Wall-Mounted Jib Crane

This guide can be used to prepare a bid specification for the incorporation of a Wall-Mounted Jib Crane into a competitive bid project or application.

***Each product specification is organized in three standard sections:**

SECTION 1 - GENERAL:

Includes product scope, references, performance requirements, applicable documents, quality assurances, product warranty information, and project conditions and handling practices.

SECTION 2 - PRODUCTS:

Includes a description of materials, products, and accessories to be incorporated into the project.

SECTION 3 – EXECUTION:

Includes provisions for product preparation, installation, field quality control, demonstrating and training, and protection.

***The specifier may need to edit this product specification to reflect the options and applications for a specific project. Notes to assist the specifier in editing this product specification are indicated in brackets. All notes and brackets should be deleted on the final draft.**

SECTION 1 – GENERAL

1.1 SCOPE

A. Product: Spanco Wall-Mounted Jib Cranes can be cantilevered or tie-rod supported. Rotating collector assembly with service entrance and festoon service support provided as indicated. Wall-Mounted Jib Cranes can be manually operated or motorized.

B. General Design Standards: Spanco Cranes are designed in conformance with the following applicable standards:

1. **Jib Cranes:** AISC Steel Construction Manual, OSHA 1910.179, ANSI B30.17, and CMAA 74.

C. Standard Equipment Specifications: List other specifications related to the product and application including options, accessories, and customizations [Mounting, Hoists, Electrical].

1. Working Span: [Working span is determined by the amount of actual working area needed. The working distance, or hook distance, is approximately one-half the trolley length from the end of the I-beam and is the same distance from the vertical support member of the jib.]
2. Area of Rotation: [Wall-Mounted Jib Cranes offer 180-degree rotation.]
3. Capacity: [The maximum weight of the application should not exceed the design weight. Load weights should be predetermined to avoid buying unnecessary capacity.]
4. Height: [Under-boom height is considered the distance from the floor to the underside of the boom. The size of the hoist and the lifting distance should also be considered. The overall height is measured at the highest point on the crane after installation.]

5. Construction: Fabricated using ASTM A36 steel sections with finished ends and surfaces.

1.2 REFERENCES

[List references referred to in this product specification. List by number and full title and delete non-applicable references.]

- **A. American Institute of Steel Construction (AISC):** Manual of Steel Construction, Part 5, Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts
- **B. American National Standards Institute (ANSI):** ANSI B30.17 – Monorails and Underhung Cranes
- **C. American Society for Testing and Materials (ASTM) A36:** Carbon Structural Steel
- **D. American Society for Testing and Materials (ASTM) A325:** Structural Bolts, Steel, Heat Treated, 120/150 ksi Minimum Tensile Strength
- **E. American Society for Testing and Materials (ASTM) A490:** Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
- **F. American Society for Testing and Materials (ASTM) B221:** Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube
- **G. American Welding Society (AWS) D1.1:** Structural Welding Code
- **H. American Welding Society (AWS):** Certified Shop
- **I. Occupational Safety and Health Administration (OSHA) –** Specification 1910.179: Overhead and Gantry Cranes
- **J. CMAA Specification 74:** Traveling Bridge Cranes

1.3 PERFORMANCE REQUIREMENTS

- **A. Coverage: 300 Series Wall-Mounted Cantilevered Jib Crane** shall consist of wall bracket mounted horizontal boom attached to vertical mast, which rotates 180 degrees to cover a semi-circular area.
- **B. Coverage: 301 Series Wall-Mounted Tie-Rod Supported Jib Crane** shall consist of a rotating steel boom covering a semi-circular area and suspended from a vertical support structure with brackets and tie rod.
- **C. Modular, Pre-Engineered Design:** Crane system shall be designed for minimum effort manual rotation.
  1. Crane shall be designed, fabricated, and installed in accordance with ANSI B30.17 and OSHA 1910.179.
- **D. Deflection Guidelines:** Wall-Mounted Cantilevered Jib Crane (300 Series) models are designed with maximum deflection of approximately L/150. Wall-Mounted Tie-Rod Supported Jib Crane (301 Series) models are designed with maximum deflection of approximately L/600 at midspan.
- **E. Crane Operating Temperature:** 5 to 200 degrees F (-15 to 93 C)
- **F. Structural Design:** The crane's structural design is based on live load capacity plus 15 percent for hoist and trolley weight and 25 percent for impact. Contact Spanco, Inc. for assistance specifying cranes that will require seismic and other additional loads or cranes that will operate in high humidity or corrosive environments.

  Crane shall be designed to withstand:
  1. Crane and hoist dead load.
  2. Live load capacity equal to net rated hook load.
  3. Inertia forces from crane and load movement.

1.4 DOCUMENTS

A. Submittal Procedures

1. Product data is included for crane and all accessories. Product data provides capacities, performance, standard operations, and applied forces to foundation.
2. Shop drawings, which outline crane configuration, dimensions, construction, and installation details.
3. Manufacturer's Warranty
4. Manufacturer's Installation instructions
5. Manufacturer's operation and maintenance manual

1.5 QUALITY ASSURANCE

A. Standard cranes shall be designed, fabricated, and installed in accordance with our interpretation of ANSI B30.17, CMAA 74, and OSHA 1910.179. Spanco, Inc. assures the safety and quality of all systems when installed and maintained according to their Installation and Maintenance Manual.

B. Manufacturer's Qualifications: An ISO 9001:2015 registered company with more than 40 years of experience successfully designing and manufacturing cranes and material handling solutions for numerous industries

C. Installer's Qualification: A company that is acceptable to the crane manufacturer and with five years of experience assembling and installing cranes for multiple applications. Installer should be able to:

1. Perform welding using certified welders in accordance with AWS D1.1.
2. Bolt connections in accordance with torque tightening procedures specified in AISC Manual, Part 5.
3. Clearly label crane with maximum rated capacity with label visible from floor level and loading position.
4. Perform OSHA Load Test Certification.

1.6 WARRANTY

A. Manufacturer's Warranty: Included on manufacturer's standard form and outlines the manufacturer's agreement to repair or replace assemblies and components that fail in materials and/or execution within warranty period from date of substantial completion.

1. Warranty covers defects in equipment material and workmanship of manual systems and equipment for ten (10) years or 20 thousand (20,000) hours, commencing on the date of shipment to the first retail purchaser. This warranty extends to non-wearable parts only, with the exception of the wheels supplied on manually operated workstation end trucks and hoist trolleys.
2. Warranty covers two (2) years for paint and finishes for non-aluminum components.
3. Warranty covers one (1) year for motorized systems and equipment.

1.7 CONDITIONS/DELIVERY, STORAGE, AND HANDLING

A. Project Conditions

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimal results.
2. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Delivery, Storage, and Handling

1. Store products in manufacturer's packaging until ready for installation.

2. Store and dispose of solvent-based materials in accordance with requirements of local authorities.

SECTION 2 – PRODUCT

2.1 ACCEPTABLE MANUFACTURERS

A. Spanco, Inc.
Locations: Morgantown, PA and Las Vegas, NV; 800-869-2080; www.spanco.com

2.2 WALL-MOUNTED JIB CRANE

[Spanco Wall-Mounted Jib Cranes are available with standard capacities up to 5 tons and standard spans up to 30 feet.] Refer to the following chart for non-standard Jib Crane dimensions.

Product	Capacity	Maximum Span
300-Series Jib	5 ton	40’-0”
	10 ton	20’-0”
301-Series Jib	5 ton	40’-0”
	10 ton	30’-0”

A. Models: Spanco Wall-Mounted Jib Cranes are available in two series. [Specifier may need to choose an acceptable model based on the list below.]
1. 300 Series: Wall-Mounted Cantilever Jib Crane manufactured by Spanco, Inc.
2. 301 Series: Wall-Mounted Tie-rod Supported Jib Crane manufactured by Spanco, Inc.

B. Construction: Fabricated from ASTM A36 steel sections with finished ends and surfaces.

C. Design Factors: Spanco Jib Cranes are designed with a factor of 15 percent of the rated capacity for hoist and trolley weight and 25 percent of the rated capacity for impact. 50 percent impact factor used for vacuum or magnet applications. The pipe mast is designed to give maximum strength and minimum deflection to resist bending, buckling, and crushing, as well as wear by the trunnion roller assembly. The bearings are designed for a 5,000-hour B-10 design lift. This design provides a margin to allow for variations in material properties, operating conditions, and design assumptions. No crane should ever be loaded beyond its rated capacity.

D. Service Factor: All Spanco Wall-Mounted Jib Cranes are designed for moderate usage (Class C Moderate Service) as defined by CMAA 74.2:
1. System or equipment is used where lifted loads average 50 percent of the rated capacity with five to ten lifts per hour, averaging 15 feet, not over 50 percent of the lifts at rated capacity.
2. Applications involving vacuums, magnets, and other high-impact lifters may be considered severe usage and require special design considerations. Please contact Spanco, Inc. for special design pricing.
3. Consult Spanco, Inc. for usage other than moderate and all instances of high-cycle rates or high-impact applications, such as high-speed air or electric hoists, vacuum lifters, or magnets.

E. Support Structure: Spanco Wall-Mounted Jib Cranes are mounted as a cantilevered system or a tie-rod supported system.
1. Cantilever: Jib Crane cantilevered from vertical support structure with rotating boom, mounting brackets, and other accessories. Cranes with greater spacing are shipped disassembled to be bolted on site.

2. Tie-rod Supported: Wall-Bracket supported Jib Crane with rotating boom, brackets, tie rod, and other accessories.

2.3 SYSTEM OPTIONS

*The following options are available for Spanco Wall-Mounted Jib Cranes. [Select required options from the following, or contact Spanco, Inc. if other types of accessories are required.]

A. Installation Capabilities
1. Wall-Mounted—Cantilevered from vertical support structure.
2. Wall-Mounted—Wall bracket (tie-rod supported boom).

B. Tagline Festoon System
1. Attached to boom for supporting electrical cable or compressed air hose supplying trolley hoist. Either S-hooks or wire rope trolleys can be used.
2. Includes system of wire rope tagline, (S-hooks or wire rope trolleys), brackets, and eyebolts for attachment to boom. System supports electrical cable and air hose supplying trolley hoist moving along boom.

C. Rotation Stops
1. Limit boom rotation.
2. Steel plate stops are welded to formed channels of top and bottom brackets.

D. Power Rotation

2.4 SYSTEM COMPONENTS

A. Cantilever Jib Cranes
1. Mast: Vertical, wide-flange or standard I-beam section perpendicular to boom and parallel to crane rotation axis.
2. Boom: Horizontal, standard, steel I-beam, reinforced with cap channels for lateral stability and stiffeners at critical stress points. [Equip boom with end stops to limit trolley movement.]
3. Two Mounting Brackets: Designed to anchor mast to support structure, allow boom rotation, and resist drift. Load-carrying parts will be double shear and no bolt stress will exceed (10,000 PSI). Brackets with tension welds are not acceptable.

B. Tie-Rod Supported Jib Cranes
1. Boom: Horizontal, adjustable wide-flange or steel I-beam designed for hoist trolley travelling on bottom flange [if applicable]. Reinforce with cap channel as required for lateral stability. [Equip boom with end stops to limit trolley movement.]
2. Top Bracket: Designed to absorb tie-rod pull force and equipped with pivot assembly to allow boom rotation. Bracket bolted to supporting structure and connected to tie-rod suspending boom. Brackets with tension welds are not acceptable. Top bracket consists of:
   a. Steel channel anchored to supporting structure with double shear bolted connections.
   b. Rotating clevis bracket consisting of steel tube, bronze bushings, wrap-around channel, grease fitting to be field lubricated, oil-impregnated thrust washer, and double shear pivot bolt assembly.
   c. Formed clevis attached to tie rod with adjusting nut and lock washer and retained in clevis bracket with double shear pin.
3. Beam Bracket: Connects tie rod to boom. Consists of formed clevis to receive tie rod, beam channel to be bolted to top flange of boom, and double shear pivot bolt joining clevis and beam channel. Brackets with tension welds are not acceptable.
4. Bottom Bracket: Absorbs downward and compressive boom forces, allows boom rotation, and resists boom drift. Consists of:

a. Formed channel bolted to supporting structure.
b. Boom connector plate and tube assembly.
c. Bronze bushings and oil impregnated bronze thrust washer.
d. Double shear pivot bolt and field lubricated grease fitting.

5. Tie Rod: Single, right-hand threaded at each end, ASTM A36 steel rod. Double tie rods are not acceptable.

2.5 SHOP FINISHING

A. Standard Paint Colors:
1. All wall-mounted jib cranes are painted with Spanco Yellow Industrial Enamel.
2. Ford® Tractor Blue and Spanco Standard Gray Industrial Enamel available at no additional cost.
3. Systems can be painted any custom color for an additional cost.

B. Surface Preparation and Painting Procedures:
1. Spanco adheres to the standards of the Society for Protective Coatings (SSPC) for all product surface preparation.
2. Spanco Crane components are deburred and descaled using power tools equipped with sanding discs and wire wheels prior to painting.
3. Components are washed with high-pressure/high-temperature biodegradable degreaser solution.
4. All components are coated with quick drying, semi-gloss enamel, applied to a minimum dry-film thickness of two to three mils.
5. A finishing coat is applied with a hot airless electrostatic spray paint system.
6. Painted components are cured at air temperature.

SECTION 3 – EXECUTION

3.1 PREPARATION

A. DO NOT start installation until support structures are properly prepared.

B. Inventory:
1. Check materials to ensure all parts are present.

C. Motorized Power Rotation:
1. Check electrical supply, conduit, wiring, disconnect switch, and other electrical components.

D. Foundation/Support Structure
1. Wall-mounted to existing columns or walls.
2. Building columns or walls must be adequate to support crane and its maximum rated capacity.
3. Consult with a qualified architect or engineer to determine structure's adequacy.

3.2 INSTALLATION

[**NOTE:** The following installation information is provided only as a reference tool. For complete installation and maintenance instructions, refer to manual 103-0009 (300 Series) or manual 103-0007 (301 Series).]

A. Units and accessories must be installed in accordance with manufacturer's instructions and shop drawings.

B. Do not modify crane components without manufacturer's approval.

C. Clearances for moving crane components:
1. Minimum vertical clearance: Three inches (76 mm) from any overhead obstruction.

2. Minimum horizontal clearances: Two inches (51 mm) from any lateral obstruction.

D. 300 Series Wall-Mounted Cantilever Jib Crane

1. Refer to installation manual to locate the dimensions of the specific jib crane to be installed.
2. Verify that the top and bottom bearing assembly is assembled correctly. Lift the crane into position using an overhead crane or other means. Place bottom wall bracket against supporting column in its proper location with a C-clamp or other supporting method. Drill the first lower hole and put the first bolt though. Level the lower bracket and then drill the second lower hole. Put the second bolt through and partially tighten bolts. Do not fully tighten bolts in case shims are needed later.
3. Allow crane to rest on lower bracket while still supporting the rest of the crane.
4. Level the crane vertically. Press downward on top of upper pin to ensure the upper bearing assembly is down as far as possible. Level the upper bracket and drill two bracket holes into support structure. Install and tighten two upper bolts. Do not fully tighten bolts in case shims are needed later.
5. Attach the hoist, supplied by others, to the hoist trolley. Use washers on hoist mounting pin to center hoist inside hoist trolley. Replace cotter pins if worn or broken.
6. Position the unloaded hoist and trolley at the extreme tip of boom. Install boom on a slight incline to compensate for anticipated deflection.
7. If lower washers (shims) are required to level the boom, leave upper bolts tightened, support crane, and install bottom washers (shims) before retightening bottom bolts. If upper washers (shims) are required to level the boom, leave lower bolts tightened, support crane, and install upper washers (shims). Retighten upper bolts. Be sure all four bolts are properly tightened.
8. Ensure both upper and lower bearing assemblies will pass the first inspection. Test jib by rotating back and forth to ensure there is no unusual rubbing or binding that could compromise the crane, bushings, or pin life. The crane should rotate freely.
9. Connect hoist to its source of power (air or electric).

E. 301 Series Wall-Mounted Tie-Rod Supported Jib Crane

1. Refer to installation manual to locate the dimensions of the specific jib crane to be installed.
2. Determine the elevation of top wall bracket holes.
3. Hold top wall bracket against supporting column in its proper location with a C-clamp or other supporting method.
4. Establish the correct distance from top wall bracket to bottom wall bracket. Hold bottom wall bracket against supporting column with a C-clamp or supporting method.
5. Use a plumb bob to check alignment of bottom bracket with top bracket in two planes. Alignment must be within 1/16 inch from top bolt-hole center to bottom bolt-hole center.
6. Using wall brackets as a template, mark established hole locations.
7. Drill holes in column for wall brackets.
8. Mount wall brackets and shims (if applicable) to column with bolts supplied by installer. Ensure all bolts are properly tightened.
9. Assemble boom and tie rod to wall bracket weldment using necessary hardware.
10. Lift boom assembly (attached to brackets and tie rod assembly) with a lift truck or other means into the correct wall brackets. Insert top and bottom pin bolts along with flange bearings and washers into wall bracket and back bracket assemblies; properly tighten nuts.
11. Remove end stop from boom tip and install trolley into boom. Remember to reinstall end stop on boom and properly tighten nuts.
12. Attach hoist, supplied by others, to hoist trolley. Use washers on hoist mounting pin to center hoist inside hoist trolley. Reinstall washer on outside of hoist trolley (both sides)

before installing or reinstalling cotter pins to secure hoist-mounting pin. Replace cotter pin(s) if worn or broken. Bend cotter pin around.

13. Position unloaded hoist and trolley at extreme tip of boom and adjust tie rod assembly until boom is level.
14. Connect hoist to its source of power (either air or electric) if required, as per hoist manufacturer's manual.

3.3 FIELD QUALITY CONTROL

*Perform field quality control testing as recommended by manufacturer.

A. Inspection

1. Verify all bolts are tightened to torque values specified in manual and lock washers are fully compressed.
2. Before the unit is placed into service, it is important to review and follow procedures outlined in chapters 11 and 12 of ANSI B30.17 regarding inspection, testing, and maintenance.

B. Field Test

1. Ensure crane operates properly (movement is smooth and consistent).
2. Verify motorized operation and controls function properly.
3. Make adjustments as needed and correct inadequacies.

C. Acceptance Test

1. After the system has been installed, OSHA requires an acceptance test before operating and after any modifications. An authorized dealer or installer should perform acceptance tests.

D. Maintenance

1. To keep a jib crane in good operating order, engineers recommend establishing a schedule of inspection and lubrication. All parts should be inspected, all loose parts adjusted, and worn parts replaced at once.
2. During the first month after a new installation, a weekly inspection should be performed. All nuts, bolts, and screws should be checked for tightness. All end stops, cotter pins, and hoist trolleys should be checked for abnormal wear or breakage.
3. After the first month, a complete inspection of all fasteners and connections should be performed monthly. Heavier conditions of use will require more frequent inspections.
4. Operators should conduct a visual inspection of the system before each use.
5. All bearings are pre-lubricated at the factory. Bearings require lubrication based on crane usage. Spanco recommends that the bearings be lubricated at least once a year. Lubrication should be performed with lithium soap-based grease (NLGI No. 1 or No. 2).
6. Recommended lubrication schedule varies based on crane use and application. A crane that operates daily for multiple hours should be lubricated weekly. Operating a crane at "standard duty" requires lubrication once every two weeks. Operating a crane on "standby classification" requires lubrication once every six months. The interval of lubrication depends on the application.

E. Clean Surfaces

1. Touch up scratches and blemishes with matching paint from manufacturer.
2. Keep surfaces clean and clear of build-up and residue.

F. Protect Crane

1. Protect installed products until completion of project.
2. Touch up, repair, or replace damaged products before substantial completion.

G. Quality Standards

1. Spanco, Inc. is an ISO 9001:2015 Registered Corporation.
2. Spanco Cranes are manufactured to standards ensuring safety, reliability, and the highest quality.

3. Spanco products are manufactured in the United States of America at facilities located in Morgantown, Pennsylvania, and Las Vegas, Nevada.
4. Spanco certifies that all goods are in full compliance with the Buy American Clause of the American Recovery and Reinvestment Act (ARRA) of May 2009.