State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER	PAGE
DCH12046	1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
KRISTA FERRELL
304-558-2596

VENDOR
RFQ COPY
TYPE NAME/ADDRESS HERE

SHIP TO
DIVISION OF CULTURE & HISTORY

CULTURAL CENTER
1900 KANAWHA BOULEVARD, EAST
CHARLESTON, WV
25305-0300 558-0220

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
01/19/2012				

BID OPENING DATE: 02/02/2012 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT NO.	ITEM NUMBER	UNIT PRICE	AMOUNT

ADDENDUM NO. 1

THIS ADDENDUM IS ISSUED TO PROVIDE REVISED SPECIFICATIONS, DRAWINGS, AND COST SHEET PER THE ATTACHED.

PRE-BID DATE REMAINS: 01/20/2012 AT 2:00 PM IN BUILDING 9 ON THE WV STATE CAPITOL COMPLEX (GREEN ROOM)

DEADLINE FOR TECHNICAL QUESTIONS REMAINS: 01/24/2012 AT THE CLOSE OF BUSINESS.

BID OPENING DATE REMAINS: 02/02/2012
BID OPENING TIME REMAINS: 1:30 PM

********** END ADDENDUM NO. 1 **********

0001	1	LS		495-35	_____	_____

COLLECTION STORAGE SYSTEM FOR DCH

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE

TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)

1. Awards will be made in the best interest of the State of West Virginia.

2. The State may accept or reject in part, or in whole, any bid.

3. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required $125 fee.

4. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods this Purchase Order/Contract becomes void and of no effect after June 30.

5. Payment may only be made after the delivery and acceptance of goods or services.

6. Interest may be paid for late payment in accordance with the ***West Virginia Code***.

7. Vendor preference will be granted upon written request in accordance with the ***West Virginia Code***.

8. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

9. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.

10. The laws of the State of West Virginia and the ***Legislative Rules*** of the Purchasing Division shall govern the purchasing process.

11. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.

12. BANKRUPTCY: In the event the vendor/contractor files for bankruptcy protection, the State may deem this contract null and void, and terminate such contract without further order.

13. HIPAA BUSINESS ASSOCIATE ADDENDUM: The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, is available online at **www.state.wv.us/admin/purchase/vrc/hipaa.html** and is hereby made part of the agreement provided that the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.

14. CONFIDENTIALITY: The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf.

15. LICENSING: Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, and the West Virginia Insurance Commission. The vendor must provide all necessary releases to obtain information to enable the director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

16. ANTITRUST: In submitting a bid to any agency for the State of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the State of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, or person or entity submitting a bid for the same material, supplies, equipment or services and is in all respects fair and without collusion or Fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division. Complete all sections of the quotation form.

2. Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.

3. Unit prices shall prevail in case of discrepancy. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.

4. All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130

5. Communication during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited (W.Va. C.S.R. §148-1-6.6).

ALL LABOR AND MATERIALS TO UPGRADE THE WV DIVISION OF CULTURE AND HISTORY COLLECTIONS STORAGE SYSTEM

SECTION 10674 – MUSEUM STORAGE (ADD- MECHANICALLY ASSISTED)

PART 1 – GENERAL

SUMMARY

A. This Section includes the following:
   1. (***ADD**: Mechanically assisted, carriage mounted high-density mobile*) storage shelving units, movable art rack, support rails, fabrication, and installation; including leveling of support rails.

B. Related Work (by others):
   1. Structural floor system capable of supporting live and dead loads required by prevailing building codes, including rolling loads of storage units to be installed.
   2. Finish floor covering materials and installation on raised floors and ramps or when on concrete with recessed rail installation.
   3. ~~Power source located in storage room from adequate power supply.~~
   4. Also by others: Fire suppression, HVAC, and lighting.

C. (***ADD**- ADD/ALTERNATES: If the project budget allows, the Agency will select form the following specialty storage systems. Bidder will provide unit and extended cost. (refer to the bid return sheet below)*

ALTERNATE #1- Garment and Costume Storage: for thirty percent (30%) of the Collection, average 26" deep carriages. Adjustable shelves and textile rods to be included. (approximately 150 to 200 linear feet of storage)

ALTERNATE #2- Slide Out Tray Unit (various sizes, widths) – fifteen percent (15%) of the Collections.

ALTERNATE #3- Long Arm Storage – One (1) 12' x 20' end cap section.

ALTERNATE #4- Rolled Textile Storage (various sizes, widths) – Drawer/rack style. Rolled textiles are suspended by the pole ends versus laying flat in drawers. – ten percent (10%) of the Collections.

ALTERNATE #5- Full-Extension Drawers (various sizes, widths) – for thirty percent (30%) of the collection.

ALTERNATE #6- Pull-Out Work Shelf – One (1) per every four (4) aisles.

D. Pre-Bid Meeting:
   1. A mandatory pre-bid conference is scheduled for January 20, 2012 at 2:00PM at the West Virginia Division of Culture and History (WVDCH) located at 1900 Kanawha Boulevard East (Building 9 on the WV Capitol Complex) in Charleston, West Virginia. Vendors are asked to

assemble in the Green Room. It is the Intent of the WVDCH to provide prospective Contractors the opportunity to survey the installation site and the Collection.

2. Questions concerning this solicitation and those specific to the Collection and the physical location of the storage area must be directed to Krista Ferrell, Buyer Supervisor via e-mail at krista.s.ferrell@wv.gov or via fax at 304-558-4115.

REFERENCES

E. American National Standards Institute (ANSI) Standards:
   1. Applicable standards for fasteners used for assembly.

F. American Society for Testing and Materials (ASTM) Standards:
   1. Applicable standards for steel sheets materials used for fabrication.

G. American Institute of Steel Construction (AISC) Standards:
   1. Applicable standards for steel materials used for fabrication.

H. Underwriters' Laboratories (UL):
   1. Listings for electrical equipment and devices describes in this specification.

SYSTEM DESCRIPTION

I. General: The system consists of manufactured and WVDCH Furnished storage units mounted on manufacturer's track-guided carriages (or to the floor as final design dictates) to form a complete storage system. System design permits access to any single aisle by moving units until the desired aisle is opened. The carriage/rail system provides uniform carriage movement along the total length of travel, even with unbalanced loads. System designs shall maintain an internal aisle no less than 45 "within the system, and 40" within the art rack system.

J. Carriage System Design and Features: The carriage system consists of a formed structural steel frame with hardened steel wheel riding on steel rails surface mounted to the floor. Rails shall be types specified to ensure smooth operation and self-centering of mobile storage units during travel without end play or binding. Rails quantities and spacing shall be determined.by the manufacturer to suit installation conditions and requirements. All bearings in the drive mechanism shall be permanently shielded and lubricated.

K. Movement Controls:

   1. ~~Movement shall be controlled b y a programmable microprocessor, which provides controlled carriage movemt speed, sequential starting and stopping, and custom programming features for access, safety and security.~~

   2. ~~Provide a carriage control panel on the accessible (open) end of each moveable carriage, located 44 inches (1118 mm) above the base, centered on the face panel. Minimum controls shall include a Liquid Crystal (LCD) display, green MOVE (aisle opening) pushbuttons, STOP, and RESET pushbuttons. Reset pushbutton shall include a red reset light, which is on continuously until rest button button is pushed.~~

3. ~~System controls shall start motors on each movable carriage sequentially to minimize power demands and shall provide dynamic braking to provide smooth operation. Maximum running speed shall be limited to 3 inches (76 mm) per second.~~

4. ~~Provide solid state controls and indicator lights for a visual indication of safety system operation. Provide each aisle an adjustable limit switch to ensure proper timing for start/stop operations.~~

5. ~~Pressing the MOVE (aisle opening) pushbutton on any movable carriage adjacent to the desired aisle location opens the desired aisle. The selected aisle shall open automatically regardless of the position of the carriages unless the presently open aisle is either still occupied, or aisle sensors detect an object disrupting the sensors.~~

    a. ~~The carriage control head willdisplay a red reset light a the newly opened aisle indicating that the aisle is locked open and requires resetting before another aisle can be opened.~~

*(**ADD- 1.** Triple arm operating wheels with rotating hand knobs shall be provided on the shelf units, centered on the end panel, located 40 inches (1051 mm) form the base of each unit to permit units to be moved to create a single aisle opening. Turning the handle transmits power through chain drive to drive wheels on each carriage.)*

L. Drive System: ~~The system shall be designed with a positive type power-assisted drive, which minimizes endplay and will stop carriages from drifting. All system components shall be as specified to ensure a smooth, even movement along the entire carriage length.~~ *(**ADD:** The system shall be designed with a positive type mechanically-assisted drive which minimizes end play, ensures there is no play in the operating wheel, and that carriages will stop without drifting.)*

1. ~~Each carriage shall be provided with a current limited fractional horsepower gear motor, connected to drive wheel assemblies with a roller chain.~~ *(**ADD:** All system components shall be selected shall be selected to ensure a smooth, even movement along the entire carriage length.)*

2. System shall include a chain sprocket drive system to ensure that carriages move uniformly along the total length of travel, even with unbalanced loads. *(**ADD:** Drive system gearing shall be designed to permit one (1) lb. of force applied to operating wheel to move a minimum of four thousand (4,000) lbs. of load.)*

3. A tensioning device shall be provided on each chain drive with provision for adjusting tension without removing end panels.

4. All bearings used in the drive mechanism shall be permanently shielded and lubricated.

5. ~~System shall operate on a minimum of three (enabled by WVDCH) 115 V.A.C. 50/60 hertz, 20 amp dedicated circuit provided by owner.~~

M. Safety Features:

1. ***(ADD:*** *Color-Coded)* visual indicators shall provide verification that carriages are in the locked or unlocked condition.

2. ~~Provide an automatic battery backup system in case of power failure~~ ***(ADD:*** *A single safety lock button, mounted on each operating wheel hub, when pulled out (unlocked),will permit moving a carriage in either direction to create a new access aisle, or locking the carriage when the button is pushed in.)*

3. ~~Entire system shall be UL listed.~~

4. ~~Photo sweep sensor system and electric braking devices shall be provided to stop carriage movement if the system detects object or persons in the aisle while the carriage is in motion. Electro-mechanical sweeps are unacceptable.~~

5. ~~Infrared sensor system and electric braking devices shall be provided to prevent new carriage movement if the system detects objects or persons in the open aisle when an attempt is made to open another aisle. Safety systems ustilizing motion detecton, heat sensors, or requiring force or pressure to activate safeties are unacceptable. System will automatically reset when person or object is removed from the aisle.~~

N. Finishes:
   1. Fabricated Metal Components And Assemblies: Manufacturer's standard powder coat paint finish (a minimum of 20).

   2. End Panels, Accessible Ends: Manufacturer's standard powder coat paint finish in standard available colors (a minimum of 20).

   3. WVDCH, at their discretion may select multiple colors within the system.

PERFORMANCE REQUIREMENTS

O. Design Requirements:

   1. Limit overall height to 105 inches (art-rack 108")

   2. Maximum system length to be determined by contractor (by design) and approved by WVDCH.

P. Seismic Performance: Provide mobile storage units capable of withstanding the effects of earthquake movement when required by applicable building codes.

Q. Minimum storage requirements:
   1. Wide span (cubic feet of storage): Six thousand four hundred (6,400)

   2. Art-rack (total square footage of screen): Eight thousand two hundred (8,200)

   3. Shelving for general collection (...et of shelving): Eight thousand (8,000)

4. Garment storage (linear feet): Two hundred eighty (280)

5. Textile storage (number of textiles 60" wide x 4" diameter): Nine hundred and sixty (960)

SUBMITALS (SHOULD BE SUBMITTED WITH THE VENDORS BID)

R. Product Data: Submit manufacturer's product literature for each type of shelving, track and installation accessory required. Include data substantiating that products to be furnished comply with requirements of the contract documents.

S. Shop Drawings: Show fabrication, assembly, and installation details including descriptions of procedures and diagrams. Show complete extent of installation layout including clearances, spacing, and relation to adjacent construction in plan, elevation, and sections. Indicate clear exit and access aisle widths; access to concealed components; assemblies, connections, attachments, reinforcement, and anchorage; and deck details, edge conditions, and extent of finish flooring within area where units are to be installed.

1. Show installation details at non-standard conditions. Furnish floor layouts, technical and installation manuals for every unit shipment with necessary dimensions for rail layout and system configuration at the project site. Include installed weight, load criteria, furnished specialties, and accessories.

2. Provide layout, dimensions, and identification of each unit corresponding to sequence of installation and erection procedures. Specifically include the following:

   a. Location, position and configuration of tracks on all floors.

   b. Plan layouts of positions of carriages, including all required clearances.

   c. Details of shelving, indicating method and configuration of installation in carriages.

3. Provide location and details of anchorage devices to be embedded in or fastened to other construction. Furnish templates if required for accurate placement.

4. Provide installation schedule and complete erection procedures to ensure proper installation.

5. Show locations of wiring and disconnects required for operating movable carriage units.

T. Samples: Provide minimum 3 inch (76MM) square example of each color and texture on actual substrate for each component to remain exposed after installation.

U. A certification letter signed by the contractor, stating that they have inspected the job site and understand fully the site logistics specific to, but not limited to bringing material into the building.

V. Installer Certificates: Furnish signed certification by manufacturer attesting that installers comply with specified requirements.

W. Submit manufacturer's certification that products comply with requirements of the contract documents.

X. Warranty: Submit copy of proposed warranty for review by WVDCH.

Y. Manufacturers Reference List: Provide a list (minimum of (4) four) of recently installed mobile storage units of similar scope and size in a museum application. Intent of list is to aid in verifying the suitability of manufacturer's products and comparison with materials and product specified in this section. Submission shall include: Company or institution name, contact name, address, phone number, date the system was put into service, contract value or amount.

Z. Contractors Reference List: Provide a list (minimum of (4) four) of recently installed mobile storage units. Intent of list is to aid in verifying the suitability of contractor's ability to provide the level of service required for a project of similar scope and size. Submission shall include: Company or institution name, contact name, address, phone number, date the system was put into service, contract value or amount.

AA. Formaldehyde-free Certification Rail/Deck: Furnish signed certification by the manufacturer on their letterhead, to the attention of the WVDCH attesting that the machinable fiberboard does not contain, nor does it emit formaldehyde VOC's.

BB. Off-Gassing Certification: Furnish signed certification by all manufacturers providing equipment on their letterhead, to the attention of the WVDCH attesting that the paint finishes used on the carriages, shelving and racks and all other steel painted surfaces do not contain off-gassing materials that can impact the collection.

CC. The successful vendor shall submit a copy of their current West Virginia Contractors License.

DD. The successful vendor shall provide the following required insurance: Workers' Compensation - Statutory requirements and benefits. Employer's Liability - $100,000.Commercial General Liability- $500,000 combined single limit. Commercial General Liability is to include Premises/Operations Liability, Products and Completed Operations Coverage, and Independent Contractor's Liability or Owner's and Contractor's Protective Liability. The West Virginia Division of Culture and History must be named as an additional insured when requiring a Contractor to obtain Commercial General Liability coverage. Automobile Liability - $500,000 - Combined single limit.

EE. Delivery of equipment and installation shall begin four (4) weeks ARO (after receipt of order) and approved submittals. Substantial completion shall be eighteen (18) weeks ARO. Due to the duration of the production and installation, Contractor and the West Virginia Purchasing Authority will determine and fair and reasonable billing sequence within five (5) days ARO.

FF. Failure to provide, or not fully disclose deviations to specifications and mandatory submittals may be cause for disqualification.

QUALITY ASSURANCE

GG. Manufacturer Qualifications: Engage an experienced manufacturer who is ISO 9001 certified for the design, production, installation and service of programmable electric, carriage mounted high-density mobile storage units and support rails. Furnish manufacturer's certification attesting ISO 9001 quality system registration. Should be included with bid submittal.

HH. Installer Qualifications: Contractor shall have in their direct employ, two experienced installers who are authorized representatives of the shelving manufacturer for installing the storage systems, with not less than 5 years' experience installing systems similar to those required for this project, and licensed or certified by manufacturer. Certification should be provided by manufacturer on manufacturer's letterhead at time of bid. Certifications by sales reps, dealers or distributors are unacceptable. Must be included with bid submittal.

II. Guaranteed minimum response time to service call of 48 hours required, and must be part of submittal. Engage an experienced installer who is a manufacturer's authorized representative for the specified products for installing carriages and anchoring shelving units to carriages.

JJ. Manufacturers Certification: Should supply with the bid separate written certifications by manufacturer on manufacturers letterhead required stating compliance with all specifications of the shelving systems. Shelving certification must confirm compliance with all sizes as noted in these specifications.

KK. Contractor shall maintain a current Contractors License Authorized by the West Virginia Contractor Licensing Board.

DELIVERY, STORAGE, AND HANDLING

LL. Follow manufacturer's instructions and recommendations for delivery, storage and handling requirements.

MM. Field Measurements: Verify dimensions before fabrication. Indicate verified measurements on Shop Drawings. Coordinate fabrication and delivery to ensure no delay in progress of the Work.

NN. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating mobile storage units without field measurements. Coordinate construction to ensure actual dimensions correspond to established dimensions.

OO. Sequence storage shelving system installation with other work to minimize possibility of damage and soiling during remainder of construction period.

PP. Schedule installation of specified products and accessories after finishing operations, including painting have been completed.

QQ. Provide components, which must be built in at a time, which causes no delays general progress of the Work.

RR. Pre-installation Conference: Schedule and conduct conference on project site to review methods and procedures for installing mobile storage units including, but not limited to, the following:

1. Review project conditions and levelness of flooring and other preparatory work performed under other contracts.

2. Review and verify structural loading limitations.
3. Recommended attendees include:

    a. Owner's Representative.

    b. Prime Contractor or representative.

    c. Manufacturer's representative.

    d. Subcontractors or installers whose work may affect, or be affected by, the work of this section.

SS. Phased installation :

The size and breath of this project dictates a phased installation. It is the responsibility of the chosen contractor to work with WVDCH to coordinate the installation schedule. The phases of installation and sequencing will be determined by the contractor and WVDCH after both parties have evaluated the existing locations of the collection, the area to house the new systems and the amount of available temporary storage.

WARRANTY

TT. Provide a written warranty, executed by Contractor, Installer, and Manufacturer, agreeing to repair or replace units, which fail in materials or workmanship within the established warranty period. This warranty shall be in addition to, and not a limitation of, other rights the Owner may have under General Conditions provisions of the Contract Documents.

UU. Warrant the entire movable compact shelving installation against defects in materials and workmanship for a period of five years from date of acceptance by the Owner. Warranty does not include extended service, including preventive maintenance.

VV. Warrant the entire movable compact shelving installation against defects in materials and workmanship for a period of five years from date of acceptance by the Owner. Warranty does not include extended service, including preventive maintenance.

MAINTENANCE

WW. Provide extended maintenance agreement for 1 year, commencing on the day the standard maintenance warranty ends. Warranty and maintenance dates will be established by Change Order after the successful installation and acceptance of the system by the Agency.

PART 2- PRODUCTS

MANUFACTURERS

A. General: Products are based upon mobile shelving system products manufactured by Spacesaver Corporation. Contingent on meeting specification requirements, other acceptable manufacturers may be included.

BASIC MATERIALS

B. General: Provide materials and quality of workmanship, which meet or exceed established industry standards for products specified. Use furniture grade sheet metal for component fabrication unless indicated otherwise.
C. ~~Electrical Devices and Controls; UL Listed for type of application and service.~~

GROUT

D. General: Provide non-shrink, non-staining hydraulic cement compound conforming to the following requirements, based on the performance of the test specimens at room temperature and in laboratory air.
    1. Linear Movement: No shrinkage while setting; maximum expansion limited to .002 inches per linear inch.
    2. Compressive Strength: Based on two inch cubes made following ASTM standards, tested on a Balding-Southward machine of 60,000 pounds capacity, meet or exceed the following:
        a. Age: 1 hour ---- 4,500 psi
           7 days ---- 8,000 psi

MANUFACTURED COMPONENTS

E. Rails:

    1. Rail shall be one piece, cold drawn structural "T" section 1035 steel extrusion 1-1/16" (27mm) high with a 2-1/8" (54mm) base flange, a 5/8" (16mm) minimum contact top surface and two anti-tip groves. Rail shall disperse the wheel point load to a minimum 4-1/4" square inch (27.5 mm) area at the base of the rail. All rail joints to be tongue and groove to provide horizontal and vertical continuity between rail sections, to gradually transfer the concentrated wheel point load to and from adjoining rail sections. Rail shall have two leveling screws and two permanently mounted floor anchors maximum 36" (914mm) o.c. Rails shall be permanently attached to top of structural floor system with provision for leveling rails to compensate for variations in floor surface level.***(ADD:*** *Capacity 1.000 lb, per linear foot (1385 kg/M)*

F. Floor/Ramp:

    1. Floor/Ramp Sheathing: Minimum 3/4 inch (19MM}, formaldehyde free fiberboard. ***(ADD:*** *Floor Ramp shall be made with materials capable of holding maximum floor loads consistent with large artifacts, The finished floor must be smooth and capable of holding loaded pallet mules. (5-ply underlayment grade plywood may not be suitable). Particle board sheathing materials are not permitted. Provide fire retardant treated floor/ramp material where required by code.)*

    2. Floor finish shall be applied by contractor. All exposed surfaces shall be coated with no less than one (1) layer of latex primer. Edges and underside of deck primer must be completed prior to deck and ramp installation. The walking surface shall be coated with no less than two (2) finish layers of a latex based deck finish.

    3. Adjustable, inverted 'T' supports shall support the deck no less than 16" on center.

    4. All other floors not covered by Floor/Ramp will be the responsibility of others.

G. Carriages:

1. Carriages shall be minimum 1,000 lbs. (1500kg) per linear carriage foot (meter) capacity, fixture unit welded, uni-frame assemblies constructed of 12 ga. steel with main supporting structural face sections 5-3/4" (146 mm) high with two reinforcing flanges running the full length of the carriage. Galvanized structural components and/or riveted carriages are unacceptable.

2. ***(ADD:** When required, provide bolted cartridge splices designed to maintain proper unit alignment and weight load distribution. Provide each carriage with at least two (2) wheeld per rail. Carriages longer than 10 Feet requires two rails; 11 to 16 feet require three (3) rails; and 17 to 27 feet require five (5) rails.)*

3. Main supporting structural face sections shall provide a ¾" (19mm) shelf mounting recess for positive shelving alignment and attachment. Top mount carriages are unacceptable. Wheel support sections shall be 12 ga. steel and shall be welded between the main support face sections, one per rail assembly. A minimum of two carriage face panel supports shall be provided for each face panel to fully support its weight and provide positive alignment. Provide each carriage that is less than 60" wide with no less than two wheels per rail and four wheels for carriages wider than 60".

4. When required, provide tension bolted carriage splices designed to maintain proper unit alignment and weight load distribution. Carriage face sections shall provide a smooth clean appearance without any exposed assembly holes or protruding hardware. Carriage shall be powder coat painted from manufacturer's standard colors.

H. Drive / Guide System:

1. Design: Provide a steady drive and guidance system which prevents carriage whipping, binding and excessive wheel/rail wear under normal operation.

    a. Drive System: Dual synchronized drive wheels on both sides of designated wheel housing(s), connected with a #40 roller chain to ensure even wheel movement. Multiple Synchro System assemblies shall be interconnected with a continuous 1-1/4" steel tube drive shaft (solid steel rod will not be accepted) for simultaneous wheel rotation and even, parallel carriage movement. Drive shaft (shaft connections shall be secured coupling type) shall exhibit no play or looseness over the entire length of that assembly. Load wheels shall be 5" (127mm). All wheels to be machined from solid 1045 steel and equipped with two (2) permanently shielded bearing assemblies. Spacers to be provided on both sides of wheel bearings to eliminate friction between wheels and carriage. Line shaft drive systems, driving wheels on only one side of carriage, will not be accepted.
    b. Guidance System: Provide four roller type guide bearings per wheel channel assembly, two at the end of each wheel channel. Guide bearings shall be precision machined, cam follower type of hardened steel, permanently lubricated and adjustable to ensure proper alignment of the carriages. Maximum profile of recess adjacent to rail for guide bearings and anti-tip system: 1-1/8" (28mm) wide x 3/4" (19mm) deep. Guidance system relying on cast iron wheels, dual flange, center flange or concave wheels are unacceptable.

c. Anti-tip safety: Provide two opposing in rail anti-tip assemblies per wheel channel that inter-member with the rails system's anti-tip grooves and are fully adjustable to ensure proper alignment.

I. ~~Motors:~~

~~1. Permanent Magnet motor type, 90VDC, 1/8 H.P. rating, continuous duty, 225 in. lbs.~~

~~2. Gear motor input RPM 1900 (full load), output RPM 30, gear ratio 60:1, 1.3 amps, 270 in. lbs torque at full load.~~

~~3. U.L. Recognized motor construction Class "A" minimum.~~

~~4. All gears shall be steel and the output shaft shall be sealed.~~

~~5. Allowable minimum noise levels (no load 60 dB max., pre-load 63 dB max).~~

~~6. Carriages less than 40' shall be equipped with one motor. Carriages more than 40' - 1" shall be equipped with two motors.~~

J. Face Panels:

1. Steel end panels. Laminated end panels, using traditional fiberboard, adhesives and laminates are not acceptable.
   a. All exposed ends (refer to design drawings) shall have steel face panels covering the full width and height of the carriage and storage housing.
   b. Face panels shall be constructed of 18 gauge (1.2 mm thick) steel using a 4-bend structural design that forms a 2- 1/4" (57mm) thick edge channel that runs the full length of each vertical edge.
   c. A minimum of three 18 gauge (1.2 mm thick) structural hat channel supports shall be welded into the back of the panel at the top, base and center to provide unit rigidity.
   d. Face panels shall be free of any exposed assembly holes or protruding hardware, and shall be assembled without any exposed sharp edges. For high density storage applications, two 3" x 5" (76mm x 127mm) cardholders shall be provided per aisle entry location and attached to the end panels with centers located 60" (1624mm) above the finished floor.
2. Finishes: Selected from manufacturer's standard available colors and patterns. A minimum of 20 colors shall be offered.

K. Art Racks:

1. Rails: Same as specification 2.4, A, 1.
2. Raised Floor: Same as specification 2.4, B, 1-4.
3. Carriage & Frame: Modular steel construction consisting of mesh panels constructed of 10 gauge (.135) steel wire, woven into 2" x 1" rectangular mesh and securely welded to a 1.25" x 1.25" x 1/8" steel angle frame. Frames have .875" x .437" slotted holes for mounting to posts and adjacent panel assemblies. Panels 4' to 7' wide have one .25" x .75" stiffener welded to the frame. Wider panels have two stiffeners. Panels are bolted back to back to a 3" x 1.5" x .125" carbon vertical steel tube posts. This forms a double face unit with no protruding frame assemblies. Double ply mesh

is required for independent storage. Racks using a single ply mesh are unacceptable. The vertical posts are bolted to a horizontal 12 gauge hot rolled wheel housing assemblies. A powder coat finish is applied to all components. Finish is inert; free of emissions and volatiles (wet spray applications unacceptable}. Total frame height not to exceed 108".

4. Wheels: Hardened steel wheels to be a minimum 3" in diameter with two (2) permanently shielded ball bearing assemblies. Wheels to be hardened. Provide spacers at both sides of wheel bearings to eliminate all friction between wheels and carriage. Provide four (4) roller-type guide bearings and two (2) anti-tip mechanisms per track assembly at the leading edge of the carriage. Guide rollers to be adjustable to insure proper alignment of carriages. Cast iron wheels, dual flange, center flange or concave wheels are unacceptable.

5. S-hooks- 50 hooks per panel.

6. Handles- ~~Each manual art rack shall be equipped with a handle to move the frame across the rail sub-structure.~~ ***(ADD:*** *Each manual art rack shall be equipped with a triple arm operating wheel with rotating hand knob, centered on the end panel, 40 inches (1051 mm) from the base of each unit to permit units to be moved to create a single aisle opening. Turning the operating wheel transmits power through a drive chain to drive wheels on each opening.*

L. Textile Racks:

1. ~~Vertical posts and bottom legs shall be 2" x 2" x 14 gauge square tubing. Horizontal supports shall be no less than 1" x 1" x 15 ga. square tubing. Tubing to be MIG welded into a solid unit. Top shall be 18 gauge steel welded to tubing frame. Bottom legs to have holes to allow attachment to moveable carriages or floor holes to be capped with polyethylene snap in plugs after the frame unit is installed. Horizontal supports shall be spaced on 12" centers vertically. Frame unit to be sandblasted prior to powder coating.~~ ***(ADD:*** *Textile racks are to be rolled, drawer storage, suspended in full pullout unit extension drawers. Rolled textiles are to be suspended on 14 gauge square tubing. Tubing shall be spaced on adjustable support bars at each end of the beam in precut slots. Frame for support bar is to be sandblasted prior to powder coating. Full pullout unit extension drawers should be free of bottom surface to rolled fabric is not resting on a flat surface.*

2. Metal shall be 16 ga. and MIG welded. Cantilever support to be designed to be moved horizontally on frame unit horizontal supports. Cantilever support to be secured in place with a zinc plated, spade head thumb screw 1/4" -20 x 3/4" long. Supports designed to accept conduit brackets on 1" centers in the front to back orientation. Cantilever textile supports is adjustable across the entire system length (as oriented left to right) of the full length of the carriage or stationery range.

3. Rolled conduit tube insert to be no less than 1-1/2" EMT conduit. Rolled conduit tube insert to be 10" to 12" longer than the either the textile or the acid free cardboard tube it is to enter. Insert to be supported by two brackets adjustable on 1" centers front to back on the cantilever textile support. For rolled textiles greater than 144", a 3" diameter schedule aluminum tube to be used as the insert.

4. All materials have been examined for "non-reactivity" and their use shall be subject to approval in this regard. "Non-reactivity" as used herein means that the material is

chemically stable and does not off-gas or physically degrade to produce any of the following: urea formaldehyde, free sulfate radicals, sulfides, free sulfur, chlorides, acetates, chlorine, formaldehyde, oxides of nitrogen, oxides of sulfur, ammonia, organic acids, disodium phosphate, di butyl phalate, acid hardened phenol formaldehyde resins, peroxides, volatile organic compounds, or plasticizers lacking long-term stability.

M. Garment Hanger Rod Assembly

1. Hanger rod brackets will be fabricated of no less than 16 ga. and will be installed in shelf units. Brackets to be powder coated.

2. Hanger rod will be no less than 1-5/16" O.D. with a wall thickness of .080" and chrome plated. Hanger rod to set within elliptical ring attached to bracket.

3. Assembly is adjustable vertically within the shelf unit on 1-1/2" centers.

4. Garment racks shall be 26" deep.

N. Shelving

1. Design: Wedge-lock type consisting of uprights, shelves, and shelf supports, designed to be assembled without fasteners or clips. Shelves shall not have any holes on exposed surfaces. Front and back flanges shall be flush with outside faces of posts. Design shall permit individual shelf adjustment and/or removal anywhere along the entire height of uprights.

2. Materials and Workmanship: Fabricate units from Class 1, cold-rolled steel sheet with all bends sharp and true and no exposed "knife" edges.

3. All units shall be free of burrs, sharp edges and projecting hardware with smooth, non-abrasive surfaces and edges.

4. After fabrication, shelving shall exhibit no dents, "oil canning", buckling or other surface irregularities.

5. Uprights: Closed single wall uprights- Formed from steel sheet to a hollow "tee" shape for intermediate supports and formed angles for end supports. Uprights shall have keyhole slots on inner wall only. Provide with sheet steel panels full height and depth of end uprights. Provide intermediate "tee" uprights between adjacent units. Closed double wall uprights - Formed from steel sheet to a hollow "tee" shape for intermediate supports and formed angles for end supports. Uprights shall have keyhole slots on inner wall only. Provide intermediate "tee" uprights between adjacent units. There shall be a 24-gauge steel panel welded to both sides of the two posts to form a hollow, closed upright which is flush with the steel posts. There shall be a recess channel adjacent to the posts that conceals shelf supports and provides for a back stop in single faced units. Double faced units shall have a recess channel at mid-depth for installation of a center stop. Double wall style uprights shall be used for storage of items that can be easily damaged such as textiles and garments. Closed single wall style uprights (all closed) shall be used for the general collection.

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7. Canopy Tops: Same construction as shelf units.

8. Shelf Supports: Form from 11 gauge steel sheet with four solid steel shoulder rivets, two per ear, that interlock with inner wall of uprights. Shelf supports used for the bottom shelf must be factory produced and not field modified for use when attaching shelving superstructure to carriage

9. All horizontal storage shelves shall be a textured and raised surface finish, with 20 standard factory colors to select from.

10. Standard Depths: 9, 10, 12, 13, 15, 16, 18, 20, 24, 26, 30, 32 or 36 inch depth selection to meet project requirements.

11. Standard Width: 28, 30, 40, 42, 46, or 48 inch width selection to meet project requirements.

12. Shelf Edge Vertical Profile: 3/4 inch (19MM) maximum.

13. Vertical Adjustment Increment: 1-1/2 inches (38MM).

14. Width Of Intermediate Uprights: 2 inches (51MM).

15. Clearance Between Uprights: Nominal shelf section width minus 2 inches (51MM).

16. Levelness of Completed Shelf Units: Maximum 1/8 inch (3.2MM) between bottom shelf and canopy top, measured along the edge of any upright in any direction.

17. Number of Vertical Shelf Spaces: As indicated on the drawings [as design dictates].

18. Vertical Shelf-To-Shelf Spacing: As indicated on the drawings [as design dictates].

19. Load Carrying Capabilities: Provide shelf units capable of supporting 40 pounds per lineal foot (18kg/305MM) with maximum deflection of U140. Shelves shall exhibit no permanent deflection under fully loaded conditions. ***(ADD:*** *a percentage of shelf units must be capable of supporting more than seventy (70) pounds per linear foot; at a minimum of fifty (50) shelves.)*

20. Accessories [as design dictates]: Provide bin fronts, dividers, bin dividers, back or center stops, reference shelves, front bases, acrylic bin fronts, double wall upright gap filler, racks or other accessories suitable to the collection requirements.

21. Shelf Reinforcements: Shelves exceeding 16" in depth, provide a minimum of {two (2) for shelf widths less than 30", three (3) for shelf widths over 30" but less than 42" and four (4) for shelf widths over 42" but less than 48"}.

22. Solid, full height back panels must be provided for all back to back shelving and all single face entry sections [as design dictates].

23. Powder Coat Paint Finish: All parts are cleaned in a six stage surface prep machine prior to coating, including:
    1. Heated alkaline wash
    2. Fresh water rinse
    3. Heated iron phosphate coat
    4. Fresh water rinse
    5. Recirculated deionized water rinse
    6. Fresh deionized water mist

24. After prepping, the material is dried at 250 degrees for 5-1/2 minutes. The painting process is an electro statically applied powder coating system using an epoxy-polyester hybrid powder paint. All overspray is collected and reused within the self- contained application booths with no venting or emissions to the environment. The film is applied to an average thickness of 1 to 1.5 mils. The coated parts are then oven cured for 20 minutes at up to 450 degrees to provide a furniture quality finish. The hot parts are cooled to ambient temperature prior to packaging. After curing, the paint finish is inert and no volatile emissions are present. There are no fugitive (stray) emissions in the finished product. During the manufacturing process, there are no volatile emissions and there is no hazardous waste produced. Color to be selected from manufacturers standard color card.

25. Gloss: 50 - 60 degrees

26. Impact Resistance: 160 in. lbs.

27. Flexibility: 180 degrees, 1/4" mandrel

28. Pencil Hardness: 2H

29. Cross Hatch Adhesion: 100%

O. Saddle Racks
   1. Existing saddle racks may be re-used at the clients discretion, however if new saddle racks must be used, must meet all the same steel and finish specifications detailed in this bid. If new racks are not required, contractor shall issue a material credit to the WVDCH via change order.

ACCESSORIES, SAFETYS, & PROGRAMMABLE SYSEM FEAURES

P. ~~All aisles shall be protected with a microprocessor controlled infrared photoelectric sensor system consisting of the following components.~~

   1. ~~Cross-aisle sensors shall be located on the face of the carriage profile on a maximum 12" (304mm) centers along the full length of each carriage at every potential moveable aisle.~~

   2. ~~Two direction sensing quadratures shall be located at each potential aisle entrance location.~~

   3. ~~An infrared photoelectric safety sweep shall be mounted on the carriage" (19mm) above the floor and scans the entire length of the aisle.~~

Q. ~~The microprocessor shall have a computer logic tracking system which combines the infrared photoelectric detectors providing the following operation modes.~~

   1. ~~System shall be passively activated so that when a person, wheelchair, cart, etc. is present in the open aisle, the aisle automatically locks in it's full open position; the face panel control shall display a lighted "AISLE IN USE" L.C.D. message at the affected aisle and a flashing "SYSTEM IN USE -CHECK OPEN AISLE" message at all other controls.~~

   2. ~~When personnel, wheelchairs, carts, etc. have exited the aisle, the system automatically resets and the L.C.D. enunciator panel shall display "READY FOR USE".~~

   3. ~~Should a person enter an opening aisle, carriage movement for that aisle will continue until the aisle is fully open.~~

   4. ~~Should the aisle be closing when someone enters it, the carriage movement at that aisle stops immediately (any other moving carriage will come to a controlled ramped stop), the L.C.D. panel shall display ""CHECK AISLE- PUSH RESET", and the reset button at that aisle shall illuminate flashing red. That aisle must be cleared and the flashing reset must be depressed before any new aisle operations.~~

      a. ~~Should an aisle lock open with no person or object in the aisle, the system may be reset only by: (Select option a or b).Pressing the reset button on the managerial key remote control unit.~~
      b. ~~Pressing the reset button at the affected aisle.~~

5. The infrared photoelectric safety sweep detection system shall operate on all carriages moving in the direction of the closing aisle. When the beam is interrupted during the a closing aisle carriage movement, the system shall come to a full stop. The L.C.D. panel shall display "CHECK AISLE - PUSH RESET" and the reset button shall flash red. This safety sweep activation shall be based on presence rather than weight. There shall be no mechanical switches, hinges, or base plates present in the aisle. To reset the system, push the flashing reset button at the affected aisle.

    a. If the photo sweep is clear and functioning properly, the system shall reset and the L.C.D. panel shall display "READY FOR USE"".

    b. If the photo sweep is obstructed, i.e., a box is in its path, the reset button will stop flashing and the panel will continue to display "AISLE IN USE' indicating the sweep is obstructed. The only command the system will accept is to push the open button at the obstructed aisle which will move the carriage away from the obstruction. When the sweep is clear and the carriage has completed the aisle movement, all L.C.D. panels shall display "READY FOR USE".

6. System shall be fully passive and fail-safe in design. Should any component of the safety sweep system fail, carriage movement will be safely locked out.

7. The mobile system shall be U.L. System Listed and C.S.A. certified.

R. The electric mobile system shall have the following programming capabilities:

1. [Touchpad Module Control on a Mobile Carriage: Provide a 10-digit touchpad control with display and audit trail capability to replace one standard push button control on a mobile carriage to control all the carriages in the system module with an easy-to-read 2x20 character LCD status display, PIN-code security, an internal real- time clock and a clear record of access. Touchpad shall permit: multiple (up to 512) unique PIN-codes with multiple (up to 256) unique security classes, PIN access to be limited to specific days of the week or time of day, and PIN access to be set to expire at a specific date and time. Touchpad control shall permit the transfer of access data (audit trail) to a touchpad PC interface software program which shall permit an authorized administrator to work with access data in spreadsheet format, to establish security classes, to assign security classes and PIN-codes to users, and to make updates as security requirements change. PC interface software installation and setup and touchpad setup shall be required. The mobile system with a touchpad module control on a mobile carriage shall also be equipped with a hardware stationary control to, with PIN-code authorization, permanently set a carriage to a stationary locking the entire system with closed aisles or splitting the system module in two [or a hardware on/off control to, with PIN-code authorization, permanently shut down or restore power to the system, preventing unintentional power ups].)
2. LCD Display -Used to display status, navigate menus and read instructions. If left idle for 20 seconds, a screensaver will appear with Time, Date, and an audit log

meter that shows how much of the memory is used and blinks when the memory is full. Display languages can be English, French, Spanish, English/French, or English/Spanish.

3. LED Indicator- Alerts the user to the status of the carriage. The LED functions the same as the standard controls for carriage movement.

4. Stop/Reset and Move Buttons- Works just like the standard controls, but Reset and Movement will be inactive if platform-mounted Touchpads are used.

5. Pin Numbers
   a. 3 - 9 Digits Long

   b. Limited to specific day of the week and time of day

   c. Set to expire at a specific date and time

6. Enter Button

7. Clear Button- Cancels the user's most recent choice.

S. Building Interface and System Cycle Operation

1. System Fire Park shall be interfaced into owner provided fire alarm system with a relay contact closure. When the alarm is activated for (1 to 255) seconds, the carriage will cycle into a position allowing equal spacing between all carriages in a module. Activated safety systems cannot be overridden by the fire park mode.

2. System Auto Cycle so that after 1 to 255 minutes of inactivity, it will enter into the auto-cycle mode. This mode cycles each adjacent aisle in a module to open every 1 to 255 minutes. When the last aisle in a module has opened and completed the time cycle, all the carriages in the module will cycle back to the first aisle and resume the process. System auto-cycle may be interrupted at any time for normal user operation. After 1 to 255 minutes, the auto-cycle feature will resume from the original aisle. Auto cycle is overridden by all safety features.

3. System Ventilation Park can be programmed so that after 1 to 255 minutes of inactivity the carriages will cycle into a position allowing equal spacing between carriages in a module. Safety systems cannot be overridden by the ventilation park mode. System Ventilation Park allows any new aisle to be opened when desired.

T. Automatic Battery Backup System: The system shall include an automatic battery backup system capable of powering the entire system module in the event of a power failure. The battery backup system shall be designed for handling not less than 15 Amps and 1500 VA. The system shall provide an audible indication that the system is running on backup power. The system shall provide full system functionality while operating on battery power including: full speed carriage movement, multiple carriage movement, and all normal

~~safety functionality. The system shall charge itself when AC power is restored to the system.~~

U. ~~Access Indicator Light: System shall be equipped with access indicator light connection, final location to be determined by customer and wiring to the system to be supplied by others. System shall be equipped with access indicator light(s). Fixture to consist of a 2-3/4" x 4-1/2" (70mm x 114mm) flat black steel face plate powder coat painted with a flat black finish. Each access indicator light shall have a n upper bright red and lower bright green Light Emitting Diode (LED) lamp assembly with a minimum :X" (19mm) diameter dome that protrudes a minimum of }'4" (6mm) from the face late providing a minimum 180 degree wide viewing angle. LED lamps shall be rated for a 100,000 hour life and shall have high luminous intensity with excellent visibility. Supplies sufficient to accommodate 75' wiring length to be provided at no additional cost.~~

PART 3 - FABRICATION

A. General: Coordinate fabrication and delivery to ensure no delay in progress of the Work.

B. Wheels: Provide precision ground, balanced and hardened units with permanently shielded and lubricated bearings.

C. Carriages: Fabricate to ensure no more than 1/4 inch (6MM) maximum deviation from a true straight line. Splice and weld to ensure no permanent set or slippage in any spliced or welded joint when exposed to forces encountered in normal operating circumstances.

D. Shelving, Supports and Accessories: See individual descriptions in "Shelving" paragraphs.

FINISHES

E. Colors: Selected from manufacturer's 20 standard available colors.

F. Paint Finish: Provide factory applied electrostatic powder coat paint. Meet or exceed specifications of the American Library Association.

G. Floor/Ramp: Finish color to be selected by WVDCH.

PART 4 - EXECUTION

EXAMINATION

A. Examine floor surfaces with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of mobile storage units.

B. Verify that building structural system is adequate for installing mobile storage units at locations indicated on approved shop drawings.

1. For installations on existing floors, ensure that rail spacings indicated on shop drawings are in proper locations so existing load-bearing structural members are not over stressed.

2. A signed and sealed letter from a Structural Engineer is required to maintain compliance with item 4.1, B, 1

C. Verify that intended installation locations of mobile storage units will not interfere with nor block established required exit paths or similar means of egress once units are installed.

D. Verify that adequate capacity permanent power sources have been installed at locations indicated on approved shop drawings.

E. Prepare written report, endorsed by Installer, listing conditions detrimental to proper performance of mobile storage units, once installed.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

INSTALLATION

G. Rails:

1. Lay out rails using full-length units to the maximum extent possible. Use cut lengths only at ends to attain total length required. Locate and position properly, following dimensions indicated on approved shop drawings. ~~Verify thickness of finished floor materials to be installed (by others) and install level 1/6 inch (1.6MM) above finished floor surfaces~~.

2. Verify level, allowing for a minimum 1/4 inch (6MM) of grout under high points. Position and support rails so that no movement occurs during grouting.

3. ~~Existing floor surface has VCT (vinyl composition tile). To ensure proper connection to the floor, it is mandatory to remove the tile at every rail location for the entire length and width of each sub-rail assembly. No visible tile can be left behind prior to the installation of the sub-rail assembly, fasteners and grout bed.~~

4. Set rails in full grout bed, completely filling any voids entire length of all rails including rail connectors. Trim up sides flush with rails to ensure proper load transfer from rail to supporting floor. Due to the extreme system weights, use of shims, or other similar method in lieu of full grouting is not permitted.

5. Installation Tolerances: Do not exceed levelness of installed rails listed below:
   a. Maximum Variation From True Level Within Any Module: 3/32 inch (2.4MM).

   b. Maximum Variation between adjacent (Parallel) rails: 1/16 inch (1.6MM), perpendicular to rail direction.

   c. Maximum Variation In Height: 1/32 inch (.8MM), measured along any 10-foot (3.05M) rail length.

6. Verify rail position and level; anchor to structural floor system with anchor type and spacings indicated on approved shop drawings.

H. Floors/Ramps:

1. General: Finished elevation shall be 1/16 inch (1.6MM) below top of rails.

2. Place floors and ramps to the extent indicated on approved shop drawings. Extend ramps under all movable ranges. Do not extend ramps beyond the ends of carriages.

3. Construct floors and ramps to prevent warping or deformation of floor panels in a normal operating environment. Support panels on levelers at maximum 16 inches on center.

4. Ramp Slope: Do not exceed the following:

   a. ADA Accessible Ramps: Maximum 1:12 slope (4.76 degrees).
   b. Other Ramps: Maximum 9-degree slope (1.9:12).
   c. Vertical Transition, Ramp edge to floor: Maximum 1/8 inch (3MM).

I. Shelving Units Installation:

1. General: Follow layout and details shown on approved shop drawings and manufacturer's printed installation instructions. Position units level, plumb; at proper location relative to adjoining units and related work.
2. Carriages:
   a. Place movable carriages on rails. Ensure that all wheels track properly and centering wheels are properly seated on centering rails. Fasten multiple carriage units together to form single movable base where required.
   b. Position fixed carriage units to align with movable units.
3. Shelving Units:
   a. Permanently fasten shelving units to fixed and movable carriages with vibration-proof fasteners.
   b. Stabilize shelving units following manufacturer's written instructions. Reinforce shelving units to withstand the stress of movement where required and specified.
4. ~~Wiring~~:
   a. ~~Make final control wiring connections between modules under single control.~~
   b. ~~Test wiring for continuity and proper connections with regulated field power~~
   c. ~~supply before making final power connections.~~
   d. ~~Make final wiring connections to permanent power source.~~
   e. ~~Test system operation by cycling all units through complete operations sequences.~~

5. Maintaining field presence

a. ~~During the initial phases of the installation, Contractor and/or manufacturer must maintain the required direct employ installers. Approximate duration to remain on site is 22 weeks.~~ ***(ADD:*** *This project is to be completed in various phases, allowing Agency staff to empty 50% of the contents of the room (East Side) and move the bulk items over. Once the bulk side is empty, the initial phase of the installation can begin. Contractor and/or manufacturer must maintain the required direct employ installers. When the track and carriage systems are installed on the bulk side, the Contractor and/or manufacturer is not required to return for the second phase until the second half of the room has been cleared and readied for installation. Approximate duration for contracted installers to be on site is 5 26 week.).*

b. The installers responsibility will include:

1. Relocation, reconfiguration and installation of new and existing wide span components.

2. ~~Assist WVDCH in the movement of large objects (under client supervision).~~

3. Installation of all phases.

4. ~~Stay on site during the weeks separating phases with responsibility to reconfigure shelving as the WVDCH requires and assist with movement of collection (under client supervision) until that portion of the collection move is complete.~~

5. Upon completion of final phase, contractor must train client on system use.

6. It is the responsibility of the contractor to remove all packing material & trash. Trash receptacle is contractor's responsibility; however WVDCH will provide a location adjacent to the loading dock.

7. The condition of the WVDCH floors to and from the loading dock is the responsibility of the Contractor. Upon completion of the project, it is the responsibility of the Contractor to enlist an outside commercial floor contractor to clean and wax the travel path hallways.

8. Based on other trades working on the job site, the Contractor that is awarded this contract may be required to unload and perform the inside delivery of equipment after 5:00 pm.

9. Relocation of the existing safe (located in the existing storage area).

FIELD QUALITY CONTROL

J. Verify shelving unit alignment and plumb after installation. Correct if required following manufacturer's instructions.

K. Remove components, which are chipped, scratched, or otherwise damaged and which do not match adjoining work. Replace with new matching units, installed as specified and in manner to eliminate evidence of replacement.

ADJUSTING

L. Adjust components and accessories to provide smoothly operating, visually acceptable installation.

CLEANING

M. Immediately upon completion of installation, clear components and surfaces. Remove surplus materials, rubbish and debris resulting from installation upon completion of work and leave areas of installation in neat, clean condition.

DEMONSTRATION & TRAINING

N. Schedule and conduct demonstration of installed equipment and features with Owner's personnel.

O. Schedule and conduct maintenance training with Owner's maintenance personnel. Training session should include lecture and demonstration of all maintenance and repair procedures that end user personnel would normally perform.

PROTECTION

P. Protect system against damage during remainder of construction period. Advise Owner of additional protection needed to ensure that system will be without damage or deterioration at time of substantial completion.

END OF SECTION