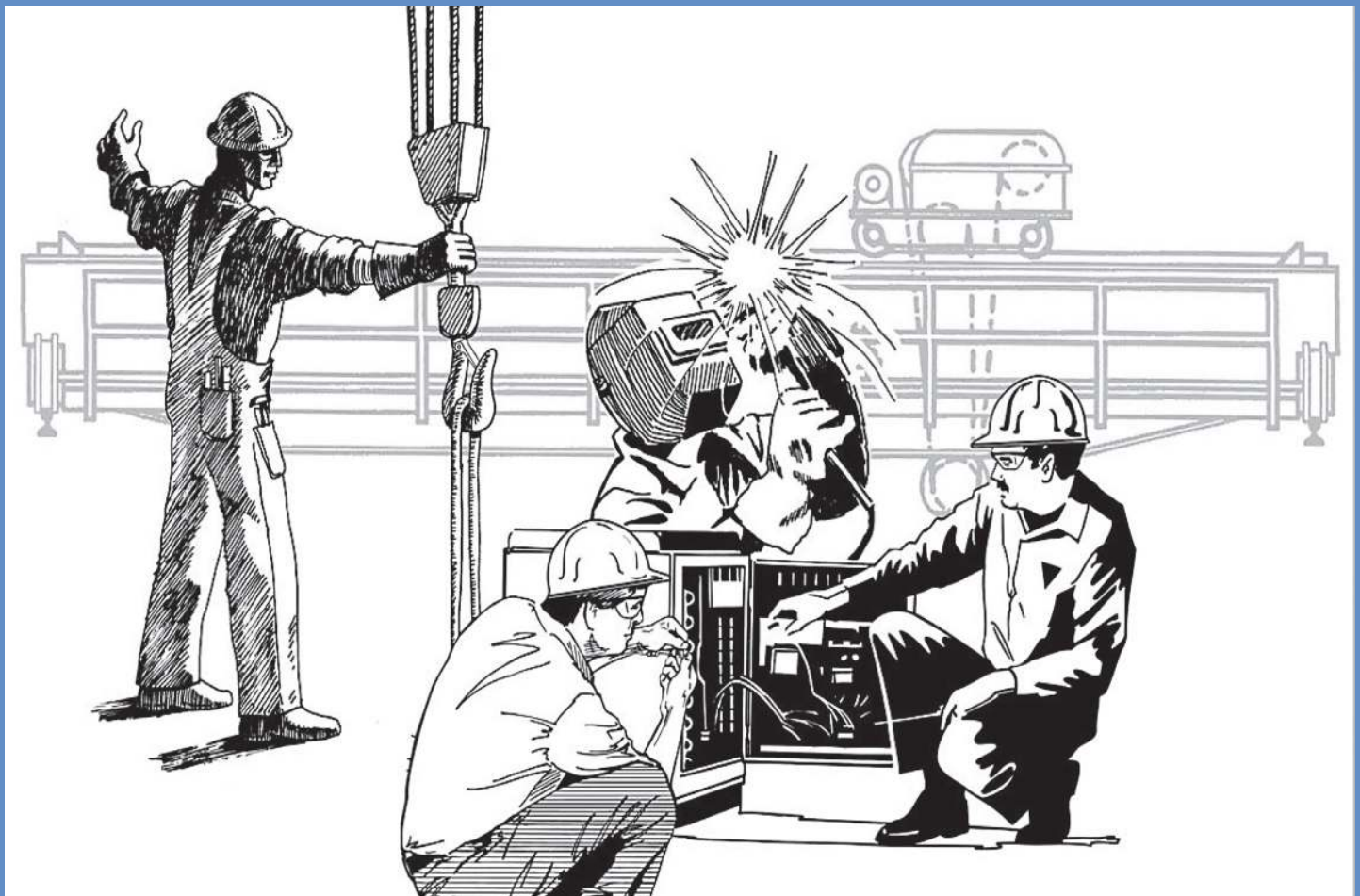


Standards and Guidelines for Professional Services Performed On Overhead and Traveling Cranes and Associated Hoisting Equipment

Prepared by:
The Crane Manufacturers Association of America, Inc.

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CMAA Specification #78, Revised 2015



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CMAA Specification No. 78-2014
Standards and Guidelines for Professional Services Performed
On Overhead Traveling Cranes and Associated Hoisting Equipment

INTRODUCTION

These Standards and Guidelines designated CMAA Specification No. 78-2014 (Specification) have been developed by the Crane Manufacturers Association of America, Inc. (CMAA) an organization of leading electric overhead traveling crane manufacturers in the United States. The purpose is to recognize overhead traveling crane service and the service for associated hoisting equipment as an “industry” worthy of having guidelines and standards for providing high quality, professional services performed by safety-minded, manufacturer-trained and certified technicians.

This Specification also contains information that should be helpful to the users of cranes, as well as to engineers in the facility and maintenance professionals. While much of this information must be of a general nature, the items listed may be checked with individual manufacturers. Additional comparisons may be made leading to optimum selection of a service provider based on input from the Original Equipment Manufacturer (OEM).

The words “**shall**” and “**should**” are used throughout this Specification. Definitions shall be in accordance with the American Society of Mechanical Engineers B30 (ASME B30) standards as follows:

- Shall:** *this word indicates that a rule is mandatory and must be followed.*
- Should:** *this word indicates that a rule is a recommendation, the advisability of which depends on the facts in each situation.*

This Specification consists of six sections, as follows:

- 78-1. General Information
- 78-2. Technical Qualifications
- 78-3. Jobsite Safety Guidelines
- 78-4. Crane Inspection and Maintenance
- 78-5. Genuine OEM (Factory) Parts
- 78-6. Crane Service Classifications
- Appendix
- Glossary
- Index

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These Standards and Guidelines represent suggested technical qualifications for service and inspection personnel and guidelines for jobsite safety and inspection procedures. It was developed with the sole intent of offering information to parties engaged in the manufacture, marketing, purchasing, servicing or use of such cranes. These Standards and Guidelines are advisory only and should be regarded as a guide that the user may or may not choose to adopt, modify, or reject. The information does not constitute a comprehensive safety program and should not be relied upon as such. Such a program should be developed and an independent safety adviser consulted to do so.

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NOTICE

It is the responsibility of the owner/user to install, inspect, test, maintain, and operate a crane or associated lifting equipment in accordance with the applicable volume of the ANSI/ASME B30 Safety Standard, OSHA Regulations, and ANSI/NFPA 70, National Electric Code, Local regulations and laws. If the crane or associated lifting equipment is installed as part of a total lifting system, it is also the responsibility of the owner/user to comply with the applicable ANSI/ASME B30 volumes that address other types of equipment used in the system.

Further, it is a responsibility of the owner/user to require all personnel who will install, inspect, test, maintain, and operate a crane or associated lifting equipment, to read and to comply with the contents of the instruction manuals furnished by the manufacturer of the crane or associated lifting equipment, and the applicable portions of the volume of the ANSI/ASME B30 Safety Standard, OSHA Regulations, and ANSI/NFPA 70, National Electric Code. If the crane or associated lifting equipment is installed as part of a total lifting system, the applicable ANSI/ASME B30 volumes that address other types of equipment used in the system must also be read and followed by all personnel.

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78-1 GENERAL INFORMATION

1.1 SCOPE

- 1.1.1 This Specification shall be known as the Standards and Guidelines for Professional Services Performed on Overhead Traveling Cranes – CMAA Specification #78, Revised 2014.
- 1.1.2 The information contained in this Specification applies to overhead traveling single or double girder top running, under running, gantry cranes, monorails and associated hoisting equipment. It should be understood that this Specification is general in nature and other specifications may be agreed upon between the purchaser and the service provider to suit each specific application.
- 1.1.3 Section 78-6 Crane Classifications outlines six different classes of crane service as a guide for determining the service requirements of the individual application. In many cases there is no clear category of service in which a particular crane operation may fall. The proper selection of a crane services can be made only through discussion of service requirements and crane design with the OEM or other qualified service providers.
- 1.1.4 Proper operator training, regular maintenance and inspections by qualified individuals have an important influence on the operating life of the crane components. These factors must be given careful consideration to assure maximum equipment operating life and minimize equipment failures.
- 1.1.5 Death, personal injury and/or serious property damage, may occur if cranes are not operated properly, regularly inspected, serviced and maintained.

1.2 Reference Documents

Parts of this Specification refer to certain portions of other applicable specifications, codes or standards. Where interpretations differ, CMAA recommends that this Specification be used as the guideline. Mentioned in the text are the latest revisions of publications of the following organizations:

ANSI American National Standards Institute
11 West 42nd Street
New York, New York 10036

ASME The American Society of Mechanical Engineers
Three Park Avenue
New York, New York 10016-5990

ASME B30 specifications that are applicable to overhead & gantry cranes, chain and wire rope hoists, below-the-hook devices and associated equipment.

CMAA Crane Manufacturers Association of America, Inc.
8720 Red Oak Blvd., Suite 201
Charlotte, North Carolina 28217-3992

Specification No. 70 – Top Running Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes

Specification No. 74 – Top Running & Under Running Single Girder Electric Traveling Cranes Utilizing Under Running Trolley Hoist

Specification No. 79 Crane Operator's Manual

MMA Monorail Manufacturers Association
8720 Red Oak Blvd., Suite 201
Charlotte, North Carolina 28217-3992

Specification No. MH27.1 – Standard for Patented Track Underhung
Cranes and Monorail Systems
Specification No. MH27.2 – Standard for Enclosed Track Underhung
Cranes and Monorail Systems

OSHA U.S. Department of Labor
Directorate of Safety Standards Programs
200 Constitution Avenue, N.W.
Washington, D.C. 20210

29 CFR Part 1910 – Occupational Safety & Health Standards for
General Industry

78-2 TECHNICAL QUALIFICATIONS

2.1 Crane Technician

Any person engaging in repairing, troubleshooting, maintaining, servicing and functional testing of cranes, including but not limited to overhead traveling single or double girder top running, under running, gantry cranes, monorails and associated hoisting equipment.

2.1.1 Work Experience

A crane technician should have a minimum of 2,000 hours of relevant work experience and training related to maintaining, inspecting, servicing, repairing and modifying cranes. This individual shall have a working knowledge of how to identify deficiencies, and make repairs to mechanical, structural, and electrical crane components and associated hoisting equipment. Under no circumstances shall an individual be permitted to perform repairs that has not received appropriate training and cannot demonstrate a working knowledge of the codes, regulations and the product being repaired.

2.1.2 Physical qualifications – A crane technician should possess the following minimum qualifications.

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2.1.2.1 Have vision of at least 20/30 Snellen in one eye, and 20/50 Snellen in the other, with or without corrective lenses and have normal depth perception, field of vision, hand-eye coordination, and no tendencies to dizziness or similar conditions.

2.1.2.2 Be able to hear, with or without hearing aid, adequately for a specific task.

2.1.2.3 Have sufficient strength, endurance, agility, coordination, manual dexterity and speed of reaction to meet the demands of the job.

2.1.2.4 Not have evidence of physical restrictions; not be subject to seizures or loss of physical control, or emotional instability that could render a hazard to the technician or others. (Evidence of such conditions may be cause for disqualification: in such cases, specialized clinical or medical judgments and tests may be required.)

2.1.2.5 Be capable of working at extended heights in a safe manner under varying environmental and adverse physical conditions.

2.1.3. Other Qualifications:

2.1.3.1 Shall demonstrate proficiency to read and write in English.

2.1.3.2 Shall demonstrate proficient oral and written communication skills.

2.1.3.3 Shall be subject to other safety, drug, or other specific requirements as mandated by the OEM or Purchaser(s) from time to time.

2.1.3.4 Shall adhere to OEM and/or Purchaser's health and safety guidelines.

2.1.3.5 Shall be able to distinguish colors, regardless of position of colors, if color differentiation is required for the task.

- 2.1.4 Required Training:
- The technician shall have received formal training in the areas of their trade or discipline and areas of expertise. Additional training should include, but not be limited to:
- 2.1.4.1 Trade skills – examples such as, basic electricity and wiring practices, basic mechanical principles, machinery alignment, rigging, etc.
 - 2.1.4.2 Safe operating practices of cranes – Receive classroom and practical training on basic operating principles and methods, i.e., rigging; hand signals; starting, stopping and controlling loads; do's and don'ts for safe operation, etc.
 - 2.1.4.3 Products – training on how to troubleshoot and repair the common components of cranes and specific product lines or models produced by the manufacturer.
 - 2.1.4.4 Safety – training on all aspects of job-site safety and safe work practices not limited to proper crane operation and the understanding of crane controls or additional on-site training as required by the customer. Refer to section 78-3.
 - 2.1.4.5 Tools and Equipment – training on proper and safe operation of work tools and equipment such as ladders, man-lifts, jacks, hand tools, meters, etc.
 - 2.1.4.6 Job-site Conduct – training on customer communication, proper check-in and checkout, site preparation and cleanup, etc.
- 2.1.5 Testing
- Technicians shall be able to successfully demonstrate retained knowledge and proficiency by passing a written and/or practical examination on topics determined by the OEM or Purchaser. Service provider shall be able to present documentation of successful completion of training for topics that require examination.

2.2 Crane Inspector

Any person engaging in the testing, examination and/or certification of cranes, including but not limited overhead traveling single or double girder top running, under running, gantry cranes, monorails and associated hoisting equipment

- 2.2.1 Work Experience
- A crane inspector should have a minimum of 2,000 hours of relevant work experience and training related to maintaining, inspecting, servicing, repairing and modifying cranes. This individual shall have a working knowledge of how to identify deficiencies to mechanical, structural, and electrical crane components and associated hoisting equipment. Under no circumstances shall an individual be permitted to perform inspections that has not received appropriate training and cannot demonstrate a working knowledge of the codes, regulations and the product being inspected.
- 2.2.2. Physical qualifications – A crane technician should possess the following minimum qualifications:
- 2.2.2.1 Have vision of at least 20/30 Snellen in one eye, and 20/50 Snellen in the other, with or without corrective lenses and have normal depth perception, field of

- vision, hand-eye coordination, and no tendencies to dizziness or similar conditions.
- 2.2.2.2 Be able to hear, with or without hearing aid, adequately for a specific task.
- 2.2.2.3 Have sufficient strength, endurance, agility, coordination, manual dexterity and speed of reaction to meet the demands of the job.
- 2.2.2.4 Not have evidence of physical restrictions; not be subject to seizures or loss of physical control, or emotional instability that could render a hazard to the technician or others. (Evidence of such conditions may be cause for disqualification: in such cases, specialized clinical or medical judgments and tests may be required.)
- 2.2.2.5 Be capable of working at extended heights in a safe manner under varying environmental and adverse physical conditions.
- 2.2.3. Other Qualifications:
 - 2.2.3.1 Should demonstrate proficiency to read and write in English.
 - 2.2.3.2 Should demonstrate proficient oral and written communication skills.
 - 2.2.3.3 Should be subject to other safety, drug, or other specific requirements as mandated by the OEM or Purchaser(s) from time to time.
 - 2.2.3.4 Should adhere to OEM and/or Purchaser's health and safety guidelines.
 - 2.2.3.5 Should be able to distinguish colors, regardless of position of colors, if color differentiation is required for the task.
- 2.2.4 Required Training:
 - 2.2.4.1 The inspector shall have received formal training in the areas of safety and design codes related to cranes regulations; safe operating practices, report writing, documentation; and communication skills.
 - 2.2.4.2 Due to continuing changes and updates to standards and codes, an inspector shall receive additional formal training every two years and be able to provide documentation of such training.
 - 2.2.4.3 The words "should" and "shall" are used extensively throughout the codes and specifications including ASME B30, OSHA 1910.179 and CMAA. The inspector shall receive training to understand the meaning of these words so he/she can accurately explain if corrective action is mandatory ("shall") or is voluntary, but recommended ("should").
 - 2.2.4.4 Additional training should include, but not be limited to the following areas:
 - 2.2.4.4.1 Trade skills – examples such as, basic electricity and wiring practices, basic mechanical principles, machinery alignment, rigging, etc.
 - 2.2.4.4.2 Products – training on how to interpret wear patterns and to make recommendations for repair or replacement utilizing sound judgment and the manufacturers' guidelines.

- 2.2.4.4.3 Safety – training on all aspects of job-site safety and safe work practices not limited to proper crane operation and the understanding of crane controls or additional on-site training as required by the customer. Refer to section 78-3.
- 2.2.4.4.4 Tools and Equipment – training on proper and safe operation of work tools and equipment such as ladders, man-lifts, jacks, hand tools, meters, etc.
- 2.2.4.4.5 Job-site Conduct – training on customer communication, proper check-in and check-out, site preparation and cleanup, etc.
- 2.2.5 Testing

The inspector shall be required to demonstrate proficiency by passing both a written and practical examination. Inspector should be able to present documentation of successful completion of above qualifications.
- 2.2.6 Certification/Licensing

If local code bodies or governments mandate, additional testing and registration for inspector certification or licensing may be required.

78-3 JOBSITE SAFETY GUIDELINES

3.1 Commitment to Safety Statement

Service providers must be committed to providing a safe workplace for employees and customers. They shall ensure a working environment free from recognized hazards. This section has been prepared as a general guideline and cannot cover all specific work situations that may occur. It is the responsibility of the employees at each specific work site to ensure all precautions are taken and safe work practices are followed.

3.2 Employee Responsibility

Each employee of a service provider has the responsibility to become familiar with all safety practices and be knowledgeable regarding all safety issues, policies, procedures and equipment. If employees are NOT familiar with these practices, procedures and equipment, it is their responsibility to obtain the proper information and to become familiar with them.

3.3 Safety Orientation and Documentation

All service provider employees shall receive appropriate safety training and orientation immediately upon employment. Additional training may be required if it is found that there is a lack of understanding of safety programs, policies and procedures.

3.4 Regulations

3.4.1 Purchaser Site Regulations

Service provider employees shall comply with all purchaser's site regulations and safety policies. It is the responsibility of these employees to review all site-specific requirements with the purchaser. Any required training at the purchaser's site shall be completed prior to starting any work.

3.4.2 Federal, State and Local Regulations

All work shall be performed in compliance with all applicable regulations, codes and requirements.

3.5 Equipment Operator Certification

3.5.1 Motor Vehicle Use

All motor vehicles shall be operated in accordance with all Federal, State, and Local requirements. In the event of a motor vehicle accident refer to Accident Reporting, section 3.6.4.3.

3.5.2 Mobile crane, forklift, scissors lift, boom lift and other machinery

Mobile cranes, forklifts and other machinery are often required to complete the work. Each service provider employee has the responsibility for the safe operation and use of any such equipment prior to operation. Mobile cranes, forklifts, scissors lifts, boom lifts and other machinery shall only be operated by trained and licensed (where required) individuals. Refer to manufacturer's requirements for specific operating procedures and requirements. All equipment shall be in good operating condition with all required inspection and maintenance documentation available.

3.5.3 Ladders

All ladders shall be used in compliance with the manufacturer's recommendations and OSHA regulations. Care shall be taken to secure the ladder to prevent falling or slipping.

3.6 Safety and First Aid

3.6.1 Fall Protection

Service providers shall have a Fall Protection Policy. Fall protection applies to all service employees who are working at heights at or above 4 feet from the floor. Site specific conditions shall be evaluated to determine the required method of fall protection to be used. All service employees shall be competent in the use of fall protection equipment. All fall protection equipment shall be regularly inspected and in good working condition.

3.6.2 Electrical Safety

3.6.2.1 Service providers shall have a Lockout / Tag-out policy. The purpose of this policy is to protect against unexpected release of energy including electrical, pneumatic, hydraulic, chemical and other potential energy sources.

3.6.2.2 Service provider employees shall be trained on the Lockout / Tag-out policy.

3.6.3 Job Site Work Area and Signage

Work areas should, wherever practical, be identified by highly visible signs, barriers or other appropriate means to alert others that overhead work is being performed. It is the responsibility of the service provider to assess site specific conditions and regulations to determine the best method to provide maximum safety.

3.6.4 Accident Prevention and Awareness

3.6.4.1 Service providers shall adopt an Accident Prevention Policy. This policy should cover general safe working practices and accident prevention. Site specific issues shall be reviewed prior to the start of any work. Any unsafe conditions should be addressed, reported, and corrected prior to commencement of work. It is the responsibility of all service provider employees to provide a safe work environment for themselves and all other site personnel.

3.6.4.2 Safety Meetings are an important part of any Accident Prevention Plan. These meetings should be conducted on a routine basis as necessary by site conditions, OSHA regulations and purchaser's requirements.