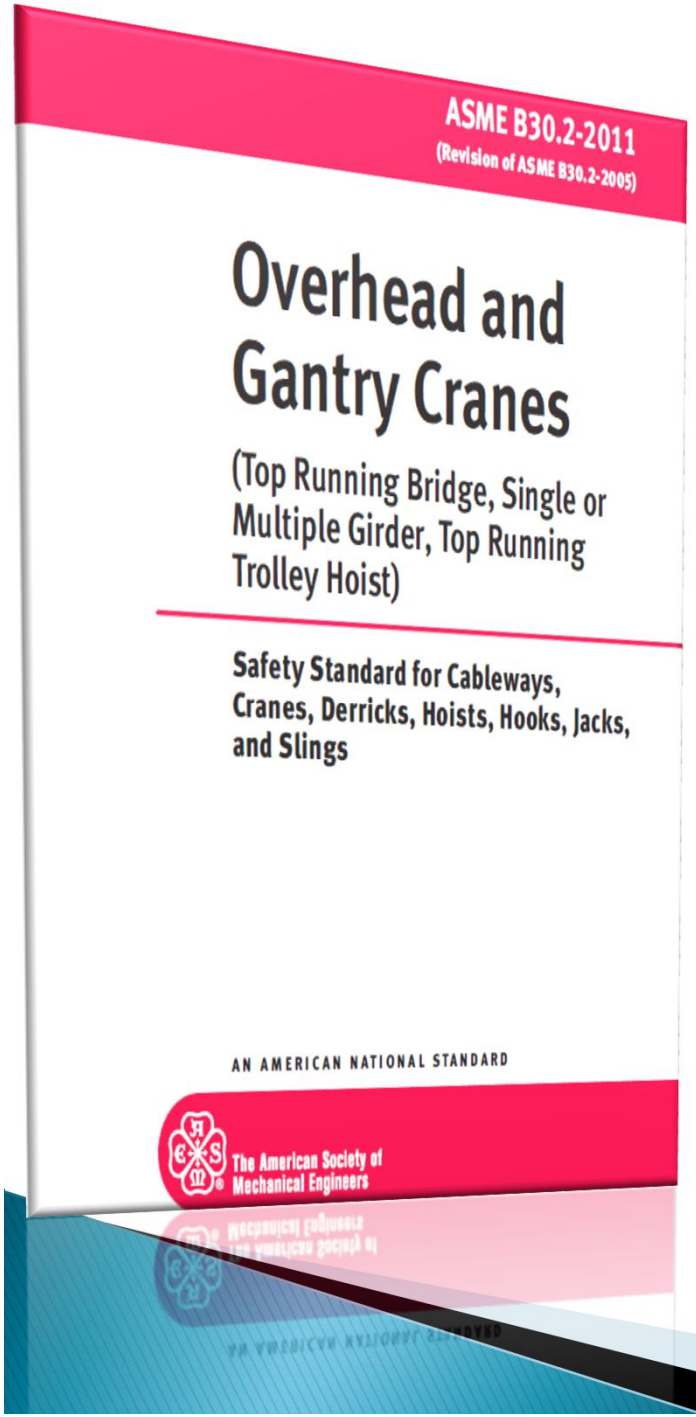

بسم الله الرحمن الرحيم



آشنایی با استاندارد ASME B30.2-2022

جرثقیل های سقفی و دروازه ایی

(پل متحرک بالایی، تکی یا چندتا تیرآهن، وینچ ترولی متحرک بالایی)

استاندارد ایمنی برای مسیرهای عبور کابل ، جرثقیل ها ،
وینچ ها ، قلاب ها و شگلها

مدرس : مهندس مدحجی

صنعت تخصص پیشه
سهامی خاص
شماره ثبت ۵۲۷۶۵

معرفی استاندارد B30

استاندارد ASME B30 شامل مقرراتی است که برای جرثقیل و دیگر بالابرهای جابجایی مواد لازم می باشد:

- ✓ساختمان
- ✓نصب
- ✓اپراتوری
- ✓بازرسی
- ✓تست
- ✓نگهداری
- ✓بهره برداری

Chapter 2-0

- هدف از استاندارد B30.2

این استاندارد شامل مقرراتی برای ساختمان ، نصب ، اپراتوری ، بازرسی و نگهداری از جرثقیل های کنترل دستی و جرثقیل های سقفی متحرک و جرثقیل های دروازه ایی که یک یا چند پل متحرک بالایی با یک یا بیشتر از یک وینچ ترولی می باشد که برای جابجایی عمودی و پایین آورنده آزادانه (مانند: بالانسرها) و تجهیزات بار بدون راهنما (مانند: بالابر ساختمانی) و جابجایی مواد لازم می باشد.

Figure 2-0.2-1
Cantilever Gantry Crane

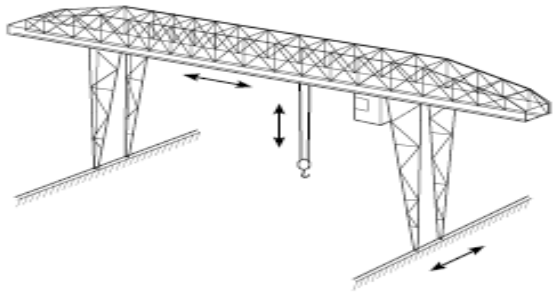


Figure 2-0.2-2
Gantry Crane

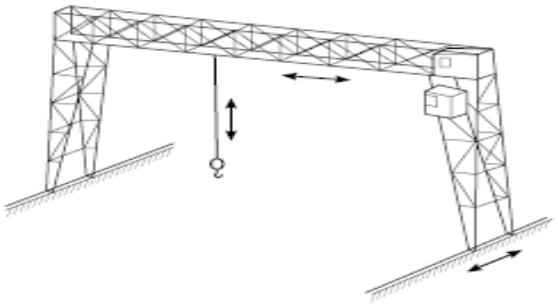


Figure 2-0.2-3
Overhead Crane

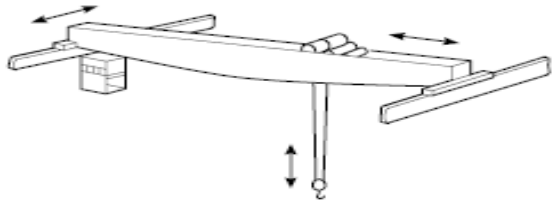


Figure 2-0.2-4
Semigantry Crane

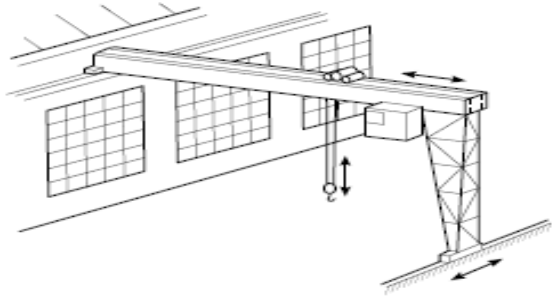
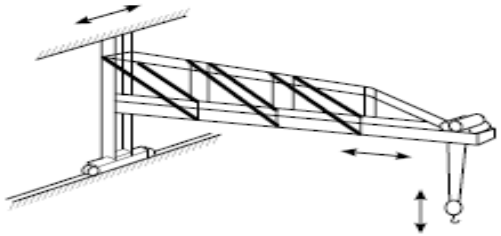


Figure 2-0.2-5
Wall Crane



SECTION 2-0.2: DEFINITIONS

- Brake: a device, other than a motor, used for retarding or stopping motion by friction or power means.

- cab: the operator's compartment on a crane.

- bridge: that part of a crane consisting of one or more girders, trucks, end ties, foot walks, and drive mechanism, which carries the trolley or trolleys.

- crane service, normal: service that involves operating at less than 85% of rated load and not more than 10 lift cycles/hour except for isolated instances.

- crane service, heavy: service that involves operating at 85% to 100% of rated load or in excess of 10 lift cycles/hour as a regular specified procedure.

صنعت تخصص پیشه

سهامی خاص

شماره ثبت ۵۲۷۶۵

Chapter 2-1

General Construction and Installation

مهندس : مدحجی

SECTION 2-1.1: MARKINGS

- 2-1.1.1 Rated Load Markings — Crane :

The rated load of the crane shall be marked:

(a)- on each side of the crane

(b)- shall be legible from the ground or floor.

- 2-1.1.2 Rated Load Markings — Hoists :

If the crane has more than one hoisting unit, each hoist shall have its rated load marked as per. These markings shall also appear on the controllers used by the operator to indicate the controllers that operate each hoist.

- **2-1.1.3 Manufacturer's Identification Markings:** The crane shall be marked with manufacturer's identification information, on a plate or label attached to the crane, as follows:
- (a) name and address of manufacturer
- (b) manufacturer's model or serial number
- (c) voltage of AC or DC power supply and phase and frequency of AC power supply

- **2-1.1.4 Multiple Hoist Identification Markings:**

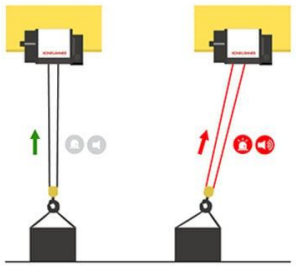
If the crane has more than one hoisting unit, each hoist shall have an identification marking on the hoist or trolley unit or its load block

- **2-1.1.5 Warnings:**

Floor-operated and remote-operated cranes shall have a safety label or labels affixed to the pendant station, portable operating station, or load block.

The label or labels shall be in compliance with ANSI Z535.4

- **2-1.1.5 Warnings:**
- (1) lifting more than rated load
- (2) operating hoist when load is not centered under hoist
- (3) operating hoist with twisted, kinked, or damaged chain or rope
- (4) operating damaged or malfunctioning crane



- **2-1.1.5 Warnings:**
- (5) lifting people
- (6) lifting loads over people
- (7) operating a rope hoist with a rope that is not properly seated in its groove
- (8) operating manual motions with other than manual power
- (9) removing or obscuring safety label

- **2-1.1.6 Controls:**

(a) Each controller shall be legibly marked to indicate the function and direction of movement.

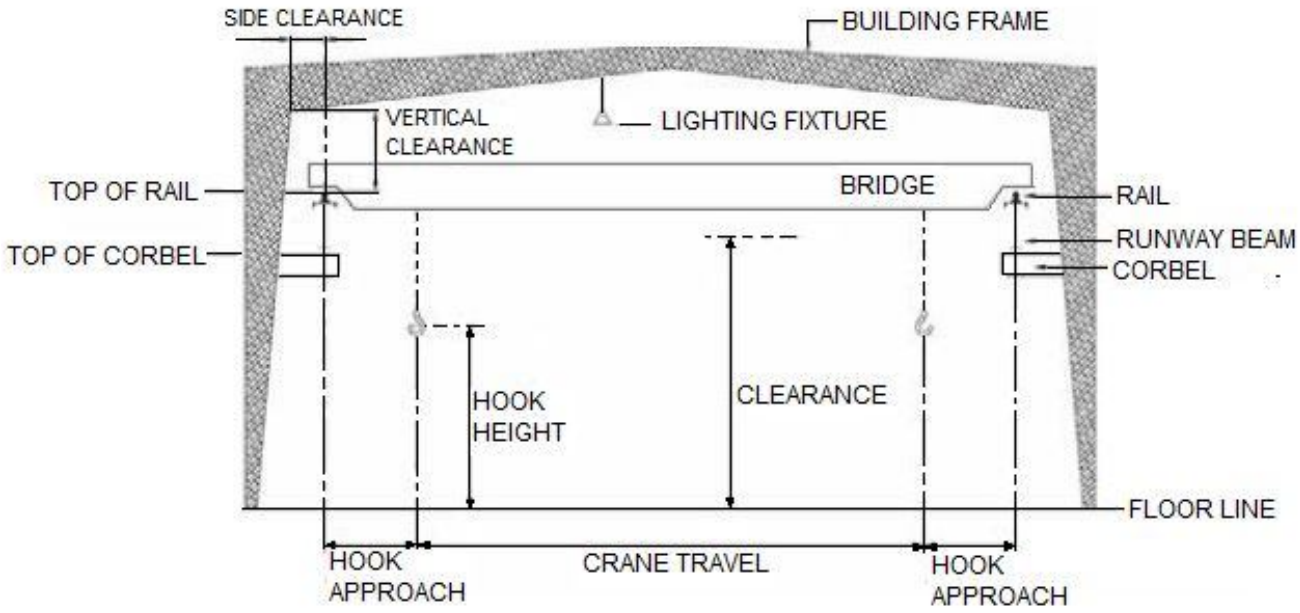
(b) In locations or areas where multiple cranes are used, the arrangement of control markings for function and direction should be the same.

(c) Directional markings (e.g., north, south, east, west
or forward, reverse, left, and right) shall be provided on the equipment or facility.

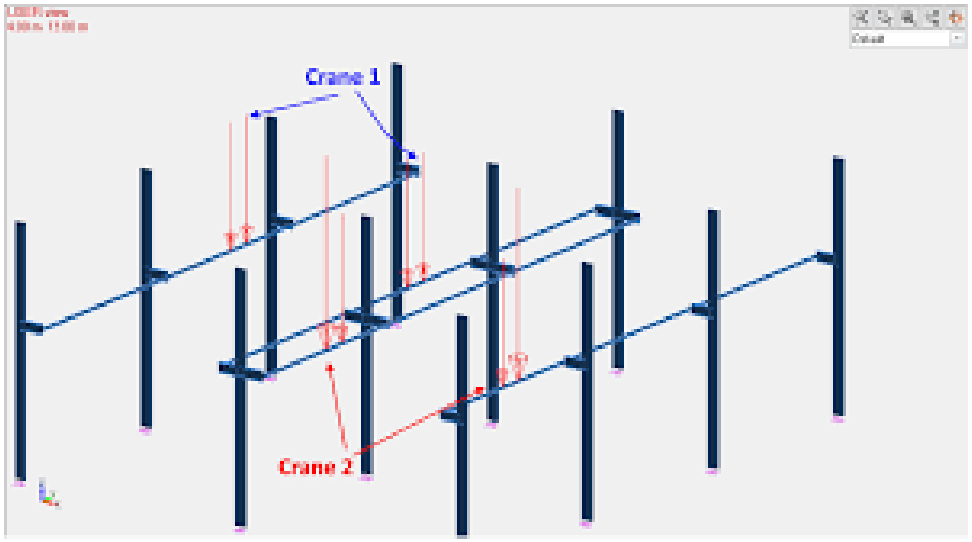
SECTION 2-1.2: CLEARANCES

2-1.2.1 Clearance From Obstruction:

(a) Clearance shall be maintained between the crane and the building, as well as parallel running cranes and cranes operating at a different elevation, under all normal operating conditions .



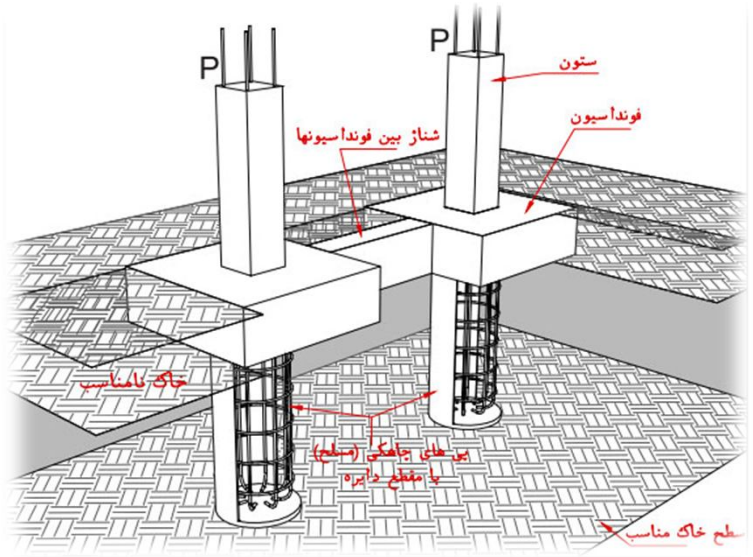
- **2-1.2.2 Clearance Between Parallel Cranes**
- If the runways of two cranes are parallel and there are no intervening walls or structures, there shall be clearance provided and maintained between the two bridges.



SECTION 2-1.3 : GENERAL CONSTRUCTION RUNWAYS AND SUPPORTING STRUCTURE:

2-1.3.1 Foundations and Anchorages:

(a) Permanent concrete or masonry foundations shall rest on footings below the frost line except in permafrost.



(b) Every outdoor crane shall be provided with secure fastenings convenient to apply and to hold the crane against a wind pressure of 30 lb/ft2 (1436 Pa) .

Parking brakes may be considered minimum compliance with this rule.

(c) Where wind forces are specified to be in excess of 30 lb/ft2 - 1436 Pa , special anchorages, such as latches or tie-downs at the home position or remotely operated rail clamps for all positions to supplement the primary

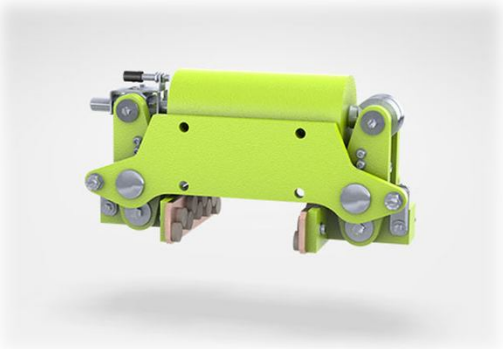
braking system, shall be provided (ANSI/ASCE 7-98 may be used as a reference for this condition) .

tie-down

latches

- (e) Rail clamps should only be applied when the crane is not in motion.

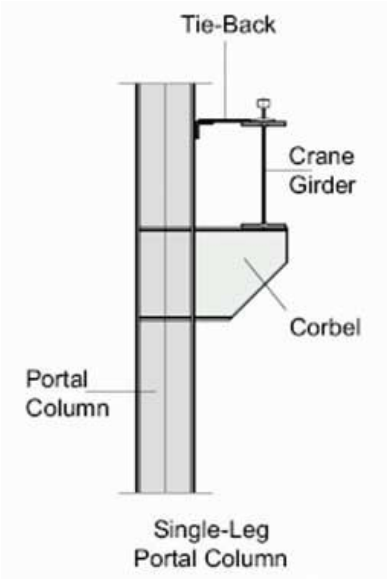
(g) A wind speed indicating device shall be provided for cranes used outdoors. The device shall be mounted on the crane or the crane runway structure and shall give a visible and audible alarm to the crane operator at a predetermined wind speed. A s ingle wind speed indicating device may serve as an alarm for more than one crane.

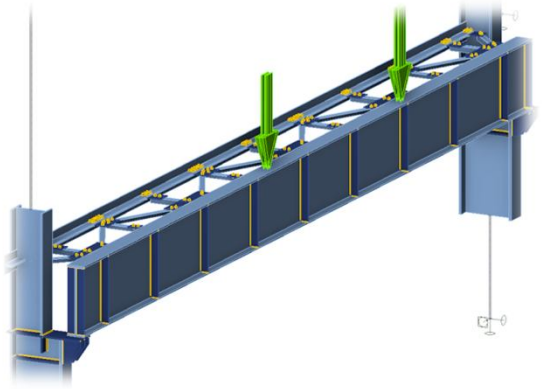


2-1.3.2 Crane Runways

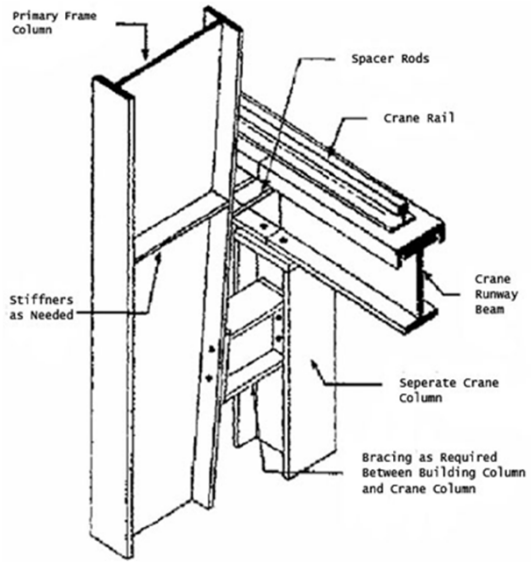
- **(a) Construction of Runways and Rails**

(1) The crane runways and supporting structures shall be designed to withstand the **loads and forces** imposed by the crane. Steel crane runways and supporting structures should conform to the design parameters as specified in ANSI/AISC 360-16.

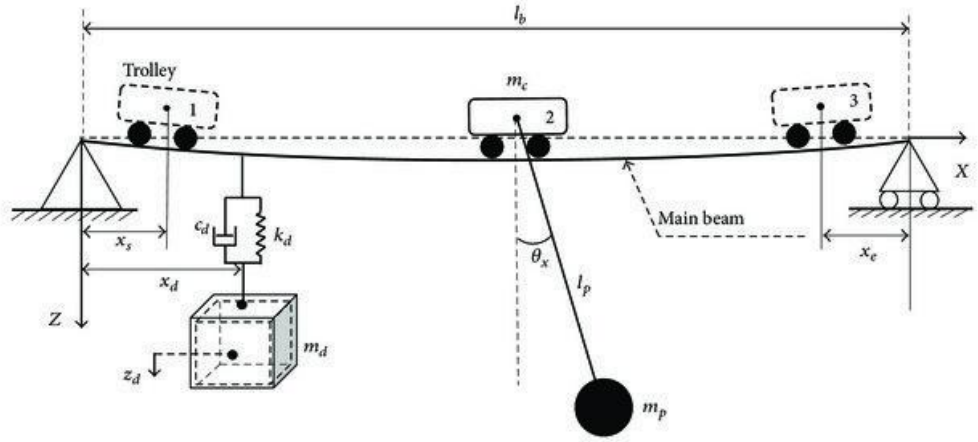


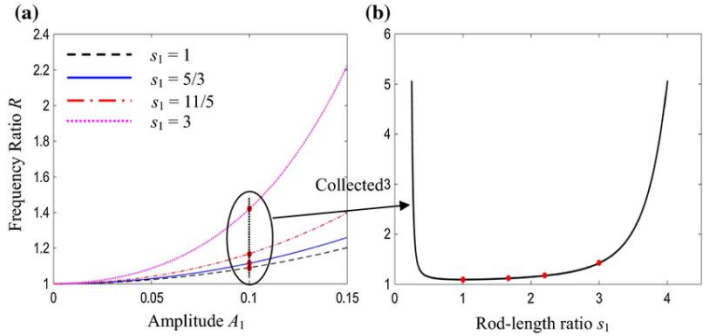


- (2) Runway columns shall be securely anchored to foundations.

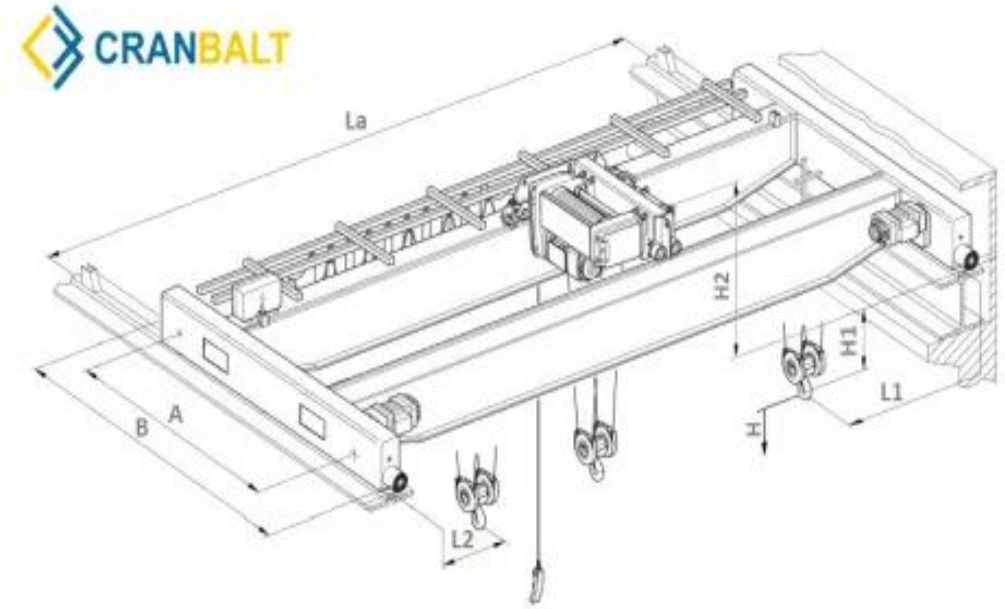


- (3) The structure shall be free from detrimental vibration under normal operating condi





(4) Rails shall be level, straight, joined, and spaced to the crane span within tolerances as specified in CMAA Specification No. 70, or within tolerances that are compatible with special conditions specified by the crane manufacturer or a qualified person.



- (5) Where curves are required, special design will be necessary.
- (6) Where grades are required, special design will be necessary.

- **(b) Runway Stops**

(1) Stops shall be provided at the limits of travel of the bridge or gantry structure.

(2) Stops shall engage the bumpers mounted on the bridge or gantry structure.

(3) Stops shall be designed to withstand the forces applied by the bumpers, as specified in para. 2-1.8.2(b).

SECTION 2-1.4: CRANE CONSTRUCTION

2-1.4.1 Welded Construction

All welding procedures and welding operator qualifications to be used on load-sustaining members shall be in accordance with ANSI/AWS D1.1, except as modified by ANSI/AWS D14.1.

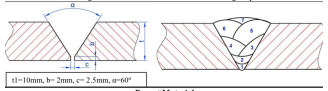
Where special steels or other materials are used, the manufacturer or qualified person shall provide welding procedures.

WELDING PROCEDURE SPECIFICATION WPS 02/09
EN ISO 15609-1:2004

Manufacturer: Wojciech Grzegorczyk	Parent Material Designation: **S960QL**
Joint Number: **P1**	
Joint Type and Weld Type: **butt weld (BW) / butt joint V**	Material thickness (mm): **10 mm**
Details of Sealing Run: **Single-side welding**	Method of Preparation and Cleaning: **Thermal cutting and machining**
Welding Position: **flat PA**	Outside Diameter (mm): ---

Weld Preparation Details (Sketch)

Joint Design | Welding Sequences



t1=10mm, b= 2mm, c= 2.5mm, α=60°

Parent Materials

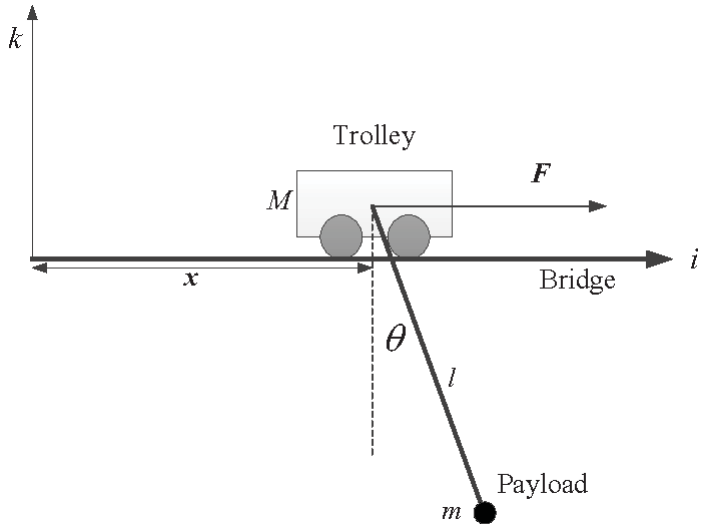
Welding joint	Material 1	Material 2
Type	Steel	Steel
Designation	S960 QL	S960 QL
Thickness [mm]	10	10

Filler Material		**Welding Position**	
Type	Wire	Welding Position	PA
Designation	X96	Direction of welding	left
Diameter [mm]	1.2	Comments	---

Shielding Gas		**Welding Technique**	
Name	Mixture	Bead type	String
Mixture Composition	82%Ar+18%CO_2	Weave width	Do not use
Flow rate [l/min]	15	Number of passes	7
Preheat Temperature	80°C	Number of beads	7

Welding Parameters

Run	Welding Process	Filler Material Type	Size [mm]	Polarity	Welding Current Intensity [A]	Arc Voltage [V]	Travel Speed [cm/min]	Welding Energy [kJ/cm]	Time $t_{8/5}$ [s]
1	135	X96	1.2	+	120	17	12	10	10
2	135	X96	1.2	+	230	27	35	11	11
3	135	X96	1.2	+	230	27	35	11	11
4	135	X96	1.2	+	230	27	35	11	11
5	135	X96	1.2	+	230	27	35	11	11
6	135	X96	1.2	+	230	27	35	11	11
7	135	X96	1.2	+	230	27	35	11	11



2-1.4.2 Structural Components

All crane load-bearing structural components such as, but not limited to, bridge girders, end ties, end trucks, and trolleys should conform the design parameters as specified, and applicable, in CMAA Specification No. 70 or AIST Technical Report No. 6.

70-1. General Specifications.

70-2. Crane Service Classification.

70-3 Structural Design.

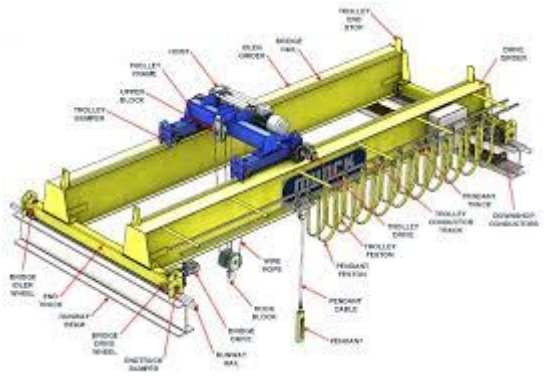
70-4. Mechanical Design.

70-5. Electrical Equipment.

70-6. Inquiry Data Sheet and Speeds.

70-7. Glossary.

70-8. Index.




با تشکر