

E-Series Steel Gantry Crane

This guide can be used to prepare a bid specification for the incorporation of an E-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 E-Series Steel Construction Gantry Cranes can be height adjustable with capacities up to three tons, or fixed height with capacities up to five tons. Four position swivel lock casters and moldon polyurethane wheels provided as indicated. E-Series Steel Gantry Cranes are portable and manually operated. [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 as they apply to gantry cranes.
- C. Standard Equipment Specifications:** List other specifications related to the product and application including options, accessories, and customizations [Mounting, Hoists, Etc.].
 - 1. Working Span: [Working span is determined by the amount of actual working area needed.] [Adjustable span kit is optional and allows for width adjustment without drilling I-beam.]
 - 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.]
4. 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 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:** E-Series Gantry Crane shall provide coverage of a rectangular area of size and consist of:
 1. Standard I-beam and hardware assembly.
 2. A-Frame fabricated from mechanical tubing.
 3. Casters and polyurethane wheels.
- B. **Modular, pre-engineered design:** Crane system shall be designed as fixed height OR with height 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. All standard Spanco E-Series Gantry Cranes are designed to withstand the worst seismic condition in the U.S. or as defined by the IBC.
1. Application where cranes will be used in essential facilities like fire departments, military buildings, or communications buildings, or at locations closer than 15km to known seismic sources require special consideration. As per the International Building Code, these special conditions must be disclosed prior to placing an order.
 2. Custom cranes (cranes modified over and above the standard dimensions or capacities shown within our standard Spanco literature) may need modification to conform to Seismic 4 Uniform Building Code due to the customized and non-standard nature of these designs.
- 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 20 thousand (20,000) hours for manual crane products to cover defects in materials and execution.

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 **E-SERIES STEEL GANTRY CRANE**

[Spanco E-Series Gantry Cranes are available in capacities up to five tons with a standard span of 12 feet [fixed height] or three tons [adjustable height] and with a standard span of 11 to 12 feet.]

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

1. **E-Series All Steel Adjustable Gantry Crane** as manufactured by Spanco, Inc.
 - a. Portable, height adjustable gantry crane with swivel lock casters and polyurethane wheels.
 - b. Construction: Fabricated from ASTM A36 steel sections with finished ends and surfaces.
2. **E-Series All Steel Fixed Height Gantry Crane** as manufactured by Spanco, Inc.
 - a. Portable, fixed height 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 E-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 E-Series Gantry Cranes are portable with moldon polyurethane wheels and can be track mounted with V-groove casters for applications requiring movement along a fixed path.

2.3 **SYSTEM OPTIONS**

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

A. Adjustable Span Kit

1. Allows for width adjustment without drilling the I-beam.
2. Allows crane to be shortened for travel down narrow aisles.
3. Does not require factory installation.

B. Lug-All Winch-Hoist Kit

1. Adjusts gantry height according to application.
2. Includes two Lug-All Cable Winch Hoists.

C. Caster Styles and Wheel Brakes

1. Available for floor-protecting casters.
2. Six- or eight-inch 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.

E. Tagline Assembly

2.4 **SYSTEM COMPONENTS**

A. Beam

1. Standard steel I-Beam

B. A-Frame

1. Fabricated from mechanical tubing.
2. Optional fixed or adjustable height.
3. Adjustable height accomplished using spring loaded steel locking pins.
4. Center tube adjusts in six-inch increments.

C. Casters

1. Four position swivel locking.
2. Polyurethane wheels.

2.5 **SHOP FINISHING**

A. Standard Paint Colors:

1. All gantries painted Spanco Yellow.
2. Ford® Blue or 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 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. 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.

3.2 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. Assembly:

1. Select an area under an overhead hoist to raise the I-beam.
2. Lay both "A" frames flat on the floor, and slide upright tube into top of center tube. Pin upright tube in its lowest position to ensure that load pin is fully engaged.
3. Lock the caster wheels in position parallel to the "A" frame. This will prevent the frame assembly from rolling away when lifted to the upright position.
4. Lift the I-beam to the gantry's minimum height. Be sure that the holes in the I-beam flange are on the bottom and that the capacity rating is legible.
5. Lift one end of the frame assembly into position under one end of the I-beam, and bolt I-beam to top plate of the upright with the hardware supplied. Be sure the lifting lug is on the outside of the frame assembly. Raise the other end frame into position and bolt together as outlined above.

3.3 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

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

C. Acceptance Test

1. 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.