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 (span, height, and tread), manually operated, and portable with the A-frame design, four-position swivel lock casters, and standard 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, CMAA 70, and ASME B30.2.

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. Optional aluminum I-beam is fabricated from T6061 Aluminum 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 B30.11 – Monorails and Underhung Cranes
- **C. American Society of Mechanical Engineers (ASME) B30.2:** Overhead and Gantry Cranes
- **D. American Society for Testing and Materials (ASTM) A36:** Carbon Structural Steel
- **E. American Society for Testing and Materials (ASTM) A325:** Structural Bolts, Steel, Heat Treated, 120/150 ksi Minimum Tensile Strength
- **F. American Society for Testing and Materials (ASTM) A490:** Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
- **G. American Society for Testing and Materials (ASTM) B221:** Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube
- **H. American Welding Society (AWS) D1.1:** Structural Welding Code
- **I. American Welding Society (AWS) D1.2:** Structural Welding Code—Aluminum
- **J. American Welding Society (AWS):** Certified Shop
- **K. Occupational Safety and Health Administration (OSHA) – Specification 1910.179:** Overhead and Gantry Cranes

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 and upper and lower main leg assemblies.
  3. Casters and caster frame assemblies.
- **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 T-Series Steel I-Beam Gantry Crane models are designed with a maximum deflection of approximately L/600. All T-Series Aluminum I-Beam Gantry crane models are designed with a maximum deflection of approximately L/450.
- **D. Crane Operating Temperature:** 5 to 140 degrees F (-15 to 60 C)—up to 200 degrees F (93 C) with optional steel wheels.
- **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 system.
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 B30.11, 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 and AWS D1.2.
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 T-SERIES GANTRY CRANE

[Spanco T-Series Gantry Cranes are available in capacities up to 10 tons and with standard spans of 10 to 40 feet.] [Spanco T-Series Gantry Cranes with Aluminum I-beam are available in capacities up to three tons with standard spans 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 T6061 brushed aluminum.

B. Design Factors: Spanco T-Series Gantry 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. 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.

C. Service Factor: All Spanco Gantry Cranes are designed for moderate usage (Class C Moderate Service) as defined by CMAA 70:
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.

D. Support Structure: Spanco T-Series Gantry Cranes are portable with standard moldon polyurethane casters 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. Caster Options
1. Wheel Brakes
2. V-Groove Casters and Track
    a. Mounted track for applications requiring movement along fixed path.
    b. Track made from inverted steel angle welded to flat strip for use with 3/8-inch lag bolts.
    c. Fixed length angle track is available in 5, 15, and 20-foot stock lengths.
3. Nylacron Casters
    a. Greatly reduces forces required to move the gantry crane.

D. Tagline Assembly

2.4 SYSTEM COMPONENTS

A. I-Beam
1. Adjustable I-beam [steel or aluminum].
2. Can be adjusted for cantilever positioning up to 25 percent of span (four feet maximum) using provided counterweight.
3. Capability to self-center over load.
4. Engineered design 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 to raise or lower beam height and to allow use on multi-level floors.
2. Push/pull pins inserted or removed when adjusting height.

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

D. Casters
1. Four position swivel-locking casters.
2. Polyurethane wheels standard.
3. Nylacron casters available.

2.5 SHOP FINISHING

A. Standard Paint Colors:
1. All gantries 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. Inventory:
1. Check materials to ensure all parts are present.

B. Foundation
1. Standard Spanco Gantries are completely portable and require no foundation or structural support.
2. Track mounting is available with steel V-groove casters.
   a. No permanent ironwork needed.
   b. Used for applications requiring load movement along fixed path.

3.2 INSTALLATION

[**NOTE:** The following installation information is provided only as a reference tool. For complete installation and maintenance instructions, refer to manual 103-0001.]

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 clearance Two inches (51 mm) from any lateral obstruction.

D. Parts:
1. I-Beam
2. I-Beam Hanger 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

WARNING: CRANE PARTS CAN BE EXTREMELY HEAVY. USE PROPER RIGGING AND SUPPORT ON ALL PARTS DURING ASSEMBLY, ADJUSTMENT, AND DISASSEMBLY.

1. Remove end 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 hanger assembly into top flange of I-beam. Angled brace tube connection should be facing toward the middle of beam.

   a. This assembly is for standard inboard bracing. If outboard bracing is desired, turn I-beam hanger assembly opposite as above.
4. Set I-beam hardware assembly to desired position and line up holes in hanger plate with holes in top flange of I-beam. Secure hanger plate using short hitch pins provided in hardware kit (two for each end of gantry) and insert lynch pins through ends of hitch pins to lock in place. (Lynch pins prevent 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 safely 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. Before rigging system, ensure push/pull pins are inserted and secure in their correct place in the main legs. 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 must be a minimum of 40 percent of overall height to maintain stability.

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.

B. Field Test

1. Ensure crane operates properly (movement is smooth and consistent).
2. 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 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. Refer to OSHA and CMAA 78 and 79 for required inspection protocols.

2. 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 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 9001:2015 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.