Please Note: These specifications may or may not include all available options including features, dimensions, etc. To customize and modify these specifications for your specific application, please contact Dave Bradford at 847-344-8989 or [dave@bradfordsystems.com](mailto:dave@bradfordsystems.com)

REQUEST FOR PROPOSAL

MOBILIZED STORAGE SYSTEM

PERFORMANCE SPECIFICATIONS

1. GENERAL
   1. RELATED DOCUMENTS
      1. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section. Attachments: 1) Proposal Form reflecting base proposal and all required alternatives (Insert); 2) General and Supplemental Conditions (Insert)**.**
   2. SUMMARY
      1. Electric high-density mobilized storage units with carriage-mounted shelving. The drawing represents the capacity requirements. If the capacity cannot be achieved as noted on the drawing, vendor is responsible for bringing this to the attention of the owner as part of the proposal document.
         1. Aisle Widths: Minimum high-density shelving aisle width shall be no less than ” between carriages.
   3. SUBMITTALS **(Submittals due with proposal, failure to do so will be cause for disqualification)**
      1. Product Data: Submit manufacturer’s product literature and installation instructions for each type of shelving, track and installation accessory required. Include data substantiating that products to be furnished comply with requirements of the specifications.
      2. Drawings: Includes details of layout and installation including clearances, spacings, and relation to adjacent construction in plan and elevation; clear exit and access aisle widths. Submit drawings showing location, ranges and extent of high density storage shelving system.
      3. Samples: Provide sample color cards.
      4. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
      5. Warranty: Submit a written warranty agreeing to repair or replace units which fail in materials or workmanship within the specified warranty period. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under Contract Documents.
         1. The entire movable compact shelving installation will be warranted against defects in material and workmanship for a period of 1 year from date of acceptance by the Owner.
         2. Minimum of two preventative maintenance inspections per year are required during labor warranty period.
      6. Project detailed completion timeline from date of award showing detailed milestones for manufacturing, delivery and installation.
      7. Reference List: Provide a list of 5 installed powered (electric) mobile storage systems of same size, scope and magnitude to be contacted by owner. This reference list may be of a national basis for the manufacturer’s installations. Reference list must include system address, contact and phone number, number and lengths of movables, features, and safeties. Without exception, all references must be electric systems.
      8. Bid bond in the amount of 5% of bid must be submitted with proposal. 100% performance/payment bond required by successful vendor.
   4. QUALITY ASSURANCE **(Submittals due with proposal, failure to do so will be cause for disqualification)**
      1. Installer Qualifications: Engage an experienced installation supervisor who is an authorized and certified representative of the mobile storage unit manufacturer with not less than 2 years experience installing systems similar to those required for this project, and licensed or certified by mobile storage system manufacturer. Certification required by manufacturer on manufacturer's letterhead at time of bid. Certifications by sales reps, dealers or distributors are unacceptable. Guaranteed maximum response time to service call of 24 hours required, and must be part of submittal. Qualification must include resume of certified installation supervisor.
      2. Manufacturers Certification: Separate written certifications by manufacturers on manufacturer’s letterhead at time of bid required stating compliance with all specifications of both the mobile and shelving systems.
      3. Other mandatory requirements. Must submit proof with proposal.
         1. Manufacturer of electric mobile systems must have a minimum of 35-years experience in the continuous manufacture of electrically operated mobile systems. Manufacturer certification required with bid.
         2. Manufacturer must be ISO 9001:2008 certified for a minimum of 5 years. Certification from ISO required with proposal. Other ISO certifications not acceptable. Or submit entire detailed manufacturer’s quality control program.
         3. Manufacturer must submit c-UL-us total system listing number and UL card. System must be total system listed, not just components. Submit listing with proposal.
         4. Manufacturer must have a local dedicated Area Contractor / Dealer / Distributor actively servicing the location, with a proven track record of installing and servicing the manufacturers electrically operated high-density storage systems.
         5. Submit documentation outlining the manufacturer’s servicing Area Contractor/ Dealer/ Distributor’s long-term commitment to the area, confirming that Area Contractor/ Dealer/ Distributor has the business plan, and financial strength to continue to service the high density storage system installation over its service life.
         6. System must be manufactured in the USA.
   5. PROJECT CONDITIONS
      1. Field Measurements: Verify mobile storage unit location by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
      2. Delivery, Storage, & Handling: Comply with instructions and recommendations of manufacturer for special delivery, storage and handling requirements.
      3. Sequence & Scheduling: Sequence storage shelving system installation with other work to minimize possibility of damage and soiling during remainder of construction period.
      4. Pre-installation Conference: Conduct conference at Project site to review methods and procedures related to mobile storage units including, but not limited to, the following:
         1. Inspect and discuss condition and levelness of flooring and other preparatory work performed under other contracts.
         2. Review structural loading limitations.
         3. In addition to the Owner and the installer, arrange for attendance of the following:
            1. Other installers affected by the work of this section.
            2. Manufacturer’s representative.
2. PRODUCTS
   1. MATERIALS
      1. BASIS OF DESIGN: Products are based upon Spacesaver Corporation’s ActivRAC Mobilized Storage System.

Spacesaver Corporation, 1450 Janesville Avenue, Fort Atkinson, WI 53538. Spacesaver or equal as determined by owner/architect. For pricing, contact David Bradford at 847-344-8989 or [dave@bradfordsystems.com](mailto:dave@bradfordsystems.com)

* + 1. SYSTEM OPERATION
       1. Operating environment: Design options shall allow the carriage system to operate in the following environmental conditions.
          1. System controls shall operate at room temperatures between 32゜F (0゜C) and 122゜F (50゜C).
          2. System controls shall operate at room temperature between 32゜F (0゜C) and -20゜F (-28.88゜C).
       2. Open an aisle with one-touch, user-friendly, directional operation (at the carriage mounted control or via optional infrared or RF remote control aboard a fork truck).
       3. Press a safety “Stop/Reset” button to immediately stop any moving carriage(s).
       4. Easily distinguish a system’s operational status via the lighted indicators on each carriage.
       5. Be protected by in-aisle safety devices that stop carriage movement when a person or object (i.e., box, ladder, or fork truck) is detected.
       6. When carriages are in motion, any safety activation (photo sweeps and aisle entry sensors) will stop the aisle from closing on that aisle and the mobile carriage LED indicators will illuminate flashing red on both sides of the aisle where the safety was activated.
       7. Depressing any “Stop/Reset” button during carriage movement will bring all carriages to a stop.
       8. After carriages complete their movement the open aisle will be locked out and the control head indicator on either side of the open aisle will illuminate “Aisle in Use” – it’s now safe to enter the aisle.
    2. RAIL:
       1. TOP MOUNT: Rail shall be 4140 steel bar 4 1/2” (114mm) wide x 3/8” (9.5mm) high with black zinc finish. Rail edges shall be beveled down to a maximum of 3/16” (4.8mm) to allow for the rail to be transversed by material handling equipment. Rail shall disperse the wheel point loads to structural slab. Rail shall have two permanently mounted floor anchors maximum 15” (381mm) on center. Rails shall be installed on top of concrete slab and laid in a manor such that rail joints are staggered across all adjacent rail runs. Rail and carriage design allows concrete slab to be unlevel at the following maximum variation of 3/16” (4.8mm) over any 2’ (0.6m) rail run and 1/4” (6.4mm) maximum variation over any 10’ (3.04m) rail run.

OR

* + - 1. RECESSED MOUNT: Rail shall be 4140 steel bar 4.00” (101.6mm) wide x 3/8” (9.5mm) high with black zinc finish. Rail shall disperse the wheel point loads to structural slab. Rail shall have two permanently mounted floor anchors maximum 15” (381mm) on center. Rail shall be installed recessed into concrete slab, flush to top of concrete slab, and laid in a manor such that rail joints are staggered across all adjacent rail runs. Rail and carriage design allows concrete slab to be unlevel at the following maximum variation of 3/16” (4.8mm) over any 2’ (0.6m) rail run and 1/4” (6.4mm) maximum variation over any 10’ (3.04m) rail run.
    1. MOBILE CARRIAGE BASES
       1. Assembled structural steel carriage base will have a minimum capacity of 16,000 lbs. (7,257 kg) per single and 32,000 lbs. (14,514 kg) per back-to-back rack section. On back-to-back configurations, individual wheel assemblies must be connected with an articulated carriage base/rack flue spacers in order to have the system track and transfer the rack loading equally to all carriage wheels. Each wheel assembly shall be equipped with two wheels, minimum 6” (152mm) diameter steel wheels. Wheels are equipped with two permanently lubricated and shielded radial ball bearings. Wheel capacity 8,000 lbs (3,628kg) each. Wheels have solid steel axles of 1-3/8” in (35mm) diameter. Wheels shall be dual flange, all wheel guided. All carriage sections between wheel assemblies have integral cross bracing to maintain accepted tolerances for function of systems. Side profiles shall provide and maintain wheel assembly alignment and squareness. These profiles shall be pre-drilled at the factory but are bolted, and assembled on the job site as integral carriage members.
       2. Wiring shall be routed through an enclosed housing channel to protect the electronic wiring harness. Structural steel side profiles shall be minimum 6.165” (157mm) high, 8 gauge (4.2mm).
       3. Finish shall be powder coat paint. Structural bases shall be placed back to back with minimum 6” (152mm) clear flue between back-to-back carriages.
    2. POWER AND CONTROLS
       1. System power requirements - 120 VAC single phase input. Powered carriages shall be equipped with ¼ HP; 90-volt DC gear motors.
       2. Multiple carriages shall be moved with a single activation of a carriage control and/or via an infrared RF remote, or TUSC mobile control app. Each carriage shall be equipped with one or more ¼ HP, 90-volt DC gear motors, depending on load rating. Each independent drive shall be synchronous and current limiting to maintain proper alignment through closed loop motor feedback and control on all individual motors within the carriage regardless of length or weight load and eliminate racking and binding. Motor and motor controllers shall provide for soft-start/soft-stop movement, current limiting, and automatic time-out. Carriage movement to be selectable between sequential to minimize power demands on start-up, or block movement for faster access Motors and power train shall provide for maximum carriage travel speed of 3” (76mm) per second. All power transfer to wheels to be done by chain drive. Power to mobile units provided by an overhead buss bar system. Communication between carriages is provided by overhead cable festoon. Power supply to be provided by others.
    3. SAFETY FEATURES: The following safety features are to be provided.
       1. Photoelectric safety sweep scanning the full length of both sides of each carriage. The sweep will prevent or immediately stop movement if an obstruction is encountered or the beam is broken.
       2. Photoelectric aisle entry sensor shall be positioned at each entry location. The aisle entry beam will prevent or immediately stop movement if an obstruction is encountered or the beam is broken in the event the aisle is closing. The photoelectric aisle entry sensor will allow entry/access of an opening aisle. Status of the safeties to be displayed on the control unit.
       3. Stop pushbutton shall be provided at each aisle control. A warning horn shall be provided whereupon activation of an aisle movement pushbutton it will sound for the first 3 seconds of carriage movement. A flashing yellow warning light is provided on the carriage ends that will flash during system movement.
    4. Accessories:
       1. [(Optional) B-Rail w/Floor and ramp: Provides leveled rail.]
       2. [(Optional) L-Rail w/floor and ramp (dual flange only) Provides leveled rail.]
       3. [(Optional) BAT w/Floor and ramp: Provides leveled rail.]
       4. [(Optional) T-Rail w/ or w/o Floor & Ramp: Provides leveled rail.]
       5. [(Optional) Recessed Mount Rail]
       6. [Dual Controls: Provide additional control panel at end of each motorized carriage.]
       7. Provide Bluetooth control via the TUSC Mobile Control App or Diagnostic in replace of or in addition to the standard powered control or touch technology system controls. Option exists to not allow system movement from local controls while connected to the TUSC Control App. One user at a time can be connected. Connection to system will timeout via set time configuration when the apps are no longer in use.
       8. TUSC Control App: Available from iOS and Android smartphone or tablet. Universal remote control to open and close aisles, enter and search for items, and view safety notifications.
       9. TUSC Diagnostic App: Available from Android smartphone or tablet. Updates systems software/firmware, configurations, and reports diagnostics wirelessly. Communicates system status, faults, and last stops real-time. Save and send diagnostic and configuration information file via email. The app requires registration and authentication with Spacesaver with option to periodically validate credentials for security. During connection automoves are disabled.
       10. [Programmable Aisle: Provide the ability to create more than one aisle per mobile storage module.]
       11. [System controls shall start motors on each movable carriage [“sequentially” to minimize power demands] [“block” to start all at once] and shall provide dynamic braking to provide smooth operation.] (No additional hardware shall be required to change between “sequential” and “block” movement.)
       12. [Stationary aisle lock: Provide key switch to make a movable carriage into a stationary carriage.]
       13. [Auto Move Interface: Provide the capability for the motorized mobile storage shelving system to move automatically depending upon the Owner’s requirements. Select [System Auto Cycle] [System Priority Aisle] [System Closed Park] [System Ventilation Park]].
       14. [Building Management Interface: Provide the capability for the motorized mobile storage shelving system to interface with the building’s fire alarm system or building management system for fire protection [System Fire Park] and security [System Closed Park].]
    5. SHELVING / RACK (Insert for each specific project)
    6. POWDER COAT PAINT FINISH CARRIAGES
       1. Provide Powder Coat paint finish on all surfaces.
       2. Finish is to be archive quality, non-reactive, solvent-free, baked polyester powder coating and will have no potential off-gassing
       3. Solvent based wet-spray paint finishes on any components in the entire installation are unacceptable.
       4. Paint finish should be available in a minimum of 5 standard colors matching the paint finish of the carriages, shelving and face panels.
  1. EXAMINATION
     1. Examine subfloor surfaces, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of mobile storage units.
     2. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of mobile storage units.
     3. Proceed with installation only after unsatisfactory conditions have been corrected.
     4. Inspect substrates and conditions in which high density storage shelving, tracks and blockouts will be installed and verify that installation may commence. Verify locations of positioning of exits and aisles and overall dimensions of space. Do not proceed with the work until unsatisfactory conditions have been resolved fully.
  2. INSTALLATION
     1. Install rail.
     2. Permanently attach shelving units to carriages. Stabilize shelving units to comply with mobile storage unit manufacturer’s written requirements. Reinforce shelving units to withstand the stress of movement where required and specified.
     3. Install mobile storage systems, shelving, track, floors, and accessories after finishing operations, including painting have been completed. Install system to comply with final layout drawings, in strict compliance with manufacturer’s printed instructions. Position units level, plumb; at proper location relative to adjoining units and related work.
     4. Field Quality Control: Remove and replace components which are shipped, scratched, or otherwise damaged and which do not match adjoining work. Provide new matching units, installed as specified and in manner to eliminate evidence of replacement.
     5. Adjust: Adjust components and accessories to provide smoothly operating, visually acceptable installation.
     6. Cleaning: Immediately upon completion of installation, clean 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.
     7. Protection: 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.
  3. DEMONSTRATION / CUSTOMER TRAINING
     1. Schedule and conduct demonstration of installed equipment and features with Owner's personnel.
        1. 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.