BICSI's Special ICT Design Considerations

Version 1.0

Bicsi®

advancing the information and communications technology community

BICSI's Special ICT Design Considerations

Version 1.0

We welcome all comments about this publication. If you have any questions about BICSI and its services, please contact our office at 800.242.7405 (USA/Canada toll free); +1 813.979.1991; fax +1 813.971.4311; e-mail bicsi@bicsi.org; website www.bicsi.org.

BICSI®, Tampa, FL 33637

Version 1.0 published 2015
First printing January 2015
Printed in the United States of America

ISBN (Electronic) 1-928886-69-8

BICSI World Headquarters
8610 Hidden River Parkway
Tampa, FL 33637-1000 USA
Tel.: +1 813.979.1991 or
Tel.: 800.242.7405 (USA & Canada toll-free)
Fax: +1 813.971.4311
E-mail: bicsi@bicsi.org
Website: www.bicsi.org

This publication is not a single source document but a compendium of many sources of ICT industry-related terminology.

The information contained in this publication includes, but is not limited to, national and international codes, de jure and de facto standards, and industry-accepted best practices terminology.

BICSI recommended best practices are industry-established best practices and not specifically developed by BICSI. When necessary, BICSI will select and recommend widely used and acceptable methods for the performance of a particular task or process based on numerous factors, including, but not limited to, widespread field acceptance, manufacturer's recommended methods, and safety.

.

WARNING

It is the responsibility of the user of *BICSI's Special ICT Design Considerations* publication to determine the use of the applicable safety and health practices (e.g., in the United States, Occupational Safety and Health Administration [OSHA], *National Electrical Code*® [*NEC*®], *National Electrical Safety Code*® [*NESC*®]) associated with information and communications technology (ICT) installation and design practices. BICSI shall not be liable to the purchaser or any other entity with respect to any liability, loss, or damage caused directly or indirectly by application or use of this publication. No project is so important nor any completion deadline so critical to justify nonconformance to ICT industry standards. This publication does not address safety issues associated with its use. It is the ICT industry professional's responsibility to use established and appropriate safety and health practices and to determine the applicability of all regulatory issues.

About BICSI ... Advancing Information and Communications Technology

BICSI Vision Statement

BICSI® is the worldwide preeminent source of information, education, and knowledge assessment for the constantly evolving information and communications technology (ICT) industry.

BICSI Mission Statement

BICSI's mission is to:

- Lead the ICT industry with excellence in publications, education, and knowledge assessment.
- Advance our members' ability to deliver the highest quality products and services.
- Provide our members with opportunities for continual improvement and enhanced professional stature.

BICSI 2015 Board of Directors

President: Michael Collins, RCDD, RTPM, CCDA, NCE

President-Elect: Brian Ensign, RCDD, NTS, OSP, RTPM, CSI

Secretary: Robert "Bob" Erickson, RCDD, NTS, OSP, WD, RTPM

Treasurer: Mel Lesperance, RCDD

Canadian Region Director: Peter Levoy, RCDD

U.S. North-Central Region Director: Christy Miller, RCDD, DCDC, RTPM

U.S. Northeast Region Director: Carol Everett Oliver, RCDD, ESS

U.S. South Central Region Director: Jeffrey Beavers, RCDD, OSP

U. S. Southeast Region Director: Charles "Chuck" Wilson, RCDD, NTS, OSP

U.S. Western Region Director: Larry Gillen, RCDD, OSP, ESS, CTS

BICSI Executive Director & Chief Executive Officer: John D. Clark Jr., CAE

Acknowledgments

BICSI's Technical Information and Methods (TI&M) Committee serves to coordinate the information within all of BICSI's technical publications. BICSI officers, membership, and Technical Publications and Design staff wish to thank the TI&M Committee and its many volunteer contributors who helped in the development of the first version of *BICSI's Special ICT Design Considerations* publication.

The following dedicated TI&M Subject Matter Experts (SMEs) provided the key expertise required for the development of this publication's technical content:

TI&M Chair: **Robert M. Gross**, RCDD, OSP; *GroTech*

TI&M Vice-Chair: **Robert B. Hertling, Jr.**, RCDD, OSP; *Parsons Transportation Group*

TI&M Secretary: **Robert Y. Faber Jr.**, RCDD, NTS; *Atras Network Communications*

BICSI Version 1.0 Contributors:

Gordon J. Ash, RCDD; *Leidos Engineering*

Jerry L. Bowman, RCDD, NTS, RTPM; *ICS Nett, Inc.*

James "Ray" Craig, RCDD, NTS, BICSI Technician; *Craig Consulting Services*

George M. Fewell, RCDD; *NCI Inc.*

Robert M. Gross, RCDD, OSP; *GroTech*

Robert B. Hertling, Jr., RCDD, OSP; *Parsons Transportation Group*

Joop Ierschot, RCDD; *Deerns Consulting Engineers*

Philip W. Janeway, RCDD; *Level3 Communications*

David P. Labuskes, RCDD, NTS, OSP; *InfoComm International*

John Romanski, OSP, WD, ESS, RTPM, DCDC; *University of Central Florida, Computer Services*

Michael Sexton, RCDD, ESS; *Leidos Engineering*

Jeff Silveira, RITP, CAE, AStd; *BICSI Director of Standards*

Jacob Robert (Bob) Vis, MSc.; *Deerns Consulting Engineers*

Michael J. Wilson, RCDD; *Tellabs, Inc.*

The following BICSI Professional Development staff members produced this publication at BICSI World Headquarters, Tampa, FL:

Vice President of Professional Development:	Gail Moore-Swaby
BICSI's Special ICT Design Considerations **Version 1.0 Project Manager/Director of Publications:**	Clarke W. Hammersley
BICSI's Special ICT Design Considerations **Version 1.0 Lead Technical Editor:**	Karen Jacob
BICSI's Special ICT Design Considerations **Version 1.0 Co-Technical Editors:**	Jeff Giarrizzo Amy Woodland (under contract)
BICSI's Special ICT Design Considerations **Version 1.0 Design and Production:**	John Pitzel, Senior Publications Designer Catherine H. Nold, Publications Designer

BICSI Policy for Numeric Representation of Units of Measurement

BICSI technical manuals primarily follow the modern metric system, known as the International System of Units (SI). The SI is intended as a basis for worldwide standardization of measurement units. With the exception of conduit and plywood measurements, units of measurement in this publication are expressed in general and approximate SI terms, followed by an equivalent imperial (U.S. customary) unit of measurement in parentheses (exceptions are listed below):

- In general, approximate (soft) conversions are used in this publication and are denoted with the approximate symbol (≈) in front of the metric number. Approximate conversions are considered reasonable and practicable; they are not precise equivalents, but are considered as "industry friendly." Example: ≈15 m (50 ft), not the hard conversion of ≈15 m (49.2 ft).

In some instances, equivalents (hard conversions) may be used when it is a:

  - Manufacturer requirement for a product (e.g., conduit, plywood sizes).
  - Standard or code requirement.
  - Safety factor.

- In general, approximate SI units of measurement are converted to an imperial unit of measurement and placed in parentheses. Exception: When the reference material from which the value is pulled is provided in imperial units only, the imperial unit is the benchmark.
- For metric conversion guidelines, refer to IEEE/ASTM SI 10, American National Standard for Metric Practice.
- Trade size is approximated for both metric and nonmetric purposes. Example: ≈100 metric designator (4 trade size).
- In some instances (e.g., optical fiber media specifications), the physical dimensions and operating wavelengths are designated.

Technical Publications

Become a member and you will receive substantial discounts on BICSI's highly acclaimed manuals—long considered the definitive reference source of the industry. BICSI's manuals serve as valuable reference and study tools for BICSI courses and exams. BICSI manuals are based on global best practices that follow and, in many cases, exceed the requirements of recognized international codes, standards, and regulations. Our most popular publications include the *Telecommunications Distribution Methods Manual* (*TDMM*), *Electronic Safety and Security Design Reference Manual* (*ESSDRM*), *Outside Plant Design Reference Manual* (*OSPDRM*), and *Information Technology Systems Installation Methods Manual* (*ITSIMM*). Standards include ANSI/BICSI 002-2011, *Data Center Design and Implementation Best Practices*, ANSI/BICSI 004-2012, *Information Technology Systems Design and Implementation Best Practices for Healthcare Institutions and Facilities*, and ANSI/BICSI 005-2013, *Electronic Safety and Security* (*ESS*) *System Design and Implementation Best Practices*.

For a complete list of member benefits, visit www.bicsi.org.

Join BICSI Today!

BICSI membership is open to individuals and corporations serving the ICT and building industries. Join BICSI, and combine your expertise with your colleagues in the network of ICT professionals. Complete BICSI information is available upon request. For a membership application or other information, contact:

Membership and Customer Care
8610 Hidden River Parkway
Tampa, FL 33637-1000 USA
Tel.: 800.242.7405 (USA/Canada toll-free)
Tel.: +1 813.979.1991
Fax: +1 813.971.4311
E-mail: bicsi@bicsi.org
Website: www.bicsi.org

We welcome your comments about *BICSI's Special ICT Design Considerations* publication. To do so, simply complete the Reader's Comment Form on the last page of this Preface and return it to BICSI. Our goal is to make BICSI publications the most important design and reference tools in your office.

Comments? More Information?

To submit comments about the BICSI's *Special ICT Design Considerations,* Version 1.0, please complete the Reader's Comment Form in this section or contact:

BICSI World Headquarters
8610 Hidden River Parkway
Tampa, FL 33637-1000 USA
Tel.: 800.242.7405 (USA/Canada toll-free) Tel.: +1 813.979.1991
Fax: +1 813.971.4311
E-mail: bicsi@bicsi.org
Web site: www.bicsi.org

Reader's Comment Form

***BICSI's Special ICT Design Considerations,* Version 1.0**

You may use this form to communicate your comments about this publication, its organization, or the subject matter. Your comments will be sent to BICSI's Technical Information and Methods (TI&M) Committee for review and action, if any is deemed appropriate.

Please complete the following information:

last name	first name	middle initial	date
company name			
mailing address			
city	state/province	zip/postal code	country
daytime phone	fax	e-mail	

Thank you for your comments.

Send to: Attn: *BICSI's Special ICT Design Considerations,* Version 1.0 User Response
BICSI
8610 Hidden River Parkway
Tampa, FL 33637-1000 USA

or fax to: +1 813.971.4311

or scan and e-mail to: chammersley@bicsi.org

Office Use Only

Response from Technical Information and Methods Committee:

Class A ☐ Class B ☐ Class C ☐

TI&M Committee chair signature date

TI&M SME chair signature date

Special ICT Design Considerations

This publication includes the latest information related to special information and communications technology (ICT) design considerations for applications such as industrial areas, secured cabling systems, systems that process financial data, and transportation facilities. Information on the Americans with Disabilities Act (ADA) requirements and the codes and standards for European building cabling systems also is included.

Table of Contents

Figures

Tables