T-Series Gantry Crane

This guide can be used to prepare a bid specification for the incorporation of a T-Series Gantry 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 T-Series Gantry Cranes are three-way adjustable, manually operated, and portable with the A-frame design, four-position swivel lock casters, and moldon polyurethane wheels. [V-groove track mounting optional.]

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

1. **Gantry Cranes:** AISC Steel Construction Manual, OSHA 1910.179, ANSI B30.11, AWS D1.1/D1.2/D1.6, 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.]
2. Capacity: [The maximum weight of the application should not exceed the design weight. Load weights should be predetermined to avoid buying unnecessary capacity.]
3. Height: [Under-beam height is considered the distance from the floor to the underside of the beam. 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. Main legs adjust at six-inch intervals.]

4. Caster Frame Spread: [Caster frame spread adjusts. Tread should increase as height increases.]
5. Construction: Fabricated using ASTM A36 steel sections with finished ends and surfaces. Main legs, brace legs, and caster frames are constructed of heavy gauge square tubing, and hardware is zinc plated.

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 Society for Testing and Materials (ASTM) A36: Carbon Structural Steel

C. American Society for Testing and Materials (ASTM) A325: Structural Bolts, Steel, Heat Treated, 120/150 ksi Minimum Tensile Strength

D. American Society for Testing and Materials (ASTM) A490: Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength

E. American Society for Testing and Materials (ASTM) B221: Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube

F. American Welding Society (AWS) D1.1: Structural Welding Code

G. American Welding Society (AWS) D1.1: Certified Shop

H. Occupational Safety and Health Administration (OSHA) – Specification 1910.179: Overhead and Gantry Cranes

I. American Recovery and Reinvestment Act (ARRA): Buy American Clause of May 2009

1.3 PERFORMANCE REQUIREMENTS

A. Coverage: T-Series Gantry Crane shall provide coverage of a rectangular area of size and consist of:

1. I-beam and hardware assembly.
2. Brace legs, upper and lower main leg assemblies.
3. Caster and caster frame assembly.

B. Modular, pre-engineered design: Crane system shall be designed with three-way adjustment capabilities, disassembly, relocation, and for minimum effort manual operation.

1. Crane shall be designed, fabricated, and installed in accordance with ANSI B30.11 and OSHA 1910.179.

C. Deflection Guidelines: All Steel series Gantry Crane models are designed with a maximum deflection of L/600.

D. Crane Operating Temperature: 5 to 200 degrees F (-15 to 93 C)

E. 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 ANSI B30.11, MH27.2, OSHA 1910.179, and IBC. Spanco, Inc assures the safety and quality of all systems when installed and maintained according to their Installation and Maintenance Manual.

B. If different specifications are required, alternate specifications need to be requested before the order is placed. Crane modifications may be required at additional cost to conform to specifications other than IBC and ASNI.

C. Manufacturer's Qualifications: A company with more than 30 years of experience successfully designing and manufacturing cranes and material handling solutions for numerous industries.

D. 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 operators 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 rated load 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 ten (10) years or twenty thousand (20,000) hours for manual crane products to cover defects in materials and execution.
2. Warranty covers two (2) years or four thousand (4,000) hours for motorized products.

1.7 CONDITIONS/ DELIVERY, STORAGE, HANDLING

A. Project Conditions

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum 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.
604 Hemlock Road, Morgantown, PA 19543; 800-869-2080; www.spanco.com

2.2 T-SERIES GANTRY CRANE

[Spanco T-Series Gantry Cranes are available in capacities up to 10 tons and with a standard span of 10 to 40 feet.] [Spanco T-Series Gantry Cranes with Aluminum I-beam are available in capacities up to three tons with a standard span of 10 to15 feet.]

A. Models: The following are T-Series Gantry Cranes manufactured by Spanco, Inc. [Specifier may need to choose an acceptable model based on the list below.]

1. **T-Series All Steel Gantry Crane** as manufactured by Spanco, Inc.
   a. Portable, three-way adjustable gantry crane with swivel lock casters and polyurethane wheels.
   b. Construction: Fabricated from ASTM A36 steel sections with finished ends and surfaces.
2. **T-Series Steel with Aluminum I-Beam Gantry Crane** as manufactured by Spanco, Inc.
   a. Portable, three-way adjustable gantry crane with swivel lock casters and polyurethane wheels.
   b. Construction: Fabricated from ASTM A36 steel sections with finished ends and surfaces. I-beam fabricated from brushed aluminum.

B. Design Factors: Spanco T-Series Gantry Cranes are designed to meet all specifications using a 25 percent factor of rated load for impact and 15 percent factor of rated load for hoist and trolley weight.

C. Service Factor: All Spanco Gantry Cranes are designed for moderate usage (Class C Normal/ Industrial service) as defined:

1. System or equipment is used where operational time is up to 100 percent of the work period and lifted load is at 50 percent or below rated capacity
2. System or equipment is used where operational time is less than 50 percent of the work period and lifted load is greater than 50 percent of rated capacity.
3. Applications involving vacuums, magnets, and other high impact lifters are considered severe usage and require special design considerations. Please contact Spanco, Inc. for special design pricing.
4. 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.

D. Support Structure: Spanco T-Series Gantry Cranes are portable with moldon polyurethane wheels, and can be track mounted with steel V-groove casters for applications requiring movement along a fixed path.

2.3 SYSTEM OPTIONS

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

A. Detachable Height Adjustment Kit
1. Used for frequent height adjustments.
2. Eliminates need for overhead hoist or forklift.
3. Kits consist of two units and include models to handle gantry capacities up to 10 tons.

B. Cart Kit
1. Transforms dissembled gantry into transportable handcart.
2. Attaches to caster frame for portability.

C. Wheel Brakes
1. Available for floor-protecting casters.

D. V-Groove Casters and Track
1. Mounted track for applications requiring movement along fixed path.
2. Track made from inverted steel angle welded to flat strip for use with 3/8-inch lag bolts.
3. Fixed length angle track is available in 5, 15, and 20 feet stock lengths.

2.4 SYSTEM COMPONENTS

A. Beam
1. Adjustable I-beam boom [steel or aluminum].
2. Can be adjusted for cantilever positioning, maximum 4 feet, 1/4 of load.
3. Offers greatest under I-beam height.
4. Pivots independently from legs to self-center load.
5. Spanloc™ ensures secure positioning of I-beam and allows span adjustment for inboard/ outboard bracing or cantilever configuration.

B. Upper and Lower Main Legs
1. Main legs adjust at six-inch intervals for uneven floors.
2. Push/ pull pins inserted or removed to adjust height.

C. Brace Legs
1. Constructed from heavy gauge square mechanical tubing.

2.5 SHOP FINISHING

A. Standard Paint Colors:
1. All gantries painted Spanco Yellow.
2. Ford® Blue and grey enamel optional.

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 thee 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

2.1 PREPARATION

A. DO NOT start installation until support structures are properly prepared.
B. Inventory:
1. Check materials to ensure all parts are present.
C. Foundation
1. Standard Spanco Gantries are completely portable and require no foundation or structural support.
2. Track mounting is available with V-groove casters.
   a. No permanent ironwork needed.
   b. Used for applications requiring load movement along fixed path.

2.2 INSTALLATION

A. Units and accessories should 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 clearance Two inches (51 mm) from any lateral obstruction.
D. Parts:
1. I-Beam
2. I-Beam Hardware Assemblies (2)
3. Upper and Lower Main Leg Assemblies (4)
4. Brace Legs (4)
5. Caster Frame Assemblies (2)
6. Casters (4)
7. [Height Adjustment Kit - Optional]
8. [Cart Kit - Optional]

E. Assembly
1. Remove trolley stop angles from both ends of the I-beam (to be reinstalled in a later step).
2. Install trolley and hoist on lower flange of I-beam. Secure in the middle of span, to prevent trolley from rolling when beam is raised.
3. Slide I-beam hardware assembly into top flange of I-beam. Angled brace tube connection should be facing into the middle of beam span.
   a. This is for standard inboard bracing. If outboard bracing is desired, turn I-beam hardware assembly opposite as above.
4. Set I-beam hardware assembly to desired position and line up holes in Spanloc plate with holes in top flange of I-beam. Secure Spanloc plate using short hitch pins provided in hardware kit (two for each end of gantry), and insert lynchpins through ends of hitch pins to lock in place. (This prevents lengthwise movement of the I-beam during use.)
5. Reinstall trolley stop angles along with counterweight lug (as originally attached to beam). Counterweight leg supplied for one end only.

6. Attach casters to caster frame assembly with hardware provided. Remove caster frame spreader pin and extend caster frame to maximum length. Replace spreader pin and secure with lynch pin attached.
7. Attach brace leg to upper and lower main leg assembly using hardware supplied. Make sure that the angle cut on the brace leg is at the top of the leg assembly and is facing up toward main leg.
8. With beam supported, trolley secure, and I-beam hardware set at desired position, legs may now be installed. Attach main support leg and brace leg assemblies to their respective connections by sliding leg into leg caps and securing with the hardware supplied. Adjust each main support leg to the minimum height and secure with push/pull pins (make sure to use both sets of pins.)
9. Slowly raise partially assembled gantry to a point where the leg assembly can be raised to fit over the caster frame. Secure leg assembly to caster frame on each end with hardware supplied.
10. Continue to slowly raise the gantry while holding the unconnected leg assemblies off the floor to allow the unconnected end of each caster frame to pass under the leg assemblies.
11. When the caster frame is in position, lower the leg assembly over it and secure with hardware supplied. The gantry is now ready for use, or can now be adjusted to desired height. If the tread needs to be other than maximum, slightly raise the unit. This should be done with push/pull pins inserted and secure in their correct place in the main leg. Remove the caster frame spreader pin and shorten the tread to desired length. Reinsert caster frame spreader pin and check for the same number of holes on each.
12. Caster frame spread should be a minimum of 40 percent of overall height to maintain stability.

2.3 FIELD QUALITY CONTROL

*****Perform field quality control testing as recommended by manufacturer.

A. Inspection

1. Verify all bolts are tight and lock washers fully compressed.

B. Field test crane and accessories for operating functions.

1. Ensure crane operates properly (movement is smooth and consistent).
2. Make adjustments as needed, and correct inadequacies.

C. Acceptance Test

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

D. Maintenance

1. To keep a gantry crane in good operating order, engineers recommend establishing a regular schedule of inspection and lubrication. All parts should be inspected, all loose parts adjusted, and worn parts replaced at once.
2. Recommended lubrication schedule varies based on crane use/ application. A crane that operates daily for multiple should be lubricated weekly. Operating a crane at “standard duty” requires lubrication once every two or three 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: 2008 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.