are provided prior to beginning fabrication of exhibits.

14.2 General Requirements

A. Assemble samples onto a Material, Color, and Finish Sample Board that includes the following additional information:

   1. Samples are labeled with the manufacturer's identification name and/or code number.

   2. Samples for all paints, finishes, and materials include the vendor's name and contact information.

   3. Samples include the park and project name, date, and current phase of work.

B. Consider cost when making material/finish selections. The goal is to achieve an effective balance between resources allocated to the exhibition's physical structure and its interpretive media elements.

C. Materials, colors, and finishes are selected for the most effective visual presentation, to reinforce the exhibition's content, durability, and sustainability. In no case should an exhibit's visual appearance compete with or obscure its educational, interpretive, or informational messages.

D. Materials and finishes specified for use inside of artifact display cases, or in contact with NPS objects on open display, are in accordance with Section 18, Object Preservation and Protection, and conform to the National Park Service Exhibit Conservation Guidelines (see Attachment 3) to ensure preservation goals.

E. All materials used inside a case including laminates, fabrics, sealants, adhesives, coatings, and paints must have passed the appropriate tests (e.g., Oddy Test, Photographic Activity Test, etc.) to ensure they are safe for use with collection objects. Previously published test results may be referenced, and and all

test results must be approved by the COR. The contractor is responsible for performing any material testing that is required for the project.

14.3 Specific Requirements for Design Development Phase

A. Design Development 1: Submit two identical copies of the preliminary Material, Color, and Finish Sample Board in the Design Development 1 phase of work. All samples must be of sufficient size, shape, and configuration to provide an accurate representation of their appearance in the exhibit. Samples obtained from the manufacturer or prepared by the contractor include, but are not limited to:

1. Plastic and plastic laminates (example: Formica)

2. Solid surfacing materials (example: Corian)

3. Paint samples (including surface luster)

4. Wood, metal, glass, ceramic, fabric, carpet or other materials with natural or applied finishes

5. Color chips to specify:

    a. Screenprinting inks – use Pantone Matching System

    b. Digitally output graphics –Pantone Matching System or other appropriate color matching chips. Paint color chips are not acceptable. Since color information is embedded in digital files, physical samples are only required for the principal color palette, and other critical color matching purposes.

B. Design Development 3: Submit two identical copies of the Material, Color, and Finish Sample Board in the Design Development 3 phase of work. The updated sample board includes any changes, additions, modifications, or deletions noted by the COR in the Design Development 1 phase of work.

14.4 Specific Requirements for Production Design Phase

Unless otherwise specified in the task order, prepare and submit a total of three Material, Color, and Finish Sample Boards revised to address all review comments as follows:

A. Ensure all materials, colors, and finishes match the corresponding specifications in the Production Exhibit Drawing package.

B. If requested by the contractor, the COR may return the two sample boards submitted in the Design Development 3 phase of work. The returned sample boards are revised and resubmitted along with a third, new copy. All three copies include identical information.

C. If the contractor does not request return of the existing sample boards for revision, the three Material, Color, and Finish Sample Boards at Production Design will be new.

14.5 Specific Requirements for Fabrication Phase

During Pre-Fabrication Submittals, prepare and submit a total of three Material, Color, and Finish Sample Boards for all exhibit materials, colors, and finishes specified in the exhibit design. Provide additional samples as specified in individual task orders.

A. Materials and Finishes Samples - All samples are identified with the brand name, number, color name and number, and the manufacturer's name, address, and telephone number. All samples are identified with exhibit color number. Sample sizes are a minimum of 4" x 4" or as specified in individual task orders.

1. Finish Samples

   a. Paint - Paint colors mixed to match the specified exhibit color, applied to substrate of same material to be used in the exhibit. All samples are identified with exhibit color number. Paints are in accordance with Section 18, Object Preservation and Protection.

   b. Plastic laminate - All samples are identified with exhibit color number.

   c. Wood - Solid wood or wood veneer finish in specified species of wood and thickness and with specified finish, such as stain, sealant, or oil finish. All samples are identified with exhibit color number. Wood and wood sealants are in accordance with Section 18, Object Preservation and Protection.

   d. Metal - Finish and metal specified, including but not limited to, paint, powder coating, patina, and anodized finish.

2. Glazing - Glass or acrylic glazing, in specified type and thickness.

3. Object Display and Case Materials - Provide material and finish samples in accordance with Section 18, Object Preservation and Protection.

4. Models and Figures – Textures and finishes for models (natural history, cultural history, custom figures, and other) are included on the Material, Color, and Finish sample board. Additional sample materials are required for Content Specialties (see Section 16, Content Specialties).

B. Graphics – For specific requirements for graphic production samples, refer to Section 15, Two-Dimensional Exhibit Graphics.

C. Mock-ups and Prototypes – Individual task orders specify any material, color, and finish sample specifications for mock-ups and prototypes. Additional samples are in accordance with Section 24, Mock-ups and Prototypes.

15. Two-Dimensional Exhibit Graphics

15.1 Introduction

Two-Dimensional Exhibit Graphics convey interpretive messages, describe objects or other exhibit elements, and provide general information within the exhibition. Exhibit graphics may include stand-alone text, photographs, illustrations, maps, or any combination of text and images. They are produced and mounted for display using a variety of processes.

Graphic Layouts are prepared using computer software, with the resulting graphic production files being structured to accommodate the selected graphic production process. In these processes, all text and images are prepared in a single Graphic Layout, which is output as a single print and mounted on a single panel. This panel is considered one two-dimensional exhibit graphic.

Along with direct digital output, an exhibit design may call for specialty processes such as silk screening, etching, or cut vinyl. Each specialty process may have unique technical requirements for preparation of graphic production files.

In addition to single flat panels, some Two-Dimensional Exhibit Graphics may be compound graphics, composed of a number of separate pieces to add dimensionality, shapes, or other textures and materials. An example is a large panel with a background image, dimensional cut-out lettering applied as a title, and several smaller mounted images standing off from the main panel. In this case the entire assembly may be designated as a single Two-Dimensional Compound Exhibit Graphic. Individual Graphic Layouts may be needed for each of the discrete pieces making up the compound graphic, along with an exhibit drawing showing the placement of all the elements in relation to each other.

Graphics created for display on screens or by projection are not included in this specification.

15.2 Graphic Layouts: General Requirements

A. Create all Graphic Layouts required for the exhibition unless otherwise specified in individual Task Orders. Graphic Layouts are prepared for each Two-Dimensional Exhibit Graphic according to the following criteria:

   1. Graphic Layouts are designed for legibility and to meet National Park Service accessibility requirements. (see Attachment 5, Programmatic Accessibility Guidelines for National Park Service Interpretive Media).

   2. In developing Graphic Layouts, take into account the proposed exhibit environment in which the graphics will be viewed, including but not limited to lighting levels, viewer distance and angle of view, possible obstructions, and shadows from other exhibit elements.

   3. The graphic design supports the clear communication of information. Labels and captions are clearly associated with the objects and images

they are describing. Take care to ensure that the design does not imply incorrect information due to the misleading selection, juxtaposition, or alteration of images.

4. The primary purpose of typography is to promote an understanding of the interpretive or informational message of the exhibition. Use of typographic styles that are distracting or difficult to read are unacceptable. Balance the selection of fonts and use of typography to compliment the exhibition's design approach while being accessible to a wide range of visitors, including those with low vision or who have reading difficulties.

5. An individual Graphic Layout is prepared for each exhibit graphic element that needs to be output and mounted separately during production. Exception: similar small elements may be grouped together on one Graphic Layout to improve efficiency as long as clear instructions are provided.

6. All Graphic Layouts are prepared using approved software application programs as specified in 15.5.A of this Section.

15.3 Specific Requirements for Design Development Phase

A. Design Development 1

Develop graphic layouts during the Design Development 1 phase of work as follows:

1. As part of the DD1 submittal, prepare, at a minimum, one sample graphic layout for each type of exhibit graphic element in the exhibition as follows:

   a. All sample graphic layouts demonstrate a proposed graphic design approach, including the specification of standard sizes, layout formats, color palette, and typography.

   b. Placement copies of key images are included in the sample graphic layouts. Secondary, or less prominent images may be indicated by outlines or other visual representations only to the extent that the proposed graphic design approach remains clear.

   c. Text Level 1 (text intent and purpose statement), consisting of draft titles for all primary text, and descriptions of the topics or information to be presented are included in the sample graphic layout. Secondary or smaller text elements may be indicated by greeking or other visual representations only to the extent that the proposed graphic design approach remains clear.

d. Outlines or images are included to indicate the location of three-dimensional objects or other exhibit elements, if any, to be mounted on a sample graphic layouts.

e. The size and shape of sample graphic layout drafts matches the corresponding two-dimensional exhibit graphic elements shown in the DD1 Exhibit Drawings.

f. Sample graphic layouts are included in the DD1 Submittal as full color prints scaled such that the proposed graphic design approach is clearly communicated. Each print is labeled to identify the type of two-dimensional exhibit graphic shown (for example: "Content Group introduction panel," "primary text panel," "reader rail graphic").

g. In addition, include typography and graphic layout specifications sheet(s) in the DD1 Submittal including:

i. Samples of all typefaces used, identified by name and manufacturer, showing different point sizes used.

ii. A graphic layout color palette with color swatches identified by Pantone number.

iii. Any standard graphic motifs, decorations, or special treatments used as part of the graphic layout approach.

B. Design Development 2

Develop graphic layouts during the Design Development 2 phase of work as follows:

1. As part of the DD2 submittal, prepare graphic layouts for all two-dimensional exhibit graphic elements in the exhibition as follows:

a. Graphic layouts during this phase of work follow the design proposed in the approved sample graphic layouts from the previous phase, as modified by COR review comments. Prior to proceeding, the COR may require the contractor to submit additional samples when the original sample graphic layouts are not approved, or approved with extensive comments.

b. Placement copies of all selected images are included in the graphic layout. In cases where specific images have not been selected or are not available, placement (location, size, and shape) of the missing image is shown, and identified as "FPO-for position only," accompanied by a written description of the desired image.

c. Text Level 2 (first full draft of all text) for each graphic layout is included. This text is integrated into the layout using the correct typeface, size, and position.

d. Outlines or images are included to indicate the location of any three-dimensional objects or other exhibit elements to be mounted on the two-dimensional exhibit graphic. These elements are clearly labeled to distinguish them from the printed graphic layout.

e. The size and shape of graphic layout drafts matches the corresponding two-dimensional exhibit graphic elements shown in the DD1 Exhibit Drawings.

f. Graphic layout drafts are included in the DD2 submittal in full color, 11" X 17" format. Each print is labeled to identify the following:

i. Location of the graphic layout in the exhibition, by Scene and Content Group

ii. Scale at which printed, with 100% equal to the final production size in the exhibit

iii. Finish size of the graphic layout in the completed exhibition

g. In addition, include revised typography and graphic layout specifications sheet(s) in the DD2 submittal.

C. Design Development 3

Complete a DD3 Graphic Layout Package, as follows:

1. Include a title page, with project name, document title, phase of work, and issue date.

2. Include a Graphic Layout Schedule, listing all graphic layouts in the exhibition, and including the data specified in Section 11, Content Management.

3. Include revised typography and graphic layout specifications sheet(s).

4. Print each graphic layout in full color on its own 11" X 17" sheet. Each sheet includes the following information in the margin:

a. Graphic layout number, using the Content Management Numbering System as specified in Section 11, Content Management

b. Scale at which printed, with 100% equal to the final production size in the exhibit

c. Finish size of the graphic layout in the completed exhibition

5. Placement copies of all selected images are included in the graphic layouts. Outlines or other graphic representations of images are not acceptable. Each image is labeled with its image (IM) number.

6. Text Level 3 (revised and refined draft of all text) is included in the graphic layouts as follows:

   a. Text appearing in these graphic layouts is the record version of all currently proposed exhibit text. Greeking or other generic representations of text is not acceptable.

   b. All text is integrated into graphic layouts using the correct typeface, size, and position.

   c. All text must be of legible size for review purposes, typically 10 point or larger. In cases where reduction of a graphic layout to fit on a single sheet results in illegible text, enlarged sections of the layout are provided on subsequent sheets for text review purposes.

7. Outlines or images are included to indicate the location of any three-dimensional objects or other exhibit elements to be mounted on the two-dimensional exhibit graphic. These outlines or images include the statement: "Do Not Print – For Placement Only", and are labeled with the appropriate exhibit element number.

8. The size and shape of graphic layout matches the corresponding two-dimensional exhibit graphic elements shown in the DD3 Exhibit Drawings.

15.4 Specific Requirements for Production Design Phase

A. Production Design 1:

Prepare and submit a PD1 Graphic Layout Package as follows:

1. This document consists of an updated version of the DD3 Graphic Layout Package, revised to resolve all COR review comments. It conforms to the specifications in 15.3.C of this Section.

2. Text Level 4 (edited, proofed text) is included in all graphic layouts.

3. Placement copies of the current versions of all images are included in all graphic layouts.

4. Where 30% or fewer of the pages in the PD1 Graphic Layout Package include revisions from the DD3 Graphic Layout Package, and with approval in advance from the COR, the contractor may submit a PD1 Graphic Layout Addendum Package consisting of the revised pages only. An up-to-date Graphic Layout Schedule is included in the addendum package.

5. Where over 30% of the pages in the PD1 Graphic Layout Package include revisions from the DD3 Graphic Layout Package, the contractor must submit a complete revised version of the package.

B. Production Design 2:

Furnish Production-Ready Graphic Layouts as follows:

1. Complete all production-quality scans required for the exhibition as specified in 15.6.B of this Section.

2. Adjust color balance, saturation, image sharpness, and perform other minor touch-up work as needed for all production-quality scans.

3. Prepare all Final Image Files for the exhibition as specified in 15.5B(2) of this Section. This includes blending of multiple source images, application of color, transparency, or a combination of other effects to match the visual intent of the corresponding low-resolution placement image, and adjusting image for correct cropping and bleed.

4. Prepare all Vector Illustration Files for the exhibition as specified in 15.5.B.3 of this Section.

5. Correct all typographical, grammar, formatting and factual errors in text noted in the COR review of the PD1 Graphic Layout Package.

6. Prepare and submit all Production-Ready Graphic Layout Files as specified in 15.5.B.1 of this Section.

7. Prepare and submit a PD2 Graphic Layout Package in 11" x 17" landscape format including:

    a. Title page with project name, document title, phase of work, and issue date.

    b. Graphic Layout Schedule.

    c. A complete set of all graphic layouts as follows:

        i. Where technically feasible, these prints are produced directly from the Production-Ready Graphic Layout Files.

ii. In all cases, the prints are an accurate representation of the contents of the Production-Ready Graphic Layout Files.

iii. All images and text are legible. In instances where graphic layouts scaled to fit a standard 11" x 17" page are not legible, provide a reference print of the entire graphic layout sized to fit a standard page, followed by enlarged, legible sections of the graphic layout on subsequent pages.

iv. Printed copies of each graphic layout include, at a minimum, the following information printed in the margin:

- Graphic Layout (GL) number
- Computer file name
- Scale at which printed, with 100% equal to the final production size in the exhibit
- Dimensions for the final production size

15.5 Requirements for Graphic Production Files

A. Software

The following software programs are acceptable:

1. Adobe InDesign, Creative Cloud or later for graphic layout files.

2. Adobe Photoshop, Creative Cloud or later for image (raster based continuous tone) files.

3. Adobe Illustrator, Creative Cloud or later for vector based graphic illustration files.

4. Adobe Acrobat, Version 9 or later for pdf (portable document format) files.

5. Newer versions of these programs that are released during the term of this contract are also acceptable unless otherwise stated in individual task orders. Substitution of other software programs must be approved in advance by the COR.

B. File Structure

Throughout the exhibit development process, all files must follow a standardized structure for each file type. File types, structure, and their naming convention are as follows:

1. Graphic Layout Files include all of the components—images, text, and graphic ornaments—for a single exhibit graphic element that will be

output and mounted separately during production. These files are created in Adobe InDesign, and organized into layers determined by the document's content. All graphic layout files are RGB files with the Adobe RGB 1998 profile embedded. In addition:

a. All files are created at 100% of final printed size unless limited by InDesign.

b. All linked files are correctly referenced and available to the graphic layout file for the file to print correctly (see 15.5.B.4 of this Section).

c. Image identification numbers are located on or adjacent to the corresponding elements on the layout, and placed on a separate layer.

d. Other supporting information is located in the document margin, and placed on a separate layer. This data includes, but is not limited to, the file name, date or revision number, and document scale in relation to the final output.

e. All graphic layout files prepared for final output include crop marks and sufficient bleed to accommodate the specified production process.

f. Each file is named to correspond with the identification number assigned in the Content Management Numbering System. File names follow the format:

i. GL-00-00-000Work.indd for Design Development level graphic layouts

ii. GL-00-00-000Prod.indd for Production level graphic layouts

2. Image Files (continuous tone, or raster files) are structured according to their specific use during the exhibit development process. A separate folder is used for each file type, and each file is named to correspond with the image identification number assigned in the Content Management Numbering System. The file types include:

a. Raw Image Files: Unimproved scan files, supplied files, and digital camera raw files (in Adobe DNG format). These files may be 16 bits per channel or 8 bits per channel RGB.

i. File names follow the format: IM-00-00-000Raw. The appropriate file extension is appended to the file name.

b. Working Image Files: Layered PSD files (Photoshop native file format). These are the files in which all work has been done. All work is done on layers and is available for further editing. All editing functions are done on adjustment layers where practical. Where this is not the case, a duplicate of the original image layer is made and the edits str applied to it. These files may be 16 bits per channel or 8 bits per channel RGB, are scaled to final use size and resolution, and have the Adobe RGB 1998 profile embedded.

    i. File names follow the format: IM-00-00-000Work.psd

c. FPO Image Files: Low-resolution versions of images used for developmental purposes during exhibit planning and design. The FPO image files are linked to the graphic layout files prior to final output of the exhibit graphics. These files are produced at a quality level sufficient to provide a clear representation of the image as it will appear in the final exhibit, balanced against the need for a manageable file size that can be easily stored, transmitted, and printed. Compressed image formats such as JPG are acceptable for FPO files. The FPO images are cropped and scaled to match the Final Files they are representing. These files are 8 bits per channel RGB and have the Adobe 1998 profile embedded.

    i. File names follow the format: IM-00-00-000FPO. The appropriate file extension is appended to the file name.

d. Final Image Files: Production-ready image files created by flattening the final version of Working Files. These are the files linked to the graphic layout files for final output. These files are 8 bits per channel RGB and have the Adobe 1998 profile embedded.

    i. File names follow the format: IM-00-00-000Prod. The appropriate file extension is appended to the file name.

3. Vector Illustration Files: These files are created in Adobe Illustrator, and are organized into layers determined by the content in the document. In addition:

    a. Supporting information is located in the document margin, and placed on a separate layer. This data includes but is not limited to the file name, and date or revision number.

    b. Vector illustrations are designated as images in the Content Management Numbering System. File names follow the format:

        i. IM-00-00-000Dev.ai for Design Development level vector illustrations

ii. IM-00-00-000Prod.ai for Production level vector illustrations

4. Linked Files are raster or vector files required by the primary file in order to print correctly. Graphic layout files often require one or more linked image files. Supporting files are always linked to, not embedded in, the primary file. Approved formats for linked files are tif, pdf, psd, and ai.

5. PDF Files are used for electronic distribution, viewing, and printing of review documents during exhibit development. Unless otherwise approved in advance by the COR, pdf files are not used for final exhibit production output. The pdf file name is identical to the file from which it was created, with the .pdf extension replacing the original file's extension.

C. Color Management

The design and production processes is color managed from beginning to end using ICC (International Color Consortium) and ColorSync color management as follows:

1. All raster image and vector files are RGB files.

2. Color working space is Adobe RGB (1998). The Adobe RGB (1998) profile is embedded in all RGB files.

3. Color settings for InDesign and other Adobe applications is US Prepress Defaults. Important settings in this context are:

   a. Enable Color Management

   b. Working Space: RGB; Adobe RGB (1998)

   c. Conversion Options:

      i. Engine: Adobe ACE

      ii. Intent: Relative Colorimetric

      iii. Use Black Point Compensation

      iv. Transparency Blend Space (for InDesign files): Document RGB

      v. All soft proof color evaluations are made in this environment.

4. The D50 standard viewing conditions (ANSI PH2.30-1989 For Graphic Arts and Photography - Color Prints, Transparencies, and Photomechanical

Reproductions - Viewing Conditions) apply, and all hard copy color evaluations will be made in this environment.

5. All defined colors (Swatches) in InDesign and Illustrator are set to Color Type: Process.

D. Fonts

1. Provide all font files necessary to view, edit, and print all graphic layouts produced under this contract.

2. OpenType is the standard approved font technology for all Graphic Layout files. Type 1, TrueType, or any other font technology is not acceptable.

3. The contractor is responsible for meeting all software licensing requirements of the font copyright owner. Provide valid software licenses permitting the receiver of the submittal to install the fonts on a computer system for purposes of viewing, editing, and printing all graphic layouts produced under this contract.

4. The requirement to provide font licenses may be waived upon written notice by the COR to the contractor that the receiver of the submittal already owns a valid font license. In this case, submittal of the font files is still required.

E. Organization of Multiple Files

Use a consistent system for organizing the multiple files generated during the course of the project. Unless otherwise approved by the COR in advance, files are submitted on an encrypted hard drive or similar portable media as appropriate for the volume of data, in a universal format that can be read by current Microsoft Windows and Apple Macintosh operating systems.

Files are organized as follows:

1. By physical disk. Each disk is clearly labeled with the project name, date, brief description of contents, and the level of exhibit development, for example “Design Development 3” or “Production Design 1”. The total number of disks is indicated, for example: “Disk 1 of 5” for a series of 5 disks, or “Disk 1 of 1” for a single disk. Each disk is accompanied by a print-out of the disk directory listing all folders and files on the disk.

2. The root directory of Disk 1 contains a Font directory, which contains all font files required for production of the graphic layouts. Other files related to the exhibition as a whole, such as “ReadMe” files and PDF versions of printed submittals are also located in the root directory of Disk 1.

3. Established a folder for each exhibition scene, consistent with the project organization established in the Content Management specifications. For example, a folder titled "Scene 01" includes sub-folders with all files associated with exhibition scene 01. Subfolders for content groups within a scene may also be established when the complexity of the exhibition warrants it.

4. Within each exhibition scene folder or content group sub-folder, establish sub-folders for each required file type as follows:

    a. Graphic layout files (GL- series InDesign files)

    b. Image files (IM-series raster images) with nested sub-folders as follows:

        i. Sub-folders within the image file folder are created as necessary for Raw, Work, FPO, and Final image files as exhibit development proceeds

        ii. Vector illustration files (IM-series Illustrator files)

        iii. PDF, reference, or other miscellaneous files relating to the specific scene or content group, if necessary

15.6 Requirements for Image Scanning

A. FPO Scans:

1. For Position Only (FPO) images are used in graphic layouts prior to the Production Design phase of work.

2. Scans for FPO images are produced at a quality level sufficient to provide a clear representation of how the image will be used in the completed exhibition, balanced against the need to maintain a small file size that can be easily stored, transmitted, and printed.

3. Compressed image formats such as JPG are acceptable for FPO image scans.

B. Production-quality scans:

1. Prior to scanning, review the resolution, cropping, and final size of the production image that will be created from the scan. Notify the COR if the quality of the source image is not suitable.

2. Scans requiring extreme enlargements of the source image are performed using a process and equipment capable of providing high

quality results. This includes the wet mounting of transparencies and negatives and/or use a drum scanner when necessary. Consult with the COR to determine when specialized processes and equipment are necessary.

3. Unless otherwise specified by the COR, follow the scanning specifications below:

    a. Resolution: 150 – 200 dpi at final image size and cropping

    b. Color Space: RGB or Grayscale

    c. Profile: Adobe RGB (1998) or Gray Gamma 2.2

    d. File type: PSD, TIFF, pdf with no compression, or DNG

15.7 Graphic Fabrication: General Requirements

Provide fabrication of all two-dimensional exhibit graphics. Except as otherwise specified in individual task orders, graphic source material will be government-furnished to the fabrication contractor in a digital format.

A. Review all government-furnished materials. Work includes:

1. Inventory of the government-furnished sources to ensure that the actual sources match the accompanying inventory list (see 15.8 and 15.9, below).

2. Inspect each source to ensure that it is acceptable for use in the exhibit.

3. Verify that FPO files match the government-furnished sources (see 15.8 and 15.9, below).

4. Compare the graphic layouts with the exhibit drawings to verify that the final output size of each graphic layout matches the size of the corresponding panel.

5. Verify the fit and cropping of images within graphic layouts.

6. Verify that all required files and fonts are furnished with digital files.

B. Graphic Production Files (see 15.10, below): As specified in individual task orders, all work that includes the following is in accordance with 15.5 and 15.6 of this Section:

1. Preparation of digital files for specified output

2. High-resolution scanning of graphic images

3. Linking of Image and Vector files to Graphic Layout Files

4. Adjusting digital files for color corrections and bleed

C. Creative graphic design services: as specified in individual task orders.

D. Produce original artwork: as specified in individual task orders, and in accordance with Section 16, Content Specialties, and Section 17, Use-Rights and Licenses.

E. Produce Sample Proofs (see 15.11, below)

1. Produce and submit two copies of 11x17 graphic proofs, samples, and revised layouts for review and approval by the COR in accordance with Section 5, Submittals and Reviews.

2. Produce and submit two copies of full-sized unlaminated graphic proofs, samples, and revised layouts for review and approval by the COR in accordance with Section 5, Submittals and Reviews.

F. Produce Final Graphic Media: Produce all final graphic media for review and approval by the COR at the Final Shop Inspection. If approved by the COR, final graphic media becomes Installation-Ready graphic media. Media includes but is not limited to:

1. Digital prints on paper

2. Digital high pressure laminate panels

3. Wall-size murals on fabric, vinyl, paper, laminate or other materials

4. Porcelain enamel panels

5. Fused polycarbonate panels

6. Digital printing of scrims and banners

7. Braille plaques, and visual graphic panels incorporating raised or Braille tactile surfaces

8. Etched or sandblasted glass, stone or metal

9. Screen printed graphics

10. Cut-out, dimensional graphics, letters or symbols

11. Hand-painted or air-brushed graphics

12. Floor graphics applied or embedded as a paint, stain, tile, metal, vinyl, carpet, or other material

15.8 Graphic Fabrication: Review of Source Material

Review all graphic, photographic, and text materials upon receipt of government-furnished graphic materials and digital files, and prior to production.

A. Inspect all government-furnished graphic sources to ensure that they correspond to the accompanying inventory list, typically specified on the project database.

B. Inspect the quality of each source to ensure that it is suitable for use in the exhibit.

1. For all government-furnished photographic negatives, prints, transparencies, or other media to be scanned by the contractor, verify that a high quality image can be obtained at the final resolution and size required.

2. Inspect government-furnished digital files to ensure that they are scanned at a resolution that is suitable for production of a high quality print at the specified output.

C. Compare each image source against the corresponding FPO on the government-furnished design drawings or graphic layouts to ensure the images match, and against the layouts to ensure that they correspond properly.

D. Compare the government-furnished graphic layouts with the design drawings and verify that the dimension of each graphic layout matches the corresponding structural panel.

E. Verify that the proposed cropping, orientation, and dimensions of images will fit within the layout as designed.

F. Check digital files against the drawings and the exhibit plan to ensure that all layouts and required fonts are provided and that the material is complete and ready for production.

G. Check digital files against government-furnished color samples and correct the digital files as necessary to ensure that the final output colors match the samples. Bring any errors, inconsistencies, omissions, or incorrect identification to the attention of the COR no later than three business days after receipt.

15.9 Handling of Source Material

Provide professional care and handling of source materials. Pprovide protection from loss and physical damage at all times. Use certified mail and written receipts or tracking numbers in transferring sources to and from photographic and graphic processors. Return all government-furnished source materials to the COR unaltered and undamaged.

No retouching or other alteration on original government-furnished prints, negatives, transparencies, or digital files is permitted. See Section 17, Use Rights and Licenses.

15.10 Graphic Production Files

Any work under a task order which requires alteration, or adjustments to government-furnished graphic production files, or creation of a new graphic production file, is in accordance with this Section, 15.5, and 15.6.

15.11 Graphic Production Samples

Graphic production samples include paper proofs and material samples that represent the images, layouts, typography, colors, and output media specified. Provide two complete sets of all production samples to the COR for review and approval, as follows:

A. Paper Proofs

1. 11" x17" proofs for all graphic images and layouts in full color and including final, high-resolution images.

2. Full-size (100%) proofs for all graphic images and layouts in full-color, on unlaminated paper, and including final, high-resolution scanned images.

3. For proofs that have been reviewed by the COR and require changes, correct and resubmit revised proofs, identifying each with the date of revision.

4. Identify each sheet with the following minimum information:

    a. Project Name: NPS Alpha code plus project ID; for instance, SHEN-BYRD VC

    b. Date of submittal/revision

    c. Exhibit GL- (layout) number(s)

    d. Font(s)/point sizes(s)

5. For large murals, it is acceptable for to submit the proof in sections. For reference in assembling the sections, submit a reduced-scale print of the entire mural on one sheet, with the seams marked.

B. Production Samples

1. Provide full-scale graphic samples of images, layouts, and output media specified. All combinations of colors, typography, and types of images as they will appear in the final graphics are required. Minimum size of production samples is 11" x 17" or as specified in individual task orders.

2. The individual task order may also specify particular areas of exhibit graphic panels, at full scale, which the COR requires in addition to the production samples. Dimensions of these sections is a minimum of 12" by 12", or as specified in individual task orders.

C. Other Graphic Production Samples

1. For graphic prints to be mounted, laminated, overlaminated, and/or embedded: Provide two 8" x 10" samples of a mounted and laminated print for each type of mounting substrate and print specified.

2. Dimensional letters: Provide samples in specified sizes, materials, and finishes.

3. Cut-outs: Provide samples showing a portion of the image at full scale with final thickness and edge treatment represented, in sizes as specified in the individual task order.

4. Braille and raised tactile graphics: Provide production samples representing the images and layouts specified, in sizes as specified in the individual task order.

5. Other graphic media: Provide samples representing the specified graphic in its final output media for all specified graphics, including the non-traditional media including etched glass or metal, hand-painted graphics, ceramic mosaics, and other non-digital graphics, as specified in the individual task order.

15.12 Corrections to Digital Files and Proofs

A. The contractor is responsible for the correctness of all contractor-generated layouts, and of all contractor-generated changes or corrections.

B. Make corrections to the digital layouts and files when any of the following are specified on individual task orders:

1. When text is found to be incorrect, either due to errors in the original text or in preparation of the layouts.

2. When original graphics cannot be obtained or are found to be incorrect, or the use rights cannot be purchased and substitutions have to be found.

3. When readability of text is found to be unacceptable and adjustments to the layout and/or font size are needed to enhance contrast between text and the background.

4. When color settings in digital files are inconsistent with the color

specifications for each output media as specified on the government furnished color sample board and exhibit plan drawings.

15.13 Graphic Output

A. Digital Output

1. Archival Inkjet Prints: Inkjet prints on paper, fabric, scrim, and vinyl must use archival inks at high resolution with no visible dot patterns, graining, or banding.

2. Digital High Pressure Laminate: 1/16" (1.5mm) to 1" (25mm) in thickness, or as specified in the individual task order, with a black solid phenolic resin core and a matte finish, as manufactured by:

   a. Fossil Industries, Inc.
   44 Jefryn Boulevard
   Deer Park, New York 11729
   800-244-9809
   https://fossilgraphics.com/

   b. iZone Imaging
   2526 Charter Oak Dr., Suite 100
   Temple, Texas 76502
   888-464-9663
   www.izoneimaging.com

3. Direct digital print to .125" aluminum with clear protective powder coating by:

   a. Gopher Sign Company
   1310 Randolph Ave.
   St. Paul, MN 55105
   651-698-5095
   www.gophersign.com

B. Screen Printing

1. Durability: Determine, through manufacturer's specifications and testing, which type of screen printing ink is most durable and long lasting for each substrate. All screen printed images must adhere completely to the substrate and not chip, flake, or pop off the substrate. Image and text must be cured in accordance with manufacturer's specifications until they are completely dry. All surfaces to be screen printed must be clean and free of grease, dirt, wax, and other coatings which can prevent the ink from adhering to the substrate. Plastic laminate surfaces must be wiped with alcohol and lacquer thinner or other solvents as recommended

by the manufacturer to remove wax coating on surface prior to screen printing.

2. Quality of Printing: Perfect register, exact measurement, proper color match, opaque, and crisp images are required. Ghosting, ragged, and soft edges are not acceptable. All borders must be consistent width throughout panels. Weight of graphic images, text, and other images used in a "set" must be consistent throughout the exhibit.

C. Cut-out Letters

1. Surfaces and all edges are smooth and free of imperfections. Finish coatings are consistent in color, and match approved sample submittals.

2. All letters are provided with mechanical fastening hardware (such as mounting pins) as well as adhesives, for securing the letter to the substrate. All hardware and adhesives are hidden from view when the letters are mounted.

3. Mounted letters are correctly aligned and spaced horizontally and vertically for the font size and type specified. Create a template to align the letters based on a printout of the type at the comparable size.

D. Cut-out Graphics

1. The following methods of fabricating cut-out graphics are acceptable. Other fabrication methods may be in accordance with production samples reviewed and approved by the COR:

   a. Digital high pressure laminate panels with a thickness of ½" thick, or thicker, with a solid black phenolic resin core; or

   b. Archival inkjet prints on aluminum, with a thickness of ½" thick.

2. The cut out image follows the crop lines as specified on the graphic references. All edges and back are smooth and finished.

E. Flip Books and Lift-and-Drop Panels

1. Flip book page holes or slots are placed outside the image area of the flipbook page. For a three-ring flip book with holes 1/2" wide by 3/8" high, stagger the holes so that the top hole is 3/32" further in from the edge than the center hole and the center hole is 3/32" further from the edge than the bottom hole. This allows the hole or slot to be big enough for ease of movement and yet the page will hang straight and not pull downward at the bottom right corner while at rest.

2. Provide tabs on each flip book page, and provide handles on lift-and-

drop panels which are in accordance with the principles of universal design. According to this principle, it should be easy for a visitor to operate the interactive exhibit with a closed fist, and not have to grab, pinch, or hold with the fingers and thumb.

3. Avoid hinge hardware or other mechanism or parts associated with the flip book that may cause pinching of the user's fingers or have any sharp edges or corners.

15.14 Image Quality

A. Contractor Inspection and Acceptance - Inspect all government-furnished source material for final determination as to its acceptability and use as intended output media. If the source material is found to be unacceptable, notify the COR prior to processing or using the material, as specified in this Section, 15.8.

1. Digital Scans: Provide scans of non-digital media as specified in the individual task order. Scan artwork, photographs, and other material at the resolution recommended for the particular output device used, based on the final size and detail of the image, and in accordance with this Section, 15.6.

2. Digital Output: Match colors in the final image to color samples, original artwork, or photographic images. Save the original scan on digital storage media in accordance with this Section,15.5.

B. Quality Control: The contractor is responsible for the quality and durability of images produced and installed. The contractor bears the costs associated with replacement or repair of those graphics that are unsatisfactory after installation because of defects in workmanship, improper fabrication techniques, use of inferior or incorrect materials, and improper handling, mounting, or installation.

C. Image Quality: The following are required for acceptable graphic output media:

1. Size: Adjust cropping of images to achieve a correct finished size, for subject matter, and for best overall composition. Located seams away from text and important images. Allow for necessary bleed and trimming.

2. Color: Prints and transparencies have high color saturation and correct color balance, and all colors match consistently from panel-to-panel.

3. Consistency: Ensure consistency of panels that are part of a group.

a. Murals and Multi-Panel Images: Images that are mounted on more than one panel line up exactly from panel-to-panel. All colors and tones remain consistent. Seams are equally spaced and occur so that all panels that make up the mural are equal width; as an

exception, the outermost panels may be narrower in width as long as both outer panels are of equal width.

Do not located seams through text that is part of the printed panel, nor through significant details in graphic images that are part of the printed panel.

b. Panel Groups: Ensure consistency of color balance, tones, contrast, and mounting methods on panels of the same output type that form part of an exhibit grouping, unless specified otherwise in individual task orders.

c. Backlit Graphics: Ensure evenly balanced backlighting of display transparencies, including proper diffusion sheeting, control of lighting intensity, and even distribution of lighting across all areas of the image.

15.15 Mounting and Overlaminating

Mount graphic images and layouts that are output on paper, including digital inkjet prints and prints on photographic paper, on a rigid and stable support substrate, and cover these with a clear overlaminate layer to protect them from minor physical damage and ultraviolet light. The following mounting methods are acceptable:

A. Mounting Support: Use anodized aluminum as the graphic support, to provide corrosion resistance and dimensional stability. Prior to use, wash and clean aluminum of residual manufacturing chemicals, dirt, oil, or foreign substances to ensure a good bond. Cut panels evenly, to the correct dimensions, and finish the edges.

B. Mounting Film: Use the cold roll lamination method to mount prints to anodized aluminum. Mount prints in accordance with the manufacturer's specifications. Securely mount print to substrate surface, free from wrinkles, blisters, scratches, rips, tears, adhesive residue, or other imperfections. Trim print square and clean, and lightly ease all aluminum edges with fine grit sandpaper on sanding block, held at 45-degree angle. Corners are well fastened and eased, with no untrimmed pieces left. Substrate and print remains flat, true, and even after mounting.

C. Protective Overlaminate Film: Use the cold roll lamination method and to apply a clear, protective coating to the mounted print. Apply the overlaminate so that it is wrapped around the print and aluminum sandwich and adhered to the back of the aluminum substrate for a minimum two inch overlap. Trim all aluminum and print edges clean and square prior to application of overlaminate. Follow all manufacturer's recommendations to ensure a continuous bond free of bubbles, scratches, dirt, and indentations. The overlaminate film surface is protected from indentations, scratches, and impressions from handling, packing material, and transport prior to installation of the exhibit.

D. Subsurface Mounting to Non-Glare Acrylic or Polycarbonate

1. Mount the print in accordance with the manufacturer's specifications. Securely mount the print to substrate surface, free from wrinkles, blisters, scratches, rips, tears, adhesive residue, or other imperfections. Bevel all edges at a 45° angle or round off edges, whichever is specified in the drawings. Polish all edges and ease all sharp corners.

2. Subsurface Mounting for Non-Flat Mounting Configurations: Mount graphic prints to curved surfaces and cylinders sas follows unless specified otherwise on the drawings or in individual task orders: Subsurface mount graphic to 15 mil Lustex®, with pressure-sensitive adhesive on one side and low-gloss textured surface. Follow all manufacturers' recommendations for laminating of the graphic, temperature and humidity ranges, bending radius, and other factors so as to maximize the exhibit's durability during the life of the exhibit. It is recommended that the edges of a curved graphic be enclosed or protected by a molding or frame.

15.16 Application to Exhibit Structure

A. Apply finished graphics to, or install on, exhibit structures and panels as specified on the drawings. Exact measurement and precise alignment is required. Seams between panels of multi-panel graphics is flush and tight, with no gaps or inconsistencies. Images line up precisely from one panel to another.

B. Attach graphics to exhibit structures in accordance with reviewed and approved fabrication drawings and sample submittals. Unless specified otherwise in the individual task order, use a combination of concealed mechanical fasteners and adhesives to attach mounted graphic panels to the exhibit structure. Acceptable mechanical fasteners include pinch cleats, "z-clips", or concealed screws.

C. Acceptable adhesives include 3M VHB Double-Coated Foam Tape, as manufactured by:

3M Industrial Specialties Division
3M 220-8E-04
St. Paul, Minnesota 55144
800-227-5085
612-733-4813
www.3m.com/bonding

Apply tape along the perimeter of the rear of the substrate, one inch in from the edge, with another strip across the middle at the widest point, and others as needed. Use 1/16" thick x 1" wide tape, or width and thickness sufficient to support the substrate as recommended by the manufacturer. For panels requiring additional support due to weight or curvature, apply beads of low-VOC construction adhesive with caulk gun in areas in-between tape.

16. Content Specialties

16.1 Introduction

Content Specialties refer to any exhibit element that requires detailed subject matter, creative, technical, and/or artistic input to inform and direct its production by a creative or technical specialist. These elements include, but are not limited to, original artwork, sculptures, models, reproductions, artifacts, dioramas, life-sized figures, and electronic programs.

The Content Specialties Reference Package is developed during Planning and Design phases to provide the creative or technical specialist with critical information needed to accurately create the exhibit element. A separate entry in the Content Specialties Reference Package is required for each custom exhibit element that is to be produced, and for which specifications are not included elsewhere in the exhibit planning and design documents. Each entry in the Content Specialties Reference Package shall provide written descriptions and graphic depictions that together provide the details that are needed to produce the exhibit element.

Content Specialties Production is frequently, though not exclusively, carried out by Fabrication sub-contractors. Content Specialties Production requires creative and technical expertise, and regular coordination with and review by the COR.

16.2 Content Specialties Reference Packages

A. General Requirements

The Content Specialties Reference Package contains a description of the work to be performed, and samples of the proposed style. The contractor researches, identifies, locates, gathers, originates, and validates reference materials necessary to develop an accurate depiction of the subject matter. At a minimum, the material contains a narrative description of design and interpretive intent, final production specifications such as final size and required resolution, examples, and samples of style. Other visual materials include documents and photographs that will serve the purpose of developing the exhibit elements by showing a representation of the item, and its color, size, shape, and accurate positioning. PThe Content Specialties Reference Package provides all details needed to communicate design intent.

Develop a Content Specialties Reference Package for each unique exhibit element. This is the default requirement for all task orders.

1. Design Development 3

   Provide a first draft of the Content Specialties Reference Package, including an entry for any exhibit element that requires detailed subject matter, creative, technical, and/or artistic input.

2. Production Design 1

   Provide an updated Content Specialties Reference Package based on

review comments from the COR.

3. Production Design 2

Provide a final Content Specialties Reference Package based on review comments from the COR.

16.3 Content Specialties Production

A. General Requirements

Content Specialties Production includes the creation of original images and art, creation of electronic programs, creation of custom three-dimensional elements, design and creation of custom mounts for accessioned and non-accessioned objects, and all other specialized exhibit elements listed in the Content Specialties Reference Package.

1. Pre-Fabrication Submittals

Develop a production plan that includes work-in-progress reviews for all content specialties

2. Fabrication

Produce all Content Specialties in accordance with the Content Specialties Reference Package, COR review comments, and following the process steps in Section 16.4, Specific Requirements for Content Specialties by Type.

16.4 Specific Requirements for Content Specialties by Type

A. Illustrations and Artwork

1. The Content Specialties Reference Package includes the following:

a. Intent, purpose, and message to be communicated

b. Samples of proposed style

c. Time period

d. Location

e. Subject matter and content intent

f. Season, time of day and lighting intent

g. Common and scientific name, gender, stage of life, size, and pose for animals included

h. Common and scientific names and size of plants, fungus, and other organisms included

i. Name or identity of specifically known people to be depicted

j. Age, gender, ethnicity, hair and eye color, size and stature, pose, style of clothing and associated accoutrements for people to be illustrated

k. Size, materials, architectural features and perspective of buildings or structures to be included

2. The Content Specialties Production process is as follows:

a. Refer to the Content Specialties Reference Package for design intent, purpose, style, and other production details

b. Submit the proposed illustration style, in accordance with the Content Specialties Reference Package, for review and approval

c. Submit rough sketches of the illustration or artwork, in the approved style

d. Submit a more refined sketch, including color, that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

e. Submit a 90% complete illustration that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

f. Submit the final illustration that incorporates all corrections, changes, modifications, or deficiencies identified by the COR. Metadata is included in the final digital file and includes information fields supplied by the COR.

B. New Photography

1. The Content Specialties Reference Package includes the following:

a. Intent, purpose, and message to be communicated

b. Location and contact information for staff at the location if needed

c. Samples of proposed style

d. Subject matter

e. Season and time of day

f. Lighting intent

g. Art direction

h. Photographic media required (i.e., color, black and white, over- or underexposed, other special effects, minimum film format requirements, minimum digital requirements)

i. Final size that the image will be used in the exhibit

2. The Content Specialties Production process is as follows:

a. Refer to the Content Specialties Reference Package for design intent, purpose, style, and other production details

b. Submit new photography for review and approval by COR

c. Submit final photographic media at size and format required for production

C. Natural History Models

1. The Content Specialties Reference Package includes the following:

a. Specifications for the characteristics of the specimen, including:

i. Common and scientific name of specimen

ii. Sex, stage of life (larva, juvenile, or adult)

iii. Size

iv. Pose

v. Season if it affects the appearance

vi. Associated elements, such as habitat pieces

b. Specifications about the production methods, including:

i. Style of model, such as photographs of the desired style

ii. Proposed fabrication technique

iii. Finish treatment: monochrome, duotone, integral color, or realistically surface colored

iv. Details of attachment, placement, and integration with other exhibit components, such as copies of the exhibit design drawings that refer to the model

2. The Content Specialties Production process is as follows:

a. Refer to the Content Specialties Reference Package for design intent, purpose, style, and other production details

b. Submit a rough pencil sketch of the model in the approved style, in accordance with the Content Specialties Reference Package, for review and approval

c. Submit a more refined sketch that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

d. Submit a revision that incorporates any additional corrections, changes, modifications, or deficiencies identified by the COR

e. Submit a positive or other 3-D draft of the model. The model sample is adequately sized to provide review of materials, colors, and finishes, and incorporates all corrections, changes, modifications, or deficiencies identified by the COR during iterative reviews of the sketches. The sample is shared for review at Preliminary Inspection or via photographic documents showing a minimum of four views of the model

f. Submit the final model that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

D. Architectural and Other Cultural History Models

1. The Content Specialties Reference Package includes the following:

a. Specifications for the characteristics of the model, including:

i. Size

ii. Shape

iii. Placement

iv. Materials, textures

v. Associated elements

b. Specifications about the production methods, including:

i. Style of model, such as photographs of the desired style

ii. Proposed fabrication technique

iii. Finish treatment: monochrome, duotone, integral color, or realistically surface colored

iv. Details of attachment, placement, and integration with other exhibit components, such as copies of the exhibit design drawings that refer to the model

2. The Content Specialties Production process is as follows:

i. Refer to the Content Specialties Reference Package for design intent, purpose, style, and other production details

ii. Submit a rough pencil sketch of the model in the approved style, in accordance with the Content Specialties Reference Package, for review and approval

iii. Submit a more refined sketch that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

iv. Submit a revision that incorporates any additional corrections, changes, modifications, or deficiencies identified by the COR

v. Submit a positive or other 3-D draft of the model. The model sample is adequately sized to provide review of materials, colors, and finishes, and incorporates all corrections, changes, modifications, or deficiencies identified by the COR during iterative reviews of the sketches. The sample is shared for review at Preliminary Inspection or via photographic documents showing a minimum of four views of the model

vi. Submit the final model that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

E. Life-Sized Figures

1. The Content Specialties Reference Package shall include the following:

a. Specifications for the characteristics of the person, including:

i. Name or identity if specifically known

ii. Age, gender, ethnicity, hair and eye color

iii. Size and stature, including height and weight

iv. Pose

v. Time-period and style of clothing

vi. Hairstyle

vii. Associated accoutrements and props (such as tools, weapons, etc.)

b. Specifications about the production methods, including:

i. Style of figure, such as photographs of the desired style

ii. Proposed fabrication technique

iii. Finish treatment: monochrome, duotone, or realistically colored

iv. Clothing treatment: cast clothing or natural textile fabric

v. Details of attachment, placement, and integration with other exhibit components, such as copies of the exhibit design drawings that refer to the life-size figure

2. The Content Specialties Production process shall be as follows:

a. Refer to the Content Specialties Reference Package for design intent, purpose, style, and other production details

b. Submit a rough pencil sketch of the figure in the approved style, in accordance with the Content Specialties Reference Package, for review and approval

c. Submit a more refined sketch that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

d. Submit a revision that incorporates any additional corrections, changes, modifications, or deficiencies identified by the COR

e. Submit a positive or other 3-D draft of a minimum 12" x 12" section of the figure that includes materials samples for all materials, colors, and finishes associated with the figure, such as

clothing, hair, skin or fabric textures, associated props, and any other accoutrements. The sample incorporates all corrections, changes, modifications, or deficiencies identified by the COR during prior reviews. The sample is shared for review at Preliminary Inspection or via photographic documents showing a minimum of four views of the figure.

f. Submit the final figure that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

F. Dioramas

1. The Content Specialties Reference Package includes the following:

a. Specifications for the characteristics of the diorama, including:

i. Common and scientific name, sex, stage of life, size, and pose for each animal

ii. Common and scientific name, size of plants, fungus, and other organisms

iii. Physical and spatial relationships between specimens and their habitat

iv. Season

v. Associated elements

b. Specifications about the production methods, including:

i. Style of model, such as photographs of the desired style

ii. Proposed fabrication technique

iii. Finish treatments

iv. Details of attachment and integration within the diorama and with other exhibit components

2. The Content Specialties Production process shall be as follows:

a. Refer to the Content Specialties Reference Package for design intent, purpose, style, and other production details

b. Submit a rough pencil sketch of the diorama components in the approved style, in accordance with the Content Specialties Reference Package, for review and approval

c. Submit a more refined sketch that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

d. Submit a revision that incorporates any additional corrections, changes, modifications, or deficiencies identified by the COR

e. Submit a 3-D sample of a minimum 12" x 12" section of the diorama that incorporates all corrections, changes, modifications, or deficiencies identified by the COR, and clearly shows the final materials, finishes, textures, and styles in progress. The sample is shared for review at Preliminary Inspection or via photographic documents showing a minimum of four views of the diorama.

f. Submit the final diorama that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

G. Reproduction Historic Objects

1. The Content Specialties Reference Package includes the following:

a. Specifications for the characteristics of the object, including:

i. Dimensions

ii. Weight

iii. Placement

iv. Materials and construction/fabrication method

v. Associated exhibit elements, reproduction historic objects, accessioned objects, or non-accessioned objects

b. Specifications about the production methods, including:

i. Appearance and style; include photograph of original object, or contemporary period photographs, drawings or illustrations of prototype

ii. Justification or evidence for use

iii. Proposed fabrication technique

iv. Details of attachment, placement, and integration with other exhibit components

v. Source for non-custom elements (for example, hardware source for custom furniture)

2. The Content Specialties Production process shall be as follows:

    a. Refer to the Content Specialties Reference Package for design intent, purpose, style, and other production details

    b. Submit a rough pencil sketch of the object in the approved style and period, in accordance with the Content Specialties Reference Package, for review and approval

    c. Submit a more refined sketch that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

    d. Submit a 3-D sample of the object that incorporates all corrections, changes, modifications, or deficiencies identified by the COR, and clearly shows the final materials, finishes, textures, and styles in progress. The sample is shared for review at Preliminary Inspection or via photographic documents showing a minimum of four views of the object.

    e. Submit the final reproduction historic object that incorporates all corrections, changes, modifications, or deficiencies identified by the COR

H. Historic Objects (Accessioned or Non-accessioned)

1. The Content Specialties Reference Package includes information about acquisition, borrowing, handling, and display of historic objects in acordance with Section 18, Object Preservation and Protection, and the following:

    a. Specifications for the characteristics of the object, including:

        i. Dimensions

        ii. Weight

        iii. Placement

        iv. Description, including materials and construction method

        v. Associated exhibit elements, reproduction historic objects, accessioned objects, or non-accessioned historic objects

    b. Specifications about the acquisition methods, including:

        i. Appearance and style; include photograph of original object or contemporary period photographs, drawings, or illustrations of object

ii. Justification or evidence for inclusion

iii. Source; include catalog information if located in park collection. Include catalog and contact information if located in another collection or with a dealer

iv. Details of placement and integration with other exhibit components. Include security, lighting, environmental, and mounting requirements

v. Conservation requirements or conservation assessment needed

2. The Content Specialties Production process shall be as follows:

a. Refer to the Content Specialties Reference Package for design intent, purpose, style, and other production details

b. Submit an acquisition plan including catalog and contact information of collection or dealer, and photographic documentation of the object under consideration, in accordance with the Content Specialties Reference Package, for review and approval.

c. Submit a report that details the conservation and mounting needs for the object, for review and approval

d. Provide the final historic object for installation in the exhibit

I. Maps and Topographic Models

1. The Content Specialties Reference Package includes information about production of maps in accordance with Section 26, Maps, 26.2.

2. The Content Specialties Production process is as follows:

a. Submit one full-sized paper proof of the tactile map. The proofs include geologic and topographical features, and all labels as specified in Content Specialties Reference Package.

b. Submit three foam mock-ups of a minimum 12" x 12" section of the map, including a different vertical exaggeration on each sample

c. Submit one 12" x 12" painted sample of the map that depicts an actual 12" x 12" segment of the map

d. Submit a minimum of five photographs of work-in-progress as the topographic map or model is in production, prior to clear-coat or final finish application

e. Submit the final tactile map that incorporates all corrections, changes, and modifications identified by the COR in the previous map samples

J. Electronic Programs

1. The Content Specialties Reference Package includes information about production of electronic programs in accordance with Section 19, Electronic Programs, and Section 20, Electronic Equipment.

2. The Content Specialties Production process is in accordance with the processes described in Section 19, Electronic Programs, and Section 20, Electronic Equipment.

17. Use Rights and Licenses

17.1 Introduction

Existing images and other third party intellectual property is often used in interpretive media. Acquisition of this content, including all required signed license agreements, typically occurs during the Production Design phase, but identification of the content to be acquired and confirmation that the appropriate terms and conditions are available is required in the Design Development phase.

17.2 General Requirements

Acquire all images and other content identified in the Content Management reports with the appropriate terms, conditions, and rights for all interpretive media. (See Attachment 8, Intellectual Property Guidelines for Harpers Ferry Center Interpretive Media)

All content is required to have the appropriate documentation of the associated use rights. Any content requiring a license or permission must include the signed license agreement or grant of permission to use. Electronic signatures for license agreements are acceptable.

If the same image is used for multiple purposes in the exhibition, obtain the number and type of permissions required. All open source or public domain sources require documentation reflecting the open nature of the content. Content from Internet sources, such as Flickr or Wikipedia, require documentation that it is open source, or, if not, signed license agreements from the owner. Do not assume that government-furnished images or other project planning partners are copyright-free; verify each source and its copyright status. For images showing children where they are clearly identifiable, obtain permission for their use.

A. General Use

Acquire all needed content with a signed license agreement which clearly indicates that the contractor is acquiring the rights on behalf of the National Park Service (see Attachment 9,Sample Use Rights Letter). The license agreement provides the appropriate use rights for all approved content which is in accordance with and pursuant to Section G, FAR 52.227-17, Rights in Data – Special Works, and also FAR 52.227-18, Rights in Data – Existing Works. Unless otherwise specified in an individual task order, the minimum requirements for all licensed content are one-time, nonexclusive use rights for the lifetime of the project to display publicly and display on the internet.

B. Special Uses

Individual task orders may specify special circumstances that require additional use rights (for example, use in a sales item). In this case, acquire additional rights that are consistent with the intended use of the content. The acquisition of these use rights is in addition to the minimum rights specified above unless otherwise specified in the task order.

C. Acquisition not Required

Individual task orders may specify that image acquisition is not required. In this case, the requirement remains to identify the needed content, confirm that the appropriate use rights are available, and estimate the acquisition costs for inclusion in production/fabrication budgets as necessary.

17.3 Specific Requirements

A. Design Development

In Design Development 3, complete all data fields for media elements as specified in Section 11, Content Management. For images requiring acquisition, this includes identifying the copyright owner, and information regarding any licensing restrictions (including, but not limited to, specific credit lines, image cropping restrictions, and any additional requirements).

For all other content requiring acquisition (such as the rights to reproduce excerpts from copyrighted written works), document any licensing restrictions, including length of use, cropping restrictions, or credits required, in the "notes" field of the respective Exhibit Element in the Content Management Database.

B. Production Design

1. Production Design 1

Acquire all images and other third party intellectual property as identified and approved by the COR in Design Development 3, and update all image and other intellectual property media elements in the corresponding Content Management data fields.

2. Production Design 2

Prepare a Use-Rights Documentation Package consisting of the following:

a. Cover page titled "Use-Rights Documentation Package," name of park, name of project, and document issue date

b. Images Schedule

c. For each image used, the image's facsimile with associated Element Identification Number(s), and signed original license agreement

d. For all other content requiring acquisition, their exhibit Element Identification Number and associated signed original licensing agreements

18. Object Preservation and Protection

18.1 Introduction

Object preservation criteria is required to be integrated into all phases of exhibit development, fabrication, and installation. Based on the criteria, identify time and resources in the project schedule and budget to address object related needs.

The mission of the National Park Service (NPS) as stated in the Organic Act of 1916 is to "conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Objects placed on exhibit have specific requirements to maintain their condition and protect them from damage or deterioration. Follow the NPS Exhibit Conservation Guidelines (see Attachment 3) when considering all aspects of exhibit design and fabrication.

Objects in exhibitions are categorized as follows (also see Section 1, Definitions):

A. Accessioned Objects

Accessioned/cataloged items from NPS resources or loan items from other museums, historical associations, libraries, etc. which can be considered non-replaceable for cultural, scientific, or historic reasons. These objects may be one-of-a-kind, have a high monetary value, or are fragile because of their condition, materials, or construction. These objects include: archeology, history, ethnology, natural science, archives, and art pieces.

The level of preservation and protection for these objects follows the NPS Exhibit Conservation Guidelines (see Attachment 3).

B. Non-Accessioned Objects

These items include the following:

1. Antique/Period Objects - Items displayed in an exhibition that have not been accessioned/cataloged into a park or other institution's collection; however, they have historic significance.

2. Replaceable Objects - Items fabricated or purchased for the exhibit such as reproductions/facsimiles, replicas, props, and models.

The level of preservation and protection given to these objects will be determined by the government on a case-by-case basis.

18.2 General Requirements

Provide for the design and fabrication of object cases and other displays, design and fabrication of object mounts, and installation of objects into exhibit cases and within other displays as follows:

A. Travel to the park, HFC Museum Conservation Services (located in Charles Town, West Virginia), and/or other locations as specified in the individual task order, to

inspect, measure, photograph, and produce templates needed for object mount production.

B. Design object cases/displays and produce preliminary and final drawings for review and approval by the COR.

C. Design individual custom mounts for objects and produce preliminary and final mount drawings for review and approval by the COR.

D. Ensure fit of all objects within the casework/mounts as designed, review object dimensions, and make adjustments to casework/mounts as required.

E. Provide storage of non-collection objects at the contractor's facility during the fabrication process, and for transportation of the objects to the installation site if specified in the individual task order.

F. Fabricate custom cases and mounts for objects.

G. Allow time for case materials to off-gas and clean interior of cases.

H. Set up a work area at the exhibit installation site to modify or alter pre-made case elements and object mounts per consultation with the COR.

I. Provide and install dataloggers in all exhibit cases which contain Accessioned Objects unless otherwise specified in the individual task order.

J. Install custom mounts, mounting systems, and objects on panels, platforms, and in cases.

K. Provide and install the appropriate amount, by volume, and approved type of silica gel into object cases.

L. Adjust lighting on objects and test ultra-violet and visible light levels to ensure specified limits are not exceeded.

M. Clean exterior of cases after all installation is complete.

N. Include exhibit casework care and operation as part of the exhibit maintenance manual and operational training (See Section 29, Operational Training and References) to park staff.

18.3 Object Stewardship

A. Security/Storage

For security purposes Accessioned Objects are only to be stored at government facilities during the entire design and fabrication process. Coordinate in advance with the government to work with objects at a government facility.

While working with Accessioned Objects at a government facility, request specific objects from the government for assessment. It is at the government's discretion as to how many objects the contractor may safely view at one time. While objects are being assessed they may not be left unattended. Contact the appropriate government personnel to return objects at the end of each day or when the work has been completed.

Store only Non-Accessioned Objects at a non-government facility. Store the objects in a lockable, protected area to eliminate damage and theft.

B. Damage

While in the contractor's custody (Non-Accessioned Objects), and while handling objects (Accessioned and Non-Accessioned Objects), exercise extreme care. If the contractor breaks, chips, fractures, scratches, or otherwise damages any object, the contractor must immediately notify the COR. Do not attempt to repair/treat objects or perform any preservation procedure on government provided objects. The government will execute any repair, treatment, or preservation procedure.

C. Transport of Objects

1. Transport only Non-Accessioned Objects that were stored at the contractor's facility to the installation site. The government will provide transportation of all other objects to the installation site.

2. Shipping of Objects from the Government to the Contractor

In the event that Non-Accessioned Objects are sent to the contractor from the government, the package will contain an inventory list. If for any reason this list is missing, contact the COR immediately. When unpacking the objects, examine each object and indicate on the list that the individual item(s) have been received, note the condition of the object(s), and return a copy to the following address or as specified in the individual task order:

National Park Service
Harpers Ferry Center
Office of the Registrar
P.O. Box 50
Harpers Ferry, West Virginia 25425-0050

3. Shipping of Objects from the Contractor to the Government

When planning the shipment or return of Non-Accessioned Objects or mounts, coordinate/confirm this shipment in advance with the COR. Include a copy of the object inventory list and make an additional listing of the mounts. Repack the object(s) in the original packing material and container. Return the object(s) to the address listed in the individual task order. For shipping packages to the Harpers Ferry Center's Registrar's Office, the address is as follows:

National Park Service
Harpers Ferry Center
Office of the Registrar
31 Maple Tree Drive
Charles Town, West Virginia 25414

D. Object Handling (see NPS Exhibit Conservation Guidelines for additional information – Attachment 3)

1. Clean hands prior to handling an object.

2. Do not smoke, eat, or drink while working with or around objects.

3. Pre-plan when moving an object. Create a clean, open space for placement after transport.

4. Avoid haste while handling an object.

5. Use both hands when carrying an object.

6. In moving any object or group of objects, avoid unnecessary vibrations/ travel shock by using an appropriate cart.

7. Wear clean appropriate gloves when handling objects.

8. Wear no jewelry or other accessories that may scratch or catch on objects.

9. Use more than one person to move a cumbersome or heavy object.

10. Know the nature of the object you are going to handle: structural compositions, weak, and strong elements.

11. Limit the number of objects put in a carrying box. Never put lightweight and heavy objects in the same container. Always use separation battens, padding, or some kind of cushioning material between pieces when more than one object is put in a single box.

12. Never discard any packing or padding material until it has been thoroughly searched, especially if breakage of the unpacked objects is known to have occurred.

13. All government tags must remain with the item for identification; when possible, tags will remain tied to the item. Do not discard any tags removed from objects to be displayed; return them to the COR.

18.4 Object Case Interiors: Design and Fabrication

A. General Requirements

1. Design/Fabrication Drawings - In accordance with Section 13, Exhibit Drawings.

2. Test Results/Ratings - All materials used inside a case including laminates, fabrics, sealants, adhesives, coatings, and paints must have passed the appropriate tests (e.g., Oddy Test, Photographic Activity Test, etc.) to ensure they are safe for use with collection objects. Test results that are published are referenced and approved by the COR. The contractor is responsible for performing any material testing that is required for the project. All materials should have a low VOC rating of no more than 50g/l (50 grams per liter).

3. Off-Gassing Period - The production schedule must ensure an appropriate period for off-gassing of sealants, paints, and other case materials to which objects will be exposed before collection objects are installed inside cases. At a minimum, the off-gassing period is four weeks.

4. Catalog Cuts - Submit catalog cuts to the COR for review and approval. At a minimum, the catalog cuts includes the following:

    a. Locking mechanisms

    b. Hinges, latches, and other specialized hardware

    c. Ventilation fans and associated grilles or screens

    d. In-case lighting, in accordance with Section 23, Exhibit Lighting

    e. Glazing

    f. Security devices, dataloggers, and other specialized equipment included in the contractor's scope of work

B. Wood Sealants and Paints

1. Wood Sealant - To ensure objects will not be harmed by volatile chemicals off-gassing, seal all exposed wood inside object cases including the desiccant chamber. Exposed wood inside case furnishings such as platforms, pedestals, or panels must also be sealed. Surfaces already finished with high-pressure laminate do not need additional sealant.

2. Paint – See Section 18.4. A. 2 and 3

C. Crack and Gap Sealants

1. Caulking - To ensure a tight seal, fill all seams that allow air exchange

with outside air using silicone, acrylic latex, or acrylic latex silicone caulk. The caulk must be neutral curing (does not emit acetic acid during curing).

2. Gasketing

    a. The gasket chosen for the case must not off-gas any volatile compounds, including its adhesive backing.

    b. The gasket must be the appropriate size and density for its channel or frame so that it compresses uniformly and provides a tight seal.

    c. Only compress the gaskets in one direction to achieve a well-sealed case.

    d. Use tube gaskets to seal mechanical fasteners that penetrate the case.

    e. For hinged doors: where possible, use a continuous gasket set into a channel with rounded corners; place gaskets as far as possible away from the pinch area of the hinge.

D. Silica Gel Chambers

1. Design chambers based upon calculations for the amount and type of silica gel necessary to achieve the required environmental standard, as defined in the individual task order.

2. Chambers must allow enough space for the appropriate amount of silica gel to be installed without excess empty space, preventing unnecessary conditioning of empty space.

3. Fabricated chambers to maximize exchange of air with the chamber containing the objects and minimize exchange of air outside of the case. For proper passive air exchange the perforations in the barrier material between the chamber and the case must be at least 40% open.

4. Materials, finishes, and fabrication methods for areas of the case containing silica gel, or any other areas exchanging air with the object chamber, must be fabricated in accordance with the same requirements for the object chamber.

E. Other Object Case Furniture - Unless specified otherwise in the individual task order, fabricate pedestals, platforms, case decks and backers, and any other object case furniture for use inside object cases using industrial grade high-pressure laminate manufactured with a formaldehyde-free binder that meets the requirements of ANSI A208.2-2002. 6.

18.5 Object Mounts

A. General Requirements

1. Never drill, trim, tack, nail, screw down, or glue down original objects. Do not use "museum wax," silicone rubber, or adhesive tapes.

2. Do not use original clamps, hooks, strings, and straps already attached to the objects for support or to take weight off of the object.

3. Do not permanently attach mounts to any object. Each object must be easily removable from its mount in the event of curatorial maintenance, rotation of objects, or emergency.

4. Use the same type and quality of materials for mounting Accessioned Objects and Non-Accessioned Objects.

5. If objects are on open display (behind barriers or otherwise), provide appropriate protection from theft and visitor contact.

B. Mount Guidelines

1. Design mounts to provide the object with adequate support to prevent physical stress or unbalanced weight distribution. Consider the center of gravity, original intended use, and object condition issues s.

2. Base any fastening system on mechanical design; do not rely on adhesives to support the mount or object.

3. Design mounts to minimize vibration and prevent abrasion.

4. Where feasible, design mounts to help protect objects from theft.

5. Do not use fabrics or materials that contain unstable dyes that could transfer colorants to objects.

6. Remove all sharp edges.

7. Never force and object to fit in a bracket, cradle, or other mount. The mount must support, not compress.

8. Pad all clamps and brackets with inert, non-abrasive materials.

9. Replacement mounts are made of the like kind and materials unless otherwise specified on the drawings.

C. Mount Design

1. Coordinate object mount design with the general design of the exhibit and reflect the support requirements of the objects.

2. Mount Design Drawings - Provide drawings of proposed mounts for objects to the COR for review and approval prior to fabrication.

   a. The drawings illustrate all custom hardware to be used to mount objects in the exhibit, identifying relevant object number, dimensions, materials, and finishes.

   b. When using identical mounts for multiple objects, submit a representative drawing that identifies the objects referred to by number.

3. Mounting Systems - Design the system so that as many of the individual parts as possible can be pre-fabricated and assembled off site with final adjustments being made on-site.

D. Mount Fabrication

1. Object mount material submittals - Submit materials proposed for fabrication of object mounts as specified in the individual task order. All material must pass the appropriate tests (e.g., Oddy Test, Photographic Activity Test, etc.) to ensure they are appropriate for use with collection objects. If there is a published test result, supply it for review to the COR. The contractor is responsible for performing any material testing that is required for the project.

2. The following are commonly used acceptable mount materials:

   a. Plastic - Rigid acrylic and polycarbonate

   b. Metal - Brass that is isolated/cushioned from the object

   c. Isolating/Cushioning Material - Polyethylene foam, polyester felt, fabric-covered polyester batting, 100% cotton fabric, silicone rubber, and acrylic resin

18.6 Installation

A. Handling - Handling of objects is in accordance with this Section, 18.3 Object Stewardship, E., Object Handling.

B. Site Conditions – The government will provide a clean work area at the exhibit site away from visitor access and any conditions that could be harmful to

the objects. Coordinate with the COR to identify this space. The contractor is responsible for all furnishings, equipment, and tools required for their on-site workstations. Keep the workspace clean and organized.

C. Mount Repairs/Replacement - When repairing or replacing an existing mount, take care to protect objects from damage. If the repair or replacement of a mount calls for removal of objects from a case, make arrangements with the COR for the government to handle and secure the objects.

D. Installation of Silica Gel – If specified in the individual task order, furnish and install silica gel. Condition the silica gel to the relative humidity level specified in the individual task order. Keep conditioned silica gel in the container from the manufacturer or in a vapor-proof bag, tightly closed, until immediately before installation.

E. Object Lighting – Unless otherwise specified in the individual task order, adjust all lighting (case exterior and interior) on objects in accordance with required levels furnished by the COR for each object. Use a light meter to check the light intensity on each object or group of objects. The lighting must not emit any UV-radiation.

F. Clean/Close Object Cases - Close and lock cases as soon as possible once installation is complete to limit exposure of the objects to unconditioned air, excess light, insects, and damage or theft. Once the case is closed, clean the outside of the case using a non-ammonium based cleaner and/or a clean magnetic cloth.

19. Electronic Programs

19.1 Introduction

Electronic Programs may include Audiovisual (linear) programs, Digital Interactive (non-linear) programs, and electromechanical programs. "Programs" refers to the media content, as well as the software and control code used to run them.

Audiovisual (AV) programs include linear programs with fixed running times. Through the use and/or integration of numerous elements such as video, sound effects, music, voiceovers, interviews, animation, graphics, and images, AV programs can be innately dynamic. They are especially effective in eliciting emotional responses, telling stories, and conveying concepts where motion and/or sound are important or particularly effective.

Throughout these specifications, the term "AV" is also used as an umbrella term that includes Digital Interactive and Electromechanical programs.

Digital Interactive programs are often non-linear. They encourage users to become engaged through interaction, exploration, and learning at their own pace and may include multiple layers of information.

Electromechanical programs include but are not limited to electronic programming such as LED lights within a map, diorama, or other exhibit element; lighting programmed to be synchronous or otherwise function in concert with exhibits or exhibit elements; and motion sensors programmed to trigger lighting, audiovisual, digital interactive, or mechanical exhibit elements.

Each exhibition, its content, and presentation is custom designed. The extent to which Electronic Programs are proposed and utilized will determine when and what kind of deliverables are required. In an exhibition where these elements are a driving force in the presentation, it is important for AV and digital specialists to be involved early in the planning and design process and for early planning documents to describe the programs in greater detail.

All Electronic Programs and associated Electronic Equipment are in compliance with the Information and Communication Standards of the Rehabilitation Act (see Section508.gov)

Equipment and software components need to be carefully coordinated to ensure an effective presentation. Equipment compatibility relative to the designer's vision is a critical element even in the early stages of the design. Electronic Equipment specifications are detailed in Section 20, Electronic Equipment.

Specifications for the conceptual development of Electronic Programs used in exhibits are stated below. These specifications shall apply to work performed by exhibit planning and design contractors and their subcontractors. In addition, for task orders that include production of completed Electronic Programs, specifications included in the most recent version of Attachment 6 at the time of contract award apply:

> National Park Service Standard Specifications for Planning, Design, Production, and Installation of Electronic Programs

19.2 Specific Requirements for Schematic Phase

A. Schematic Design 2

1. Prepare and submit an overview of the Electronic Programs proposed for use in the exhibition.

During this phase, the overview is based on the contractor's planning and research for the proposed program(s):

a. Describe how Electronic Program content will be integrated with the rest of the exhibition to reinforce the interpretive message, including an explanation of the interpretive purpose of the Electronic Programs and any advantages or disadvantages of using electronic media instead of other media for this purpose.

b. Indicate locations for Electronic Programs while maintaining a comfortable flow of visitors through the exhibition space.

c. Describe how Electronic Programs will be made accessible to people with sensory, physical and cognitive disabilities by providing recommended and achievable accessibility solutions, such as captioning, audio description, assistive listening, and alternative navigation devices for use with the interactive programs. (see Section 6, Accessibility)

2. Include a line item for Electronic Programs with the Class B Cost Estimate.

19.3 Specific Requirements for Design Development Phase

A. Design Development 1

For each proposed Electronic Program, provide:

1. An AV Program Concept Treatment

2. Proposed program type (AV, digital interactive, or electromechanical)

3. Proposed display format such as touchscreen, vertically-oriented screen, multiple screens, or projection system

4. A line item for Electronic Programs with the Class B Cost Estimate

B. Design Development 2

For each proposed Electronic Program, provide:

1. A revised AV Program Concept Treatment

2. An AV Program Production Treatment

3. A detailed listing of resource information relevant to the proposed Electronic Program

4. A description of the physical integration of the Electronic Program with the rest of the exhibition, including strategies for making programs accessible, limiting sound and light spill, maintaining visitor flow, ease of equipment access for maintenance purposes, and triggering other programs or devices (such as lights or audio). This description includes any updates to proposed display format.

5. A description of the proposed method of activation, including but not limited to pushbutton, touchscreen, motion sensor, timer, or continuous loop.

C. Design Development 3

Provide an Electronic Programs Report, as desribed below.

Within the EP Report, provide a list of all proposed hardware, software, and operating systems necessary for proposed programs, for review and approval. The government will ensure compliance with all security requirements and Information Technology policies in effect at the time of submittal.

1. For Audiovisual Programs:

   a. A revised AV Program Concept Treatment and revised AV Program Production Treatment. Include sketches or storyboards, if necessary, to communicate the creative approach and storyline

   b. An updated and detailed listing of resource information relevant to the proposed Electronic Program

   c. The estimated total running time for the program, based on the following guidelines:

      i. Programs located within an exhibit area without visitor seating are limited to three minutes or less unless otherwise approved by the COR

      ii. Programs located within an exhibit area with visitor seating are limited to eight minutes or less unless otherwise approved by the COR

      iii. Programs located in dedicated mini-theater areas within the exhibition are limited to 15 minutes or less unless otherwise approved by the COR

iv. Audio soundscapes, video imagery without a storyline, and similar continuously running, mood setting AV elements are of sufficient length to avoid appearing repetitious or annoying

d. An updated description of the physical integration of the AV Program with the rest of the exhibition, including strategies for making the program accessible, limiting sound and light spill, maintaining visitor flow, and triggering other programs or devices (such as lights or audio)

e. Description of the proposed playback equipment, including screen size, resolution and type, audio system details (i.e., mono, stereo, surround-sound, handsets)

f. Description of the proposed control system and equipment, including but not limited to pushbutton, touchscreen, motion sensor, timer, or continuous loop

2. For Digital Interactive Programs:

a. A revised AV Program Concept Treatment and revised AV Program Production Treatment for the main program and attract screen

b. A graphic representation (flow chart) outlining the structure, content, navigation, and user interface for the program, including Section 508 compliance

c. An updated description of the physical integration of the Digital Interactive Program with the rest of the exhibition, including strategies for making the program controls accessible, limiting sound and light spill, maintaining visitor flow, and triggering other programs or devices (such as lights or audio)

d. Description of the proposed equipment and operating system platform for the program

3. For Electromechanical Programs:

a. When necessary to convey creative approach, include a graphic representation (flow chart) outlining the structure, content, and navigation of the program, including Section 508 compliance.

b. Description of the proposed equipment and systems required to run the program.

c. Include itemized costs for Electronic Programs and their associated Equipment within the Class B Cost Estimate.

19.4 Specific Requirements for Production Design Phase

A. During the Production Design Phase, provide the final AV Program Concept Treatment and AV Program Production Treatment for each Electronic Program, which is an updated version of the Electronic Program Reports submitted at DD3, with revisions based on COR comments.

B. Include itemized costs for all Electronic Programs and their associated Equipment within the Class A Cost Production Estimate.

19.5 Specific Requirements for Fabrication Phase

A. During Fabrication, and as part of the Exhibit Production Plan, provide the AV Production Plan and script, narrative, or storyboard for review and approval. The AV Production Plan describes all elements required to produce the program as outlined in the final AV Production Treatment.

B. Follow all processes for AV Production as outlined in

> Attachment 6: National Park Service Standard Specifications for Planning, Design, Production, and Installation of Electronic Programs

19.6 Specific Requirements for Installation Phase

A. The contractor is responsible for the successful installation of all Electronic Programs that are part of the exhibits, including those that are government-provided.

B. Provide a digital version of the final Electronic Program labeled with the exhibit name and program title, and all component parts of the COR-provided AV Completion Report, as part of the Closeout package.

20. Electronic Equipment

20.1 Introduction

"Equipment" refers to the electronic devices used to play Electronic Programs including video, audio, or digital programs within an exhibit. It also includes devices and systems that control multiple programs, or that interface with other exhibit elements such as programmed lighting and electromechanical devices.

AV, digital, and electromechanical elements present an important part of the interpretive message in exhibits where they are installed; inoperative equipment severely impacts an exhibition's effectiveness. Therefore, equipment selections should be based on the long-term requirements for the exhibit. Equipment should be easy to operate with minimal training, and designed for long life and minimal maintenance.

Equipment and software components need to be carefully coordinated to ensure that all design goals are met. Specifications for audiovisual and digital interactive software are detailed in Section 19, Electronic Programs. Equipment specifications are stated below.

20.2 General Requirements

A. Design equipment and systems with ease of use in mind, and with minimal required maintenance.

B. Work with the appropriate project team members to ensure that the exhibit space electrical system will accommodate all specified electronic equipment. Begin this coordination at the earliest possible opportunity and continue through the duration of the project.

C. Inform the COR of all proposed systems that require network or Internet connectivity. Plans for such programs require additional review and approval by the government to ensure compliance with all network security requirements and Information Technology policies in effect at the time of submittal.

20.3 Specific Requirements for Design Development Phase

A. Design Development 1

In coordination with the overall strategy specified in Section 19, Electronic Programs, identify the types of equipment that are proposed for use with each Electronic Program. Identify salient characteristics; specific brands and models are not required at this phase of development.

B. Design Development 3

1. Specify locations of all equipment including signal and control wiring paths or conduit runs, exhibit power circuits/outlets required by each piece of equipment, and switch locations.

2. Develop start-up, shut-down, and operating procedures for electronic equipment systems.

    a. Design start-up and shut-down for convenient operation, either from a single control panel or dedicated switch, or by use of a preprogrammed timer with a manual override function, and battery backup.

    b. Detail daily tasks and operation procedures required to maintain each system.

    c. Ensure that operational controls are easy to access and simple to execute. Controls are, preferably, grouped together in one location.

20.4 Specific Requirements for Production Design Phase

A. Production Design 1

Provide detailed technical specifications for electronic equipment systems in the exhibition as follows:

1. Specify brand name equipment that is appropriate for the application, as well as for the environmental conditions in which it will be installed. Use industrial or commercial grade equipment. Simplify systems design by using a single brand and model for each type of equipment throughout the exhibit whenever possible. When possible, use computer equipment of the same brand available to the government via the DOI-approved equipment list.

2. Specify all ancillary equipment required for a fully operational system, such as surge protectors, uninterruptible power supplies, push buttons, and motion sensors.

3. Identify all equipment by brand name and model number.

4. For each product specified, provide the manufacturer's technical information sheets, the manufacturer and/or supplier's address, telephone number, and information regarding accessories and additional equipment.

5. Special order items and items that are not normally available from a manufacturer's stock should be clearly identified as such.

6. Provide architectural specifications including, but not limited to, the number and placement of circuits, load requirements for each circuit, and the number, type, and placement for high and low voltage conduit.

7. Include prices for all equipment within the Design Development 3 Class B Production Cost Estimate. In addition, include the cost of one spare unit for each type of equipment in the estimate unless otherwise specified by the COR. Provide a life-cycle cost estimate for all equipment specified in the exhibition. (see Section 8, Production Cost Estimates)

B. Production Design 2

1. Update the electronic equipment specifications to reflect all changes in the project and submit the updated equipment specifications as part of the PD2 submittals.

   Review the availability of the approved equipment during the Production Design phase. When previously specified equipment has been discontinued, specify replacement equipment by brand name and model number, and provide cut sheets that show all product specifications.

2. Include prices for all equipment within the Class A Production Cost Estimate. In addition, include the cost of one spare unit for each type of equipment in the estimate unless otherwise specified by the COR. Provide an updated life-cycle cost estimate for all equipment specified in the exhibition. (see Section 8, Production Cost Estimates)

3. Provide detailed wiring diagrams for the equipment in each audiovisual and computer interactive system. Wiring diagrams show the precise points of connection on each piece of equipment; wiring between systems and controllers, and the interface between electronic equipment systems and lighting or other electromechanical device. Specify the load rating for each piece of equipment, and the total load on each circuit/ outlet that is required to power the equipment.

20.5 Specific Requirements for Fabrication

A. Submittals for Review

1. Pre-Fabrication Submittals: During this phase, provide the submittals for review and approval in accordance with Section 13, Exhibit Drawings, 13.6, and as specified in the individual task order. Unless otherwise specified in the task order, provide the following minimum submittals for all audiovisual elements and integrated lighting equipment in the scope of work:

   a. Fabrication drawings for mounting hardware, cabinet, or enclosure of equipment;

   b. Plan Drawings indicating locations of power sources and wiring conduits, reflecting up-to-date on-site conditions and dimensions.

c. Wiring diagrams for each system and between systems and controllers.

d. Catalog cuts for audiovisual equipment, and lighting.

2. Fabrication: During this phase, acquire all Electronic Equipment as specified in the individual task order. Test all Electronic Programs on the specified Electronic Equipment to ensure they are Installation-Ready.

3. Shop Inspection: Demonstrate all Electronic Programs to be fully operational on the Electronic Equipment.

4. Installation: Install all Electronic Equipment and ensure functional operation of all Electronic Programs. Provide operational training on the use of all installed Electronic Equipment.

5. Closeout: During this phase, provide the following submittal for review and approval:

   Audiovisual Operations Manual, in accordance with Section 29, Operational Training and References, 29.5.

B. Quality Assurance

The National Electrical Code (NEC) is the required standard for all electrical work. In the event other codes, state and local, are in effect at the final exhibit site, they must be included as part of this specification and requirement. All manufacturers printed recommendations for materials are a part of this specification. Standards for other trades are included as part of this contract.

Information on the NEC is available at: www.nfpa.org/NEC

Only persons trained and experienced in the fabrication, installation, and implementation of professional audiovisual, video, sound reinforcement, cinema playback, and show control systems may perform all assembly, fabrication, and installation work. Adhere to all installation practices as described in pertinent chapters of the following publications or their latest published edition:

"Audio Systems Design and Installation", Author: Philip Giddings, Focal Press

"Sound System Engineering", Second Edition Authors: Don and Carolyn Davis, Howard W. Sams & Co.

In addition, all requirements of the latest published edition including, but not limited to, the following apply unless otherwise noted. In case of conflict between cited or referenced standards, the more stringent example or standard apply.

1. National Electrical Code (N.E.C.)

2. Federal Communications Commission (F.C.C.)

3. Society of Motion Picture and Television Engineers (S.M.P.T.E.)

4. American Society for Testing Materials (A.S.T.M.)

5. Electronic Industries Association (E.I.A.)

6. Handbook for Riggers, 1977 Revised Edition, W.G. Newberry; Calgary, Alberta Canada

7. Basic Principles for Suspended Loudspeaker Systems, Technical Notes Volume 1, Number 19, JBL Professional Division

C. Product Handling

Store electrical, electronic, and mechanical components in a dry location. Do not expose to extreme changes in temperature and humidity. Protect components from damage during shipping, handling, storage, and installation. Pack components in containers in which components were shipped from the manufacturer. Exercise care so as not to damage electrical and electronic components. Store in a protected environment.

D. Testing

Test electrical, electronic, and mechanical components of exhibits, including audiovisual equipment and lighting, in the fabrication shop prior to delivery to the site. Ensure that all equipment is fully operational prior to installation at the site.

1. Test the electronic equipment and media on the same equipment to be installed and used for the program on-site in order to verify functionality of the complete integrated system.

2. Test environmental conditions for all operating equipment for heat build-up in their shop and again on-site after the equipment has been installed, but before artifacts are installed. Test by operating the equipment for a minimum of two consecutive hours with all ventilation controls in place. Do not open and close the environment during the test; do not open the environment to read the temperature; use a sensing device inside the environment with a remote read-out. Provide a compliance statement when testing is complete.

E. Safety

On-site installation of all electrically-powered equipment is in accordance with Section 28, Shop Inspections and Installation, 28.7, Safety.

F. Materials

1. Audiovisual / Electronic Equipment

Purchase and/or install electronic equipment as specified in individual task orders. Cables, connectors, racks, and mounting accessories required for the proper installation and operation of the equipment are provided by the contractor unless specified otherwise.

All materials provided by the contractor are new and all work must be completed to the satisfaction of the COR.

Integreate all government-furnished equipment into the audiovisual system. Protect all equipment against cosmetic and operational damage, and replace equipment damaged while in the contractor's possession.

At a minimum, submit the following types of equipment for review and approval by the COR prior to shipment and installation to the site. Provide catalog cuts or reviews of actual equipment samples, in accordance with the individual task order.

a. Video monitors - display monitors, touchscreen monitors

b. Digital playback equipment - equipment for playback of digital video or audio media, handheld equipment for playback of audio description files, and control equipment for playback equipment

c. Computers - desktop personal computers, laptop computers, tablet computers, including accessories such as keyboards, mice, monitors, external harddrives, and portable media

d. Audio speakers - including mounted speakers, personal handheld sound-stick-type speakers, and headphone speakers

e. Audio Amplifiers- All Audio Amplifiers must contain easily adjustable volume, bass and treble controls, to allow for on site adjustments. Class D low heat amplifiers are preferred

f. Equipment Racks - Use standard metal audiovisual equipment racks any time multiple sources and processing equipment are grouped together in one location

g. Lighting fixtures, lamps and accessories as specified in the individual task order and in accordance with Section 23, Exhibit Lighting

h. Ventilation Fans – Convection cooling of equipment with adequate sized grille covered openings below and above the equipment is preferred to the use of fans. Provide fans as necessary to vent heat out of enclosed environments in which equipment or lighting is installed. In accordance with this Section, Item J, Heat Ventilation

i. Thermostats - Provide line voltage thermostat as necessary to

achieve the temperature control specified under this Section, Item J, Heat Ventilation

j. Cables and connectors - audio cables, video cables, loudspeaker cables, composite video cables, data cables, and other cables as required, audio and video connectors

k. Pushbuttons - Pushbuttons for "Play Selection" or "Push to Play" are momentary action

l. Power Equipment - Uninterruptible Power Supplies and Surge units for each system or subsystem

m. Control Equipment - user interfaces, motion sensors, processors, and program type

2. Electrical - Materials must be new and U/L approved

a. Wiring - Wiring for high voltage applications must be as required under the latest version of the NEC. Provide plenum rated cables of the types specified where required by the NEC or other governing building codes

b. Conduit - All conduit must be 3/4" electric metallic tubing unless specified otherwise

c. Outlets - Multi-outlet power strips with integral circuit breaker and grounded outlets

d. Surge Protection - Provide an electrical surge suppression system dedicated to each audiovisual system, all fiber optic illuminators, and each interactive electronic exhibit. Size the suppression device to accommodate the maximum load plus 100 percent. Surge supression device must have an indicator light

G. Audiovisual / Electronic Equipment - Shop Fabrication - The contractor is responsible for ensuring that electronic equipment fits and operates with the exhibit structures.

1. The government will ship one type of each piece of government-furnished electronic equipment to the contractor's facility, within two weeks after the production drawings are approved. Demonstrate the fit and operation of the equipment to the COR during a site inspection at the contractor's facility.

2. When included in the design, install pushbuttons in the exhibit structures and wire them to be fully operational at the time of the final inspection. The pushbutton assembly must fit snugly into the panel with the

outermost ring sitting flush against the panel surface. Label the attached wiring to clearly identify what component activates when pushed.

3. Test all electronic equipment to ensure operation, and confirm and demonstrate that the associated electronic program(s) run as intended on the specified equipment.

4. Ensure that all electronic equipment has adequate heat ventilation while operating in the exhibits, and there is access to the equipment for government staff to perform maintenance or repairs.

H. Audiovisual / Electronic Equipment - Installation

Install, test, and verify operation of all audiovisual components, media, and interactive programs in the exhibits. All electrical work on site is in accordance with Section 28, Shop Inspections and Installation, 28.7, Safety.

1. Installed equipment should be easily accessible for cleaning, adjustment, replacement, and routine maintenance, have proper ventilation, and provide safety and convenience for the operator.

2. Floor Standing Rack - In systems where the equipment is collocated, provide a floor standing metal equipment rack with locking rear door, removable vented side panels, and vented top. Provide a rack layout for review and approval by the COR before installing equipment in the rack. Provide a rack mount shelf sized appropriately for equipment not manufactured for traditional rack mounting methods.

    a. Rack Power Distribution - Use switched power strips with surge suppression on the front of the racks that allow the audiovisual equipment to be turned off when required: Tripp-Lite IBAR-12-UL20 or approved equal. Mount vertical power strips in the back of the rack for extra outlets to accommodate all equipment mounted in the rack: Middle Atlantic PD-2415SC-NS or approved equal.

        In high current or large sound systems, provide a sequential power system for rack mounted and peripheral equipment. The power system should include a front panel mounted on/off power control for the audiovisual system. Power control provides electrical power first to headend equipment such as mixers, switchers, processors, and media players, and after a predetermined timed delay provide power to audio amplifiers. No single sequenced outlet should be encumbered with more than 90% of its load rating.

    b. Uninterruptible Power Supply (UPS) - This is required for all video projectors, computers, and control systems unless the manufacturer specifications state that it may be shut down by a switched outlet. The UPS shall constantly protect connected

equipment against brownouts and over-voltages without draining battery power. It shall provide surge suppression and noise protection.

Use Tripp-Lite OmniSmart or SmartPro series or approved equal.

3. Switches, connectors, jacks, receptacles, outlets, cables, and cable terminations are logically and permanently marked as to their function. Custom panel nomenclature is engraved, etched, or screened. Submit a schedule and diagrams of the proposed identification marks to the COR for review and approval.

4. With the exception of portable equipment, all boxes, conduits, cabinets, equipment, and related wiring are firmly mounted in place. Mounting is plumb and square.

5. Exercise care in wiring the systems to avoid damage to cables and equipment. Make all joints and connections with rosin core solder or with mechanical connectors approved by the COR. Accomplish crimp type connections with manufacturer recommended ratchet type crimping tools. Cables are free of splices between terminations at the specified equipment. Unused conductors, shields, or drain wires are dressed under heat shrink tubing, not cut.

6. Form wires and cables into harnesses that are tied and supported in accordance with accepted engineering practice. Take care to bundle and secure all cables that interconnect electronic devices integral to the exhibit with destinations outside the exhibit. Where applicable, harnessing and bundling of cables also accommodates movement of exhibit on casters to provide access to the rear or interior of the exhibit.

7. Comb harnessed cables straight. Harnesses with intertwining members are unacceptable. Each cable that breaks out from a harness for termination is provided with a service loop. Form cables in either a vertical or horizontal relationship to equipment, controls, components, or terminations.

8. Run power cables, control cables, and high level cables on the left side of an equipment rack, as viewed from the rear. Run all other cables on the right side of an equipment rack, as viewed from the rear.

9. Cut cables, except video cables, which require cutting, to the length dictated by the run. For equipment mounted in drawers or on slides, the interconnecting cables are provided with a service loop of appropriate length.

10. Do not be install cables with a bend radius less than that recommended by the cable manufacturer.

11. Mark cables, regardless of length, with a unique ID number, optionally with the source and input/output port name, within three- to six-inches of both ends. Include no unmarked cables in the system. Marking codes used on cables correspond to codes shown on drawings, run sheets, and patch panels. Use the following label styles: self-laminating; heat shrunk with electronically printed text; or, electronically printed wrap-around numbers with clear shrink wrap over them.

12. Provide terminal blocks or connectors for all cables that interface with racks, cabinets, consoles, or equipment modules. Terminate all control panel cables on their own terminal strip in the rack, all bussing of the cables shall be done on the controller side of the terminal strip. Use eurostyle screw terminal strips that have captive wire retention screws with wire protectors to protect stranded wires from screw damage. All metal parts shall be recessed providing a dead front design to ensure safety and to prevent short-circuiting. Provide as required according to cable type.

13. Use commercial grade cables or better. Do not use adapters unless approved by the COR.

14. Provide the audiovisual system free of artifacts such as hum, noise, or distortion of any level above that specified by the manufacturers of the equipment specified and/or provided. Locate system components and related wiring to minimize electromagnetic and electrostatic hum, spurious oscillation, wiring length, and provide proper ventilation, safety, and convenience for the operator.

15. Verify all circuits and extensions for correct connection, continuity, and phasing. Make all adjustments and modifications so that all systems are operational.

I. Electrical -

1. Safety - Perform all electrical work on site in accordance with Section 28, Shop Inspections and Installation, 28.7, Safety.

2. Codes - Obtain all requirements pertaining to the most recent state and local codes:

3. Power - Distribute circuits within each installed exhibit structure from one four-gang box mounted inside the exhibit structure. Connect the box to the power source (120 volt AC) through flexible conduit. Power supplies for the lighting systems and lighting shall be hardwired to the power source (120 volt AC) through flexible conduit. Provide sufficient extra length of flexible conduit to accommodate movement of power supply on sliding access shelf. Make all connections to power sources at

the locations specified on the drawings.

4. Evaluate power supply versus power demand to determine appropriateness of existing circuits.

5. The contractor is the responsbile for advising the COR if total power service requirements for any exhibit structure exceeds 15 amperes.

6. Ensure that power cables do not cause interference with audiovisual signal cables.

7. Coordination - Provide secondary distribution lines and one three-prong grounded female receptacle within each applicable exhibit unit for powering of electrical equipment.

8. Craftsmanship - Clearly and neatly label circuits with special operating and maintenance instructions mounted on descriptive panels with each applicable exhibit unit. Run wiring exposed to minor potential physical damage in electric metallic tubing. Run inaccessible wiring in conduit. All conduit, junction boxes, fixtures, and equipment shall be neatly and securely attached to support members and concealed.

9. Access - Ensure serviceability to each and every piece of equipment. Provide cutouts and access panels to facilitate maintenance. Avoid alterations to exposed surfaces.

10. Support - Provide additional support such as clip angles, plates, brackets, thrust blocks, bushings, and bearings necessary to reinforce exhibit structures, and devices relative to “hands-on” use and abuse of each exhibit.

11. Termination of Wiring - Terminate conductors using crimp-type lugs if the component possesses screw-type terminals. Where the component has only soldering lugs, connection shall be by good quality electrical joint using rosin core solder. Connection of conductors and wiring, one to another, shall be by the application of screw -type terminal strips and spade lug connectors. Such terminations shall be located in a National Electrical Manufacturers Association (NEMA) rated enclosure. Accomplish all crimp connections by ratchet type production crimp tools. The use of any adhesive insulating tape is not acceptable.

12. Surge Suppression - For each audiovisual exhibit, provide an electrical surge suppression system dedicated to that exhibit. Size the suppression device to accommodate the audiovisual system maximum load plus 100 percent.

J. Heat Ventilation - Determine total heat loads of all active equipment used in the exhibit structures. Provide convection vents (preferred) and/or cooling

fans with thermostats as necessary to prevent the equipment environment's temperature from rising above the equipment's maximum operating temperature.

1. Select and install fans to provide the maximum amount of airflow with the minimum amount of noise. Provide fans of type and quantity to replace the enclosed volume of air at a minimum of every two- minutes. No individual fan shall contribute more than 35 dBa of noise to the environment.

2. Locate convection vents to maximize intake of cool air as close to the floor as possible and exhaust of warm air out of the top of the exhibit. Convection air flow inside the exhibit shall flow unimpeded through casework containing the audiovisual and lighting equipment.

K. Support Hardware - All hardware is of a grade equal to at least five times the rated load weight of the equipment supported.

21. Tactile Exhibit Elements and Mechanical Interactives

21.1 Introduction

The use of tactile exhibit elements and mechanical interactive exhibits is important to the effectiveness of interpretive exhibits. They enhance the aesthetic appeal of an exhibit by providing dimensionality. This contributes to increased accessibility for visitors with certain disabilities and invites visitors to physically interact with the exhibit, which increases visitor interest. Mechanical interactive exhibits in particular add another level of learning through "doing" in addition to looking and reading. Some mechanical interactive elements supplement the interpretive message by discovery through activity; others are used as a tool to reveal information. Examples of mechanical interactive exhibit elements that have been used successfully in National Park Service exhibits include lift and drop exhibits, hinged or sliding doors, discovery drawers, and a roulette-style wheel.

21.2 General Requirements

When tactile exhibits and mechanical interactive exhibits are incorporated into exhibits, safety, accessibility, and durability are primary considerations in the design of these elements. The exhibit element must be relevant to the interpretive theme and enhance visitor understanding. Instructions for use of mechanical interactive exhibits is obvious and easily understood. Tactile and mechanical interactive exhibits are low maintenance except when the nature of the tactile or interactive exhibit is such that routine maintenance will be required and the requirement for such maintenance is included as part of the design proposal.

Tactile exhibits and mechanical interactive exhibits are generally considered to be Custom Elements (CEs). (see Section 11, Content Management)

A. Design Development and Production Design

Include tactile exhibits and mechanical interactive exhibits in the Content Management database (see Section 11, Content Management), Exhibit Drawings (Section 13, Exhibit Drawings), and in Content Specialties Reference Packages (Section 16, Content Specialties).

B. Production

Include tactile and mechanical exhibit elements in the Exhibit Production Plan, and shall produce these elements for COR review and approval in accordance with Section 16, Content Specialties and Section 15, Two-Dimensional Exhibit Graphics.

21.3 Specific Requirements

A. Safety

Safety must be the highest consideration in the design of tactile and mechanical interactive exhibits. The design includes details that prevent injury during

use or misuse. Take particular care to prevent fingers from being pinched between closing doors or between rotating and fixed parts. Design electrical components, such as light fixtures, to be inaccessible to visitors. Cables, pulleys, and other mechanical features shall also be inaccessible, except where these are an interpretive component of the interactive design, in which case such features are designed so that they pose no risk of injury.

B. Interpretive Purpose

In many instances, the interactive element supplements the interpretive message. The purpose of the interractive exercise is linked to the interpretive theme.

C. Durability

1. Design

Tactile and mechanical interactive exhibits endure more wear than typical graphic panels and other static exhibit structures. When designing tactile and mechanical interactive exhibits, specify materials that are appropriate for the physical environment and for the particular use intended. Specify durable, heavy-duty materials that can withstand hundreds of thousands of uses a year for years on end; always anticipate aggressive use of the exhibit. For mechanical interactive exhibits, simplicity of design with as few moving parts as possible is important.

2. Environmental Conditions

Models and interactives in government sites are installed in a variety of types of structures and locations, many of which are historic structures, or structures lacking all modern utilities. The exhibits may be outside, exposed to sun, wind, and the weather, spray from nearby bodies of water, and so forth. It is the responsibility of the designer and the fabricator to inspect site conditions and take them into consideration when designing and fabricating a tactile model or interactive for a particular location. During the site visits, the designer and the fabricator consider and review the following:

a. Physical access to the entire display: determine if there are barriers to wheelchair access to part or all of a tactile display or interactive;

b. Temperature range of the location: if a tactile element or interactive is placed outside, it is important to determine how hot it will get to the touch;

c. Harshness of the environment: particularly if the exhibit is placed outside or in a partially unprotected area. Other factors to take note of include factors requiring especially durable materials, such as a corrosive marine environment, especially harsh weather conditions, nearby blowing sand, and;

d. Acoustical environment: tactile exhibits often incorporate acoustical experiences. Determine the acoustical environment in which the display will be located; whether there is competing spillover from other audio program(s); Verify if there is general environmental noise; and whether it will be a problem with using speakers in this location due to echoes.

3. Fabrication

Best practices for fabrication of more durable tactile models include the following:

a. Cast model as one piece, or in as few pieces as possible, to reduce seams and increase structural integrity. Design and fabrication is such that visitors cannot flex, wiggle, or shift any element of the model unless intended as part of an interactive experience.

b. Reduce or eliminate applied, glued-on, screwed-on, small elements that can potentially be pulled off by visitors.

c. Where applicable, use color that runs throughout the tactile models to avoid visible chipping.

d. Heavy-duty sprayed-on clear protective coating should be applied as the final finish over painted finishes. Avoid finishes which are not fully sealed and which are not cleanable with a damp cloth. Finishes created from rough and loosely-bound together fragments of a material held together by glue tend to continuously shed this material, as they are constantly touched by visitors. It is also problematic for park maintenance crews to clean or maintain such finishes over time.

D. Accessibility

All tactile and mechanical interactive exhibit elements are required to meet accessibility requirements specified in Section 6, Accessibility, and the recommended approach to developing a tactile exhibit as described below.

In addition, a tactile floorplan is required for each exhibition. Each tactile floorplan is oriented to the physical space, only shows spaces that are open to the public, shows exhibit structures diagramatically, includes the information desk, restrooms, exhibit space, doors, pathways, exits, and a star to denote "You Are Here." Walls are tactile and raised, and Braille is included for all labeling. Direct labeling of features and spaces is preferred, however for large or complex floorplans, a key or legend may be provided.

1. Accessibility Guidelines for the development of tactile exhibits:

When exhibits are planned with accessibility in mind, tactile elements provide effective communication for accessibility purposes. In particular,

tactile exhibit elements convey key interpretive messages, information, and education for visitors who are blind or have low vision or learn more effectively through touch and exploration.

Tactile elements and anticipated outcomes relate to the core themes and central messages within the exhibit. For example, if an exhibit's core message is about the architecture of a historic house and the only tactile opportunities are to touch a few reproductions of decorative objects found within the house, it is doubtful that these tactile elements would convey the core messages and meanings of the exhibit. If this exhibit included a tactile floor plan and model of the house that visitors could touch in order to learn about the overall layout and architectural features of the house and are given audio navigation to guide them in their exploration, it is likely that these tactile elements will help to effectively communicate the core meanings and messages of the exhibit, particularly for visitors who are blind or have low vision.

Consider the following when designing tactile exhibit elements:

a. Tactile exhibit elements follow the guiding principles of Universal Design:

    i. Useful for people with diverse abilities;

    ii. Accommodates a wide range of preferences and abilities;

    iii. Simple and intuitive to use;

    iv. Communicates perceptual information regardless of the ambient conditions or the users sensory abilities;

    v. Has no moving parts that are hazardous to use;

    vi. Can be used with a minimum of effort; and

    vii. Easy approach and use regardless of the user's body size, posture, or visual acuity.

b. When specified in the individual task order, include one or more consultants from the accessibility community on the design team to provide evaluation of the proposed tactile exhibit's ability to communicate clearly to visitors with disabilities.

c. Introduce tactile exhibit elements as early as possible in the exhibit planning and design process, and not as an after-thought.

d. The use of touch and tactile exhibit elements is recognized as a part of a natural multi-sensory learning strategy that people of all ages and abilities use.

e. Tactile exhibit elements are audio described (See Section 31, Audio Description).

f. Tactile exhibits are reachable by a person in a wheelchair using one hand. In any instance where a three-dimensional exhibit is larger than this, a tactile element is included that communicates the core message.

g. Textures are used to represent the concept of color or a pattern. For example, a tactile representation of our nation's flag may include three different textures for red, white, and blue. When textures are used, audio description and a color key clearly explain the textures.

h. To the greatest extent possible, develop tactile exhibits that facilitate a front approach by wheelchair users.

E. Visitor Instructions

Provide instructions for use of the mechanical interactive exhibit, either as a stand-alone text or graphic element or as part of the broader interpretive text. Where safety instructions are warranted or required, the safety instructions are separate and distinct from any other instructions or interpretive messages.

F. Tactile Maps - See Section 26, Maps (Physical Models)

G. Maintenance

Design tactile and mechanical interactive exhibit elements to require minimal maintenance other than cleaning. Exhibits that require frequent lubrication, alignment, tightening of parts, or replacement of parts are generally inappropriate for most National Park Service sites. (see Section 29, Operational Training and References)

H. Life-cycle Cost

Estimate the useful life span of each tactile and mechanical interactive exhibit element, considering the estimated visitation, the type of use, and other considerations, and provide repair or replacement costs. Where an interactive exhibit element requires routine maintenance, including cleaning, identify the types of maintenance and estimate the annual cost of maintenance, both in terms of labor as well as materials costs.

22. Design Guidelines for Exhibit Structures

22.1 Introduction

Exhibit structures work as a platform to support the content elements of the exhibit, and enhance the aesthetic quality of the exhibit by adding dimensionality, functionality, and presence, with characteristics that are appropriate for the themes of the exhibit, the exhibit space, and in some instances with the region of the country in which the exhibits are installed.

22.2 Specific Requirements

A. Become familiar with the general and specific requirements of the project before proposing design elements. Examples of such requirements include:

1. Current and anticipated visitation

2. Spatial requirements, such as the size and shape of the exhibit area, exposed and hidden dimensional characteristics such as columns and support beams

3. Other pertinent spatial characteristics such as outlets, heating and cooling vents, wall mounted heating devices, security equipment, and plumbing

4. Access considerations, such as the size of doors, stairs, elevators, and other limiting features leading to the exhibit area

5. Environmental conditions, such as the availability of heating, cooling, and humidity control, exposure to outdoor elements and the nature of such elements, historic characteristics of the exhibit area

B. Exhibit structures provide dimensionality, especially when three-dimensional objects are not available for display.

C. Structural design accommodates the available space, ensuring that the exhibits do not overwhelm the space available, nor are overwhelmed by the space. Structural elements are designed to provide for the comfortable flow of visitors, taking into account existing and anticipated visitor use patterns as well as anticipated "stay" times within the museum area.

D. Exhibit structures are designed for the specific environment in which the exhibit will be installed, and to accommodate unique requirements. For most projects, exhibits will be housed in heated and air-conditioned rooms. However, some exhibit environments are more extreme and require alternative design approaches and materials.

E. Other examples of unique requirements include installation into historic structures in which the original historic fabric cannot be altered or disturbed; exhibits installed in flood plains that require easy and quick disassembly for removal on short notice; in facilities where the exhibit area is used as a multipurpose room, the exhibit design requirement may include easy mobility or portability of some or all of the structures, and the design of support equipment and supplies to aid in mobility, such as tow bars or rolling cases.

F. Ensure that structures are designed to accommodate all media elements that are part of the exhibit, such as discovery drawers, audio speakers, video monitors, and supplemental AV equipment, so that the design creates no obstacles to the installation of such elements. The design provides for easy access to all electronic equipment and lighting for routine servicing with a minimum of climbing, bending, and reaching.

G. The design is easily maintainable by the individual park. The design reflects the availability and type of staff to perform routine maintenance tasks. The number of different types of materials in an exhibit is kept to a minimum. For example, whenever possible, use glass or acrylic in an exhibit, but not both, in order to reduce the risk that inappropriate cleaning agents will be used.

23. Exhibit Lighting

23.1 Introduction

The quality of lighting in NPS visitor centers, historic structures, and exhibitions has a significant impact on the quality of the visitor experience and the preservation of historic objects. Successful exhibit lighting is aesthetically pleasing, enriches the visitor experience, and balances the often-competing needs of interpretation, presentation, object conservation, energy efficiency, and maintenance.

The goal is to have a complete visual presentation of the visitor center, historic structure, or exhibition area, while limiting theatrical and dramatic lighting practices. The lighting designer must consider the requirements of all parties invested in the exhibit process – the visitor, designer, fabricator, curator, conservator, interpretive staff, and maintenance. The lighting is sustainable for the life of the exhibit and, with the exception of lamp replacement, be relatively maintenance free.

23.2 General Requirements

Specify a lighting system that is appropriate to the exhibition space using the following guidelines:

A. LED track lighting is the default standard for exhibition gallery areas. Other lighting systems may be used where indicated by design or functional requirements and as approved by the COR.

B. Use the minimum number of fixtures to accomplish the task.

C. Limit the types of fixtures.

D. Limit the types of lamps. Keep different wattages and beam spreads to a minimum within the same family of lamps since, during maintenance, lamp types are often incorrectly substituted.

E. Specify energy efficient lamps such as LED PAR lamps and LED MR-16 lamps.

F. Limit the use of theatrical and ellipsoidal lighting projectors; use only where absolutely necessary to accomplish the task. When image projection is required, LED-type projectors are preferred.

G. To ensure continued viability and product support, specify commonly available lighting products that are recognized and proven successful in similar exhibit or commercial display applications.

H. To minimize visual pollution, design lighting to integrate with the architectural space, especially in exhibition areas.

I. Integrate natural light where possible and where artifacts will not be impacted. Use daylight harvesting technology where possible and where artifacts or visitor services will not be impacted.

J. Coordinate with the COR to ensure that heat generation from exhibit lighting does not exceed the allotted cooling capacity of the proposed or existing HVAC system.

K. Design lighting for ease of maintenance using the following guidelines:

1. Fixtures are accessible for routine maintenance.

2. Lamps are standardized, widely available, and easily replaceable.

3. Wherever possible, choice of fixtures is such that lamp replacement may be accomplished without disturbing fixture accessories (filters, screens, etc.)

4. Fiber optic illuminators are located in a manner that allows proper ventilation and easy access for maintenance.

L. Design lighting controls using the following guidelines:

1. Provide lighting control specifications, including any requirements for automated control systems linking lighting to AV or other exhibit elements, requirements for dimmers, and start-up, operating, and shut-down procedures.

2. Indicate locations of all lighting controls on the lighting plan. Controls shall have limited staff access.

3. Use of a circuit breaker panel for daily switching of exhibit lighting is discouraged.

4. Provide dimmers on lighting circuits to the extent required for effective lighting control within the exhibit. Dimming control systems programmable with preset scenes are preferred.

5. The primary method of controlling default light levels is by lamp specification or through use of accessory screens. Keep dimming of lamps to a minimum for this purpose.

6. Use occupancy sensors where possible to conserve energy and to limit light exposure in exhibits containing light sensitive artifacts.

23.3 Specific Requirements for Design Development

Provide a preliminary lighting plan at the Design Development 1 phase of work, showing proposed fixture locations and types.

23.4 Specific Requirements for Production Design

In the Production Design phase of work, provide a reflected ceiling plan of the exhibit area(s) identifying existing and new lighting fixtures, hardware, and controls. The plan includes a lighting schedule for all new lighting indicating type of track, track accessories, fixture, fixture accessories, lamp type, wattage, and beam spread.

23.5 Specific Requirements for Light Levels in Exhibition Spaces

A. Light levels meet the minimum requirements stated in the Accessibility specifications of this contract. (see Section 6, Accessibility).

B. Light levels in exhibit areas are defined by the nature of the exhibits and limited by artifact conservation requirements.

C. Where necessary and where possible, the design incorporates adaptive lighting techniques, allowing visitors' eyes to adjust to the lower levels required for light sensitive artifacts or audiovisual spaces.

D. Coordinate with the COR when designing lighting plans for exhibit areas where artifacts are displayed. Use the following guidelines for lighting of artifacts:

1. Attachment 3, NPS Exhibit Conservation Guidelines, provides general guidance for the lighting of artifacts in exhibition spaces.

2. The project conservator is responsible for specifying artifact lighting limits.

3. All fixtures illuminating sensitive artifacts are equipped with Optivex UV filters.

4. Infrared radiation is eliminated from the object environment.

23.6 Specific Requirements for Artifact Case Lighting

A. Attachment 3, NPS Exhibit Conservation Guidelines provide general guidance for artifacts case lighting.

B. Heat-generating light sources or transformers are located in a light attic, separated from and insulated against heat spill into the artifact environment. Adequate ventilation is provided to remove heat from the light attic, preferably passively with exit holes or, if necessary, with the use of exhaust fans. Heat gain from lighting is no more than 3 to 4°F in the course of an exhibit day.

C. Where different light levels are required within a case (for example, where labels require higher lighting levels than adjacent artifacts), design the lighting system to selectively illuminate individual items within the case.

D. Directional LED lighting is preferred for exhibit cases.

E. Fiber optic luminaires and light bars may be located inside the artifact chamber provided the entry holes are sufficiently gasketed so that there is no additional air exchange and the exhibit environment is not affected. Fiber optic illuminators may be located either outside or inside the exhibit case. If inside, the preferred location is in the top of the case. Adequate insulation between the artifact chamber and the illuminator is provided if the illuminator is located in the base of the exhibit case. Manufacturer's recommendations for air exchange and illuminator mounting/position are followed.

F. LED lighting may be located in the artifact chamber provided they give off no heat. LED ballasts are remotely located outside the artifact chamber.

G. All ultraviolet radiation is eliminated through use of a UV blocking acrylic or glass separator between the artifact chamber and the light attic.

24. Mock-Ups and Prototypes

24.1 Introduction and Definitions

Mock-ups or prototypes may be required for unusual or innovative approaches to presentation and interpretation. Examples include exhibits that incorporate new technology, mechanical devices, lighting effects, or other special effects or concepts that are unfamiliar to the project team. In these cases, mock-ups or prototypes may be required to test the idea and work out problems before making a final decision about their use in the exhibit. Mock-ups may also be used for testing the interpretive effectiveness of an idea during Formative Evaluation of the exhibition.

Mock-ups typically refer to working models that are fabricated simply, quickly, and at minimal cost in order to test a concept. Mock-ups are full-scale representations of portions of an exhibit for the purpose of review and testing of exhibit elements that are undeveloped and need further evaluation. Mock-ups are fabricated as specified in individual task orders. Mock-ups are for review only, and are not incorporated into the final exhibit.

Prototypes are more refined than mock-ups, and closer to the final product in material, fabrication, and operation. Prototypes are portions of an exhibit such as an artifact case or an interactive mechanism that has a particular need to be reviewed and tested prior to fabrication of more elements of the same design.

24.2 Planning and Design Phase

Mock-ups may be required during Design Development for unusual or innovative approaches to exhibit presentation. In these cases, the COR will identify when a mock-up shall be needed. Mock-ups are made from rudimentary or inexpensive materials, such as PVC, glue, and cardboard, to test the idea for effectiveness.

A. In each case, the mock-up or prototype is fabricated to demonstrate and test the functional characteristics required in the final production version.

B. If necessary, revise the design based upon review comments provided by the COR and information gained from fabrication and testing of the mock-up or prototype.

24.3 Fabrication Phase

A. Requirements for the purpose, number, and type of mock-ups and prototypes are specified in individual task orders.

B. Along with each mock-up or prototype submitted, provide the COR a report, with photo documentation, of the performance of the mock-up.

C. Unless otherwise specified in individual task orders, prototypes are corrected in accordance with the review and approval by the COR and incorporated into the final exhibit along with the other elements of the same design.

25. Planning & Design Support During Fabrication

25.1 Production Support Introduction

Unless otherwise specified, the National Park Service involves the planning and design contractor in the production process to maintain the design intent, provide continuity throughout the project, and resolve production issues. Production support includes Planning and Design follow-ons, to update existing or create additional content and/or exhibit elements; and Fabrication/Installation support to review the Exhibit Fabricator's work and assist in installation, document as-built content, and evaluate the completed project.

25.2 General Requirements

A. Coordinate with Project Team

The design team communicates with the other project team members to ensure that the completed project fulfills the conceptual and technical requirements as specified in Production Design.

B. Production Meetings

The design team attends meetings where advice and information from the planning and design team is required. Such meetings may include postaward conferences with fabrication contractors, meetings or conference calls to discuss production submittals from the Exhibit Fabricator and other contractors, and meetings or conference calls to discuss other fabrication issues related to the Production Design.

25.3 Specific Requirements for Planning and Design Follow-ons

A. Revise Exhibit Design Drawings

Revise drawings when portions of the approved design or content are found to be unusable for any reason. Redesign exhibit areas, exhibits, and or exhibit elements where necessary to accommodate changes to the project during production.

B. Revise Graphic Layouts

Revise graphic layouts when the approved design or content is found to be unusable for any reason. At a minimum:

1. Select substitutions for graphics and artwork that are found to be unacceptable, or when the original source material cannot be located or obtained, or when use rights cannot be obtained.

2. Revise layouts to incorporate substitution of graphics and artwork or minor corrections to text.

3. Revise layouts or positioning of graphics or artifacts when graphics, artifacts, or objects cannot be obtained, are the incorrect size on the original drawings, or are otherwise unusable.

C. Revise Production-Ready Graphic Files.

Revise files following the specifications in Section 15, Two-Dimensional Exhibit Graphics. In addition, perform the following work:

1. Adjust all colors for the final output process to be used, to ensure that they match those specified in the Approved Final Package.

2. Respond to inquiries from the COR and production team concerning layout file design, high-resolution scans, specifications and intentions.

D. Create Original Graphic Content

Where advantageous to the government and specified in individual task orders, the Planning and Design contractor fully develops graphic content for production. Examples of graphic content that may be specified under this contract as part of Production Support include the development of original illustrations, the development of original and adapted maps, and new photography for use in the exhibit.

E. Provide Creative Direction

Provide creative direction to the Exhibit Fabrication contractor and to other NPS contractors that are involved in the Exhibit Fabrication process, including illustrators, photographers, model makers, audiovisual and multimedia producers, audiovisual equipment technicians and systems engineers, curators, and lighting designers.

25.4 Specific Requirements for Fabrication / Installation Support

A. Review Shop Drawings or Fabrication Drawings

Review and comment on shop drawings that are submitted by the Exhibit Fabrication contractor. Ensure that the design intent is maintained, that measurements, materials, and finishes are correct, and that the details are reasonable.

B. Review Production Documents/Samples

Review and comment on samples, mockups, and prototypes submitted by the Exhibit Fabrication contractor, as specified in the individual task orders, to ensure they fulfill the conceptual and technical requirements of the project. These typically include, but are not limited to, catalog cuts for materials and equipment, color and material samples, production proofs of graphic layouts, prototypes of interactive elements, and specialty treatments that are specified in the design package or that are proposed by the Fabricator.

C. Inspect Fabrication Work

Inspect work-in-progress and completed exhibit elements at the Fabricator's shop, subcontractor's shops, and as specified in individual task orders.

D. Support Exhibit Installation

Attend the installation of the exhibits in part to inspect pre-installation site conditions, to provide technical guidance during installation of the exhibits, to provide art and set direction, and to light or to direct the lighting of the installed exhibits. Work may include a final walkthrough of the installed exhibits with the Exhibit Fabricator and COR and park staff to identify obvious design flaws, to identify undesirable content and design features, and to propose alternative design solutions.

E. Update Content Management Data

Revise all information to reflect the final, "as-built" content of the exhibit. Work includes incorporating revised or corrected text and text specifications, replaced images or revised image specifications, incorporating content elements that are added during the fabrication process and deleting content elements that are not used, and updating all other Content Management Database schedules.

F. Support Summative / Remedial Media Evaluation

Work will be specified in individual task orders and may include:

1. Participation in the evaluation process, such as attending evaluations and reviewing the final evaluation report.

2. Preparing and submitting alternative design solutions to remediate design weaknesses identified in the final evaluation report.

3. Revising, refining, and submitting the alternative design solutions into a single design element for each weakness, based on comments by the COR.

26. Maps

26.1 Introduction

Maps used in National Park Service exhibitions serve three general purposes: orientation, communicating a sense of place, and educating the public about park themes. To accomplish these goals, exhibit maps are designed so as to attract and engage park visitors.

26.2 Overview of Map Types

Types of exhibit maps include, but are not limited to, the following:

A. Orientation Maps

Traditional maps of a park or region that typically show administrative boundaries, roads, trails, rivers, and terrain represented with shaded relief. Orientation maps are usually planimetric (looking at the site from a point directly overhead), north oriented, and shall conform to NPS map standards. See: https://www.nps.gov/carto

B. Image Maps

Maps created from aerial photographs or satellite images. The images may depict the park planimetrically or obliquely as in a bird's-eye view.

C. Birds-Eye View Maps

These maps, sometimes called panoramas or 3D views, are digitally rendered views that show natural landscapes (with three-dimensional terrain) and/or cultural landscapes (with three-dimensional buildings) from an oblique angle. Some birds-eye view maps serve as geologic diagrams and natural science illustrations. The contractor may use 3D software of their choice for rendering these views, unless otherwise specified in the task order. The final views are usually presented as two-dimensional graphics within an exhibit.

D. Thematic Maps

Generalized base maps of parks and larger geographic regions overlaid with interpretive information. For example, a map of the Greater Yellowstone ecosystem depicting forest fires since 1980.

E. Physical Models

Created from a variety of solid materials, such as high-density foam or resin compounds, these models show a scaled representation of the landscape in three dimensions that derives from Digital Elevation Model (DEM) data. Textures, labels, and lines can be added to the surface of the routed model. Physical models may be embedded with fiber optic or LED lights to display supplemental information, such as troop movements on a battlefield. Depending on their purpose within an exhibit, physical models may or may not be touchable.

If the physical model is larger than can be reached by a person in a wheelchair using one hand, a dedicated tactile representation of the physical model is produced. Tactile maps are designed to be touchable for purposes of accessibility, often including braille, raised relief, and other tactile elements. See also Section 6, Accessibility.

F. Interactive Maps

Delivered dynamically on kiosks and other electronic devices, interactive maps provide graphically rich tools and layered information that engages the reader. Virtual navigation and information retrieval are key uses. Interactive maps will usually be a part of a larger multimedia project; see also Section 19, Electronic Programs.

G. Animated Maps

This product shows a sequence of events or information on a base map presented on a computer display or in a movie. Animated maps are often accompanied by narration and sound effects. Typical uses for animated maps would include showing continental drift on a world map, the advance and retreat of glaciers, and battlefield troop movements. Animated maps will usually be a part of a larger audiovisual project; see also Section 19, Electronic Programs.

H. Flythrough Animations

As if in a low-flying aircraft, flythrough animations take the viewer on a virtual journey over a landscape created from Digital Elevation Model (DEM) data, draped imagery, and 3D buildings in a scene that can contain a horizon and clouds. Producing flythrough animations requires 3D software. Typical uses would include movies shown in visitor centers or introductory screens on digital kiosks; see also Section 19, Electronic Programs.

26.3 General Map Requirements for Schematic Design

For consistency, the design and content of maps must be coordinated with other exhibit elements. Planning for maps begins in Schematic Design, and is refined throughout Design Development phases.

By Schematic 2, address the following:

A. Map Purpose and Type

Determine the purpose, type, and intended audience for the map, and how the map supports other information in the exhibit.

B. Subject Matter (Cartographic) Expertise Requirements

Identify the skill sets required to design each map, and the resources required by the map producer. Based on the requirements of the task order, the contractor provides the following:

1. In cases where the contractor is responsible for planning and design only, a reference package is prepared for review and approval by the COR. The reference package provides sufficient information for an appropriately skilled cartographer to produce the map.

2. In cases where the contractor is responsible for planning, designing and producing the map, a reference package is prepared for review and approval by the COR. In addition, the contractor proposes an appropriately skilled cartographer to produce the map. The cartographer must be approved in advance by the COR prior to production of the map.

C. Size and Scale

Identify the geographic area of the map and its final size in the exhibit. The map design takes into account the map projection, as this can greatly affect the how much space the map takes up.

D. Orientation

Determine the orientation of the map; in most cases north is at the top of the map. Exceptions to this rule may include a tabletop map oriented to the landscape visible through a window. Most maps include a north arrow, provided that the projection is appropriate.

E. Content

Identify general geographic scope and boundaries of the map.

26.4 General Map Requirements for Design Development

Design and produce exhibit maps that combine geospatial accuracy production and design sensitivity as follows:

A. Map Design

Exhibit maps have a clean, uncluttered, and exceptionally legible appearance. The average person is able to understand an exhibit map in only a matter of seconds.

The design of exhibit maps is compatible with the graphic style and other design elements within the exhibition.

Most traditional orientation maps within exhibits adhere to the NPS map standards established for wayside and publications maps. These map standards include the use of Frutiger and NPS Rawlinson fonts, and pictographs, scale bars, north arrows, road shields, and other NPS symbols. See: https://www.nps.gov/carto/app/#!/maps/symbols

B. Software

The contractor may use any software for the preliminary production of maps.

However, all vector map deliverables must be in Adobe Illustrator CC, or later software. Raster map deliverables must be delivered in Adobe Photoshop CC, or later. Map information is organized in annotated layers for easy editing.

C. Data Sources

Unless otherwise approved in advance by the COR, exhibit maps derive from accurate geospatial data sources. Typical exceptions to this requirement include simple maps that can be produced more efficiently by tracing existing maps in Adobe Illustrator; artistically rendered maps, such as a map in a faux-historical style; and diagrammatic maps.

Most new maps derive from geospatial data sources with georeferencing, including but not limited to the following data types: ESRI shapefile, .e00, and geodatabase; AutoCAD DXF; Digital Chart of the World (DCW); Digital Line Graph (DLG); Digital Elevation Model (DEM); Digital Orthophoto Quadrangles (DOQ); Digital Raster Graphics (DRG); Spatial Data Transfer Standard (SDTS); and the full range of data formats offered online by the U.S. Geological Survey and other U.S. government agencies. Identify other available sources as required. All data sources are in the public domain unless approved in advance by the COR. See: https://www.nps.gov/carto/app/#!/maps/data-sources-and-accuracy

D. Map Accuracy and Generalization

Regardless of whether a map derives from geospatial or analogue sources, it must be accurate. Putting information on maps by "eyeballing" it in is not permissible. Thematic data presented on maps derives from authoritative sources. Take care preparing base maps from geospatial data to generalize it appropriately depending on the map scale.

E. Map Projections

Standardized map projections are required. The UTM projection (the zone will vary according to location) and NAD83 datum are required for parks in Hawa2 and the contiguous 48 states. Maps of Alaskan parks use the Alaskan Albers Equal-Area projection, NAD83 datum. Alternatively, the Web Mercator projection, WGS84 datum is the new projection standard for brochure maps, which is also acceptable for constructing park maps in exhibits. Maps of the contiguous United States (U.S.) use the Albers Equal-Area projection, CONUS parameters. World maps avoid using cylindrical projections (i.e. Mercator, Miller, and Geographic) in favor of projections with less severe areal distortion, such as the Robinson, Natural Earth, or Winkel Tripel.

Final map deliverables contain metadata specifying the projection type, projection parameters, and datum. Maps produced in Adobe Illustrator with the Avenza MAPublisher GIS plugin automatically contain projection information.

F. Place Names

All place names on U.S. Government maps are spelled according to the U.S. Board on Geographic Names: https://geonames.usgs.gov/

G. Metric units of measurement

In addition to Standard English measurements, include metric equivalents for labeled units of measurement. All conversions preserve the degree of precision of the original English measurement. For example, a label that lists a trail as 0.25 mile shall not include a metric equivalent of 402.33 meters; this implies a degree of exactness that the original English did not have. The dynamic equivalent of 0.25 mile would be about 400 meters. Road and trail distances below one kilometer are stated in rounded off hundreds of meters. Distances greater than one kilometer are stated in rounded off tenths of kilometers.

H. NPS Starter Map Files

NPS Starter Maps are generic templates that, in most cases, require color adjustments and other minor design modifications in order to make them more attractive.

These layered Adobe Illustrator files contain all of the elements needed to design and produce NPS Wayside and Publication maps, which are directly applicable to exhibit maps. Starter Maps include graphical styles assigned to layers that automatically apply line weights and colors to roads, trails, and drainages. Map elements found in Map Starter Files include north arrows; bar scales; pictographs; road shields, callout boxes; and area color schemes keyed to natural environments, such as deserts and forests. See: https://www.nps.gov/carto/app/#!/maps/starter-maps

I. Content

Identify specific geographical features, labels, and all other information to be included on the map, organized according to hierarchy. Only those elements which are relevant to the purpose of the map are shown.

26.5 General Map Requirements for Production

A. For all map types other than Physical Models, provide submittals in accordance with Section 15, Two-Dimensional Exhibit Graphics.

B. For Physical Models, provide submittals in accordance with Section 16, Content Specialties.

27. Quality Standards and Safety for Fabrication

27.1 Introduction

Adequate personnel and facilities to fabricate all structures and exhibit elements, as detailed in each individual task order, are required. The contractor's role is to ensure the safety of staff and the quality of fabricated elements, and to facilitate reviews of work throughout fabrication.

27.2 Product Handling

Store lumber and millwork in a dry location. Do not expose wood to extreme changes in temperature or humidity. Protect panels, cases, and other structures from damage during handling, production, storage, shipping, and installation.

27.3 Safety

A. Accident Prevention

1. Provide all safeguards, devices and PPE (Personal Protective Equipment) necessary to protect the life and health of employees on the job site and the safety of the public.

2. Complete all work in compliance with all OSHA (Occupational Safety and Health Administration) standards.

B. Health and Safety

1. Comply with all applicable federal, state, and local laws governing safety, health, and sanitation including all applicable laws and regulations of OSHA.

2. Joint Duty Regarding Safety - Any party that observes a violation of the OSHA standards must notify the contractor in non-compliance, and must see that these unsafe conditions are corrected.

27.4 Environmental Practices

The NPS encourages contractors to follow "green" and sustainable environmental practices whenever possible while performing the work under this contract. Examples include:

A. Practicing waste reduction and recycling of waste

B. Using regionally local materials whenever possible, and using materials made from recycled or rapidly renewable resources

C. Maintaining good indoor environmental air quality through managing air contaminants, using less harmful low-VOC materials, and improving ventilation

D. Reducing the need for electricity through increased use of natural daylight for lighting

27.5 Quality Standards - Applicable Industry Standards

A. Woodworking - Refer to the Architectural Woodwork's Institute (AWI) Quality Standards for cabinetry and laminate work. All manufacturers' printed recommendations for materials, coatings, and adhesives are a part of these specifications. Copies of the publication, AWI Quality Standards, are available from:

Architectural Woodwork Institute
46179 Westlake Drive, Suite 120
Potomac Falls, Virginia 20165
571-323-3636
https://www.awinet.org

B. Cabinetry and Architectural Millwork Quality Standards - AWI Quality Standards are by reference made part of this Specification. Unless otherwise clearly detailed or specified in individual task orders, all cabinetry is fabricated to conform to AWI Quality Standards, Section 400, for Custom Grade material and workmanship.

C. Steel - Steel for fabrication of exhibit structures is as recommended by the American Society for Testing and Materials (ASTM) for the application specified.

American Society For Testing and Materials
100 Barr Harbor Drive
West Conshohocken, Pennsylvania 19428-2959
610-832-9585
www.astm.org

D. Welding - Standards for welding are as recommended by:

American Welding Society
550 NW LeJeune Road
Miami, Florida 33126
305-443-9353
800-443-9353
www.aws.org

E. Ornamental metal work - Railings and ornamental metalwork is in accordance with recommendations of the National Ornamental & Miscellaneous Metals Association (NOMMA).

National Ornamental & Miscellaneous Metals Association
805 South Glynn Street, Ste. 127 #311
Fayetteville, Georgia 30214
888-516-8585
www.nomma.org

F. Plastic Laminates - High pressure decorative laminates meet the minimum performance standards of the International Organization of Standardization (ISO) ISO-4586-2:2004 and the National Electrical Manufacturer's Association, LD3-2005. Laminate shall be Grade 10, General Purpose Grade, with the exception of curved, vertical surfaces, when Grade 20, Vertical Postforming Grade is acceptable.

G. Object Case Fabrication – All materials used in object cases, or which comes in contact with objects is safe for use with accessioned objects, and is allowed a period of off-gassing, in accordance with Section 18, Object Preservation and Protection.

27.6 Quality Standards - Cabinetry

A. Large casework and structures - All casework is fabricated, finished, and assembled in the contractor's shop. Structures too large for access into the exhibit area, or which would be damaged by shipment while assembled, are made in detachable sections with provisions for final assembly inside the exhibit space.

B. Fabrication Methods - All faceplates, panel ends, and doors are of mortise and tenon or doweled fabrication, glued under pressure, with nails only furnishing the pressure. All nails are properly set for filling. Filled areas are sanded smooth to receive laminate, paint, or other specified finish. Edges of panels and signs are filled, sanded smooth, and finished or covered with material matching the panel face. Edges are not left unfinished unless otherwise specified on the drawings.

C. Shelving - Unless otherwise specified in individual task orders, any shelving used as part of the interior of cabinets is 3/4" Birch plywood. At a minimum, audiovisual equipment shelving has 12" square center portions of perforated metal to allow ventilation around equipment. The contractor is responsible for ensuring that each shelf is fabricated of material of sufficient strength for the piece of equipment for which it is intended.

D. Architectural Millwork - Fabricate and assemble units complete in the shop, insofar as their dimensions will permit for transportation and proper handling. All woodwork is shop finished and delivered to the installation site with protective covering. Use solid stock for frames, jambs, heads, stops, and edges. Where veneer plywood is used, trim exposed edges with hardwood without face nailings. Accurately fit and align separate parts. Provide ample screw, glue-and-bolt blocks, draw-bolts, tongues, grooves, splines, dowels, tenons, mortises, and other means of fastening to render the work substantial, rigid, and permanently secured in the proper position. Provide material to permit scribing to walls, floors, and related work. Provide sufficient allowance for shrinkage occurring after installation. Provide mitered corners at doorframes with hairline joints. Fit and adjust doors to achieve smooth and noiseless operation. Exposed fasteners are unacceptable without prior approval from the COR. Countersink

face nails and face screws, fill with plastic wood or wood plugs, sand flush to surface, and finish without visible markings.

27.7 Quality Standards - Finishes

A. Substrates - Surfaces scheduled to receive etching, sandblasting, paint, laminate, photo mounts, and graphic prints, are made true and even with joints and nail holes filled, and are primed, sealed, and properly supported to prevent warping or bending.

B. Paint - All exposed surfaces to receive paint are finished smooth. Finished paint surface is without runs, sags, and other imperfections. Match colors specified on the drawings. Colors are consistent from surface-to-surface. Paint is applied under dry, dust-free conditions, in accordance with the manufacturer's specifications. Edges, crevices, corners, and joints are thoroughly cleaned. Painting is of uniform thickness. All exposed edges of painted panels are filled, sanded, and painted to match the panel face unless otherwise specified on the drawings.

C. Plastic Laminate - All laminate and substrate is stored together for at least 72 hours and assembled in an environment of approximately 70 degrees Fahrenheit and 50 percent relative humidity. Face of the substrates are sanded smooth and free of grease, wax, dust, or other contaminates which interfere with adhesion. Control of the glue line and its thickness and uniformity of spread is given constant attention. Spot bonding is never used. Cover all areas where contact is made with adhesive. In all cases, the adhesive manufacturer's instructions for use are followed. Avoid chipping of laminate by the saw blade. Finish smooth edges on curved cut by sawing the part oversize and finish it by routing, filing, or sanding. When cutting laminate, make certain to prevent hairline cracks or over-cutting at inside corners. Inside corners are rounded to prevent corner cracking.

D. Veneer - All veneer is ordered in a minimum 3:1 ratio per square foot of plywood substrate required. Face veneer is flat sliced with adjacent pieces randomly matched. The maximum width of sapwood per flitch does not exceed two-inches. Panel face assembly is running matched. Veneer millwork is not sequence matched. All edges are veneer banded on all four edges for final use in the exhibit.

E. Panel Edges and Backs, Concealed Areas - Finish in accordance with the following unless specified otherwise on the drawings.

1. Concealed Areas - Those areas completely enclosed by solid opaque framing and skin. No finish required.

2. Semi-Exposed Areas - Those areas only visible by opening doors or access panels. Finish with wood sealer.

3. Flat Panels, Framed - The back side of plywood or other framed material. A minimum of two coats flat lacquer primer for the surface.

4. Flat Panels, Unframed - The back side of plywood or other material without framing such as cabinet doors and applied panels. A minimum of three coats of paint, laminate backing sheet, or other finish equal in density and weight to that specified on the drawings for the exposed surface.

5. Edges - All exposed edges of panels, plaques, and graphic prints are fitted and sanded smooth. Edges are finished to match adjoining surfaces as specified on the drawings.

6. Panel Backs - Backs of panels are finished with spray-applied lacquer finish or laminate backing sheet in color specified on the drawings.

27.8 Quality Standards - Glass

A. Cut material shall to size as specified on the drawings, allowing for expansion and contraction. Surfaces are free of scratches, bubbles, stains, rough edges, or other imperfections.

B. Laminated Safety Glass - Laminated glass is used for all artifact case glazing. All exposed edges are eased and finely ground to be smooth, with broad surfaces free of imperfections.

C. Tempered Safety Glass - All exposed edges are polished, with broad surfaces free of visible tong marks or any other imperfections.

D. Anti-Reflective Glass - Anti-reflective glass, in thickness, glass color, and UV-filtering properties as specified on the drawings and in the individual task order. All glass to be used for artifact case glazing is laminated. All exposed edges are eased and finely ground to be smooth, with broad surfaces free of imperfections.

27.9 Quality Standards - Hardware

A. Rough - Nails, screws, bolts, nuts, washers, anchors, threaded inserts, flush clips, and similar items of proper size and number to secure materials in place. Any fasteners used in areas where moisture is a factor are galvanized or aluminum.

B. Finish - Hinges, key-hole fasteners, concealed hinges, cam locks, slides, push locks and keys, casters, levelers, handles, and knobs as specified on approved drawings and catalog cuts. All doors in exhibit structures which provide access to interior storage cabinetry and audiovisual equipment are fastened with concealed hinges and provided with locks. Locks that are installed as multiples are keyed alike.

C. Finish Hardware or Fasteners are applied and installed so they are fully functional. Screws are countersunk to flush level with surface, free of burrs, and at a 90-degree angle to the surface plane.

D. Security Hardware

1. Provide locks for all access doors to display objects, audiovisual equipment, and storage areas in accordance with approved drawings and catalog cuts.

2. Install locks so that the hardware is concealed yet easily accessible. Locks may be installed behind removable outer panels, on the unexposed underside of structures, or as otherwise specified on the drawings. Unless specified otherwise in the drawings, access doors to chambers not requiring locks (such as silica gel chambers) are hinged panels using the same hardware as panels used to conceal the locks.

3. Unless otherwise specified in the task order, all locks are keyed alike, with the exception of donation boxes. Donation box locks are keyed separately from all other exhibit locks.

4. For hardware requiring special tools, such as tamperproof screws and cam locks, provide a minimum of two of each tool required.

28. Shop Inspections and Installation

28.1 Introduction

Shop Inspections are reviews of fabrication work at partial stages of completion. All shop inspections take place at the contractor's facility, unless otherwise noted in the individual task order. The COR conducts reviews or inspections of work in progress at the contractor's facility in accordance with the contract schedule. The contractor's Project Manager coordinates the shop reviews with the COR to ensure that the work is at a productive stage of completion for review.

Installation takes place at the site indicated in individual task orders. The contractor provides adequate personnel to install the exhibits, including the Project Manager. The contractor's project manager ensures the safety of installation staff, park or site staff, and the fabricated elements. During installation, the worksite is treated as a construction zone and taped or roped off as needed. The Project Manager facilitates reviews and oversight of installation tasks by the COR throughout installation.

28.2 Shop Inspections – General Requirements

A. Preliminary Shop Inspection

Facilitate review of exhibit elements at the 40% completion milestone or as specified in individual Task Orders.

Unless otherwise specified, provide the following:

1. Primary exhibit structures without final finishes
2. Representative sample of exhibit casework
3. Full-size, unlaminated graphic proofs
4. 40% completion milestone for Content Specialties
5. Mock-ups and prototypes, per individual Task Order

B. Photo Documentation

When approved in advance by the COR, photo/video documentation of shop fabrication in progress may be substituted for the preliminary shop inspection. In this case, provide digital photographs and/or videos of work in progress to the COR via electronic mail or FTP sites. At a minimum, the photos document the following stages, or as specified in the individual task order:

1. Exhibit structures - prior to finish surface application
2. Exhibit structures - after finish application
3. Content Specialties – such as models, topographic maps, cast figures, furnishings, reproductions

C. Final Shop Inspection

1. Final set-up of completed exhibits for shop inspection

   Prior to shipping the exhibit elements to the site for installation, a thorough inspection of the completed and functioning exhibits is made by the COR at the contractor's facility. To the greatest extent possible, all exhibit units are configured in a dimensioned area similar to that into which they will be installed.

2. Review and demonstration of Content Specialties

   All units are fully operational at the time of final inspection. Exhibit units with built-in lighting, electrical, mechanical, and audiovisual equipment are connected to power sources. Demonstrate that each operation is fully functional in accordance with the design intent and applicable fabrication specifications.

3. Shop inspection punch list

   During the inspection, the contractor's Project Manager documents all review comments. At the completion of the inspection, the Project Manager assembles the review comments into a punch list.

4. Pre-installation Meeting

   The contractor's Project Manager and members of the contractor's installation team meet with the COR at the contractor's facility to discuss the project and review work at the time of the exhibit staging. The minimum agenda for the Pre-Installation Meeting is in accordance with Section 4, Travel, Meetings, and Presentations, 4.5, C.

28.3 Installation Equipment

Acquire on site or ship to site all required tools, materials, and equipment to accomplish the job, including cleaning and removal of trash.

28.4 Packing and Crating

A. Structures - Structures are blanket-wrapped with all attached exhibit elements protected.

B. Electronic Equipment - Electronic equipment is shipped in original shipping box from manufacturer with all original packing materials in place.

C. Graphics - During storage prior to the installation and during transportation to the installation site, use flat, smooth-surfaced materials between graphics which are mounted and protected with overlaminate film. Ensure that dust, dirt, sawdust, bubble wrap, styrofoam sheet or peanuts, and the rear surfaces of other graphic panels do not come in contact with the face of overlaminated

prints and leave impressions in the overlaminate surface. Mounted prints with patterns impressed into the overlaminate film are unacceptable. All screenprinted surfaces are protected with brown paper secured with masking tape until completion of final on-site setup.

D. Wood Crates - Fabricate or supply wood crates, using CDX plywood and pine framing in thickness required, based on size of crate. Fasten crates using galvanized nails and screws for crate top.

E. Packing Materials - Pack exhibit materials using "green" environmental methods as much as possible, such as recycled cardboard boxes, biodegradable "peanuts", recycled paper and cardboard cushioning products, and reusable heavy blankets. Reuse wooden boxes or crates for shipment of exhibits as much as possible. Recycle shipping containers and packing materials at the installation site if they are not retained for re-use.

28.5 Shipping

Pack and crate all materials which are shipped by their own or commercial carrier in such a manner that they arrive at the designated site undamaged. If exhibit elements are damaged in transit, the contractor bears the full responsibility for repair or replacement.

28.6 Site Preparation

A. Existing Work - Request authorization from the COR prior to cutting, drilling, altering, or removing material within the building. Work that is replaced must match existing work. Anything damaged or defaced within the building due to the contractor's error during installation must be restored to the original condition by the contractor. Restoration work is coordinated with the COR.

B. Demolition – When specified in the individual task order, remove and dispose of existing exhibit structures, furniture, lighting, and other elements from the exhibit area.

C. Site Protection - Provide adequate protection for parts of the building, its contents, and occupants wherever work under this contract is being performed. This includes dust protection where required and protective coverings for interior surfaces and furnishings adjacent to the work area. Provide cardboard, plastic, or heavy kraft paper for the floor of the exhibit and adjacent work areas; use masonite in adequate thicknesses to protect floors from indentations and other damage when heavy loads will be wheeled over, or temporarily stored on, the floor. Provide barriers and post "No Admittance" signs. TEnsure that artifacts are not left unattended and that they are stored in a secure location when the work site is unattended.

28.7 Safety

Provide all safeguards, devices, and PPE necessary to protect the life and health of employees on the job site and the safety of the public. All contract and subcontract

employees working on the job site are in compliance with all applicable federal, state, and local laws governing safety, health, and sanitation including all applicable laws and regulations of OSHA. In addition, the following requirements during on-site installation are included:

A. Personal Protective Equipment (PPE) - Use safe work practices while installing the exhibits on-site and use all appropriate PPE for the health and safety of the installation crew, including proper clothing, footwear, and hearing and eye protection. Refer to the most current OSHA standards as guidance to plan PPE for the installation. PPE includes, at a minimum:

1. Protective Eye Wear - For tasks including, but not limited to, sawing, drilling, nailing, grinding, machining, welding, and handling harsh chemicals. The eyewear must have side shields and be of the appropriate type for each kind of activity.

2. Respirators and Ventilation - For tasks including, but not limited to, application of spray coatings and paints, power sanding, or other tasks which generate hazards to the respiratory system, dust masks or respirators in accordance with OSHA 1926.103, Respiratory Protection, are required. Ensure that the fumes from all on-site applied finishes, coatings, adhesives, and other volatile substances are ventilated from the workspace in accordance with the manufacturer's recommendations. The contractor is responsible for providing portable fans as needed, to assist with ventilation.

3. Hard hats - When workers are exposed to potential overhead hazards in the work site, hard hats are required. Examples include workers on ladders or lifts installing equipment in the ceiling while other workers are working directly below and could be hit by falling tools or materials.

4. Other - Gloves, hard-toed shoes, safety vests, or hearing protection, as required in accordance with an assessment of the potential hazards on-site.

B. Work Zones - Provide a visual and physical barrier between the exhibit installation work zone and public foot traffic to keep out unauthorized intrusions, for safety of the public and for the protection of the work being performed.

1. Barriers - Safety cones, orange construction fencing, and caution tape, and panels or sawhorses identified with signs, are acceptable components of work zone barriers. Work zones include power tool stations located outside the facility as well as installation work areas inside the facility. Power cords, tools, hoses, and hardware are kept inside the work zones.

2. Signs - Provide signs on the work zone barrier, identifying the area as

a work area and closed to the public. If hard hats are in use in an area, identify it as a hard hat area, only.

3. Access - Provide clear, accessible passageways to areas of public access which pass through the work zone. Separate the public access from the work zone using barriers on both sides, identified by signs.

C. Electrical Safety

1. On-site electrical work in the contractor's scope of work is always performed by an electrician licensed in the state where the work will be performed. Examples of typical electrical work which may be included in an exhibit contract include installation of junction boxes, switches, dimmer systems, and lighting systems, or modifications to existing electrical work.

2. During the on-site installation of electrical wiring, switches, and other electrical or electronic devices, and for operation of electrical equipment in general, follow OSHA and industry standards for safety, including the NEC, NFPA 70E National Electrical Code, and the National Electrical Safety Code (NESC).

3. Never perform electrical work on energized electrical circuits at any time. Prior to start of any on-site electrical work, meet with the park electrician or other representative to coordinate the work. The park representative will identify circuits which will be shut off and assist with verifying when it is safe to begin work.

28.8 Installation

Install exhibits in accordance with the design intent, the approved fabrication shop drawings, and in consultation with the COR. In the event that the COR reports problems during or after shipment, delivery, and/or installation, it is the contractor's responsibility to:

A. Determine the nature of the reported problem, damage, or production error and provide a proposal for resolution to the COR for review and approval.

B. Ensure that approved corrections or repairs are made in a satisfactory manner within the time scheduled by the COR.

28.9 Final Lighting of Installed Exhibits

Illuminate the installed exhibits and artifacts, as specified on the Lighting Plan and in accordance with Section 23, Exhibit Lighting. Work includes:

A. Aim and adjust all exhibit lighting, including exhibit lighting equipment and accessories already in place or installed by others.

B. Adjust lamp wattages and beam spread, as well as dimmers when available.

C. Install lenses and accessories as required to meet the specified effects.

D. Document final placement and aiming of lighting fixtures onsite after installation of exhibits and case contents, including measurement and adjustment of exhibit lighting levels. Include this detailed information in the Maintenance Manual, as specified in Section 29, Operational Training and References.

28.10 Audiovisual Systems

Install audiovisual systems in accordance with Section 19, Electronic Programs, and Section 20, Electronic Equipment.

28.11 Cleanup and Recycling

Maintain all areas in a clean condition on a daily basis and provide means of preventing dirt or waste material from being tracked into adjacent areas of the building. Practice waste reduction and recycling of waste whenever possible while performing the on-site work under this contract.

A. Provide bags and containers for storage of trash and recyclables. The contractor is responsible for removing waste materials generated during the installation from the park. Do not dispose of waste in dumpsters or containers that belong to the government or to other contractors working on-site.

B. Drilling and cutting is completed prior to the installation of artifacts, models, original art, and audiovisual equipment to avoid excessive dust and debris that may damage the sensitive items. On-site work is phased so that drilling, cutting, rough carpentry, sanding, and use of finishes or adhesives is accomplished, followed by a thorough cleanup and allowance for dust to settle and fumes to dissipate. Protective paper or plastic floor coverings that are torn or thoroughly soiled are replaced with clean material. Then, installation of the sensitive materials and equipment can proceed.

C. Thoroughly clean exhibit surfaces to remove handprints, dust, and miscellaneous markings generated during the installation.

D. Handle all acrylic, glass, and graphic panels with clean gloves to minimize handprints of natural skin oils. Thoroughly clean panels until all dust, prints, and smears are removed from the face and rear surfaces. Acceptable materials for cleaning acrylic are specified in Section 29, Operational Training and References.

E. Provide labor, materials, equipment, and supplies for final cleaning of the exhibit site, including vacuuming the entire exhibit space. For carpeted spaces, vacuuming equipment is appropriate for professional cleaning of carpeting; shop vacuums are not acceptable. The use of equipment belonging to the government is not acceptable.

28.12 Walkthrough Inspection

A. Upon completion of the on-site work, conduct a final walk-through inspection of the exhibits with the COR and park staff. Notify the COR ahead of time when the walk-through can be scheduled and assemble installation team members with the appropriate expertise to demonstrate the equipment and answer questions. Walk-through inspections occur Monday through Friday between 9:00 am and 4:00 pm, excluding federal holidays, or as specified in individual task orders.

B. Installation Punch List - The walkthrough inspection results in identifying punch-list items (items that need to be corrected by the contractor). The contractor's Project Manager records the punch list during the walkthrough inspection. The contractor's Project Manager is responsible for documenting, organizing, verifying, and clarifying the punch list items with the COR and the park to create the final Punch List document. The contractor provides a completion date to the COR for each of the individual items on the list.

C. Demonstrate operation of all electrical, mechanical elements, and audiovisual components in the exhibit. The exhibit is fully operational at the time of the walk-through inspection.

D. Demonstrate access into exhibit structures for maintenance purposes, including artifact cases, silica gel chambers, lighting chambers, and all other electrical and electronic equipment, including audiovisual equipment.

E. Provide the Maintenance Manuals, keys, tools, touch-up materials, cleaning materials, and operational training in accordance with the individual task order and with Section 29, Operational Training and References.

29. Operational Training and References

29.1 Introduction

Operational Training and Maintenance Manual references are required for all exhibits to provide the park with a comprehensive reference for the use and care of their exhibits.

29.2 General Requirements

A. Provide the following documents, at a minimum, to the COR and the park at the completion of the exhibit installation, or as specified in individual task orders:

1. Maintenance Manual

2. As-Built Lighting Plan

3. Audiovisual Operations Manual

B. Unless specified otherwise in the individual task order, prepare two copies of each set of manuals for the park and one set for the COR.

C. For each copy of the manuals, provide each of the documents in digital form. Material sample pages and catalog cuts are included as PDF scans.

29.3 Maintenance Manual

A. Assembly of Maintenance Manual

1. Use 8-1/2" x 11" sheets, punched and inserted into three-ring binders. Insert a full-length sheet of card stock into the sleeve along the spine of the binder labeled "Maintenance Manual," the name of the project, site, and month/year of installation. Organize the manual in sections in accordance with Section 29.3.B, and separate each section with labeled and tabbed dividers. Organize content of the Maintenance Manual to facilitate easy use as a reference document. Include page numbers or headers, and organize information in a logical manner.

2. When audiovisual equipment is installed as part of the exhibit, the Maintenance Manual consists of a second volume, the AV Maintenance Manual. This second volume is dedicated to the operation and maintenance of the audiovisual equipment.

B. Content of Maintenance Manual

1. Title Page - Provide a title page with the name of the exhibit, the site, and installation date.

2. Table of Contents - Provide a list of contents.

3. Contract Information - Provide name, address, and telephone number for all contractors and suppliers who produced work for the exhibit, identifying the portion of the work which they provided.

4. Cleaning Instructions - Provide instructions for cleaning all exhibit structures, finishes, graphic panels, tactile models, and screen printed material. Include brand names of recommended cleaning materials. Provide the name, address, telephone number, and website (if applicable) of the manufacturers or distributors of the cleaning products. Listed cleaning products correspond with supplies included in the Maintenance Kit furnished by the contractor. "Not to be Used" materials and techniques are also identified.

5. Repair Instructions - Describe specific techniques for repairing damage to exhibit surface materials such as: wood and painted finishes, screen printed areas, plastic laminates, faux finishes, fabric, metal, acrylic, polycarbonate, and glass.

6. Object Care and Handling - Provide information or direction for care, maintenance, and cleaning of the object mounts, including how to detach the object from the mount. Provide copies of all final object mount drawings.

7. Product List and Catalog Cuts - List brand names of off-the-shelf products purchased for use in the exhibit and the name, address, telephone number, and website address (if applicable). Provide legible scanned and printed copies of catalog cuts for all products listed. Include at least one original copy of the manufacturer's information packed with contractor-purchased off-the-shelf equipment, inserted into 8-1/2" x 11" clear plastic sleeves, punched for three-ring binders.

8. Warranties - Provide purchase receipts and manufacturer's warranties for all off-the-shelf equipment purchased by the contractor.

9. Access Instructions - Provide visuals clearly and sufficiently illustrating access to artifacts, desiccant, lighting equipment, mechanical devices, and audiovisual equipment within the exhibits. The illustrations include the exhibit number(s), step-by-step instructions, and any other information relevant to opening or dismantling the structures. The illustrations are accomplished in one or both of the following ways:

    a. Isometric, exploded view drawings, or digital 3-D renderings, with captions providing step-by-instructions; or

    b. Photographs combined with text, showing a person following the step-by-step instructions. Include close-up views of specialized locks or hardware, identified by captions.

10. Electrical and Mechanical Instructions - Provide maintenance and operational instructions for all electrical and mechanical equipment other than lighting and audiovisual equipment, or as specified in the individual task order.

11. Catalog Cuts and Purchase Receipts - Catalog cuts, manufacturer's printed instructions, and Purchase Receipts with warranty information for all power strips, clocks, sensors, timers, ventilation fans, thermostats, motors, switches, dimmer controls, or other electrical or mechanical equipment.

12. Color and Finish Samples

    a. Provide actual samples of all materials used in the exhibit such as: woods, veneers, masonry, metal trim, laminates, fabrics, carpets, paints, and inks. Material shall be mounted on 8-1/2" x 11" white illustration board, clearly labeled with the color name and number, the manufacturer's brand name, and other pertinent product identification, keyed to the drawings for location.

    b. Provide one 8-1/2" x 11" mounted sample for each type of digital output print and for each screen printing ink color and substrate combination used in the exhibit.

    c. Provide samples of specialized techniques such as sandblasted or etched graphics or finishes.

13. As-Built Exhibit Plan – Update the government-furnished content management schedule to reflect all changes that occur during fabrication, and provide a hard copy and electronic version of the resulting As-Built Schedules and Facsimiles. All revisions and updated information are clearly noted.

14. As-Built Exhibit Drawings - Include one copy of As-Built Exhibit Drawings printed onto 11" x 17" sheets in accordance with Section 13, Exhibit Drawings.

29.4 As-Built Lighting Plan

A. Provide a separate notebook that contains the As-Built Lighting Plan. Upon completion of installation of the exhibit lighting, prepare the As-Built Lighting Plan to reflect the actual installed lighting.

B. Contents of the As-Built Lighting Plan:

1. As-Built Drawings of the exhibit lighting plan which shows final fixture placement, orientation, and the lamp specifications for each fixture.

2. Fixture Schedule - Identification of the manufacturer and model number of all fixtures, including any specialized equipment and accessories, such as lenses, gobos, gels, diffusers, and louvers.

3. Lamp Schedule -Specific instructions for re-lamping, including type, wattage, beam spread, color temperature, etc.

4. Wiring Diagrams - Include as-built wiring diagrams for all lighting and equipment installed by the contractor.

5. Catalog Cuts - Catalog cuts and manufacturer's printed instructions for all ceiling lighting fixtures, lighting tracks, lighting track fixtures, lamps, connectors, transformers, adapters, power strips, clocks, sensors, timers, ventilation fans, thermostats, motors, switches, pushbuttons, fibers, lenses, illuminators, dimmer controls, or other electrical, mechanical, or lighting equipment.

29.5 Audiovisual Operations Manual

Provide a separate notebook that contains the Audiovisual Operations Manual. This Manual describes the operation and simple troubleshooting of the audiovisual systems specified in individual task orders. Each copy includes the owner's operating/service manuals for each item of equipment used in the specified system.

Contents of the Audiovisual Operations Manual:

A. Title Page - Provide a title page with the name of the exhibit, the site, and installation date

B. Table of Contents - Provide a list of contents

C. Systems Block diagram(s), 11"x17"

D. Systems Overview description(s)

E. Daily System Startup and Shutdown Procedures

F. Access Instructions - Provide visuals clearly and sufficiently illustrating access to equipment. The illustrations include the exhibit number(s), step-by-step instructions, and any other information relevant to accessing the equipment for troubleshooting or maintenance.

G. System Adjustments

1. Audio

2. Video

a. Troubleshooting Guide:

i. Video

ii. Audio

iii. Controls

b. Maintenance Procedures:

i. Describe routine procedures required with time intervals. This includes audiovisual programs, lighting equipment, computer interactive displays, mechanical interactive displays, and other electrical, electronic or mechanical equipment provided and/or installed by the contractor.

ii. For each audiovisual display, provide a list of parts needed for routine maintenance with make, model, time frequency needed, quantity per year, and price at the time of purchase.

iii. Provide a written proposal at installation for an optional Service Contract for audiovisual equipment or audiovisual systems as specified in individual task orders. Include proposed pricing for service at scheduled intervals as well as for fixed labor rates for individual service calls. Provide the contractor's contact information including name, address, telephone numbers, and names of the project manager, sales representative, and service manager.

H. As-built wiring diagrams for each audiovisual system. Provide hard copies as well as the electronic files in PDF format.

I. Programs - A hard copy and electronic version of the final control program(s) shall be included on CD-ROM, DVD-ROM, or hard drive in the manual.

J. Manuals - The manufacturers installation, maintenance, and user instruction manuals for all components of the system. When electronic versions are available, they shall be included on CD-ROM, DVD-ROM, or hard drive in the manual.

K. Warranties - Provide manufacturer's warranties for all off-the-shelf equipment purchased by the contractor. Include purchase receipts and documentation for date of purchase of the equipment.

29.6 As-Built Drawings

The purpose and general requirement of the As-Built Drawings is to provide detailed documentation of the actual, installed, completed exhibit conditions.

A. The drawings document and incorporate changes in content, materials, or fabrication details which were made in the exhibits prior to final completion, but which are not reflected in the most current drawings.

B. The As-Built Drawings are included in the Maintenance Manual and incorporate all final exhibit design and detail drawings. The drawings are in accordance with Section 13, Exhibit Drawings.

C. All original drawings produced under this contract are the property of the government.

29.7 Operational Training

A. After inspection and acceptance of the installed exhibits, conduct operational training session(s) for the COR and park staff. The number of staff to be included and the quantity of sessions required will be specified in the individual task order. The training session includes, but is not limited to:

1. Day-to-day cleaning of the exhibits - In addition, provide and identify the components of the Maintenance Kit, assembled in accordance with this Section, 29.9, Maintenance Kit

2. Minor repair and touch-up procedures

3. Access into exhibit structures, including operating locks and tamperproof hardware, opening hinged doors, removing and replacing cover panels, removing and inserting silica gel desiccant, changing lamps in lighting fixtures, and removing and replacing mounted artifacts, models, and life-size figures

4. Start-up and shutdown procedures for audiovisual equipment, lighting, and other electrical equipment, including troubleshooting in the event of a power outage, lightening surge, or other potential hazard

B. Operational Training Video - In addition, provide to the COR two copies of a prerecorded video that demonstrates all key topics covered in the Operational Training Session, for reference by park staff. Submit the training videos on CD, DVD, or hard drive, to the COR at or prior to the Operational Training Session. Divide the video into four chapters that cover the work specified above. Submit a rough cut of the Operational Training Video for use during the Operational Training Session, and the final, revised version for the Closeout Package.

29.8 Specialized Keys and Tools

Specialized keys and tools are all keys to exhibit locks and specialized tools, including screwdrivers for tamperproof screws, wrenches for roto locks, and allen (hex) wrenches, or any other specialized tool which are used for case access, mobility, or security. Provide three copies of each type of key and tool. Each key and tool is identified with the exhibit project name and number.

29.9 Maintenance Kit

A. Container - A heavy-duty plastic storage container, with a lid.

B. Touch-up Materials - Bottles or cans of each paint, stain, wax, and other finishes used on the exhibit, with tightly fitted lids or caps, and clear identification of the contents on firmly attached labels. For each type of finish, provide appropriate solvents and brushes or other tools as required to apply the finish. Provide a minimum of one full quart of each paint and stain, one two-ounce bottle of each screen ink, and one full quart of each type of protective finish, such as polyurethane, except as otherwise specified on individual task orders.

C. Cleaning Materials - Cleaning materials for each type of surface in the exhibit, including glass, acrylic, plastic laminate, metal, and wood. Provide one full bottle of each type of cleaner. Provide appropriate applicators for use with each type of cleaning product in sufficient quantities to clean the entire exhibit for a minimum of 60 days. All cleaning materials are listed in the Maintenance Manual, with manufacturer's address, telephone number, and website address (if applicable). If the exhibit includes acrylic glazing or surfaces, provide the following materials for cleaning acrylic:

1. Brillianize, as manufactured by:

   The Brillianize Company
   Kleenmaster Products
   4966 Industrial Highway
   Benicia, California 94510
   800-445-9344
   707-751-0656
   www.brillianize.com

2. WypAll Plus All-Purpose Wipers, as manufactured by:

   Kimberly-Clark Corporation
   World Headquarters
   351 Phelps Drive
   Irving, Texas 75038
   972-281-1200
   https://www.kcprofessional.com/brands/wypall

29.10 Toolbox

At a minimum, provide a toolbox that contains the following:

A. Container – Provide one plastic or metal toolbox to store in the exhibit space, labeled with the park and visitor center name.

B. Three sets of specialized tools required for the exhibits in the individual task order, per 29.8 of this section.

C. Two suction cups in a case, of a type required for removing graphics and/or use on a glass or acrylic vitrine or object display case.

D. Two straight screwdrivers: one large and one small.

E. Two Phillips screwdrivers: one large and one small.

F. Two pairs of heavy-duty work gloves.

29.11 Photography of Completed Exhibits

Document the completed, operational exhibit with digital photographs that clearly show the overall exhibit, with additional photos of each of the exhibit areas and close-up photos that show the details within each exhibit area. The purpose of the photographs is to document and showcase exhibits for NPS as well as contractor portfolios; therefore, the quality of the photos must be within a range of contrast that clearly shows the details of the exhibit, and is in accordance with Section 30, Closeout, 30.5.B.7.

30. Closeout

30.1 Introduction

All NPS exhibit projects are closed out at the completion of work. Closeout includes the finalizing of documents, the return of government-furnished materials, and the preparation and organization of exhibit materials and documentation.

30.2 General Requirements

At the conclusion of work, return all government furnished property and all other outstanding materials, as specified in individual task orders, to the COR. All material generated by the contractor in the process of completing a task order is the property of the government.

30.3 Planning and Design Phase

Following completion of Production Design 1, revise and update all Planning and Design materials in accordance with Section 3, Exhibit Planning, Design, and Fabrication Process, and any direction from the COR. Prepare and organize all exhibit material for submittal to the COR and closeout of the project. See Section 3.5.B, Production Design 2.

30.4 Production Phase

Prepare and organize all exhibit production material for submittal to the COR and closeout of the project.

Assemble, organize, and submit a Closeout Package consisting of all government-furnished references and graphic sources, along with all materials generated during the production process including drawings, digital files, samples, one copy of the final maintenance manual, and photographs of the installed exhibits.

Provide the Production Closeout Package to the COR on a hard drive, or a series of CD-ROM or DVD-ROMs, after the exhibits are complete and installed. The Closeout Package includes the following:

A. Table of Contents:

1. Digital media, photo negatives, transparencies, original artwork, and other image source and reference materials
2. Samples and Government-Furnished Materials
3. Maintenance Manuals
4. As-Built Exhibit Drawings
5. Audiovisual Operations Manual
6. As-Built Lighting Plan

7. Photographs of the Completed, Installed Exhibits

8. Component Inventory Form

B. Closeout Package

1. Digital Media

   Assemble and organize as follows:

   a. As-Built Exhibit Plan Database - in accordance with Section 11, Content Management.

   b. As-Built Graphic Layouts - in accordance with Section 15, Two-Dimensional Exhibit Graphics.

   c. High-resolution Scans of Art and Photos - in accordance with Section 15, Two-Dimensional Exhibit Graphics.

   d. Digital Photos of the Completed, Operational Exhibit – in accordance with Section 29, Operational Training and References and below

2. Photo Negatives and Image Sources

   Assemble and organize in accordance with Section 17, Use Rights and Licenses.

3. Artwork

   Place government-furnished and contractor-produced artwork, sketches, and layouts in acid-free folders or wrapped in acid-free paper. Identify all artwork by project name and graphic number.

4. Government-Furnished References

   Return all government-furnished reference materials, drawings, plans, and samples.

5. Samples

   All samples, models, and mock-ups required as submittals to the COR for review are the property of the government, including samples returned to the contractor for reference or stored in the contractor's shop. The COR will inform the contractor which samples are no longer of use and can be discarded and which may be included in the closeout package.

6. Maintenance Manuals

   Exhibit Maintenance Manual and Audiovisual Maintenance Manual, in accordance with Section 29, Operational Training and References.

7. Photographs of the Completed, Installed Exhibits

   High-quality photography of the exhibits is used as documentation and portfolio content at the completion of the exhibit. P

   Photograph the installed exhibits and provide the digital images on a hard drive, or as specified in the individual task order. Specific requirements include:

   a. Provide at least 20 images, with a mixture of close-up and wide-view shots of the exhibits.

   b. All images are sharp-focused and high-resolution, with even lighting, minimal "hot spots" and dark shadows, and accurate color rendering.

   c. The exhibits are thoroughly cleaned and the viewpoints are prepared for the shots to eliminate construction dirt, tools, and equipment visible in the background of the image.

8. Component Inventory Form for FMSS

   The units of the National Park Service are required to manage their interpretive media assets through a centralized database. P

   repare and submit the required data for the media project completed under the contract, which the park will use to enter into the database.

   Submit a Component Inventory Schedule spreadsheet using the form provided as Attachment 11. A Component Inventory Sample is provided for reference, as Attachment 12.

   a. The general categories of inventory are as follows:

      i. Wayside - Wayside Panel - An outdoor exhibit graphic element fabricated to NPS Wayside specifications.

      ii. Wayside - Wayside Base - Outdoor support hardware fabricated to NPS Wayside specifications. Also, outdoor ancillaries such as audio stations, brochure holders, and coin boxes.

      iii. Exhibit - Exhibit Structure - Support features built or purchased specifically for the exhibition. These elements provide structural support and or operational support for the interpretive elements. These include platforms, walls, rail systems, soffit/ceiling/overhead support, bases, information desks, and benches/seating.

      iv. 2-Dimensional Exhibit Graphic - An exhibit element whose

primary purpose is to display a 2-dimensional graphic image. This includes the image on its substrate and any backing material to which it is permanently attached.

v. Exhibit Case - An exhibit element whose primary purpose is to hold and display objects that require protection from the surrounding exhibit environment. Includes Exhibit Case Base, Vitrine, Internal Lighting System, and Ancillary Lighting Equipment.

vi. Exhibit Lighting System - System components used for general exhibit lighting not integrated into other exhibit elements.

vii. Custom 3-Dimensional Exhibit Element - 3-Dimensional objects and assemblies within the exhibition that are informational, interpretive or artistic in nature and have been purchased or custom-fabricated by artists, sculptors, or technical specialists.

viii. Exhibit Reproduction Historic Furnishing - Reproduction of an object from a specific historical era, depicted in an historic furnishing exhibit. This also includes historic room treatments such as floor coverings, window treatments, and wall papers.

ix. Exhibit Audiovisual System - A combination of electrical, electronic and ancillary equipment that supports one or more audio, video, slide, film, and/or multimedia presentations within an interpretive media asset. Includes playback equipment, displays, control systems, audio equipment, projection screens, programmed lighting systems, and other ancillary equipment.

x. ID and Wayfinding Signage - Non-interpretive exterior directional and information signs and hardware.

b. Required cost and technical data:

The cost and technical data required for each of the itemized components in the exhibition include the following minimum information. Refer to Attachment 11, the template of the Component Inventory spreadsheet, which illustrates how this information is organized and other specific itemized data that is required depending on the type of media component.

i. Tracking number

ii. Short description

iii. Acquisition cost

iv. Quantity

v. Installation date

vi. Estimated design life in years

vii. Exhibit number

viii. Dimensions

ix. GPS data for installed location

x. Specific type, for that element (structure, graphic, 3-D element, audiovisual component)

xi. Accessibility compliance (in consultation with COR)

xii. Exposure to outside environment

c. References:

Prior to preparation of the Component Inventory, contact the COR with any question regarding preparation of the inventory.

31. Audio Description

31.1 Introduction

Exhibits planned, designed, and fabricated for the National Park Service comply with the latest published version of Attachment 5, Programmatic Accessibility Guidelines for National Park Service Interpretive Media, including audio description of the exhibit.

Audio description describes visual content important to understanding the content and context of the exhibit and its components. Audio description may be used by people who are blind or have low vision, as well as by visitors who have print-related disabilities, such as dyslexia, or visitors with auditory learning styles.

In addition to describing exhibit content, audio description tours include basic navigational information throughout an exhibit, its components, and within the larger area or facility. Audio description is not the same as an interpretive audio tour of the exhibit, but audio description may be part of a larger audio interpretive tour if it uses a separate track or independent module.

31.2 General Requirements

All content created for the development, review, and delivery of audio description complies with Attachment 5, Programmatic Accessibility Guidelines for National Park Service Interpretive Media, and is accessible to all people following the latest regulations and standards for Sections 504 and 508 of the 1973 Rehabilitation Act, as amended. This includes all exhibits.

Unless otherwise stated in the individual Task Order, include audio description in the planning, design, and fabrication for all National Park Service exhibits.

Audio description includes all exhibit elements. Exhibit elements include but are not limited to text, graphics, tactiles, interactives, scenic elements, audio, video, and navigational instruction.

A. Content

The audio description content meets the following requirements:

1. Follow the most current version of the Audio Description Core Concepts at https://www.nps.gov/subjects/hfc/accessibility.htm

2. Be segmented into sections no longer than three minutes or 450 words, unless approved in advance by the COR. Descriptions that require longer lengths shall be separated into shorter sub-segments.

3. The script includes a Table of Contents (ToC) that includes the exhibit title of each segment and any individual sections, congruent with the Scenes and Content Groups specified in the exhibit design. Multiple sub-menus are acceptable. Additional sub menus contain no more than six segments, unless approved in advance by the COR. The script includes audio signals (tones) at end to signal end of description segment. The script also

includes instruction geared to a general audience on how to use the handheld delivery device.

4. Provide basic navigational information within the exhibit space, including dimensions, locations, and general layout of the exhibits, restrooms, theater, and any barriers or hazards.

5. Describe the overall exhibit layout; artwork, illustrations, photos and other images; artifacts, models, and other display objects; and read the text. Explain where the text is located on the panel, and include titles and short descriptions of their contents.

   For captioned images, describe both images and captions.

6. Provide instructions that allow users to understand tactile models, maps, or interactive exhibits.

7. All video programs used in the exhibit have synchronous audio description. Audio description for video programs is triggered and transmitted via a live feed onto the user's device, unless otherwise approved by the COR.

8. For Electronic Programs, provide a basic overview of the program to include instructions for using the program via the touchscreen, push buttons, and the required redundant tactile equipment. Description includes the overall visual style, creative concepts, interpretive messages, and functionality.

   Synchronous description of Digital Interactive Programs is provided within the program and delivered to the user via technology to be approved by the COR.

B. Delivery Method

Audio Description for exhibits may be delivered through a variety of technical means.

1. Capabilities

   The audio description system provides the user with the following capabilities:

   a. Independent access to the description. This is achieved through systems capable of automatically triggering the description when the user enters a particular zone of the exhibit, unless otherwise specified in individual task order.

   b. Drill down options for content that allows the user to select level of detail instead of a single linear tour, or lengthy segments.

c. Ease of use. Tours are designed, organized, and produced to minimize the hardware complexity. Button and navigation functionality is consistent; instructions are clear; and, returning to operational instructions are simple.

d. History of use. The proposed hardware and software has a demonstrated history of being developed for and used by the community of users. If it does not, the contractor must demonstrate how the proposed hardware and development software was developed and/or modified, and tested with the user group.

2. Delivery of Content

Unless specified in the individual task order, propose and provide a delivery system for automatic playback of descriptions that uses one of the following:

a. IR (Infrared) or RF (radio frequency) triggers, RF transmitters for live audio feeds, and a user interface that utilizes tactile buttons for program navigation;

b. Bluetooth triggers, Wi-Fi for live audio feeds, and a user interface that utilizes a touch screen for program navigation.

The proposed delivery system provides, integrates, and delivers audio description and assistive listening for all exhibit AV elements and theater programs.

3. Delivery Systems

Equipment must meet the following requirements depending on which system is selected and approved by the COR during Design Development.

Unless specified in the individual task order, provide, integrate, and deliver automatic triggers and equipment necessary to ensure accessibility compliance of exhibits and existing theater or viewing area.

a. Tactile Button Delivery System that provides the following:

i. A minimum of five receivers with multi-charger. If more receivers or chargers are required, the quantity will be designated in the individual task order.

ii. Receivers vibrate when a trigger emitter is detected.

iii. One RF transmitter for each described video. For videos with sound, one additional RF transmitter is required to provide assistive listening. Existing park movie venues are included.

iv. One trigger emitter for each designated activation zone.

v. Programming software and hardware required to program the receivers.

vi. One single-sided wired headphone, one lanyard, and one audio splitter for each receiver, plus two spare of each.

vii. One personal induction loop for every four receivers, a minimum of two required.

b. Mobile Application-based Delivery System:

i. Use the official NPS app framework, unless otherwise approved by the COR.

ii. A minimum of three receivers with a charger for each. If more receivers or chargers are required, quantity will be designated in the individual task order.

iii. Receivers vibrate when a trigger beacon is detected.

iv. Wi-Fi transmission system with a single audio channel for each described video. For videos with sound, an additional channel is required to provide AD synch timing. Existing park movie venues are included.

v. One trigger beacon for each exhibit zone.

vi. Programming software and hardware required to program the receivers.

vii. One single-sided wired headphone, and one audio splitter for each receiver, plus two spare of each. If receiver does not have analog headphone jack, adapters for each receiver are provided.

viii. One hard case and lanyard for each receiver, plus two spare of each.

ix. One tempered glass screen cover for each receiver.

x. Test and verify all accessibility features of the receivers during installation.

31.3 Specific Requirements for Schematic Design

As part of Schematic Design 1, identify an approach to audio description.

As part of Schematic Design 2, provide a preliminary Audio Description Production Plan, to include:

A. A narrative description of the work to be completed, a schedule, and logistics

B. An updated narrative approach to the audio description

As part of the SD2 Class B cost estimate (see Section 8.4, Production Cost Estimates), include itemized costs for script development, production, and proposed delivery system. Unless otherwise approved by the COR, budget for five personal audio description delivery devices with charger and accessories.

31.4 Specific Requirements for Design Development

A. As part of Design Development 1, provide an Audio Description Production Plan, to include:

1. Updated narrative description of work, schedule, and logistics, according to review comments from the COR. The narrative includes a description of how the audio description triggers and content are congruent with the Scenes and Content Groups.

2. Recommendations for audio description trigger types and locations dependent on the approved delivery system to be used, for approval by the COR.

3. A first draft of the proposed main menu selections of the Table of Contents as described in Section 31.2, above.

As part of the DD1 Class B cost estimate (see Section 8.4, Production Cost Estimates), include any updated, itemized costs for script development, production, and proposed delivery system.

B. As part of Design Development 3, provide a revised Audio Description Production Plan, to include:

1. Updated trigger types and locations according to review comments from the COR

2. Updated Table of Contents (ToC) to include audio description segment titles and submenus congruent with Scenes, Content Groups, and individual exhibit elements. Each submenu should have no more than six segments.

As part of the DD3 revised Class B cost estimate (see Section 8.4, Production Cost Estimates), include updated audio description specifications.

31.5 Specific Requirements for Production Design

As part of Production Design 1, provide an updated Audio Description Production Plan, to include:

A. A diagram of the exhibits indicating required power sources, and identifying the types and locations of audio description beacon or emitter triggering hardware

B. Table of Contents with audio description segment titles and submenus for final approval by the COR

As part of Production Design 2 deliverable, provide any updates to the Audio Description Production Plan noted by the COR.

31.6 Specific Requirements for Fabrication

A. Script

1. Draft Script

   Prior to exhibit installation, produce a draft audio description script based on the approved ToC, audio description trigger location diagram, production-ready graphic proofs, and final MSWord file of exhibit text.

   The draft script is keyed to the exhibit diagram to clearly indicate the number and location of stops, and includes a brief description of the elements to be described at each stop and a word count for each stop.

2. Revised Draft Script

   During exhibit installation, conduct an exhibit walk-through to test the audio description script, and make corrections to the draft to accurately reflect the final exhibits, as installed. Produce navigational and instructional content for the audio description as part of the walk-through.

   Verify, install, and test the audio description trigger locations. Trigger testing and verification validates that a person using the device and moving through the space at a medium pace and at various distances and directions that don't require hugging the walls, reader rails or exhibit panels will be able to trigger the content. When possible, test triggering in conjunction and with a consultant who is blind or has low vision during the installation walkthrough. Test each trigger multiple times and in random sequences to ensure that triggering is consistent and reliable.

   Revise the draft script based on on-site information and as-installed exhibits, and submit a revised script.

3. Final Script

Based on COR comments on the revised script, provide a final script to the COR for approval. When using the NPS app framework as the AD delivery system, input final, COR-approved script into MS Excel spreadsheets that provide appropriate interface with the app framework.

4. Narration

   Narration of the script is required by some audio description delivery systems; other systems utilize their internal programming and text-to-speech software.

   The following process is used only with systems requiring recorded narration of the script:

   a. Narration requires one voice to read descriptions and a second to read text. Submit samples from two male and two female professional narrators to the COR for approval. Provide replacement samples in cases where a gender pair is rejected.

   b. Produce and submit for approval a preliminary recording of the audio description using the draft script at a quality sufficient to be evaluated for accuracy, pronunciation, appropriate terminology, and aesthetic considerations.

   c. Record the final audio description soundtracks in a professional studio using the approved narrators and incorporating all script edits, including terminology and pronunciation.

5. Installation

   a. Provide, deliver, and install the necessary hardware, software, and personal listening equipment for the audio description program.

   b. Travel to the park a second time to test and adjust the revised and final audio description using the triggering system and equipment and ensure that the audio description is fully functional.

   c. Demonstrate use of the installed audio description system to the park.

6. Closeout

   a. Provide the following:

      i. The as-recorded audio description script, and the as-recorded audio files (when narration is present), as part of the Audiovisual Operations and Maintenance Manual, in accordance with Section 29, Operation Training and References.

ii. The source code, software, and any proprietary hardware required to make changes to the audio descriptions and tour structure to enable future changes to the exhibits.

iii. Instructions and software for accessing and replacing triggering devices.

All material generated by the contractor in the process of completing a task order is the property of the government.

7. Hardware

a. All triggers are commercially-powered, rather than battery-powered, unless approved by the COR.

b. The audio description main menu is automatically triggered, rather than manually accessed by the user, whenever technically possible. Submenus are user-selected either by tactile buttons or VoiceOver for touch screens.

Appendix D:
Temporary Relocation Plan

Supplement to Section 01 50 00: Temporary Facilities and Controls
and
Supplement to Section 02 50 10: Employee Office Relocation

Rehabilitate Kawuneeche Visitor Center and Improve Accessibility for Visitor Enjoyment

Rocky Mountain National Park
PMIS: 326235

TABLE OF CONTENTS:

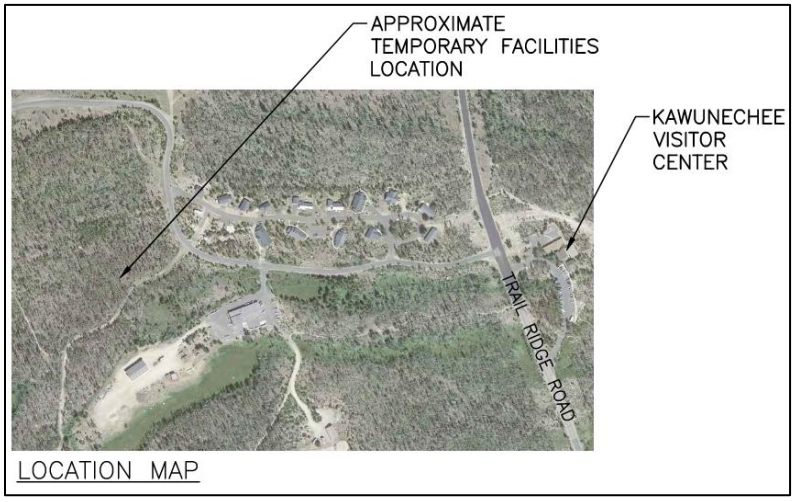
- Scope of Work
- General Notes
- Visitor Center Trailer
- Staff Trailers
- Furniture
- Cutsheets

Scope of Work:

This document is intended as a scope and planning document to outline the minimum requirements of the temporary relocation of staff office facilities and the visitor center. Note these facilities are located at separate locations. Refer to the maps below for approximate locations. See also C005 and C006 as well as spec sections 01 50 00 and 02 50 10 for more information.

(Left) Approximate location of temporary staff trailer facilities

(Right) Approximate temporary visitor center location



The Contractor shall be responsible for the following aspects of the temporary relocation of building occupants:

- Trailer and trailer accessory rental (including ramps, heating/cooling, sanitary tanks, and winterizing of sanitary tanks)
- Furniture rental
- Storage container rental
- Installation of temporary utilities (including winterizing measures) and rental furniture
- Servicing of temporary utilities (pumping the sanitary holding tanks for the trailers)
- Moving services (packing and transporting furniture and books/files out of the building and then moving back into the building at the close of the project and unpacking)

Any questions about the scope or proposed substitutions shall be directed to the Contracting Officer. The Contractor shall be required to submit shop drawings, sequencing plan of move logistics, and product data for approval by the Contracting Officer prior to taking action on this plan. The submittals shall include:

- Product data for all rented (or purchased) equipment and furniture. Document that all furniture is ABA compliant
- Schedule (including delivery, installation, and moving activities)
- Proposed Moving Plan describing moving company’s strategies for moving building furniture and files out and back in again to the same locations

Temporary Trailer General Notes

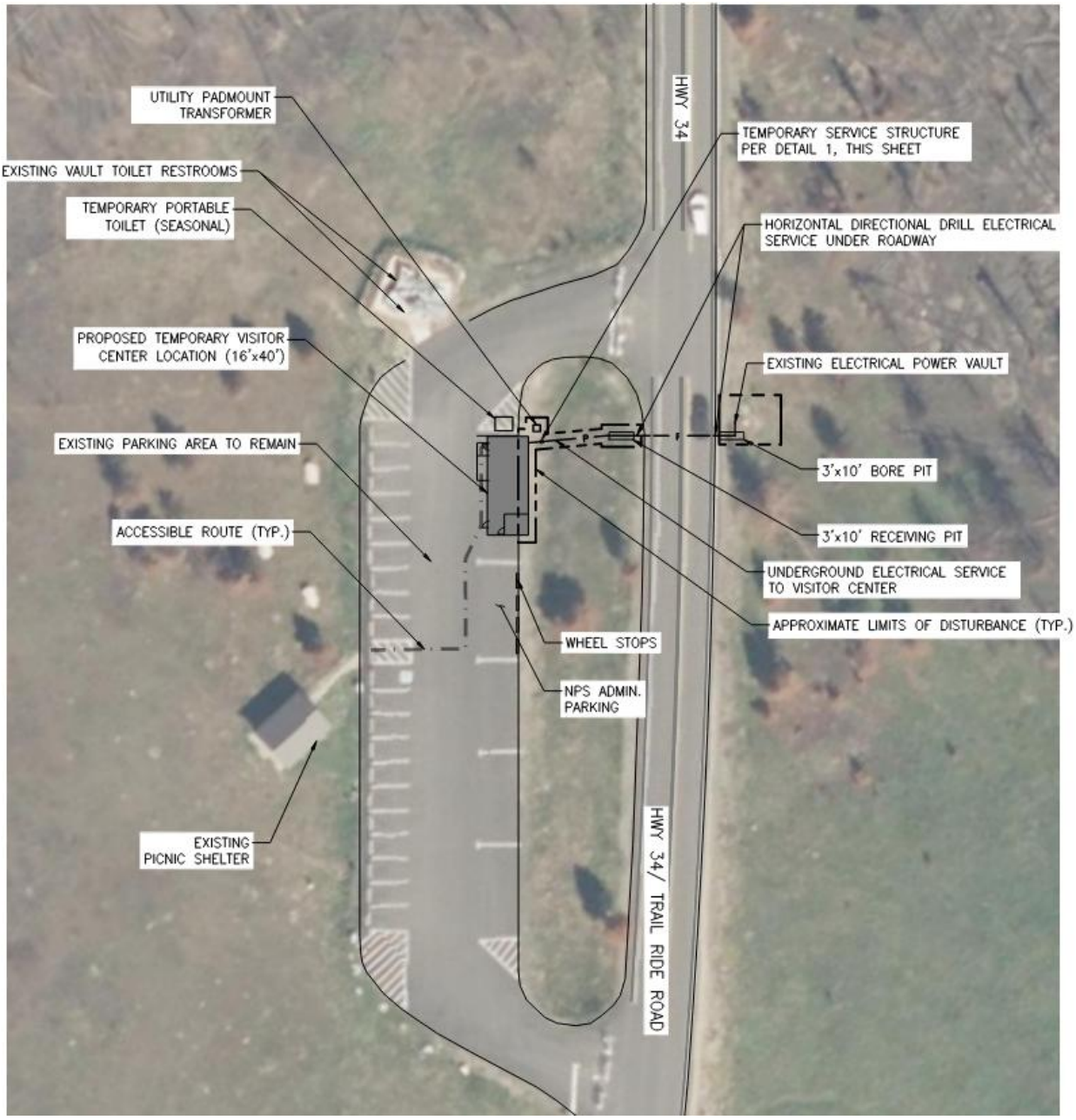
Contractor Notes:

- Temporary furniture rental is assumed for all work locations (temporary visitor center and staff trailers)
- Storage of furniture and boxes of books/paperwork/etc. shall be in Conex storage containers.
- Required for all trailers:
    - Utility hook ups and installation
    - Leveling expected for uneven ground
    - Accessible ramp and stair at trailer entry
- Typical of all trailers with plumbing: Water lines to be run above grade and be insulated and provided with heat trace. Waste from the trailers is to utilize a 2000 gallon tank and estimated to need to be pumped weekly. Placement of trailer and tank to provide clear access for pumper truck.

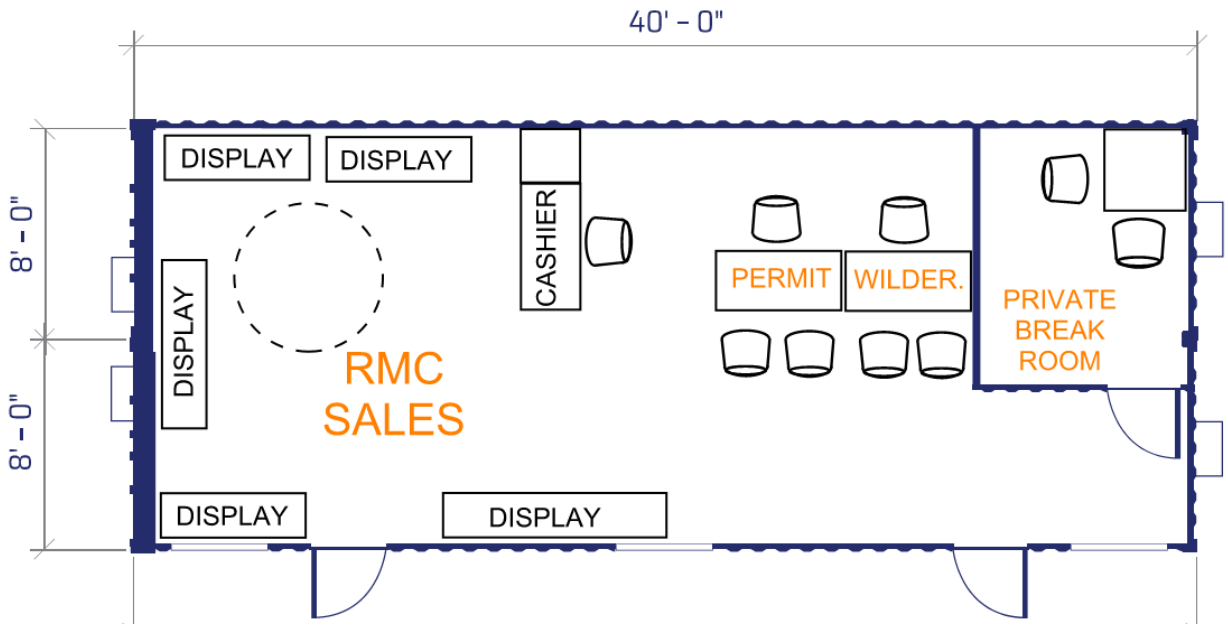
Design Criteria for Trailers

- Wind Speed Vult = 175 mph, Vasd = 135, Pressure Correction Factor = 0.80
- Roof Snow Loading: 110 psf (assumes trailers located between elevation 7,000 and 8,000)
- IT connections to be provided at all workstations

Visitor Center Trailer – Harbinson Picnic Area



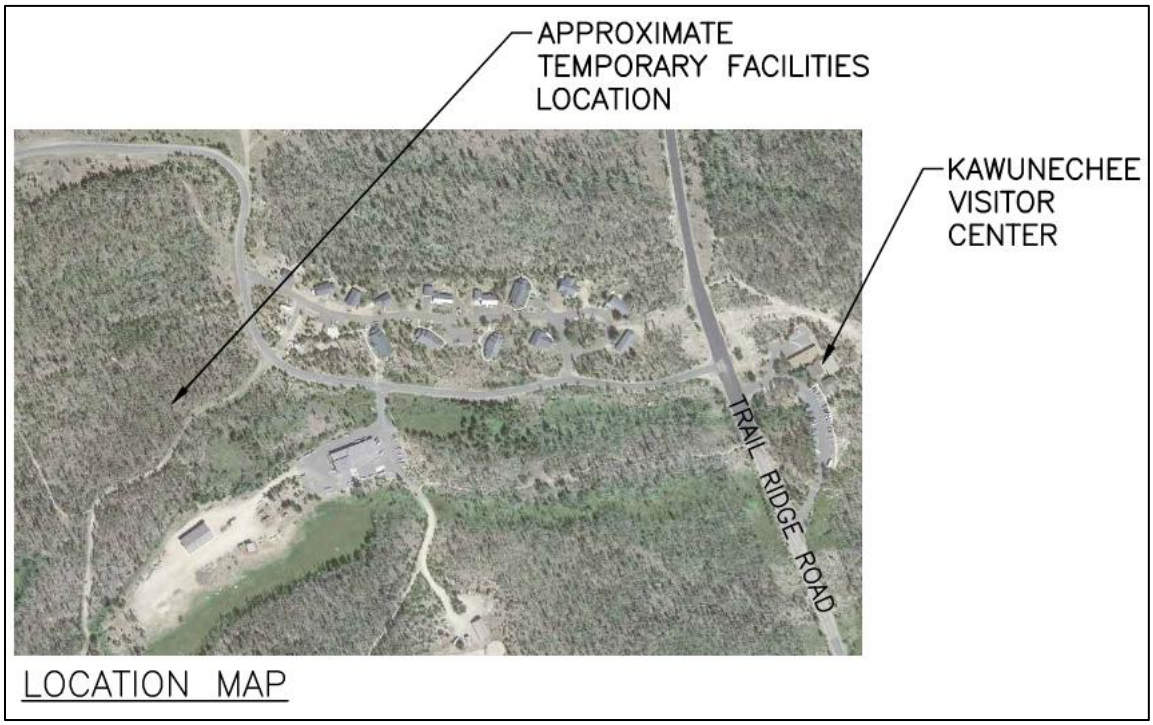
Refer to C006 and spec section 01 50 00 for more information.

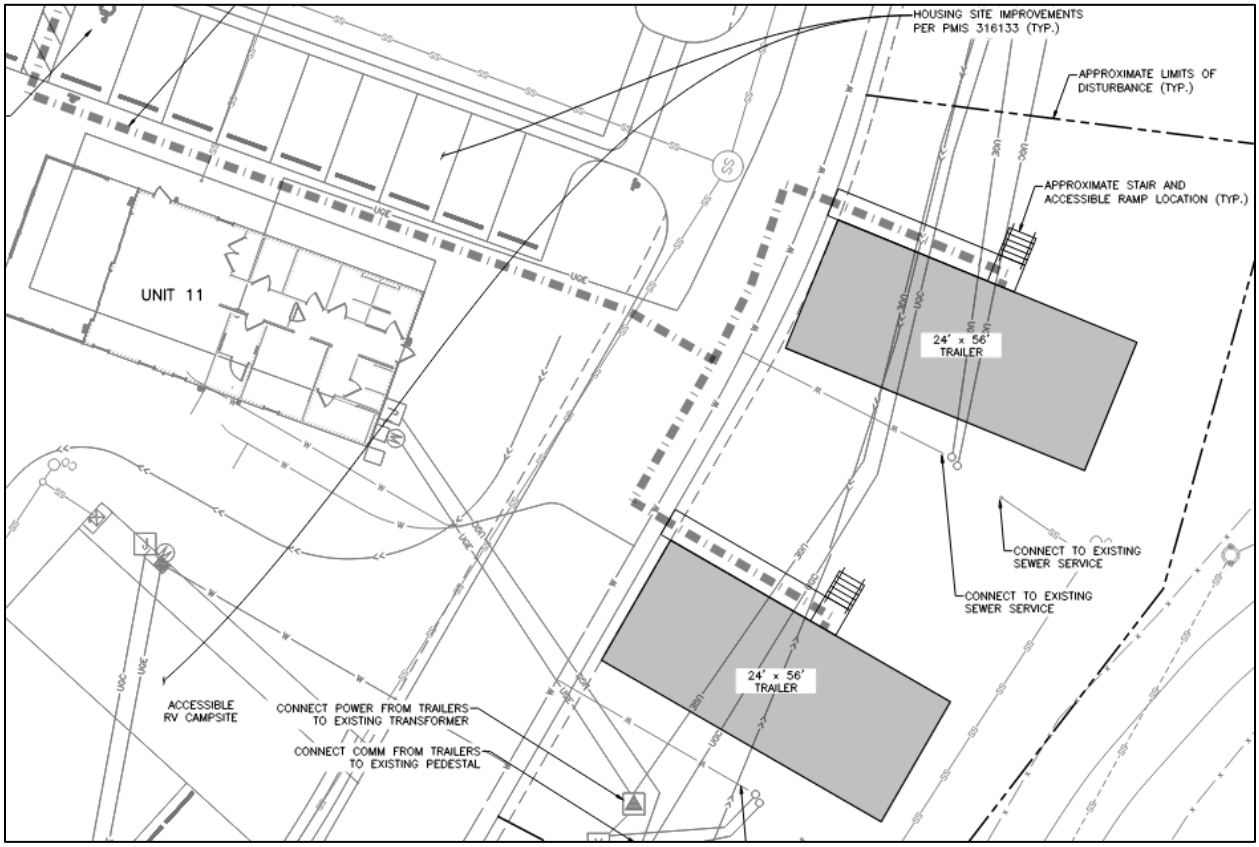


Visitor Center Trailer Example Layout

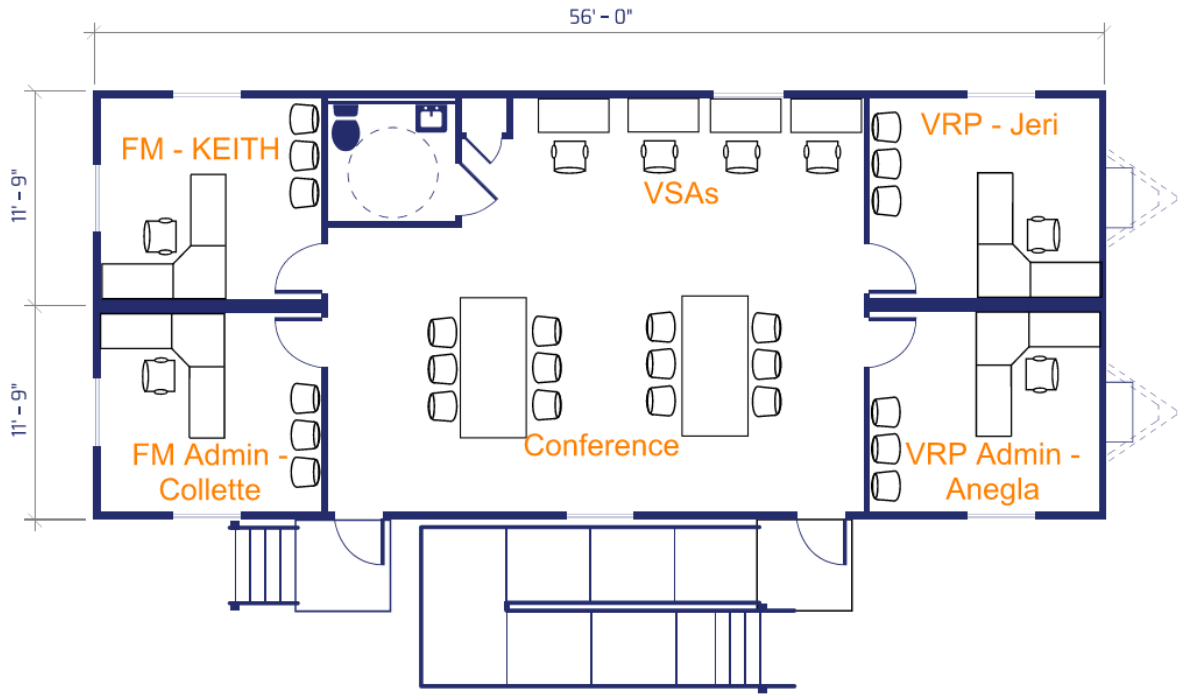
- One trailer (16'x40') with the following characteristics:
  - Ground level trailer, trailer to be accessible
  - Open plan with one small private office
  - No restroom
  - Integral HVAC system
  - Doors on either end, as shown in the layout.
- Contractor to provide outdoor portable toilet.
- Contractor to provide IT and electrical connections
- Furnishings to be provided by contractor: 2 staff desks with chairs, 4 public chairs, 1 cashier desk with side table and chair, 1 table with two chairs (for private office)
  - Note: Merchandise displays to be provided by Park
- Code compliant number and location of outlets with surge protector power strip to be used for:
  - Computer
  - Credit card machine
  - Receipt Printer
  - Monitor
  - Firewall
  - Modem
  - Switch
- NPS to provide internet service for computer and credit card connections.

Staff Trailers

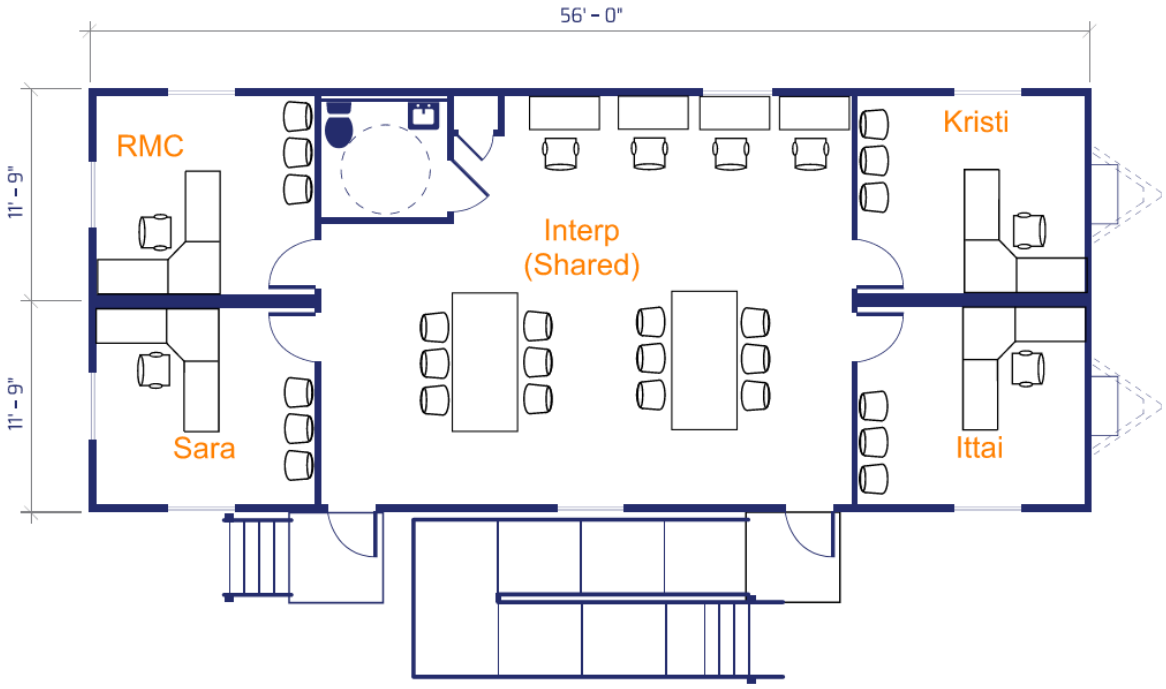




See also C005 and spec section 02 50 10 for more information.



Staff Trailer Example Layout No. 1



Staff Trailer Example Layout No. 2

- (2) trailers (24’x56’ each) with the following characteristics:
    - ABAAS ramp provided by trailer vendor, trailer to be accessible
    - Open plan with one small private office
    - Accessible restroom with toilet and water closet
    - Integral HVAC system
- Accommodating: 16 people
    - Trailer 1: (4 private office, 4 workstations)
    - Trailer 2: (4 private office, 4 workstations)
- Contractor to provide water, sewer, electrical, IT, generator
- Furnishings to be provided by contractor:
    - 4 private office workstations and 4 shared workstations
    - 9 chairs (8 workstations, 12 guest, 12 conference)
    - Filing cabinets (supplementary) to filing cabinet in workstation
    - Office equipment (provided by NPS) is expected to be limited to typical equipment such as computers, printers, and task lighting
- Code compliant number and location of outlets with surge protector power strip to be used for:
    - Computer
    - Monitor
    - Firewall
    - Modem
    - Switch
- NPS to provide internet service for computer connections.

Furniture

Park to identify furniture to move to temporary facilities and to storage.

- Mail boxes to be relocated in Blister Rust
- Currently located on top of 5'x3' counter
- Relocate both counter and boxes
- Contractor to provide table

EXAMPLE

- Mailing Station to be relocated in Blister Rust
- Needs min 4.5'x2.5' counter, relocate both labeler and scale
- Contractor to provide table

- Printer to be relocated in Blister Rust
- 3'x4.5'
- Needs network hook up

- Shredder to be relocated in Blister Rust
- 2'x2'

LARGE STRUCTURES & COMPLEXES

Larger buildings for bigger teams

TEMPORARY STAFF TRAILER

EXTERIOR & INTERIOR

Up to 7,200 sq.ft. * standard options with varying sizes available at a local level

Most popular sizes have the ability to extend in 12' increments

Aluminum, smart panel wood or Vertical textured exterior siding

Gypsum ceiling or suspended acoustical ceiling

Commercial grade tile or carpet, and vinyl covered gypsum walls

Vertical slider windows, or Low-E double-insulated glass windows

Panel door or steel exterior doors with deadbolts and vision window

MODULAR COMPLEXES

Modular complexes offer the feel and amenities of a permanent office but with greater flexibility for evolving needs. They're ideal for large workspaces like contractor offices, sales outlets, administrative offices, temporary spaces during renovations, medical facilities, or visitor centers.

OPTIONAL

Can be completed with full range of furnishings, entrances, and more.

Holding Tank or Water Tank

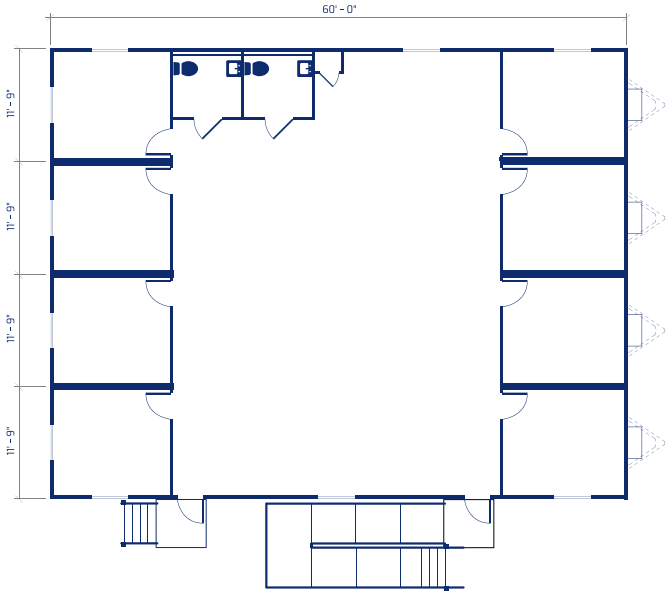
60' Clearspan roof truss

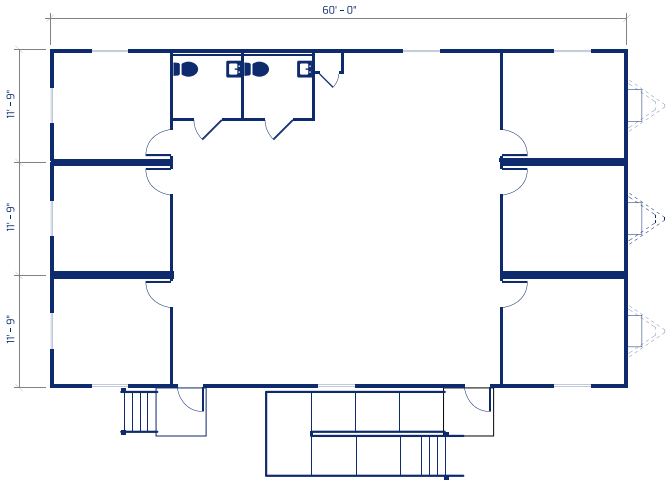
USES

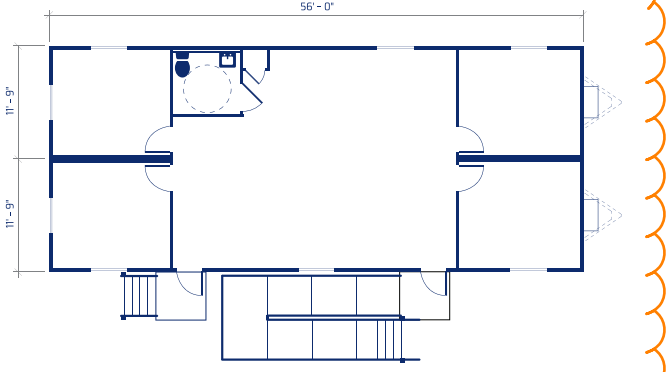
Recommended for large sites with more than 3 private offices and additional space for work and collaboration (Teams larger than 16 people). Traditionally used in administrative offices, healthcare facilities or classroom spaces.

In-unit restroom

Multi-functional common area







COMPLEX FLOORPLANS

We offer a wide selection of sizes and floorplans that meet a variety of portable office space needs.

All of our modular complexes are made with durable, high quality materials that meet national and state building, electrical, mechanical and plumbing codes and are supported by the best customer service in the industry.

We also provide a variety of additional products, including steps, ramps, and awnings, and convenient furniture packages thoughtfully designed to fit your space, saving you time and money, so that your space is outfitted with everything you need, right from the start.

* Photos are representational; actual products vary. Additional floor plans and specifications may vary from those shown and are subject to in-stock availability

RIGHT FROM THE START

FLEX®

TEMPORARY SPACE THAT GOES FAR BEYOND ORDINARY

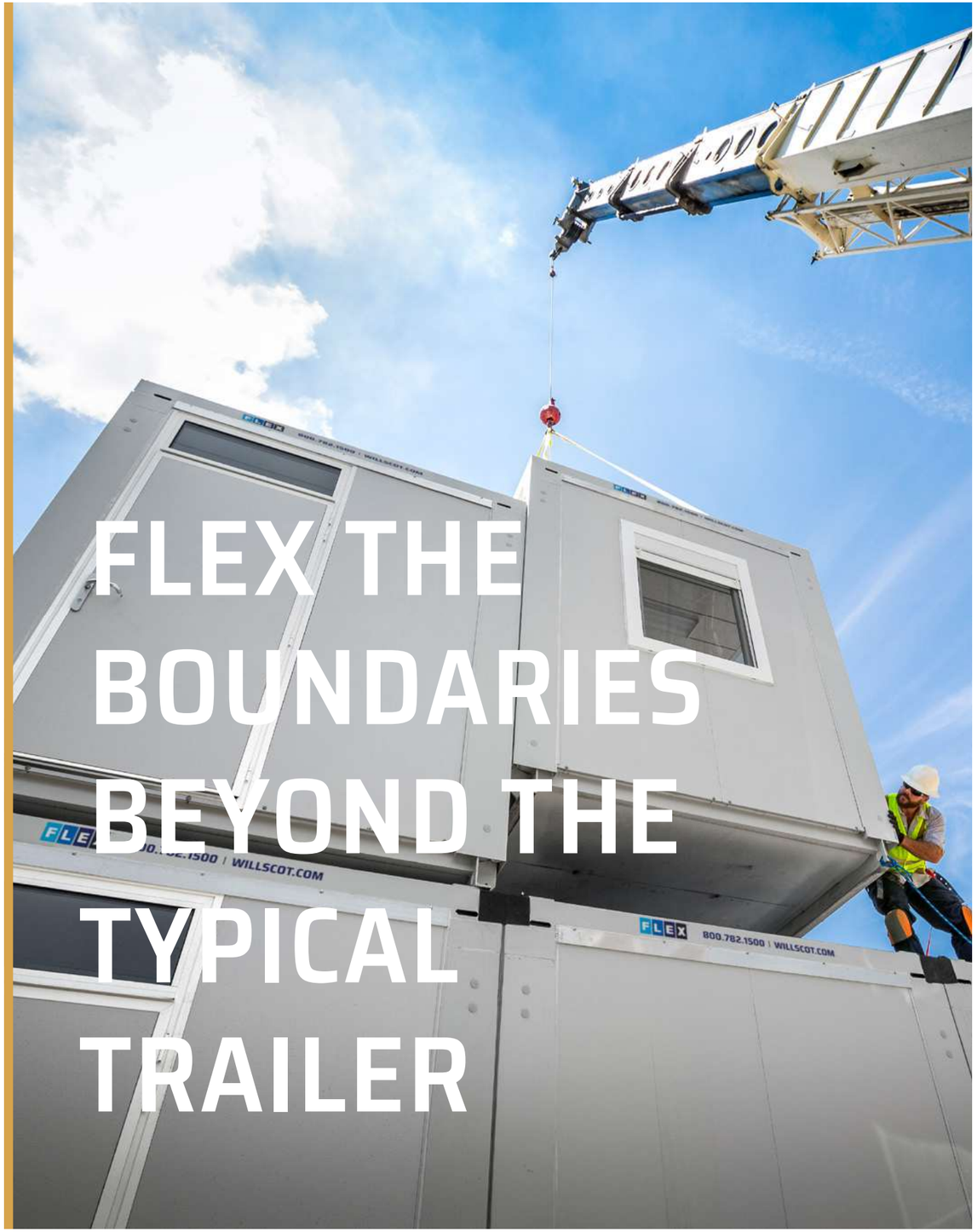
TEMPORARY VISITOR CENTER TRAILER ALT 1

WILLSCOT™

SPACE SOLUTIONS | 800.782.1500 | WILLSCOT.COM

A total evolution in temporary workspace

Get modular workspace that's completely flexible to your needs. FLEX® is the ultimate in versatility with nearly unlimited configurations, both inside and out. Connect two units end-to-end and as many as you like side-by-side, then stack up to three stories. Plus, everything you need comes with it, from windows and walls to furnishings and fixtures.



FLEX THE BOUNDARIES BEYOND THE TYPICAL TRAILER

Adaptable footprint

With a single unit only taking up the space of a parking spot, FLEX fits where traditional trailers can't. Connect two units end-to-end, then place as many as you need side-by-side and stack up to three stories. Limited site access? No problem. FLEX units can be lowered by crane into even the tightest, most restrictive spaces — even on top of a skyscraper. No matter what your project calls for, FLEX allows you to put the right space together.

WILLSCOT.COM/FLEX | 800.782.1500

Awesome aesthetics

Unlike traditional trailers, FLEX looks and feels like premium office space — because it is. Every detail is clean and modern, both inside and out. With large windows, sleek steel and glass window panels, contemporary furniture and carpeting, motion-activated LED lighting, flat screen TVs, ADA-compliant stairs, added security, and more, FLEX lets you configure a space that motivates your people and impresses your customers.

Absolute configurability

Movable panels mean you can make your space into whatever you need it to be. Upscale office, entertainment suite, broadcast stage, retail store, locker room, sales center, training room — FLEX does all of this and more. Create wide-open expanses with lots of natural light or configure the space with partitions to separate teams. Make it short, long, thin, wide, small, or tall. With FLEX, there's no shortage of configurations.

WILLSCOT.COM/FLEX | 800.782.1500

Tailored to your specific needs

With FLEX, endless configurability makes it easy to create a workspace tailored to the specific need of your jobsite.

ENTRANCES

From ground level to multi-story offices, configure your FLEX units with accessible, fully adjustable ramps and steps that allow your team to get inside on day one.

Choose from a full range of ADA- and OSHA-compliant step and ramp solutions

Access any level of your FLEX complex with step options for two- and three-story offices

Entrance canopies protect your space and your team from the elements

High-grip surfaces help protect from slipping in any kind of environment

With FLEX, you have the option to add ADA ground-level steps and ramps for first-floor entry, as well as ADA-approved multi-story steps for two- or three-story complexes. These solutions can be accompanied by an optional canopy over the entrance.

DOOR & WINDOW OPTIONS

Customize your office with the ideal balance of natural light and privacy. Select from various doors and windows to achieve the desired light levels and aesthetic.

Large format door

Large format windows

FLEX offers a modern, customizable design that provides the utmost flexibility, including door and window placement. WillScot experts assist with arranging these features to meet your needs and adapt as they change, whether that means swapping panels or expanding your unit.

STANDARD WINDOW

Energy-efficient dual-pane tempered glass
Decreases exterior noise
Includes blinds for privacy and light control
Configure with security screens

LARGE FORMAT WINDOW

More visibility for overseeing job sites
Energy-efficient dual-pane tempered glass
Reduces exterior noise
Includes blinds for privacy and light control

TICKET WINDOW

Designed specifically for the events industry
Tempered glass increases window strength
Can slide horizontal

SECURITY SCREENS

Provides security from unwanted entry
Protection from falling objects
Compatible with standard window

STANDARD DOOR

Steel construction
Insulated for proper sound dampening
Increased level of privacy

LARGE FORMAT DOOR

Large format windows for increased visibility
Includes blinds for privacy and light control
Premium experience for employees and visitors
Optional double-door configuration available

Choose from solid steel panels or upgrade to frosted glass panels for a more upscale aesthetic

Choose from solid steel panels or upgrade to frosted glass panels for a more upscale aesthetic that lets in more natural light. You can even reconfigure the space later, adding or removing panels as your needs change over time. Whatever you need for your office space to be ready to work, FLEX panels can make it happen.

PANEL & WALL CONFIGURATION

The panelized design of FLEX offers limitless partition options so you can customize your space with a sleek, modern aesthetic.

Rolled steel walls allow for hanging with magnets

Frosted panels double as a dry-erase board

THE GLASS PANEL

Modern aesthetic
Allows for the transfer of natural light
Frosted panels also serve as dry-erase board
Allows you to create multiple sizes

THE STEEL PANEL

Insulated panels create proper sound dampening
Rolled steel walls allow for hanging with magnets
Allows you to create spaces in multiple sizes

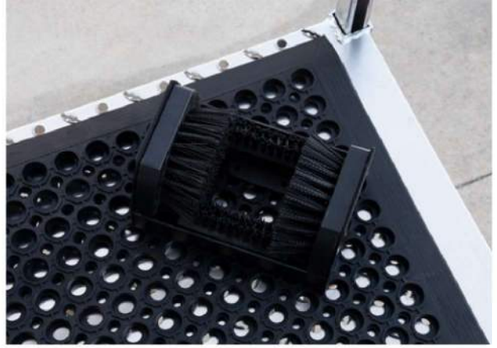
VIEWING DECK

Monitor the jobsite, impress customers, or create an open-air break space with viewing decks for multi-story FLEX buildings.

Configure your FLEX office with ADA-compliant decks for outdoor meetings

Metal handrails keep teams safe during project oversight from the viewing deck

Create a VIP lounge space for a sporting event or concert



High-grip surfaces help protect from slipping in any kind of environment

Equip your FLEX office with ADA-compliant desks on an outdoor deck for meetings and gatherings. This versatile setup can also serve as a VIP lounge for events, enhanced by metal handrails for safety and high-grip surfaces to prevent slipping, ensuring a secure and adaptable environment.

WILLSCOT.COM/FLEX | 800.782.1500

Large magnets attach to the interior and exterior steel panels for even more configurability

Durable steel panels act as a perfect surface for vinyl installation and removal, both inside and out

Maximize your brand's visibility from afar and captivate a wide audience at busy events with custom vinyl wrapping. These wraps provide a unique chance to create a striking impact in any setting.

CUSTOM BRANDING

Make your FLEX office space instantly recognizable to your customers and team members with custom vinyl wrapping that highlights your unique brand.

Wrap seamless branding across large format windows for increased privacy while maintaining full visibility

WILLSCOT.COM/FLEX | 800.782.1500

COMPLETE YOUR SPACE

Outfit your space with all the essentials so you have everything you need right from the start.

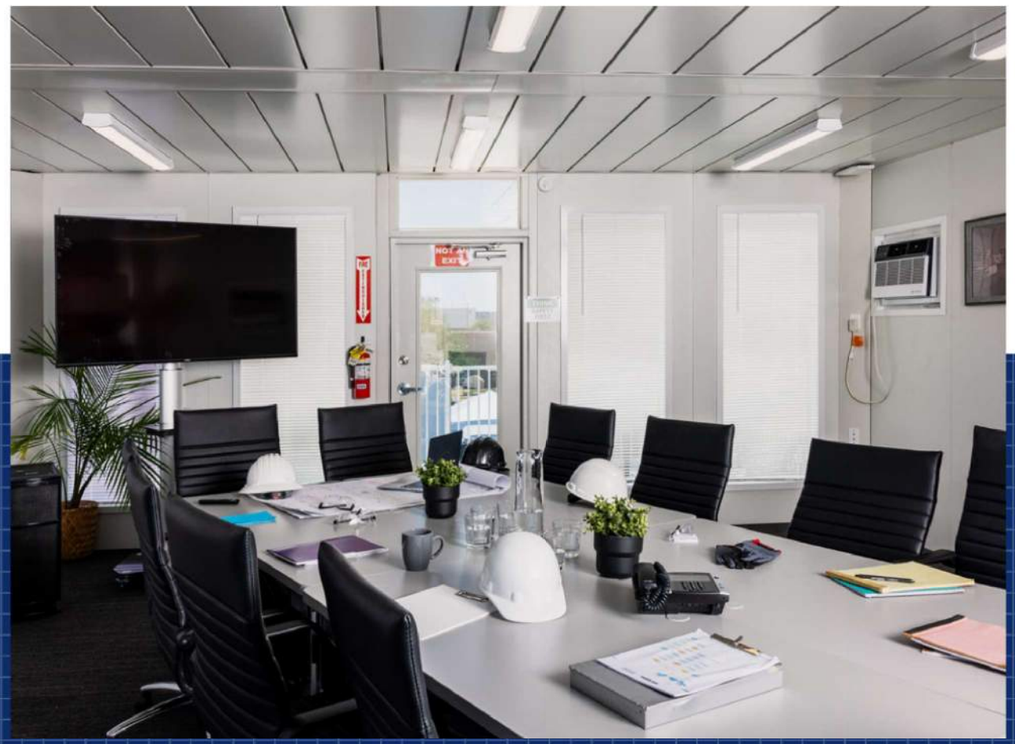
Office packages

Cafe / break room packages

Media package

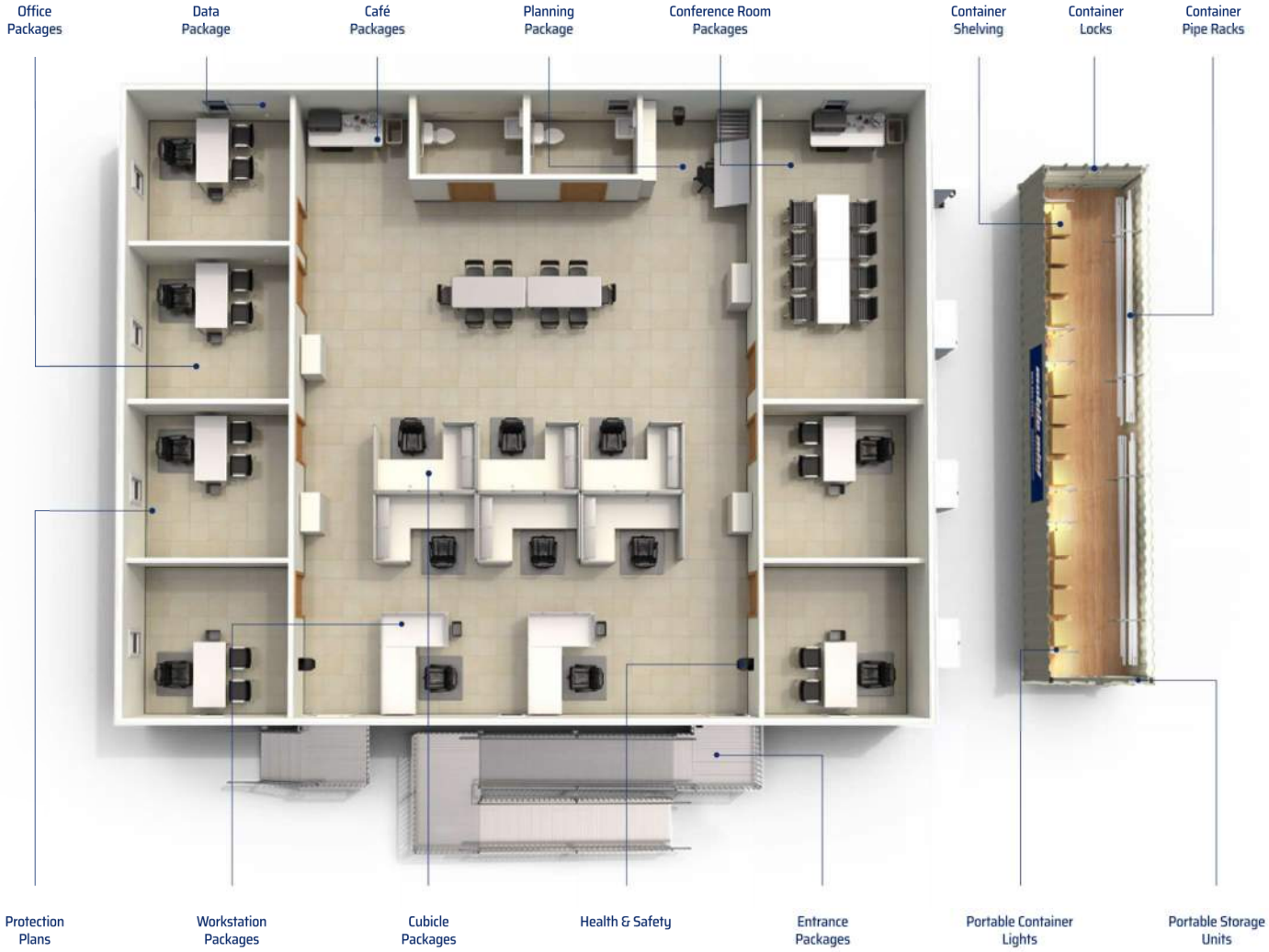
Health and safety products

Every office needs furnishings, appliances and accessories to be comfortable and functional. Our Essentials packages fit our floor plans perfectly and outfit your space for immediate productivity, saving you money and time.



Configurations for every need

FLEX buildings are the ultimate in versatility. Minimize footprint and maximize space with nearly unlimited configurations and the option to stack up to three stories.



Everything you need for your space, inside and out.

From simple products that accommodate your construction teams to more premium options suitable for entertaining customers and VIPs, we offer a wide range of ready-to-go packages that cover the most common needs.

GROUND LEVEL OFFICES

Convenient and quick access to ground-level office space.

TEMPORARY VISITOR CENTER TRAILER ALT 2

SIMPLICITY AND SIZES FOR EVERY NEED

Our rugged ground-level offices, well-known as GLO, provide fully functional on-site office space and storage. Container spaces require a minimal footprint, can be delivered and set up quickly, and may be customized with a variety of options.

Storage combo available

Multifunctional open space

EXTERIOR & INTERIOR

Small size up to 160 sq ft (8'x10' or 8'x20')

Medium size up to 320 sq. ft (10'x30' or 8'x40')

Single open space

Steel ribbed exterior

Pre-finished wall panels

Tile floor with vinyl wall base

Commercial steel door with deadbolt

Horizontal sliding window with steel window guard

Environmentally controlled with heat and AC

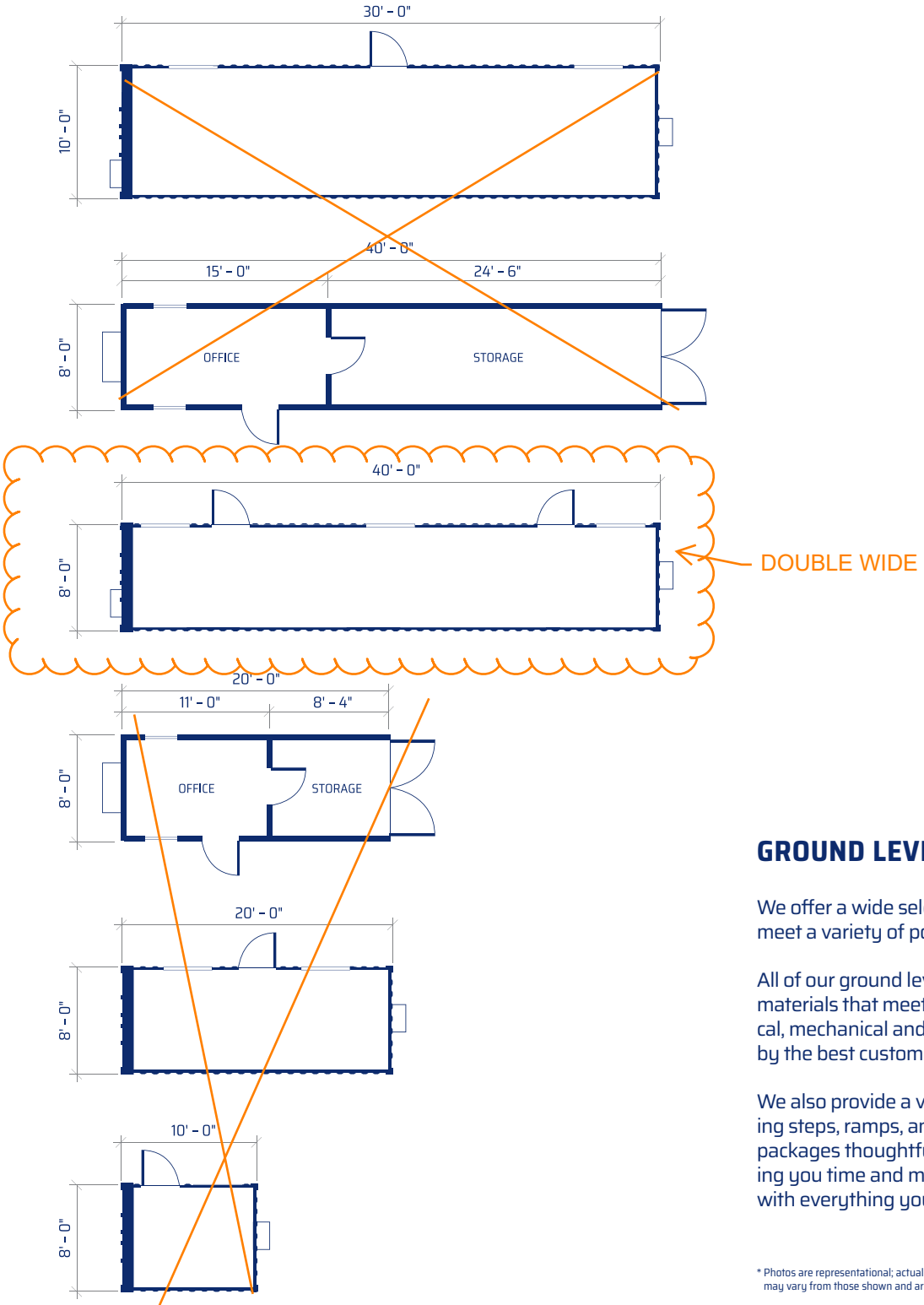
OPTIONAL

Can be completed with full range of furnishings, entrances, and more

USES

ur 20' length is great for smaller teams (1-5 people), with our 40' length ideal for more medium sized teams (5-10 people)

Our container office is perfect for informal team meetings, dedicated workstations, breakrooms with café space, and more



GROUND LEVEL OFFICE FLOORPLANS

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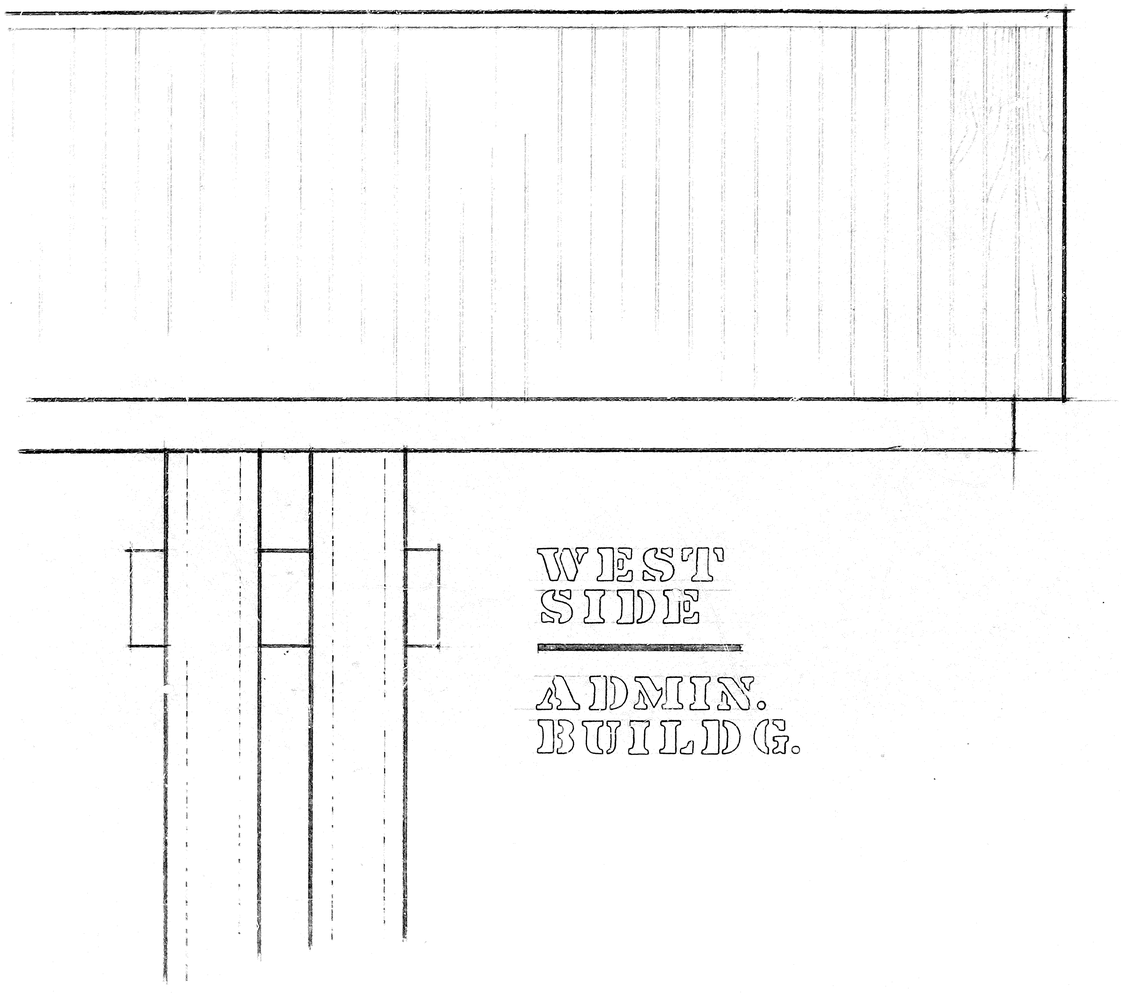
APPENDIX E - MOCK UP LIST

Park Acronym/Project Management Information System (PMIS) Number: 326235

Project Title: Rehabilitate Kawuneeche Visitor Center and Improve Accessibility for

SPECIFICATION SECTIOI	PARAGRAPH NUMBER	SECTION TITLE
04 03 10	1.6.D	Historic Masonry Cleaning
04 03 42	1.6	Historic Stone Masonry Repair
06 03 12	1.7	Historic Wood Repair
07 62 00	1.6	Sheet Metal Flashing and Trim
07 92 00	1.7	Joint Sealants
08 51 13	1.3.F	Aluminum Windows
08 51 23.13	1.3.F	Hot Rolled Steel Windows
09 03 91	1.8.D	Historic Treatment of Plain Painting
09 51 23	1.7.A	Acoustical Tile Ceilings
09 91 13	1.5.A	Exterior Painting
09 91 24	1.5.A	Interior Painting
09 93 01	1.4	Staining and Transparent Finishing
32 13 20	1.5.C	Site Concrete
32 15 43	1.4.D	Permeable Aggregate Surfacing
32 31 14	1.3.A	Post and Rail Fence
32 32 00	1.3.A	Boulder Placement



WEST SIDE

ADMIN. BUILDG.

SHEET INDEX:

1. TITLE & INDEX
2. SITE PLAN
3. MATERIAL & COLOR SCHEDULE
4. FOUNDATION PLAN
5. FOUNDATION DETAILS
6. FLOOR PLAN — LOBBY & COMFORT STATION
7. FLOOR PLAN — OFFICE WING
8. ROOF PLAN, COLUMN & BEAM DETAILS
9. ELEVATIONS — LOBBY & COMFORT STATION
10. ELEVATIONS — OFFICE WING
11. CROSS SECTION — LOBBY
12. CROSS SECTION — OFFICE WING, CORRIDOR, & C.S.
13. WINDOW & DOOR DETAILS
14. WINDOW DETAILS
15. WINDOW DETAILS
16. EAVE DETAILS
17. INTERIOR ELEVATIONS
18. INFORMATION COUNTER DETAILS
19. INTERIOR DETAILS
20. INTERIOR DETAILS
21. HEATING
22. HEATING & PLUMBING
23. ELECTRICAL

[redacted]CTION

CONTRACT No. 14-10-7-971-164

PROJECT NO. RM-S 251

AS CONSTRUCTED DRAWINGS

ORIENTATION

PREPARED	
DESIGNED	R.D. NEWCOMB & ASSOCIATES
DRAWN	RDN
CHECKED	
COLOR	J.R.
ARCH.	C.R.S.
ELEC.	C.K.
MECH.	C.K.
STRUC.	H.W.

REVISED	
DATE	INITIAL
5/69	RDD

SCALE

WORKING DRAWING

This drawing has been prepared in compliance with Preliminary Drawing No. NP-RM 3648, approved by (S) REGIONAL DIRECTOR on SEPT. 29, 1967

Acty. Chief, Design & Construction Div. — Date 5/8/68

SHEET NUMBER 1

RECOMMENDED — DATE

CONCURRED — Curtis E. Reiley 5-7-68 — U.S. PUBLIC HEALTH SERVICE — DATE

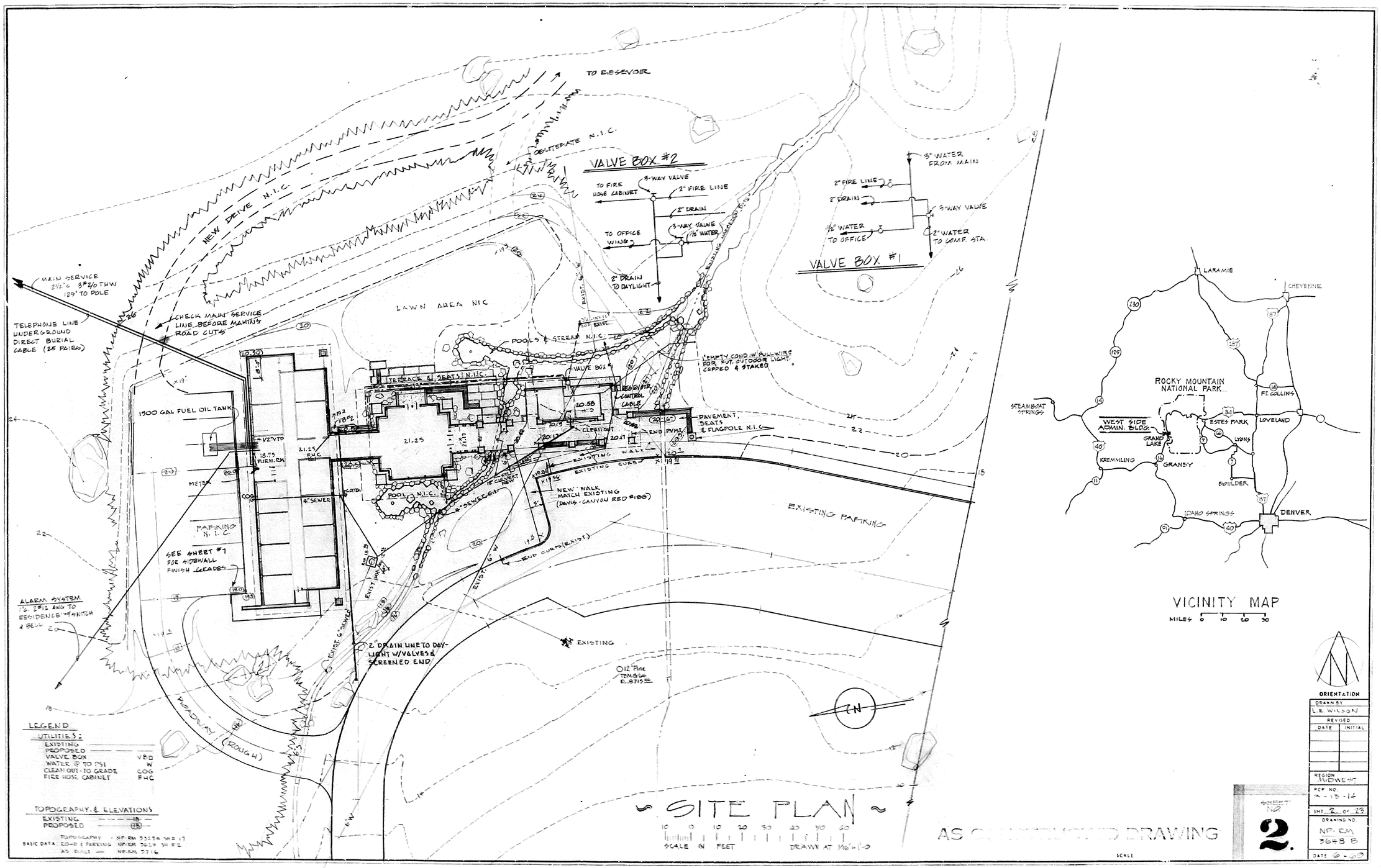
APPROVED — DATE

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
SAN FRANCISCO PLANNING & SERVICE CENTER
PREPARED BY D C S S C
OFFICE F.Y. 67

WEST SIDE ADMIN. BUILDING
TITLE OF DRAWING
GRAND LAKE ENTRANCE
LOCATION WITHIN PARK
ROCKY MOUNTAIN NATIONAL PARK
GRAND COUNTY — NAME OF PARK — COLORADO

REGION MIDWEST
PCP NO. 8-13-14
SHEET 1 OF 23
DRAWING NO. NP - RM 3648-8
DATE 6-69

BASIC DATA



TO RESEVOIR
OBLITERATE N.I.C.
NEW DRIVE N.I.C.
VALVE BOX #2
TO FIRE HOSE CABINET
3-WAY VALVE
2" FIRE LINE
2" DRAIN
TO OFFICE WING
3-WAY VALVE
1½" WATER
2" DRAIN TO DAYLIGHT
3" WATER FROM MAIN
2" FIRE LINE
2" DRAIN
3-WAY VALVE
1½" WATER TO OFFICE
2" WATER TO COMP. STA.
VALVE BOX #1
MAIN SERVICE 2½" C 3#2/0 THW 129' TO POLE
TELEPHONE LINE UNDERGROUND DIRECT BURIAL CABLE (25 PAIRS)
CHECK MAIN SERVICE LINE BEFORE MAKING ROAD CUTS
LAWN AREA N.I.C.
POOLS & STREAM N.I.C.
TERRACE & SEATS N.I.C.
VALVE BOX
RESERVOIR CONTROL CABLE
1" EMPTY COND. W/ PULLWIRE FOR FUT. OUTDOOR LIGHT. CAPPED & STAKED
PAVEMENT, SEATS & FLAGPOLE N.I.C.
END PVMT
CLEANOUT
EXISTING WALK
EXISTING CURB
NEW WALK MATCH EXISTING (DAVIS-CANYON RED #188)
END CURB (EXIST.)
EXISTING PARKING
1500 GAL FUEL OIL TANK
METER
PARKING N.I.C.
SEE SHEET #7 FOR SIDEWALL FINISH GRADES
ALARM SYSTEM 1½ 2#12 AWG TO RESIDENCE W/ SWITCH & BELL
2" DRAIN LINE TO DAYLIGHT W/ VALVES & SCREENED END
EXISTING
ROADWAY (ROUGH)
LEGEND
UTILITIES:
EXISTING
PROPOSED
VALVE BOX VBD
WATER @ 70 PSI W
CLEAN OUT - TO GRADE COG
FIRE HOSE CABINET FHC
TOPOGRAPHY & ELEVATIONS
EXISTING
PROPOSED
BASIC DATA: TOPOGRAPHY - NP-RM 5327A SH #17
ROAD & PARKING NP-RM 5624 SH #2
AS BUILT — NP-RM 5716
SITE PLAN
SCALE IN FEET
DRAWN AT 1/16" = 1'-0
AS CONSTRUCTED DRAWING
SCALE
LARAMIE
CHEYENNE
ROCKY MOUNTAIN NATIONAL PARK
STEAMBOAT SPRINGS
WEST SIDE ADMIN. BLDG.
GRAND LAKE
ESTES PARK
FT. COLLINS
LOVELAND
LYONS
KREMMLING
GRANBY
BOULDER
IDAHO SPRINGS
DENVER
VICINITY MAP
MILES 0 10 20 30
ORIENTATION
DRAWN BY L.E. WILSON
REVISED
DATE INITIAL
REGION MIDWEST
PCP NO. 3-13-14
SHT 2 OF 23
DRAWING NO. NP-RM 3648 B
DATE 6-60
SHEET NO. 2.

INTERIOR FINISH AND COLOR SCHEDULE

ROOM NO.	ROOM NAME	FLOOR MAT'L	FLOOR FINISH	FLOOR CLR	BASE MAT'L	BASE FINISH	BASE CLR	WALLS MAT'L	WALLS FINISH	WALLS CLR	CEILING MAT'L.	CEILING FINISH	CEILING CLR	DOORS MAT'L	DOORS FINISH	DOORS CLR	WINDOWS MAT'L.	WINDOWS FINISH	WINDOWS CLR	TRIM MAT'L	TRIM FINISH	TRIM CLR	REMARKS
1	LOBBY	HARD WOOD	WAX	G	WOOD	STAIN	2	TEXT. 1-11	STAIN	2	WOOD	STAIN	1	WOOD	STAIN	10	METAL	FACTORY	7	WOOD	STAIN	1	COUNTER TOP: FORMICA BUTTERSCOTCH 868
2	INFORMATION	↓	↓	G	↓	↓	2	↓	↓	2	↓	↓	1	↓	↓	1	↓	↓	7	↓	↓	1	
3	INFORMATION CORRIDOR	↓	↓	G	↓	↓	2	↓	↓	2	GYPSUM BOARD	PAINT	4	↓	↓	1	↓	↓	7	↓	↓	1	
4	CORRIDOR	V.A. TILE	↓	G	↓	↓	2	↓	↓	2	↓	↓	1	↓	↓	1	↓	↓	7	↓	↓	1	
5	CORRIDOR	↓	↓	5	↓	PAINT	3*	GYPSUM BOARD	PAINT	3*	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	TEXTURES 1-11, ADJ. BASE, TRIM: OLYMPIC STAIN 719 *
6	CORRIDOR	↓	↓	5	↓	STAIN	2	TEXT. 1-11	STAIN	2	↓	↓	4	↓	↓	10	↓	↓	7	↓	↓	1	
7	CORRIDOR	↓	↓	5	↓	PAINT	3*	GYPSUM BOARD	PAINT	3*	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	TEXTURE 1-11 ADJ. BASE, TRIM: OLYMPIC STAIN 719 *
8	OFFICE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
9	FILE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
10	OFFICE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
11	OFFICE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
12	OFFICE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
13	OFFICE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
14	OFFICE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
15	OFFICE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
16	CONFERENCE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
17	STORAGE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
18	WORK ROOM	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	COUNTER TOP: FORMICA BUTTERSCOTCH 868
19	OFFICE	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
20	MECHANICAL	CONC.	↓	8	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
21	JANITOR	V.A. TILE	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
22	MEN	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
23	WOMEN	↓	↓	5	↓	↓	3	↓	↓	3	↓	↓	4	↓	↓	1	↓	↓	7	↓	↓	1	
24	MEN	CONC.	-	8	NONE	-	-	PLYW'D		3	WOOD	STAIN	1		PAINT	11			7			1	PARTITIONS: ACCURATE
25	WOMEN	CONC	-	8	NONE	-	-	PLYW'D	↓	3	WOOD	STAIN	1	↓	PAINT	11	↓	↓	7	↓	↓	1	B.IFF #623

EXTERIOR FINISH & COLOR SCHEDULE

AREA	MATERIAL	FINISH	COLOR
ROOF	GRAVEL	-	NATURAL
FASCIA (UPPER)	TEXTURE 1-11	STAIN	OLYMPIC 711
FASCIA (LOWER)	DOUGLAS FIR	STAIN	OLYMPIC 711
SOFFIT	DOUGLAS FIR	STAIN	OLYMPIC 902
BEAMS	DOUGLAS FIR	STAIN	OLYMPIC 902
MULLIONS	DOUGLAS FIR	STAIN	OLYMPIC 902
COLUMNS	DOUGLAS FIR	STAIN	OLYMPIC 902
COLUMN SPACERS	DOUGLAS FIR	STAIN	OLYMPIC 711
WALLS	TEXTURE 1-11	STAIN	OLYMPIC 711
WALLS	STONE	NONE	NATURAL
DOORS	WOOD	STAIN	OLYMPIC 711
WINDOWS	METAL	FACTORY	RUSCO 70103 BLACK
STOPS	WOOD	STAIN	OLYMPIC 902
CHIMNEY	WOOD	STAIN	OLYMPIC 711
MISC. METAL	-	PAINT	MATCH ADJACENT SURFACE

BASIC DATA

COLOR KEY

1. OLYMPIC SEMI-TRANSPARENT STAIN # 902
2. OLYMPIC SEM-TRANSPARENT STAIN # 719
3. FS 33690
4. FS 37886
5. FLINTKOTE CLASSIC II
6. BONDWOOD DOMINO WALNUT
7. RUSCO 70103 BLACK
8. NATURAL
9. TO MATCH ADJACENT SURFACE
10. OLYMPIC SEMI-TRANSPACENT STAIN # 711
11. FS 20318

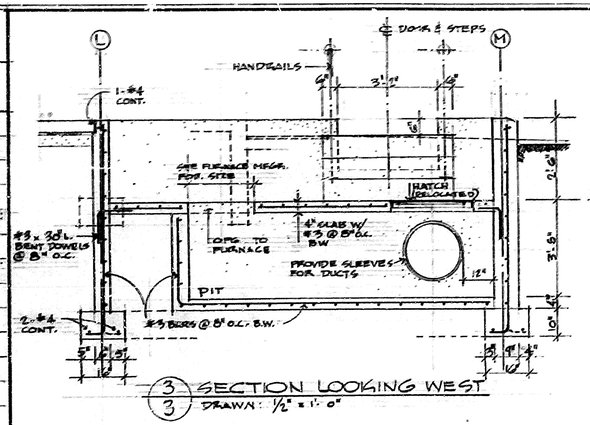
EXTERIOR STAINS
2 COATS OF STAIN
2 COATS OF DRONAT MARINE SPAR VARNISH

INTERIOR STAINS
LOBBY CEILING
1 COAT OF STAIN
1 COAT OF PRO-MAT #841 (SUPER SATIN-SEALER FINISH)
1 COAT OF PRO-MAT #800 (SATIN FINISH VARNISH.)

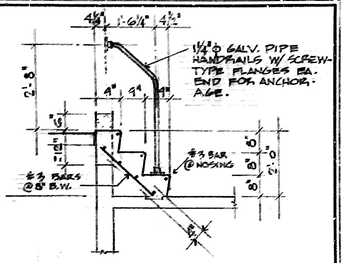
WALLS, DOORS, & WOOD TRIM
2 COATS OF STAIN
1 COAT OF PRO-MAT #841
1 COAT OF PRO-MAT #800

ENAMEL SURFACES
1 COAT TT513 PRO-MAT ENAMEL UNDERCOAT
1 COAT EGGSHELL ENAMEL W/COLOR

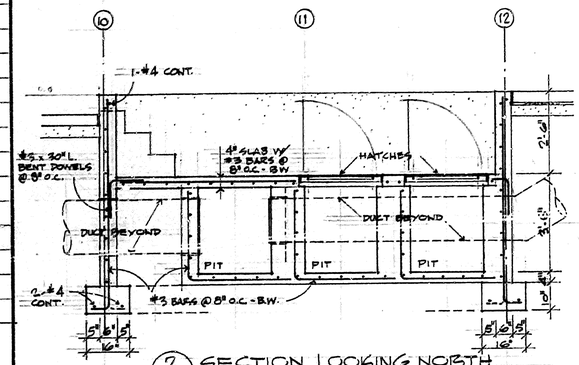
OFFICE WALLS
TEXTURE - ROLLER W/TAPING CEMENT
PRO. DRYWALL SEALER PRO-MAT 6458
1 COAT EGGSHELL ENAMEL W/COLOR



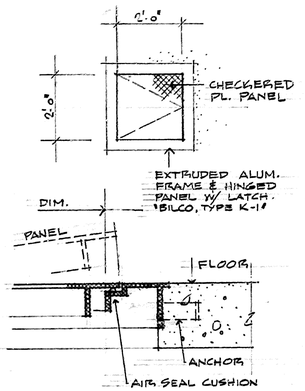
3/3 SECTION LOOKING WEST
DRAWN: 1/2" = 1'-0"



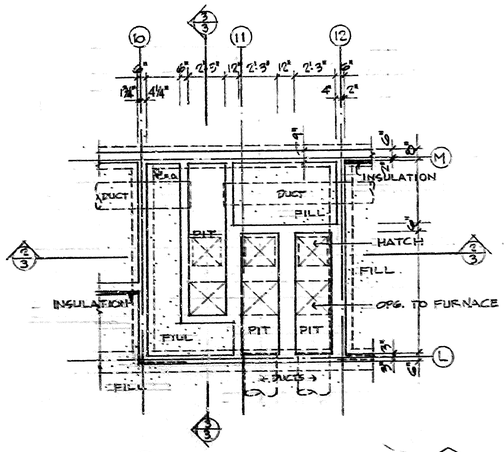
4/3 STEPS & HANDRAILS



2/3 SECTION LOOKING NORTH



5/3 FLOOR HATCH DETAIL
DRAWN: 3" = 1'-0"



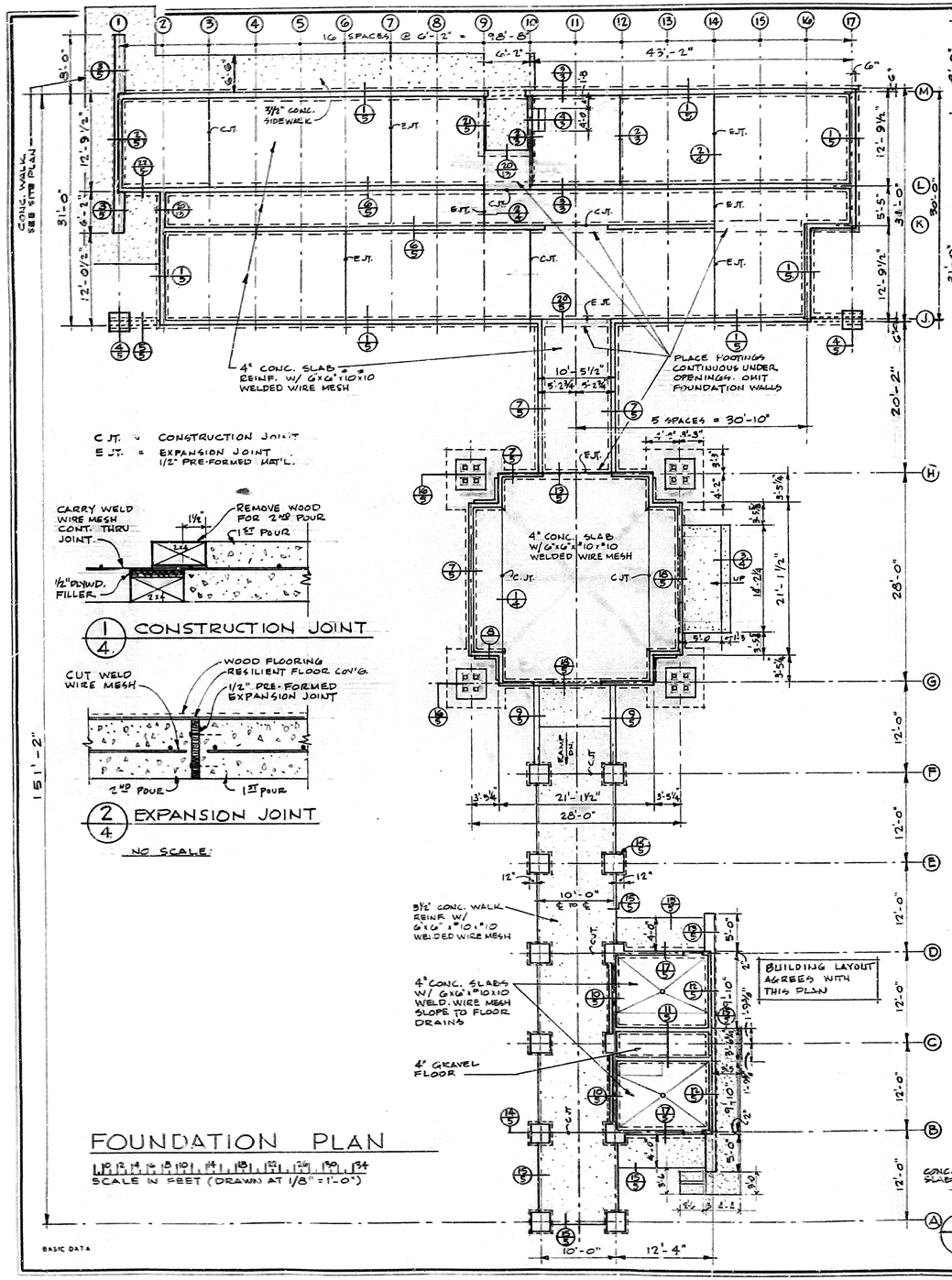
1/3 FNDN. PLAN - MECH. RM 20
DRAWN: 1/4" = 1'-0"

SCALE

ORIENTATION

DRAWN BY	
J.F.H.	
REVISED	
DATE	INITIAL
REGION	MIDWEST
PCF NO.	F-13-14
SHT.	3 OF 13
DRAWING NO.	NP-RM 3648-3
DATE	6-83

SHEET NO 3.



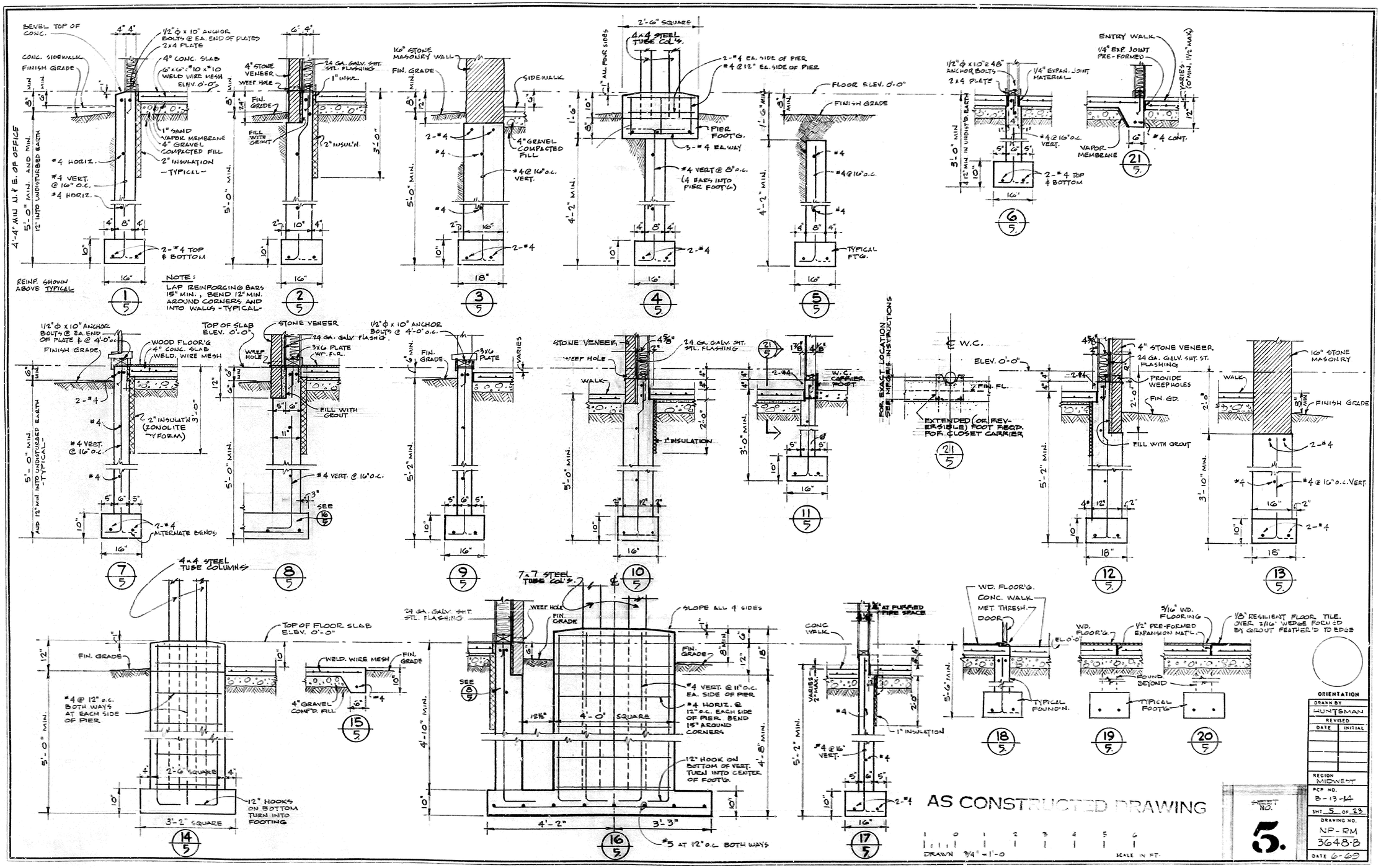
ORIENTATION

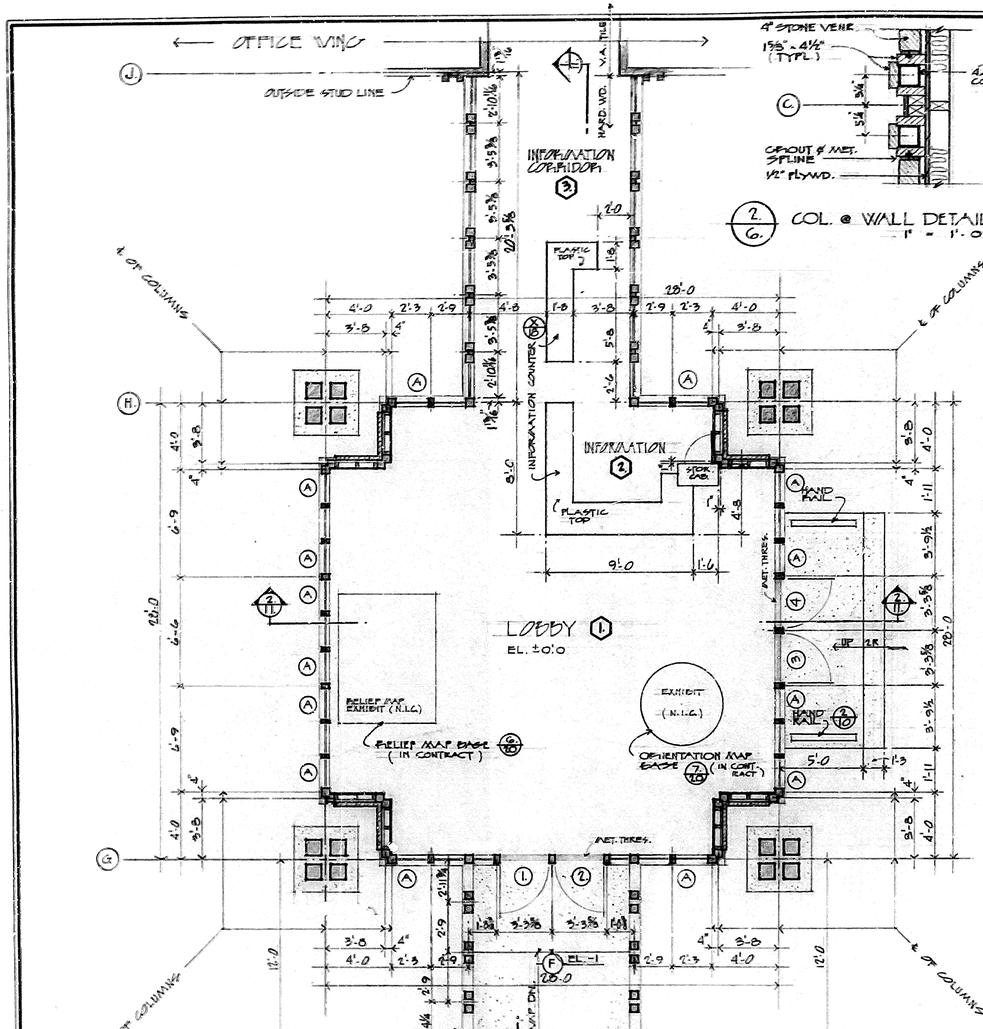
DRAWN BY	
HUNTSMAN	
REVISED	
DATE	INITIAL

REGION MIDWEST
PCP NO. B-13-14
SHT. 4 OF 23
DRAWING NO. NP-RM 3648-B
DATE 6-69

SHEET NO. 4.

AS CONSTRUCTED DRAWING


BEVEL TOP OF CONC.
CONC. SIDEWALK
FINISH GRADE
4" 4"
1/2"ϕ x 10" ANCHOR BOLTS @ EA. END OF PLATES
2x4 PLATE
4" CONC. SLAB
6"x6"-10 x 10 WELD WIRE MESH
ELEV. 0'-0"
1" SAND
VAPOR MEMBRANE
4" GRAVEL COMPACTED FILL
2" INSULATION
-TYPICAL-
#4 HORIZ.
#4 VERT. @ 16" O.C.
#4 HORIZ.
4'-4" MIN. U.F.E. OF OFFICE
5'-0" MIN. AND 12" INTO UNDISTURBED EARTH
2-#4 TOP & BOTTOM
16"
REINF. SHOWN ABOVE TYPICAL
NOTE: LAP REINFORCING BARS 15" MIN., BEND 12" MIN. AROUND CORNERS AND INTO WALLS - TYPICAL-
1/5
6" 4"
4" STONE VENEER
WEEP HOLE
24 GA. GALV. SHT. STL. FLASHING
1" INSUL'N.
FIN. GRADE
FILL WITH GROUT
2" INSUL'N.
3'-0"
5'-0" MIN.
2" 10" 4"
2/5
16" MASONRY WALL
FIN. GRADE
SIDEWALK
2-#4
#4
#4 @ 16" O.C. VERT.
4" GRAVEL COMPACTED FILL
5'-0" MIN.
2" 16" 2"
2-#4
18"
3/5
2'-6" SQUARE
1" ALL FOUR SIDES
4x4 STEEL TUBE COL'M.
2-#4 EA. SIDE OF PIER
#4 @ 12" EA. SIDE OF PIER
PIER FOOT'G.
3-#4 EA. WAY
#4 VERT. @ 8" O.C. (4 BARS INTO PIER FOOT'G)
1'-6" 10"
4'-2" MIN.
2-#4
16"
4/5
FLOOR ELEV. 0'-0"
FINISH GRADE
1'-6" MIN.
#4
#4 @ 16" O.C.
4'-2" MIN.
TYPICAL FTG.
16"
5/5
1/2"ϕ x 10" 2 4B ANCHOR BOLTS
2x4 PLATE
1/4" EXPAN. JOINT MATERIAL
3'-0" MIN IN UNDIST'D EARTH
#4 @ 16" O.C. VERT.
5" 6" 5"
2-#4 TOP & BOTTOM
16"
6/5
ENTRY WALK
1/4" EXP. JOINT PRE-FORMED
VARIES (0" MIN., 1/2" MAX)
12"
VAPOR MEMBRANE
6"
#4 CONT.
21/5
1/2"ϕ x 10" ANCHOR BOLTS @ EA. END OF PLATE & @ 4'-0" o.c.
FINISH GRADE
WOOD FLOOR'G
4" CONC. SLAB
WELD. WIRE MESH
16"
2-#4
#4
2" INSUL'N (ZONOLITE -YFORM)
3'-0"
#4 VERT. @ 16" O.C.
#4
5" 6" 5"
2-#4 ALTERNATE BENDS
10"
16"
7/5
TOP OF SLAB ELEV. 0'-0"
STONE VENEER
24 GA. GALV. FLASHG.
WEEP HOLE
3x6 PLATE WT. FLG.
FILL WITH GROUT
5" 6"
11"
5'-0" MIN.
#4 VERT. @ 16" O.C.
3"
SEE 16/5
8/5
1/2"ϕ x 10" ANCHOR BOLTS @ 4'-0" o.c.
FIN. GRADE
3x6 PLATE
VARIES
5'-2" MIN.
5" 6" 5"
10"
16"
9/5
STONE VENEER
4 5/8"
2" 24 GA. GALV. SHT. STL. FLASHING
WEEP HOLE
WALK
2'-0"
1" INSULATION
5'-0" MIN.
2-#4
W.C. CARRIER FOOT
3'-0" MIN.
5" 5"
10"
16"
11/5
21/5
1'-6" 4 1/8"
FOR EXACT LOCATION SEE PLUMB. INSTRUCTIONS
W.C.
ELEV. 0'-0"
FIN. FL.
EXTENDED (OR REVERSIBLE) FOOT RECD. FOR CLOSET CARRIER
21/5
4 5/8"
4" STONE VENEER
24 GA. GALV. SHT. ST. FLASHING
PROVIDE WEEP HOLES
2'-0"
FIN GD.
FILL WITH GROUT
5'-2" MIN.
4" 12" 2"
10"
16"
12/5
16" STONE MASONRY
WALK
FINISH GRADE
2'-0"
3'-10" MIN.
2-#4
#4
#4 @ 16" O.C. VERT.
16"
2"
2-#4
16"
13/5
4"x4" STEEL TUBE COLUMNS
TOP OF FLOOR SLAB ELEV. 0'-0"
12"
FIN. GRADE
10"
#4 @ 12" o.c. BOTH WAYS AT EACH SIDE OF PIER
5'-0" MIN.
2'-6" SQUARE
4"
10"
3'-2" SQUARE
12" HOOKS ON BOTTOM TURN INTO FOOTING
14/5
WELD. WIRE MESH
FIN. GRADE
10"
4" GRAVEL COMP'D. FILL
6"
#4
15/5
24 GA. GALV. SHT. STL. FLASHING
7"x7" STEEL TUBE COL'S
WEEP HOLE
FIN. GRADE
SLOPE ALL 4 SIDES
6"
8" MIN.
12"
18"
SEE 6/5
#4 VERT. @ 11" O.C. EA. SIDE OF PIER
#4 HORIZ. @ 12" O.C. EACH SIDE OF PIER. BEND 15" AROUND CORNERS
4'-10" MIN.
12 1/2"
4'-0" SQUARE
4'-8" MIN.
12" HOOK ON BOTTOM OF VERT. TURN INTO CENTER OF FOOTG.
10"
4'-2"
3'-3"
#5 AT 12" O.C. BOTH WAYS
16/5
AT PURGED FIRE SPACE
CONC WALK
VARIES 2'-0" MAX.
8"
2'-0"
#4
#4 @ 16" VERT.
#4
1" INSULATION
5'-2" MIN.
5" 6" 5"
2-#4
10"
16"
17/5
WD. FLOOR'G.
CONC. WALK
MET. THRESH.
DOOR
EL. 0'-0"
5'-6" MIN.
TYPICAL FOUND'N.
18/5
WD. FLOOR'G.
1/2" PRE-FORMED EXPANSION MAT'L.
3/16" WD. FLOORING
1/8" RESILIENT FLOOR TILE OVER 3/16" WEDGE FORMED BY GROUT FEATHER'D TO EDGE
ROUND BEYOND
TYPICAL FOOTG.
19/5
20/5
AS CONSTRUCTED DRAWING
DRAWN 3/4" = 1'-0"
SCALE IN FT.
0 1 2 3 4 5 6
ORIENTATION
DRAWN BY HUNTSMAN
REVISED
DATE INITIAL
REGION MIDWEST
PCP NO. B-13-44
SHT 5 OF 33
DRAWING NO. NP-RM 3648-B
DATE 6-69
SHEET NO. 5.

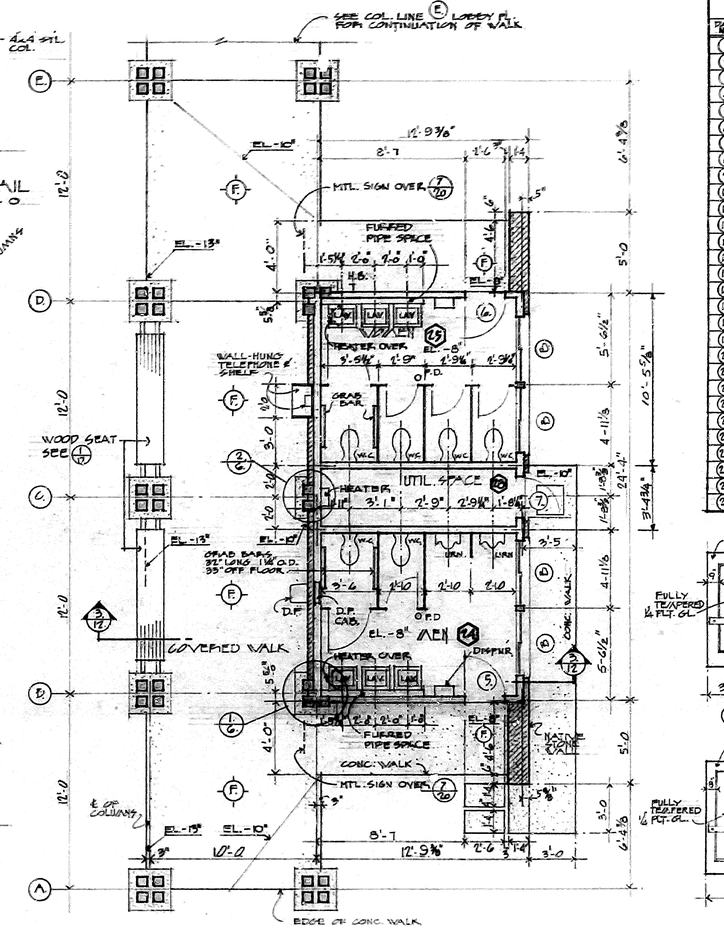


FLOOR PLAN - LOBBY

SCALE 1 0 5 10 15 20 — DRAWN 1/4" = 1'-0

1/6 CORNER DETAIL 1" = 1'-0

2/6 COL. @ WALL DETAIL 1" = 1'-0

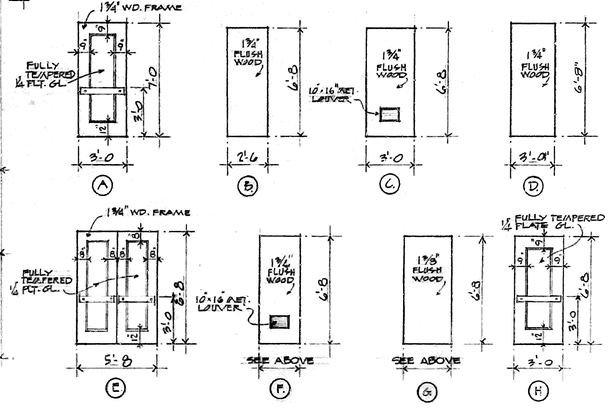


FLOOR PLAN - COMFORT STATION & COVERED WALK

- DOOR SCHEDULE -

DOOR NO.	TYPE	SIZE	HEAD	JAMB	TRSH.	LOUVER	HARDW.	REMARKS
1	A	3'-0 x 7'-0	4/15	3/15	1/15			SEE SPECS
2	A	3'-0 x 7'-0	4/15	3/15	1/15			
3	A	3'-0 x 7'-0	4/15	3/15	1/15			
4	A	3'-0 x 7'-0	4/15	3/15	1/15			
5	B	2'-6 x 6'-8	12/13	13/13				
6	B	2'-6 x 6'-8	12/13	13/13				
7	B	2'-6 x 6'-8	9/13	10/13	11/13			
8	C	3'-0 x 6'-8	15/13	15/13		METAL 10"x16"		
9	C	3'-0 x 6'-8	16/13	17/13		DO		
10	C	3'-0 x 6'-8	16/13	17/13		DO		
11	G	3'-0 x 6'-8	16/13	17/13				
12	G	3'-0 x 6'-8	16/13	17/13				
13	C	3'-0 x 6'-8	16/13	17/13		METAL 10"x16"		
14	C	3'-0 x 6'-8	16/13	17/13		DO		
15	C	3'-0 x 6'-8	16/13	17/13		DO		
16	C	3'-0 x 6'-8	16/13	17/13		DO		
17	C	3'-0 x 6'-8	14/13	17/13		DO		
18	C	3'-0 x 6'-8	14/13	17/13		DO		
19	C	3'-0 x 6'-8	14/13	17/13		DO		
20	C	3'-0 x 6'-8	15/13	15/13		DO		
21	H	3'-0 x 6'-8	5/12	8/12	20/13			
22	D	3'-0 x 6'-8	18/13	18/13	19/13			
23	E	1-PR 2'-10 x 6'-8	6/12	9/12	20/13			
24	F	2'-6 x 6'-8	14/13	15/13				
25	F	2'-6 x 6'-8	15/13	15/13				
26	F	2'-6 x 6'-8	14/13	15/13				
27	F	2'-0 x 6'-8	16/13	17/13				
28	G	1 PR 2'-10 x 6'-8						
29	G	1 PR 2'-10 x 6'-8"						

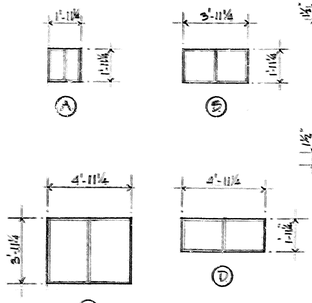
ALL DOORS SOLID CORE EXCEPT DOORS 28 & 29.



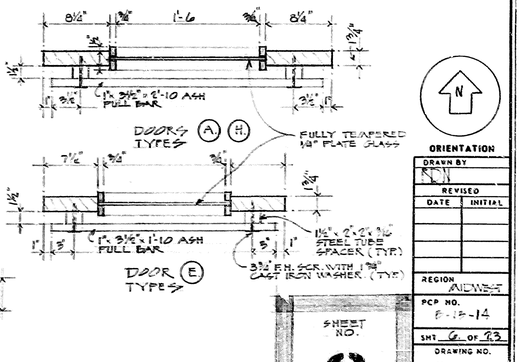
- WINDOW SCHEDULE -

MARK	TYPE	SIZE	HEAD	JAMB	SILL	GLASS	REMARKS
A	FIX. & SLIDE	1'-11¾" x 1'-11¾"	9/14	5/14	5/14	D.S.B.	
B	FIX. & SLIDE	5'-11¾" x 1'-11¾"	5/15	5/15	8/15	D.S.B.	OBSCURE GLASS
C	FIX. & SLIDE	4'-11¾" x 3'-11¾"	4/15	5/15	5/15	D.S.B.	
D	FIX. & SLIDE	4'-11¾" x 1'-11¾"	4/15	5/15	5/15	D.S.B.	OBSCURE GLASS

WINDOWS EQUIPED W/ STORM WINDOWS & SCREENS.



NOTE! FIXED & SLIDE SECTIONS OF WINDOWS ARE INDICATED ON ELEVATIONS.



ORIENTATION

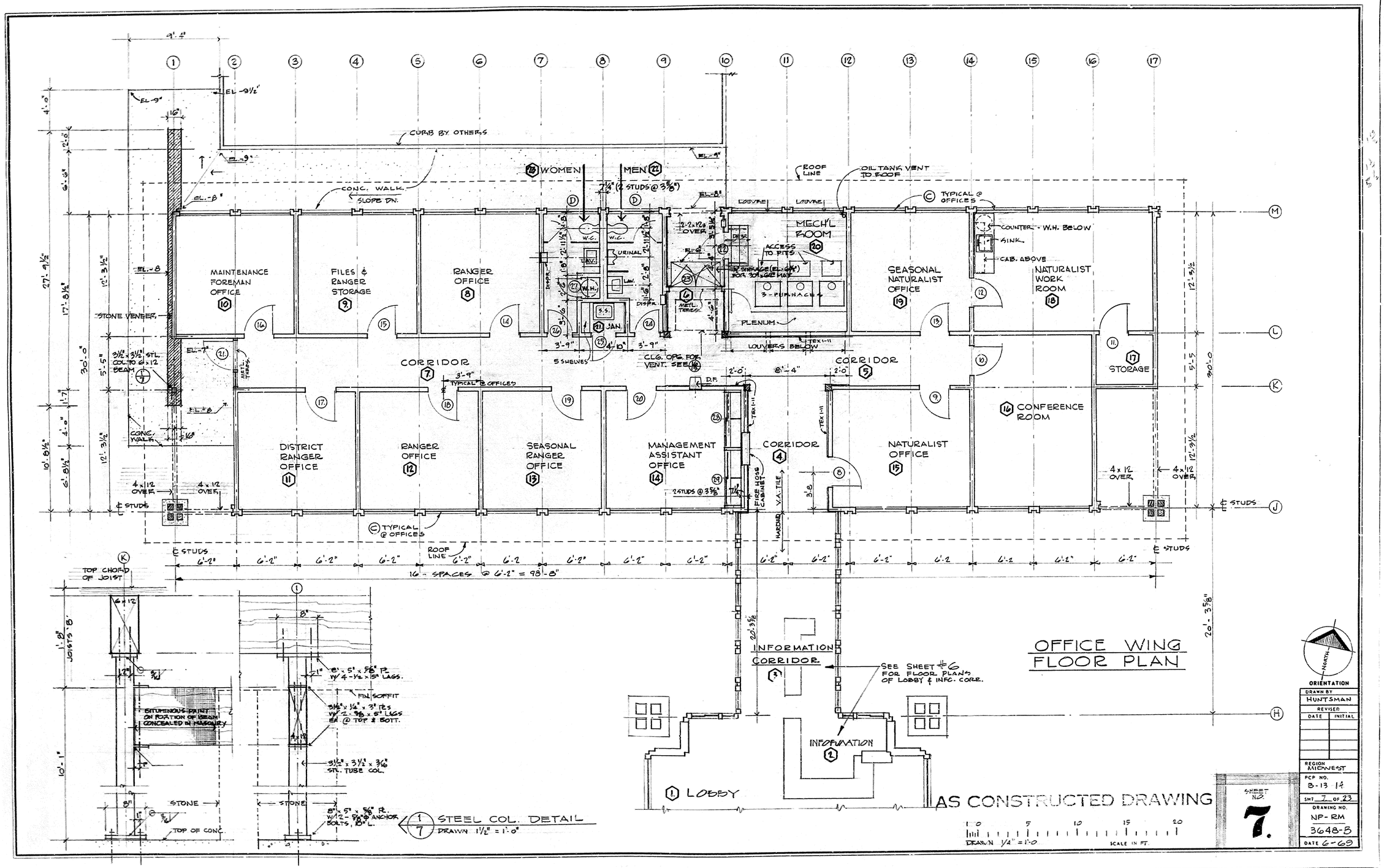
DRAWN BY	
KEN	
REVISED	
DATE	INITIAL
REGION	MIDWEST
PCP NO.	8-17-14
SHT.	6 OF 9
DRAWING NO.	NP-330 3648
DATE	6-63

SHEET NO. 6.

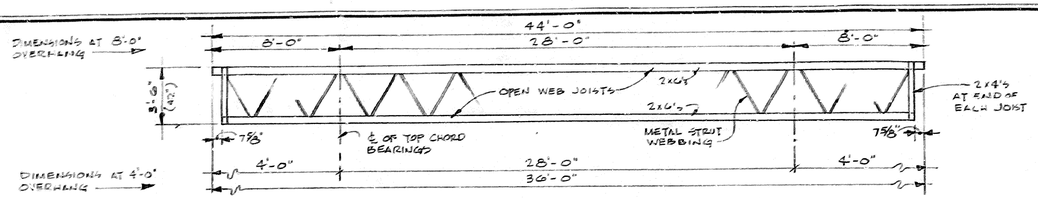
AS CONSTRUCTED DRAWING

SCALE

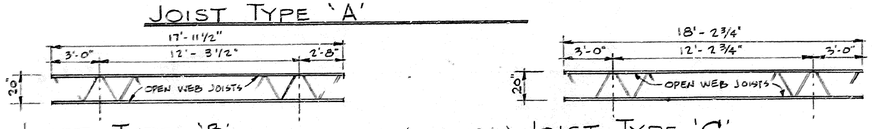
BASIC DATA



OFFICE WING
FLOOR PLAN
MAINTENANCE FOREMAN OFFICE 10
FILES & RANGER STORAGE 9
RANGER OFFICE 8
WOMEN 23
MEN 22
MECH'L ROOM 20
SEASONAL NATURALIST OFFICE 19
NATURALIST WORK ROOM 18
STORAGE 17
CONFERENCE ROOM 16
CORRIDOR 7
CORRIDOR 5
CORRIDOR 4
DISTRICT RANGER OFFICE 11
RANGER OFFICE 12
SEASONAL RANGER OFFICE 13
MANAGEMENT ASSISTANT OFFICE 14
NATURALIST OFFICE 15
INFORMATION CORRIDOR 3
INFORMATION 2
LOBBY 1
CURB BY OTHERS
CONC. WALK
SLOPE DN.
ROOF LINE
OIL TANK VENT TO ROOF
TYPICAL @ OFFICES
COUNTER - W.H. BELOW
SINK
CAB. ABOVE
ACCESS TO PITS
3-FURNACES
PLENUM
LOUVERS BELOW
CLG. OPG. FOR VENT. SEE 16
5 SHELVES
STONE VENEER
3½" x 3½" STL. COL. TO 6 x 12 BEAM
4 x 12 OVER
℄ STUDS
16 - SPACES @ 6'-2" = 98'-8"
TOP CHORD OF JOIST
JOISTS 8'
BITUMINOUS PAINT ON PORTION OF BEAM CONCEALED IN MASONRY
FIN. SOFFIT
3½" x 3½" x 3/16" STL. TUBE COL.
STONE
TOP OF CONC.
8" x 5" x 5/8" PL. W/ 4-½ x 5" LAGS.
3½" x ¼" x 3" PLS W/ 2-⅜ x 5" LAGS EA. @ TOP & BOTT.
8" x 5" x 5/8" PL. W/ 2-5/8" ⌀ ANCHOR BOLTS, 18" L.
1/7 STEEL COL. DETAIL
DRAWN 1½" = 1'-0"
SEE SHEET #6 FOR FLOOR PLANS OF LOBBY & INFO. CORR.
AS CONSTRUCTED DRAWING
DRAWN ¼" = 1'-0
SCALE IN FT.
ORIENTATION
NORTH
DRAWN BY HUNTSMAN
REVISED
DATE INITIAL
REGION MIDWEST
PCP NO. B-13 14
SHT 7 OF 23
DRAWING NO. NP-RM 3648-B
DATE 6-69
SHEET NO. 7.



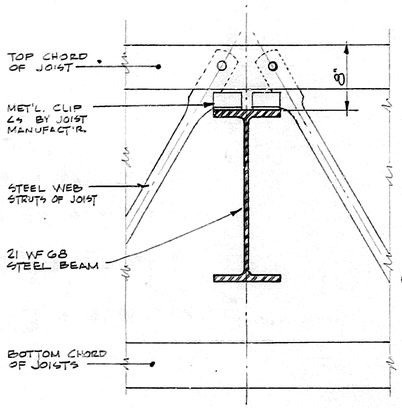
JOIST TYPE 'A'



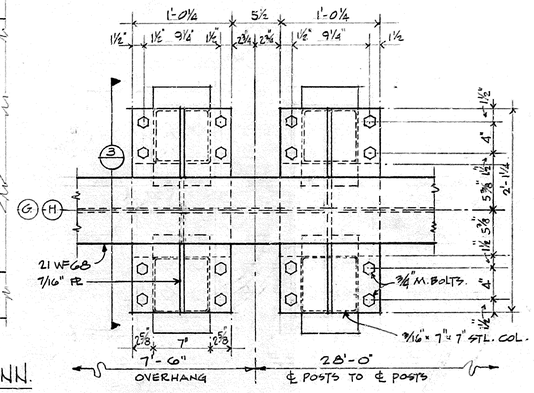
JOIST TYPE 'B'

SCALE (DRAWN 1/4"=1'-0")

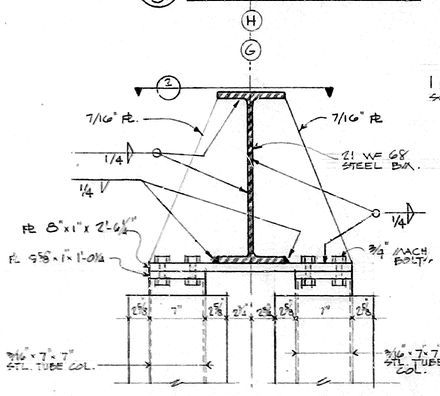
JOIST TYPE 'C'



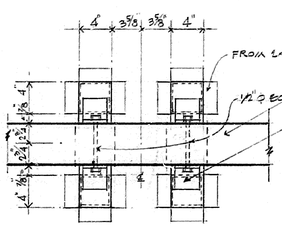
1/8 JOIST TO BEAM CONN.



2/8 BEAM TO POST - PLAN



3/8 BEAM to POST CONN.

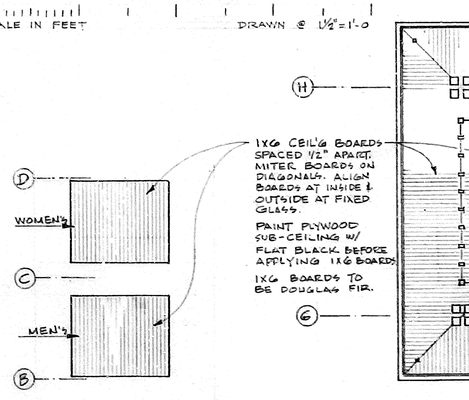


4/8 BEAM TO POST - PLAN

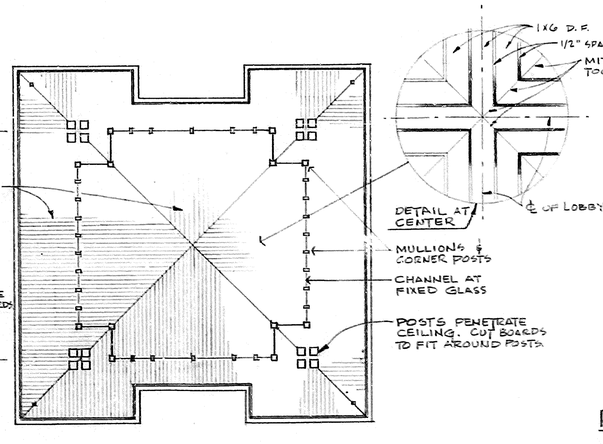
5/8 BEAM TO POST CONN.

SCALE IN FEET

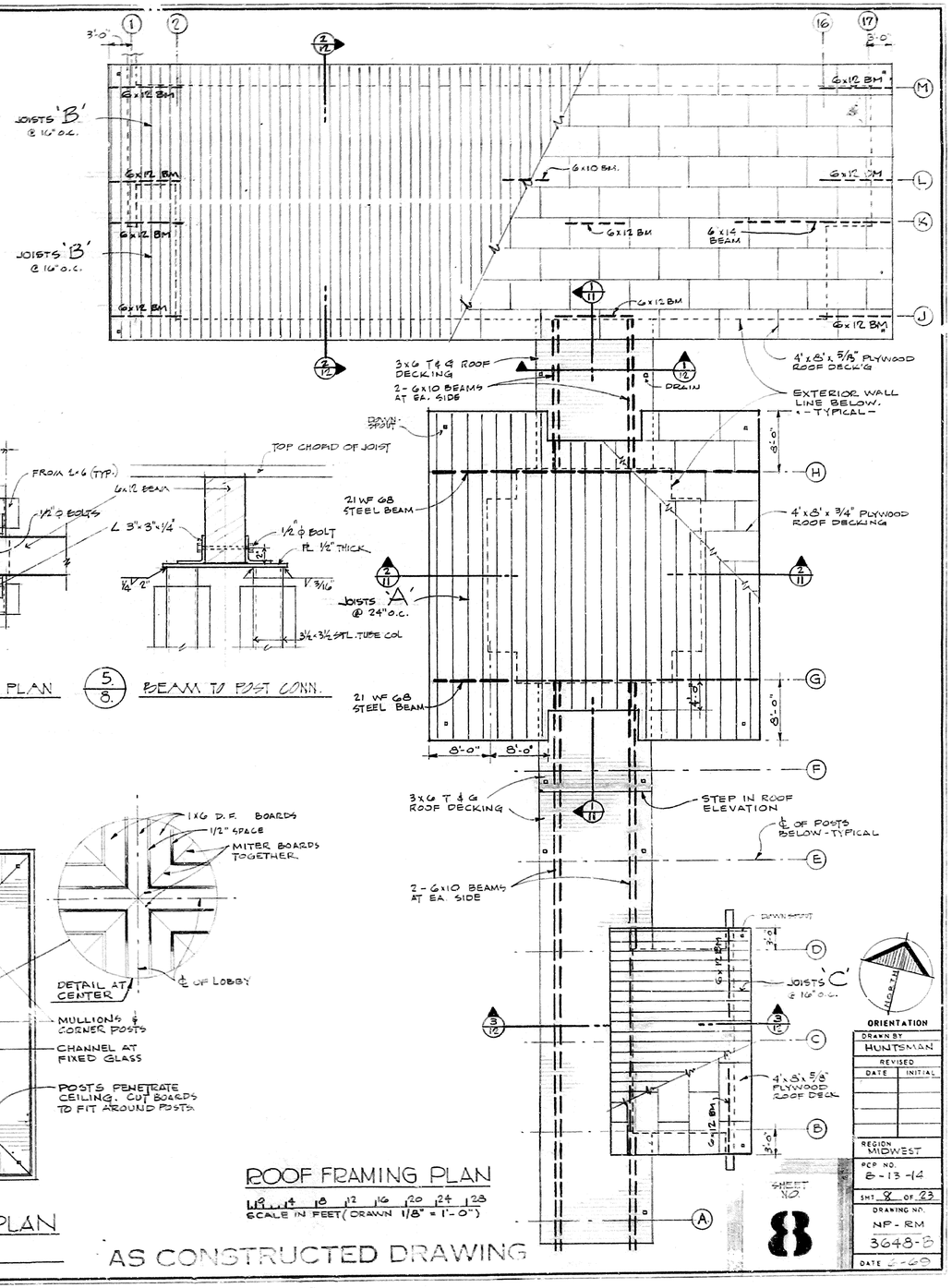
DRAWN @ ½"=1'-0"



REFLECTED CEIL. PLAN OF COMFORT STATION



REFLECTED CEILING PLAN OF LOBBY



ROOF FRAMING PLAN

1/8 1/4 3/8 1/2 1/16 1/20 1/24 1/28

SCALE IN FEET (DRAWN 1/8" = 1'-0")

AS CONSTRUCTED DRAWING

ORIENTATION

DRAWN BY	HUNTSMAN
REVISED	
DATE	INITIAL
REGION	MIDWEST
RCP NO.	E-13-14
SHT.	8 OF 23
DRAWING NO.	NP-RM 3648-B
DATE	4-69

SHEET NO. 8