PF-Series Gantry Crane

This guide can be used to prepare a bid specification for the incorporation of a PF-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 PF-Series Gantry Cranes are portable with the A-frame design, four-position swivel lock casters, and standard moldon polyurethane wheels. Systems can be manually operated or motorized; motorized track and V-groove track mounting options are also available.

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, and AWS D1.1 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.]
4. 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 National Standards Institute (ANSI): ANSI B30.11 – Monorails and Under-hung 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): Certified Shop
J. Occupational Safety and Health Administration (OSHA) – Specification 1910.179: Overhead and Gantry Cranes

1.3 PERFORMANCE REQUIREMENTS

A. Coverage: PF-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 fixed height, 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 PF-Series Gantry Crane models are designed with a maximum deflection of approximately L/600.
D. Crane Operating Temperature: 5 to 140 degrees F (-15 to 60 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 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.
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 PF-SERIES GANTRY CRANE

[Spanco PF-Series Gantry Cranes are available in capacities up to 15 tons and with standard spans of 15 to 40 feet and custom spans up to 50 feet, depending on capacity.]

A. Models: The following are PF-Series Gantry Cranes manufactured by Spanco, Inc. [Specifier may need to choose an acceptable model based on the list below.]
1. **Manually Operated PF-Series All Steel Gantry Crane** as manufactured by Spanco, Inc.
   a. Portable, A-frame design with swivel lock casters and polyurethane wheels (standard).
   b. Manually operated.
   c. Construction: Fabricated from ASTM A36 steel sections with finished ends and surfaces.
2. **Motorized PF-Series All Steel Gantry Crane** as manufactured by Spanco, Inc.
   a. Portable, A-frame design with swivel lock casters and polyurethane wheels (standard).
   b. Power drive for motorized operation.
   c. Custom power installation options available.
   d. Construction: Fabricated from ASTM A36 steel sections with finished ends and surfaces.

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

C. Design Factors: Spanco PF-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.

D. 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 lift 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 PF-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 PF-Series Gantry Cranes. [Select required options from the following, or contact Spanco, Inc. if other types of accessories are required.]

A. Power Drive
1. Two-drive assemblies
   a. Wheels can be polyurethane (trackless) or V-groove (with track).

2. Sprockets and Chains
3. Two-gear Reducers
4. Two 230/460 V-Three Phase TEFC Motors
5. Adjustable Multi-Speed AC Inverter Drives Standard
6. Two Idler Assemblies

B. Trackless Kit

1. Guide rollers on one drive and one idler assembly
2. Idler and drive assemblies supplied with polyurethane bumpers

C. Custom Power Installation

1. Crane Controls
   a. Control enclosures suitable for severe environments or hazardous areas.
2. Multi-Speed AC Inverter Drives
3. Air-Driven Power Drive Kits
4. Crane Wiring with Metal Conduit
5. Cable Reels and Electrical Systems
6. Push Button Stations
7. Tagline Festooning
8. Flat Wire and Box Track Festooning
9. Warning Light and Audible Alarms or Travel Limit Switches
10. Top Running and Under Running End Trucks
    a. For single leg (semi-gantry) applications

D. Caster Options

1. Wheel Brakes
2. V-Groove Casters and Track
   a. Mounted track for applications requiring movement along a 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. Cost-effective alternative to motorized travel.
   b. Greatly reduces force required to move the gantry crane.

E. Tagline Assembly

2.4 SYSTEM COMPONENTS

A. I-Beam

1. Standard steel I-beam
2. Offers greatest under I-beam height compared to Spanco A-Series and E-Series gantry cranes, starting at 20 feet under the beam standard.

B. A-Frame

1. Fabricated from heavy-gauge square or rectangular mechanical tubing.

C. 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 an airless electrostatic hot 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. Motorized Power Drives:

1. Check electrical supply, conduit, wiring, disconnect switch, and other electrical components.

C. 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 a 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 103-0003.]

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. Left and Right Leg Assemblies (2)
2. Bridge Beam with Register Plates Attached
3. Connecting Plates
4. Upper Leg Brace
5. Lower Leg Brace
6. Caster Assemblies or Optional Power Drive

E. Assembly

1. Assemble casters or optional power drive assemblies to legs. Bolt one set of legs together using connection plates. Install lower and upper leg braces.

2. Raise bridge beam so legs can be bolted to register plates on underside of bridge beam. Bolts should be tightened and torqued to valves shown in installation manual.
3. Install hoist trolley unit on bridge beam. Trolley must be separated to install around bridge beam. Register plates are welded to bottom flange of beam so trolley cannot slide onto beam from one end.
4. Shims are furnished for leg connections to register plates. Variations in rolled structural shapes, manufacturing, and site conditions may require shimming to plumb legs and align wheels.

F. Power Drive Assembly (If Supplied)

1. Install bridge electrification and connect all electrical components if the gantry crane is so equipped. Ensure equipment travels in direction indicated on control station. If not, correct phasing by interchanging any two incoming power wires.
2. Check oil level in all gearboxes. Make sure all wheels and roller chains are lubricated if the gantry is furnished with power drives.
3. Operate the crane the full length of the runway several times to make sure it is tracking properly, and it clears all obstructions. If any problems occur while tracking, the legs should be checked for being plumb. Rearrange shims to plumb legs.
4. A complete electrical/mechanical manual is supplied separately for power drives.

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.