



National BIM Standard - United States™ Version 2

ACKNOWLEDGEMENTS

NBIMS-US™ V2 Volunteers

This standard would not be possible without the commitment of the volunteers listed below. They developed the content, evaluated it, provided comments, resolved the comments, and represented the entire facilities industry in reaching consensus on the best way to move the industry forward. Consider part of this leadership group on a future version of the National BIM Standard.

NBIMS-US™ V2 Ballot Authors' Biography

Chimay Anumba

Chimay Anumba is a Professor and Head of the Architectural Engineering Department at the Pennsylvania State University. Dr. Anumba specializes in the implementation of information technology research related to design, construction, and operations.

R. Mark Butler

Mr. Butler is looked on nationally inside and outside of HDR and for HDR clients as an expert on the subject of Building Information Modeling (BIM). Mark strives to insure that HDR and the industry have a comprehensive understanding and experience with BIM. Mark has been with HDR since 1981, serving in varied production and technology roles at local office and national levels.

Mark works nationally with several Industry groups investigating BIM as well as with academic institutions, presenting BIM information to these and other groups. He represents HDR as an active participant in the Industry Standards work sponsored by the National Institute of Building Sciences (NIBS). This includes the National CAD Standard (NCS), the National BIM Standard (NBIMS-US) and the buildingSMART Alliance.

Lars Bjørkhaug

Lars Bjørkhaug is the product manager at Catenda AS. Catenda develops on-line tools to simplify the use of buildingSMART standards in projects. He has long experience from the construction industry, from practical work as a carpenter, later civil engineer, researcher and senior researcher at SINTEF Byggforsk. At SINTEF, his area of research was building process, information technology and later buildingSMART. He has led several research and development projects under the buildingSMART umbrella. He has been heavily involved in the development of the IFC, IFD and IDM standards as well as other international

standards since 1999. Lars is a Civil Engineer from Bergen Engineering University, and MSc from NTNU and Universidade do Porto in Portugal.

Greg Ceton

Greg Ceton has managed the development of Construction Specifications Institute's (CSI) information standards and publications since November 2000. He has been directly involved in the creation and maintenance of OmniClass™, MasterFormat®, UniFormat™, and the CSI Practice Guide series, among others, and has served as the director of CSI's technical publications department since July 2010.

Ceton's work has been recognized by awards from construction associations, among them a CSI President's Award and honorary membership in Construction Specifications Canada. He holds the Construction Documents Technologist (CDT) certificate and has a master's degree in library science from the University of Maryland, a law degree from the University of Florida, and has been a member of the Florida Bar since 1991. Ceton lives in the suburbs of Washington, DC.

Craig Dubler

Craig Dubler was a former graduate assistant and member of the CIC Research Group at Penn State. Upon completion of his Ph.D., Dr. Dubler transitioned to the Office of Physical Plant within Penn State as a Virtual Facilities Engineer and a course instructor for the Architectural Engineering Department. His specialties include the implementation of Building Information Modeling into facility operations and applying efficient information exchange procedures within an owner organization. Dr. Dubler is also the faculty advisor of the Design-Build Institute of America student chapter.

Bill East

Dr. Bill East, is Research Civil Engineer at the Engineer Research and Development Center, Construction Engineering Research Laboratory, Champaign, IL. Dr. East conducts research in design and construction quality management. Tools resulting from Dr. East's research currently support over fifty thousand worldwide stakeholders. With the goal of creating more efficient, and ultimately, automated means for quality management, Dr. East leads several projects, with the National Institute of Building Sciences, to develop national and international Building Information Modeling information exchange standards.

Dr. East has Civil Engineering degrees from Virginia Tech and University of Illinois at Urbana-Champaign. He is a Fellow of the American Society of Civil Engineers and the active participant in the International Council for Research and Innovation in Building and Construction. Dr. East was the recipient of the ASCE Public Civil Engineer of the Year award, Construction Specification Institute Innovation in Construction Information award, and the NIBS Member Award.

- Kristine K. Fallon** Kristine K. Fallon, President of Kristine Fallon Associates, Inc. (www.kfa-inc.com), is a member of the buildingSMART alliance Board of Direction and a Fellow of the American Institute of Architects. She has been a pioneer in applying information technology to design, construction and facility management since the 1970's and a participant in the development of multiple industry standards. The firm, which she founded in 1993, provides IT consulting services, with specialization in BIM and project collaboration and management technologies. The firm's clients are primarily are owners with large capital programs. Kristine K. Fallon, President of Kristine Fallon Associates, Inc. (www.kfa-inc.com), is a member of the buildingSMART alliance Board of Direction and a Fellow of the American Institute of Architects. She has been a pioneer in applying information technology to design, construction and facility management since the 1970's and a participant in the development of multiple industry standards. The firm, which she founded in 1993, provides IT consulting services, with specialization in BIM and project collaboration and management technologies. The firm's clients are primarily are owners with large capital programs.
- Shane Goodman** Shane Goodman is a BIM Engineer and Project Engineer at DPR Construction, working to implement new technology and BIM on a project level. Shane is also a certified teacher in the Associated General Contractors of America's (AGC) BIM 101 Education Program. He is a graduate of The Pennsylvania State University, where he was a former graduate research assistant to the CIC Research Group.
- Colleen Kasprzak** Colleen Kasprzak is the BIM Implementation Strategist of Design Services for the Office of Physical Plant at The Pennsylvania State University, as well as a member of the Computer Integrated Construction Research Program. Her focus is on the development and implementation of appropriate BIM strategies and standards for the university, as well as integrating BIM information exchange procedures into Penn State's existing facility management system.
- Ralph Kreider** Ralph Kreider is a Doctoral Candidate in Architectural Engineering at the Pennsylvania State University. As a part of the Computer Integrated Construction Research Program, his research focuses on BIM Planning. His dissertation is focused on developing an ontology of BIM Uses (the methods of implementing BIM). In addition to the BIM Project Execution Planning Guide, he is also a major contributor on the BIM Planning Guide for Facility Owners.
- Robert M. Leicht** Robert M. Leicht is a faculty member and graduate of the Department of Architectural Engineering at Penn State University. Before returning to Penn State, Robert served as the Virtual Building Operations Manager for DPR Construction's East Coast projects and offices. In this role Robert dedicated much of his time to the process of integrating design, construction, and owner's efforts using BIM Platforms.

- Deborah L. Macpherson** Deborah L. Macpherson works in Specifications and Research for Cannon Design; she is also a Certified Construction Specifier (CCS) with the Construction Specification Institute (CSI) and President of the Northern Virginia Chapter. Deborah serves on the OmniClass Development Committee, including the Properties, and Facility and Space Types Working Groups; the National Building Information Modeling Standard (NBIMS) Planning Committee and Technical Subcommittee; the National Information Exchange Model (NIEM) Business Architecture Committee (NBAC); Projects Director for the 5013c nonprofit organization Accuracy & Aesthetics; and the Advisory Board for Places & Spaces, Mapping Science.
- Tammy McCuen** Tammy McCuen is an Assistant Professor of Construction Science at the University of Oklahoma. Her research and teaching focus is 1) BIM and the information exchange between members of integrated teams and 2) BIM as a tool to improve spatial skills for complex problem solving in the AEC industry. Tammy is the Workgroup leader for the "Quantification Process and Standards for Cost Estimating in BIM", a collaboration between the Association for the Advancement of Cost Engineering International (AACE-I), American Society of Professional Estimators (ASPE), and the Royal Institute of Chartered Surveyors (RICS). Tammy is a member of the building SMART alliance Board of Direction, NBIMS Project Committee, and AACE-I National BIM Committee Chair.
- John Messner** John Messner is an Associate Professor at The Pennsylvania State University and the Director of the Computer Integrated Construction Research Program. Dr. Messner specializes in research related to the implementation of Building Information Modeling into the industry as well as information visualization approaches to improve decision-making on projects. He also leads the design tools task area at the Energy Efficient Building Hub, a Department of Energy Innovation Hub.
- David Morris** (pending)
- Mark E. Palmer** Mark E. Palmer is the leader of the Process Engineering Group of the Systems Integration Division of the Engineering Laboratory at the National Institute of Standards and Technology (NIST). Mr. Palmer conducts research on measurement science for advancing the integration of information, communication, sensing and automation technologies and work process optimization to improve engineering, manufacturing, and construction. Mr. Palmer is active in national and international standards development activities and numerous industry organizations. Mr. Palmer has led numerous national and international research projects on interdisciplinary collaboration, information modeling, interoperability, systems engineering and cross-industry, data exchange standards and web standards. Prior to joining NIST, Mr. Palmer spent 14 years in the engineering and construction of commercial, industrial, and residential facilities. He received his Bachelor of Architecture degree from the University of Oregon. His Master of Science degree is from the

Massachusetts Institute of Technology where he specialized in the integration of CAD/CAE systems, knowledge systems, and quality management principles.

Chitwan Saluja

Chitwan Saluja is a Design Application Technician at Perkins+Will. She possesses over 5 years of experience in the Architecture and Information Technologies fields, specializing in Building Information Modeling. Her day-to-day activities include successful implementation, collaboration, and support revolving around BIM Technologies. She has a Bachelor in Architecture from Indian Institute of Technology and a Master's in Architectural Engineering from The Pennsylvania State University. She was also a former member of the Computer Integrated Construction (CIC) Research Program and a graduate research assistant at Penn State.

Richard See

Richard See is a licensed Architect in Washington State and practiced architecture in some of the leading design firms in the Pacific Northwest.

During the 1980's and 1990's, Richard was a pioneer in the development of BIM concepts and products, and eventually led the development of the Industry Foundation Classes (IFC), the basis for BIM interoperability today. He also led the development of several products and technologies during his 14 year tenure at Autodesk, Visio, and Microsoft.

Currently, Richard leads Digital Alchemy, a BIM products, services, and consulting company working with several government agencies and industry leading design, construction, and building owner/property management organizations. He is also MVD Coordinator for buildingSMART International, Co-Chair of the Technical Committee for buildingSMART alliance, Chairman of the BLIS Consortium.

Patrick C. Suermann

Lieutenant Colonel Patrick C. Suermann, Ph.D., P.E., LEED AP is the Commander, 821st Support Squadron, 821st Air Base Group, Thule Air Base, Greenland. The 821 SPTS supports the full complement of Air Base support functions and consists of six flights: civil engineering, logistics, airfield operations, communications, medical, and personnel/services. Lt Col Suermann is a registered PE in the state of Colorado and received his PhD in 2009 from the University of Florida. At the culmination of his command tour, Lt Col Suermann will return to teach at the Air Force Academy in July 2012 in the Department of Civil and Environmental Engineering.

Nevena Zikic

Nevena Zikic is a Project Engineer working for the General Contractor in San Francisco, CA. Ms. Zikic specializes in MEP coordination, Commissioning, Building Information Modeling, 3D Spatial Coordination, 4D Schedule Simulation, Design Build and Green Buildings. She is a former Graduate Research Assistant and member of the CIC Research Group at Penn State.

NBIMS-US™ V2 Planning Committee (PLC) and Staff

Name	Organization	Role
Morris, David	Morris, David	Chair
Partridge, Allan	Canadian BIM Council	Secretary
Anderson, Robert	Nemetschek Vectorworks	Member
Butler, R. Mark	Butler, R. Mark	Member
Butler, Shawn	Butler, Shawn	Member
Ceton, Greg	Construction Specifications Institute	Member
Cramer, Mathew	Sheet Metal & Air-Conditioning Contractors National Association	Member
Curtis, Clyne	Curtis, Clyne S.	Member
Davis, Adam	Davis, Adam	Member
Davis, Dianne	Davis, Dianne	Member
Dossick, Carrie	Dossick, Carrie Sturts	Member
East, Bill	U.S. Army Corps of Engineers, Engineering and Construction	Member
Gay, Thomas	FM Global	Member
Hecht, Louis	Hecht, Louis	Member
Jernigan, Finith	Jernigan, Finith	Member
Jordani, David	Jordani, Dave	Member
Kam, Calvin	General Services Administration	Member
Mack, Melcher	Mack, Melcher	Member
MacPherson, Deborah	MacPherson, Deborah	Member
McCuen, Tammy	McCuen, Tammy	Member
Messner, John	Messner, John I.	Member
Moor, Chris	AISC	Member
Moy, Get	Moy, Get	Member
Omansky, Adam	Omansky, Adam	Member
Reece, Jason	Balfour Beatty Construction	Member
Reis, Jim	Technical Sales International	Member
Schleusner, Greg	HOK	Member
See, Richard A.	See, Richard	Member
Smith, Andy	Bentley Systems, Inc.	Member
Soles, Tom	Sheet Metal & Air-Conditioning Contractors National Association	Member
Vandezande, James	HOK	Member
Fernandez, Dominique	National Institute of Building Sciences	Staff
Smith, Deke	National Institute of Building Sciences	Staff

NBIMS-US™ V2 Project Committee (PC)

Name	Organization	Role
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Alderete, Albert	Alderete, Albert	Member
Alley, Dave	Alley, David	Member
Anderson, Robert	Nemetschek Vectorworks	Member
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Asaro, Larry	Asaro, Larry	Member
Ashcraft, Howard	Ashcraft, Howard	Member
Azhar, Salman	Azhar, Salman	Member
Baldwin, Cindy	ACAI Associates	Member
Barry, Patrick	Barry, Patrick	Member
Basu, Abhimanyu	Basu, Abhimanyu	Member
Bates, Richard	Bates, Dick	Member
Bell, Robert	Bell, Robert	Member
Bender, John	UL LLC	Member
Blanchard, Paul	Blanchard, Paul	Member
Bona, Philip	Bona, Philip	Member
Bourland, Cliff	Bourland, Cliff	Member
Bradford, Robert	Bradford, Robert	Member
Bredehoeft, Peter	Bredehoeft, Peter	Member
Brodt, William	National Aeronautics and Space Administration	Member
Brown, Duncan	Brown, Duncan	Member
Butler, R. Mark	Butler, R. Mark	Member
Butler, Shawn	Butler, Shawn	Member
Cadorette, Tyson	Weidlinger Associates, Inc.	Member
Camps, Hector	Camps, Hector	Member
Candelaria, Maura	Jaros, Baum & Bolles	Member
Canham, Chris	Canham, Chris	Member
Carter, Rich	Carter, Rich	Member
Ceton, Greg	Construction Specifications Institute	Member
Chapin, Monte	Graphisoft	Member
Chiple, Michael	Chiple, Michael	Member
Chipman, Tim	Chipman, Tim	Member
Cholakis, Peter	Cholakis, Peter	Member
Clark, Peter	Clark, Peter	Member
Cousins, Phillip	Cousins, Phillip	Member
Cramer, Mathew	Sheet Metal & Air-Conditioning Contractors National Association	Member
Curtis, Clyne	Curtis, Clyne S.	Member

Darnell, Chris	American Concrete Institute	Member
Davis, Adam	Davis, Adam	Member
Davis, Dianne	Davis, Dianne	Member
Davis, Patrick	Davis, Patrick	Member
Demler, Adam	Demler, Adam	Member
Dossick, Carrie	Dossick, Carrie Sturts	Member
East, Bill	U.S. Army Corps of Engineers, Engineering and Construction	Member
Eisman, David	Eisman, David	Member
Fallon, Kristine	Kristine Fallon Associates, Inc.	Member
Fard, Babak	Fard, Babak J.	Member
Garrett, Brandon	Garrett, Brandon	Member
Gay, Thomas	FM Global	Member
Glover, Robert Androse	Glover, Robert	Member
Gravatte, Jeff	Gravatte, Jeff	Member
Hagan, Stephen	Hagan, Stephen	Member
Hale, Greg	Hale, Greg	Member
Hall, Dennis	Construction Specifications Institute	Member
Hanna, Sam	Hanna, Sam	Member
Harris, Joe	Harris, Joe	Member
Hecht, Louis	Hecht, Louis	Member
Hedges, Keith	Hedges, Keith E.	Member
Henderson, Lamar	Henderson, Lamar	Member
Herbere, Frederic	Herbere, Frederic	Member
Hermendorfer, Greg	Hermendorfer, Greg	Member
Hill, Gerald	Hill, Gerald	Member
Holzer, Stephen	Holzer, Stephen	Member
Houhou, Kal	Houhou, Kal	Member
Humphrey, Douglas	Humphrey, Douglas	Member
Jackman, Stacy	Jackman, Stacy	Member
Jernigan, Finith	Jernigan, Finith	Member
Johnson, Karie	Johnson, Karie L.	Member
Jordani, David	Jordani, Dave	Member
Junkin, Malcolm	Junkin, G. Malcolm	Member
Kam, Calvin	General Services Administration	Member
Keenlside, Susan	Keenlside, Susan	Member
Kiff, Liana	Honeywell, International	Member
Kistler, Rob	Kistler, Rob	Member
Kramer, Nicholas	Kramer, Nicholas	Member
Kwan, OhSung	Kwan, OhSung	Member
LeFevre, Michael	LeFevre, Michael	Member
Leicht, Robert	Leicht, Robert M.	Member

Levasseur, Janis Phelps	Levasseur, Janis Phelps	Member
Lewis, Jim	Lewis, Jim	Member
Lewis, Thomas	Assa Abloy Door Security Solutions	Member
Lighthart, Brian	Lighthart, Brian	Member
Lord, John	Component Assembly Systems	Member
Lowe, Ed	Lowe, Ed	Member
Mack, Melcher	Mack, Melcher	Member
Mackenzie, Pete	Mackenzie, Pete	Member
MacPherson, Deborah	MacPherson, Deborah	Member
Madison, Bradley	Madison, Bradley	Member
Maing, Minjung	Maing, Minjung	Member
McCartney, Sean	McCartney, Sean	Member
McCuen, Tammy	McCuen, Tammy	Member
McKinley, Grant	McKinley, Grant	Member
McLucas, John	McLucas, John	Member
Medina, Mario	Medina, Mario	Member
Messner, John	Messner, John I.	Member
Miller, Jay	Miller, Jay	Member
Miller, Lee	HOK	Member
Miller, Matthew	Miller, Matthew - Navigant	Member
Miller, Sean	Miller, Sean	Member
Mislan, Ryan	Mislan, Ryan	Member
Moor, Chris	AISC	Member
Morrey, Richard	Accela, Inc.	Member
Moy, Get	Moy, Get	Member
Mueller, Volker	Mueller, Volker	Member
Napier, William	Wisconsin Department of Administration	Member
Nawari, Nawari	Nawari, Nawari O.	Member
Nisbet, Nicholas	Nisbet, Nicholas	Member
Omansky, Adam	Omansky, Adam	Member
Onuma, Kimon	Onuma, Inc.	Member
Park, Youngchoon	Park, Youngchoon	Member
Partridge, Allan	Canadian BIM Council	Member
Peterson, Judd	Peterson, Judd	Member
Porter, Rachelle	Porter, Rachelle	Member
Przybyla, John	Przybyla, John	Member
Ransom, Calvin	Ransom, Calvin	Member
Redmond, Alan	Redmond, Alan	Member
Reece, Jason	Balfour Beatty Construction	Member
Reinke, Lauren	Reinke, Lauren	Member
Reis, Jim	Technical Sales International	Member

Riopel Wiley, Rachel	Riopel Wiley, Rachel	Member
Rosenbloom, Scott	Rosenbloom, Scott	Member
Russell, Brian	Russell, Brian S.	Member
Schleusner, Greg	HOK	Member
See, Richard A.	See, Richard	Member
Settlemyre, Kevin	Settlemyre, Kevin	Member
Shelden, Dennis	Gehry Technologies	Member
Simmons, Scott	Simmons, Scott	Member
Smith, Andy	Bentley Systems, Inc.	Member
Smith, Bob	Smith, Bob	Member
Smith, Jesse	Smith, Jesse	Member
Soles, Tom	Sheet Metal & Air-Conditioning Contractors National Association	Member
Spangler, Stephen	U.S. Army Corps of Engineers, Engineering and Construction	Member
Spartz, Jamie	Spartz, Jamie L.	Member
Starkov, Igor	Starkov, Igor	Member
Stewart, R.K.	Stewart, R.K.	Member
Storey, Jennifer	Storey, Jennifer	Member
Taylor, Simon	Taylor, Simon (Questant)	Member
Thomson, Stephen	Thomson, Stephen	Member
Tietjen, Renee	U.S. Department of Veterans Affairs	Member
Vaia, Jason	Vaia, Jason	Member
Valente, Josephine	Valente, Josephine	Member
Vandezande, James	HOK	Member
Wallis, Charles	Wallis, Charles	Member
Wang, Xin	Wang, Xin	Member
Ways, David	Ways, David	Member
Weidman, Allen	Weidman, Allen	Member
Whitehead, James	Whitehead, James	Member
Whitmer, Steve	Whitmer, Steve	Member
Wong, Irina	Wong, Irina	Member
Wood, Scott	HOK	Member
Wu, Wei	Wu, Wei	Member
Yee, Peggy Ho	General Services Administration	Member
<i>International Reviewers on the Project Committee</i>		
Fernandez, Leonel	Fernandez, Leonel	Reviewer
Friborg, Bunnar	Friborg, Gunnar	Reviewer
Karlshoj, Jan	Karlshoj, Jan	Reviewer
Kobberoe, Inge	Kobberoe, Inge	Reviewer
Kulusjärvi, Heikki	Kulusjärvi, Heikki	Reviewer
Sunesen, Steen	Sunesen, Steen	Reviewer

NBIMS-US™ V2 Implementation Subcommittee (SC4)

Name	Organization	Role
Butler, R. Mark	Butler, R. Mark	Chair
Morris, David	Morris, David	Vice Chair
Davis, Dianne	Davis, Dianne	Member
Dossick, Carrie	Dossick, Carrie Sturts	Member
Hecht, Louis	Hecht, Louis	Member
Henderson, Lamar	Henderson, Lamar	Member
Mack, Melcher	Mack, Melcher	Member
Maing, Minjung	Maing, Minjung	Member
Schleusner, Greg	HOK	Member
Smith, Andy	Bentley Systems, Inc.	Member
Smith, Bob	Smith, Bob	Member

NBIMS-US™ V2 Technical Subcommittee (SC3)

Name	Organization	Role
Messner, John	Messner, John	Co-Chair
See, Richard A.	See, Richard	Co-Chair
Partridge, Allan	Canadian BIM Council	Secretary
Anderson, Robert	Nemetschek Vectorworks	Member
Davis, Dianne	Davis Dianne	Member
Dossick, Carrie	Dossick, Carrie Sturts	Member
East, Bill	U.S. Army Corps of Engineers, Engineering and Construction	Member
Hecht, Louis	Hecht, Louis	Member
MacPherson, Deborah	MacPherson, Deborah	Member
Onuma, Kimon	Onuma, Inc.	Member
Schleusner, Greg	HOK	Member

NBIMS-US™ V2 Workgroup 1 – Design (WGD)

Name	Organization	Role
Vandezande, James	HOK	Chair
Rosenbloom, Scott	Rosenbloom, Scott	Vice Chair
Anderson, Robert	Nemetschek Vectorworks	Member
Hedges, Keith	Hedges, Keith E.	Member
Mueller, Volker	Mueller, Volker	Member
Nawari, Nawari	Nawari, Nawari O.	Member
Russell, Brian	Russell, Brian S.	Member
Spangler, Stephen	U.S. Army Corps of Engineers, Engineering and	Member

Construction

NBIMS-US™ V2 Workgroup 2 – Procure (WGP)

Name	Organization	Role
Ashcraft, Howard	Ashcraft, Howard	Chair
Keenlside, Susan	Keenlside, Susan	Member
Thomson, Stephen	Thomson, Stephen	Member

NBIMS-US™ V2 Workgroup 3 – Assemble (WGA)

Name	Organization	Role
Soles, Tom	Sheet Metal & Air-Conditioning Contractors National Association	Chair
Chipman, Tim	Chipman, Tim	Member
Moor, Chris	AISC	Member
Morris, David	Morris, David	Member
Omansky, Adam	Omansky, Adam	Member
Partridge, Allan	Canadian BIM Council	Member
Spartz, Jamie	Spartz, Jamie L.	Member

NBIMS-US™ V2 Workgroup 4 – Operate (WGO)

Name	Organization	Role
Jernigan, Finith	Jernigan, Finith	Chair
Chiple, Michael	Chiple, Michael	Member
Fallon, Kristine	Kristine Fallon Associates, Inc.	Member
Przybyla, John	Przybyla, John	Member
Reece, Jason	Balfour Beatty Construction	Member
Starkov, Igor	Starkov, Igor	Member
Yee, Peggy Ho	General Services Administration	Member

NBIMS-US™ V2 Ad-Hoc Workgroup – Style (WGAHS)

Name	Organization	Role
Henderson, Lamar	Henderson, Lamar	Chair
Butler, R. Mark	Butler, R. Mark	Member
Demler, Adam	Demler, Adam	Member
Maing, Minjung	Maing, Minjung	Member
Smith, Bob	Smith, Bob	Member

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National BIM Standard - United States™ Version 2

FOREWORD

The National Building Information Model Standard-United States Version 2 (NBIMS-US V2) is the second version of an ongoing project of the buildingSMART alliance™ (bSa), the Northern American Chapter of buildingSMART® International (bSI).

Version 2 has been extensively revised with additional material and organized according to ISO/IEC Directives – Part 2: Rules for the structure and drafting of International Standards.

The purpose of the National BIM Standard-US™ (NBIMS-US) is to advance the art and science of the entire life-cycle of the vertical and horizontal built environment by providing a means of organizing and classifying electronic object data and thereby fostering streamlined communication among owners, designers, material suppliers, constructors, facility managers, and all stakeholders associated with the built environment. (Paragraph 1.3a from the Rules of Governance, January 2011)

The intent of Version 2 is to encourage further productive practices by all members of the architect/designer, engineer, contractor, owner, and operator (AECOO) team for the life-cycle of a project. This and succeeding versions will provide the necessary structure and framework for a collaborative basis for the process, the ethics of trust between the professionals, the standards for building information technologies, and a system for an integrated practice within an open, non-proprietary, standard accessible to all professionals within the industry.

This is to be a living and evolutionary document. The authors ask that members of the industry and implementers send us your comments. The feedback is critical for designing the content for Version 3. Please send your comments to Mr. Dana K. “Deke” Smith, FAIA, Executive Director, buildingSMART alliance, at dsmith@nibs.org.

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1 SCOPE

The National BIM Standard-US™ Version 2 (NBIMS-US V2) is designed for two specific audiences:

- Software developers and vendors, and
- Practice documents for implementers who design, engineer, construct, own, and operate the built environment.

1.1 Software developers and vendors

Interoperability of data and information is an absolute requirement for designing and managing the life-cycle of the built environment. Software developers and vendors must develop and support programs to achieve the seamless exchange of data and information between users. The design and coding of software standards will allow developers to efficiently accomplish this task. NBIMS-US V2 has delineated the appropriate standards to cover all aspects of software development.

Two sections within the standard provide the developer with the necessary information:

- Reference standards: This set of standards provides a data dictionary, data model, web-based exchange, and structures and identifiers for building data and information.
- Exchange information standards: This section sets standards for data management, assurance, and validation, as well as exchange concepts; defines the design of exchanges for specific types of data related to building analysis; and includes *Construction Operations Building information exchange* (COBie).

The reference standards were developed by other allied standards organizations, while the exchange standards were written and balloted by the NBIMS-US project committee.

1.2 Practice documents for implementers

The second section of NBIMS-US V2 focuses on the industry implementer. These sections describe the necessary professional knowledge and judgment for all allied disciplines, as well as critical management systems and tools for the building life-cycle. Thus far in the NBIMS development process, the practice document section has been the least documented for the building disciplines.

In order to help organize best practices, the buildingSMART International (bSI) has designed a system of organizing building knowledge, skills and systems into four major process domains to describe the overall building life-cycle process. These domains known as the BIM Tetralogy are represented by the following icon.



The practice document section in this version of NBIMS-US accommodates a very few of the 64 sections described within the tetralogy. The development of additional best practice documentation for each tetralogy section is in the challenge for future versions of NBIMS-US.

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2 REFERENCE STANDARDS

Chapter 2.1 Introduction to Reference Standards

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

The Reference Standards are divided into three general categories:

- Model and Dictionary Standards
- Exchange Standards
- Data Structure and Identifier Standards

The three Reference categories will provide the software developer with the primary source standard necessary for designing and writing code for interoperable programs, which will allow professionals in the building industry to seamlessly exchange data and information. These standards, especially the Data Structure and Identifier Standards, may be used by professionals to develop cognitive-conceptual models and semantic systems to explain, analyze and describe the project's life-cycle.

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2 REFERENCE STANDARD

Chapter 2.2 **ISO 16739, Industry Foundation Class 2X3 – February 2006**

Introduction

ISO 16739, Industry Foundation Class 2X3 (IFC 2X3) is an existing industry standard developed, managed, published and copyrighted by the buildingSMART International, approved through the NBIMS-US V2 consensus process. *ISO 16739, Industry Foundation Class 2X3* is incorporated in NBIMS-US V2 by reference so that it can be easily referenced in BIM Information Exchanges.

- IFC 2x3 Specification, February 2006, <http://buildingsmart-tech.org/specifications/ifc-releases/ifc2x3-release>
- IFC Certification, <http://buildingsmart-tech.org/certification>

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2 REFERENCE STANDARD

Chapter 2.3 World Wide Web Consortium Extensible Markup Language Specification and Validation 1.0, Fifth edition – 26 November 2008

Introduction

World Wide Web Consortium Extensible Markup Language (W3C XML) Specification and Validation 1.0, Fifth edition, 26 November 2008 is an existing industry standard developed, managed, published and copyrighted by the W3C® Consortium, approved through the NBIMS-US V2 consensus process. *World Wide Web Consortium Extensible Markup Language Specification and Validation 1.0, Fifth edition, 26 November 2008* is incorporated in NBIMS-US V2 by reference so that it can be easily referenced in BIM Information Exchanges.

- W3C Specification, <http://www.w3.org/XML/>
- W3C XML Validator, http://www.w3schools.com/xml/xml_validator.asp



National BIM Standard - United States™ Version 2

2 REFERENCE STANDARD

Chapter 2.4 OmniClass™ Table 13 – Spaces by Function – May 2011

Introduction

OmniClass™ Table 13 – Spaces by Function is an existing industry standard developed, managed, published and copyrighted by the Construction Specifications Institute, approved through the NBIMS-US V2 consensus process. *OmniClass™ Table 13 – Spaces by Function* is incorporated in NBIMS-US V2 by reference so that it can be easily referenced in BIM Information Exchanges. Document follows.



Table 13 – Spaces by Function

Table 13 - Spaces by Function

Definition

Spaces by Function are basic units of the built environment delineated by physical or abstract boundaries and characterized by their function or primary use.

Discussion

A space is a part of the built environment that is marked off in some way. It is usually a component forming a larger, more significant construction entity.

A space can be delineated by either physical or abstract boundaries. Often these are environmental parameters such as walls and roofs which separate the interior space from adjacent spaces. Other spaces such as airport approach zones are delineated by non-physical, abstract boundaries.

Spaces have a purpose or use. This is their function and the concern of this table. Spaces can be occupied by people, things, and substances and serve as mediums for activities and movement.

Spaces also have physical form and that is the concern of Table 14 - Spaces by Form. In some cases, the form of a space and its function are related and more or less inseparable, but most spaces can accommodate many different functions throughout their useful life with little regard for their form.

Examples

Kitchen, Elevator Shaft, Office Space, Sidewalk

Table Uses

Storing and retrieving information and classifying objects for software for space planning, construction project programming and budgeting, compiling historical cost and operation data, designating spaces and activities for building codes and ordinances, inventorying spaces for property transfer, and classifying spaces for facility management operations.

Table Users

Possible table users include librarians, design professionals, space planners and programmers, estimators, building officials, real estate agents, facility managers, and software developers.

Legacy Sources

- The Appraisal Institute. Appraisal Institute Commercial Data Standard. Chicago: Appraisal Institute, 2001.
- International Code Council (ICC). International Building Code. Washington, DC: ICC, 2006.
- International Organization for Standardization (ISO). ISO 12006-2, Table 4.5 Spaces (by function or user activity). Geneva: ISO, 2001.
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- Open Standards Consortium for Real Estate (OSCRE). OSCRE Space Classification Standard, v1.0. OSCRE, 2007.
- United States General Services Administration (GSA). Public Buildings Service (PBS) National Business Space Assignment Policy, Washington, DC: GSA, May 2009.

- United States Department of Veterans Affairs (VA). VA Space and Equipment Planning System (VA-SEPS). Washington, DC: VA, 2009.
- United States Department of Education, Institute of Education Sciences, National Center for Education Statistics. U.S. Postsecondary Education Facilities Inventory and Classification Manual. Washington, DC: National Center for Education Statistics, 2006.
- Building Owners and Managers Association International (BOMA). Office Buildings: Standard Methods of Measurement (ANSI/BOMA Z65.1 – 2010). Washington, DC: BOMA International, 2010.
- Building Owners and Managers Association International (BOMA). Gross Areas of a Building: Standard Methods of Measurement (ANSI/BOMA Z65.3 – 2009). Washington, DC: BOMA International, 2009.
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). Ventilation for Acceptable Indoor Air Quality (ASHRAE 62.1-2007). Atlanta: ASHRAE, 2007.
- U.S. Department of Defense. Real Property Classification System (RPCS). Washington, DC: DOD, 2006.

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OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
Numbers and Titles					
13-11 00 00	Space Planning Types				Amounts of space establish for development of design scenarios
13-11 11 00		Planned Work Space			Spaces planned to perform a function in support of the occupant business objectives.
13-11 13 00		Planned Building Service Space			Spaces planned to support the operation of the building enabling the occupants to work in a safe and supportive environment.
13-11 15 00		Planned Amenity/Support Space			Spaces planned to be provided as a convenience offering occupants support beyond their business driven functional requirements.
13-11 17 00		Planned Circulation Space			Spaces planned for circulation to provide or control access to and between other spaces within the facility, entry, and egress.
13-11 19 00		Planned Parking Space			Spaces planned to be used to circulate and station vehicles.
13-13 00 00	Void Areas				A space inside the building where floor structure might otherwise be expected. The lowest floor of a multi-story void is classified based on the utilization at that level.
13-13 11 00		Light Well			Multi-story, enclosed space in a building, which may have a skylight. Every level of the atrium
13-13 13 00		Air Shaft			A vertical (or near vertical) shaft that supplies ventilation to a tunnel or other underground facility
13-13 15 00		Occupant Void Area			Opening in a floor created for the specific benefit of an occupant.
13-15 00 00	Wall Spaces				The space taken up by any of various permanent upright constructions having a length much greater than the thickness and presenting a continuous surface except where pierced by doors, windows, etc.: used for shelter, protection, or privacy, or to subdivide interior space, to support floors, roofs, or the like.
13-15 11 00		Exterior Wall Space			The space of a wall that divides/separates inside spaces from out side spaces. The wall may be structural or non-structural
13-15 13 00		Interior Wall Space			The space of a wall that divides/separates inside spaces only. The wall may be structural or non-structural
13-17 00 00	Encroachment Spaces				The space associated with base building elements that prevent the use of the space for furniture, equipment, circulation, or other occupant function.
13-17 11 00		Interior Encroachment			The space associated with a base building element that is located inside the building but not on the outer wall.
13-17 13 00		Perimeter Encroachment			The space associated with a base building element that is located on the outer wall.
13-21 00 00	Parking Spaces				Spaces used to circulate and station vehicles.
13-21 11 00		Exterior Parking Spaces			Outdoor area used for transient storage of motor vehicles, not including loading docks, sally ports and building service areas such as enclosed auxiliary lobbies used to enter a building from parking areas.
13-21 11 11			Exterior Parking Circulation		Outdoor space used to circulate vehicles and providing access to parking stalls.
13-21 11 13			Exterior Parking Access Control Point		Outdoor parking access control point space such as attendant booth, gate, card reader, or self serve ticket dispenser.
13-21 11 15			Exterior Parking Stall		Outdoor space provided for parking a vehicle (car, truck, bicycles or motorbikes).
13-21 13 00		Interior Parking Spaces			Totally or partially enclosed space that is normally used to circulate and station vehicles.
13-21 13 11			Interior Parking Ramp and Circulation		Interior space including ramps used to circulate vehicles and providing access to parking stalls.
13-21 13 13			Interior Parking Access Control Point		Interior parking access control point space such as attendant booth, gate, card reader, or self serve ticket dispenser.
13-21 13 15			Interior Parking Stall		Interior space provided for parking a vehicle (car, truck, bicycles or motorbikes).
13-21 13 17			Interior Vehicle Service Space		Interior parking stall and circulation space used to provide vehicle services.
13-23 00 00	Facility Service Spaces				portion of a building that provides services that enable occupants to work in a building
13-23 11 00		Vertical Penetration			opening in a floor that serves a building or system distribution function
13-23 11 11			Mechanical Circulation		Space used by mechanical modes of circulation such as elevators and escalators providing transportation between floors of a structure.

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13-23 11 11 11				Elevator Shaft	An enclosed space extending through one or more stories of a building connecting vertical openings in successive floors, or floors and the roof used to enclose an elevator.
13-23 11 11 13				Elevator Pit	
13-23 11 11 15				Elevator Cab	Platform or an enclosure raised and lowered in a vertical shaft to transport people or freight.
13-23 11 11 17				Elevator Machine Room	A room to house elevator motors, pumps, controls or lifting equipment
13-23 11 11 19				Dumbwaiter	A small lift / elevator used to move food etc. from one floor of a building to another.
13-23 11 11 21				Escalator	Set of moving steps attached to a continuously circulating belt that carries people up or down between levels in a building.
13-23 11 11 23				Freight Elevator	Device for vertical transportation of freight to different floors or levels in a building
13-23 11 13			Stairway		Space used by a static circulation path providing transportation between floors of a structure.
13-23 11 13 11				Egress Stairway	A stair that is part of an exit or leads to an exit.
13-23 11 13 13				Tenant Stairway	A stair that is accessible only by the tenant
13-23 11 15			Monumental Stair		Space occupied by a larger than necessary, architectural stair. Space with clear headroom under the stair may be classified differently.
13-23 11 17			Ramp		A walking surface that has a running slope steeper than 1 unit vertical in 20 units horizontal (5-percent slope). (IBC)
13-23 11 19			Chimney		a primarily vertical enclosure containing one or more passageways for conveying flue gasses to the outside atmosphere.
13-23 11 21			Chute		(postal, refuse, laundry) which end at a "termination room" - a shaft enclosure that does not extend to the underside of the roof sheathing, deck, or slab of the building.
13-23 11 23			Service Riser Space		Space used to accommodate intra-floor services such as flues, fire towers, fire hose cabinets (because of the pipes attached to them), stacks, pipe shafts, electricity, vertical air conditioning ducts and other vertical ducts.
13-23 11 23 11				Power Distribution Riser	A vertical service pipe or duct providing a route for electrical cabling to service floors with electricity
13-23 11 23 13				Information Signal Distribution Riser	A vertical service pipe or duct providing a route for communication cabling to service floors with tele and/or data communications
13-23 11 23 15				Gas Distribution Riser	A vertical service pipe or duct providing a route for gas piping to service floors with gas.
13-23 11 23 17				Liquid Distribution Riser	A vertical service pipe or duct providing a route for piping to service floors with water and/or other liquids
13-23 12 00		Horizontal Infrastructure/Service Space, Non-Occupied			Space solely used to accommodate horizontal distribution of infrastructure for HVAC, Power and Communications. Within Interstitial space the tracking of horizontal distribution is optional. Generally the final distribution such as electrical circuits within an office area are not tracked.
13-23 12 11			Power Distribution Network		A horizontal space providing a route to distribute electricity on a floor
13-23 12 13			Information Signal Network		A horizontal space providing a route to distribute tele and/or data communications on a floor
13-23 12 15			Gas Distribution Network		A horizontal space providing a route to distribute gas on a floor
13-23 12 17			Liquid Distribution Spaces		A horizontal space providing a route to distribute water and/or other liquids on a floor
13-23 13 00		Control Room			Space used for the control and monitoring of life safety and communication services.
13-23 13 11			Fire Command Center		Space for fire department operations with the location, layout, content and features and approved by the fire department; includes Fire Protection System (FPS)
13-23 13 13			Guard Stations		Booth or room within building line used to house security for building or tenant.
13-23 15 00		Loading Dock			A secondary building entrance space used to accommodate shipping and delivery of bulk materials to the structure.
13-23 17 00		Restroom			A space with washing and toilet facilities.
13-23 17 11			Men's Restroom		Toilet(s) used exclusively by men.
13-23 17 13			Women's Restroom		Toilet(s) used exclusively by women.
13-23 17 15			Unisex Restroom		Handicapped toilet for individual use by men or women, or for family use.

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13-23 19 00		Utility Equipment Room			Space provided for the general operation of heating, ventilating, and air conditioning, plumbing and electrical, life safety and communication services; including sections of tunnels which are dedicated to distribution of utilities.
13-23 19 11			Refrigerant Machinery Room		A room meeting prescribed safety requirements and in which refrigeration systems or components thereof are located.
13-23 19 13			Furnace Room		A room primarily utilized for the installation of fuel burning, space-heating and water-heating appliances other than boilers.
13-23 19 15			Incinerator Room		A room used for reducing combustible refuse material to ashes.
13-23 19 17			Fuel Room		A separately ventilated, fully enclosed room for the storage of fuel.
13-23 19 19			Gas Room		A separately ventilated, fully enclosed room in which only compressed gases and associated equipment and supplies are stored or used.
13-23 19 21			Liquid Storage Room		A room classified as a Group H-3 occupancy used for the storage of flammable or combustible liquids in a closed condition.
13-23 19 23			Liquid Use, Dispensing and Mixing Room		A room in which Class I, II, and IIIA flammable or combustible liquids are used, dispensed or mixed in open containers.
13-23 19 25			Hydrogen Cutoff Room		an assembly of piping, devices and apparatus designed to generate, store, contain, distribute or transport a nontoxic, gaseous hydrogen containing mixture.
13-23 19 27			Electrical Room		A designated room containing electrical equipment.
13-23 19 29			Switch Room		Contains electrical switch gear and equipment.
13-23 19 31			Telecommunications Room		A designated room containing telecommunications equipment.
13-23 19 33			Transformer Vault		A separately ventilated, fully enclosed room to house the building power transformer.
13-23 21 00		Waste and Recycling Spaces			Space used for holding garbage and recyclable materials.
13-23 21 11			Hazardous Waste Storage		An area used for the storage of chemicals or substances that pose a physical or health hazard that are in waste condition.
13-23 23 00		Building Service Support Spaces			Other building service space, such as space used for the building operator and custodian office, workshop and supplies.
13-23 23 11			Building Manager Office		Space for the property manager.
13-23 23 13			Custodial Space		Room that contains sink(s) or mop sink(s) and is used by custodial services for CUST. their related activities.
13-23 23 15			Shop Area		A place where things are crafted.
13-23 23 17			Access Chamber		Space that leads to prefabricated sewage system "man hole" structures.
13-23 23 19			Areaway		A subsurface space adjacent to a building open at the top or protected at the top by a grating or guard.
13-23 23 21			Service Space		Clear floor space in front of an appliance to assure adequate space for servicing.
13-23 23 23			Furred Space		Furred-out space is created when the floor layout must accommodate irregular wall surfaces or conceal mechanical obstructions.
13-23 23 25			Crawl Space		Unexcavated space that has restricted headroom and is not occupiable.
13-23 23 27			Attic Space		The space between the ceiling beams of the top story and the roof rafters.
13-23 23 29			Plenum		A horizontal chamber intended to contain air, gas, or liquid at positive pressure.
13-23 25 00		Equipment Platform			An unoccupied elevated platform used exclusively for mechanical systems or industrial process equipment, including the associated elevated walkways, stairs and ladders necessary to access the platform.
13-23 27 00		Interstitial Space			The area of load bearing surfaces located above or below occupied building floor that are not available for general occupancy often due to inadequate clear headroom and contain building mechanical or electrical systems predominantly serving the adjacent floors or to provide access to such systems.
13-23 29 00		Unimproved Shell			The portion of a building that has been constructed with minimal enclosure for future use.
13-23 31 00		Alteration or Conversion Space			Spaces temporarily out of use because they are being altered, remodeled, or rehabilitated at the time of the inventory.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-25 00 00	Circulation Spaces				Spaces for circulation that provide or control access to and between other spaces within the facility, entry, and egress.
13-25 11 00		Primary Circulation Spaces			The direct path on a floor necessary for access to egress stairs, elevator lobbies, toilet rooms, refuge space, building lobbies and entrances.
13-25 11 11			Corridor		An enclosed exit access component that defines and provides a path of egress travel to an exit.
13-25 11 13			Aisle		An exit access component that defines and provides a path of egress travel.
13-25 11 15			Mall		A roofed or covered common pedestrian area within a covered mall building that serves as access for two or more tenants.
13-25 11 17			Concourse		A large open space in a building where people can gather.
13-25 11 19			Breezeway		A structure with a roof and open sides that connects two buildings.
13-25 11 21			Moving Walkway		A slow conveyor belt that transports people horizontally or on an incline in a similar manner to an escalator.
13-25 13 00		Transitional Circulation Spaces			Space adjacent to the entry points such as lobbies.
13-25 13 11			Entry Vestibule		A passage, hall or room between the outer door and the interior of a building.
13-25 13 13			Entry Lobby		A large entrance area of hall that serves as a foyer.
13-25 13 15			Box Lobby		Entranceway or foyer within the building line.
13-25 13 17			Vestibule		A small passage, hall, or room between a door or room and another room, corridor, or lobby.
13-25 13 19			Elevator Lobby		Lobby that separates the elevator shaft enclosure doors from each floor by fire partitions.
13-25 13 21			Freight Elevator Vestibule		A small passage, hall, or room between a door or room and a freight elevator.
13-25 13 23			Landing		An in-between platform or large bottom-most or top-most step of a staircase.
13-25 13 25			Anteroom		A room before, or forming an entrance to, another.
13-25 13 27			Air Lock		An airlock is a device which permits the passage of people and objects between a pressure vessel and its surroundings while minimizing the change of pressure in the vessel and loss of air from it. The lock consists of a small chamber with two airtight doors in series which do not open simultaneously.
13-25 13 29			Sally Port		A small controlled space with two doors. Access requires that one door must remain closed to proceed, used for security.
13-25 13 31			Jet Way		An enclosed, telescoping, movable ramplike bridge connecting an airport terminal and an aircraft, for use by passengers in boarding and disembarking.
13-25 15 00		Connector			A covered or enclosed bridge, walk-way, tunnel or other similar connecting element between two separate buildings.
13-25 17 00		External Circulation Spaces			Unenclosed corridors meeting circulation and exiting requirements of the local building code, and only when there are no fully enclosed corridors on a Floor that provide that function..
13-25 19 00		Secondary Circulation Spaces			A portion of a floor required for access to some subdivision of the floor, that does not serve all occupants on a floor, and is not defined as primary circulation Space.
13-25 19 11			Door Set-Back		A recess in a vertical wall plane that contains an access and egress to a tenant area, or amenity area, or building service area.
13-25 21 00		Restricted Spaces			Space that is normally available for use but is set aside by regulatory authority, such as clear space requirements for electrical closets.
13-25 23 00		Refuge Spaces			An enclosed space that is protected from the effects of fire permitting a delay in required egress travel time.
13-31 00 00	Education and Training Spaces				Space used for education.
13-31 11 00		Breakout Space			A space associated with a classroom or training room that is designated for discussions, side meetings, and breaks.
13-31 13 00		Lecture and Classroom Spaces			Spaces used for classes, lectures, symposiums, and speeches.
13-31 13 11			Lecture Classroom		A room in which teaching or learning activities can take place.
13-31 13 13			Classrooms (age 9 plus)		A room in which teaching or learning activities can take place for older children, ages 9 and over.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-31 13 15			Classrooms (ages 5–8)		A room in which teaching or learning activities can take place for younger children, ages 8 and younger.
13-31 13 17			Lecture Hall (Fixed Seats)		A large room used for instruction, typically at a college or university, with a capacity in the hundreds.
13-31 13 19			Assembly Hall		A hall where many students and teachers can congregate.
13-31 13 21			Seminar Room		A space for conducting a course offered for a small group of advanced students.
13-31 15 00		Class Laboratories			A space used primarily for formally or regularly scheduled instruction that require special purpose equipment or a specific space configuration for student participation, experimentation, observation, or practice in an academic discipline.
13-31 15 11			Open Class Laboratory		An educational space that provides controlled conditions in which scientific research, experiments, and measurement may be performed for teaching purposes.
13-31 15 11 11				Physics Teaching Laboratory	An educational laboratory space for teaching physics through hands on experimentation and demonstration.
13-31 15 11 13				Astronomy Teaching Laboratory	An educational laboratory space for teaching astronomy through hands on experimentation and demonstration. May require a planetarium and rooftop observation platforms.
13-31 15 13			Research/non-class Class Laboratory		A space used for laboratory experimentation, research, or training in research methods; professional research and observation; or structured creative activity within a specific program or for sponsored research.
13-31 15 15			Laboratory Service Space		A space that directly serves one or more class laboratories as an extension of the activities in those spaces.
13-31 17 00		Training Spaces			Space that is similar in configuration to a classroom but which contains specialized equipment or machinery used as part of a specific training activity.
13-31 17 11			Computer Lab		Space, often found in libraries, schools, government buildings, science labs, or community centers, which contains many networked computers and may contain printers, scanners, or other peripherals for public use.
13-31 17 13			Woodshop/Metalshop		A room for providing vocational education and training in the skills needed to perform a particular job, such as wood or metal working.
13-31 17 15			Training Support Space		Space which is used for support services directly related to training activities.
13-31 17 17			Religious Education Space		Space for training of those who perform or administer religious rites, both laypeople and clergy.
13-31 19 00		Study Spaces			Spaces in which learning or experimentation take place.
13-31 19 13			Study Room		A room or area used by individuals to study at their convenience, the space not being restricted to a particular subject or discipline by contained equipment.
13-31 19 15			Study Service		A space that directly serves study spaces, stacks, open-stack study spaces, or processing rooms as a direct extension of the activities in those spaces. stack and study areas.
13-33 00 00	Recreation Spaces				A space for any leisure activity, such as play, that diverts, amuses or stimulates.
13-33 11 00		Athletic Recreation Spaces			Spaces for participating in sports and athletic activities.
13-33 11 11			Athletic Spectator Seating		The covered seating area used by students, staff, or the public to watch athletic events.
13-33 11 11 11				Bleacher	A seating section commonly found in athletic spaces but occasionally found in performance spaces, containing bench seating instead of separate seats.
13-33 11 13			Team Athletic Recreation Spaces		Spaces for participating in team sports and athletic activities.
13-33 11 13 11				Baseball Field	A playing field on which the game of baseball is played.
13-33 11 13 13				Softball Fields	A playing field on which the game of softball is played. See also Baseball Field.
13-33 11 13 15				Dugouts	A sunken shelter at the side of a baseball or football (soccer) field where non-playing team members sit.
13-33 11 13 17				Grass Playing Fields	A grass field on which a game, esp. a ball game, is played.
13-33 11 13 19				Synthetic Fields	A field, often used for team sports, planted with a synthetic grass substitute.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-33 11 13 21				Football Field	A playing field on which the game of American football is played. Also used as an informal measurement of size.
13-33 11 13 23				Soccer Field	A playing field on which the game of soccer is played.
13-33 11 13 25				Basketball Courts	A concreted outside area or tiled or wooden inside area on which the game of basketball is played.
13-33 11 13 27				Field Light Poles	Spaces for lighting equipment used to illuminate a team sport playfield.
13-33 11 13 29				Press Box	The section in a stadium or arena set aside for the press, or specifically for sportscasters.
13-33 11 13 31				Scoreboards	A large board that displays the score in a game or contest.
13-33 11 15			Individual Athletic Recreation Spaces		Spaces for participating in individual sports and athletic activities.
13-33 11 15 11				Hard Playing Surfaces	Hard-surfaced spaces used for individual or team recreation, such as playgrounds.
13-33 11 15 13				Tennis Courts	A firm, rectangular surface, marked with lines and having a net across the middle, where the game of tennis is played.
13-33 11 15 15				Volleyball Court	A rectangular surface marked with lines and having a high net across the middle, where the game of volleyball is played.
13-33 11 15 17				Golf Course	A grassy course consisting of series of holes, each with a teeing ground, fairway, rough and other hazards, and a green with a pin and cup, all designed for the game of golf.
13-33 11 15 19				Driving Range	A facility for practicing driving golf balls.
13-33 11 15 21				Golf Course Support Space	Spaces designed to support golf courses on the installation. Space may include equipment storage and maintenance areas, locker rooms, and equipment sales area.
13-33 11 15 23				Skating Rink	A specially frozen surface of water on which people skate or play ice hockey.
13-33 11 15 25				Boxing Ring	A space, usually square, with elastic ropes around the edge, in which a boxing match is competed.
13-33 11 15 27				Wrestling Mat	A space in which a wrestling match is competed.
13-33 11 15 29				Diving Board	A springboard used for diving into water.
13-33 11 15 31				Bowling Lane	A space in which players attempt to score points by rolling a bowling ball along a flat surface into objects called pins.
13-33 11 15 33				Dart Throwing Area	A space in which darts can be thrown at a circular target (dartboard) hung on a wall.
13-33 11 15 35				Circuit Training Course Area	A space for interval training in which strength exercises are combined with endurance/aerobic exercises.
13-33 11 15 37				Running Tracks	A track for holding running events at track and field competitions.
13-33 11 15 39				Ski Lift Space	Space for a device that transports skiers up a mountain.
13-33 11 15 41				Exercise Space	A space to perform physical activity intended to improve strength and fitness.
13-33 11 15 43				Workout Station	A space for a machine designed to enable exercise to enhance or maintain physical fitness and overall health.
13-33 11 15 45				Aerobic Studio	A space for a form of exercise, designed to enhance one's cardiovascular fitness, often performed to music.
13-33 11 15 47				Climbing Wall	An artificial wall used for the sport of climbing.
13-33 11 15 49				Ropes Course Elements	A challenging outdoor personal development and team building activity which usually consists of elements of varying height connected by rope bridges that must be traversed.
13-33 13 00		Swimming Pools			
13-33 13 11			Outdoor Swimming Pool		Non-enclosed swimming pools intended for recreational use. See also: Indoor Swimming Pool
13-33 13 13			Indoor Swimming Pool		An artificially enclosed body of water intended for swimming or water-based recreation, designed for year-round use. See also: Outdoor Swimming Pool
13-33 13 13 11				Diving Tank	A water-filled structure for training related to SCUBA diving.
13-33 15 00		Non-Athletic Recreation Spaces			Spaces for recreation and entertainment that do not include athletic activity or sports.
13-33 15 11			Park		A tract of ground kept in its natural state, about or adjacent to a residence, as for the preservation of game, for walking, riding, or the like or a piece of ground, in or near a city or town, enclosed and kept for ornament and recreation; as, Hyde Park in London; Central Park in New York.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-33 15 13			Pleasure Garden		A garden that is opened to the public for recreation, differentiated from other public gardens by containing entertainments in addition to the planting; for example, concert halls or bandstands, rides, zoos or menageries.
13-33 15 15			Indoor Firing Range		Indoor firing ranges provide marksmanship training space for the firing of pistols and small caliber rifles.
13-33 15 17			Outdoor Shooting Range		A training range for the firing of small arms
13-33 15 19			Recreational Deck		Wood or timber flat surface capable of supporting weight and used in a number of ways as part of garden landscaping, to extend living areas of houses, and as an alternative to stone based features such as patios.
13-33 15 21			Playground		A large open space where children play or small area for children with dedicated play equipment - slide, or tubes, or swings, etc.
13-33 15 23			Game Room		A room used for a variety of purposes, such as parties, games and other everyday or casual use.
13-33 15 25			Gambling Table		A table where games of chance such as poker, craps, or roulette are played and bet upon.
13-33 15 27			Amusement Ride		A device found at carnivals, fairs/funfairs, or amusement parks meant to appeal to various senses of the rider.
13-33 15 29			Parade Grounds		A large area of hard ground, usually of concrete or tarmac, where soldiers practice routine marching maneuvers.
13-33 15 31			Computer-Aided Visual Environment		A space for projecting an apparent reality that is only based in the computer.
13-33 15 33			Hobby and Craft Center		A facility that provide space for administration, drawing and art studio, storage, photo dark room, audio/photo sales area, separate areas for individual crafts and arts, and kiln area for ceramics.
13-33 15 35			Dance Floors		A dance floor construction, which may include a sprung floor, flooring typically made of vinyl sheeting, also called a marley floor, or an illuminated dance floor, also called a disco dance floor.
13-33 17 00		Wellness Spaces			Space that is related to medical and other wellness services provided to the personnel in a facility; such as first aid stations.
13-33 17 11			Fitness Center		Spaces for exercise and fitness activities.
13-33 17 11 11				Exercise Room	Space used for physical wellness but does not include weight-lifting equipment
13-33 17 11 13				Weight Room	Space used for weight-lifting, either using exercise equipment or free weights.
13-35 00 00	Government Spaces				A place provided for general public access and use.
13-35 11 00		Judicial Spaces			Spaces supporting the work of the justice system.
13-35 11 11			Courtroom		The room where a judge presides over hearings and trials, sometimes with a jury
13-35 11 11 11				Jury Box	The area in a courtroom wherein the jury is seated during a trial.
13-35 11 11 13				Jury Room	The room where a jury is sequestered and deliberates at the close of a trial.
13-35 11 11 15				Judge's Bench	The location in a courtroom where a judge sits.
13-35 11 11 17				Evidence Room	Room used to secure legal evidence, usually near a courtroom.
13-35 11 11 19				Jury Assembly Space	Room where prospective jurors gather to wait or assemble before being selected for jury duty. Includes seating area and may include TV, work stations, and tables.
13-35 11 11 21				Witness Stand	An enclosed area in a courtroom where witnesses give their evidence.
13-35 11 13			Judge's Chambers		The office of a judge.
13-35 11 13 11				JCC-Judicial Chambers	Space with features exceeding typical office space standards such as extensive wood millwork, wood base, chair rail, fabric wall covering, vinyl wall covering, sound board, speakers, CCTV monitors and/or cameras, panic buttons, recessed can lighting, ceiling fans, and cabinetry.
13-35 11 13 13				Law Clerk Space	Space for a law clerk that assists a judge.
13-35 11 15			Robing Area/Room		Space for judges to change into their robes.
13-35 11 19			Hearing Room		Room used by courts and administrative agencies as a location where evidence and testimony is submitted for findings of fact. May be closed or open.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-35 11 19 11				JHR–Judicial Hearing Room	Small court facilities that typically have features such as column spacing less than 30'-0" on center, above-standard lighting and HVAC, built-in judge's bench, chair rail, sound system, recessed can lighting, separate air, walls-to-deck crown molding, built-in podium, built-in spectator railing, above-standard doors, sound lock entry, articulation in the ceiling, and smaller-in-scale millwork and cabinetry than found in CRJ.
13-35 13 00		Legislative Spaces			Spaces supporting the legislative assemblies of government.
13-35 13 11			Council Chambers		A specialized meeting space generally associated with local government facilities. The space is designed to allow councilors to interact face to face and includes gallery space for citizens.
13-35 13 13			Legislative Hearing Room		Room where members of legislative bodies and their committees and subcommittees hold hearings for receipt of testimony and evidence in reference to action on legislation. Typically has audience space.
13-35 15 00		Military Spaces			Spaces associated with Military training functions
13-35 15 11			Armory		A room or area used by Reserve Officer Training Corps (ROTC) and ancillary units for military training and/or instructional activities.
13-35 15 13			Armory Service Space		A space that directly serves an armory facility as an extension of the activities in that facility.
13-37 00 00	Artistic Spaces				
13-37 11 00		Performance Spaces			Space used for any performance type such as dance, music or theater.
13-37 11 11			Outdoor Theater		An outdoor facility to accommodate cultural events such as plays, concerts, and festivals.
13-37 11 13			General Performance Spaces		A space for events in which performers perform for an audience.
13-37 11 13 11				Acting Stage	A space for the performance of theatrical productions.
13-37 11 13 13				Orchestra Pit	The area in a theater, usually located in a lowered area in front of the stage, in which musicians perform.
13-37 11 13 15				Performance Rehearsal Space	A space for conducting preparatory music and theatre performances before the official public performance.
13-37 11 13 17				Soundstage	A soundproof, hangar-like space used for the production of theatrical motion pictures and television shows, usually located in a movie studio.
13-37 11 13 19				Performance Hall	A room or theater, often with tiers of seats, which serves as performance venue, such as for classical instrumental music or jazz, or for hearing lectures or presentations. Includes amphitheaters, auditoriums, or concert halls.
13-37 11 13 21				Band Training Space	Space for marching band rehearsal.
13-37 11 15			Audience Spaces		Spaces for a group of people who observe a performing art.
13-37 11 15 11				Pre-Function Lobby	A room used for entry from the outside in a building that houses performing arts productions, and in which the audience can gather before showtime and at intermission.
13-37 11 15 13				Audience Seating Space	A space where audience members can sit during a performance.
13-37 11 17			Supporting Performance Spaces		Spaces used to provide support to any performance type such as dance, music or theater.
13-37 11 17 11				Projection Booth	Space in a movie theater that houses the projector and other equipment used to show the movie.
13-37 11 17 13				Catwalk	An elevated walkway in a theater or soundstage used to access rigging for lights, curtains, sets, and other items.
13-37 11 17 15				Stage Wings	Areas adjacent to the stage in a theater, where support personnel and players can stand.
13-37 11 17 17				Motion Picture Screen Space	Space for a motion picture screen and associated equipment.
13-37 13 00		Display Spaces			Areas for the display of art and other exhibit materials
13-37 13 11			Art Gallery		A room, group of rooms, or other space where works of art are placed on display, possibly for sale.
13-37 13 13			Exhibit Gallery		A space for a public showing or exhibition of items of interest.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-37 13 15			Sculpture Garden		An outdoor garden dedicated to the presentation of sculpture, usually several permanently-sited works in durable materials in landscaped surroundings.
13-37 13 17			Ornamental Garden		A planned space, usually outdoors, set aside for the display, cultivation, and enjoyment of ornamental plants and flowers.
13-37 13 19			Observation Deck		A platform situated upon a tall architectural structure or natural feature.
13-37 15 00		Creative Spaces			Propose as level one - Space fit-up with features facilitating the production of art and/or the broadcasting, recording, editing or storage of audio visual productions.
13-37 15 11			Recording Studio		Space fit-up to facilitate the recording of sounds
13-37 15 13			Artist's Studio		Space fit-up to facilitate the development of works of art
13-37 15 15			Photo Lab		Space fit-up to facilitate the production and/or repair of film and electronic photography
13-37 15 15 11				Motion Picture Exchange	Space for the distribution of motion picture prints for viewing by military personnel.
13-37 15 17			Media Production		Space fit-up with features facilitating the production of televised programming live or recorded.
13-37 15 17 11				Media Production Support	Space supporting media production such as make-up station, dressing room, guest waiting room, wardrobe/prop room
13-37 15 17 13				Sound Lock	Room that provides an acoustical buffer to eliminate the transfer of sound to adjoining space.
13-37 15 19			Zen Garden		An enclosed shallow sandpit containing sand, gravel, rocks, and occasionally grass and/or other natural elements, raked and arranged artfully, usually providing a quiet, contemplative setting.
13-41 00 00	Museum Spaces				
13-41 11 00		Museum Gallery			A space in a museum for the exhibition, and educational interpretation of objects having scientific, historical, cultural or artistic value.
13-45 00 00	Library Spaces				
13-45 11 00		Library			Space in which literary, musical, artistic, or reference materials (as books, manuscripts, recordings, or films) are kept for use but not for sale.
13-45 11 11			Library Stack		A space used to house arranged collections of literary, musical, artistic, educational or reference materials for use.
13-47 00 00	Spiritual Spaces				Space designated for the practice of religion or meditation.
13-47 11 00		Worship spaces			Spaces for conducting worship activities, such as prayer, religious or spiritual ceremonies or celebration, or meditation.
13-47 11 11			Meditation Chapel		A space provided for obtaining a deeper state of relaxation or awareness.
13-47 11 13			Altar		A space upon which offerings can be made for religious purposes, or some other sacred place where ceremonies take place.
13-47 11 15			Reflection Space		A space for self-observation and contemplation of conscious inner thoughts, desires and sensations.
13-47 11 17			Blessing Space		A space for infusion of something with holiness or divine will.
13-47 11 19			Chapel		A space used as a place for fellowship and worship for Christians.
13-47 11 21			Mihrab		A niche in the wall of a mosque that indicates the direction of the Kaaba in Mecca and hence the direction that Muslims should face when praying.
13-47 11 23			Shrine		A holy or sacred place which is dedicated to a specific deity, ancestor, hero, martyr, saint or similar figure of awe and respect, at which they are venerated or worshipped.
13-47 11 25			Sanctuary		The consecrated area of a church or temple around its tabernacle or altar.
13-47 11 27			Confessional Space		A small, enclosed booth used for the Sacrament of Penance, often called confession, in the Catholic Church.
13-47 11 29			Ark		A cabinet used to store a synagogue's Torah scroll.
13-47 11 31			Bimah		The elevated area or platform in a Jewish synagogue where the person reading aloud from the Torah stands.
13-47 11 33			Tabernacle		A case on the altar of a church that contains the consecrated host and wine for the Eucharist.
13-47 11 35			Pulpit		A raised platform in a church, usually enclosed, where the minister or preacher stands to conduct the sermon.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-47 11 37			Choir Loft		A narrow recessed balcony area along an upper floor on the interior of a church, usually marked by a colonnade.
13-47 13 00		Ceremonial Spaces			A space for performing a ceremony to change the religious nature or status of a person.
13-47 13 11			Marriage Sanctuary		A space for conducting marriage ceremonies.
13-47 13 13			Baptistery		The area in a church surrounding the baptismal font.
13-47 13 15			Circumcision Space		A space in a religious structure for performing circumcisions.
13-47 13 17			Cathedra		The space surrounding the chair or throne of a bishop.
13-47 15 00		Procession Spaces			A space for performing a spiritual procession or orderly gathering and movement.
13-47 17 00		Death Spaces			Spaces for religious and other proceedings surrounding death, funerals, and interment.
13-47 17 11			Crypt		A chambered burial vault used to store the deceased.
13-47 17 13			Morgue		A facility for the identification, preparation, and holding of human remains.
13-47 17 13 11				Morgue Compartment	A room used for the storage of human remains awaiting identification, or removal for autopsy, burial, cremation or some other post death ritual.
13-47 17 17			Grave Space		A place where a dead body is buried.
13-49 00 00	Environmentally Controlled Spaces				Space with environments where such variables as humidity, temperature, pressure, sound, contamination are tightly controlled. These Spaces may be part of the research or production processes.
13-49 11 00		Anechoic Chamber			Space that is isolated from external sound and electromagnetic radiation sources, using sound proofing and electromagnetic absorptive material to prevent the reflection of wave phenomena (reverberation).
13-49 13 00		Hazard Containment			Specialized containment space for hazardous agents such as biological, radiological and chemical hazards.
13-49 15 00		Clean Room			Space in which the air quality, temperature and humidity are highly regulated in order to protect sensitive equipment and materials from contamination.
13-49 15 11			Clean Room Class 1		The ISO 14644-1 classification describes Clean rooms rated as "Class 1," where there exists no more than 10 particles larger than 0.1 micrometer in any given cubic meter of air;
13-49 15 13			Clean Room Class 2		The ISO 14644-1 classification describes Clean rooms rated as "Class 2," where there exists no more than 100 particles larger than 0.1 micrometer in any given cubic meter of air;
13-49 15 15			Clean Room Class 3		The ISO 14644-1 classification describes Clean rooms rated as "Class 3," where there exists no more than 1,000 particles larger than 0.1 micrometer in any given cubic meter of air;
13-49 15 17			Clean Room Class 4		The ISO 14644-1 classification describes Clean rooms rated as "Class 4," where there exists no more than 10,000 particles larger than 0.1 micrometer in any given cubic meter of air;
13-49 15 19			Clean Room Class 5		The ISO 14644-1 classification describes Clean rooms rated as "Class 5," where there exists no more than 100,000 particles larger than 0.1 micrometer in any given cubic meter of air;
13-49 15 21			Clean Room Class 6		The ISO 14644-1 classification describes Clean rooms rated as "Class 6," where there exists no more than 1,000,000 particles larger than 0.1 micrometer in any given cubic meter of air;
13-49 15 23			Clean Room Class 7		The ISO 14644-1 classification describes Clean rooms rated as "Class 7," where there exists no more than 10,000,000 particles larger than 0.1 micrometer in any given cubic meter of air;
13-49 15 25			Clean Room Class 8		The ISO 14644-1 classification describes Clean rooms rated as "Class 8," where there exists no more than 100,000,000 particles larger than 0.1 micrometer in any given cubic meter of air;
13-49 15 27			Clean Room Class 9		The ISO 14644-1 classification describes Clean rooms rated as "Class 9," where there exists no more than 1,000,000,000 particles larger than 0.1 micrometer in any given cubic meter of air;

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-49 15 29			Clean Room	Support Space	Support space for a classified room but not enclosed within a classified room.
13-49 17 00		Temperature and Pressure Chamber			Space in which air or other gases can be added or removed to create low/ high air pressure environments. Chambers can also control the thermal environment.
13-49 19 00		Data Center			Space designed to accommodate the needs of large quantities of co-located computer equipment.
13-49 19 11			Data Center Tier I		Basic Site Structure providing non-redundant capacity and single path distribution systems.
13-49 19 13			Data Center Tier II		Redundant Capacity Components with single path distribution systems.
13-49 19 15			Data Center Tier III		Concurrently Maintainable Infrastructure which provides redundant capacity and multiple distribution paths.
13-49 19 17			Data Center Tier IV		Fault Tolerant Infrastructure providing redundant capacity and multiple distribution paths simultaneously serving dual powered equipment.
13-49 19 19			Data Center Support Space		Support space for a Data Center but not enclosed within a Data Center.
13-49 21 00		Controlled Space Support			Support space directly involved with environmentally controlled spaces.
13-49 23 00		Miscellaneous Environmentally Controlled Spaces			Other Environmentally Controlled space not readily classified in one of the other classes.
13-49 23 11			Film Storage Vault		Space fit-up with climate controls and storage equipment to facilitate the preservation of film
13-49 23 13			Computer Server Room		Climate controlled space for servers associated with office environments
13-51 00 00	Healthcare Spaces				Space which is used for services directly related to the health care and medical practice. Most uses are applicable to providing medical care to humans as well as veterinarian services for animals. Size of the space may vary according to the size of the patient however the functions would be consistent as in admissions, diagnostics, surgery etc.
13-51 11 00		General Examination Spaces			Spaces used by multiple medical services for routine patient examinations.
13-51 11 11			Exam Room		Space used for routine, urgent, and emergent examination (physical inspection of a patient or parts of his body) in order to verify health or diagnose disease or injury. May also be Space used for minor procedures such as injections, wound care, and suturing.
13-51 11 13			Exam Room, Airborne Infection Isolation		Space used for examination of patients who are suspected to have or have a condition which could pose an airborne infection threat to other patients.
13-51 11 15			Exam Room, Isolation		Space used for examination of patients with suspected contagious diseases.
13-51 11 17			Exam Room, OB/Gyn		Space used for gynecological examination of women.
13-51 11 19			Exam Room, Pediatric		Space used for examination of patients who conform to institutional criteria as being children, generally 1 year old to 20 years old.
13-51 11 21			Exam Room, Protective Environment Isolation		Space used for examination of patients who are suspected to have or have a condition which makes them highly susceptible to infection.
13-51 11 23			Exam Room, Podiatry		Space used for the diagnosis and treatment of disorders of the foot, ankle and leg.
13-51 11 25			Exam Room, Security		Space used for examination and holding of patients who are under custodial observation due to mental infirmity or judicial restraint.
13-51 11 27			Height/Weight Screening Space		Space used for taking measurement of patient height and weight.
13-51 11 29			Holding Room, Secured		Space used for placement of patients who need observation for a period of time under police supervision.
13-51 14 00		Inpatient Care Spaces			Spaces used for overnight patient care.
13-51 14 11			Anteroom, Inpatient Airborne Infection Isolation		Space used for protective segregation of patients who have or are suspected of having contagious diseases to provide access control and environmental separation.
13-51 14 13			Anteroom, Inpatient Protective Environment Isolation		Space used for protective segregation of patients whose immune system is compromised to provide access control and environmental separation.
13-51 14 17			Anteroom, Inpatient Isolation/Seclusion		Space used in mental health units to provide controlled access to a seclusion room.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 14 19			Labor, Delivery, Recovery, Postpartum Room		Space used for the "birthing process" including pre-delivery preparation, delivery, and post delivery recovery. Where the acronym is "LDR" the function does not include the post recovery hospital stay for the mother.
13-51 14 21			Medical Information Computer System Room		Space used for equipment and personnel charged with monitoring vital signs telemetry for an intensive care unit setting.
13-51 14 23			Newborn Nursery		Space used for observation of newborn infants prior to placement in a newborn nursery or when their condition requires heightened attention or special intervention.
13-51 14 25			NICU Nursery		Space used for comprehensive and intensive care for neonates who have low birth weight, are very pre-mature, or who have other developmental and medical complications.
13-51 14 27			Nursery Transport Unit Alcove		Space used for parking of specialized infant transport carts including those for transport to other facilities.
13-51 14 29			Nursery, Airborne Infection Isolation		Space used for airborne infection isolation (AII) segregation of newborns.
13-51 14 31			Nursery, Observation		Space used for observation of newborn infants prior to placement in a newborn nursery.
13-51 14 33			Nursery, Special Care		Space used for observation of newborn infants prior to placement in a newborn nursery or when their condition requires heightened attention or special intervention.
13-51 14 35			Patient Room		Space used for overnight patient care.
13-51 14 35 11				Patient Room, Airborne Infection Isolation	Space used for protective segregation of inpatients who have or are suspected of having contagious diseases.
13-51 14 35 13				Patient Room, Bariatric	Space used for the care of patients who are morbidly obese in an acute care inpatient nursing unit.
13-51 14 35 15				Patient Room, Intensive Care	Space used for care of patients whose health status requires highly focused and concentrated medical care services by staff with specialized training and skills.
13-51 14 35 17				Patient Room, Intensive Care, Airborne Infection Isolation	Space used for protective segregation of intensive care patients who have or are suspected of having contagious diseases.
13-51 14 35 19				Patient Room, Intensive Care, Protective Environment Isolation	Space used for protective segregation of intensive care patients whose immune system is compromised.
13-51 14 35 21				Patient Room, Isolation	Space used for restrained isolation of patients for a short duration in a mental health setting.
13-51 14 35 23				Patient Room, Monitored	Space used in an inpatient setting where a patient care room must be capable of monitoring of vital signs.
13-51 14 35 25				Patient Room, One-Bed	Space used for patient sleeping and care in an inpatient setting for a single patient.
13-51 14 35 27				Patient Room, Protective Environment Isolation	Space used for protective segregation of patients whose immune system is compromised.
13-51 14 35 29				Patient Room, Seclusion	Used for segregation of patients who may pose a risk to themselves or others due to behavioral factors.
13-51 14 35 31				Patient Room, Transitional, One-Bed	Space used for patient sleeping and care in a transitional or apartment setting.
13-51 14 35 33				Patient Room, Two-Bed	Space used for patient sleeping and care in an inpatient setting for two patients.
13-51 17 00		Multi-Medical Service Support Spaces			Spaces used by multiple medical services to provide direct support for patient care.
13-51 17 11			Clean Linen Storage Room, Healthcare		Space used for storage of clean linen.
13-51 17 13			Clean Supply Room, Healthcare		Space used for storage of clean supplies on carts or shelves.
13-51 17 15			Clean Utility Room, Healthcare		Space used for the storage of clean supplies and clean linens and their preparation for patient use and for patient care support equipment such as icemakers and refrigerators.
13-51 17 17			Consultation Room, Patient		Space used for meetings with patients and family members to discuss health status, learn health history, and provide information.
13-51 17 19			Mental Health Interview/Counseling Room		Space used for interviews and counseling with patients in an individual or group format.
13-51 17 21			Equipment Storage Room, Healthcare		Space used for storage of equipment such as surgical tables, accessories, carts, etc.
13-51 17 22			Medical Records Storage Room		Space used for organized, active filing of physical patient charts, in a specially ordered and controlled environment.
13-51 17 23			Nurse Workspaces		Spaces used by nurses to perform their work and administer activities.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 17 23 11				Nurse Station	Space used as a central work and management area by nurses, physicians, and technicians. Functions performed include: charting, staff workflow management, monitoring of patient call system, conferring with other patient care staff, and monitoring of patient vital signs.
13-51 17 23 13				Nurse Station/Communication Center	Space used as a central work and management area by nurses, physicians, and technicians. Functions performed include: charting, staff workflow management, monitoring of patient call system, conferring with other patient care staff, and monitoring of patient vital signs.
13-51 17 23 15				Nurse Sub-Station	Space used as a satellite work area for one or two nurses placed where they are in close proximity to patient rooms and (in many cases) have observation windows from the workstation to the patient.
13-51 17 23 17				Nurse Triage Space	Space used to do a rapid assessment of patient acuity in order to determine priority of treatment.
13-51 17 25			Soiled Utility Room, Healthcare		Space used for disposal of human waste, bio-hazardous waste, and trash and for temporary storage of soiled linens, and for clean-up of soiled and non-disposable items.
13-51 17 27			Soiled Utility/Supply Room, Healthcare		Space used for clean up of equipment Space used for patient care, disposal of trash and biologic waste and storage of soiled linen.
13-51 17 29			Mental Health Multipurpose Room w/Control Room		Space used for group therapy and activity sessions in a mental health setting where undetected observation is required.
13-51 17 31			Resuscitation Cart Alcove		Space used for emergency resuscitation cart so that it can be near patient care areas.
13-51 17 35			Mental Health Quiet Room		Space used as a place where a patient can go to calm down if over stimulated by other activities or events.
13-51 21 00		Diagnostic Imaging Spaces			Spaces used for examination of patients by devices which produce an image of tissue, bone, or biophysical structure excluding those used in cardiac diagnostic and interventional services, nuclear medicine services, and radiation therapy services.
13-51 21 11			Angiographic Procedure Room		Space used for complex, percutaneous interventional radiology procedures to diagnose problems of the arteries, veins, and heart chambers.
13-51 21 13			Bone Densitometry Room		Space used for a radiographic technology which measures bone loss, most frequently to diagnose osteoporosis.
13-51 21 15			CT Scanning Room		Space used for computerized tomography which creates radiographic images of whole slices of tissue.
13-51 21 17			CT Simulator Room		Space used for planning patient treatment which will be performed using a linear accelerator.
13-51 21 19			Cystoscopic Radiology Room		Space used for performing examination of the bladder and urethra using either a flexible or rigid cystoscope. May also involve minor surgical procedures such as removal of stones.
13-51 21 21			Head Radiographic Room		Space used for making radiographic images of the head and neck.
13-51 21 23			Mammography Room		Space used for low-dose radiographic imaging of the breast.
13-51 21 25			Mobile Imaging System Alcove		Space used for parking mobile X-Ray units so that they will be readily accessible, but not obstructing corridors or passageways.
13-51 21 27			MRI Scanning Room		Space used for examination of organ structure and condition by use of alternating magnetic fields which create minute but detectable radio frequency waves of different characteristics from different types of tissue.
13-51 21 29			MRI System Component Room		Space used for electronic and mechanical components which support a magnetic resonance imaging system.
13-51 21 31			PET/CT Scanning Room		Space used for creation of images which superimpose information about the metabolism of the body (positron emission tomography – PET) over the anatomic information about location, shape, and size of various lesions and tissue (computerized tomography – CT).
13-51 21 33			PET/CT Simulator Room		Space used for patient treatment planning for PET/CT system.
13-51 21 35			Radiographic Chest Room		Space used for special imaging equipment which is capable of rapid patient throughput for routine chest x-rays.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 21 37			Radiographic Room		Space used for taking routine radiographic images of the body.
13-51 21 39			Radiographic/Fluoroscopic Room		Space used for radiographic imaging equipment which has fluoroscopic capabilities allowing real time examination of the internal organs.
13-51 21 41			Radiographic/Tomographic Room		Space used for making tomographic X-Ray images.
13-51 21 43			Radiology Computer Systems Room		Space used for Picture Archiving Computer/Communication System (PACS) associated with imaging systems which produce digital vs. film images.
13-51 21 45			Stereotactic Mammography Room		Space used for a radiographic procedure which produces three dimensional images to aid in performing a needle biopsy of the breast.
13-51 21 47			Ultrasound Room		Space used in services such as gynecology, cardiology, and ophthalmology for real-time examination of internal organs utilizing high frequency sound waves.
13-51 21 49			Ultrasound/Optical Coherence Tomography Room		Space used in Ophthalmology for the location of unseen intraocular foreign bodies, for retinal detachment, and for internal view when the patient's eye lid can not be opened or the patient's eye is blocked by blood or cataracts.
13-51 21 51			Whole Body Scanning Room		Space used in nuclear medicine for scanning by use of gamma or scintillation cameras of the whole body for use in diagnosis of a variety of conditions.
13-51 24 00		Diagnostic Imaging Support Spaces			Spaces used in support of imaging equipment and personnel.
13-51 24 11			Angiographic Control Room		Space used for operator control of angiography equipment.
13-51 24 13			Angiographic Instrument Room		Space used for preparation, cleaning, and storage of certain equipment used in angiography.
13-51 24 15			Angiographic Procedure Control Area		Space used for operator control of an angiographic system and its components.
13-51 24 17			Angiographic System Component Room		Space used for electronic and mechanical equipment which supports an angiographic imaging system.
13-51 24 19			Silver Collection Area, Diagnostic Imaging		Space used for the collection of and storage of silver from film based radiographic imaging systems.
13-51 24 21			Computed Radiology Reader Area		Space used for viewing digital images.
13-51 24 23			Computer Image Processing Area, Diagnostic Imaging		Space used for computer equipment which serves digital imaging modalities.
13-51 24 24			X-Ray, Digital Image Storage Space		Space used for picture archiving computer system and image quality control.
13-51 24 25			CT Control Area		Space used for operator controls for a computerized tomography (CT) imaging system.
13-51 24 27			CT Power and Equipment Room		Space used to house the electrical power panels and electronic panels, X-ray power supply and components, computer system image processor components, and other peripheral devices for a computerized tomography (CT) imaging system.
13-51 24 29			Image Quality Control Room		Space used by technicians to check the quality of images so that retakes can be ordered if needed.
13-51 24 31			Image Reading Room		Space used for examination of images produced by radiography, fluoroscopy, nuclear medicine, ultrasound and related technologies.
13-51 24 32			X-Ray, Plane Film Storage Space		Space used for plane film storage of patient radiographs in a made for purpose system and controlled environment.
13-51 24 33			Mammography Processing Room		Space used for developing films from a mammography imaging system.
13-51 24 34			X-Ray Film, Daylight Processing Space		Space used for daylight film processors serving certain types of x-ray equipment.
13-51 24 35			MRI Control Room		Space used for operator control console and for operator observation of a magnetic resonance imaging (MRI) procedure.
13-51 24 37			MRI Equipment Storage Room		Space used for electronic and mechanical components which support a magnetic resonance imaging system.
13-51 24 39			MRI Viewing Room		Space used for technician and physician viewing of images created using a magnetic resonance imaging system.
13-51 24 41			PET/CT Control Room		Space used for operator control of a positron emission tomography/computerized tomography scanning system.
13-51 24 43			Radiographic Control Room		Space used for operator control of an imaging system. The operator is protected by an emission opaque wall which has a special view window for observation of the patient.
13-51 24 45			Radiographic Darkroom		Use for developing plane film images.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 24 47			Tele-Radiology/Tele-Medicine Room		Space used for electronic transmission of images to and consultation with providers at outside locations.
13-51 24 49			Viewing/Consultation Room, Diagnostic Imaging		Space used for review of diagnostic images and consultation with other providers, family, and patients.
13-51 24 51			X-Ray, Mobile C-Arm Alcove		Space used for temporary "parking" of mobile x-ray systems.
13-51 27 00		Radiation Diagnostic and Therapy Spaces			Spaces used for examination and treatment of patients by devices which primarily use ionizing radiation or its byproducts (such as thallium). This section is limited to systems used for oncology and nuclear medicine.
13-51 27 11			Equipment Calibration Space, Radiation Diagnostic and Ther		Space used for equipment adjustment as part of a nuclear medicine service.
13-51 27 13			Health Physics Laboratory		Space used to calculate safe levels of radiation in various diagnostic and therapeutic procedures.
13-51 27 15			Linear Accelerator Component Room, Healthcare		Space used for the linear accelerator device which generates radiation Space used in the patient treatment area.
13-51 27 17			Linear Accelerator Entrance Maze, Healthcare		Space used for shielding spaces surrounding the entrance to a linear accelerator room from ionizing radiation.
13-51 27 19			Linear Accelerator Room, Healthcare		Space used for external beam radiation treatments for patients with benign or malignant tumors. May also be associated with Intensity Modulated Radiation Therapy (IMRT), Image Guided Radiation Therapy (IGRT), Stereotactic Radiosurgery (SRS), and Stereotactic Body Radio Therapy (SBRT).
13-51 27 21			Linear Accelerator Control Room, Healthcare		Space used for equipment which controls the operation of a linear accelerator and its associated safety devices.
13-51 27 23			Radioactive Waste Storage Room, Healthcare		Space used for storage of medical radioactive waste.
13-51 27 25			Nuclear Medicine Dose Calibration Space		Space used for the calculation and verification of radioactive injectibles Space used in nuclear medicine testing.
13-51 27 27			Nuclear Medicine Scanning Room		Space used in nuclear medicine for scanning by use of gamma or scintillation cameras of the whole body or portions of the body for use in diagnosis of a variety of conditions.
13-51 27 29			Nuclear Medicine Patient "Hot" Waiting Room		Space used for nuclear medicine patients who have received a radioactive material as part of their treatment or diagnostic routine.
13-51 27 31			Patient Dose/Thyroid Uptake Room		Space used for administration of radiopharmaceuticals by injection or intravenously prior to certain imaging procedures.
13-51 27 33			Radiation Dosimetry Planning Room		Space used for calculation of radiation dose and duration to be utilized in several different types of radiation therapy systems.
13-51 27 35			Radiopharmacy		Space used for the storage, preparation, and dispensing of radiopharmaceuticals.
13-51 27 37			Radium Cart Holding Space		Space used for temporary parking of radium transport carts.
13-51 27 38			Radiation Therapy, Mold Fabrication Shop		Space used for layout and fabrication of specialized masks which shield portions of a patient's body during radiation therapy treatment.
13-51 27 39			Sealed Source Room		Space used for storage and preparation of sealed sources containing radioactive substances used in patient treatment.
13-51 31 00		Heart and Lung Diagnostic and Treatment Spaces			Spaces used for cardiac and pulmonary function diagnostic and interventional services.
13-51 31 11			Brachytherapy Room		Space used for treatment of in-stent restenosis by radiating the site of the restenosis, or blocking of an artery at a stent. The procedure starts with an angioplasty in which radioactive isotopes are placed at the site of the blockage. After a few minutes the isotopes are removed.
13-51 31 13			Cardiac Catheter Instrument Room		Space used for preparation, cleaning and storage of certain catheterization equipment.
13-51 31 15			Cardiac Catheter System Component Room		Space used for electronic and mechanical equipment which supports a cardiac catheterization imaging system.
13-51 31 17			Cardiac Catheterization Control Room		Space used for operator control of a catheterization imaging system.
13-51 31 19			Cardiac Catheterization Laboratory		Space used for a diagnostic and interventional form of fluoroscopy (cardiac angiogram) in which a catheter is inserted through the arm or groin into the heart.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 31 21			Cardiac Electrophysiology Room		Space used to record the electrical activity and pathways to the heart in order to diagnose and treat irregular rhythms of the heart. The procedure is similar to that employed for cardiac catheterization.
13-51 31 23			Cardiac Testing Room		Space used to conduct a test in which a patient is given an electrocardiogram before and after induction of physical stress. The variation in heart activity between resting and stressed states is evaluated to determine heart condition. This test is closely associated with "thallium stress test" or "cardiolite stress test" in which an "image" of the patient's heart activity resting and under stress is taken using a nuclear medicine "camera."
13-51 31 25			Echocardiograph Room		Space used to perform an ultrasonic examination of the heart by creating two dimensional or three dimensional real-time images.
13-51 31 27			EKG Testing Room		Space used for a non-invasive test which measures electrical activity of the heart to diagnose underlying conditions of the heart. The electrocardiogram test strip is interpreted by looking for characteristic waveform patterns.
13-51 31 29			Extended Pulmonary Function Testing Laboratory		Space used to conduct a wide range of tests of the pulmonary system.
13-51 31 31			Microvascular Laboratory		Space used for the diagnosis and treatment of the finer blood vessels as opposed to macrovascular laboratory which is concerned with the major vessels. Modalities may include traditional surgery and laser surgery.
13-51 31 33			Pacemaker ICD Interrogation Room		Space used for "reading" performance parameters from an implantable cardioverter defibrillator (ICD) or a pacemaker.
13-51 31 35			Pacemaker/Holter Monitor Room		Space used to connect a patient to a portable electrocardiogram machine (Holter Monitor) which the patient wears for 24 hours and to read the results of the test.
13-51 31 37			Procedure Viewing Area		Space used for observation of invasive cardiology procedures done in a catheterization laboratory.
13-51 31 39			Pulmonary Function Testing Laboratory		Space used for a limited battery of tests of patients who are suspected of having lung or airway system condition by pulmonary medicine providers.
13-51 31 40			Pulmonary Function Treadmill Room		Space used by the patient for physical exercise during which the patient's pulmonary function and response of gaseous exchange is measured and later analyzed.
13-51 31 41			Pulmonary Screening Room		Space used for initial screening of patients by pulmonary medicine providers.
13-51 31 43			Respiratory Inhalation Cubicle		Space used for administration of oxygen to ambulatory patients to promote healing.
13-51 31 45			Respiratory Therapy Clean-up Room		Space used for decontamination and cleaning of respiratory therapy equipment.
13-51 31 47			Spirometry Test Room		Space used for performing spirometry tests as a part of pulmonary medicine service.
13-51 31 49			Stress Echocardiograph Room		Space used to perform an echocardiogram (sonogram) during which the heart is placed under physical stress.
13-51 31 51			Stress Testing Treadmill Room		Space used to conduct cardiac stress tests in which an electrocardiogram is made while the patient rests and then the patient is stressed by walking on a treadmill. The test is Space used to determine how the heart reacts to exertion and to detect abnormal heart rhythms or ischemia.
13-51 31 53			Transesophageal Echocardiography Room		Space used for performing an echocardiograph (a form of sonogram) in which the specialized probe is passed thru the mouth and esophagus of the patient.
13-51 34 00		General Diagnostic Procedure and Treatment Spaces			Spaces used by multiple medical services for specific diagnostic and treatment functions which are typically exclusive to those services.
13-51 34 11			Allergen Preparation Space		Space used to compound a formulated preparation for oral administration and ingestion containing an immunotherapeutically active amount of at least one allergen.
13-51 34 13			Allergy Injection Room		Space used for administration of compounded allergens by injection.
13-51 34 15			Allergy Skin Testing		Space used for application of various agents to the bare skin in order to determine source of allergies.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 34 17			Antepartum Testing (NST) Room		Space used to determine and control the causes of fetal distress in the antepartum (before labor) period. A variety of tests may be used including nonstress test (NST), biophysical profile, and contraction stress test (CST).
13-51 34 19			Biofeedback Treatment Control/Office		Space used for technician control of biofeedback treatment and for related administrative work.
13-51 34 21			Biofeedback Treatment Room		Space used for development of patient self-awareness through the use of a variety of physiological and vital signs monitors which help the patient apply control to otherwise autonomous functions. The monitoring systems may include electromyography systems, automated sphygmomanometers, neuro-processors and polygraphs.
13-51 34 23			Cast and Splint Room		Space used for the placement of casts and splints on patients with orthopedic injury.
13-51 34 25			Chemotherapy Treatment Room		Space used for infusion of chemotherapy drugs to one or more patients.
13-51 34 27			Dermatology Cryotherapy Space		Space used for removal of a variety of benign and malignant lesions by use of a substance such as liquid nitrogen kept at an extremely low temperature.
13-51 34 29			Dermatology Procedure Room		Space used for invasive and non-invasive procedures to ameliorate or correct conditions of the skin, hair, nails, oral cavity, and genitals. May be used for Moh's surgery.
13-51 34 31			Dialysis Clean Equipment Preparation Room		Space used for packaging clean dialysis equipment and preparing it for subsequent uses.
13-51 34 33			Dialysis Soiled Equipment Processing		Space used for decontamination and cleaning of dialysis equipment prior to its being prepared for subsequent use.
13-51 34 35			Dialysis Training Room		Space used for training of dialysis patients and their caregivers in various dialysis techniques.
13-51 34 37			EEG Exam Room		Space used for the diagnosis of epilepsy, seizures, sleep disorders, and related conditions by recording electrical signals of the brain.
13-51 34 39			EEG Instrument and Work Room		Space used for monitoring equipment and technician workspace in a sleep study laboratory.
13-51 34 41			EEG/Sleep Study Monitoring Room		Space used for conducting sleep studies with an electroencephalograph machine.
13-51 34 43			Electromyography Room		Space used to conduct electromyograms (EMG) which detect electrical activity in the muscles. The test is used to diagnose the cause of unexplained muscle weakness including muscular dystrophy, inflammation, pinched nerves, amyotrophic lateral sclerosis (ALS), myasthenia gravis, disc herniation, etc.
13-51 34 45			ENT Procedure Room		This room accommodates equipment used for instrumental evaluation and treatment including laryngoscopy, stroboscopy, fiberoptic endoscopy (FEES), surface electromyography (SEMG), cervical auscultation, respiration and swallow coordination assessment, manometry, and digital imaging equipment to view radiology images. This room is also used for tracheo-esophageal puncture voice prosthesis fitting procedures.
13-51 34 47			Evoked Potential Response Room		Space used to conduct visual evoked response (VER), visual evoked potential (VEP), auditory brain evoked response (ABER), auditory brain evoked potential (ABEP), somatosensory evoked response (SSE), or somatosensory evoked potential (SSEP) studies for multiple sclerosis, other neurological diseases, or with damaged optic nerves and eyes.
13-51 34 49			General Purpose Dirty Treatment Room		Space used for minor medical or surgical treatments which result in excretions of substances which pose a risk of contamination, but which do not require a special level of sterility.
13-51 34 51			Immunization Room		Space used for administration of vaccines and other prophylactic substances, generally by injection.
13-51 34 53			Infectious Disease Decontamination Shower		Space used to shower patients and/or healthcare workers who may have come in contact with certain toxic substances or particulate radiation.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 34 55			Infectious Disease Decontamination Suite		Space used to decontaminate persons who have come in contact with persons who have or may have an infectious disease.
13-51 34 57			Life Support Unit Room		Space used for the emergent care of patients who are at immediate risk of loss of life or serious disability such as loss of limb.
13-51 34 61			OB/GYN Treatment Room		Space used for the examination and treatment of reproductive organs and conditions of women.
13-51 34 63			Patient Observation and Treatment Room		Space used for patients who require a combination of treatment and a period of observation pre or post treatment.
13-51 34 65			Pentamidine Treatment Room		Space used for the administration of pentamidine to patients with suppressed immune systems.
13-51 34 67			Peritoneal Dialysis Exam Room		Space used for examination of patients with end stage renal disease who may be suited for peritoneal dialysis or for existing peritoneal dialysis patients. Peritoneal dialysis is a process in which the patient's peritoneum (membrane surrounding the abdominal cavity) is Space used as a membrane across which fluids and dissolved matter can be passed in order to exchange them from the blood.
13-51 34 69			Peritoneal Dialysis Procedure Room		Space used for the peritoneal dialysis infusion/diffusion process for outpatients with impaired kidney function. Differentiated from hemodialysis. Unless the room is located and configured for overnight stay, the room would not be suited for automated peritoneal dialysis (APD).
13-51 34 71			Phototherapy Treatment Room		Space used for a procedure which utilizes a photosensitizing drug applied to the patient which is later exposed to light of a specific wavelength to destroy precancerous and cancerous cells. Also known as photodynamic therapy (PDT), it can be Space used for acne, rosacea, skin cancer, sun damage, cosmetic skin improvement, wrinkles, warts, psoriasis and other skin conditions.
13-51 34 73			Renal Dialysis Bed Station, Private		Space used for hemodialysis or peritoneal dialysis of inpatients with impaired kidney function.
13-51 34 75			Renal Dialysis Room, Negative Pressure		Space used for hemodialysis of patients with impaired kidney function who also are diagnosed with infectious diseases.
13-51 34 77			Renal Dialysis, Chair Station, Cubicle		Space used for hemodialysis of patients with impaired kidney function.
13-51 34 78			Renal Dialysis, Water Treatment Room		Space used for purification of water which will be used in the dialysis cleansing treatment
13-51 34 79			Sleep Study Room		Space used for conducting a multi-parametric test to diagnose sleep disorders such as sleep apnea. The test utilizes a polysomnograph instrument which records a comprehensive record of biophysical changes that occur during sleep.
13-51 34 81			Provider Trainee Observation Area, Healthcare		Space used for observation of patient treatment by medical students and trainees.
13-51 34 83			Treatment Cubicle, Healthcare		Space used for and useful for a variety of minor medical and surgical treatments.
13-51 34 85			Treatment Room, Healthcare		Space used for various types of treatments, generally of a non-specialty nature where specialized equipment is not required.
13-51 34 87			Neuropsychology Testing Laboratory		Space used to study the structure and function of the brain with relationship to specific psychological processes as may occur with traumatic brain injury.
13-51 37 00		Eye and Ear Healthcare Spaces			Spaces used for diagnosis and treatment of conditions relating to sight, hearing, balance and related functions.
13-51 37 11			Audiology Immittance Room		Space used for tests with certain types of measuring instruments to determine electrical characteristics of the auditory system.
13-51 37 13			Audiometric Exam Booth		Space used for audiometric tests in a "soundproof" booth.
13-51 37 15			Audiometric Exam Suite		Space used for tests to determine the health status of auditory systems including hearing loss, sensitivity threshold, understanding, and other conditions in a pre-fabricated, "soundproof" testing room with attached control room.
13-51 37 17			Audiometric Multi-Exam Suite		Space used for an audiometric suite with two booths and a common workroom.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 37 19			Audiology Electrophysiology Exam Room		Space used in audiology for the study of the electrical properties of biological cells and tissues.
13-51 37 20			Hearing Aid Testing Laboratory		Space used for testing of hearing aids and for related minor adjustments.
13-51 37 21			Electroretinography Room		Space used for visual digitized equipment for conducting electro-oculographic, electroretinographic, and visual evoked cortical potential testing of retina, optic nerve, and visual pathway functioning with analysis.
13-51 37 23			ENT Exam Room		Space used for examination of patients with suspected disorders or injuries to the ears, nose, and throat for routine, minor treatments such as cerumen management.
13-51 37 25			Exam/Training Room, Low Vision		Space used for examination of low vision patients, storage of low vision devices, and for minor training and education.
13-51 37 27			Eye Lane		Space used for routine visual acuity screening generally by using a chart placed a certain distance from the patient who is asked to read successive rows of letters and numbers.
13-51 37 29			Laser Treatment Room		Space used for treatment of conditions of the eye with one of several types of laser systems. These include: LASIK, LASEK, LTK and PRK
13-51 37 31			Ophthalmology Procedure Room		This room is Space used for assessment of eye health, acuity, and presence of disease and for minor treatments. It includes equipment such as a phoropter for measuring acuity and a slit lamp Space used in conjunction with a biomicroscope for examination of the eye exterior and interior structure. Some conditions of the eye may be treated with minor surgical or with medical procedures in the treatment room.
13-51 37 33			Ophthalmology/Optometry Exam Room		Space used for the examination of eyes and related tissue to determine status of health (including visual acuity) and presence of diseases or injured tissue. Methods of examination include direct visual observation and use of equipment such as slit lamps, retinoscopes, and phoropters.
13-51 37 35			Photography Room, Ophthalmology/Optometry		Space used for a special camera attached to a low power microscope (fundus camera or retinal camera) to take pictures of the interior lining of the eyeball and related structures including the retina, optic disc, macula, and posterior pole.
13-51 37 37			PRK/LASIK Treatment Room		Space used for two types of laser surgery on the eye. Photorefractive keratectomy (PRK) is Space used to reshape the surface of the cornea. Laser in situ keratomileusis (LASIK) uses a laser underneath the corneal flap to reshape the cornea. It uses an excimer laser specially designed for the procedure. Both techniques treat refractive errors such as myopia, hyperopia, and astigmatism.
13-51 37 39			Sinusoidal Vertical Axis Rotational Rest Room		Space used for a specific test which is generally part of a battery of tests to diagnose certain conditions of the vestibular and ocular systems.
13-51 37 41			Tilt Table Testing Room		Space used to determine the cause of fainting. The patient is placed on a table which is tilted upward in increments while the vital signs (blood pressure, pulse, other symptoms) are being monitored.
13-51 37 43			Training Room, Low Vision, Polytrauma		Space used to provide vision rehabilitation care. Patient education and eye care counseling sessions are conducted so that patients can learn how to use prescribed low vision and other aids.
13-51 37 45			Ultrasound/Optical Coherence Tomography Room		Space used in Ophthalmology for the location of unseen intraocular foreign bodies, for retinal detachment, and for internal view when the patient's eye lid can not be opened or the patient's eye is blocked by blood or cataracts.
13-51 37 47			Vestibulography Room		Space used for examination of the vestibular system which controls balance and sense of spatial orientation. It provides dominant input about equilibrioception and movement and for performing electronystagmography (ENG) or videonystagmography (VNG) for patients with balance or vestibular disorder.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 37 49			Vision/Hearing Screening Room		Space used for initial vision and hearing screening and preparation of patients for further diagnostic tests
13-51 37 51			Vision Screening Room		Space used to assist in the performance of preliminary testing and preparation of the patient's profile with the supervision of the optometrist or ophthalmologist.
13-51 37 53			Vision Testing Station		Space used for initial screening and preparation of patients by ophthalmology technicians under the supervision of providers.
13-51 37 55			Visual Fields Room		Space used to test, evaluate and monitor the visual fields (side vision) of a patient who may or may not be ambulant.
13-51 37 57			Eye, Contact Lens Fitting/Dispensing Space		Space used for fitting of prescription contact lenses and for related patient education.
13-51 37 59			Eyeglass Fitting and Dispensing Space		Space used for fitting of prescription eyeglasses.
13-51 41 00		Endoscopy/Gastroenterology Spaces			Spaces used for examinations and treatments of the esophagus, lungs, stomach, digestive and associated anatomical structures using endoscopes and related systems.
13-51 41 11			Bronchoscopy Equipment Preparation Room		Space used for decontamination, cleaning, packaging, and storing equipment Space used to perform bronchoscopies.
13-51 41 13			Bronchoscopy Procedure Room		Space used for examination of patient's lungs, airways, voice box, vocal cord, and trachea by placement of a flexible fiberoptic bronchoscope into the windpipe which displays the images on a monitor or at the end of the instrument. The procedure often involves "conscious sedation."
13-51 41 15			Endoscope Clean-up, Sterilization, and Storage Room		Space used for cleaning and sanitizing or sterilizing medical endoscopes and related or similar devices
13-51 41 17			Endoscopy Room		Space used for examination of the upper and lower gastrointestinal tract by use of a thin, flexible tube or wireless capsule (endoscope) which transmits real time images to a display monitor. The device may also allow biopsy and electrocautery.
13-51 41 19			Gastroenterology Laboratory		Space used for gastric analysis studies (to analyze stomach contents) and esophageal manometry (study to determine swallowing disorders).
13-51 41 21			Proctoscopy/Sigmoidoscopy Room		Space used for examination of the rectum and lower colon by use of a flexible tube (sigmoidoscope) to determine the cause of rectal bleeding and diarrhea and as screening examination for conditions of the colon.
13-51 41 23			Uroynamics Treatment Room		Space used for various tests which provide information about the bladder. Most of the tests do not require sophisticated equipment, but video uroynamics utilizes radiographic or sonographic systems. May also serve as preparation room for other tests and procedures relating to bladder function and voiding disorders.
13-51 44 00		Surgical Spaces			Spaces used for surgical procedures and for direct support of surgical functions.
13-51 44 11			Anesthesia Workroom and Equipment Storage		Space used for storage, minor operator maintenance, and preparation of anesthesia machines and associated equipment.
13-51 44 13			Cardiac Operating Room		Space used for cardiac and cardiovascular surgical procedures, in particular those in which a heart/lung machine is utilized.
13-51 44 15			Cardiac Pump Room		Space used for equipment associated with heart/lung machines utilized in open heart surgery.
13-51 44 17			Cesarean Birth Room		Space used for the surgical procedure of delivery of infants via Cesarean Section.
13-51 44 19			Cystoscopy Room		Space used for surgery of the excretory organs.
13-51 44 21			Equipment Storage Room, Surgical		Space used for storage of equipment such as OR tables, accessories, carts, etc.
13-51 44 23			Frozen Section Laboratory		Space used for rapid preparation, sectioning and microscopic examination of specimens obtained during surgery.
13-51 44 25			General Operating Room		Space used for non-specialized surgical procedures.
13-51 44 27			Nerve Block Induction Room		Space used for the injection of local anesthetic for temporary reduction of pain. The process may include the use of ultrasound, fluoroscopy, or CT.
13-51 44 29			Neurosurgery Operating Room		Space used for surgery of the brain and central and peripheral nervous system

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 44 31			Orthopedic Operating Room		Space used for surgery of the skeletal system, muscles, tendons, ligaments and associated tissue.
13-51 44 33			Patient Holding Area, Surgical		Space used for temporary holding of pre-surgical patients in the surgical department. Additional uses may include anesthesiologist interview of patient, preparation of surgical site, and inception of sedation or anesthesia agents.
13-51 44 35			Postanesthesia Recovery Cubicle		Space used for the recovery of a patient who has had general anesthesia during a surgical procedure
13-51 44 37			Postanesthesia Recovery Isolation Room		Space used for post anesthesia recovery of patients who may have an infectious disease.
13-51 44 39			Postoperative Recovery Lounge		Space used for step down or Phase II recovery of surgical patients, particularly outpatients who will be discharged to home subsequent to their discharge from the postanesthesia recovery room.
13-51 44 41			Preparation/Recovery Spaces, Surgical		Space used for preoperative patient preparation and postoperative recovery.
13-51 44 41 11			Preparation/Recovery Cubicle, Surgical		Space used for preoperative patient preparation and postoperative recovery in an ambulatory or outpatient surgery setting
13-51 44 41 13			Preparation/Recovery Room, Surgical		Space used for preparation and holding of patients prior to surgery and for recovery after surgery, generally in an outpatient or ambulatory care setting.
13-51 44 43			Procedure/Minor Operating Room		Space used for a class of surgical procedure which generally does not require general anesthesia and which are generally performed on ambulatory patients. Examples include: incision and drainage of abscesses and cysts, evacuation of hemorrhoids, excision of small skin lesions, small skin grafts, debridement of wounds, and suture removal.
13-51 44 45			Scrub/Gowning Area		Space used by surgical staff for scrubbing of hands and lower arms during the process of preparing for surgery and for donning sterile gowns before entering an operating room.
13-51 44 47			Sub-Sterile Room		Space used to support one or more operating rooms by providing space for flash sterilization of instruments, storage of warmed blankets, and other accessory functions.
13-51 44 50			Operating Room, Sterile Storage		Space used for storage of supplies which must be maintained in a sterile state.
13-51 44 51			Surgical Laser Treatment Room		Space used for surgical techniques which employ various types of lasers. In addition to eye surgery, surgical lasers are Space used in dermatological procedures, vascular surgery, neurosurgery, and spinal orthopedic procedures. Procedures which require general anesthesia are performed in an operating room.
13-51 44 53			Recovery Room, Surgical		Space used for the recovery of patients who have been administered general anesthesia.
13-51 44 55			Surgical Suite, Workroom and Supply Space		Space used for cleaning and sterilization of surgical instruments, preparation of sterile surgical instrument packs, and storage of surgical supplies in a veterinary research service setting.
13-51 47 00		Clinical Laboratory Spaces			Spaces used for testing of human biological specimens to determine health status, to diagnose disease, and to prepare blood and serum for patient use.
13-51 47 11			Automated Clinical Laboratory		Space used to house a central area in the clinical laboratory that performs the high-volume, automated testing of hematology, coagulation, chemistry, and urinalysis specimens.
13-51 47 13			Bioassay (Radioimmunoassay) Room		Space used for a technique which employs a radiolabeled antigen and other substances to measure the level of a specific antigen in the serum of a patient. The test is employed to study conditions of the immune system. The test procedure is extremely sensitive, but it requires special equipment and hazardous substances.
13-51 47 15			Blood Gas Laboratory		Space used for testing equipment which determines the concentrations of certain gases in the bloodstream. Function is associated with intensive inpatient care, cardiovascular care, and pulmonary medicine.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 47 17			Blood Hemotherapeutics Room		Space used for the collection of special blood components (white blood cells, platelets, etc.) from patients; and the therapeutic removal of plasma (plasmapheresis) or blood cells (cytophoresis).
13-51 47 19			Bone Dissection Laboratory		Space used for dissection and analysis of bones and bone specimens in a clinical pathology or autopsy service setting.
13-51 47 21			Clinical Chemistry Laboratory		Space used for chemistry, hematology, and urinalysis functions in a hospital, ambulatory care, or outpatient facility.
13-51 47 23			Clinical Microbiology Laboratory		Space used for manual and automated microbiology tests and systems.
13-51 47 25			Cytology Laboratory		Space used for the examination of cells to determine the presence of disease, cancer or other conditions especially gynecological specimens.
13-51 47 27			Cytology Screening and Histology Space		Space used to study cells for morphologic abnormalities indicative of disease.
13-51 47 29			Dermatology Laboratory		Space used for analysis of specimens obtained during dermatological procedures in a clinic or outpatient setting.
13-51 47 31			Electron Microscope Suite		A group of rooms Space used to house an electron microscope and its related components. Electron microscopes use a beam of electrons to achieve magnifications (up to 2 million times) which is much greater than that possible with a light microscope. Electron microscopes have a variety of scientific and industrial applications. In science these include: cryobiology, electron tomography, cellular tomography, toxicology, pharmaceutical quality control, and virology.
13-51 47 33			Electron Microscope System Room		Space used for the principal components of an electron microscope.
13-51 47 35			Entomology Laboratory		Space used for the examination of insects which may carry disease and/or which may be vectors that carry disease to humans.
13-51 47 37			Flow Cytometer Space		Space used for a test which counts and examines microscopic particles, such as cells. It is Space used for diagnosis of certain health disorders such as blood cancers.
13-51 47 39			Fluorescence Microscope Room		Space used for fluorescence microscope work. One component of the specimen is labeled with a fluorescent material and then illuminated with a light of a specific wavelength to reveal its properties.
13-51 47 41			General Clinical Laboratory Area		Space used for testing of specimens or other substances to determine their chemical and biological properties for the purposes of research and patient care.
13-51 47 43			Hematology Laboratory, Coagulation		Space used to tests to study those properties of blood specimens relating to coagulation, a process through which blood loss is limited after injury to the blood carrying structure.
13-51 47 45			Hematology Laboratory, Routine		Space used for the study of blood and blood forming organs for the diagnosis of disease or chronic health problems.
13-51 47 47			Histology Laboratory		Space used for the processing of tissue specimens through automated processors, embedding the specimens in paraffin blocks, sectioning the specimens and staining them for examination by pathologists.
13-51 47 49			Immunopathology Laboratory		Space used for the study of immune responses related to disease.
13-51 47 51			Microbiology Biosafety Laboratory		Space used for testing of biologically hazardous specimens.
13-51 47 53			Microbiology Mycology Laboratory		Space used for identification and testing of fungi and susceptibility testing for anti-fungal drugs.
13-51 47 55			Microbiology Mycobacteriology Laboratory		Space used for TB culture and susceptibility testing of microorganisms.
13-51 47 57			Moh's Laboratory		Space used for analysis of specimens/biopsies obtained during dermatological procedures.
13-51 47 59			Mycology Laboratory		Space used for the study of fungi and their relationship with health conditions.
13-51 47 61			Nephrology Renal Study Space		Space used by nephrologists for study of renal condition and mal-performance.
13-51 47 63			Renal Studies Laboratory		Space used for the investigation of diseases and conditions of the kidneys and related systems.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 47 65			Special Chemistry Laboratory		Space used for special and unique diagnostic procedures such as chromatography, EMIT and/or manual spectrophotometry, fluorometry, etc. to perform therapeutic drug monitoring, toxicology, endocrinology, heavy metal, nutrition and metabolism studies.
13-51 47 67			Urine Testing Alcove		Space used in conjunction with and adjacent to a specimen collection toilet for routine testing of urine specimens.
13-51 47 69			Urinalysis Laboratory		Space used for the biochemical analysis and microscopic examination of urine and feces for the detection of abnormalities or disease.
13-51 47 71			Urology Laboratory		Space used to examine urine, blood, and secretions of the genitourinary tract in order to assess the health conditions of the genitourinary system and, where indicated, develop a diagnosis and plan of treatment
13-51 47 73			Medical Autopsy Room		Space used for forensic examination of human remains.
13-51 51 00		Clinical Laboratory Support Spaces			Spaces used exclusively in support of clinical laboratory operations.
13-51 51 11			Blood Bank Donor Station		Space used for donating blood in an organized blood banking program.
13-51 51 13			Blood Bank Preparation Rom		Space used for red cell packing, red cell washing, freezing/ rejuvenating, thawing and deglycerolizing, freezing of frozen plasma, preparation of cryoprecipitate, thawing of cryoprecipitate, pooling of cryoprecipitate, platelet and granulocyte concentrates from single units, and pooling platelets.
13-51 51 15			Blood Bank Blood Product Storage Space		Space used to store, type, and cross match blood.
13-51 51 17			Blood Bank Storage and Transfusion Room		Space used to store, type, cross match, and transfuse blood.
13-51 51 19			Blood Specimen Collection Room		Space used for phlebotomy, drawing of blood specimens from patients.
13-51 51 21			Cell Bank Freezer, Ultra Low		Space used for the storage of cell stocks Space used in research to inhibit deterioration of the functional and biological characteristics of the cells.
13-51 51 23			Electron Microscope Automated Data Processing Room		Space used for data processing equipment utilized by technicians in the analysis of results obtained during examination of specimens.
13-51 51 25			Electron Microscope Cutting Room		Space used for sectioning prepared specimens prior to examination by an electron microscope.
13-51 51 27			Electron Microscope Dark Room		Space used for the processing of films made during examination of specimens using an electron microscope.
13-51 51 29			Electron Microscope Developing, Printing and Enlarging Room		Space used to develop and process films and prints made during electron microscope examination.
13-51 51 31			Electron Microscope Finishing Room		Space used for final work in preparing prints for use.
13-51 51 33			Electron Microscope Preparation Room		Space used for preparing specimens for examination under an electron microscope. This may involve using chemical compounds, dehydration, or cryofixation. Specimens are then embedded in a stabilizing material which allows them to be sectioned.
13-51 51 35			Glassware Washing and Decontamination Room, Clinical Lab		Space used for gross decontamination, cleaning, washing and sterilizing various types of glassware Space used in clinical and research laboratories
13-51 51 37			Glassware Washing Room, Clinical Laboratory		Space used for gross decontamination, cleaning, washing and sterilizing various types of glassware Space used in clinical and research laboratories
13-51 51 39			Slides and Blocks Storage Room, Clinical Laboratory		Space used to store slides, as a matter of record keeping, for a set period of time after they have been examined by a pathologist.
13-51 51 41			Sterilization and Solution Preparation Room, Clinical Laboratory		Space used for sterilizing solutions and compounds Space used during the analysis of specimens in a laboratory.
13-51 51 43			Tissue Storage Area, Clinical Laboratory		Space used for storage of tissues which may be in a variety of forms such as paraffin blocks or in preservative fluid filled sealed containers.
13-51 51 45			Microbiology Media Preparation Laboratory		Space used to prepare media for culturing in support of microbiology.
13-51 51 47			Specimen Accessioning, Processing and Distribution Room		Space used as a general receiving area for specimens and requests.
13-51 51 49			Laboratory, Water		Space used to treat water which has acquired certain chemicals during its used in sterilizing surgical instruments.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 54 00		Pharmacy Spaces			Spaces used to receive, prepare, compound, test and examine pharmaceuticals and to dispense them as requested for patient care.
13-51 54 11			Chemotherapy Agent Medication Preparation Room		Space used for preparation of compounds and IV admixtures to be administered to patients with cancer.
13-51 54 13			Compound Sterile Preparation Space - High Risk		Space used for compounding of medications which require a sterile environment.
13-51 54 15			Compound Sterile Preparation Space - Low Risk		Space used for compounding of medications which require a sterile environment.
13-51 54 17			Compounding Area		Space used for pharmacist preparation of medications.
13-51 54 19			Dialysate Preparation Room		Space used for the preparation of dialysate prior to dialysis patient treatment.
13-51 54 21			IV Admixture Anteroom		Space used for gowning and hand sanitizing prior to entry into an IV Admixture Room.
13-51 54 23			IV Admixture Room		Space used for preparation of IV admixtures in a sterile environment.
13-51 54 25			Medication Preparation Room		Space used for the preparation of prescribed medicines for administration to a patient.
13-51 54 27			Methadone Dispensing Station		Space used for dispensing methadone to heroin addicts.
13-51 54 29			Oncology Drug Preparation Area		Space used for preparation of drugs Space used in chemotherapy, in particular those administered intravenously.
13-51 54 31			Pharmacy		Space used for compounding, packaging, dispensing and managing pharmaceuticals.
13-51 54 32			Pharmacy, Dispensing Space		Space used in a pharmacy for dispensing medications to outpatients or for patient care units.
13-51 54 33			Pharmacy Manufacturing & Prepack Space		Space used for compounding, packaging, and sorting of medications for dispensing and administration to patients.
13-51 54 35			Prescription Receiving Station		Space used by a pharmacist or pharmacy technician for receiving prescriptions.
13-51 54 37			Pharmacy, Bulk, Breakdown and Verification Area		Space used for storage of pharmaceuticals in a pharmacy in bulk packaging format and for cross checking delivery records.
13-51 54 39			Pharmacy, Controlled Substances and Secured Dispensing		Space used in a pharmacy for storage of controlled pharmaceuticals and related controlled pharmacy supplies. This is the vault and dispensing area for drugs identified by DEA requiring separation from other medications due to high abuse potential.
13-51 57 00		Medical Services Logistic Spaces			Spaces used for cleaning, sterilizing, packaging, stocking and distributing various types of supplies in a health care setting. Includes spaces used for receiving and holding soiled linens and receiving and distributing clean linens.
13-51 57 11			Automatic Cart Wash Area, Healthcare		Space used for mechanical system which washes various types of carts Space used for surgical cases, supply delivery, and/or linen handling.
13-51 57 13			BSL3 Infectious Disease Suite, Autoclave Room		Space used for sterilizing equipment and supplies within a biosafety level 3 infectious disease suite.
13-51 57 15			BSL3 Suite, Autoclave Room		Space used for sterilizing equipment and supplies within a biosafety level 3 suite.
13-51 57 17			Cart Assembly/Queue Area, Healthcare		Space used in a surgical clean core concept for "stacking" of surgical case carts in the clean core or designated area of central sterile supply.
13-51 57 19			Clean Cart Holding Area, Healthcare		Use for clean carts containing supplies or linens.
13-51 57 20			Medical Material Cart Restocking Area		Space used for stocking of unit supply carts in a hospital supply cart distribution system.
13-51 57 21			Clean Linen Preparation and Storage Area, Healthcare		Space used for preparation and stocking of linens for distribution to patient service units.
13-51 57 23			Clean Supply Preparation and Assembly Area, Healthcare		Space used for preparation and assembly of supplies for distribution to patient service units.
13-51 57 25			Clean Supply Preparation Area, Healthcare		Space used for equipment and supply packaging and preparation for future use where storage is provided elsewhere.
13-51 57 27			Equipment Processing and Clean Storage Room, Healthcare		Space used for the processing of equipment such as cystoscopes, preparing them for future use, and clean storage.
13-51 57 29			Ethylene Oxide Gas Sterilizer Room		Space used to house an ethylene oxide gas sterilizer Space used for terminal sterilization of certain types of medical and surgical equipment.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 57 31			Instrument Sterilization Room		Space used for post-decontamination, cleaning, washing and sterilizing various types of medical equipment of the types generally Space used for invasive procedures.
13-51 57 32			Central Sterile, Receiving and Decontamination		Space used for reception and gross decontamination of supplies and equipment used in various surgical and other invasive procedures.
13-51 57 33			Manual Cart Wash Area, Healthcare		Space used for washing soiled carts such as food carts, supply carts or surgical case carts.
13-51 57 35			Soiled Cart Holding Area, Healthcare		Space used for temporary holding (parking) of supply or case carts which require washing or disinfection prior to reuse.
13-51 57 37			Soiled Cart Receiving Area, Healthcare		Space used for temporary holding (parking) of supply or case carts which require washing or disinfection prior to reuse.
13-51 57 39			Soiled Instrument and Equipment Receiving and Decontamination		Space used for gross decontamination of surgical instruments and equipment prior to repackaging and/or sterilization.
13-51 57 41			Sterile Supply Preparation and Assembly Area, Healthcare		Space used for packaging, preparation, assembly and storage of surgical and other procedure packs where a sterile environment is required.
13-51 57 43			Biomedical Electronic Repair		Space used for repair of electrical and electronic components of medical instruments and equipment.
13-51 61 00		Rehabilitation Spaces			Spaces used for physical and occupational/vocational rehabilitation, for designing, and for manufacturing dispensing and fitting orthotic and prosthetic appliances.
13-51 61 11			Amputee Training Area		Space used in physical therapy and rehabilitation medicine for training and exercises for persons who have suffered limb loss.
13-51 61 13			Brace Shop Fitting Shop		Space used to apply casts, fit, construct, and adjust artificial facial or body appliances that need color coordination with adjacent body tones.
13-51 61 15			Brace Shop , Adjustment/Modification Area		Space used for adjustments and changes which must be made to prosthetics during the process of fitting to a patient.
13-51 61 17			Brace Shop Welding Area		Space used for fabrication of prosthetic braces where welding is required.
13-51 61 19			Computer Activities Room, Rehabilitation		Space used for rehabilitative therapy related to the use of computers.
13-51 61 21			Prosthesis Design and Manufacturing Room, Rehabilitation		Space used for computerized equipment to scan and measure residual limbs of patients with amputation and for a computerized lathe for fabrication.
13-51 61 23			Dynamic Alignment Room		Space used for a particular system for fitting and adjustment of prostheses for lower leg amputee
13-51 61 25			Therapeutic Exercise Spaces		Spaces used for various exercise and related therapeutic modalities intended to restore or improve physical function.
13-51 61 25 11				Therapeutic Exercise Area	Space used for individual and group exercise and for exercise classes and instruction.
13-51 61 25 13				Exercise/Therapy Gymnasium	Space used for group and individual therapy including various types of exercises ranging from use of free weights to machines such as treadmills and exercise bikes.
13-51 61 25 15				Individual Therapeutic Exercise Area	Space used for individual physical training and exercise as a part of a physical rehabilitation program.
13-51 61 25 17				Treatment/Exercise Area	Space used for physical therapy gymnasium to accommodate a wide variety of exercise procedures and training functions.
13-51 61 27			Eye Fitting Studio		Space used to display, fit, match and color coordinate artificial eyes.
13-51 61 29			Facial/Body Fitting Studio		Space used to fit custom made prosthetics and orthotics to a patient.
13-51 61 31			Fitting Room, Custom Fabrication		Space used for examination of patients prior to and during fabrication of prosthetic and orthotic devices.
13-51 61 33			Fitting Room, Soft Goods Fabrication		Space used for fitting of various prosthetic and orthotic devices and for follow-up examination.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 61 35			Gait Lane		Space used in physical therapy treatment of problems of ambulation and in training and exercise for patients with lower extremity prosthetic devices. The gait lane is focSpace used on persons with lower limb or trunk conditions sometime associated with neurological or orthopedic impairment. The parallel bar area is focSpace used on restoring basic ambulation skills.
13-51 61 37			Gait Study Track		Space used for diagnosis and treatment of ambulation disorders where equipment is Space used in obtaining and analyzing patient movement.
13-51 61 39			Hearing Aid Fabrication and Modification Room		Space used for construction, adjustment and maintenance of hearing aids and bioelectric implants
13-51 61 41			Hubbard Tank - Full Immersion		Space used for a specialized treatment tank in which pressurized and/or heated streams of water are circulated around the body of the patient
13-51 61 43			Hubbard Tank - Partial Immersion		Space used for a specialized treatment tank in which pressurized and/or heated streams of water are circulated around an immersed portions of the body of a patient
13-51 61 45			Hydrotherapy Area		Space used for treatments in which the patient or a portion of his body is immersed in a tank in which the water is heated and circulated by jets or other devices.
13-51 61 47			Neurophysiology Rehabilitation Room		Space used for treatment of problems relating to nervous system functioning. May include techniques and procedures also Space used for vocational therapy
13-51 61 49			Occupational Therapy Room		Space used for development of occupational (work) related skills and attitudes.
13-51 61 50			Occupational Therapy, Daily Living Skills Training and Evaluation		Space used to train patients in adaptive behavior needed to perform routine living skills. Generally arranged to include fixed and movable items which a person would encounter in daily living.
13-51 61 51			Pediatric Developmental Therapy Space		Space used for treatment of children who suffer from chronic or acute conditions which have impaired their physical and/or neurological development. May include occupational therapy, speech therapy, and physical therapy.
13-51 61 53			Physical Therapy/Kinesiology Therapy Room		Space used for physical therapy treatment and gymnasium to accommodate a wide variety of functions including prosthetic and orthotic training.
13-51 61 55			Posturography Exam Room		Space used for examination of patients with a battery of tests to evaluate balance function using a series of tasks to simulate situations encountered in daily life.
13-51 61 57			Prosthetic and Orthotic Dust Room		Space used for fabrication equipment which generates quantities of dust.
13-51 61 59			Prosthetic and Orthotic Fume Room		Space used for fabrication processes which generate toxic or unpleasant fumes.
13-51 61 61			Prosthetic and Orthotic Work Station		Space used for prosthetic and orthotic technician workspace, bench space, and power equipment.
13-51 61 63			Prosthetic and Orthotic, Maintenance Support Room		Space used for repairs and routine maintenance of prosthetic and orthotic devices.
13-51 61 65			Rehabilitation Therapy Gym		Space used for exercise and treatment interventions related to physical therapy.
13-51 61 67			Speech Pathology Individual Therapy Room		Space used for speech therapy for a single patient.
13-51 61 68			Speech Therapist, Exam and Treatment Space		Space used for individual examination and treatment of speech deficits by a speech therapist.
13-51 61 69			Therapeutic Pool		Space used for therapeutic swimming and related activities for individuals or groups.
13-51 61 71			Wheelchair Repair Workspace		Space used for the repair of wheelchairs.
13-51 61 73			Whirlpool		Space used for a specialized treatment tank in which pressurized and/or heated water is circulated around the arm or leg of a patient.
13-51 61 75			Rehabilitation Living Skills Training Apartment		Space used in a rehabilitation program to train and evaluate patients, shortly before discharge, in a realistic living setting.
13-51 64 00		Dental Spaces			Spaces used for dental hygiene care, routine dentistry, and for design, fabrication, application and adjustment of dental and maxillo-facial appliances for corrective and reconstructive purposes.
13-51 64 11			Dental CS Suite		Spaces which constitute a specialized dental support and sterilization function.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 64 13			Dental Hygiene and Operator Room		Space used for dental hygiene and routine treatments such as fillings, crowns, application of sealants and some cosmetic procedures.
13-51 64 15			Dental Hygiene Room		Space used for routine dental hygiene.
13-51 64 17			Dental Porcelain Room		Space used for the fabrication of porcelain dental prosthetics.
13-51 64 19			Dental Prosthetics Laboratory		Space used for the fabrication and adjustment of dental prosthetics.
13-51 64 21			Dental Screening Room		Space used for routine screening examination (triage) to determine health of the teeth, gums and surrounding tissue.
13-51 64 23			Dental Self Preparation Area		Space used by patients to prepare for dental services.
13-51 64 25			Dental Treatment Room, Mini Laboratory		Space used for routine dental office procedures such as making impressions, crowns, and bridges to support general dentistry.
13-51 64 27			Dental Treatment Room		Operator, General Treatment or Operator, Dental Hygiene Space used for routine cleaning and examination of teeth, gums and surrounding tissue and for treatments not requiring general anesthesia such as fillings crowns, application of sealants and some cosmetic procedures.
13-51 64 29			Dental Treatment Room, Conscious Sedation Support		Space used for preparation of anesthetizing and sedating agents which produce a state of relaxation and/or pain relief to be given to patients undergoing dental prosthetic/reconstructive surgery
13-51 64 31			Dental Treatment Room, Endodontics		Space used for the diagnosis and treatment of conditions relating to the tooth pulp and the tissues surrounding the root of the tooth.
13-51 64 33			Dental Treatment Room, Orthodontics		Space used for the design, application and control of corrective appliances to move teeth or adjust underlying bone to bring teeth, lips, and jaws into proper alignment and achieve facial balance.
13-51 64 35			Dental Treatment Room, Pediatrics		Space used for examination, diagnosis and treatment of teeth, gums, and supporting structures of pediatric patients.
13-51 64 37			Dental Treatment Room, Periodontics		Space used for the prevention, diagnosis, and treatment of patients with diseases affecting the gums and supporting structures of the teeth. Includes placement and maintenance of dental implants.
13-51 64 39			Dental Treatment Room, Prosthodontics		Space used for the examination and treatment of patients who may require special prosthetics for missing or deficient teeth or oral and maxillo-facial tissues.
13-51 64 41			Dental X-Ray Room		Space used to make intra-oral (several teeth) and cephalometric (entire head) x-rays for use in diagnosis and treatment of dental and maxillo-facial conditions.
13-51 64 43			Instrument Preparation and Sterilization Room		Space used for cleaning, sterilizing and packing dental instruments and supplies.
13-51 64 45			Maxillo-Facial Laboratory		Space used for prosthetic treatment of patients with abnormal conditions of the face and oral structures.
13-51 64 47			Maxillo-Facial Treatment Room		Space used for prosthetic treatment of patients with abnormal conditions of the face and oral structures.
13-51 64 49			Oral Pathology Laboratory		Space used for the study of tissue from oral and facial areas
13-51 64 51			Oral Surgery Residency Room		Space used for surgery of the mouth and jaw particularly where anesthesia or heavy sedation is Space used in services which include a residency program.
13-51 64 53			Oral Surgery Room		Space used for surgery of the mouth and jaw particularly where anesthesia or heavy sedation is Space used.
13-51 64 55			Panoramic Dental X-Ray Room		Space used for making panoramic x-rays for use in diagnosis and treatment of dental conditions.
13-51 64 57			Dental X-Ray Support Room		Space used for support of dental x-ray systems.
13-51 67 00		Medical Research and Development Spaces			Spaces used for basic research on the nature and prevention of disease and injury. May involve use of animals and/or highly toxic or infectious matter which must be contained in special rooms or suites of rooms.
13-51 67 11			Research Animal Recovery Area		Space used in a veterinary research area for recovery of animals who have had surgery.
13-51 67 13			Barrier Suite, Procedure Laboratory		Space used for the control of microbial agents Space used in animal research to keep to keep harmful agents away from the area.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 67 15			Biomedical Research BSL3 Suite	Tissue Culture Room	Space used for preparation, culturing, and examination of tissue research specimens in a clean room environment.
13-51 67 17			Biomedical Research	Tissue Culture Room	Space used for preparation, culturing, and examination of research specimens.
13-51 67 18			Laboratory, Research, Biochemistry		Space used for biochemistry research related to human health and treatment of injury and disease.
13-51 67 19			Biosafety Level 3 Laboratory		A group of spaces which are Space used for procedures which are part of animal research and which require a high level of environmental containment.
13-51 67 21			BSL3 Infectious Disease Suite, Procedure Laboratory		Space used for the preparation and administration of infectious diseases to animal subjects in a research setting where a high degree of risk is present. The purpose is to keep agents in the suite from being transmitted outside the suite, i.e. containment.
13-51 67 23			BSL3 Procedure Room		Space used for procedures which are part of animal research and which require a high level of environmental containment. The Department of Homeland Security defines the BSL-3 level of containment as follows: "BSL-3: Microorganisms present in the United States, and foreign and emerging agents that may cause serious consequences in livestock but are not harmful to human beings because of available protective measures."
13-51 67 25			Environmental Suite Infectious Disease Procedure Laboratory		Space used for performing diagnostic laboratory procedures such as routine bacterial cultures, serology, hematology, clinical chemistry, and parasitological examinations in a veterinary research facility.
13-51 67 27			Research Infectious Disease Animal Holding Area		Space used for temporary segregation in a research facility of animals who have or are suspected of having a contagious disease.
13-51 67 29			Research Veterinary Radiography Control Room		Space used in a research facility for the operator controls for a veterinary radiographic imaging system for animals.
13-51 67 31			Research and Development Machine Shop		Space used for fabrication of mechanical and electro-mechanical devices to be Space used in various research programs.
13-51 67 33			Research Veterinary Radiography Procedure Room		Space in a research facility used for veterinary radiographic imaging for animals
13-51 67 35			Research Diagnostic Laboratory		Space used for performing routine diagnostic laboratory procedures such as bacterial cultures, serology, hematology, clinical chemistry, and parasitological examinations in a research setting where high level environmental control is not required.
13-51 67 37			Research NMR Room		Space used to house a 400 megahertz super shielded instrument in a research setting.
13-51 67 39			Research Procedure Laboratory		Space used for multi-user performance of minor surgical procedures, specimen collection, and monitoring procedures in a research setting.
13-51 67 41			Research Veterinary Surgical Suite, Animal Preparation Room		Space used for the preparation of animals prior to surgery in a research facility.
13-51 67 43			Research Veterinary BSL3 Infectious Disease Suite Holding Room		Space used for temporary placement of research animals in a biosafety level 3 suite.
13-51 67 45			Research Veterinary Barrier Suite Holding Room		Space in a research facility used where immune-suppressed animals are present to prevent entrance of harmful agents.
13-51 67 47			Research Veterinary Chemical/Radioisotope Suite Holding Room		Space used to temporarily house animals where animal experiments involve the administration of harmful chemical or radioactive agents.
13-51 67 49			Research Veterinary Environmental Suite Holding Room		Space used to accommodate animals Space used in research requiring rigid control of various environmental factors such as light, temperature, humidity, sound and air movement.
13-51 67 51			Research Veterinary Quarantine Holding Room		Space in a research facility used for segregation of animals who may have contagious diseases or infections.
13-51 67 53			Research Veterinary Surgery Room		Space in a research facility used for surgical procedures on animals.
13-51 91 00		Veterinary Spaces			Spaces used for housing, treatment, training and other types of care for animals.
13-51 91 11			Hospitalization Kennel		Space used for housing animals which require veterinary care.
13-51 91 14			Infectious Disease Animal Holding Area		Space used for temporary segregation of animals who have or are suspected of having a contagious disease.
13-51 91 17			Veterinary Radiography Control Room		Space used for the operator controls for a veterinary radiographic imaging system.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-51 91 20			Veterinary Radiography Procedure Room		Space used for veterinary radiographic imaging
13-51 91 23			Veterinary Surgical Suite, Animal Preparation Room		Space used for the preparation of animals prior to surgery.
13-51 91 26			Veterinary BSL3 Infectious Disease Suite Holding Room		Space used for temporary placement of animals in a biosafety level 3 suite.
13-51 91 29			Veterinary Barrier Suite Holding Room		Space used where immune-suppressed animals are present to prevent entrance of harmful agents.
13-51 91 32			Veterinary Examination and Treatment Room		Space used for the examination and treatment of animals in a veterinary clinic or laboratory.
13-51 91 35			Veterinary Quarantine Holding Room		Space used for segregation of animals who may have contagious diseases or infections.
13-51 91 38			Veterinary Surgery Room		Space used for surgical procedures on animals.
13-51 91 41			Cage Wash Area		Space used for manual or automatic animal cage washing.
13-51 91 44			Veterinary Food Preparation Room		Space used to prepare food for animals, including special diets for research animals.
13-53 00 00	Laboratory Spaces				Space that has built-in equipment, plumbing, and/or utilities for the qualitative and/or quantitative analysis of matter, experimentation, or the processing of materials, including wet and clean laboratories.
13-53 11 00		Chemistry Laboratories			A laboratory for research in chemistry. Includes Organic Chemistry Laboratories, Inorganic Chemistry Laboratories, Analytical Chemistry Laboratories, and Biochemistry Laboratories.
13-53 13 00		Biosciences Laboratories			Spaces with shared equipment or housing specialized functions including fume hoods and biosafety equipment.
13-53 15 00		Physical Sciences Laboratories			Spaces for building experiments with a minimum of built-in furniture where power and piped services are usually provided overhead
13-53 15 11			Optical Physics Laboratory		Spaces requiring light control
13-53 15 13			Physics Research Laboratory		Specialized spaces with extensive controls over the surrounding environment.
13-53 17 00		Astronomy Laboratories			
13-53 17 11			Astronomy Research Laboratory		Field based observation facilities and office based computational facilities
13-53 19 00		Earth and Environmental Sciences Laboratories			
13-53 19 11			Geology Laboratory		Often requires extensive storage of samples
13-53 19 13			Earth Sciences Research Laboratory		Field based sciences that require processing of field samples from a dirty sample to very clean analytical equipment with a strong overlap to chemistry and applied engineering
13-53 21 00		Forensics Laboratories			Spaces with high performance standards for cleanliness, temperature, humidity, and vibration controls.
13-53 23 00		Psychology Laboratories			Open and flexible spaces that can be set up to accommodate many different types of studies. May have animal use
13-53 25 00		Bench Laboratories			Space specifically used in development and testing of equipment and circuitry.
13-53 27 00		Dry Laboratories			Space used in the development and/or testing of hardware including semiconductors and optics.
13-53 29 00		Integration Laboratories			Laboratory designed for assembly and testing of components and sub assemblies, mechanical and electronic.
13-53 31 00		Wet Laboratories			Space used in the development of test materials, processes, or equipment that involve the use of liquids and gases; usually chemical and biotechnology work.
13-53 33 00		Laboratory Storage Spaces			Storage space adjacent to laboratory facilities and is specifically designed for storage of lab materials such as gas canisters, etc.
13-53 35 00		Laboratory Support Spaces			Space which is used for support services directly related to the use of the laboratory.
13-55 00 00	Commerce Activity Spaces				Spaces where customers or clients view, sample, purchase and return product or where business, clerical or professional activities are conducted
13-55 11 00		Office Spaces			Space in which business, clerical or professional activities are conducted.
13-55 11 11			Office Service		A space that directly serves an office or group of offices as an extension of the activities in those spaces.
13-55 11 13			Dedicated Enclosed Workstation		An enclosed space used as one workstation occupied by a particular person on an ongoing basis.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-55 11 15			Shared Enclosed Workstation		An enclosed space used as one or more workstations by a variety of persons who are not specifically assigned to a particular workstation.
13-55 11 17			Dedicated Open Workstation		An non-enclosed space used as one workstation occupied by a particular person on an ongoing basis.
13-55 11 19			Shared Open Workstation		An non-enclosed space used as one or more workstations by variety of persons who are not specifically assigned to a particular workstation.
13-55 11 21			Open Team Setting		A free-address space that is designed to be used by a group of people working together with no fixed workstation assignments.
13-55 11 23			General File and Storage		Space set aside for storage of material that is used by an area, group of persons or department.
13-55 11 25			Shared Workstation File and Storage		Space designated for the materials used by persons using shared workstations.
13-55 11 27			Shared Equipment Station		Space set aside for office equipment used jointly by the occupants in the immediate area.
13-55 11 29			Lookout Gallery		Space used to observe employees in work areas performing work-related functions. This includes the ladder rooms to access the lookout gallery.
13-55 13 00		Banking Spaces			Space specific to banking such as teller spaces, vaults, safety deposit space and automated teller machines.
13-55 13 11			Bank Teller Space		Area fit-up for face to face customer service usually over a counter
13-55 13 13			Automatic Teller Machine Space		Area associated with a wall mounted banking machine and space for the user to access the machine
13-55 13 15			Vault		A reinforced room or compartment in a bank building where valuables are stored
13-55 15 00		Trading Spaces			Open space used for security or commodity trading.
13-55 15 11			Trading Floor		Area used to facilitate the communication between professionals on a stock exchange or futures exchange which involves shouting and the use of hand signals to transfer information primarily about buy and sell orders, also know as the pit.
13-55 17 00		Demonstration Spaces			Space where the product is demonstrated in an operational setting; often for large and/or complex operations and products.
13-55 19 00		Sales Spaces			Space where customers or clients can view or purchase product.
13-55 19 11			Checkout Space		Space with counters and product sales/returns equipment
13-55 19 13			Display Space		Space used to display articles for sale including associated circulation area.
13-55 19 15			Fitting Space		Space supporting clothing/footwear/sports equipment sales providing customers opportunity to try on products and/or have them sized for alterations.
13-55 19 17			Vending Machine Area		Space accommodating vending equipment for non-perishable goods
13-55 19 19			Auction Room		A space to accommodate a regularly occurring auction process, such as those for automobiles or livestock. This space will often contain special furnishing for displaying the items being bid on, as well as a raised platform for the auctioneer and assistants, and audio visual and lighting enhancements needed to support the auction..
13-55 19 21			Pet Shop Animal Space		Space for the display of animals, insects, fish and birds that would require additional equipment (cages/aquariums) and associated plumbing, power and ventilation.
13-55 21 00		Commercial Service and Repair Spaces			Space designed for the service or repair of product, including customer waiting and stockrooms for replacement parts as part of the customer-facing operation.
13-55 23 00		Commercial Support Spaces			Space for storage room, back office and other support functions required for Commercial Space.
13-55 27 00		Hotel, Motel, Hostel, and Dormitory Service Spaces			Spaces used for lodging on a short-term basis.
13-55 27 11			Dormitory		Space where two or more persons are housed in the same room or share restroom facilities.
13-55 27 13			Hotel Residence Room		Private residence room in a hotel or motel for lodging on a short-term basis.
13-55 29 00		Commerce Activity Support Areas			Space housing functions supporting the business process or secondary business functions.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-55 29 11			Information Counter		A space where visitors can ask questions, get directions, or pick up pamphlets and other basic informational materials.
13-55 29 13			Lobby Non-Circulation Space		Portions of the Lobby, which are used for purposes other than circulation and are not readily designated as another classification.
13-55 29 15			Post Office Space		Specialized space in a facility that houses United States Postal Service operations.
13-55 29 17			Mail Room Space		Mail sorting and distribution space including remote mail stops on floors.
13-55 29 19			Box Lobby		Lobby with post office-type boxes. Usually assigned to U.S. Postal Service.
13-55 29 21			Meeting Spaces		Space specifically designed for groups of people to interact on an occasional basis having appropriate seating and other amenities to support this activity.
13-55 29 21 11				Conference Room	Any office room used primarily as a conference room by a single tenant
13-55 29 21 13				Press Conference Room	A room to accommodate a media event in which newsmakers invite journalists to hear them speak and, most often, ask questions; this room often includes a podium, seating for the press, and audio-visual, communications, power, and lighting enhancements to accommodate the work of broadcast journalists.
13-55 29 21 15				Community Room	An often public space for community organizations to carry out meetings and programs
13-55 29 21 17				War Room	A single location from which any activity is directed.
13-55 29 21 19				Meeting Equipment Room	Audio/Visual equipment rooms associated with conference rooms, courtrooms, and auditoriums. Room used to house radio equipment and/or conduct associated activities.
13-55 29 23			Waiting Space		Space with seating where people wait prior to entering another space or receiving service.
13-55 29 23 11				Reception Space	A waiting area, such as a lobby or front office desk of an organization or business.
13-55 29 23 13				Waiting Room	A room in some public space for people to wait.
13-55 29 23 15				Queuing Space	A waiting space used to organize people into a first-come-first-served order.
13-55 29 25			Business Support Space		Any other business service space that is not readily categorized into one of the other classes.
13-57 00 00	Service Activity Spaces				Space for conducting commercial activities and those in support of personal needs.
13-57 11 00		Grooming Activity Spaces			Spaces for cleaning, grooming, or maintaining parts of the body, including primping, hair dressing, shaving, and providing manicures and pedicures.
13-57 11 11			Makeup Space		Space for the professional application of cosmetics and makeup, often used in the entertainment or fashion industries
13-57 11 13			Haircutting Space		Space used by barber or hair dresser to conduct said business.
13-57 13 00		Food Service			Space used for preparation and serving of food or providing seating for dining.
13-57 13 11			Cooking Spaces		Spaces used for preparation of food.
13-57 13 13			Kitchen Space		A room or area for preparing and cooking food.
13-57 13 13 11				Food Preparation Space	Space for the preparation of food that does not require cooking, or for preparation of food for cooking.
13-57 13 13 13				Cooking Space	Space for cooking food.
13-57 13 13 15				Dishwashing Station	Area and equipment for the cleaning of cooking and serving utensils
13-57 13 15			Dining and Drinking Spaces		Spaces used for the serving and consumption of food and beverages, or providing seating for dining.
13-57 13 15 11				Dining Room	A room in a home or hotel, or a private area in a restaurant away from the main public area, where meals are eaten.
13-57 13 15 13				Banquet Hall	A space that can accommodate large groups for dining and where celebratory meals may be eaten.
13-57 13 15 15				Food Court	A common area for dining, containing or surrounded by contiguous counters of multiple food vendors.
13-57 13 15 17				Snack Bar	A small restaurant serving light meals or a counter in some other establishment having the same function.
13-57 13 15 19				Salad Bar	A buffet space for self-serving salad and cold food.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-57 13 15 21				Liquor Bar	The serving counter space of a business licensed to sell intoxicating beverages for consumption on the premises or a similar device or area containing alcoholic beverages in a private house or a hotel room.
13-57 13 15 23				Beverage Station	A space, often self-serve, for preparing consumable liquids, including tea, coffee, liquor, beer, milk, or soft drinks.
13-57 13 15 25				Table Bussing Station	A space in restaurant or dining area for collecting dirty dishes, and storing silverware and supplies for cleaning and refreshing tables.
13-57 13 15 27				Serving Station	A space for the final preparation or assembling of meals before serving.
13-57 13 15 29				Vending Perishable Product Space	A space for housing coin-operated, automatic machines that dispenses foodstuffs.
13-57 13 15 31				Cafeteria Vending Space	Space in a cafeteria or dining hall in which customers select their food at a counter.
13-57 13 15 33				Tray Return Space	A space in a Dining Hall or Cafeteria where serving trays are returned by customers and stacked before washing.
13-57 13 15 35				Food Discard Station	Space set up to receive soiled service ware (dishes, cutlery etc)
13-57 13 17			Coffee stations		Room or area used by employees during break times. This may include a service unit and can BREAK also contain miscellaneous storage, localized mail stop facilities, and other miscellaneous office amenities.
13-57 15 00		Child Care Spaces			Spaces designed for the care of a young child or children
13-57 15 11			Daycare sickroom		A room in a day care facility to be used by a child who is ill.
13-57 15 13			Child Day Care Space		A space for the daytime supervision of children.
13-57 15 15			Play Room		A room, allocated as a children's play area, in which noisy or boisterous activities are tolerated. (NEW TITLE: Playroom?)
13-57 15 17			OLD-Child Care		Space specifically built for child care use with features such as above-standard flooring, indoor play area, and laundry facilities.
13-57 17 00		Resting Spaces			A space where one can rest.
13-57 17 11			Rest Area		A place on the interstate where one can stop to use the restroom, rest or do other things.
13-57 17 13			Break Room		A room at a business which is set aside for coffee breaks, snacks, lunches, etc. Synonym: Lunchroom
13-57 21 00		Laundry/Dry Cleaning Space			Space that provides large-scale laundry and/or dry cleaning operations, or personal coin operated laundry equipment.
13-57 23 00		Smoking Space			Space that is designed specifically for smoking.
13-59 00 00		Production, Fabrication, and Maintenance Spaces			Spaces where manufactured items are created or maintained.
13-59 11 00		Material Handling Area			Space for the movement, storage, control and protection of materials, goods and products throughout the process of manufacturing, distribution, consumption and disposal
13-59 13 00		Batching Space			Space for the preparation of mixtures in manufacturing and process plants
13-59 15 00		Production Process			Space where items are fabricated and/or assembled using a materials process.
13-59 15 11			Workbench	Workbench	Space accommodating a component supporting production, fabrication, testing or maintenance functions
13-59 15 13			Mock-up Space	Mock-up Space	Space accommodating a function supporting production
13-59 17 00		Printing and Reproduction Spaces			Space for the reproduction and distribution of documents.
13-59 19 00		Quality Control and Test Spaces			Space where items are tested and inspected.
13-59 19 11			Product Inspection Space		Space for the direct evaluation of a product in production
13-59 19 13			Production Observation Space		Space for the observation of the operation of a product in production
13-59 21 00		Production Service and Repair Spaces			Space where items are corrected for defects.
13-59 23 00		Production and In-Process Storage Spaces			Space for raw material or work in process within the production process.
13-59 25 00		Production Support Spaces			Space to support the functioning of other production space.
13-59 29 00		Greenhouse Spaces			A space used for growing in a facility with glass walls and roof in which temperature and humidity can be regulated for the growing and protection of plants.
13-59 29 11			Greenhouse Support Space		Space housing equipment supporting a greenhouse

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-61 00 00	Protective Spaces				Spaces to provide shelter or keep someone safe from harm or discomfort.
13-61 11 00		Animal Securing Spaces			A space that directly serves an animal quarters facility as an extension of the activities in that facility.
13-61 11 11			Cage		A typically small, freestanding, wire enclosed space for detaining an animal or bird
13-61 11 13			Animal Stall		An enclosed floor space, typically open to the structure ceiling for detaining an animal.
13-61 11 15			Kennel		An enclosed, typically permanent, floor space generally used to detain a dog or cat
13-61 11 17			Aquarium		An tank, containing or filled with water, generally used to detain a fish or marine animal.
13-61 13 00		Detention Spaces			Space associated with the holding of humans as prisons, criminals or people suspected of committing a crime.
13-61 13 11			Detention Cell		An enclosed floor space use to confine a convicted person(s) for an extended period of time in a particular place
13-61 13 13			Holding Cell		An enclosed floor space use to confine a person(s) of interest for a very short period of time in a particular place
13-61 13 15			Impound Lot		An area used to secure vehicles from general access of the public
13-61 13 17			Dayroom		A room associated with enforced confinement which is used for daytime recreation, esp. a communal room in an institution.
13-61 15 00		Spaces for Protection from the Elements			Spaces to provide shelter or keep someone safe from environmental harm or discomfort.
13-61 15 11			Park Shelter		A pavilion structure commonly found in parks, gardens, and spacious public areas. See also Gazebo.
13-61 15 13			Entry Porch		A covered entrance to a vestibule or doorway attached to a building.
13-61 15 15			Covered Walkway		A sidewalk or path with a cover to provide shelter from weather or sunlight.
13-61 15 17			Canopy		An overhead roof or structure that is able to provide shade or shelter.
13-61 15 19			Shielded Room		Space with protection from radiation or other harmful effect, often adjacent to a space in which radioactive or other harmful materials may be used.
13-61 15 21			Containment Room		Space with shielding for radiation or biological harms inside of which harmful materials can be used.
13-61 17 00		Spaces for Protection from Violence			Spaces to provide shelter or keep someone safe from violent or force-based harm or discomfort.
13-61 17 11			Safe Room		A fortified room installed in a private residence or business to provide a safe hiding place for the inhabitants in the event of a break-in, home invasion, or other threat.
13-61 17 13			Bunker		A hardened shelter, often buried partly or fully underground, designed to protect the inhabitants from falling bombs or other attacks.
13-61 17 15			Bomb Shelter		A space for the protection of the civil population as well as military personnel against bombing from the air.
13-63 00 00	Storage Spaces			Discuss alternate titles	
13-63 11 00		Warehouse Spaces			Space specifically designed for the storage of raw material, in process materials or finished goods.
13-63 11 11			High Bay Warehouse Space		Warehouse space with usable storage heights at 24' or higher.
13-63 11 13			General Warehouse Space		Warehouse space with usable storage heights of less than 24 feet.
13-63 11 15			Warehouse Support Space		Space that directly supports warehouse functions.
13-63 13 00		Non-Warehouse Storage Spaces			Spaces for the storage of goods and materials for long and short terms
13-63 13 11			Storage Room		A room that is used to store equipment or materials and that serves multiple room use categories, organizational units, or buildings.
13-63 13 11 11				GNS-General Storage	Space that is used for storage and has diminished use that prohibits the space from otherwise being used as general office space.
13-63 13 13			Closet		Small room used for containment of work-related items.
13-63 13 15			Coat Check		Space for the temporary storage of outerwear and other personal items during events or at entertainment facilities

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-63 13 17			Locker Room		Room containing lockers or small lockable cupboards or compartments in which people secure possessions.
13-63 13 19			Filing Space		Space for filing cabinets and storage of paper materials
13-63 13 21			Supply Room		Room for storage of regularly used supplies, such as in an educational or office facility
13-63 13 23			Unit Storage		A dedicated storage area or location at an educational facility under the direct control and management of a specific institutional division, department, office, business unit, or similar organizational unit
13-63 13 25			Consolidation/Containerization Point		Space for outloading, stuffing, and receiving containers
13-63 13 27			Self Storage Space		A space in a facility divided into storage spaces that are rented to tenants, usually on a monthly basis
13-63 13 29			Operational Storage (Misc)		A space used for bulk storage areas of major end items, and operational material to support multiple Departments/Divisions within a command.
13-63 13 31			Operational Hazardous/Flammable Storage		A space for the storage of materials used in daily operations (paint, acetone, oil, etc.) that are considered to be hazardous and/or flammable and require special environmental separation.
13-63 15 00		Moveable Storage Spaces			Spaces, which do not have a fixed location, used for the storage of goods and materials for long and short terms
13-63 15 11			Vehicle Storage Compartment		A storage space in a vehicle designed to move on land
13-63 15 13			Portable Bin		Movable storage container, used for relocation or temporary storage purposes
13-63 15 15			Vessel Hold		A storage space in a vehicle or craft designed to move across (or through) water
13-63 17 00		Environmentally Controlled Storage Spaces			A facility for cooling and storage of materials at the depot level.
13-63 17 11			Refrigeration Compartment		Space served by refrigeration equipment, used to lower the internal temperature, often for the purposes of storing perishables.
13-63 17 13			Freezing Compartment		Space served by equipment to lower the internal temperature below the freezing point of water, often for the purposes of storing perishables.
13-63 17 15			Humidity Controlled Storage Space		A space for storage of materials at a controlled humidity at the depot level.
13-63 17 17			Vacuum Sealed Storage Compartment		Space served by equipment to provide lowered air pressure, often for the purposes of storing perishables.
13-63 19 00		Specialty Storage Spaces			Spaces for the storage of goods and materials in specialized ways or of special quality or type for long and short terms
13-63 19 11			Sanitary Storage Room		Space for the storage of sterile or clean items, often in a healthcare setting
13-63 19 13			Soiled Storage Room Space		Space for the storage of used or dirty items prior to cleaning or discard, often in a healthcare setting
13-63 19 15			Sacristy		A room for keeping vestments (such as the alb and chasuble) and other church furnishings, sacred vessels, and parish records.
13-63 19 17			Vestry		A room within or attached to a church which is used to store vestments and other items used in worship. It is usually of sufficient size to allow those using vestments to change into them, and thus in England and elsewhere was often used for meetings dealing with the administration of the local parish.
13-63 19 19			Hazardous Material Storage Space		A facility for the storage of hazardous materials at the depot level.
13-63 19 21			Book Stacks		Space for the storage of printed material, with specialized shelving and environmental controls suitable to that task.
13-63 19 23			Baggage Claim		A space in an airport terminal or other transportation hub where one claims checked-in baggage after disembarking.
13-63 19 25			Evidence Room		A secure room where vital evidence is kept until it can be used in court or in the investigation and prosecution of a crime.
13-63 19 27			Vehicle Impound Lot		A space for the storage of abandoned, towed, or disabled vehicles, either for short term prior to claim by their owners, or for longer term prior to auction or disposal.
13-63 19 29			Operating Fuel Storage		Storage tanks that provide an operating and reserve supply of fuel. Cost factors are based on a 5000 GA tank.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-65 00 00	Private Residential Spaces				Space used to provide accommodation for people when not at work. The accommodation provides facilities for sleeping and relaxation and usually cooking, eating, cleaning.
13-65 11 00		On-call Room			Space where workers on standby are able to sleep, such as in hospitals.
13-65 13 00		Bathroom			Either a "full bathroom," containing a bathtub or shower, toilet, and sink or a "half (1/2) bath" (or "powder room") containing just a toilet and sink.
13-65 13 11			Shower Space		A space in which one bathes underneath a spray of water.
13-65 13 13			Toilet Space		A space containing a toilet or similar fixture that disposes of human waste by using water to flush it through a drainpipe to another location.
13-65 13 15			Ablution Room		Space for washing one's body or part of it.
13-65 13 17			Combination Toilet and Bathing Space		Space used for both toilet and bathing functions and related personal grooming.
13-65 15 00		Mud Room			An entryway or hall that is generally located at the front entrance of a house, designed to be an easy-to-clean transition space.
13-65 17 00		Laundry Room			A room where clothes are washed.
13-65 19 00		Bedroom			A private room where people sleep for the night.
13-65 19 11			Mental Health Resident Bedroom		Space used in non-acute healthcare settings to provide sleeping accommodations for a resident.
13-65 19 13			Mental Health Resident Bedroom, Bariatric		Space used for housing residents who are morbidly obese in a non-hospital, residential setting.
13-65 21 00		Nursery			A bedroom within a house or other dwelling set aside for an infant or toddler.
13-65 23 00		Kitchen			A room or part of a room used for cooking and food preparation.
13-67 00 00	Alternate Workplace				Space that is used to accommodate employees during the workday but which are not part of the institution's real estate portfolio.
13-67 11 00		Customer Site			Specific dedicated space at a customer's site which is used by employees.
13-67 13 00		Home Office			Space used as an office within the home of an employee.
13-67 15 00		Rent-An-Office			A short-term office rental which is typically by the room and may have office services provided.
13-67 17 00		No Fixed Location			The implied space to support personnel who have no designed work location.
13-67 19 00		Supplier Site			Specific dedicated space at a supplier site which is used by employees.
13-69 00 00	Building Associated Spaces				
13-69 11 00		Roof			A construct oriented more than 15° from vertical that Encloses the interior of a Building underneath from the exterior above, affording protection from the elements appropriate to the occupancy and the local climate.
13-69 13 00		Roof Terrace			An unenclosed horizontal Roof (other than a Plaza) with a Load Bearing surface intended for use along with other appropriate and required features such as railings.
13-69 15 00		Penthouse			Fully enclosed Floor area located on the Roof level of a Building that occupies less than all of the Roof.
13-69 17 00		Antenna Farm			Space designed to support communications antenna.
13-69 19 00		Heliport			Space designed to support the arrival and departure of helicopters.
13-69 21 00		Balcony			A horizontal extension of an adjacent floor outside the exterior enclosure of a building that is not a roof.
13-69 23 00		Deck			An unenclosed surface contiguous with a Building that is suitable for use by an occupant and supported by structure above the ground.
13-69 25 00		Pedestrian Travel Spaces			Spaces for travel by people on foot.
13-69 25 11			Sidewalk		A pathway constructed to support pedestrian traffic. Construction is of concrete, asphalt, paving blocks, gravel, or the like.
13-69 25 13			Pedestrian Way		A decorative path for travel by people on foot.
13-69 25 15			Pedestrian Bridge		Bridges that support walkway crossing of a river, underpass, or similar gap.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Definition
13-69 25 17			Footpath		Trail, which runs through a park or rural area, or which is a path of travel for recreation and/or transportation within a park, natural environment, or designated corridor that is not classified as a highway, road, or street.
13-69 25 19			Trail		A simple thoroughfare used for travel on foot or possibly by horse, bicycle or other simple device that is not a highway or associated with a highway
13-69 25 21			Gangway		An aisle or walkway between apartment buildings or houses, or any raised walkway or platform



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2 REFERENCE STANDARD

Chapter 2.5 OmniClass™ Table 21 – Elements – February 2011

Introduction

OmniClass™ Table 21 – Elements is an existing industry standard developed, managed, published and copyrighted by the Construction Specifications Institute, approved through the NBIMS-US V2 consensus process. *OmniClass™ Table 21 – Elements* is incorporated in NBIMS-US V2 by reference so that it can be easily referenced in BIM Information Exchanges. Document follows.



A Strategy for Classifying the Built Environment

Table 21 - Elements

Table 21 - Elements

Definitions

An *Element* is a major component, assembly, or “*construction entity part which, in itself or in combination with other parts, fulfills a predominating function of the construction entity*” (ISO 12006-2). Predominating functions include, but are not limited to, supporting, enclosing, servicing, and equipping a facility. Functional descriptions can also include a process or an activity.

A *Designed Element* is an “*Element for which the work result(s) have been defined.*” (ISO 12006-2).

Discussion

An *Element* fulfills a characteristic predominant function, either by itself, or in combination with other elements; Table 21 is organized by elements’ implied functions. Major elements may be composed of several sub-elements. For example, a shell enclosure might be composed of superstructure, exterior closure, and roofing. Currently, elements are most often used during early project phases for identifying a project’s physical, operational, or aesthetic characteristics. Elements are considered without regard to a material or technical solution of the function. For each element, there may be several technical solutions capable of accomplishing the elemental function, and more than one may be selected for a project. These solutions are the designed elements.

The content of the OmniClass *Elements* Table extends well beyond the content of the 1998 version of the CSC/CSI *UniFormat*[™] document. *UniFormat* is currently undergoing revision by CSI and CSC. When the new version becomes available, the OCCS Development Committee intends to use its applicable contents as the source for Table 21, similar to the current relationship between Table 22 and *MasterFormat*.

Many applications exist for elemental classification. OmniClass Table 21 – Elements can provide a useful way to organize and classify elements at the early stages of a project, before particular or specific materials and methods (designed elements) have been determined, and help to conceptualize the project without restrictions imposed by any particular design solution. The Elements table can be used to organize information so that it can help stimulate project decisions, record those decisions (and subsequent changes), and used as a basis for organizing documents to form a contractual commitment between two or more parties on a project. These usually occur at an early design development stage, but may occur at any project stage or phase.

Examples

Structural Floors, Exterior Walls, Storm Sewer Utility, Stairs, Roof Framing, Furniture and Fittings, HVAC Distribution

Table Uses

Identifying owner criteria for project, designer aesthetic and functional criteria, and applicable code and regulatory requirements, classifying facility design data, organizing pre-design and early design descriptions, design/build proposals, preliminary project reports, preliminary specifications of facility functions, cost analysis reports, scheduling intentions, performance requirements or criteria, and preliminary drawings, relating drawings and preliminary project descriptions, electronic filing of project documents and their schematic details, and coordinating all project information with facility management and maintenance information.

Table Users

Owners, designers, planners, project information programmers, specifiers, budget and cost estimators, schedulers, constructors, construction managers, design-builders, facility owners, facility managers, and draftspersons.

Table Relationships

Table 22 - Work Results

Table 22 organizes “work results” most commonly used in outline, short form, or full-form specifications and related documents, usually produced after subjects are briefly defined and addressed in documents organized according to Table 21 - Elements. These more complete specification work result sections may individually include a variety of products or materials (classified in Table 23 - Products) used to achieve a specific work result. Work result specifications, in conjunction with working drawings and other associated documents, are usually used for bidding and contracting the complete project. Table 22 is based in part on CSC/CSI MasterFormat™, 2004 edition.

Table 23 – Products

Table 23 classifies products intended for potential or actual use in any construction project. This table provides a location for materials, assemblies, and systems, as products without regard for their application, which is addressed in Tables 21 and 22. A single product will have a single location in this Table, whereas Table 22 - Work Results may have numerous headings that reference the same product in a number of locations, depending on its use within the facility.

Legacy Sources

- ASTM: A variety of ASTM “format” documents addressing specific classification of subjects associated with these element tables are included.
- ISO 12006-2 – Table 4.7 Elements (by characteristic predominating function of the construction entity)
- ISO 12006-2 – Table 4.8 Designed Elements (element by type of work)
- Uniclass Table G - Elements for Buildings.
- Uniclass Table H - Elements for Civil Engineering Works.
- UniFormat™ (CSC/CSI publication 1992, 1998)
- UNIFORMAT II (ASTM E1557)

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Table 22 Reference
21-01 00 00	Substructure				
21-01 10		Foundations			
21-01 10 10			Standard Foundations		
21-01 10 10 10				Wall Foundations	
21-01 10 10 30				Column Foundations	
21-01 10 10 90				Standard Foundation Supplementary Components	
21-01 10 20			Special Foundations		22-31 60 00
21-01 10 20 10				Driven Piles	22-31 62 00
21-01 10 20 15				Bored Piles	22-31 63 00
21-01 10 20 20				Caissons	22-31 64 00
21-01 10 20 30				Special Foundation Walls	22-31 66 16
21-01 10 20 40				Foundation Anchors	22-31 68 00
21-01 10 20 50				Underpinning	22-31 48 00
21-01 10 20 60				Raft Foundations	22-03 71 00
21-01 10 20 70				Pile Caps	
21-01 10 20 80				Grade Beams	
21-01 20		Subgrade Enclosures			
21-01 20 10			Walls for Subgrade Enclosures		
21-01 20 10 10				Subgrade Enclosure Wall Construction	
21-01 20 10 20				Subgrade Enclosure Wall Interior Skin	
21-01 20 10 90				Subgrade Enclosure Wall Supplementary Components	
21-01 40		Slabs-On-Grade			
21-01 40 10			Standard Slabs-on-Grade		
21-01 40 20			Structural Slabs-on-Grade		
21-01 40 30			Slab Trenches		
21-01 40 40			Pits and Bases		
21-01 40 90			Slab-On-Grade Supplementary Components		
21-01 40 90 10				Perimeter Insulation	22-07 21 00
21-01 40 90 20				Vapor Retarder	22-07 26 00
21-01 40 90 30				Waterproofing	22-07 10 00
21-01 40 90 50				Mud Slab	22-03 30 00
21-01 40 90 60				Subbase Layer	22-31 23 23
21-01 60		Water and Gas Mitigation			
21-01 60 10			Building Subdrainage		22-33 46 00
21-01 60 10 10				Foundation Drainage	22-33 46 13
21-01 60 10 20				Underslab Drainage	22-33 46 19
21-01 60 20			Off-Gassing Mitigation		22-31 21 00
21-01 60 20 10				Radon Mitigation	22-31 21 13
21-01 60 20 50				Methane Mitigation	22-31 21 16
21-01 90		Substructure Related Activities			
21-01 90 10			Substructure Excavation		22-31 23 16
21-01 90 10 10				Backfill and Compaction	22-31 23 23
21-01 90 20			Construction Dewatering		22-31 23 19
21-01 90 30			Excavation Support		22-31 50 00
21-01 90 30 10				Anchor Tiebacks	22-31 51 00
21-01 90 30 20				Cofferdams	22-31 52 00
21-01 90 30 40				Cribbing and Walers	22-31 53 00
21-01 90 30 60				Ground Freezing	22-31 54 00
21-01 90 30 70				Slurry Walls	22-31 56 00
21-01 90 40			Soil Treatment		22-31 31 00
21-02 00 00	Shell				
21-02 10		Superstructure			
21-02 10 10			Floor Construction		
21-02 10 10 10				Floor Structural Frame	
21-02 10 10 20				Floor Decks, Slabs, and Toppings	
21-02 10 10 30				Balcony Floor Construction	
21-02 10 10 40				Mezzanine Floor Construction	
21-02 10 10 50				Ramps	

21-02 10 10 90		Floor Construction Supplementary Components	
21-02 10 20	Roof Construction		
21-02 10 20 10		Roof Structural Frame	
21-02 10 20 20		Roof Decks, Slabs, and Sheathing	
21-02 10 20 30		Canopy Construction	
21-02 10 20 90		Roof Construction Supplementary Components	
21-02 10 80	Stairs		
21-02 10 80 10		Stair Construction	
21-02 10 80 30		Stair Soffits	
21-02 10 80 50		Stair Railings	
21-02 10 80 60		Fire Escapes	22-05 51 23
21-02 10 80 70		Metal Walkways	22-05 51 36
21-02 10 80 80		Ladders	22-05 51 23
21-02 20	Exterior Vertical Enclosures		
21-02 20 10	Exterior Walls		
21-02 20 10 10		Exterior Wall Veneer	
21-02 20 10 20		Exterior Wall Construction	
21-02 20 10 30		Exterior Wall Interior Skin	
21-02 20 10 40		Fabricated Exterior Wall Assemblies	
21-02 20 10 50		Parapets	
21-02 20 10 60		Equipment Screens	
21-02 20 10 80		Exterior Wall Supplementary Components	
21-02 20 10 90		Exterior Wall Opening Supplementary Components	
21-02 20 20	Exterior Windows		22-08 50 00
21-02 20 20 10		Exterior Operating Windows	22-08 50 00
21-02 20 20 20		Exterior Fixed Windows	22-08 50 00
21-02 20 20 30		Exterior Window Wall	
21-02 20 20 50		Exterior Special Function Windows	22-08 56 00
21-02 20 50	Exterior Doors and Grilles		
21-02 20 50 10		Exterior Entrance Doors	22-08 42 00
21-02 20 50 20		Exterior Utility Doors	22-08 10 00
21-02 20 50 30		Exterior Oversize Doors	
21-02 20 50 40		Exterior Special Function Doors	22-08 30 00
21-02 20 50 60		Exterior Grilles	
21-02 20 50 70		Exterior Gates	
21-02 20 50 90		Exterior Door Supplementary Components	
21-02 20 70	Exterior Louvers and Vents		22-08 90 00
21-02 20 70 10		Exterior Louvers	22-08 91 00
21-02 20 70 50		Exterior Vents	22-08 95 00
21-02 20 80	Exterior Wall Appurtenances		
21-02 20 80 10		Exterior Fixed Grilles and Screens	22-10 82 13
21-02 20 80 30		Exterior Opening Protection Devices	
21-02 20 80 50		Exterior Balcony Walls and Railings	22-05 52 00
21-02 20 80 70		Exterior Fabrications	
21-02 20 80 80		Bird Control Devices	22-10 81 13
21-02 20 90	Exterior Wall Specialties		22-10 74 00
21-02 30	Exterior Horizontal Enclosures		
21-02 30 10	Roofing		
21-02 30 10 10		Steep Slope Roofing	22-07 30 00
21-02 30 10 50		Low-Slope Roofing	
21-02 30 10 70		Canopy Roofing	
21-02 30 10 90		Roofing Supplementary Components	
21-02 30 20	Roof Appurtenances		

21-02 30 20 10		Roof Accessories	22-07 72 00
21-02 30 20 30		Roof Specialties	22-10 74 00
21-02 30 20 70		Rainwater Management	
21-02 30 40		Traffic Bearing Horizontal Enclosures	
21-02 30 40 10		Traffic Bearing Coatings	22-07 18 00
21-02 30 40 30		Horizontal Waterproofing Membrane	22-07 10 00
21-02 30 40 50		Wear Surfaces	
21-02 30 40 90		Horizontal Enclosure Supplementary Components	
21-02 30 60		Horizontal Openings	
21-02 30 60 10		Roof Windows and Skylights	22-08 60 00
21-02 30 60 50		Vents and Hatches	
21-02 30 60 90		Horizontal Opening Supplementary Components	
21-02 30 80		Overhead Exterior Enclosures	
21-02 30 80 10		Exterior Ceilings	
21-02 30 80 20		Exterior Soffits	
21-02 30 80 30		Exterior Bulkheads	
21-03 00 00	Interiors		
21-03 10	Interior Construction		
21-03 10 10		Interior Partitions	22-10 22 00
21-03 10 10 10		Interior Fixed Partitions	
21-03 10 10 20		Interior Glazed Partitions	
21-03 10 10 40		Interior Demountable Partitions	22-10 22 19
21-03 10 10 50		Interior Operable Partitions	
21-03 10 10 70		Interior Screens	
21-03 10 10 90		Interior Partition Supplementary Components	
21-03 10 20		Interior Windows	22-08 50 00
21-03 10 20 10		Interior Operating Windows	22-08 50 00
21-03 10 20 20		Interior Fixed Windows	22-08 50 00
21-03 10 20 50		Interior Special Function Windows	22-08 56 00
21-03 10 20 90		Interior Window Supplementary Components	
21-03 10 30		Interior Doors	22-08 10 00
21-03 10 30 10		Interior Swinging Doors	22-08 10 00
21-03 10 30 20		Interior Entrance Doors	22-08 42 00
21-03 10 30 25		Interior Sliding Doors	22-08 11 73
21-03 10 30 30		Interior Folding Doors	22-08 35 13
21-03 10 30 40		Interior Coiling Doors	22-08 33 00
21-03 10 30 50		Interior Panel Doors	22-08 36 00
21-03 10 30 70		Interior Special Function Doors	22-08 30 00
21-03 10 30 80		Interior Access Doors and Panels	22-08 31 00
21-03 10 30 90		Interior Door Supplementary Components	
21-03 10 40		Interior Grilles and Gates	
21-03 10 40 10		Interior Grilles	
21-03 10 40 50		Interior Gates	
21-03 10 60		Raised Floor Construction	
21-03 10 60 10		Access Flooring	22-09 69 00
21-03 10 60 30		Platform/Stage Floors	
21-03 10 70		Suspended Ceiling Construction	
21-03 10 70 10		Acoustical Suspended Ceilings	22-09 51 00
21-03 10 70 20		Suspended Plaster and Gypsum Board Ceilings	
21-03 10 70 50		Specialty Suspended Ceilings	22-09 54 00

21-03 10 70 70		Special Function Suspended Ceilings	22-09 57 00
21-03 10 70 90		Ceiling Suspension Components	
21-03 10 90	Interior Specialties		
21-03 10 90 10		Interior Railings and Handrails	
21-03 10 90 15		Interior Louvers	22-08 91 00
21-03 10 90 20		Information Specialties	22-10 10 00
21-03 10 90 25		Compartments and Cubicles	22-10 21 00
21-03 10 90 30		Service Walls	22-10 25 00
21-03 10 90 35		Wall and Door Protection	22-10 26 00
21-03 10 90 40		Toilet, Bath, and Laundry Accessories	22-10 28 00
21-03 10 90 45		Interior Gas Lighting	22-10 84 16
21-03 10 90 50		Fireplaces and Stoves	22-10 30 00
21-03 10 90 60		Safety Specialties	22-10 40 00
21-03 10 90 70		Storage Specialties	22-10 50 00
21-03 10 90 90		Other Interior Specialties	22-10 80 00
21-03 20	Interior Finishes		
21-03 20 10	Wall Finishes		22-09 70 00
21-03 20 10 10		Tile Wall Finish	22-09 30 00
21-03 20 10 20		Wall Paneling	
21-03 20 10 30		Wall Coverings	22-09 72 00
21-03 20 10 35		Wall Carpeting	22-09 73 00
21-03 20 10 50		Stone Facing	22-09 75 00
21-03 20 10 60		Special Wall Surfacing	22-09 77 00
21-03 20 10 70		Wall Painting and Coating	22-09 90 00
21-03 20 10 80		Acoustical Wall Treatment	
21-03 20 10 90		Wall Finish Supplementary Components	
21-03 20 20	Interior Fabrications		
21-03 20 30	Flooring		22-09 60 00
21-03 20 30 10		Flooring Treatment	22-09 61 00
21-03 20 30 20		Tile Flooring	22-09 30 00
21-03 20 30 30		Specialty Flooring	22-09 62 00
21-03 20 30 40		Masonry Flooring	22-09 63 00
21-03 20 30 45		Wood Flooring	22-09 64 00
21-03 20 30 50		Resilient Flooring	22-09 65 00
21-03 20 30 60		Terrazzo Flooring	22-09 66 00
21-03 20 30 70		Fluid-Applied Flooring	22-09 67 00
21-03 20 30 75		Carpeting	22-09 68 00
21-03 20 30 80		Athletic Flooring	
21-03 20 30 85		Entrance Flooring	
21-03 20 30 90		Flooring Supplementary Components	
21-03 20 40	Stair Finishes		
21-03 20 40 20		Tile Stair Finish	22-09 30 00
21-03 20 40 40		Masonry Stair Finish	22-09 63 00
21-03 20 40 45		Wood Stair Finish	22-09 64 00
21-03 20 40 50		Resilient Stair Finish	22-09 65 00
21-03 20 40 60		Terrazzo Stair Finish	22-09 66 00
21-03 20 40 75		Carpeted Stair Finish	22-09 68 00
21-03 20 50	Ceiling Finishes		22-09 50 00
21-03 20 50 10		Plaster and Gypsum Board Finish	22-09 20 00
21-03 20 50 20		Ceiling Paneling	
21-03 20 50 70		Ceiling Painting and Coating	22-09 90 00
21-03 20 50 80		Acoustical Ceiling Treatment	
21-03 20 50 90		Ceiling Finish Supplementary Components	
21-04 00 00	Services		
21-04 10	Conveying		22-14 00 00
21-04 10 10	Vertical Conveying Systems		

21-04 10 10 10	Elevators	22-14 20 00
21-04 10 10 20	Lifts	22-14 40 00
21-04 10 10 30	Escalators	22-14 31 00
21-04 10 10 50	Dumbwaiters	22-14 10 00
21-04 10 10 60	Moving Ramps	22-14 33 00
21-04 10 30	Horizontal Conveying	
21-04 10 30 10	Moving Walks	22-14 32 00
21-04 10 30 30	Turntables	22-14 70 00
21-04 10 30 50	Passenger Loading Bridges	22-34 77 13
21-04 10 30 70	People Movers	
21-04 10 50	Material Handling	
21-04 10 50 10	Cranes	22-41 22 13
21-04 10 50 20	Hoists	22-41 22 23
21-04 10 50 30	Derricks	22-41 22 33
21-04 10 50 40	Conveyors	22-41 21 00
21-04 10 50 50	Baggage Handling Equipment	22-34 77 16
21-04 10 50 60	Chutes	22-14 91 00
21-04 10 50 70	Pneumatic Tube Systems	22-14 92 00
21-04 10 80	Operable Access Systems	
21-04 10 80 10	Suspended Scaffolding	22-14 81 00
21-04 10 80 20	Rope Climbers	22-14 82 00
21-04 10 80 30	Elevating Platforms	22-14 83 00
21-04 10 80 40	Powered Scaffolding	22-14 84 00
21-04 10 80 50	Building Envelope Access	
21-04 20	Plumbing	22-22 00 00
21-04 20 10	Domestic Water Distribution	22-22 11 00
21-04 20 10 10	Facility Potable-Water Storage Tanks	22-22 12 00
21-04 20 10 20	Domestic Water Equipment	
21-04 20 10 40	Domestic Water Piping	22-22 11 16
21-04 20 10 60	Plumbing Fixtures	22-22 40 00
21-04 20 10 90	Domestic Water Distribution Supplementary Components	
21-04 20 20	Sanitary Drainage	22-22 13 00
21-04 20 20 10	Sanitary Sewerage Equipment	
21-04 20 20 30	Sanitary Sewerage Piping	
21-04 20 20 90	Sanitary Drainage Supplementary Components	
21-04 20 30	Building Support Plumbing Systems	22-22 14 00
21-04 20 30 10	Stormwater Drainage Equipment	
21-04 20 30 20	Stormwater Drainage Piping	22-22 14 13
21-04 20 30 30	Facility Stormwater Drains	22-22 14 26
21-04 20 30 60	Gray Water Systems	
21-04 20 30 90	Building Support Plumbing System Supplementary Components	
21-04 20 50	General Service Compressed-Air	22-22 15 00
21-04 20 60	Process Support Plumbing Systems	
21-04 20 60 10	Compressed-Air Systems	22-22 61 00
21-04 20 60 20	Vacuum Systems	22-22 62 00
21-04 20 60 30	Gas Systems	22-22 63 00
21-04 20 60 40	Chemical-Waste Systems	22-22 66 00
21-04 20 60 50	Processed Water Systems	22-22 67 00
21-04 20 60 90	Process Support Plumbing System Supplementary Components	

21-04 30	Heating, Ventilation, and Air Conditioning (HVAC)		22-23 00 00
21-04 30 10	Facility Fuel Systems		22-23 10 00
21-04 30 10 10		Fuel Piping	22-23 11 00
21-04 30 10 30		Fuel Pumps	22-23 12 00
21-04 30 10 50		Fuel Storage Tanks	22-23 13 00
21-04 30 20	Heating Systems		
21-04 30 20 10		Heat Generation	
21-04 30 20 30		Thermal Heat Storage	22-23 71 13
21-04 30 20 70		Decentralized Heating Equipment	22-23 80 00
21-04 30 20 90		Heating System Supplementary Components	
21-04 30 30	Cooling Systems		
21-04 30 30 10		Central Cooling	22-23 60 00
21-04 30 30 30		Evaporative Air-Cooling	22-23 76 00
21-04 30 30 50		Thermal Cooling Storage	22-23 71 00
21-04 30 30 70		Decentralized Cooling	22-23 80 00
21-04 30 30 90		Cooling System Supplementary Components	
21-04 30 50	Facility HVAC Distribution Systems		
21-04 30 50 10		Facility Hydronic Distribution	
21-04 30 50 30		Facility Steam Distribution	
21-04 30 50 50		HVAC Air Distribution	
21-04 30 50 90		Facility Distribution Systems Supplementary Components	
21-04 30 60	Ventilation		
21-04 30 60 10		Supply Air	
21-04 30 60 20		Return Air	
21-04 30 60 30		Exhaust Air	
21-04 30 60 40		Outside Air	
21-04 30 60 60		Air-to-Air Energy Recovery	22-23 72 00
21-04 30 60 70		HVAC Air Cleaning	22-23 40 00
21-04 30 60 90		Ventilation Supplementary Components	
21-04 30 70	Special Purpose HVAC Systems		
21-04 30 70 10		Snow Melting	22-23 83 00
21-04 40	Fire Protection		
21-04 40 10	Fire Suppression		22-21 00 00
21-04 40 10 10		Water-Based Fire-Suppression	22-21 10 00
21-04 40 10 50		Fire-Extinguishing	22-21 20 00
21-04 40 10 90		Fire Suppression Supplementary Components	
21-04 40 30	Fire Protection Specialties		22-10 44 00
21-04 40 30 10		Fire Protection Cabinets	22-10 44 13
21-04 40 30 30		Fire Extinguishers	22-10 44 16
21-04 40 30 50		Breathing Air Replenishment Systems	22-10 44 33
21-04 40 30 70		Fire Extinguisher Accessories	22-10 44 43
21-04 50	Electrical		22-26 00 00
21-04 50 10	Facility Power Generation		
21-04 50 10 10		Packaged Generator Assemblies	22-26 32 00
21-04 50 10 20		Battery Equipment	22-26 33 00
21-04 50 10 30		Photovoltaic Collectors	22-26 31 00
21-04 50 10 40		Fuel Cells	22-48 18 00
21-04 50 10 60		Power Filtering and Conditioning	22-26 35 00
21-04 50 10 70		Transfer Switches	22-26 36 00

21-04 50 10 90		Facility Power Generation Supplementary Components	
21-04 50 20	Electrical Service and Distribution		
21-04 50 20 10		Electrical Service	22-26 21 00
21-04 50 20 30		Power Distribution	22-26 20 00
21-04 50 20 70		Facility Grounding	22-26 05 26
21-04 50 20 90		Electrical Service and Distribution Supplementary Components	
21-04 50 30	General Purpose Electrical Power		
21-04 50 30 10		Branch Wiring System	
21-04 50 30 50		Wiring Devices	22-26 27 26
21-04 50 30 90		General Purpose Electrical Power Supplementary Components	
21-04 50 40	Lighting		
21-04 50 40 10		Lighting Control	22-26 09 23
21-04 50 40 20		Branch Wiring for Lighting	
21-04 50 40 50		Lighting Fixtures	22-26 50 00
21-04 50 40 90		Lighting Supplementary Components	
21-04 50 80	Miscellaneous Electrical Systems		
21-04 50 80 10		Lightning Protection	22-26 41 00
21-04 50 80 40		Cathodic Protection	22-26 42 00
21-04 50 80 70		Transient Voltage Suppression	22-26 43 00
21-04 50 80 90		Miscellaneous Electrical Systems Supplementary Components	
21-04 60	Communications		
21-04 60 10	Data Communications		
21-04 60 10 10		Data Communications Network Equipment	
21-04 60 10 20		Data Communications Hardware	22-27 22 00
21-04 60 10 30		Data Communications Peripheral Data Equipment	
21-04 60 10 50		Data Communications Software	22-27 25 00
21-04 60 10 60		Data Communication Program and Integration Services	22-27 26 00
21-04 60 20	Voice Communications		
21-04 60 20 10		Voice Communications Switching and Routing Equipment	22-27 31 00
21-04 60 20 20		Voice Communications Terminal Equipment	
21-04 60 20 30		Voice Communications Messaging	22-27 33 00
21-04 60 20 40		Call Accounting	22-27 34 00
21-04 60 20 50		Call Management	22-27 35 00
21-04 60 30	Audio-Video Communication		
21-04 60 30 10		Audio-Video Systems	22-27 41 00
21-04 60 30 50		Electronic Digital Systems	22-27 42 00
21-04 60 60	Distributed Communications and Monitoring		
21-04 60 60 10		Distributed Audio-Video Communications Systems	22-27 51 00
21-04 60 60 30		Healthcare Communications and Monitoring	22-27 52 00
21-04 60 60 50		Distributed Systems	22-27 53 00
21-04 60 90	Communications Supplementary Components		
21-04 60 90 10		Supplementary Components	
21-04 70	Electronic Safety and Security		
21-04 70 10	Access Control and Intrusion Detection		
			22-28 10 00

21-04 70 10 10		Access Control	22-28 13 00
21-04 70 10 50		Intrusion Detection	22-28 16 00
21-04 70 30	Electronic Surveillance		22-28 20 00
21-04 70 30 10		Video Surveillance	22-28 23 00
21-04 70 30 50		Electronic Personal Protection	22-28 26 00
21-04 70 50	Detection and Alarm		22-28 30 00
21-04 70 50 10		Fire Detection and Alarm	22-28 31 00
21-04 70 50 20		Radiation Detection and Alarm	22-28 32 00
21-04 70 50 30		Fuel-Gas Detection and Alarm	22-28 33 00
21-04 70 50 40		Fuel-Oil Detection and Alarm	22-28 34 00
21-04 70 50 50		Refrigeration Detection and Alarm	22-28 35 00
21-04 70 50 60		Water Intrusion Detection and Alarm	22-28 36 00
21-04 70 70	Electronic Monitoring and Control		22-28 46 00
21-04 70 70 10		Electronic Detention Monitoring and Control	22-23 46 00
21-04 70 90	Electronic Safety and Security Supplementary Components		
21-04 70 90 10		Supplementary Components	
21-04 80	Integrated Automation		22-25 00 00
21-04 80 10	Integrated Automation Facility Controls		22-25 50 00
21-04 80 10 10		Integrated Automation Control of Equipment	22-25 51 00
21-04 80 10 20		Integrated Automation Control of Conveying Equipment	22-25 52 00
21-04 80 10 30		Integrated Automation Control of Fire-Suppression Systems	22-25 53 00
21-04 80 10 40		Integrated Automation Control of Plumbing Systems	22-25 54 00
21-04 80 10 50		Integrated Automation Control of HVAC Systems	22-25 55 00
21-04 80 10 60		Integrated Automation Control of Electrical Systems	22-25 56 00
21-04 80 10 70		Integrated Automation Control of Communication Systems	22-25 57 00
21-04 80 10 80		Integrated Automation Control of Electronic Safety and Security Systems	22-25 58 00
21-04 80 10 90		Integrated Automation Supplementary Components	
21-05 00 00	Equipment and Furnishir		
21-05 10	Equipment		22-11 00 00
21-05 10 10	Vehicle and Pedestrian Equipment		22-11 10 00
21-05 10 10 10		Vehicle Servicing Equipment	22-11 11 00
21-05 10 10 30		Interior Parking Control Equipment	22-11 12 00
21-05 10 10 50		Loading Dock Equipment	22-11 13 00
21-05 10 10 70		Interior Pedestrian Control Equipment	22-11 14 00
21-05 10 30	Commercial Equipment		22-11 20 00
21-05 10 30 10		Mercantile and Service Equipment	22-11 21 00
21-05 10 30 20		Vault Equipment	22-11 16 00
21-05 10 30 25		Teller and Service Equipment	22-11 17 00
21-05 10 30 30		Refrigerated Display Equipment	22-11 22 00
21-05 10 30 35		Commercial Laundry and Dry Cleaning Equipment	

21-05 10 30 40		Maintenance Equipment	22-11 24 00
21-05 10 30 50		Hospitality Equipment	22-11 25 00
21-05 10 30 55		Unit Kitchens	22-11 26 00
21-05 10 30 60		Photographic Processing Equipment	22-11 27 00
21-05 10 30 70		Postal, Packaging, and Shipping Equipment	22-11 29 00
21-05 10 30 75		Office Equipment	22-11 28 00
21-05 10 30 80		Foodservice Equipment	22-11 40 00
21-05 10 40	Institutional Equipment		22-11 50 00
21-05 10 40 10		Educational and Scientific Equipment	22-11 50 00
21-05 10 40 20		Healthcare Equipment	22-11 70 00
21-05 10 40 40		Religious Equipment	22-11 91 00
21-05 10 40 60		Security Equipment	22-11 18 00
21-05 10 40 70		Detention Equipment	22-11 19 00
21-05 10 60	Residential Equipment		22-11 30 00
21-05 10 60 10		Residential Appliances	22-11 31 00
21-05 10 60 50		Retractable Stairs	22-11 33 00
21-05 10 60 70		Residential Ceiling Fans	22-11 34 00
21-05 10 70	Entertainment and Recreational Equipment		
21-05 10 70 10		Theater and Stage Equipment	22-11 61 00
21-05 10 70 20		Musical Equipment	22-11 62 00
21-05 10 70 50		Athletic Equipment	22-11 66 00
21-05 10 70 60		Recreational Equipment	22-11 67 00
21-05 10 90	Other Equipment		22-11 90 00
21-05 10 90 10		Solid Waste Handling Equipment	22-11 82 00
21-05 10 90 30		Agricultural Equipment	22-11 92 00
21-05 10 90 40		Horticultural Equipment	22-11 93 00
21-05 10 90 60		Decontamination Equipment	
21-05 20	Furnishings		22-12 00 00
21-05 20 10	Fixed Furnishings		
21-05 20 10 10		Fixed Art	22-12 10 00
21-05 20 10 20		Window Treatments	22-12 20 00
21-05 20 10 30		Casework	22-12 30 00
21-05 20 10 70		Fixed Multiple Seating	22-12 60 00
21-05 20 10 90		Other Fixed Furnishings	22-12 90 00
21-05 20 50	Movable Furnishings		
21-05 20 50 10		Movable Art	22-12 10 00
21-05 20 50 30		Furniture	22-12 50 00
21-05 20 50 40		Accessories	22-12 40 00
21-05 20 50 60		Movable Multiple Seating	22-12 60 00
21-05 20 50 90		Other Movable Furnishings	22-12 90 00
21-06 00 00	Special Construction and Demolition		
21-06 10	Special Construction		
21-06 10 10	Integrated Construction		
21-06 10 10 10		Building Modules	22-13 42 00
21-06 10 10 50		Manufactured/Fabricated Rooms	22-13 20 00
21-06 10 10 70		Modular Mezzanines	22-13 44 00
21-06 10 20	Special Structures		22-13 30 00
21-06 10 20 10		Fabric Structures	22-13 31 00
21-06 10 20 20		Space Frames	22-13 32 00
21-06 10 20 30		Geodesic Structures	22-13 33 00
21-06 10 20 40		Manufacturer-Engineered Structures	22-13 34 00
21-06 10 20 60		Manufactured Canopies	22-10 73 16
21-06 10 20 65		Rammed Earth Construction	22-13 35 00
21-06 10 20 70		Towers	22-13 36 00
21-06 10 30	Special Function Construction		
21-06 10 30 10		Sound and Vibration Control	22-13 48 00
21-06 10 30 30		Seismic Control	22-13 48 00
21-06 10 30 50		Radiation Protection	22-13 49 00
21-06 10 50	Special Facility Components		
21-06 10 50 10		Pools	

21-06 10 50 20		Interior Fountains	22-13 12 23
21-06 10 50 30		Interior Water Features	
21-06 10 50 40		Aquariums	22-13 13 00
21-06 10 50 50		Amusement Park Structures and Equipment	22-13 14 00
21-06 10 50 60		Ice Rinks	22-13 18 00
21-06 10 50 70		Animal Containment	22-13 19 00
21-06 10 60	Athletic and Recreational	Special Construction	22-13 28 00
21-06 10 60 10		Indoor Soccer Boards	22-13 28 13
21-06 10 60 20		Safety Netting	22-13 28 16
21-06 10 60 30		Arena Football Boards	22-13 28 19
21-06 10 60 40		Floor Sockets	22-13 28 26
21-06 10 60 50		Athletic and Recreational Court Walls	22-13 28 33
21-06 10 60 60		Demountable Athletic Surfaces	22-13 28 66
21-06 10 80	Special Instrumentation		22-13 50 00
21-06 10 80 10		Stress Instrumentation	22-13 51 00
21-06 10 80 20		Seismic Instrumentation	22-13 51 00
21-06 10 80 40		Meteorological Instrumentation	22-13 51 00
21-06 10 80 60		Earth Movement Monitoring	
21-06 20	Facility Remediation		
21-06 20 10	Hazardous Materials Remediation		22-02 80 00
21-06 20 10 10		Transportation and Disposal of Hazardous Materials	
21-06 20 10 20		Asbestos Remediation	22-02 82 00
21-06 20 10 30		Lead Remediation	22-02 83 00
21-06 20 10 40		Polychlorinate Biphenyl Remediation	22-02 84 00
21-06 20 10 50		Mold Remediation	22-02 85 00
21-06 30	Demolition		
21-06 30 10	Structure Demolition		22-02 41 16
21-06 30 10 10		Building Demolition	22-02 41 16.13
21-06 30 10 30		Tower Demolition	22-02 41 16.23
21-06 30 10 50		Bridge Demolition	22-02 41 16.33
21-06 30 10 70		Dam Demolition	22-02 41 16.43
21-06 30 30	Selective Demolition		22-02 41 19
21-06 30 30 10		Selective Building Demolition	22-02 41 19.13
21-06 30 30 30		Selective Interior Demolition	22-02 41 19.16
21-06 30 30 50		Selective Bridge Demolition	22-02 41 19.33
21-06 30 30 70		Selective Historic Demolition	22-02 41 91
21-06 30 50	Structure Moving		22-02 43 00
21-06 30 50 10		Structure Relocation	22-02 43 13
21-06 30 50 30		Structure Raising	22-02 43 16
21-07 00 00	Sitework		
21-07 10	Site Preparation		
21-07 10 10	Site Clearing		22-31 10 00
21-07 10 10 10		Clearing and Grubbing	22-31 11 00
21-07 10 10 30		Tree and Shrub Removal and Trimming	22-31 13 00
21-07 10 10 50		Earth Stripping and Stockpiling	22-31 14 00
21-07 10 20	Site Elements Demolition		
21-07 10 20 10		Utility Demolition	
21-07 10 20 30		Infrastructure Demolition	
21-07 10 20 50		Selective Site Demolition	22-02 41 13
21-07 10 30	Site Element Relocations		
21-07 10 30 10		Utility Relocation	
21-07 10 50	Site Remediation		22-02 50 00
21-07 10 50 10		Physical Decontamination	22-02 51 00
21-07 10 50 15		Chemical Decontamination	22-02 52 00

21-07 10 50 20		Thermal Decontamination	22-02 53 00
21-07 10 50 25		Biological Decontamination	22-02 54 00
21-07 10 50 30		Remediation Soil Stabilization	22-02 55 00
21-07 10 50 40		Site Containment	22-02 56 00
21-07 10 50 45		Sinkhole Remediation	22-02 57 00
21-07 10 50 50		Hazardous Waste Drum Handling	22-02 86 00
21-07 10 50 60		Contaminated Site Material Removal	22-02 60 00
21-07 10 50 80		Water Remediation	22-02 70 00
21-07 10 70	Site Earthwork		22-31 20 00
21-07 10 70 10		Grading	22-31 22 00
21-07 10 70 20		Excavation and Fill	22-31 23 00
21-07 10 70 30		Embankments	22-31 24 00
21-07 10 70 35		Erosion and Sedimentation Controls	22-31 25 00
21-07 10 70 40		Soil Stabilization	22-31 32 00
21-07 10 70 45		Rock Stabilization	22-31 33 00
21-07 10 70 50		Soil Reinforcement	22-31 34 00
21-07 10 70 55		Slope Protection	22-31 35 00
21-07 10 70 60		Gabions	22-31 36 00
21-07 10 70 65		Riprap	22-31 37 00
21-07 10 70 70		Wetlands	22-32 70 00
21-07 10 70 80		Earth Dams	22-35 73 13
21-07 10 70 90		Site Soil Treatment	22-31 31 00
21-07 20	Site Improvements		
21-07 20 10	Roadways		
21-07 20 10 10		Roadway Pavement	22-32 10 00
21-07 20 10 20		Roadway Curbs and Gutters	22-32 16 13
21-07 20 10 40		Roadway Appurtenances	22-32 17 00
21-07 20 10 70		Roadway Lighting	22-26 56 19
21-07 20 10 80		Vehicle Fare Collection	22-34 52 00
21-07 20 20	Parking Lots		
21-07 20 20 10		Parking Lot Pavement	22-32 10 00
21-07 20 20 20		Parking Lot Curbs and Gutters	22-32 16 13
21-07 20 20 40		Parking Lot Appurtenances	22-32 17 00
21-07 20 20 70		Parking Lot Lighting	22-26 56 16
21-07 20 20 80		Exterior Parking Control Equipment	22-11 12 00
21-07 20 30	Pedestrian Plazas and Walkways		
21-07 20 30 10		Pedestrian Pavement	22-32 10 00
21-07 20 30 20		Pedestrian Pavement Curbs and Gutters	22-32 16 13
21-07 20 30 30		Exterior Steps and Ramps	
21-07 20 30 40		Pedestrian Pavement Appurtenances	22-32 17 00
21-07 20 30 70		Plaza and Walkway Lighting	22-26 56 33
21-07 20 30 80		Exterior Pedestrian Control Equipment	22-11 14 00
21-07 20 40	Airfields		
21-07 20 40 10		Aviation Pavement	22-32 10 00
21-07 20 40 20		Aviation Pavement Curbs and Gutters	22-32 16 13
21-07 20 40 40		Aviation Pavement Appurtenances	22-32 17 00
21-07 20 40 70		Airfield Lighting	22-26 56 00
21-07 20 40 80		Airfield Signaling and Control Equipment	22-34 43 00
21-07 20 50	Athletic, Recreational, and Playfield Areas		
21-07 20 50 10		Athletic Areas	
21-07 20 50 30		Recreational Areas	
21-07 20 50 50		Playfield Areas	
21-07 20 60	Site Development		
21-07 20 60 10		Exterior Fountains	22-13 12 13
21-07 20 60 20		Fences and Gates	22-32 31 00

21-07 20 60 25		Site Furnishings	22-12 93 00
21-07 20 60 30		Exterior Signage	22-10 14 00
21-07 20 60 35		Flagpoles	22-10 75 00
21-07 20 60 40		Covers and Shelters	22-10 73 00
21-07 20 60 45		Exterior Gas Lighting	22-10 84 13
21-07 20 60 50		Site Equipment	
21-07 20 60 60		Retaining Walls	22-32 32 00
21-07 20 60 70		Site Bridges	22-32 34 00
21-07 20 60 80		Site Screening Devices	22-32 35 00
21-07 20 60 85		Site Specialties	22-32 39 00
21-07 20 80		Landscaping	
21-07 20 80 10		Planting Irrigation	22-32 84 00
21-07 20 80 20		Turf and Grasses	22-32 92 00
21-07 20 80 30		Plants	22-32 93 00
21-07 20 80 50		Planting Accessories	22-32 94 00
21-07 20 80 70		Landscape Lighting	22-26 56 26
21-07 20 80 80		Landscaping Activities	
21-07 30		Liquid and Gas Site Utilities	
21-07 30 10		Water Utilities	22-33 10 00
21-07 30 10 10		Site Domestic Water Distribution	
21-07 30 10 30		Site Fire Protection Water Distribution	
21-07 30 10 50		Site Irrigation Water Distribution	
21-07 30 20		Sanitary Sewerage Utilities	22-33 30 00
21-07 30 20 10		Sanitary Sewerage Utility Connection	
21-07 30 20 20		Sanitary Sewerage Piping	22-33 31 00
21-07 30 20 40		Utility Septic Tanks	22-33 36 00
21-07 30 20 50		Sanitary Sewerage Structures	22-33 39 00
21-07 30 20 60		Sanitary Sewerage Lagoons	22-33 47 23
21-07 30 30		Storm Drainage Utilities	22-33 40 00
21-07 30 30 10		Storm Drainage Utility Connection	
21-07 30 30 20		Storm Drainage Piping	22-33 41 00
21-07 30 30 30		Culverts	22-33 42 00
21-07 30 30 40		Site Storm Water Drains	22-33 44 00
21-07 30 30 50		Storm Drainage Pumps	22-33 45 00
21-07 30 30 60		Site Subdrainage	22-33 46 00
21-07 30 30 70		Storm Drainage Ponds and Reservoirs	22-33 47 26
21-07 30 50		Site Energy Distribution	
21-07 30 50 10		Site Hydronic Heating Distribution	22-33 61 00
21-07 30 50 20		Site Steam Energy Distribution	22-33 63 00
21-07 30 50 40		Site Hydronic Cooling Distribution	22-33 61 00
21-07 30 60		Site Fuel Distribution	
21-07 30 60 10		Site Gas Distribution	22-33 41 00
21-07 30 60 20		Site Fuel-Oil Distribution	22-33 52 13
21-07 30 60 30		Site Gasoline Distribution	22-33 52 16
21-07 30 60 40		Site Diesel Fuel Distribution	22-33 52 19
21-07 30 60 60		Site Aviation Fuel Distribution	22-33 52 43
21-07 30 90		Liquid and Gas Site Utilities Supplementary Components	
21-07 30 90 10		Supplementary Components	
21-07 40		Electrical Site Improvements	
21-07 40 10		Site Electric Distribution Systems	
21-07 40 10 10		Electrical Utility Services	22-33 71 73
21-07 40 10 20		Electric Transmission and Distribution	22-33 71 00
21-07 40 10 30		Electrical Substations	22-33 72 00
21-07 40 10 40		Electrical Transformers	22-33 73 00

21-07 40 10 50		Electrical Switchgear and Protection Devices	22-33 75 00
21-07 40 10 70		Site Grounding	22-33 79 00
21-07 40 10 90		Electrical Distribution System Instrumentation and Controls	22-33 09 70
21-07 40 50	Site Lighting		22-26 56 29
21-07 40 50 10		Area Lighting	22-26 56 23
21-07 40 50 20		Flood Lighting	22-26 56 36
21-07 40 50 50		Building Illumination	
21-07 40 50 90		Exterior Lighting Supplementary Components	
21-07 50	Site Communications		
21-07 50 10		Site Communications Systems	22-33 80 00
21-07 50 10 10		Site Communications Structures	22-33 81 00
21-07 50 10 30		Site Communications Distribution	22-33 82 00
21-07 50 10 50		Wireless Communications Distribution	22-33 83 00
21-07 90	Miscellaneous Site Construction		
21-07 90 10		Tunnels	22-31 70 00
21-07 90 10 10		Vehicular Tunnels	
21-07 90 10 20		Pedestrian Tunnels	
21-07 90 10 40		Service Tunnels	
21-07 90 10 90		Tunnel Construction Related Activities	



National BIM Standard - United States™ Version 2

2 REFERENCE STANDARD

Chapter 2.6 OmniClass™ Table 22 – Work Results – April 2011

Introduction

OmniClass™ Table 22 – Work Results is an existing industry standard developed, managed, published and copyrighted by the Construction Specifications Institute, approved through the NBIMS-US V2 consensus process. *OmniClass™ Table 22 – Work Results* is incorporated in NBIMS-US V2 by reference so that it can be easily referenced in BIM Information Exchanges. Document follows.



A Strategy for Classifying the Built Environment

Table 22 - Work Results

Table 22 - Work Results

Definition

Work Results are construction results achieved in the production stage or by subsequent alteration, maintenance, or demolition processes, and identified by one or more of the following:

- the particular skill or trade involved;
- the construction resources used;
- the part of the construction entity which results;
- the temporary work or other preparatory or completion work which results. (ISO 12006-2).

Discussion

A work result represents a completed entity that exists after all required raw materials, human or machine effort, and processes have been provided to achieve a completed condition. Since facility owners ultimately desire a completed entity, specifiers routinely specify contractual requirements by work result, and minimize the specifying of details about how to achieve that result to contractors.

Table 22 provides a classification arrangement that organizes information most appropriately from the viewpoint of identifying the “results of work” required to provide all or part of a facility. Table 22 - Work Results is based almost entirely on an existing Construction Specifications Institute/Construction Specifications Canada publication called MasterFormat, which has been a standard means of organizing construction information in North America since the 1960s. Since the 2004 edition, MasterFormat has been developed and updated with OmniClass in mind, to serve as the basis for this OmniClass table.

Please note that some content of MasterFormat 2011 Update is not included in OmniClass Table 22.

A work result may pertain to several manufactured products (an assembly) such as exterior insulation and finish system, or to a single product such as chalkboard. A work result could also involve only labor and equipment which are utilized to achieve the desired result, such as trenching.

Examples

Cast-in-Place Concrete, Structural Steel Framing, Finish Carpentry, Built-Up Bituminous Waterproofing, Glazed Aluminum Curtain Walls, Ceramic Tiling, Hydraulic Freight Elevators, Water-Tube Boilers, Interior Lighting, Railways

Table Uses

- Specifying contract project requirements
- Specifying technical project requirements
- Organizing project cost data

Table Users

Designers, specifiers, constructors, construction managers, design-builders, facility owners, facility managers, draftspersons

Table Relationships

Table 21 - Elements

Table 21 is used for organizing information that is typically generated or required early in the design stage of a project, when designers are thinking at a higher conceptual level about project requirements which future “work results” will eventually be identified to meet. While it is possible to specify project requirements at the elemental level, such a specification would consist of performance statements and not necessarily identify a means to achieve that performance. Thus, early design documents are often organized to Table 21 when they are associating overall requirements of an entity with the most appropriate building element. Once the design has evolved to a point where specific products or services are required to meet the design, then organizing those requirements or solutions by work results (Table 22) is most appropriate.

Table 23 - Products

Table 23 is used for classifying tangible construction resources intended for use in a project. Table 23 identifies a single location for classes of products that may be used in multiple types of assemblies or systems. Since most products or materials have multiple potential functions and applications for usage, organizing information about these items in a single location as products, using a generic name, makes it easier to locate them than using elemental or work result organizational structures that may have multiple locations for individual product classes. Documents organized according to Table 22 - Work Results may identify any one product in two or more locations as a “work result”; thus Table 22 has a close relationship with items classified using Table 23.

Table 41 – Materials

Table 41 organizes the basic physical properties of material composition without regard to the form or use of the material. Materials include gases, liquids, or solids of any type which may be used in the course of a construction project. Materials identified in Table 41 are often cited as a requirement in a work result, and thus this table has a close relationship with Table 22 - Work Results.

Legacy Sources

- ISO 12006-2 Table 4.9 Work Results (by Type of Work)
- *MasterFormat*™ 2011 Update

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<http://www.omniclass.org/>. See OmniClass License for more information.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-01 00 00	General Requirements			
22-01 30 00		Administrative Requirements		
22-01 31 00		Project Management and Coordination		
22-01 31 13			Project Coordination	
22-01 31 14			Facility Services Coordination	
22-01 31 16			Multiple Contract Coordination	
22-01 31 19			Project Meetings	
22-01 31 19 13				Preconstruction Meetings
22-01 31 19 16				Site Mobilization Meetings
22-01 31 19 23				Progress Meetings
22-01 31 19 33				Preinstallation Meetings
22-01 31 23			Project Web Site	
22-01 31 26			Electronic Communication Protocols	
22-01 32 00		Construction Progress Documentation		
22-01 32 13			Scheduling of Work	
22-01 32 16			Construction Progress Schedule	
22-01 32 16 13				Network Analysis Schedules
22-01 32 19			Submittals Schedule	
22-01 32 23			Survey and Layout Data	
22-01 32 26			Construction Progress Reporting	
22-01 32 29			Periodic Work Observation	
22-01 32 33			Photographic Documentation	
22-01 32 36			Video Monitoring and Documentation	
22-01 32 43			Purchase Order Tracking	
22-01 35 00		Special Procedures		
22-01 35 13			Special Project Procedures	
22-01 35 13 13				Special Project Procedures for Airport Facilities
22-01 35 13 16				Special Project Procedures for Detention Facilities
22-01 35 13 19				Special Project Procedures for Health care Facilities
22-01 35 13 26				Special Project Procedures for Clean Rooms
22-01 35 13 43				Special Project Procedures for Contaminated Sites
22-01 35 16			Alteration Project Procedures	
22-01 35 23			Owner Safety Requirements	
22-01 35 26			Governmental Safety Requirements	
22-01 35 29			Health, Safety, and Emergency Response Procedures	
22-01 35 29 13				Health, Safety, and Emergency Response Procedures for Contaminated Sites
22-01 35 33			Infection Control Procedures	
22-01 35 43			Environmental Procedures	
22-01 35 43 13				Environmental Procedures for Hazardous Materials
22-01 35 43 16				Environmental Procedures for Toxic Materials
22-01 35 46			Indoor Air Quality Procedures	
22-01 35 53			Security Procedures	
22-01 35 63			Sustainability Certification Project Requirements	
22-01 35 66			Sustainability Certification Project Procedures	
22-01 35 91			Historic Treatment Procedures	
22-01 50 00		Temporary Facilities and Controls		
22-01 51 00		Temporary Utilities		
22-01 51 13			Temporary Electricity	
22-01 51 16			Temporary Fire Protection	
22-01 51 19			Temporary Fuel Oil	
22-01 51 23			Temporary Heating, Cooling, and Ventilating	
22-01 51 26			Temporary Lighting	
22-01 51 29			Temporary Natural-Gas	
22-01 51 33			Temporary Telecommunications	
22-01 51 36			Temporary Water	
22-01 52 00		Construction Facilities		
22-01 52 13			Field Offices and Sheds	
22-01 52 16			First Aid Facilities	
22-01 52 19			Sanitary Facilities	
22-01 53 00		Temporary Construction		
22-01 53 13			Temporary Bridges	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-01 53 16			Temporary Decking	
22-01 53 19			Temporary Overpasses	
22-01 53 23			Temporary Ramps	
22-01 53 26			Temporary Runarounds	
22-01 54 00		Construction Aids		
22-01 54 13			Temporary Elevators	
22-01 54 16			Temporary Hoists	
22-01 54 19			Temporary Cranes	
22-01 54 23			Temporary Scaffolding and Platforms	
22-01 54 26			Temporary Swing Staging	
22-01 55 00		Vehicular Access and Parking		
22-01 55 13			Temporary Access Roads	
22-01 55 16			Haul Routes	
22-01 55 19			Temporary Parking Areas	
22-01 55 23			Temporary Roads	
22-01 55 26			Traffic Control	
22-01 55 29			Staging Areas	
22-01 56 00		Temporary Barriers and Enclosures		
22-01 56 13			Temporary Air Barriers	
22-01 56 16			Temporary Dust Barriers	
22-01 56 19			Temporary Noise Barriers	
22-01 56 23			Temporary Barricades	
22-01 56 26			Temporary Fencing	
22-01 56 29			Temporary Protective Walkways	
22-01 56 33			Temporary Security Barriers	
22-01 56 36			Temporary Security Enclosures	
22-01 56 39			Temporary Tree and Plant Protection	
22-01 57 00		Temporary Controls		
22-01 57 13			Temporary Erosion and Sediment Control	
22-01 57 16			Temporary Pest Control	
22-01 57 19			Temporary Environmental Controls	
22-01 57 23			Temporary Storm Water Pollution Control	
22-01 58 00		Project Identification		
22-01 58 13			Temporary Project Signage	
22-01 58 16			Temporary Interior Signage	
22-01 70 00		Execution and Closeout Requirements		
22-01 71 00		Examination and Preparation		
22-01 71 13			Mobilization	
22-01 71 16			Acceptance of Conditions	
22-01 71 23			Field Engineering	
22-01 71 23 13				Construction Layout
22-01 71 23 16				Construction Surveying
22-01 71 33			Protection of Adjacent Construction	
22-01 73 00		Execution		
22-01 73 13			Application	
22-01 73 16			Erection	
22-01 73 19			Installation	
22-01 73 23			Bracing and Anchoring	
22-01 73 26			Existing Products	
22-01 73 29			Cutting and Patching	
22-01 74 00		Cleaning and Waste Management		
22-01 74 13			Progress Cleaning	
22-01 74 16			Site Maintenance	
22-01 74 19			Construction Waste Management and Disposal	
22-01 74 23			Final Cleaning	
22-01 75 00		Starting and Adjusting		
22-01 75 13			Checkout Procedures	
22-01 75 16			Startup Procedures	
22-01 76 00		Protecting Installed Construction		
22-01 77 00		Closeout Procedures		
22-01 77 13			Preliminary Closeout Reviews	
22-01 77 16			Final Closeout Review	
22-01 77 19			Closeout Requirements	
22-01 78 00		Closeout Submittals		
22-01 78 13			Completion and Correction List	
22-01 78 19			Maintenance Contracts	
22-01 78 23			Operation and Maintenance Data	
22-01 78 23 13				Operation Data
22-01 78 23 16				Maintenance Data
22-01 78 23 19				Preventative Maintenance Instructions
22-01 78 29			Final Site Survey	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-01 78 33			Bonds	
22-01 78 36			Warranties	
22-01 78 39			Project Record Documents	
22-01 78 43			Spare Parts	
22-01 78 46			Extra Stock Materials	
22-01 78 53			Sustainable Design Closeout Documentation	
22-01 79 00		Demonstration and Training		
22-01 90 00		Life Cycle Activities		
22-01 91 00		Commissioning		
22-01 91 13			General Commissioning Requirements	
22-01 91 16			Facility Substructure Commissioning	
22-01 91 16 13				Foundation Commissioning
22-01 91 16 53				Basement Construction Commissioning
22-01 91 19			Facility Shell Commissioning	
22-01 91 19 13				Superstructure Commissioning
22-01 91 19 43				Exterior Enclosure Commissioning
22-01 91 19 73				Roofing Commissioning
22-01 91 23			Interiors Commissioning	
22-01 91 23 13				Interior Construction Commissioning
22-01 91 23 43				Stairways Commissioning
22-01 91 23 73				Interior Finishes Commissioning
22-01 92 00		Facility Operation		
22-01 92 13			Facility Operation Procedures	
22-01 93 00		Facility Maintenance		
22-01 93 13			Facility Maintenance Procedures	
22-01 93 16			Recycling Programs	
22-01 94 00		Facility Decommissioning		
22-01 94 13			Facility Decommissioning Procedures	
22-02 00 00	Existing Conditions			
22-02 01 00		Maintenance of Existing Conditions		
22-02 01 50			Maintenance of Site Remediation	
22-02 01 65			Maintenance of Underground Storage Tank Removal	
22-02 01 80			Maintenance of Facility Remediation	
22-02 01 86			Maintenance of Hazardous Waste Drum Handling	
22-02 05 00		Common Work Results for Existing Conditions		
22-02 05 19			Geosynthetics for Existing Conditions	
22-02 05 19 13				Geotextiles for Existing Conditions
22-02 05 19 16				Geomembranes for Existing Conditions
22-02 05 19 19				Geogrids for Existing Conditions
22-02 08 00		Commissioning of Existing Conditions		
22-02 20 00		Assessment		
22-02 21 00		Surveys		
22-02 21 13			Site Surveys	
22-02 21 13 13				Boundary and Survey Markers
22-02 21 13 23				Archeological and Historic Surveys
22-02 21 16			Measured Drawings	
22-02 22 00		Existing Conditions Assessment		
22-02 22 13			Movement and Vibration Assessment	
22-02 22 16			Acoustic Assessment	
22-02 22 19			Traffic Assessment	
22-02 22 23			Accessibility Assessment	
22-02 24 00		Environmental Assessment		
22-02 24 13			Natural Environment Assessment	
22-02 24 13 13				Air Assessment
22-02 24 13 43				Water Assessment
22-02 24 13 73				Land Assessment
22-02 24 23			Chemical Sampling and Analysis of Soils	
22-02 24 43			Transboundary and Global Environmental Aspects Assessment	
22-02 25 00		Existing Material Assessment		
22-02 25 16			Existing Concrete Assessment	
22-02 25 16 13				Concrete Assessment Drilling
22-02 25 19			Existing Masonry Assessment	
22-02 25 19 13				Masonry Assessment Drilling
22-02 25 23			Existing Metals Assessment	
22-02 25 23 13				Welding Investigations
22-02 25 26			Existing Wood, Plastics, and Composites Assessment	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-02 25 29			Existing Thermal and Moisture	Protection Assessment
22-02 25 29 13				Waterproofing Investigations
22-02 25 29 23				Roofing Investigations
22-02 26 00		Hazardous Material Assessment		
22-02 26 23			Asbestos Assessment	
22-02 26 26			Lead Assessment	
22-02 26 29			Polychlorinate Biphenyl Assessment	
22-02 26 33			Biological Assessment	
22-02 26 33 13				Mold Assessment
22-02 26 36			Hazardous Waste Drum Assessment	
22-02 30 00		Subsurface Investigation		
22-02 31 00		Geophysical Investigations		
22-02 31 13			Seismic Investigations	
22-02 31 16			Gravity Investigations	
22-02 31 19			Magnetic Investigations	
22-02 31 23			Electromagnetic Investigations	
22-02 31 26			Electrical Resistivity Investigations	
22-02 31 29			Magnetotelluric Investigations	
22-02 32 00		Geotechnical Investigations		
22-02 32 13			Subsurface Drilling and Sampling	
22-02 32 16			Material Testing	
22-02 32 19			Exploratory Excavations	
22-02 32 23			Geotechnical Monitoring Before Construction	
22-02 32 23 13				Groundwater Monitoring Before Construction
22-02 40 00		Demolition and Structure Moving		
22-02 41 00		Demolition		
22-02 41 13			Selective Site Demolition	
22-02 41 13 13				Paving Removal
22-02 41 13 23				Utility Line Removal
22-02 41 13 33				Railtrack Removal
22-02 41 16			Structure Demolition	
22-02 41 16 13				Building Demolition
22-02 41 16 23				Tower Demolition
22-02 41 16 33				Bridge Demolition
22-02 41 16 43				Dam Demolition
22-02 41 19			Selective Demolition	
22-02 41 19 13				Selective Building Demolition
22-02 41 19 16				Selective Interior Demolition
22-02 41 19 19				Selective Facility Services Demolition
22-02 41 19 33				Selective Bridge Demolition
22-02 41 91			Selective Historic Demolition	
22-02 42 00		Removal and Salvage of Construction Materials		
22-02 42 13			Deconstruction of Structures	
22-02 42 13 13				Deconstruction of Buildings
22-02 42 91			Removal and Salvage of Historic Construction Materials	
22-02 43 00		Structure Moving		
22-02 43 13			Structure Relocation	
22-02 43 13 13				Building Relocation
22-02 43 16			Structure Raising	
22-02 43 16 13				Building Raising
22-02 50 00		Site Remediation		
22-02 51 00		Physical Decontamination		
22-02 51 13			Coagulation and Flocculation Decontamination	
22-02 51 16			Reverse-Osmosis Decontamination	
22-02 51 19			Solidification and Stabilization Decontamination	
22-02 51 23			Mechanical Filtration Decontamination	
22-02 51 26			Radioactive Decontamination	
22-02 51 29			Surface Cleaning Decontamination	
22-02 51 29 13				High-Pressure Water Cleaning Decontamination
22-02 51 29 16				Vacuum Sweeping Cleaning Decontamination
22-02 51 33			Surface Removal Decontamination	
22-02 51 33 13				Surface Removal Decontamination by Grinding
22-02 51 33 16				Surface Removal Decontamination by Sand Blasting
22-02 51 33 19				Surface Removal Decontamination by Ultrasound

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-02 52 00		Chemical Decontamination		
22-02 52 13			Chemical Precipitation Decontamination	
22-02 52 16			Ion Change Decontamination	
22-02 52 19			Neutralization Decontamination	
22-02 53 00		Thermal Decontamination		
22-02 53 13			Incineration Decontamination	
22-02 53 13 13				Remediation of Contaminated Soils and Sludges by Incineration
22-02 53 16			Thermal Desorption Decontamination	
22-02 53 16 13				Remediation of Contaminated Soils by Thermal Desorption
22-02 53 19			Vitrification Decontamination	
22-02 54 00		Biological Decontamination		
22-02 54 13			Aerobic Processes Decontamination	
22-02 54 16			Anaerobic Processes Decontamination	
22-02 54 19			Bioremediation Decontamination	
22-02 54 19 13				Bioremediation Using Landfarming
22-02 54 19 16				Bioremediation of Soils Using Windrow Composting
22-02 54 19 19				Bioremediation Using Bacteria Injection
22-02 54 23			Soil Washing through Separation/Solubilization	
22-02 54 26			Organic Decontamination	
22-02 55 00		Remediation Soil Stabilization		
22-02 56 00		Site Containment		
22-02 56 13			Waste Containment	
22-02 56 13 13				Geomembrane Waste Containment
22-02 56 19			Gas Containment	
22-02 56 19 13				Fluid-Applied Gas Barrier
22-02 57 00		Sinkhole Remediation		
22-02 57 13			Sinkhole Remediation by Grouting	
22-02 57 13 13				Sinkhole Remediation by Compaction Grouting
22-02 57 13 16				Sinkhole Remediation by Cap Grouting
22-02 57 16			Sinkhole Remediation by Backfilling	
22-02 58 00		Snow Control		
22-02 58 13			Snow Fencing	
22-02 58 16			Snow Avalanche Control	
22-02 60 00		Contaminated Site Material Removal		
22-02 61 00		Removal and Disposal of Contaminated Soils		
22-02 61 13			Excavation and Handling of Contaminated Material	
22-02 61 23			Removal and Disposal of Polychlorinate Biphenyl Contaminated Soils	
22-02 61 26			Removal and Disposal of Asbestos Contaminated Soils	
22-02 61 29			Removal and Disposal of Organically Contaminated Soils	
22-02 62 00		Hazardous Waste Recovery Processes		
22-02 62 13			Air and Steam Stripping	
22-02 62 16			Soil Vapor Extraction	
22-02 62 19			Soil Washing and Flushing	
22-02 65 00		Underground Storage Tank Removal		
22-02 66 00		Landfill Construction and Storage		
22-02 70 00		Water Remediation		
22-02 71 00		Groundwater Treatment		
22-02 72 00		Water Decontamination		
22-02 72 13			Chemical Water Decontamination	
22-02 72 16			Biological Water Decontamination	
22-02 72 19			Electrolysis Water Decontamination	
22-02 80 00		Facility Remediation		
22-02 81 00		Transportation and Disposal of Hazardous Materials		
22-02 82 00		Asbestos Remediation		
22-02 82 13			Asbestos Abatement	
22-02 82 13 13				Glovebag Asbestos Abatement
22-02 82 13 16				Precautions for Asbestos Abatement
22-02 82 13 19				Asbestos Floor Tile and Mastic Abatement
22-02 82 16			Engineering Control of Asbestos Containing Materials	
22-02 82 33			Removal and Disposal of Asbestos Containing Materials	
22-02 83 00		Lead Remediation		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-02 83 13			Lead Hazard Control Activities	
22-02 83 19			Lead-Based Paint Remediation	
22-02 83 19 13				Lead-Based Paint Abatement
22-02 83 33			Removal and Disposal of Material Containing Lead	
22-02 83 33 13				Lead-Based Paint Removal and Disposal
22-02 84 00		Polychlorinate Biphenyl Remediation		
22-02 84 16			Handling of Lighting Ballasts and Lamps Containing PCBs and Mercury	
22-02 84 33			Removal and Disposal of Polychlorinate Biphenyls	
22-02 85 00		Mold Remediation		
22-02 85 13			Precautions for Mold Remediation	
22-02 85 16			Mold Remediation Preparation and Containment	
22-02 85 19			Mold Remediation Clearance Air Sampling	
22-02 85 33			Removal and Disposal of Materials with Mold	
22-02 86 00		Hazardous Waste Drum Handling		
22-03 00 00	Concrete			
22-03 01 00		Maintenance of Concrete		
22-03 01 10			Maintenance of Concrete Forming and Accessories	
22-03 01 20			Maintenance of Concrete Reinforcing	
22-03 01 23			Maintenance of Stressing Tendons	
22-03 01 30			Maintenance of Cast-in-Place Concrete	
22-03 01 30 51				Cleaning of Cast-in-Place Concrete
22-03 01 30 61				Resurfacing of Cast-in-Place Concrete
22-03 01 30 71				Rehabilitation of Cast-in-Place Concrete
22-03 01 30 72				Strengthening of Cast-in-Place Concrete
22-03 01 40			Maintenance of Precast Concrete	
22-03 01 40 51				Cleaning of Precast Concrete
22-03 01 40 61				Resurfacing of Precast Concrete
22-03 01 40 71				Rehabilitation of Precast Concrete
22-03 01 40 72				Strengthening of Precast Concrete
22-03 01 50			Maintenance of Cast Decks and Underlayment	
22-03 01 50 51				Cleaning Cast Decks and Underlayment
22-03 01 50 61				Resurfacing of Cast Decks and Underlayment
22-03 01 50 71				Rehabilitation of Cast Decks and Underlayment
22-03 01 50 72				Strengthening of Cast Decks and Underlayment
22-03 01 60			Maintenance of Grouting	
22-03 01 70			Maintenance of Mass Concrete	
22-03 01 80			Maintenance of Concrete Cutting and Boring	
22-03 05 00		Common Work Results for Concrete		
22-03 08 00		Commissioning of Concrete		
22-03 10 00		Concrete Forming and Accessories		
22-03 11 00		Concrete Forming		
22-03 11 13			Structural Cast-in-Place Concrete Forming	
22-03 11 13 13				Concrete Slip Forming
22-03 11 13 16				Concrete Shoring
22-03 11 13 19				Falsework
22-03 11 16			Architectural Cast-in Place Concrete Forming	
22-03 11 16 13				Concrete Form Liners
22-03 11 19			Insulating Concrete Forming	
22-03 11 23			Permanent Stair Forming	
22-03 15 00		Concrete Accessories		
22-03 15 13			Waterstops	
22-03 15 13 13				Non-Expanding Waterstops
22-03 15 13 16				Expanding Waterstops
22-03 15 13 19				Combination Expanding and Injection Hose Waterstops
22-03 15 13 21				Injection Hose Waterstops
22-03 15 16			Concrete Construction Joints	
22-03 20 00		Concrete Reinforcing		
22-03 21 00		Reinforcement Bars		
22-03 21 11			Plain Steel Reinforcement Bars	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-03 21 13			Galvanized Reinforcement Steel Bars	
22-03 21 16			Epoxy-Coated Reinforcement Steel Bars	
22-03 21 19			Stainless Steel Reinforcement Bars	
22-03 21 21			Composite Reinforcement Bars	
22-03 21 21 11				Glass Fiber-Reinforced Polymer Reinforcement Bars
22-03 21 21 13				Organic Fiber-Reinforced Polymer Reinforcement Bars
22-03 21 21 16				Carbon Fiber-Reinforced Polymer Reinforcement Bars
22-03 22 00		Fabric and Grid Reinforcing		
22-03 22 13			Galvanized Welded Wire Fabric Reinforcing	
22-03 22 16			Epoxy-Coated Welded Wire Fabric Reinforcing	
22-03 22 19			Composite Grid Reinforcing	
22-03 23 00		Stressed Tendon Reinforcing		
22-03 24 00		Fibrous Reinforcing		
22-03 25 00		Composite Reinforcing		
22-03 25 13			Glass Fiber-Reinforced Polymer Reinforcing	
22-03 25 16			Organic Fiber-Reinforced Polymer Reinforcing	
22-03 25 19			Carbon Fiber-Reinforced Polymer Reinforcing	
22-03 30 00		Cast-in-Place Concrete		
22-03 30 53			Miscellaneous Cast-in-Place Concrete	
22-03 31 00		Structural Concrete		
22-03 31 13			Heavyweight Structural Concrete	
22-03 31 16			Lightweight Structural Concrete	
22-03 31 19			Shrinkage-Compensating Structural Concrete	
22-03 31 23			High-Performance Structural Concrete	
22-03 31 24			Ultra High-Performance Structural Concrete	
22-03 31 26			Self-Compacting Concrete	
22-03 33 00		Architectural Concrete		
22-03 33 13			Heavyweight Architectural Concrete	
22-03 33 16			Lightweight Architectural Concrete	
22-03 34 00		Low Density Concrete		
22-03 35 00		Concrete Finishing		
22-03 35 13			High-Tolerance Concrete Floor Finishing	
22-03 35 16			Heavy-Duty Concrete Floor Finishing	
22-03 35 19			Colored Concrete Finishing	
22-03 35 23			Exposed Aggregate Concrete Finishing	
22-03 35 26			Grooved Concrete Surface Finishing	
22-03 35 29			Tooled Concrete Finishing	
22-03 35 33			Stamped Concrete Finishing	
22-03 35 43			Polished Concrete Finishing	
22-03 37 00		Specialty Placed Concrete		
22-03 37 13			Shotcrete	
22-03 37 16			Pumped Concrete	
22-03 37 19			Pneumatically Placed Concrete	
22-03 37 23			Roller-Compacted Concrete	
22-03 37 26			Underwater Placed Concrete	
22-03 38 00		Post-Tensioned Concrete		
22-03 38 13			Post-Tensioned Concrete Preparation	
22-03 38 16			Unbonded Post-Tensioned Concrete	
22-03 38 19			Bonded Post-Tensioned Concrete	
22-03 39 00		Concrete Curing		
22-03 39 13			Water Concrete Curing	
22-03 39 16			Sand Concrete Curing	
22-03 39 23			Membrane Concrete Curing	
22-03 39 23 13				Chemical Compound Membrane Concrete Curing
22-03 39 23 23				Sheet Membrane Concrete Curing
22-03 40 00		Precast Concrete		
22-03 41 00		Precast Structural Concrete		
22-03 41 13			Precast Concrete Hollow Core Planks	
22-03 41 16			Precast Concrete Slabs	
22-03 41 23			Precast Concrete Stairs	
22-03 41 33			Precast Structural Pretensioned Concrete	
22-03 41 36			Precast Structural Post-Tensioned Concrete	
22-03 45 00		Precast Architectural Concrete		
22-03 45 13			Faced Architectural Precast Concrete	
22-03 45 33			Precast Architectural Pretensioned Concrete	
22-03 45 36			Precast Architectural Post-Tensioned Concrete	
22-03 47 00		Site-Cast Concrete		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-03 47 13			Tilt-Up Concrete	
22-03 47 16			Lift-Slab Concrete	
22-03 48 00		Precast Concrete Specialties		
22-03 48 13			Precast Concrete Bollards	
22-03 48 16			Precast Concrete Splash Blocks	
22-03 48 19			Precast Concrete Stair Treads	
22-03 48 33			Precast Pre-Framed Concrete Panels	
22-03 48 43			Precast Concrete Trim	
22-03 49 00		Glass-Fiber-Reinforced Concrete		
22-03 49 13			Glass-Fiber-Reinforced Concrete Column Covers	
22-03 49 16			Glass-Fiber-Reinforced Concrete Spandrels	
22-03 49 43			Glass-Fiber-Reinforced Concrete Trim	
22-03 50 00		Cast Decks and Underlayment		
22-03 51 00		Cast Roof Decks		
22-03 51 13			Cementitious Wood Fiber Decks	
22-03 51 16			Gypsum Concrete Roof Decks	
22-03 52 00		Lightweight Concrete Roof Insulation		
22-03 52 13			Composite Concrete Roof Insulation	
22-03 52 16			Lightweight Insulating Concrete	
22-03 52 16 13				Lightweight Cellular Insulating Concrete
22-03 52 16 16				Lightweight Aggregate Insulating Concrete
22-03 53 00		Concrete Topping		
22-03 53 13			Emery-Aggregate Concrete Topping	
22-03 53 16			Iron-Aggregate Concrete Topping	
22-03 54 00		Cast Underlayment		
22-03 54 13			Gypsum Cement Underlayment	
22-03 54 16			Hydraulic Cement Underlayment	
22-03 60 00		Grouting		
22-03 61 00		Cementitious Grouting		
22-03 61 13			Dry-Pack Grouting	
22-03 62 00		Non-Shrink Grouting		
22-03 62 13			Non-Metallic Non-Shrink Grouting	
22-03 62 16			Metallic Non-Shrink Grouting	
22-03 63 00		Epoxy Grouting		
22-03 64 00		Injection Grouting		
22-03 64 23			Epoxy Injection Grouting	
22-03 70 00		Mass Concrete		
22-03 71 00		Mass Concrete for Raft Foundations		
22-03 72 00		Mass Concrete for Dams		
22-03 80 00		Concrete Cutting and Boring		
22-03 81 00		Concrete Cutting		
22-03 81 13			Flat Concrete Sawing	
22-03 81 16			Track Mounted Concrete Wall Sawing	
22-03 81 19			Wire Concrete Wall Sawing	
22-03 81 23			Hand Concrete Wall Sawing	
22-03 81 26			Chain Concrete Wall Sawing	
22-03 82 00		Concrete Boring		
22-03 82 13			Concrete Core Drilling	
22-04 00 00	Masonry			
22-04 01 00		Maintenance of Masonry		
22-04 01 20			Maintenance of Unit Masonry	
22-04 01 20 41				Unit Masonry Stabilization
22-04 01 20 51				Unit Masonry Maintenance
22-04 01 20 52				Unit Masonry Cleaning
22-04 01 20 91				Unit Masonry Restoration
22-04 01 20 93				Testing and Sampling Brick Units for Restoration
22-04 01 40			Maintenance of Stone Assemblies	
22-04 01 40 51				Stone Maintenance
22-04 01 40 52				Stone Cleaning
22-04 01 40 91				Stone Restoration
22-04 01 50			Maintenance of Refractory Masonry	
22-04 01 60			Maintenance of Corrosion-Resistant Masonry	
22-04 01 70			Maintenance of Manufactured Masonry	
22-04 05 00		Common Work Results for Masonry		
22-04 05 13			Masonry Mortaring	
22-04 05 13 16				Chemical-Resistant Masonry Mortaring
22-04 05 13 19				Epoxy Masonry Mortaring

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-04 05 13 23				Surface Bonding Masonry Mortaring
22-04 05 13 26				Engineered Masonry Mortaring
22-04 05 13 29				Refractory Masonry Mortaring
22-04 05 13 91				Masonry Restoration Mortaring
22-04 05 16			Masonry Grouting	
22-04 05 16 16				Chemical-Resistant Masonry Grouting
22-04 05 16 26				Engineered Masonry Grouting
22-04 05 19			Masonry Anchorage and Reinforcing	
22-04 05 19 13				Continuous Joint Reinforcing
22-04 05 19 16				Masonry Anchors
22-04 05 19 26				Masonry Reinforcing Bars
22-04 05 19 29				Stone Anchors
22-04 05 21			Masonry Strengthening	
22-04 05 23			Masonry Accessories	
22-04 05 23 13				Masonry Control and Expansion Joints
22-04 05 23 16				Masonry Embedded Flashing
22-04 05 23 19				Masonry Cavity Drainage, Weepholes, and Vents
22-04 08 00		Commissioning of Masonry		
22-04 20 00		Unit Masonry		
22-04 21 00		Clay Unit Masonry		
22-04 21 13			Brick Masonry	
22-04 21 13 13				Brick Veneer Masonry
22-04 21 13 23				Surface-Bonded Brick Masonry
22-04 21 16			Ceramic Glazed Clay Masonry	
22-04 21 19			Clay Tile Masonry	
22-04 21 23			Structural Clay Tile Masonry	
22-04 21 26			Glazed Structural Clay Tile Masonry	
22-04 21 29			Terra Cotta Masonry	
22-04 22 00		Concrete Unit Masonry		
22-04 22 00 13				Concrete Unit Veneer Masonry
22-04 22 00 16				Surface-Bonded Concrete Unit Masonry
22-04 22 19			Insulated Concrete Unit Masonry	
22-04 22 23			Architectural Concrete Unit Masonry	
22-04 22 23 13				Exposed Aggregate Concrete Unit Masonry
22-04 22 23 16				Fluted Concrete Unit Masonry
22-04 22 23 19				Molded-Face Concrete Unit Masonry
22-04 22 23 23				Prefaced Concrete Unit Masonry
22-04 22 23 26				Sound-Absorbing Concrete Unit Masonry
22-04 22 23 29				Split-Face Concrete Unit Masonry
22-04 22 26			Autoclaved Aerated Concrete Unit Masonry	
22-04 22 33			Interlocking Concrete Unit Masonry	
22-04 23 00		Glass Unit Masonry		
22-04 23 13			Vertical Glass Unit Masonry	
22-04 23 16			Glass Unit Masonry Floors	
22-04 23 19			Glass Unit Masonry Skylights	
22-04 24 00		Adobe Unit Masonry		
22-04 24 13			Site-Cast Adobe Unit Masonry	
22-04 24 16			Manufactured Adobe Unit Masonry	
22-04 25 00		Unit Masonry Panels		
22-04 25 13			Metal-Supported Unit Masonry Panels	
22-04 26 00		Single-Wythe Unit Masonry		
22-04 26 13			Masonry Veneer	
22-04 27 00		Multiple-Wythe Unit Masonry		
22-04 27 13			Composite Unit Masonry	
22-04 27 23			Cavity Wall Unit Masonry	
22-04 28 00		Concrete Form Masonry Units		
22-04 28 13			Dry-Stacked, Concrete-Filled Masonry Units	
22-04 28 23			Mortar-Set, Concrete-Filled Masonry Units	
22-04 29 00		Engineered Unit Masonry		
22-04 40 00		Stone Assemblies		
22-04 41 00		Dry-Placed Stone		
22-04 42 00		Exterior Stone Cladding		
22-04 42 13			Masonry-Supported Stone Cladding	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-04 42 16			Steel-Stud-Supported Stone Cladding	
22-04 42 19			Strongback-Frame-Supported Stone Cladding	
22-04 42 23			Truss-Supported Stone Cladding	
22-04 42 26			Grid-System-Supported Stone Cladding	
22-04 42 43			Stone Panels for Curtain Walls	
22-04 43 00		Stone Masonry		
22-04 43 13			Stone Masonry Veneer	
22-04 43 13 13				Anchored Stone Masonry Veneer
22-04 43 13 16				Adhered Stone Masonry Veneer
22-04 50 00		Refractory Masonry		
22-04 51 00		Flue Liner Masonry		
22-04 52 00		Combustion Chamber Masonry		
22-04 53 00		Castable Refractory Masonry		
22-04 54 00		Refractory Brick Masonry		
22-04 57 00		Masonry Fireplaces		
22-04 57 33			Modular Masonry Fireplaces	
22-04 60 00		Corrosion-Resistant Masonry		
22-04 61 00		Chemical-Resistant Brick Masonry		
22-04 62 00		Vitrified Clay Liner Plate		
22-04 70 00		Manufactured Masonry		
22-04 71 00		Manufactured Brick Masonry		
22-04 71 13			Calcium Silicate Manufactured Brick Masonry	
22-04 72 00		Cast Stone Masonry		
22-04 73 00		Manufactured Stone Masonry		
22-04 73 13			Calcium Silicate Manufactured Stone Masonry	
22-05 00 00	Metals			
22-05 01 00		Maintenance of Metals		
22-05 01 10			Maintenance of Structural Metal Framing	
22-05 01 20			Maintenance of Metal Joists	
22-05 01 30			Maintenance of Metal Decking	
22-05 01 40			Maintenance of Cold-Formed Metal Framing	
22-05 01 50			Maintenance of Metal Fabrications	
22-05 01 70			Maintenance of Decorative Metal	
22-05 01 70 91				Historic Treatment of Decorative Metal
22-05 05 00		Common Work Results for Metals		
22-05 05 13			Shop-Applied Coatings for Metal	
22-05 05 23			Metal Fastenings	
22-05 05 53			Security Metal Fastenings	
22-05 08 00		Commissioning of Metals		
22-05 10 00		Structural Metal Framing		
22-05 12 00		Structural Steel Framing		
22-05 12 13			Architecturally-Exposed Structural Steel Framing	
22-05 12 16			Fabricated Fireproofed Steel Columns	
22-05 12 19			Buckling Restrained Braces	
22-05 12 23			Structural Steel for Buildings	
22-05 12 33			Structural Steel for Bridges	
22-05 13 00		Structural Stainless-Steel Framing		
22-05 14 00		Structural Aluminum Framing		
22-05 14 13			Architecturally-Exposed Structural Aluminum Framing	
22-05 15 00		Wire Rope Assemblies		
22-05 15 13			Aluminum Wire Rope Assemblies	
22-05 15 16			Steel Wire Rope Assemblies	
22-05 15 19			Stainless-Steel Wire Rope Assemblies	
22-05 16 00		Structural Cabling		
22-05 16 13			Cable Bow Truss Assemblies	
22-05 16 33			Bridge Cabling	
22-05 17 00		Structural Rod Assemblies		
22-05 19 00		Tension Rod and Cable Truss Assemblies		
22-05 19 13			Façade Support Truss Assemblies	
22-05 19 19			Canopy Support Truss Assemblies	
22-05 20 00		Metal Joists		
22-05 21 00		Steel Joist Framing		
22-05 21 13			Deep Longspan Steel Joist Framing	
22-05 21 16			Longspan Steel Joist Framing	
22-05 21 19			Open Web Steel Joist Framing	
22-05 21 23			Steel Joist Girder Framing	
22-05 25 00		Aluminum Joist Framing		
22-05 30 00		Metal Decking		
22-05 31 00		Steel Decking		
22-05 31 13			Steel Floor Decking	
22-05 31 23			Steel Roof Decking	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-05 31 33			Steel Form Decking	
22-05 33 00		Aluminum Decking		
22-05 33 13			Aluminum Floor Decking	
22-05 33 23			Aluminum Roof Decking	
22-05 34 00		Acoustical Metal Decking		
22-05 35 00		Raceway Decking Assemblies		
22-05 36 00		Composite Metal Decking		
22-05 36 13			Composite Steel Plate and Elastomer Decking	
22-05 40 00		Cold-Formed Metal Framing		
22-05 41 00		Structural Metal Stud Framing		
22-05 42 00		Cold-Formed Metal Joist Framing		
22-05 42 13			Cold-Formed Metal Floor Joist Framing	
22-05 42 23			Cold-Formed Metal Roof Joist Framing	
22-05 43 00		Slotted Channel Framing		
22-05 44 00		Cold-Formed Metal Trusses		
22-05 44 13			Cold-Formed Metal Roof Trusses	
22-05 45 00		Metal Support Assemblies		
22-05 45 13			Mechanical Metal Supports	
22-05 45 16			Electrical Metal Supports	
22-05 45 19			Communications Metal Supports	
22-05 45 23			Healthcare Metal Supports	
22-05 50 00		Metal Fabrications		
22-05 51 00		Metal Stairs		
22-05 51 13			Metal Pan Stairs	
22-05 51 16			Metal Floor Plate Stairs	
22-05 51 19			Metal Grating Stairs	
22-05 51 23			Metal Fire Escapes	
22-05 51 33			Metal Ladders	
22-05 51 33 13				Vertical Metal Ladders
22-05 51 33 16				Inclined Metal Ladders
22-05 51 33 23				Alternating Tread Ladders
22-05 51 36			Metal Walkways	
22-05 51 36 13				Metal Catwalks
22-05 51 36 16				Metal Ramps
22-05 52 00		Metal Railings		
22-05 52 13			Pipe and Tube Railings	
22-05 53 00		Metal Gratings		
22-05 53 13			Bar Gratings	
22-05 53 16			Plank Gratings	
22-05 54 00		Metal Floor Plates		
22-05 55 00		Metal Stair Treads and Nosings		
22-05 55 13			Metal Stair Treads	
22-05 55 16			Metal Stair Nosings	
22-05 56 00		Metal Castings		
22-05 58 00		Formed Metal Fabrications		
22-05 58 13			Column Covers	
22-05 58 16			Formed Metal Enclosures	
22-05 58 19			Heating/Cooling Unit Covers	
22-05 58 23			Formed Metal Guards	
22-05 59 00		Metal Specialties		
22-05 59 13			Metal Balconies	
22-05 59 63			Detention Enclosures	
22-05 70 00		Decorative Metal		
22-05 71 00		Decorative Metal Stairs		
22-05 71 13			Fabricated Metal Spiral Stairs	
22-05 73 00		Decorative Metal Railings		
22-05 73 13			Glazed Decorative Metal Railings	
22-05 73 16			Wire Rope Decorative Metal Railings	
22-05 74 00		Decorative Metal Castings		
22-05 75 00		Decorative Formed Metal		
22-05 76 00		Decorative Forged Metal		
22-06 00 00	Wood, Plastics, and Composites			
22-06 01 00		Maintenance of Wood, Plastics, and Composites		
22-06 01 10			Maintenance of Rough Carpentry	
22-06 01 10 71				Rough Carpentry Rehabilitation
22-06 01 10 91				Rough Carpentry Restoration
22-06 01 10 92				Rough Carpentry Preservation
22-06 01 20			Maintenance of Finish Carpentry	
22-06 01 20 71				Finish Carpentry Rehabilitation
22-06 01 20 91				Finish Carpentry Restoration
22-06 01 20 92				Finish Carpentry Preservation
22-06 01 40			Maintenance of Architectural Woodwork	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-06 01 40 51				Architectural Woodwork Cleaning
22-06 01 40 61				Architectural Woodwork Refinishing
22-06 01 40 91				Architectural Woodwork Restoration
22-06 01 50			Maintenance of Structural Plastics	
22-06 01 60			Maintenance of Plastic Fabrications	
22-06 01 60 51				Plastic Cleaning
22-06 01 60 71				Plastic Rehabilitation
22-06 01 60 91				Plastic Restoration
22-06 01 60 92				Plastic Preservation
22-06 01 70			Maintenance of Structural Composites	
22-06 01 80			Maintenance of Composite Assemblies	
22-06 01 80 51				Composite Cleaning
22-06 01 80 71				Composite Rehabilitation
22-06 01 80 91				Composite Restoration
22-06 01 80 92				Composite Preservation
22-06 05 00		Common Work Results for Wood, Plastics, and Composites		
22-06 05 23			Wood, Plastic, and Composite Fastenings	
22-06 05 73			Wood Treatment	
22-06 05 73 13				Fire-Retardant Wood Treatment
22-06 05 73 33				Preservative Wood Treatment
22-06 05 73 91				Long-Term Wood Treatment
22-06 05 73 93				Eradication of Insects in Wood
22-06 05 73 96				Antiseptic Treatment of Wood
22-06 05 83			Shop-Applied Wood Coatings	
22-06 08 00		Commissioning of Wood, Plastics, and Composites		
22-06 10 00		Rough Carpentry		
22-06 10 53			Miscellaneous Rough Carpentry	
22-06 10 63			Exterior Rough Carpentry	
22-06 11 00		Wood Framing		
22-06 11 13			Engineered Wood Products	
22-06 11 16			Mechanically Graded Lumber	
22-06 12 00		Structural Panels		
22-06 12 13			Cementitious Reinforced Panels	
22-06 12 16			Stressed Skin Panels	
22-06 13 00		Heavy Timber Construction		
22-06 13 13			Log Construction	
22-06 13 13 91				Period Horizontal Log Work
22-06 13 16			Pole Construction	
22-06 13 23			Heavy Timber Framing	
22-06 13 26			Heavy Timber Trusses	
22-06 13 33			Heavy Timber Pier Construction	
22-06 14 00		Treated Wood Foundations		
22-06 15 00		Wood Decking		
22-06 15 13			Wood Floor Decking	
22-06 15 13 91				Carvel Planking
22-06 15 16			Wood Roof Decking	
22-06 15 19			Timber Decking	
22-06 15 23			Laminated Wood Decking	
22-06 15 33			Wood Patio Decking	
22-06 16 00		Sheathing		
22-06 16 13			Insulating Sheathing	
22-06 16 23			Subflooring	
22-06 16 26			Underlayment	
22-06 16 33			Wood Board Sheathing	
22-06 16 36			Wood Panel Product Sheathing	
22-06 16 43			Gypsum Sheathing	
22-06 16 53			Moisture-Resistant Sheathing Board	
22-06 16 63			Cementitious Sheathing	
22-06 17 00		Shop-Fabricated Structural Wood		
22-06 17 13			Laminated Veneer Lumber	
22-06 17 23			Parallel Strand Lumber	
22-06 17 33			Wood I-Joists	
22-06 17 36			Metal-Web Wood Joists	
22-06 17 43			Rim Boards	
22-06 17 53			Shop-Fabricated Wood Trusses	
22-06 18 00		Glued-Laminated Construction		
22-06 18 13			Glued-Laminated Beams	
22-06 18 16			Glued-Laminated Columns	
22-06 20 00		Finish Carpentry		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-06 20 13			Exterior Finish Carpentry	
22-06 20 23			Interior Finish Carpentry	
22-06 22 00		Millwork		
22-06 22 13			Standard Pattern Wood Trim	
22-06 25 00		Prefinished Paneling		
22-06 25 13			Prefinished Hardboard Paneling	
22-06 25 16			Prefinished Plywood Paneling	
22-06 26 00		Board Paneling		
22-06 26 13			Profile Board Paneling	
22-06 40 00		Architectural Woodwork		
22-06 40 13			Exterior Architectural Woodwork	
22-06 40 23			Interior Architectural Woodwork	
22-06 41 00		Architectural Wood Casework		
22-06 41 13			Wood-Veneer-Faced Architectural Cabinets	
22-06 41 16			Plastic-Laminate-Clad Architectural Cabinets	
22-06 41 93			Cabinet and Drawer Hardware	
22-06 42 00		Wood Paneling		
22-06 42 13			Wood Board Paneling	
22-06 42 14			Stile and Rail Wood Paneling	
22-06 42 16			Flush Wood Paneling	
22-06 42 19			Plastic-Laminate-Faced Wood Paneling	
22-06 43 00		Wood Stairs and Railings		
22-06 43 13			Wood Stairs	
22-06 43 16			Wood Railings	
22-06 44 00		Ornamental Woodwork		
22-06 44 13			Wood Turnings	
22-06 44 16			Wood Pilasters	
22-06 44 19			Wood Grilles	
22-06 44 23			Wood Corbels	
22-06 44 26			Wood Cupolas	
22-06 44 29			Wood Finials	
22-06 44 33			Wood Mantels	
22-06 44 36			Wood Pediment Heads	
22-06 44 39			Wood Posts and Columns	
22-06 46 00		Wood Trim		
22-06 46 13			Wood Door and Window Casings	
22-06 46 16			Wood Aprons	
22-06 46 19			Wood Base and Shoe Moldings	
22-06 46 23			Wood Chair Rails	
22-06 46 26			Wood Cornices	
22-06 46 29			Wood Fascia and Soffits	
22-06 46 33			Wood Stops, Stools, and Sills	
22-06 46 91			Splicing of Wooden Components	
22-06 48 00		Wood Frames		
22-06 48 13			Exterior Wood Door Frames	
22-06 48 16			Interior Wood Door Frames	
22-06 48 19			Ornamental Wood Frames	
22-06 48 23			Stick-Built Wood Windows	
22-06 48 26			Wood-Veneer Frames	
22-06 49 00		Wood Screens and Exterior Wood Shutters		
22-06 49 13			Wood Screens	
22-06 49 16			Exterior Wood Blinds	
22-06 49 19			Exterior Wood Shutters	
22-06 50 00		Structural Plastics		
22-06 51 00		Structural Plastic Shapes and Plates		
22-06 51 13			Plastic Lumber	
22-06 52 00		Plastic Structural Assemblies		
22-06 53 00		Plastic Decking		
22-06 53 13			Solid Plastic Decking	
22-06 60 00		Plastic Fabrications		
22-06 61 00		Simulated Stone Fabrications		
22-06 61 13			Cultured Marble Fabrications	
22-06 61 16			Solid Surfacing Fabrications	
22-06 61 19			Quartz Surfacing Fabrications	
22-06 63 00		Plastic Railings		
22-06 64 00		Plastic Paneling		
22-06 64 13			Plastic Lattice Paneling	
22-06 65 00		Plastic Simulated Wood Trim		
22-06 66 00		Custom Ornamental Simulated Woodwork		
22-06 70 00		Structural Composites		
22-06 71 00		Structural Composite Shapes and Plates		
22-06 71 13			Composite Lumber	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-06 72 00		Composite Structural Assemblies		
22-06 72 13			Composite Joist Assemblies	
22-06 73 00		Composite Decking		
22-06 73 13			Composite Structural Decking	
22-06 74 00		Composite Gratings		
22-06 74 13			Fiberglass Reinforced Gratings	
22-06 80 00		Composite Fabrications		
22-06 81 00		Composite Railings		
22-06 81 13			Glass-Fiber-Reinforced Plastic Railings	
22-06 83 00		Composite Paneling		
22-06 83 13			Resin Composite Paneling	
22-06 83 16			Fiberglass Reinforced Paneling	
22-07 00 00	Thermal and Moisture Protection			
22-07 01 00		Operation and Maintenance of Thermal and Moisture Protection		
22-07 01 10			Maintenance of Dampproofing and Waterproofing	
22-07 01 10 81				Waterproofing Replacement
22-07 01 20			Maintenance of Thermal Protection	
22-07 01 30			Maintenance of Steep Slope Roofing	
22-07 01 40			Maintenance of Roofing and Siding Panels	
22-07 01 50			Maintenance of Membrane Roofing	
22-07 01 50 13				Roof Moisture Survey
22-07 01 50 16				Roof Maintenance Program
22-07 01 50 19				Preparation for Re-Roofing
22-07 01 50 23				Roof Removal
22-07 01 50 61				Roof Re-Coating
22-07 01 50 81				Roof Replacement
22-07 01 50 91				Roofing Restoration
22-07 01 60			Maintenance of Flashing and Sheet Metal	
22-07 01 60 71				Flashing and Sheet Metal Rehabilitation
22-07 01 60 91				Flashing and Sheet Metal Restoration
22-07 01 60 92				Flashing and Sheet Metal Preservation
22-07 01 70			Operation and Maintenance of Roof Specialties and Accessories	
22-07 01 80			Maintenance of Fire and Smoke Protection	
22-07 01 90			Maintenance of Joint Protection	
22-07 01 90 71				Joint Sealant Rehabilitation
22-07 01 90 81				Joint Sealant Replacement
22-07 05 00		Common Work Results for Thermal and Moisture Protection		
22-07 08 00		Commissioning of Thermal and Moisture Protection		
22-07 10 00		Dampproofing and Waterproofing		
22-07 11 00		Dampproofing		
22-07 11 13			Bituminous Dampproofing	
22-07 11 16			Cementitious Dampproofing	
22-07 11 19			Sheet Dampproofing	
22-07 12 00		Built-Up Bituminous Waterproofing		
22-07 12 13			Built-Up Asphalt Waterproofing	
22-07 12 16			Built-Up Coal Tar Waterproofing	
22-07 13 00		Sheet Waterproofing		
22-07 13 13			Bituminous Sheet Waterproofing	
22-07 13 26			Self-Adhering Sheet Waterproofing	
22-07 13 52			Modified Bituminous Sheet Waterproofing	
22-07 13 53			Elastomeric Sheet Waterproofing	
22-07 13 54			Thermoplastic Sheet Waterproofing	
22-07 14 00		Fluid-Applied Waterproofing		
22-07 14 13			Hot Fluid-Applied Rubberized Asphalt Waterproofing	
22-07 14 16			Cold Fluid-Applied Waterproofing	
22-07 15 00		Sheet Metal Waterproofing		
22-07 16 00		Cementitious and Reactive Waterproofing		
22-07 16 13			Polymer Modified Cement Waterproofing	
22-07 16 16			Crystalline Waterproofing	
22-07 16 19			Metal Oxide Waterproofing	
22-07 17 00		Bentonite Waterproofing		
22-07 17 13			Bentonite Panel Waterproofing	
22-07 17 16			Bentonite Composite Sheet Waterproofing	
22-07 18 00		Traffic Coatings		
22-07 18 13			Pedestrian Traffic Coatings	
22-07 18 16			Vehicular Traffic Coatings	
22-07 19 00		Water Repellents		
22-07 19 13			Acrylic Water Repellents	
22-07 19 16			Silane Water Repellents	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-07 19 19			Silicone Water Repellents	
22-07 19 23			Siloxane Water Repellents	
22-07 19 26			Stearate Water Repellents	
22-07 20 00		Thermal Protection		
22-07 21 00		Thermal Insulation		
22-07 21 13			Board Insulation	
22-07 21 13 13				Foam Board Insulation
22-07 21 13 16				Fibrous Board Insulation
22-07 21 13 19				Mineral Board Insulation
22-07 21 16			Blanket Insulation	
22-07 21 19			Foamed-in-Place Insulation	
22-07 21 23			Loose-Fill Insulation	
22-07 21 26			Blown Insulation	
22-07 21 29			Sprayed Insulation	
22-07 21 53			Reflective Insulation	
22-07 22 00		Roof and Deck Insulation		
22-07 22 13			Asphaltic Perlite Concrete Deck	
22-07 22 16			Roof Board Insulation	
22-07 24 00		Exterior Insulation and Finish Systems		
22-07 24 13			Polymer-Based Exterior Insulation and Finish System	
22-07 24 16			Polymer-Modified Exterior Insulation and Finish System	
22-07 24 19			Water-Drainage Exterior Insulation and Finish System	
22-07 24 23			Direct-Applied Finish Systems	
22-07 25 00		Weather Barriers		
22-07 26 00		Vapor Retarders		
22-07 26 13			Above-Grade Vapor Retarders	
22-07 26 16			Below-Grade Vapor Retarders	
22-07 26 23			Below-Grade Gas Retarders	
22-07 27 00		Air Barriers		
22-07 27 13			Modified Bituminous Sheet Air Barriers	
22-07 27 16			Sheet Metal Membrane Air Barriers	
22-07 27 19			Plastic Sheet Air Barriers	
22-07 27 23			Board Product Air Barriers	
22-07 27 26			Fluid-Applied Membrane Air Barriers	
22-07 27 36			Sprayed Foam Air Barrier	
22-07 30 00		Steep Slope Roofing		
22-07 30 91			Canvas Roofing	
22-07 31 00		Shingles and Shakes		
22-07 31 13			Asphalt Shingles	
22-07 31 13 13				Fiberglass-Reinforced Asphalt Shingles
22-07 31 16			Metal Shingles	
22-07 31 19			Mineral-Fiber Cement Shingles	
22-07 31 23			Porcelain Enamel Shingles	
22-07 31 26			Slate Shingles	
22-07 31 29			Wood Shingles and Shakes	
22-07 31 29 13				Wood Shingles
22-07 31 29 16				Wood Shakes
22-07 31 33			Composite Rubber Shingles	
22-07 31 53			Plastic Shakes	
22-07 32 00		Roof Tiles		
22-07 32 13			Clay Roof Tiles	
22-07 32 16			Concrete Roof Tiles	
22-07 32 19			Metal Roof Tiles	
22-07 32 23			Mineral-Fiber Cement Roof Tiles	
22-07 32 26			Plastic Roof Tiles	
22-07 32 29			Rubber Tiles/Panels	
22-07 33 00		Natural Roof Coverings		
22-07 33 13			Sod Roofing	
22-07 33 16			Thatched Roofing	
22-07 33 63			Vegetated Roofing	
22-07 40 00		Roofing and Siding Panels		
22-07 41 00		Roof Panels		
22-07 41 13			Metal Roof Panels	
22-07 41 23			Wood Roof Panels	
22-07 41 33			Plastic Roof Panels	
22-07 41 43			Composite Roof Panels	
22-07 41 63			Fabricated Roof Panel Assemblies	
22-07 42 00		Wall Panels		
22-07 42 13			Metal Wall Panels	
22-07 42 13 13				Formed Metal Wall Panels
22-07 42 13 16				Metal Plate Wall Panels

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-07 42 13 19				Insulated Metal Wall Panels
22-07 42 13 23				Metal Composite Material Wall Panels
22-07 42 23			Wood Wall Panels	
22-07 42 29			Terracotta Wall Panels	
22-07 42 33			Plastic Wall Panels	
22-07 42 43			Composite Wall Panels	
22-07 42 63			Fabricated Wall Panel Assemblies	
22-07 42 93			Soffit Panels	
22-07 44 00		Faced Panels		
22-07 44 13			Aggregate Coated Panels	
22-07 44 16			Porcelain Enameled Faced Panels	
22-07 44 19			Tile-Faced Panels	
22-07 44 23			Ceramic-Tile-Faced Panels	
22-07 44 33			Metal Faced Panels	
22-07 44 53			Glass-Fiber-Reinforced Cementitious Panels	
22-07 44 56			Mineral-Fiber-Reinforced Cementitious Panels	
22-07 44 63			Fabricated Faced Panel Assemblies	
22-07 46 00		Siding		
22-07 46 16			Aluminum Siding	
22-07 46 19			Steel Siding	
22-07 46 23			Wood Siding	
22-07 46 26			Hardboard Siding	
22-07 46 29			Plywood Siding	
22-07 46 33			Plastic Siding	
22-07 46 43			Composition Siding	
22-07 46 46			Fiber-Cement Siding	
22-07 46 63			Fabricated Panel Assemblies with Siding	
22-07 50 00		Membrane Roofing		
22-07 51 00		Built-Up Bituminous Roofing		
22-07 51 13			Built-Up Asphalt Roofing	
22-07 51 13 13				Cold-Applied Built-Up Asphalt Roofing
22-07 51 16			Built-Up Coal Tar Roofing	
22-07 51 23			Glass-Fiber-Reinforced Asphalt Emulsion Roofing	
22-07 52 00		Modified Bituminous Membrane Roofing		
22-07 52 13			Atactic-Polypropylene-Modified Bituminous Membrane Roofing	
22-07 52 13 11				Cold Adhesive Applied Atactic-Polypropylene-Modified Bituminous Membrane Roofing
22-07 52 13 13				Torch-Applied Atactic-Polypropylene-Modified Bituminous Membrane Roofing
22-07 52 13 14				Mechanically Fastened Atactic-Polypropylene-Modified Bituminous Membrane Roofing
22-07 52 16			Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing	
22-07 52 16 11				Cold Adhesive Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing
22-07 52 16 12				Hot-Mopped Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing
22-07 52 16 13				Torch-Applied Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing
22-07 52 16 14				Mechanically Fastened Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing
22-07 53 00		Elastomeric Membrane Roofing		
22-07 53 13			Chlorinated-Polyethylene Roofing	
22-07 53 16			Chlorosulfonate-Polyethylene Roofing	
22-07 53 23			Ethylene-Propylene-Diene-Monomer Roofing	
22-07 53 29			Polyisobutylene Roofing	
22-07 54 00		Thermoplastic Membrane Roofing		
22-07 54 13			Copolymer-Alloy Roofing	
22-07 54 16			Ethylene-Interpolymer Roofing	
22-07 54 19			Polyvinyl-Chloride Roofing	
22-07 54 23			Thermoplastic-Polyolefin Roofing	
22-07 54 26			Nitrile-Butadiene-Polymer Roofing	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-07 55 00		Protected Membrane Roofing		
22-07 55 51			Built-Up Bituminous Protected Membrane Roofing	
22-07 55 52			Modified Bituminous Protected Membrane Roofing	
22-07 55 53			Elastomeric Protected Membrane Roofing	
22-07 55 54			Thermoplastic Protected Membrane Roofing	
22-07 55 56			Fluid-Applied Protected Membrane Roofing	
22-07 55 56 13				Hot-Applied Rubberized Asphalt Protected Membrane Roofing
22-07 55 63			Vegetated Protected Membrane Roofing	
22-07 56 00		Fluid-Applied Roofing		
22-07 57 00		Coated Foamed Roofing		
22-07 57 13			Sprayed Polyurethane Foam Roofing	
22-07 58 00		Roll Roofing		
22-07 60 00		Flashing and Sheet Metal		
22-07 61 00		Sheet Metal Roofing		
22-07 61 13			Standing Seam Sheet Metal Roofing	
22-07 61 16			Batten Seam Sheet Metal Roofing	
22-07 61 19			Flat Seam Sheet Metal Roofing	
22-07 62 00		Sheet Metal Flashing and Trim		
22-07 63 00		Sheet Metal Roofing Specialties		
22-07 64 00		Sheet Metal Wall Cladding		
22-07 64 13			Standing Seam Sheet Metal Wall Cladding	
22-07 64 16			Batten Seam Sheet Metal Wall Cladding	
22-07 64 19			Flat Seam Sheet Metal Wall Cladding	
22-07 65 00		Flexible Flashing		
22-07 65 13			Laminated Sheet Flashing	
22-07 65 16			Modified Bituminous Sheet Flashing	
22-07 65 19			Plastic Sheet Flashing	
22-07 65 23			Rubber Sheet Flashing	
22-07 65 26			Self-Adhering Sheet Flashing	
22-07 70 00		Roof and Wall Specialties and Accessories		
22-07 71 00		Roof Specialties		
22-07 71 13			Manufactured Copings	
22-07 71 16			Manufactured Counterflashing Systems	
22-07 71 19			Manufactured Gravel Stops and Fascias	
22-07 71 23			Manufactured Gutters and Downspouts	
22-07 71 23 13				Gutter Debris Guards
22-07 71 26			Reglets	
22-07 71 29			Manufactured Roof Expansion Joints	
22-07 71 33			Manufactured Scuppers	
22-07 72 00		Roof Accessories		
22-07 72 13			Manufactured Curbs	
22-07 72 23			Relief Vents	
22-07 72 26			Ridge Vents	
22-07 72 33			Roof Hatches	
22-07 72 36			Smoke Vents	
22-07 72 43			Roof Walk Boards	
22-07 72 46			Roof Walkways	
22-07 72 53			Snow Guards	
22-07 72 63			Waste Containment Assemblies	
22-07 76 00		Roof Pavers		
22-07 76 13			Roof Ballast Pavers	
22-07 76 16			Roof Decking Pavers	
22-07 77 00		Wall Specialties		
22-07 80 00		Fire and Smoke Protection		
22-07 81 00		Applied Fireproofing		
22-07 81 13			Cement Aggregate Fireproofing	
22-07 81 16			Cementitious Fireproofing	
22-07 81 19			Foamed Magnesium-Oxychloride Fireproofing	
22-07 81 23			Intumescent Fireproofing	
22-07 81 26			Magnesium Cement Fireproofing	
22-07 81 29			Mineral-Fiber Cementitious Fireproofing	
22-07 81 33			Mineral-Fiber Fireproofing	
22-07 82 00		Board Fireproofing		
22-07 82 13			Calcium-Silicate Board Fireproofing	
22-07 82 16			Slag-Fiber Board Fireproofing	
22-07 84 00		Firestopping		
22-07 84 13			Penetration Firestopping	
22-07 84 13 13				Penetration Firestopping Mortars
22-07 84 13 16				Penetration Firestopping Devices
22-07 84 43			Joint Firestopping	
22-07 84 53			Building Perimeter Firestopping	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-07 86 00		Smoke Seals		
22-07 87 00		Smoke Containment Barriers		
22-07 90 00		Joint Protection		
22-07 91 00		Preformed Joint Seals		
22-07 91 13			Compression Seals	
22-07 91 16			Joint Gaskets	
22-07 91 23			Backer Rods	
22-07 91 26			Joint Fillers	
22-07 92 00		Joint Sealants		
22-07 92 13			Elastomeric Joint Sealants	
22-07 92 16			Rigid Joint Sealants	
22-07 92 19			Acoustical Joint Sealants	
22-07 95 00		Expansion Control		
22-07 95 13			Expansion Joint Cover Assemblies	
22-07 95 53			Joint Slide Bearings	
22-07 95 63			Bridge Expansion Joint Cover Assemblies	
22-08 00 00	Openings			
22-08 01 00		Operation and Maintenance of Openings		
22-08 01 10			Operation and Maintenance of Doors and Frames	
22-08 01 11			Operation and Maintenance of Metal Doors and Frames	
22-08 01 14			Operation and Maintenance of Wood Doors	
22-08 01 15			Operation and Maintenance of Plastic Doors	
22-08 01 16			Operation and Maintenance of Composite Doors	
22-08 01 17			Operation and Maintenance of Integrated Door Opening Assemblies	
22-08 01 30			Operation and Maintenance of Specialty Doors and Frames	
22-08 01 32			Operation and Maintenance of Sliding Glass Doors	
22-08 01 33			Operation and Maintenance of Coiling Doors and Grilles	
22-08 01 34			Operation and Maintenance of Special Function Doors	
22-08 01 35			Operation and Maintenance of Folding Doors and Grilles	
22-08 01 36			Operation and Maintenance of Panel Doors	
22-08 01 39			Operation and Maintenance of Traffic Doors	
22-08 01 40			Operation and Maintenance of Entrances, Storefronts, and Curtain Walls	
22-08 01 41			Operation and Maintenance of Entrances	
22-08 01 42			Operation and Maintenance of Storefronts	
22-08 01 44			Operation and Maintenance of Curtain Walls	
22-08 01 50			Operation and Maintenance of Windows	
22-08 01 51			Operation and Maintenance of Metal Windows	
22-08 01 52			Operation and Maintenance of Wood Windows	
22-08 01 52 61				Wood Window Repairs
22-08 01 52 71				Wood Window Rehabilitation
22-08 01 52 81				Wood Window Replacement
22-08 01 52 91				Wood Window Restoration
22-08 01 52 93				Historic Treatment of Wood Windows
22-08 01 53			Operation and Maintenance of Plastic Windows	
22-08 01 54			Operation and Maintenance of Composite Windows	
22-08 01 56			Operation and Maintenance of Special Function Windows	
22-08 01 60			Operation and Maintenance of Skylights and Roof Windows	
22-08 01 61			Operation and Maintenance of Roof Windows	
22-08 01 62			Operation and Maintenance of Unit Skylights	
22-08 01 63			Operation and Maintenance of Metal-Framed Skylights	
22-08 01 64			Operation and Maintenance of Plastic-Framed Skylights	
22-08 01 70			Operation and Maintenance of Hardware	
22-08 01 71			Operation and Maintenance of Door Hardware	
22-08 01 74			Operation and Maintenance of Access Control Hardware	
22-08 01 75			Operation and Maintenance of Window Hardware	
22-08 01 80			Maintenance of Glazing	
22-08 01 81			Maintenance of Glass Glazing	
22-08 01 84			Maintenance of Plastic Glazing	
22-08 01 88			Maintenance of Special Function Glazing	
22-08 01 90			Operation and Maintenance of Louvers and Vents	
22-08 01 91			Operation and Maintenance of Louvers	
22-08 01 92			Operation and Maintenance of Louvered Equipment Enclosures	
22-08 01 95			Operation and Maintenance of Vents	
22-08 05 00		Common Work Results for Openings		
22-08 08 00		Commissioning of Openings		
22-08 10 00		Doors and Frames		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-08 11 00		Metal Doors and Frames		
22-08 11 13			Hollow Metal Doors and Frames	
22-08 11 13 13				Standard Hollow Metal Doors and Frames
22-08 11 13 16				Custom Hollow Metal Doors and Frames
22-08 11 16			Aluminum Doors and Frames	
22-08 11 19			Stainless-Steel Doors and Frames	
22-08 11 23			Bronze Doors and Frames	
22-08 11 63			Metal Screen and Storm Doors and Frames	
22-08 11 63 13				Steel Screen and Storm Doors and Frames
22-08 11 63 23				Aluminum Screen and Storm Doors and Frames
22-08 11 66			Metal Screen Doors and Frames	
22-08 11 66 13				Steel Screen Doors and Frames
22-08 11 66 23				Aluminum Screen Doors and Frames
22-08 11 69			Metal Storm Doors and Frames	
22-08 11 69 13				Steel Storm Doors and Frames
22-08 11 69 23				Aluminum Storm Doors and Frames
22-08 11 73			Sliding Metal Firedoors	
22-08 11 74			Sliding Metal Grilles	
22-08 12 00		Metal Frames		
22-08 12 13			Hollow Metal Frames	
22-08 12 13 13				Standard Hollow Metal Frames
22-08 12 13 53				Custom Hollow Metal Frames
22-08 12 16			Aluminum Frames	
22-08 12 19			Stainless-Steel Frames	
22-08 12 23			Bronze Frames	
22-08 13 00		Metal Doors		
22-08 13 13			Hollow Metal Doors	
22-08 13 13 13				Standard Hollow Metal Doors
22-08 13 13 53				Custom Hollow Metal Doors
22-08 13 16			Aluminum Doors	
22-08 13 19			Stainless-Steel Doors	
22-08 13 23			Bronze Doors	
22-08 13 73			Sliding Metal Doors	
22-08 13 76			Bifolding Metal Doors	
22-08 14 00		Wood Doors		
22-08 14 13			Carved Wood Doors	
22-08 14 16			Flush Wood Doors	
22-08 14 23			Clad Wood Doors	
22-08 14 23 13				Metal-Faced Wood Doors
22-08 14 23 16				Plastic-Laminate-Faced Wood Doors
22-08 14 23 19				Molded-Hardboard-Faced Wood Doors
22-08 14 29			Prefinished Wood Doors	
22-08 14 33			Stile and Rail Wood Doors	
22-08 14 66			Wood Screen Doors	
22-08 14 69			Wood Storm Doors	
22-08 14 73			Sliding Wood Doors	
22-08 14 76			Bifolding Wood Doors	
22-08 15 00		Plastic Doors		
22-08 15 13			Laminated Plastic Doors	
22-08 15 16			Solid Plastic Doors	
22-08 15 66			Plastic Screen Doors	
22-08 15 69			Plastic Storm Doors	
22-08 15 73			Sliding Plastic Doors	
22-08 15 76			Bifolding Plastic Doors	
22-08 16 00		Composite Doors		
22-08 16 13			Fiberglass Doors	
22-08 16 73			Sliding Composite Doors	
22-08 16 76			Bifolding Composite Doors	
22-08 17 00		Integrated Door Opening Assemblies		
22-08 17 13			Integrated Metal Door Opening Assemblies	
22-08 17 23			Integrated Wood Door Opening Assemblies	
22-08 17 33			Integrated Plastic Door Opening Assemblies	
22-08 17 43			Integrated Composite Door Opening Assemblies	
22-08 30 00		Specialty Doors and Frames		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-08 31 00		Access Doors and Panels		
22-08 31 13			Access Doors and Frames	
22-08 31 13 53				Security Access Doors and Frames
22-08 31 16			Access Panels and Frames	
22-08 32 00		Sliding Glass Doors		
22-08 32 13			Sliding Aluminum-Framed Glass Doors	
22-08 32 16			Sliding Plastic-Framed Glass Doors	
22-08 32 19			Sliding Wood-Framed Glass Doors	
22-08 33 00		Coiling Doors and Grilles		
22-08 33 13			Coiling Counter Doors	
22-08 33 16			Coiling Counter Grilles	
22-08 33 23			Overhead Coiling Doors	
22-08 33 23 13				Overhead Rapid Coiling Doors
22-08 33 26			Overhead Coiling Grilles	
22-08 33 33			Side Coiling Doors	
22-08 33 36			Side Coiling Grilles	
22-08 33 43			Overhead Coiling Smoke Curtains	
22-08 34 00		Special Function Doors		
22-08 34 13			Cold Storage Doors	
22-08 34 16			Hangar Doors	
22-08 34 19			Industrial Doors	
22-08 34 33			Lightproof Doors	
22-08 34 36			Darkroom Doors	
22-08 34 46			Radio-Frequency-Interference Shielding Doors	
22-08 34 49			Radiation Shielding Doors and Frames	
22-08 34 49 13				Neutron Shielding Doors and Frames
22-08 34 53			Security Doors and Frames	
22-08 34 56			Security Gates	
22-08 34 58			File Room Doors and Frames	
22-08 34 59			Vault Doors and Day Gates	
22-08 34 63			Detention Doors and Frames	
22-08 34 63 13				Steel Detention Doors and Frames
22-08 34 63 16				Steel Plate Detention Doors and Frames
22-08 34 63 33				Detention Door Frame Protection
22-08 34 73			Sound Control Door Assemblies	
22-08 35 00		Folding Doors and Grilles		
22-08 35 13			Folding Doors	
22-08 35 13 13				Accordion Folding Doors
22-08 35 13 23				Accordion Folding Fire Doors
22-08 35 13 33				Panel Folding Doors
22-08 35 16			Folding Grilles	
22-08 35 16 13				Accordion Folding Grilles
22-08 36 00		Panel Doors		
22-08 36 13			Sectional Doors	
22-08 36 16			Single-Panel Doors	
22-08 36 19			Multi-Leaf Vertical Lift Doors	
22-08 36 23			Telescoping Vertical Lift Doors	
22-08 38 00		Traffic Doors		
22-08 38 13			Flexible Strip Doors	
22-08 38 16			Flexible Traffic Doors	
22-08 38 19			Rigid Traffic Doors	
22-08 39 00		Pressure-Resistant Doors		
22-08 39 13			Airtight Doors	
22-08 39 19			Watertight Doors	
22-08 39 53			Blast-Resistant Doors	
22-08 40 00		Entrances, Storefronts, and Curtain Walls		
22-08 41 00		Entrances and Storefronts		
22-08 41 13			Aluminum-Framed Entrances and Storefronts	
22-08 41 16			Bronze-Framed Entrances and Storefronts	
22-08 41 19			Stainless-Steel-Framed Entrances and Storefronts	
22-08 41 23			Steel-Framed Entrances and Storefronts	
22-08 41 26			All-Glass Entrances and Storefronts	
22-08 42 00		Entrances		
22-08 42 26			All-Glass Entrances	
22-08 42 29			Automatic Entrances	
22-08 42 29 13				Folding Automatic Entrances
22-08 42 29 23				Sliding Automatic Entrances
22-08 42 29 33				Swinging Automatic Entrances

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-08 42 33			Revolving Door Entrances	
22-08 42 33 13				Security Revolving Door Entrances
22-08 42 36			Balanced Door Entrances	
22-08 42 39			Pressure-Resistant Entrances	
22-08 42 43			Intensive Care Unit/Critical Care Unit Entrances	
22-08 43 00		Storefronts		
22-08 43 11			Timber-Framed Storefronts	
22-08 43 13			Aluminum-Framed Storefronts	
22-08 43 16			Bronze-Framed Storefronts	
22-08 43 19			Stainless-Steel-Framed Storefronts	
22-08 43 23			Steel-Framed Storefronts	
22-08 43 26			All-Glass Storefronts	
22-08 43 27			Channel Glass Storefronts	
22-08 43 29			Sliding Storefronts	
22-08 44 00		Curtain Wall and Glazed Assemblies		
22-08 44 11			Glazed Timber Curtain Walls	
22-08 44 13			Glazed Aluminum Curtain Walls	
22-08 44 16			Glazed Bronze Curtain Walls	
22-08 44 18			Glazed Steel Curtain Walls	
22-08 44 19			Glazed Stainless-Steel Curtain Walls	
22-08 44 23			Structural Sealant Glazed Curtain Wall	
22-08 44 26			Structural Glass Curtain Walls	
22-08 44 26 19				Point Supported Structural Glass
22-08 44 33			Sloped Glazing Assemblies	
22-08 45 00		Translucent Wall and Roof Assemblies		
22-08 45 13			Structured-Polycarbonate-Panel Assemblies	
22-08 45 23			Fiberglass-Sandwich-Panel Assemblies	
22-08 50 00		Windows		
22-08 51 00		Metal Windows		
22-08 51 13			Aluminum Windows	
22-08 51 16			Bronze Windows	
22-08 51 19			Stainless-Steel Windows	
22-08 51 23			Steel Windows	
22-08 51 66			Metal Window Screens	
22-08 51 69			Metal Storm Windows	
22-08 52 00		Wood Windows		
22-08 52 13			Metal-Clad Wood Windows	
22-08 52 16			Plastic-Clad Wood Windows	
22-08 52 66			Wood Window Screens	
22-08 52 69			Wood Storm Windows	
22-08 53 00		Plastic Windows		
22-08 53 13			Vinyl Windows	
22-08 53 66			Vinyl Window Screens	
22-08 53 69			Vinyl Storm Windows	
22-08 54 00		Composite Windows		
22-08 54 13			Fiberglass Windows	
22-08 54 66			Fiberglass Window Screens	
22-08 54 69			Fiberglass Storm Windows	
22-08 55 00		Pressure-Resistant Windows		
22-08 56 00		Special Function Windows		
22-08 56 19			Pass Windows	
22-08 56 46			Radio-Frequency-Interference Shielding Windows	
22-08 56 49			Radiation Shielding Windows	
22-08 56 53			Security Windows	
22-08 56 56			Security Window Screens	
22-08 56 59			Service and Teller Window Units	
22-08 56 63			Detention Windows	
22-08 56 66			Detention Window Screens	
22-08 56 73			Sound Control Windows	
22-08 56 88			Interior Insulating Windows	
22-08 60 00		Roof Windows and Skylights		
22-08 61 00		Roof Windows		
22-08 61 13			Metal Roof Windows	
22-08 61 16			Wood Roof Windows	
22-08 62 00		Unit Skylights		
22-08 62 13			Domed Unit Skylights	
22-08 62 16			Pyramidal Unit Skylights	
22-08 62 19			Vaulted Unit Skylights	
22-08 62 23			Tubular Skylights	
22-08 63 00		Metal-Framed Skylights		
22-08 63 13			Domed Metal-Framed Skylights	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-08 63 16			Pyramidal Metal-Framed Skylights	
22-08 63 19			Vaulted Metal-Framed Skylights	
22-08 63 23			Ridge Metal-Framed Skylights	
22-08 63 53			Motorized Metal-Framed Skylights	
22-08 64 00		Plastic-Framed Skylights		
22-08 67 00		Skylight Protection and Screens		
22-08 70 00		Hardware		
22-08 71 00		Door Hardware		
22-08 71 13			Automatic Door Operators	
22-08 71 53			Security Door Hardware	
22-08 71 63			Detention Door Hardware	
22-08 74 00		Access Control Hardware		
22-08 74 13			Card Key Access Control Hardware	
22-08 74 16			Keypad Access Control Hardware	
22-08 74 19			Biometric Identity Access Control Hardware	
22-08 75 00		Window Hardware		
22-08 75 13			Automatic Window Equipment	
22-08 75 16			Window Operators	
22-08 78 00		Special Function Hardware		
22-08 79 00		Hardware Accessories		
22-08 79 13			Key Storage Equipment	
22-08 80 00		Glazing		
22-08 81 00		Glass Glazing		
22-08 81 13			Decorative Glass Glazing	
22-08 83 00		Mirrors		
22-08 83 13			Mirrored Glass Glazing	
22-08 83 16			Mirrored Plastic Glazing	
22-08 84 00		Plastic Glazing		
22-08 84 13			Decorative Plastic Glazing	
22-08 85 00		Glazing Accessories		
22-08 87 00		Glazing Surface Films		
22-08 87 13			Solar Control Films	
22-08 87 23			Safety and Security Films	
22-08 87 23 13				Safety Films
22-08 87 23 16				Security Films
22-08 87 33			Decorative Films	
22-08 88 00		Special Function Glazing		
22-08 88 13			Fire-Resistant Glazing	
22-08 88 19			Hurricane-Resistant Glazing	
22-08 88 23			Cable Suspended Glazing	
22-08 88 33			Transparent Mirrored Glazing	
22-08 88 36			Switchable Glass	
22-08 88 36 16				Electronically Controlled Switchable Glass
22-08 88 39			Pressure-Resistant Glazing	
22-08 88 49			Radiation-Resistant Glazing	
22-08 88 53			Security Glazing	
22-08 88 56			Ballistics-Resistant Glazing	
22-08 90 00		Louvers and Vents		
22-08 91 00		Louvers		
22-08 91 13			Motorized Wall Louvers	
22-08 91 16			Operable Wall Louvers	
22-08 91 19			Fixed Louvers	
22-08 91 26			Door Louvers	
22-08 92 00		Louvered Equipment Enclosures		
22-08 95 00		Vents		
22-08 95 13			Soffit Vents	
22-08 95 16			Wall Vents	
22-08 95 33			Explosion Vents	
22-08 95 43			Flood Vents	
22-09 00 00	Finishes			
22-09 01 00		Maintenance of Finishes		
22-09 01 20			Maintenance of Plaster and Gypsum Board	
22-09 01 20 91				Plaster Restoration
22-09 01 30			Maintenance of Tiling	
22-09 01 30 91				Tile Restoration
22-09 01 50			Maintenance of Ceilings	
22-09 01 50 91				Ceiling Restoration
22-09 01 60			Maintenance of Flooring	
22-09 01 60 91				Flooring Restoration
22-09 01 70			Maintenance of Wall Finishes	
22-09 01 70 91				Wall Finish Restoration

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-09 01 80			Maintenance of Acoustic Treatment	
22-09 01 90			Maintenance of Painting and Coating	
22-09 01 90 51				Paint Cleaning
22-09 01 90 52				Maintenance Repainting
22-09 01 90 53				Maintenance Coatings
22-09 01 90 61				Repainting
22-09 01 90 91				Paint Restoration
22-09 01 90 92				Coating Restoration
22-09 01 90 93				Paint Preservation
22-09 05 00		Common Work Results for Finishes		
22-09 05 13			Common Finishes	
22-09 05 61			Common Work Results for Flooring Preparation	
22-09 08 00		Commissioning of Finishes		
22-09 20 00		Plaster and Gypsum Board		
22-09 21 00		Plaster and Gypsum Board Assemblies		
22-09 21 13			Plaster Assemblies	
22-09 21 16			Gypsum Board Assemblies	
22-09 21 16 23				Gypsum Board Shaft Wall Assemblies
22-09 21 16 33				Gypsum Board Area Separation Wall Assemblies
22-09 22 00		Supports for Plaster and Gypsum Board		
22-09 22 13			Metal Furring	
22-09 22 13 13				Metal Channel Furring
22-09 22 13 23				Resilient Channel Furring
22-09 22 16			Non-Structural Metal Framing	
22-09 22 16 13				Non-Structural Metal Stud Framing
22-09 22 26			Suspension Systems	
22-09 22 26 23				Metal Suspension Systems
22-09 22 26 33				Plastic Suspension Systems
22-09 22 36			Lath	
22-09 22 36 13				Gypsum Lath
22-09 22 36 23				Metal Lath
22-09 22 39			Veneer Plaster Base	
22-09 23 00		Gypsum Plastering		
22-09 23 13			Acoustical Gypsum Plastering	
22-09 23 82			Fireproof Gypsum Plastering	
22-09 24 00		Cement Plastering		
22-09 24 13			Adobe Finish	
22-09 24 23			Cement Stucco	
22-09 24 33			Cement Parging	
22-09 25 00		Other Plastering		
22-09 25 13			Acrylic Plastering	
22-09 25 13 13				Acrylic Plaster Finish
22-09 25 23			Lime Based Plastering	
22-09 25 26			Natural Clay Plastering	
22-09 26 00		Veneer Plastering		
22-09 26 13			Gypsum Veneer Plastering	
22-09 27 00		Plaster Fabrications		
22-09 27 13			Glass-Fiber-Reinforced Plaster Fabrications	
22-09 27 23			Simulated Plaster Fabrications	
22-09 28 00		Backing Boards and Underlayments		
22-09 28 13			Cementitious Backing Boards	
22-09 28 16			Glass-Mat Faced Gypsum Backing Boards	
22-09 28 19			Fibered Gypsum Backing Boards	
22-09 29 00		Gypsum Board		
22-09 29 82			Gypsum Board Fireproofing	
22-09 30 00		Tiling		
22-09 30 13			Ceramic Tiling	
22-09 30 16			Quarry Tiling	
22-09 30 19			Paver Tiling	
22-09 30 23			Glass Mosaic Tiling	
22-09 30 26			Plastic Tiling	
22-09 30 29			Metal Tiling	
22-09 30 33			Stone Tiling	
22-09 30 36			Concrete Tiling	
22-09 30 39			Brick Tiling	
22-09 31 00		Thin-Set Tiling		
22-09 31 13			Thin-Set Ceramic Tiling	
22-09 31 16			Thin-Set Quarry Tiling	
22-09 31 19			Thin-Set Paver Tiling	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-09 31 23			Thin-Set Glass Mosaic Tiling	
22-09 31 26			Thin-Set Plastic Tiling	
22-09 31 29			Thin-Set Metal Tiling	
22-09 31 33			Thin-Set Stone Tiling	
22-09 31 36			Thin-Set Concrete Tiling	
22-09 32 00		Mortar-Bed Tiling		
22-09 32 13			Mortar-Bed Ceramic Tiling	
22-09 32 16			Mortar-Bed Quarry Tiling	
22-09 32 19			Mortar-Bed Paver Tiling	
22-09 32 23			Mortar-Bed Glass Mosaic Tiling	
22-09 32 26			Mortar-Bed Plastic Tiling	
22-09 32 29			Mortar-Bed Metal Tiling	
22-09 32 33			Mortar-Bed Stone Tiling	
22-09 32 36			Mortar-Bed Concrete Tiling	
22-09 33 00		Conductive Tiling		
22-09 33 13			Conductive Ceramic Tiling	
22-09 33 16			Conductive Quarry Tiling	
22-09 33 19			Conductive Paver Tiling	
22-09 33 23			Conductive Glass Mosaic Tiling	
22-09 33 26			Conductive Plastic Tiling	
22-09 33 29			Conductive Metal Tiling	
22-09 33 33			Conductive Stone Tiling	
22-09 33 36			Conductive Concrete Tiling	
22-09 34 00		Waterproofing-Membrane Tiling		
22-09 34 13			Waterproofing-Membrane Ceramic Tiling	
22-09 34 16			Waterproofing-Membrane Quarry Tiling	
22-09 34 19			Waterproofing-Membrane Paver Tiling	
22-09 34 23			Waterproofing-Membrane Glass Mosaic Tiling	
22-09 34 26			Waterproofing-Membrane Plastic Tiling	
22-09 34 29			Waterproofing-Membrane Metal Tiling	
22-09 34 33			Waterproofing-Membrane Stone Tiling	
22-09 34 36			Waterproofing-Membrane Concrete Tiling	
22-09 35 00		Chemical-Resistant Tiling		
22-09 35 13			Chemical-Resistant Ceramic Tiling	
22-09 35 16			Chemical-Resistant Quarry Tiling	
22-09 35 19			Chemical-Resistant Paver Tiling	
22-09 35 23			Chemical-Resistant Glass Mosaic Tiling	
22-09 35 26			Chemical-Resistant Plastic Tiling	
22-09 35 29			Chemical-Resistant Metal Tiling	
22-09 35 33			Chemical-Resistant Stone Tiling	
22-09 35 36			Chemical-Resistant Concrete Tiling	
22-09 50 00		Ceilings		
22-09 51 00		Acoustical Ceilings		
22-09 51 13			Acoustical Panel Ceilings	
22-09 51 14			Acoustical Fabric-Faced Panel Ceilings	
22-09 51 23			Acoustical Tile Ceilings	
22-09 51 26			Acoustical Wood Ceilings	
22-09 51 33			Acoustical Metal Pan Ceilings	
22-09 51 33 13				Acoustical Snap-in Metal Pan Ceilings
22-09 51 53			Direct-Applied Acoustical Ceilings	
22-09 53 00		Acoustical Ceiling Suspension Assemblies		
22-09 53 13			Curved Profile Ceiling Suspension Assemblies	
22-09 53 23			Metal Acoustical Ceiling Suspension Assemblies	
22-09 53 33			Plastic Acoustical Ceiling Suspension Assemblies	
22-09 54 00		Specialty Ceilings		
22-09 54 13			Open Metal Mesh Ceilings	
22-09 54 16			Luminous Ceilings	
22-09 54 19			Mirror Panel Ceilings	
22-09 54 23			Linear Metal Ceilings	
22-09 54 26			Suspended Wood Ceilings	
22-09 54 33			Decorative Panel Ceilings	
22-09 54 36			Suspended Decorative Grids	
22-09 54 43			Stretched-Fabric Ceiling Systems	
22-09 54 46			Fabric-Wrapped Ceiling Panels	
22-09 54 53			Fiberglass Reinforced Panel Ceilings	
22-09 56 00		Textured Ceilings		
22-09 56 13			Gypsum-Panel Textured Ceilings	
22-09 56 16			Metal-Panel Textured Ceilings	
22-09 57 00		Special Function Ceilings		
22-09 57 53			Security Ceiling Assemblies	
22-09 58 00		Integrated Ceiling Assemblies		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-09 60 00		Flooring		
22-09 60 13			Acoustical Underlayment	
22-09 61 00		Flooring Treatment		
22-09 61 13			Slip-Resistant Flooring Treatment	
22-09 61 36			Static-Resistant Flooring Treatment	
22-09 62 00		Specialty Flooring		
22-09 62 13			Asphaltic Plank Flooring	
22-09 62 19			Laminate Flooring	
22-09 62 23			Bamboo Flooring	
22-09 62 26			Leather Flooring	
22-09 62 29			Cork Flooring	
22-09 62 35			Acid-Resistant Flooring	
22-09 62 48			Acoustic Flooring	
22-09 62 53			Synthetic Turf Flooring	
22-09 62 63			Metal Flooring	
22-09 62 63 13				Aluminum Flooring
22-09 62 63 16				Stainless Steel Flooring
22-09 62 83			Structural Glass Flooring	
22-09 63 00		Masonry Flooring		
22-09 63 13			Brick Flooring	
22-09 63 13 35				Chemical-Resistant Brick Flooring
22-09 63 40			Stone Flooring	
22-09 63 43			Composition Stone Flooring	
22-09 64 00		Wood Flooring		
22-09 64 16			Wood Block Flooring	
22-09 64 19			Wood Composition Flooring	
22-09 64 23			Wood Parquet Flooring	
22-09 64 23 13				Acrylic-Impregnated Wood Parquet Flooring
22-09 64 29			Wood Strip and Plank Flooring	
22-09 64 33			Laminated Wood Flooring	
22-09 64 53			Resilient Wood Flooring Assemblies	
22-09 64 66			Wood Athletic Flooring	
22-09 65 00		Resilient Flooring		
22-09 65 13			Resilient Base and Accessories	
22-09 65 13 13				Resilient Base
22-09 65 13 23				Resilient Stair Treads and Risers
22-09 65 13 26				Resilient Stair Nosings
22-09 65 13 33				Resilient Accessories
22-09 65 13 36				Resilient Carpet Transitions
22-09 65 16			Resilient Sheet Flooring	
22-09 65 16 23				Vinyl Sheet Flooring
22-09 65 16 33				Rubber Sheet Flooring
22-09 65 16 43				PVC-Free Sheet Flooring
22-09 65 19			Resilient Tile Flooring	
22-09 65 33			Conductive Resilient Flooring	
22-09 65 36			Static-Control Resilient Flooring	
22-09 65 36 13				Static-Dissipative Resilient Flooring
22-09 65 36 16				Static-Resistant Resilient Flooring
22-09 65 43			Linoleum Flooring	
22-09 65 66			Resilient Athletic Flooring	
22-09 66 00		Terrazzo Flooring		
22-09 66 13			Portland Cement Terrazzo Flooring	
22-09 66 13 13				Sand Cushion Terrazzo Flooring
22-09 66 13 16				Monolithic Terrazzo Flooring
22-09 66 13 19				Bonded Terrazzo Flooring
22-09 66 13 23				Palladina Terrazzo Flooring
22-09 66 13 26				Rustic Terrazzo Flooring
22-09 66 13 33				Structural Terrazzo Flooring
22-09 66 16			Terrazzo Floor Tile	
22-09 66 16 13				Portland Cement Terrazzo Floor Tile
22-09 66 16 16				Plastic-Matrix Terrazzo Floor Tile
22-09 66 23			Resinous Matrix Terrazzo Flooring	
22-09 66 23 13				Polyacrylate Modified Cementitious Terrazzo Flooring
22-09 66 23 16				Epoxy-Resin Terrazzo Flooring

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-09 66 23 19				Polyester-Resin Terrazzo Flooring
22-09 66 33			Conductive Terrazzo Flooring	
22-09 66 33 13				Conductive Epoxy-Resin Terrazzo
22-09 66 33 16				Conductive Polyester-Resin Terrazzo Flooring
22-09 66 33 19				Conductive Plastic-Matrix Terrazzo Flooring
22-09 67 00		Fluid-Applied Flooring		
22-09 67 13			Elastomeric Liquid Flooring	
22-09 67 13 33				Conductive Elastomeric Liquid Flooring
22-09 67 16			Epoxy-Marble Chip Flooring	
22-09 67 19			Magnesium-Oxychloride Flooring	
22-09 67 23			Resinous Flooring	
22-09 67 26			Quartz Flooring	
22-09 67 66			Fluid-Applied Athletic Flooring	
22-09 68 00		Carpeting		
22-09 68 13			Tile Carpeting	
22-09 68 16			Sheet Carpeting	
22-09 69 00		Access Flooring		
22-09 69 13			Rigid-Grid Access Flooring	
22-09 69 16			Snap-on Stringer Access Flooring	
22-09 69 19			Stringerless Access Flooring	
22-09 69 33			Low-Profile Fixed Height Access Flooring	
22-09 69 53			Access Flooring Accessories	
22-09 69 56			Access Flooring Stairs and Stringers	
22-09 70 00		Wall Finishes		
22-09 72 00		Wall Coverings		
22-09 72 13			Cork Wall Coverings	
22-09 72 16			Vinyl-Coated Fabric Wall Coverings	
22-09 72 16 13				Flexible Vinyl Wall Coverings
22-09 72 16 16				Rigid-Sheet Vinyl Wall Coverings
22-09 72 19			Textile Wall Coverings	
22-09 72 23			Wallpapering	
22-09 73 00		Wall Carpeting		
22-09 74 00		Flexible Wood Sheets		
22-09 74 13			Wood Wall Coverings	
22-09 74 16			Flexible Wood Veneers	
22-09 75 00		Stone Facing		
22-09 75 13			Stone Wall Facing	
22-09 75 19			Stone Trim	
22-09 76 00		Plastic Blocks		
22-09 77 00		Special Wall Surfacing		
22-09 77 13			Stretched-Fabric Wall Systems	
22-09 77 23			Fabric-Wrapped Panels	
22-09 77 53			Vegetated Wall Systems	
22-09 80 00		Acoustic Treatment		
22-09 81 00		Acoustic Insulation		
22-09 81 13			Acoustic Board Insulation	
22-09 81 16			Acoustic Blanket Insulation	
22-09 81 29			Sprayed Acoustic Insulation	
22-09 83 00		Acoustic Finishes		
22-09 83 13			Acoustic Wall Coating	
22-09 83 16			Acoustic Ceiling Coating	
22-09 83 22			Acoustic Drapery	
22-09 84 00		Acoustic Room Components		
22-09 84 13			Fixed Sound-Absorptive Panels	
22-09 84 14			Acoustic Stretched-Fabric Wall Systems	
22-09 84 16			Fixed Sound-Reflective Panels	
22-09 84 23			Moveable Sound-Absorptive Panels	
22-09 84 26			Moveable Sound-Reflective Panels	
22-09 84 33			Sound-Absorbing Wall Units	
22-09 84 36			Sound-Absorbing Ceiling Units	
22-09 90 00		Painting and Coating		
22-09 91 00		Painting		
22-09 91 13			Exterior Painting	
22-09 91 23			Interior Painting	
22-09 93 00		Staining and Transparent Finishing		
22-09 93 13			Exterior Staining and Finishing	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-09 93 13 13				Exterior Staining
22-09 93 13 53				Exterior Finishing
22-09 93 23			Interior Staining and Finishing	
22-09 93 23 13				Interior Staining
22-09 93 23 53				Interior Finishing
22-09 94 00		Decorative Finishing		
22-09 94 13			Textured Finishing	
22-09 94 16			Faux Finishing	
22-09 94 19			Multicolor Interior Finishing	
22-09 96 00		High-Performance Coatings		
22-09 96 13			Abrasion-Resistant Coatings	
22-09 96 23			Graffiti-Resistant Coatings	
22-09 96 26			Marine Coatings	
22-09 96 33			High-Temperature-Resistant Coatings	
22-09 96 35			Chemical-Resistant Coatings	
22-09 96 43			Fire-Retardant Coatings	
22-09 96 46			Intumescent Painting	
22-09 96 53			Elastomeric Coatings	
22-09 96 56			Epoxy Coatings	
22-09 96 59			High-Build Glazed Coatings	
22-09 96 63			Textured Plastic Coatings	
22-09 96 66			Aggregate Wall Coatings	
22-09 97 00		Special Coatings		
22-09 97 13			Steel Coatings	
22-09 97 13 13				Interior Steel Coatings
22-09 97 13 23				Exterior Steel Coatings
22-09 97 23			Concrete and Masonry Coatings	
22-09 97 26			Cementitious Coatings	
22-09 97 26 13				Interior Cementitious Coatings
22-09 97 26 23				Exterior Cementitious Coatings
22-10 00 00	Specialties			
22-10 01 00		Operation and Maintenance of Specialties		
22-10 01 10			Operation and Maintenance of Information Specialties	
22-10 01 20			Operation and Maintenance of Interior Specialties	
22-10 01 30			Operation and Maintenance of Fireplaces and Stoves	
22-10 01 40			Operation and Maintenance of Safety Specialties	
22-10 01 50			Operation and Maintenance of Storage Specialties	
22-10 01 70			Operation and Maintenance of Exterior Specialties	
22-10 01 80			Operation and Maintenance of Other Specialties	
22-10 05 00		Common Work Results for Specialties		
22-10 08 00		Commissioning of Specialties		
22-10 10 00		Information Specialties		
22-10 11 00		Visual Display Units		
22-10 11 13			Chalkboards	
22-10 11 13 13				Fixed Chalkboards
22-10 11 13 23				Modular-Support-Mounted Chalkboards
22-10 11 13 33				Rail-Mounted Chalkboards
22-10 11 13 43				Portable Chalkboards
22-10 11 16			Markerboards	
22-10 11 16 13				Fixed Markerboards
22-10 11 16 23				Modular-Support-Mounted Markerboards
22-10 11 16 33				Rail-Mounted Markerboards
22-10 11 16 43				Portable Markerboards
22-10 11 16 53				Electronic Markerboards
22-10 11 23			Tackboards	
22-10 11 23 13				Fixed Tackboards
22-10 11 23 23				Modular-Support-Mounted Tackboards
22-10 11 23 33				Rail-Mounted Tackboards
22-10 11 23 43				Portable Tackboards
22-10 11 33			Sliding Visual Display Units	
22-10 11 33 13				Horizontal-Sliding Visual Display Units
22-10 11 33 23				Vertical-Sliding Visual Display Units
22-10 11 36			Visual Display Conference Units	
22-10 11 39			Visual Display Rails	
22-10 11 43			Visual Display Wall Panels	
22-10 11 46			Visual Display Fabrics	
22-10 12 00		Display Cases		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-10 13 00		Directories		
22-10 13 13			Electronic Directories	
22-10 13 23			Illuminated Directories	
22-10 14 00		Signage		
22-10 14 16			Plaques	
22-10 14 19			Dimensional Letter Signage	
22-10 14 23			Panel Signage	
22-10 14 23 13				Engraved Panel Signage
22-10 14 26			Post and Panel/Pylon Signage	
22-10 14 33			Illuminated Panel Signage	
22-10 14 43			Photoluminescent Signage	
22-10 14 53			Traffic Signage	
22-10 14 53 13				Transportation Reference Markers
22-10 14 63			Electronic Message Signage	
22-10 14 64			Audible Signage	
22-10 14 66			Floating Signage	
22-10 17 00		Telephone Specialties		
22-10 17 13			Telephone Directory Units	
22-10 17 16			Telephone Enclosures	
22-10 17 16 13				Telephone Stalls
22-10 17 16 16				Telephone Alcoves
22-10 17 19			Telephone Shelving	
22-10 18 00		Informational Kiosks		
22-10 20 00		Interior Specialties		
22-10 21 00		Compartments and Cubicles		
22-10 21 13			Toilet Compartments	
22-10 21 13 13				Metal Toilet Compartments
22-10 21 13 16				Plastic-Laminate-Clad Toilet Compartments
22-10 21 13 19				Plastic Toilet Compartments
22-10 21 13 23				Particleboard Toilet Compartments
22-10 21 13 40				Stone Toilet Compartments
22-10 21 16			Shower and Dressing Compartments	
22-10 21 16 13				Metal Shower and Dressing Compartments
22-10 21 16 16				Plastic-Laminate-Clad Shower and Dressing Compartments
22-10 21 16 19				Plastic Shower and Dressing Compartments
22-10 21 16 23				Particleboard Shower and Dressing Compartments
22-10 21 16 40				Stone Shower and Dressing Compartments
22-10 21 23			Cubicle Curtains and Track	
22-10 21 23 13				Cubicle Curtains
22-10 21 23 16				Cubicle Track and Hardware
22-10 22 00		Partitions		
22-10 22 13			Wire Mesh Partitions	
22-10 22 14			Expanded Metal Partitions	
22-10 22 16			Folding Gates	
22-10 22 19			Demountable Partitions	
22-10 22 19 13				Demountable Metal Partitions
22-10 22 19 23				Demountable Wood Partitions
22-10 22 19 33				Demountable Plastic Partitions
22-10 22 19 43				Demountable Composite Partitions
22-10 22 19 53				Demountable Gypsum Partitions
22-10 22 23			Portable Partitions, Screens, and Panels	
22-10 22 23 13				Wall Screens
22-10 22 23 23				Movable Panel Systems
22-10 22 33			Accordion Folding Partitions	
22-10 22 36			Coiling Partitions	
22-10 22 39			Folding Panel Partitions	
22-10 22 43			Sliding Partitions	
22-10 25 00		Service Walls		
22-10 25 13			Patient Bed Service Walls	
22-10 25 16			Modular Service Walls	
22-10 26 00		Wall and Door Protection		
22-10 26 13			Corner Guards	
22-10 26 16			Bumper Guards	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-10 26 16 13				Bumper Rails
22-10 26 16 16				Protective Corridor Handrails
22-10 26 23			Protective Wall Covering	
22-10 26 23 13				Impact Resistant Wall Protection
22-10 26 33			Door and Frame Protection	
22-10 26 41			Bullet Resistant Panels	
22-10 28 00		Toilet, Bath, and Laundry Accessories		
22-10 28 13			Toilet Accessories	
22-10 28 13 13				Commercial Toilet Accessories
22-10 28 13 19				Healthcare Toilet Accessories
22-10 28 13 53				Security Toilet Accessories
22-10 28 13 63				Detention Toilet Accessories
22-10 28 16			Bath Accessories	
22-10 28 16 13				Residential Bath Accessories
22-10 28 19			Tub and Shower Doors	
22-10 28 19 16				Shower Doors
22-10 28 19 19				Tub Doors
22-10 28 23			Laundry Accessories	
22-10 28 23 13				Built-In Ironing Boards
22-10 28 23 16				Clothes Drying Racks
22-10 30 00		Fireplaces and Stoves		
22-10 31 00		Manufactured Fireplaces		
22-10 31 13			Manufactured Fireplace Chimneys	
22-10 31 16			Manufactured Fireplace Forms	
22-10 32 00		Fireplace Specialties		
22-10 32 13			Fireplace Dampers	
22-10 32 16			Fireplace Inserts	
22-10 32 19			Fireplace Screens	
22-10 32 23			Fireplace Doors	
22-10 32 26			Fireplace Water Heaters	
22-10 35 00		Stoves		
22-10 35 13			Heating Stoves	
22-10 35 23			Cooking Stoves	
22-10 40 00		Safety Specialties		
22-10 41 00		Emergency Access and Information Cabinets		
22-10 41 13			Fire Department Plan Cabinets	
22-10 41 16			Emergency Key Cabinets	
22-10 43 00		Emergency Aid Specialties		
22-10 43 13			Defibrillator Cabinets	
22-10 43 16			First Aid Cabinets	
22-10 43 21			Accessibility Evacuation Chairs	
22-10 43 31			Respiration Equipment	
22-10 43 33			Breathing Air Replenishment Systems	
22-10 44 00		Fire Protection Specialties		
22-10 44 13			Fire Protection Cabinets	
22-10 44 13 53				Security Fire Extinguisher Cabinets
22-10 44 16			Fire Extinguishers	
22-10 44 16 13				Portable Fire Extinguishers
22-10 44 16 16				Wheeled Fire Extinguisher Units
22-10 44 43			Fire Extinguisher Accessories	
22-10 50 00		Storage Specialties		
22-10 51 00		Lockers		
22-10 51 13			Metal Lockers	
22-10 51 16			Wood Lockers	
22-10 51 23			Plastic-Laminate-Clad Lockers	
22-10 51 26			Plastic Lockers	
22-10 51 26 13				Recycled Plastic Lockers
22-10 51 29			Phenolic Lockers	
22-10 51 33			Glass Lockers	
22-10 51 43			Wire Mesh Storage Lockers	
22-10 51 53			Locker Room Benches	
22-10 55 00		Postal Specialties		
22-10 55 13			Central Mail Delivery Boxes	
22-10 55 13 13				Cluster Box Units
22-10 55 16			Mail Collection Boxes	
22-10 55 19			Receiving Boxes	
22-10 55 23			Mail Boxes	
22-10 55 23 13				Apartment Mail Boxes
22-10 55 23 16				Mail Box Directories
22-10 55 23 19				Mail Box Key Keepers

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-10 55 26			Parcel Lockers	
22-10 55 33			Data Distribution Boxes	
22-10 55 36			Package Depositories	
22-10 55 91			Mail Chutes	
22-10 56 00		Storage Assemblies		
22-10 56 13			Metal Storage Shelving	
22-10 56 13 13				End-Panel-Support Metal Storage Shelving
22-10 56 13 16				Post-and-Shelf Metal Storage Shelving
22-10 56 13 19				Post-and-Beam Metal Storage Shelving
22-10 56 13 23				Cantilever Metal Storage Shelving
22-10 56 16			Fabricated Wood Storage Shelving	
22-10 56 17			Wall-Mounted Standards and Shelving	
22-10 56 19			Plastic Storage Shelving	
22-10 56 19 13				Recycled Plastic Storage Shelving
22-10 56 23			Wire Storage Shelving	
22-10 56 26			Mobile Storage Shelving	
22-10 56 26 13				Manual Mobile Storage Shelving
22-10 56 26 23				Motorized Mobile Storage Shelving
22-10 56 29			Storage Racks	
22-10 56 29 13				Flow Storage Racks
22-10 56 29 16				Pallet Storage Racks
22-10 56 29 19				Movable-Shelf Storage Racks
22-10 56 29 23				Stacker Storage Racks
22-10 56 29 26				Cantilever Storage Racks
22-10 56 29 29				Drive-In Storage Racks
22-10 56 29 33				Drive-Through Storage Racks
22-10 56 29 43				Wine Storage Racks
22-10 56 33			Mercantile Storage Assemblies	
22-10 57 00		Wardrobe and Closet Specialties		
22-10 57 13			Hat and Coat Racks	
22-10 57 16			Boot Racks	
22-10 57 23			Closet and Utility Shelving	
22-10 57 23 13				Wire Closet and Utility Shelving
22-10 57 23 16				Plastic-Laminate-Clad Closet and Utility Shelving
22-10 57 23 19				Wood Closet and Utility Shelving
22-10 57 33			Closet and Utility Shelving Hardware	
22-10 70 00		Exterior Specialties		
22-10 71 00		Exterior Protection		
22-10 71 13			Exterior Sun Control Devices	
22-10 71 13 13				Exterior Shutters
22-10 71 13 19				Rolling Exterior Shutters
22-10 71 13 23				Coiling Exterior Shutters
22-10 71 13 26				Decorative Exterior Shutters
22-10 71 13 29				Side-Hinged Exterior Shutters
22-10 71 13 43				Fixed Sun Screens
22-10 71 16			Storm Panels	
22-10 71 16 13				Demountable Storm Panels
22-10 71 16 16				Movable Storm Panels
22-10 71 19			Flood Barriers	
22-10 73 00		Protective Covers		
22-10 73 13			Awnings	
22-10 73 16			Canopies	
22-10 73 23			Car Shelters	
22-10 73 26			Walkway Coverings	
22-10 73 33			Marquees	
22-10 73 43			Transportation Stop Shelters	
22-10 74 00		Manufactured Exterior Specialties		
22-10 74 13			Exterior Clocks	
22-10 74 23			Cupolas	
22-10 74 26			Spires	
22-10 74 29			Steeples	
22-10 74 33			Weather vanes	
22-10 74 43			Below-Grade Egress Assemblies	
22-10 74 46			Window Wells	
22-10 75 00		Flagpoles		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-10 75 13			Automatic Flagpoles	
22-10 75 16			Ground-Set Flagpoles	
22-10 75 19			Nautical Flagpoles	
22-10 75 23			Wall-Mounted Flagpoles	
22-10 80 00		Other Specialties		
22-10 81 00		Pest Control Devices		
22-10 81 13			Bird Control Devices	
22-10 81 16			Insect Control Devices	
22-10 81 19			Rodent Control Devices	
22-10 82 00		Grilles and Screens		
22-10 82 13			Exterior Grilles and Screens	
22-10 82 19			Exterior Sound Screens	
22-10 82 23			Interior Grilles and Screens	
22-10 83 00		Flags and Banners		
22-10 83 13			Flags	
22-10 83 16			Banners	
22-10 84 00		Gas Lighting		
22-10 84 13			Exterior Gas Lighting	
22-10 84 16			Interior Gas Lighting	
22-10 86 00		Security Mirrors and Domes		
22-10 88 00		Scales		
22-11 00 00	Equipment			
22-11 01 00		Operation and Maintenance of Equipment		
22-11 01 10			Operation and Maintenance of Vehicle and Pedestrian Equipment	
22-11 01 15			Operation and Maintenance of Security, Bank, and Detention Equipment	
22-11 01 20			Operation and Maintenance of Commercial Equipment	
22-11 01 30			Operation and Maintenance of Residential Equipment	
22-11 01 40			Operation and Maintenance of Foodservice Equipment	
22-11 01 50			Operation and Maintenance of Educational and Scientific Equipment	
22-11 01 56			Operation and Maintenance of Observatory Equipment	
22-11 01 60			Operation and Maintenance of Entertainment Equipment	
22-11 01 65			Operation and Maintenance of Athletic and Recreational Equipment	
22-11 01 70			Operation and Maintenance of Healthcare Equipment	
22-11 01 80			Operation and Maintenance of Collection and Disposal Equipment	
22-11 01 90			Operation and Maintenance of Other Equipment	
22-11 05 00		Common Work Results for Equipment		
22-11 05 13			Common Motor Requirements for Equipment	
22-11 08 00		Commissioning of Equipment		
22-11 10 00		Vehicle and Pedestrian Equipment		
22-11 11 00		Vehicle Service Equipment		
22-11 11 13			Compressed-Air Vehicle Service Equipment	
22-11 11 19			Vehicle Lubrication Equipment	
22-11 11 23			Tire-Changing Equipment	
22-11 11 26			Vehicle-Washing Equipment	
22-11 12 00		Parking Control Equipment		
22-11 12 13			Parking Key and Card Control Units	
22-11 12 16			Parking Ticket Dispensers	
22-11 12 23			Parking Meters	
22-11 12 26			Parking Fee Collection Equipment	
22-11 12 26 13				Parking Fee Coin Collection Equipment
22-11 12 33			Parking Gates	
22-11 13 00		Loading Dock Equipment		
22-11 13 13			Loading Dock Bumpers	
22-11 13 16			Loading Dock Seals and Shelters	
22-11 13 16 13				Loading Dock Seals
22-11 13 16 23				Loading Dock Shelters
22-11 13 16 33				Loading Dock Rail Shelters
22-11 13 19			Stationary Loading Dock Equipment	
22-11 13 19 13				Loading Dock Levelers
22-11 13 19 23				Stationary Loading Dock Lifts
22-11 13 19 26				Loading Dock Truck Lifts
22-11 13 19 33				Loading Dock Truck Restraints
22-11 13 23			Portable Dock Equipment	
22-11 13 23 13				Portable Dock Lifts
22-11 13 23 16				Portable Dock Ramps
22-11 13 23 19				Portable Dock Bridges

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-11 13 23 23				Portable Dock Platforms
22-11 13 26			Loading Dock Lights	
22-11 14 00		Pedestrian Control Equipment		
22-11 14 13			Pedestrian Gates	
22-11 14 13 13				Portable Posts and Railings
22-11 14 13 16				Rotary Gates
22-11 14 13 19				Turnstiles
22-11 14 16			Money-Changing Equipment	
22-11 14 16 19				Money-Changing Machines
22-11 14 26			Pedestrian Fare Collection Equipment	
22-11 14 26 13				Pedestrian Coin Fare Collection Equipment
22-11 14 43			Pedestrian Detection Equipment	
22-11 14 43 13				Electronic Detection and Counting Systems
22-11 14 53			Pedestrian Security Equipment	
22-11 15 00		Security, Detention and Banking Equipment		
22-11 16 00		Vault Equipment		
22-11 16 13			Safe Deposit Boxes	
22-11 16 16			Safes	
22-11 16 23			Vault Ventilators	
22-11 17 00		Teller and Service Equipment		
22-11 17 13			Teller Equipment Systems	
22-11 17 16			Automatic Banking Systems	
22-11 17 23			Money Handling Equipment	
22-11 17 33			Money Cart Pass-Through	
22-11 17 36			Package Transfer Units	
22-11 18 00		Security Equipment		
22-11 18 13			Deal Drawers	
22-11 18 16			Gun Ports	
22-11 18 23			Valuable Material Storage	
22-11 19 00		Detention Equipment		
22-11 19 13			Detention Pass-Through Doors	
22-11 19 16			Detention Gun Lockers	
22-11 20 00		Commercial Equipment		
22-11 21 00		Mercantile and Service Equipment		
22-11 21 13			Cash Registers and Checking Equipment	
22-11 21 23			Vending Equipment	
22-11 21 23 13				Vending Machines
22-11 21 33			Checkroom Equipment	
22-11 21 43			Weighing and Wrapping Equipment	
22-11 21 53			Barber and Beauty Shop Equipment	
22-11 22 00		Refrigerated Display Equipment		
22-11 23 00		Commercial Laundry and Dry Cleaning Equipment		
22-11 23 13			Dry Cleaning Equipment	
22-11 23 16			Drying and Conditioning Equipment	
22-11 23 19			Finishing Equipment	
22-11 23 23			Commercial Ironing Equipment	
22-11 23 26			Commercial Washers and Extractors	
22-11 23 33			Coin-Operated Laundry Equipment	
22-11 23 43			Hanging Garment Conveyors	
22-11 24 00		Maintenance Equipment		
22-11 24 13			Floor and Wall Cleaning Equipment	
22-11 24 16			Housekeeping Carts	
22-11 24 19			Vacuum Cleaning Systems	
22-11 24 23			Facade Access Equipment	
22-11 24 23 13				Window Washing Systems
22-11 24 29			Facility Fall Protection	
22-11 25 00		Hospitality Equipment		
22-11 25 13			Registration Equipment	
22-11 26 00		Unit Kitchens		
22-11 26 13			Metal Unit Kitchens	
22-11 26 16			Wood Unit Kitchens	
22-11 26 19			Plastic-Laminate-Clad Unit Kitchens	
22-11 27 00		Photographic Processing Equipment		
22-11 27 13			Darkroom Processing Equipment	
22-11 27 16			Film Transfer Cabinets	
22-11 28 00		Office Equipment		
22-11 28 13			Computers	
22-11 28 16			Printers	
22-11 28 19			Self-Contained Facsimile Machines	
22-11 28 23			Copiers	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-11 29 00		Postal, Packaging, and Shipping Equipment		
22-11 29 23			Packaging Equipment	
22-11 29 33			Shipping Equipment	
22-11 29 55			Postal Equipment	
22-11 30 00		Residential Equipment		
22-11 31 00		Residential Appliances		
22-11 31 13			Residential Kitchen Appliances	
22-11 31 23			Residential Laundry Appliances	
22-11 33 00		Retractable Stairs		
22-11 34 00		Residential Ceiling Fans		
22-11 40 00		Foodservice Equipment		
22-11 41 00		Foodservice Storage Equipment		
22-11 41 13			Refrigerated Food Storage Cases	
22-11 41 23			Walk-In Coolers	
22-11 41 26			Walk-In Freezers	
22-11 41 33			Foodservice Shelving	
22-11 42 00		Food Preparation Equipment		
22-11 42 13			Food Preparation Appliances	
22-11 42 16			Food Preparation Surfaces	
22-11 43 00		Food Delivery Carts and Conveyors		
22-11 43 13			Food Delivery Carts	
22-11 43 16			Food Delivery Conveyors	
22-11 44 00		Food Cooking Equipment		
22-11 44 13			Commercial Ranges	
22-11 44 16			Commercial Ovens	
22-11 46 00		Food Dispensing Equipment		
22-11 46 13			Bar Equipment	
22-11 46 16			Service Line Equipment	
22-11 46 19			Soda Fountain Equipment	
22-11 47 00		Ice Machines		
22-11 48 00		Cleaning and Disposal Equipment		
22-11 48 13			Commercial Dishwashers	
22-11 50 00		Educational and Scientific Equipment		
22-11 51 00		Library Equipment		
22-11 51 13			Automated Book Storage and Retrieval Systems	
22-11 51 16			Book Depositories	
22-11 51 19			Book Theft Protection Equipment	
22-11 51 23			Library Stack Systems	
22-11 51 23 13				Metal Library Shelving
22-11 52 00		Audio-Visual Equipment		
22-11 52 13			Projection Screens	
22-11 52 13 13				Fixed Projection Screens
22-11 52 13 16				Portable Projection Screens
22-11 52 13 19				Rear Projection Screens
22-11 52 16			Projectors	
22-11 52 16 13				Movie Projectors
22-11 52 16 16				Slide Projectors
22-11 52 16 19				Overhead Projectors
22-11 52 16 23				Opaque Projectors
22-11 52 16 26				Video Projectors
22-11 52 19			Players and Recorders	
22-11 52 23			Audio-Visual Equipment Supports	
22-11 53 00		Laboratory Equipment		
22-11 53 13			Laboratory Fume Hoods	
22-11 53 13 13				Recirculating Laboratory Fume Hoods
22-11 53 16			Laboratory Incubators	
22-11 53 17			Laboratory Equipment Washers	
22-11 53 19			Laboratory Sterilizers	
22-11 53 23			Laboratory Refrigerators	
22-11 53 26			Laboratory Freezers	
22-11 53 29			Laboratory Controlled-Environment Cabinets	
22-11 53 33			Emergency Safety Appliances	
22-11 53 43			Service Fittings and Accessories	
22-11 53 53			Biological Safety Cabinets	
22-11 55 00		Planetarium Equipment		
22-11 55 13			Planetarium Projectors	
22-11 55 16			Planetarium Pendulums	
22-11 56 00		Observatory Equipment		
22-11 56 13			Telescopes	
22-11 56 16			Telescope Mounts	
22-11 56 19			Telescope Drive Mechanisms	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-11 56 23			Telescope Domes	
22-11 57 00		Vocational Shop Equipment		
22-11 59 00		Exhibit Equipment		
22-11 60 00		Entertainment Equipment		
22-11 61 00		Theater and Stage Equipment		
22-11 61 13			Acoustical Shells	
22-11 61 23			Folding and Portable Stages	
22-11 61 33			Rigging Systems and Controls	
22-11 61 43			Stage Curtains	
22-11 62 00		Musical Equipment		
22-11 62 13			Bells	
22-11 62 16			Carillons	
22-11 62 19			Organs	
22-11 65 00		Athletic and Recreational Equipment		
22-11 66 00		Athletic Equipment		
22-11 66 13			Exercise Equipment	
22-11 66 23			Gymnasium Equipment	
22-11 66 23 13				Basketball Equipment
22-11 66 23 23				Volleyball Equipment
22-11 66 23 33				Interior Tennis Equipment
22-11 66 23 43				Interior Track and Field Equipment
22-11 66 23 53				Wall Padding
22-11 66 23 56				Mat Storage
22-11 66 43			Interior Scoreboards	
22-11 66 53			Gymnasium Dividers	
22-11 66 53 13				Batting/Golf Cages
22-11 67 00		Recreational Equipment		
22-11 67 13			Bowling Alley Equipment	
22-11 67 23			Shooting Range Equipment	
22-11 67 33			Climbing Walls	
22-11 67 43			Table Games Equipment	
22-11 67 43 13				Pool Tables
22-11 67 43 23				Ping-Pong Tables
22-11 67 53			Game Room Equipment	
22-11 67 53 13				Video Games
22-11 67 53 23				Pinball Machines
22-11 68 00		Play Field Equipment and Structures		
22-11 68 13			Playground Equipment	
22-11 68 16			Play Structures	
22-11 68 23			Exterior Court Athletic Equipment	
22-11 68 23 13				Exterior Basketball Equipment
22-11 68 23 23				Exterior Volleyball Equipment
22-11 68 23 33				Tennis Equipment
22-11 68 33			Athletic Field Equipment	
22-11 68 33 13				Football Field Equipment
22-11 68 33 23				Soccer and Field Hockey Equipment
22-11 68 33 33				Baseball Field Equipment
22-11 68 33 43				Track and Field Equipment
22-11 68 43			Exterior Scoreboards	
22-11 70 00		Healthcare Equipment		
22-11 71 00		Medical Sterilizing Equipment		
22-11 72 00		Examination and Treatment Equipment		
22-11 72 13			Examination Equipment	
22-11 72 53			Treatment Equipment	
22-11 73 00		Patient Care Equipment		
22-11 74 00		Dental Equipment		
22-11 75 00		Optical Equipment		
22-11 76 00		Operating Room Equipment		
22-11 77 00		Radiology Equipment		
22-11 78 00		Mortuary Equipment		
22-11 78 13			Mortuary Refrigerators	
22-11 78 16			Crematorium Equipment	
22-11 78 19			Mortuary Lifts	
22-11 79 00		Therapy Equipment		
22-11 80 00		Collection and Disposal Equipment		
22-11 82 00		Solid Waste Handling Equipment		
22-11 82 13			Solid Waste Bins	
22-11 82 19			Packaged Incinerators	
22-11 82 23			Recycling Equipment	
22-11 82 26			Facility Waste Compactors	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-11 82 29			Composting Equipment	
22-11 82 33			Facility Waste Shredders	
22-11 82 36			Facility Waste Balers	
22-11 90 00		Other Equipment		
22-11 91 00		Religious Equipment		
22-11 91 13			Baptisteries	
22-11 92 00		Agricultural Equipment		
22-11 92 13			Milkers	
22-11 92 16			Stock Feeders	
22-11 92 19			Stock Waterers	
22-11 92 23			Agricultural Waste Clean-Up Equipment	
22-11 93 00		Horticultural Equipment		
22-11 93 13			Hydroponic Growing Systems	
22-11 93 16			Seeders	
22-11 93 19			Transplanters	
22-11 93 23			Potting Machines	
22-11 93 26			Flat Fillers	
22-11 93 29			Baggers	
22-11 93 33			Soil Mixers	
22-11 95 00		Arts and Crafts Equipment		
22-11 95 13			Kilns	
22-12 00 00	Furnishings			
22-12 01 00		Operation and Maintenance of Furnishings		
22-12 01 10			Operation and Maintenance of Art	
22-12 01 20			Operation and Maintenance of Window Treatments	
22-12 01 30			Operation and Maintenance of Casework	
22-12 01 40			Operation and Maintenance of Furnishings and Accessories	
22-12 01 50			Operation and Maintenance of Furniture	
22-12 01 60			Operation and Maintenance of Multiple Seating	
22-12 01 90			Operation and Maintenance of Other Furnishings	
22-12 05 00		Common Work Results for Furnishings		
22-12 05 13			Fabrics	
22-12 08 00		Commissioning of Furnishings		
22-12 10 00		Art		
22-12 11 00		Murals		
22-12 11 13			Photo Murals	
22-12 11 16			Sculptured Brick Panels	
22-12 11 23			Brick Murals	
22-12 11 26			Ceramic Tile Murals	
22-12 11 33			Trompe l'oeil	
22-12 12 00		Wall Decorations		
22-12 12 13			Commissioned Paintings	
22-12 12 16			Framed Paintings	
22-12 12 19			Framed Prints	
22-12 12 23			Tapestries	
22-12 12 26			Wall Hangings	
22-12 14 00		Sculptures		
22-12 14 13			Carved Sculpture	
22-12 14 16			Cast Sculpture	
22-12 14 19			Constructed Sculpture	
22-12 14 23			Relief Art	
22-12 17 00		Art Glass		
22-12 17 13			Etched Glass	
22-12 17 16			Stained Glass	
22-12 19 00		Religious Art		
22-12 20 00		Window Treatments		
22-12 21 00		Window Blinds		
22-12 21 13			Horizontal Louver Blinds	
22-12 21 13 13				Metal Horizontal Louver Blinds
22-12 21 13 23				Wood Horizontal Louver Blinds
22-12 21 13 33				Plastic Horizontal Louver Blinds
22-12 21 16			Vertical Louver Blinds	
22-12 21 16 13				Metal Vertical Louver Blinds
22-12 21 16 23				Wood Vertical Louver Blinds
22-12 21 16 33				Plastic Vertical Louver Blinds
22-12 21 23			Roll-Down Blinds	
22-12 21 26			Black-Out Blinds	
22-12 22 00		Curtains and Drapes		
22-12 22 13			Draperies	
22-12 22 16			Drapery Track and Accessories	
22-12 23 00		Interior Shutters		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-12 23 13			Wood Interior Shutters	
22-12 24 00		Window Shades		
22-12 24 13			Roller Window Shades	
22-12 24 16			Pleated Window Shades	
22-12 24 16 13				Z-Pleated Window Shades
22-12 24 16 23				Cellular Shades
22-12 24 16 33				Roman Shades
22-12 25 00		Window Treatment Operating Hardware		
22-12 25 09			Window Treatment Control System	
22-12 25 13			Motorized Drapery Rods	
22-12 30 00		Casework		
22-12 31 00		Manufactured Metal Casework		
22-12 31 16			Manufactured Metal Sandwich Panel Casework	
22-12 32 00		Manufactured Wood Casework		
22-12 32 13			Manufactured Wood-Veneer-Faced Casework	
22-12 32 16			Manufactured Plastic-Laminate-Clad Casework	
22-12 34 00		Manufactured Plastic Casework		
22-12 34 16			Manufactured Solid-Plastic Casework	
22-12 35 00		Specialty Casework		
22-12 35 17			Bank Casework	
22-12 35 25			Hospitality Casework	
22-12 35 30			Residential Casework	
22-12 35 30 13				Kitchen Casework
22-12 35 30 23				Bathroom Casework
22-12 35 30 43				Dormitory Casework
22-12 35 33			Utility Room Casework	
22-12 35 36			Mailroom Casework	
22-12 35 39			Commercial Kitchen Casework	
22-12 35 50			Educational/Library Casework	
22-12 35 50 13				Educational Casework
22-12 35 50 53				Library Casework
22-12 35 50 56				Built-In Study Carrels
22-12 35 53			Laboratory Casework	
22-12 35 53 13				Metal Laboratory Casework
22-12 35 53 16				Plastic-Laminate-Clad Laboratory Casework
22-12 35 53 19				Wood Laboratory Casework
22-12 35 53 23				Solid-Plastic Laboratory Casework
22-12 35 59			Display Casework	
22-12 35 70			Healthcare Casework	
22-12 35 70 13				Hospital Casework
22-12 35 70 16				Nurse Station Casework
22-12 35 70 19				Exam Room Casework
22-12 35 70 74				Dental Casework
22-12 35 83			Performing Arts Casework	
22-12 35 91			Religious Casework	
22-12 36 00		Countertops		
22-12 36 13			Concrete Countertops	
22-12 36 16			Metal Countertops	
22-12 36 19			Wood Countertops	
22-12 36 23			Plastic Countertops	
22-12 36 23 13				Plastic-Laminate-Clad Countertops
22-12 36 40			Stone Countertops	
22-12 36 53			Laboratory Countertops	
22-12 36 61			Simulated Stone Countertops	
22-12 36 61 13				Cultured Marble Countertops
22-12 36 61 16				Solid Surfacing Countertops
22-12 36 61 19				Quartz Agglomerate Countertops
22-12 40 00		Furnishings and Accessories		
22-12 41 00		Office Accessories		
22-12 41 13			Desk Accessories	
22-12 42 00		Table Accessories		
22-12 42 13			Ceramics	
22-12 42 16			Flatware	
22-12 42 16 13				Silverware
22-12 42 19			Hollowware	
22-12 42 23			Glassware	
22-12 42 26			Table Linens	
22-12 42 26 13				Napery
22-12 43 00		Portable Lamps		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-12 43 13			Lamps	
22-12 43 13 13				Desk Lamps
22-12 43 13 16				Table Lamps
22-12 43 13 19				Floor Lamps
22-12 44 00		Bath Furnishings		
22-12 44 13			Bath Linens	
22-12 44 13 13				Bath Mats
22-12 44 13 16				Bath Towels
22-12 44 16			Shower Curtains	
22-12 45 00		Bedroom Furnishings		
22-12 45 13			Bed Linens	
22-12 45 13 13				Blankets
22-12 45 13 16				Comforters
22-12 45 16			Pillows	
22-12 46 00		Furnishing Accessories		
22-12 46 13			Ash Receptacles	
22-12 46 16			Bowls	
22-12 46 19			Clocks	
22-12 46 23			Decorative Crafts	
22-12 46 26			Decorative Screens	
22-12 46 29			Vases	
22-12 46 33			Waste Receptacles	
22-12 48 00		Rugs and Mats		
22-12 48 13			Entrance Floor Mats and Frames	
22-12 48 13 13				Entrance Floor Mats
22-12 48 13 16				Entrance Floor Mat Frames
22-12 48 16			Entrance Floor Grilles	
22-12 48 19			Entrance Floor Gratings	
22-12 48 23			Entrance Floor Grids	
22-12 48 26			Entrance Tile	
22-12 48 43			Floor Mats	
22-12 48 43 13				Chair Mats
22-12 48 53			Rugs	
22-12 48 53 13				Runners
22-12 48 53 16				Oriental Rugs
22-12 50 00		Furniture		
22-12 51 00		Office Furniture		
22-12 51 16			Case Goods	
22-12 51 16 13				Metal Case Goods
22-12 51 16 16				Wood Case Goods
22-12 51 16 19				Plastic-Laminate-Clad Case Goods
22-12 51 19			Filing Cabinets	
22-12 51 19 13				Lateral Filing Cabinets
22-12 51 19 16				Vertical Filing Cabinets
22-12 51 23			Office Tables	
22-12 51 83			Custom Office Furniture	
22-12 52 00		Seating		
22-12 52 13			Chairs	
22-12 52 19			Upholstered Seating	
22-12 52 23			Office Seating	
22-12 52 70			Healthcare Seating	
22-12 52 83			Custom Seating	
22-12 53 00		Retail Furniture		
22-12 53 83			Custom Retail Furniture	
22-12 54 00		Hospitality Furniture		
22-12 54 13			Hotel and Motel Furniture	
22-12 54 16			Restaurant Furniture	
22-12 54 83			Custom Hospitality Furniture	
22-12 55 00		Detention Furniture		
22-12 55 13			Detention Bunks	
22-12 55 16			Detention Desks	
22-12 55 19			Detention Stools	
22-12 55 23			Detention Tables	
22-12 55 26			Detention Safety Clothes Hooks	
22-12 55 83			Custom Detention Furniture	
22-12 55 86			Detention Control Room Furniture	
22-12 56 00		Institutional Furniture		
22-12 56 23			Religious Furniture	
22-12 56 33			Classroom Furniture	
22-12 56 33 13				Fixed Classroom Tables
22-12 56 39			Lecterns	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-12 56 43			Dormitory Furniture	
22-12 56 51			Library Furniture	
22-12 56 51 13				Book Shelves
22-12 56 51 16				Study Carrels
22-12 56 51 19				Index Card File Cabinets
22-12 56 52			Audio-Visual Furniture	
22-12 56 53			Laboratory Furniture	
22-12 56 70			Healthcare Furniture	
22-12 56 83			Custom Institutional Furniture	
22-12 56 86			Institutional Control Room Furniture	
22-12 57 00		Industrial Furniture		
22-12 57 13			Welding Benches	
22-12 57 16			Welding Screens	
22-12 57 19			Laser Containment Screens	
22-12 57 83			Custom Industrial Furniture	
22-12 57 86			Industrial Control Room Furniture	
22-12 58 00		Residential Furniture		
22-12 58 13			Couches and Loveseats	
22-12 58 13 13				Futons
22-12 58 16			Residential Chairs	
22-12 58 16 13				Reclining Chairs
22-12 58 19			Dining Tables and Chairs	
22-12 58 23			Coffee Tables	
22-12 58 26			Entertainment Centers	
22-12 58 29			Beds	
22-12 58 29 13				Daybeds
22-12 58 33			Dressers	
22-12 58 33 13				Armoires
22-12 58 36			Nightstands	
22-12 58 83			Custom Residential Furniture	
22-12 59 00		Systems Furniture		
22-12 59 13			Panel-Hung Component System Furniture	
22-12 59 16			Free-Standing Component System Furniture	
22-12 59 19			Beam System Furniture	
22-12 59 23			Desk System Furniture	
22-12 59 83			Custom Systems Furniture	
22-12 60 00		Multiple Seating		
22-12 61 00		Fixed Audience Seating		
22-12 61 13			Upholstered Audience Seating	
22-12 61 16			Molded-Plastic Audience Seating	
22-12 62 00		Portable Audience Seating		
22-12 62 13			Folding Chairs	
22-12 62 16			Interlocking Chairs	
22-12 62 19			Stacking Chairs	
22-12 63 00		Stadium and Arena Seating		
22-12 63 13			Stadium and Arena Bench Seating	
22-12 63 23			Stadium and Arena Seats	
22-12 64 00		Booths and Tables		
22-12 65 00		Multiple-Use Fixed Seating		
22-12 66 00		Telescoping Stands		
22-12 66 13			Telescoping Bleachers	
22-12 66 23			Telescoping Chair Platforms	
22-12 67 00		Pews and Benches		
22-12 67 13			Pews	
22-12 67 23			Benches	
22-12 68 00		Seat and Table Assemblies		
22-12 68 13			Pedestal Tablet Arm Chairs	
22-12 90 00		Other Furnishings		
22-12 92 00		Interior Planters and Artificial Plants		
22-12 92 13			Interior Artificial Plants	
22-12 92 33			Interior Planters	
22-12 92 43			Interior Landscaping Accessories	
22-12 93 00		Site Furnishings		
22-12 93 13			Bicycle Racks	
22-12 93 14			Bicycle Lockers	
22-12 93 23			Trash and Litter Receptors	
22-12 93 33			Manufactured Planters	
22-12 93 43			Site Seating and Tables	
22-12 93 43 13				Site Seating
22-12 93 43 53				Site Tables
22-13 00 00	Special Construction			
22-13 01 00		Operation and Maintenance of Special Construction		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-13 01 10			Operation and Maintenance of Special Facility Components	
22-13 01 11			Operation and Maintenance of Swimming Pools	
22-13 01 12			Operation and Maintenance of Fountains	
22-13 01 13			Operation and Maintenance of Aquariums	
22-13 01 14			Operation and Maintenance of Amusement Park Structures and Equipment	
22-13 01 18			Operation and Maintenance of Ice Rinks	
22-13 01 20			Operation and Maintenance of Special Purpose Rooms	
22-13 01 21			Operation and Maintenance of Controlled Environment Rooms	
22-13 01 23			Operation and Maintenance of Planetariums	
22-13 01 30			Operation and Maintenance of Special Structures	
22-13 01 40			Operation and Maintenance of Integrated Construction	
22-13 01 49			Operation and Maintenance of Radiation Protection	
22-13 01 50			Operation and Maintenance of Special Instrumentation	
22-13 01 51			Operation and Maintenance of Stress Instrumentation	
22-13 01 52			Operation and Maintenance of Seismic Instrumentation	
22-13 01 53			Operation and Maintenance of Meteorological Instrumentation	
22-13 05 00		Common Work Results for Special Construction		
22-13 08 00		Commissioning of Special Construction		
22-13 08 10			Commissioning of Special Facility Components	
22-13 08 11			Commissioning of Swimming Pools	
22-13 08 12			Commissioning of Fountains	
22-13 08 13			Commissioning of Aquariums	
22-13 08 14			Commissioning of Amusement Park Structures and Equipment	
22-13 08 18			Commissioning of Ice Rinks	
22-13 08 20			Commissioning of Special Purpose Rooms	
22-13 08 21			Commissioning of Controlled Environment Rooms	
22-13 08 23			Commissioning of Planetariums	
22-13 08 30			Commissioning of Special Structures	
22-13 08 40			Commissioning of Integrated Construction	
22-13 08 50			Commissioning of Special Instrumentation	
22-13 10 00		Special Facility Components		
22-13 11 00		Swimming Pools		
22-13 11 13			Below-Grade Swimming Pools	
22-13 11 23			On-Grade Swimming Pools	
22-13 11 33			Elevated Swimming Pools	
22-13 11 43			Recirculating Gutter Systems	
22-13 11 46			Swimming Pool Accessories	
22-13 11 49			Swimming Pool Cleaning Equipment	
22-13 11 53			Movable Pool Bulkheads	
22-13 11 56			Movable Pool Floors	
22-13 12 00		Fountains		
22-13 12 13			Exterior Fountains	
22-13 12 23			Interior Fountains	
22-13 13 00		Aquariums		
22-13 14 00		Amusement Park Structures and Equipment		
22-13 14 13			Water Slides	
22-13 14 16			Wave Generating Equipment	
22-13 14 23			Amusement Park Rides	
22-13 17 00		Tubs and Pools		
22-13 17 13			Hot Tubs	
22-13 17 23			Therapeutic Pools	
22-13 17 33			Whirlpool Tubs	
22-13 18 00		Ice Rinks		
22-13 18 13			Ice Rink Floor Systems	
22-13 18 16			Ice Rink Dasher Boards	
22-13 19 00		Kennels and Animal Shelters		
22-13 19 13			Kennel Enclosures and Gates	
22-13 19 16			Kennel Feeding Devices	
22-13 20 00		Special Purpose Rooms		
22-13 21 00		Controlled Environment Rooms		
22-13 21 13			Clean Rooms	
22-13 21 16			Hyperbaric Rooms	
22-13 21 23			Insulated Rooms	
22-13 21 26			Cold Storage Rooms	
22-13 21 26 13				Walk-in Coolers
22-13 21 26 16				Walk-in Freezers
22-13 21 29			Constant Temperature Rooms	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-13 21 48			Sound-Conditioned Rooms	
22-13 22 00		Office Shelters and Booths		
22-13 23 00		Planetariums		
22-13 24 00		Special Activity Rooms		
22-13 24 16			Saunas	
22-13 24 26			Steam Baths	
22-13 24 66			Athletic Rooms	
22-13 26 00		Fabricated Rooms		
22-13 26 13			Storm Shelter Rooms	
22-13 27 00		Vaults		
22-13 27 16			Modular Fire Vaults	
22-13 27 53			Security Vaults	
22-13 27 53 13				Modular Concrete Security Vaults
22-13 27 53 16				Modular Metal-Clad Laminated Security Vaults
22-13 28 00		Athletic and Recreational Special Construction		
22-13 28 13			Indoor Soccer Boards	
22-13 28 16			Safety Netting	
22-13 28 19			Arena Football Boards	
22-13 28 26			Floor Sockets	
22-13 28 33			Athletic and Recreational Court Walls	
22-13 28 66			Demountable Athletic Surfaces	
22-13 30 00		Special Structures		
22-13 31 00		Fabric Structures		
22-13 31 13			Air-Supported Fabric Structures	
22-13 31 13 13				Single-Walled Air-Supported Structures
22-13 31 13 16				Multiple-Walled Air-Supported Structures
22-13 31 23			Tensioned Fabric Structures	
22-13 31 33			Framed Fabric Structures	
22-13 32 00		Space Frames		
22-13 32 13			Metal Space Frames	
22-13 32 23			Wood Space Frames	
22-13 33 00		Geodesic Structures		
22-13 33 13			Geodesic Domes	
22-13 34 00		Fabricated Engineered Structures		
22-13 34 13			Glazed Structures	
22-13 34 13 13				Greenhouses
22-13 34 13 16				Solariums
22-13 34 13 19				Swimming Pool Enclosures
22-13 34 13 23				Sunrooms
22-13 34 13 26				Conservatories
22-13 34 16			Grandstands and Bleachers	
22-13 34 16 13				Grandstands
22-13 34 16 53				Bleachers
22-13 34 18			Post Frame Building Systems	
22-13 34 19			Metal Building Systems	
22-13 34 23			Fabricated Structures	
22-13 34 23 13				Portable and Mobile Buildings
22-13 34 23 14				Fabricated Classroom Buildings
22-13 34 23 16				Fabricated Control Booths
22-13 34 23 19				Fabricated Dome Structures
22-13 34 23 23				Fabricated Substation Control Rooms
22-13 34 56			Observatories	
22-13 35 00		Rammed Earth Construction		
22-13 35 13			Rammed Earth Walls	
22-13 35 13 13				Traditional Rammed Earth Walls
22-13 35 13 23				Stabilized Insulated Rammed Earth Walls
22-13 36 00		Towers		
22-13 36 13			Metal Towers	
22-13 36 13 13				Steel Towers
22-13 36 23			Wood Towers	
22-13 40 00		Integrated Construction		
22-13 42 00		Building Modules		
22-13 42 13			Bathroom Unit Modules	
22-13 42 25			Hospitality Unit Modules	
22-13 42 33			Apartment Unit Modules	
22-13 42 43			Dormitory Unit Modules	
22-13 42 63			Detention Cell Modules	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-13 42 63 13				Precast-Concrete Detention Cell Modules
22-13 42 63 16				Steel Detention Cell Modules
22-13 44 00		Modular Mezzanines		
22-13 48 00		Sound, Vibration, and Seismic Control		
22-13 48 13			Manufactured Sound and Vibration Control Components	
22-13 48 23			Fabricated Sound and Vibration Control Assemblies	
22-13 48 53			Manufactured Seismic Control Components	
22-13 48 63			Fabricated Seismic Control Assemblies	
22-13 49 00		Radiation Protection		
22-13 49 13			Integrated X-Ray Shielding Assemblies	
22-13 49 16			Modular X-Ray Shielding Rooms	
22-13 49 23			Integrated RFI/EMI Shielding Assemblies	
22-13 49 26			Modular RFI/EMI Shielding Rooms	
22-13 50 00		Special Instrumentation		
22-13 51 00		Stress Instrumentation		
22-13 52 00		Seismic Instrumentation		
22-13 53 00		Meteorological Instrumentation		
22-13 53 13			Solar Instrumentation	
22-13 53 23			Wind Instrumentation	
22-14 00 00	Conveying Equipment			
22-14 01 00		Operation and Maintenance of Conveying Equipment		
22-14 01 10			Operation and Maintenance of Dumbwaiters	
22-14 01 10 71				Dumbwaiter Rehabilitation
22-14 01 20			Operation and Maintenance of Elevators	
22-14 01 20 71				Elevator Rehabilitation
22-14 01 30			Operation and Maintenance of Escalators and Moving Walks	
22-14 01 30 71				Escalators and Moving Walks Rehabilitation
22-14 01 40			Operation and Maintenance of Lifts	
22-14 01 40 71				Lifts Rehabilitation
22-14 01 70			Operation and Maintenance of Turntables	
22-14 01 80			Operation and Maintenance of Scaffolding	
22-14 01 90			Operation and Maintenance of Other Conveying Equipment	
22-14 05 00		Common Work Results for Conveying Equipment		
22-14 08 00		Commissioning of Conveying Equipment		
22-14 08 10			Commissioning of Dumbwaiters	
22-14 08 20			Commissioning of Elevators	
22-14 08 30			Commissioning of Escalators and Moving Walks	
22-14 08 40			Commissioning of Lifts	
22-14 08 70			Commissioning of Turntables	
22-14 08 80			Commissioning of Scaffolding	
22-14 10 00		Dumbwaiters		
22-14 11 00		Manual Dumbwaiters		
22-14 12 00		Electric Dumbwaiters		
22-14 14 00		Hydraulic Dumbwaiters		
22-14 20 00		Elevators		
22-14 21 00		Electric Traction Elevators		
22-14 21 13			Electric Traction Freight Elevators	
22-14 21 23			Electric Traction Passenger Elevators	
22-14 21 23 13				Machine Room Electric Traction Passenger Elevators
22-14 21 23 16				Machine Room-Less Electric Traction Passenger Elevators
22-14 21 33			Electric Traction Residential Elevators	
22-14 21 43			Electric Traction Service Elevators	
22-14 24 00		Hydraulic Elevators		
22-14 24 13			Hydraulic Freight Elevators	
22-14 24 23			Hydraulic Passenger Elevators	
22-14 24 33			Hydraulic Residential Elevators	
22-14 24 43			Hydraulic Service Elevators	
22-14 26 00		Limited-Use/Limited-Application Elevators		
22-14 27 00		Custom Elevator Cabs and Doors		
22-14 27 13			Custom Elevator Cab Finishes	
22-14 27 16			Custom Elevator Doors	
22-14 28 00		Elevator Equipment and Controls		
22-14 28 16			Elevator Controls	
22-14 28 19			Elevator Equipment	
22-14 28 19 13				Elevator Safety Equipment
22-14 28 19 16				Elevator Hoistway Equipment

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-14 30 00		Escalators and Moving Walks		
22-14 31 00		Escalators		
22-14 32 00		Moving Walks		
22-14 33 00		Moving Ramps		
22-14 33 13			Motorized Ramps	
22-14 33 16			Powered Ramps	
22-14 40 00		Lifts		
22-14 41 00		People Lifts		
22-14 41 13			Counterbalanced People Lifts	
22-14 41 16			Endless-Belt People Lifts	
22-14 42 00		Wheelchair Lifts		
22-14 42 13			Inclined Wheelchair Lifts	
22-14 42 16			Vertical Wheelchair Lifts	
22-14 43 00		Platform Lifts		
22-14 43 13			Orchestra Lifts	
22-14 43 16			Stage Lifts	
22-14 44 00		Sidewalk Lifts		
22-14 45 00		Vehicle Lifts		
22-14 70 00		Turntables		
22-14 71 00		Industrial Turntables		
22-14 71 11			Vehicle Turntables	
22-14 72 00		Hospitality Turntables		
22-14 72 25			Restaurant Turntables	
22-14 73 00		Exhibit Turntables		
22-14 73 59			Display Turntables	
22-14 74 00		Entertainment Turntables		
22-14 74 61			Stage Turntables	
22-14 80 00		Scaffolding		
22-14 81 00		Suspended Scaffolding		
22-14 81 13			Beam Scaffolding	
22-14 81 16			Carriage Scaffolding	
22-14 81 19			Hook Scaffolding	
22-14 82 00		Rope Climbers		
22-14 82 13			Manual Rope Climbers	
22-14 82 16			Powered Rope Climbers	
22-14 83 00		Elevating Platforms		
22-14 83 13			Telescoping Platform Lifts	
22-14 83 13 13				Electric and Battery Telescoping Platform Lifts
22-14 83 13 16				Pneumatic Telescoping Platform Lifts
22-14 83 16			Scissor Lift Platforms	
22-14 83 19			Multi-Axis Platform Lifts	
22-14 84 00		Powered Scaffolding		
22-14 84 13			Window Washing Scaffolding	
22-14 84 23			Window Washing Hoists	
22-14 90 00		Other Conveying Equipment		
22-14 91 00		Facility Chutes		
22-14 91 13			Coal Chutes	
22-14 91 23			Escape Chutes	
22-14 91 33			Laundry and Linen Chutes	
22-14 91 82			Trash Chutes	
22-14 92 00		Pneumatic Tube Systems		
22-21 00 00	Fire Suppression			
22-21 01 00		Operation and Maintenance of Fire Suppression		
22-21 01 10			Operation and Maintenance of Water-Based Fire-Suppression Systems	
22-21 01 20			Operation and Maintenance of Fire-Extinguishing Systems	
22-21 01 30			Operation and Maintenance of Fire-Suppression Equipment	
22-21 05 00		Common Work Results for Fire Suppression		
22-21 05 13			Common Motor Requirements for Fire-Suppression	
22-21 05 16			Expansion Fittings and Loops for Fire-Suppression Piping	
22-21 05 19			Meters and Gages for Fire-Suppression Systems	
22-21 05 23			General-Duty Valves for Water-Based Fire-	
22-21 05 29			Hangers and Supports for Fire-Suppression Piping and Equipment	
22-21 05 33			Heat Tracing for Fire-Suppression Piping	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-21 05 48			Vibration and Seismic Controls for Fire-Suppression Piping and Equipment	
22-21 05 53			Identification for Fire-Suppression Piping and Equipment	
22-21 07 00		Fire Suppression Systems Insulation		
22-21 07 16			Fire-Suppression Equipment Insulation	
22-21 07 19			Fire-Suppression Piping Insulation	
22-21 08 00		Commissioning of Fire Suppression		
22-21 09 00		Instrumentation and Control for Fire-Suppression Systems		
22-21 10 00		Water-Based Fire-Suppression Systems		
22-21 11 00		Facility Fire-Suppression Water-Service Piping		
22-21 11 16			Facility Fire Hydrants	
22-21 11 19			Fire-Department Connections	
22-21 12 00		Fire-Suppression Standpipes		
22-21 12 13			Fire-Suppression Hoses and Nozzles	
22-21 12 16			Fire-Suppression Hose Reels	
22-21 12 19			Fire-Suppression Hose Racks	
22-21 12 23			Fire-Suppression Hose Valves	
22-21 13 00		Fire-Suppression Sprinkler Systems		
22-21 13 13			Wet-Pipe Sprinkler Systems	
22-21 13 16			Dry-Pipe Sprinkler Systems	
22-21 13 19			Precision Sprinkler Systems	
22-21 13 23			Combined Dry-Pipe and Precision Sprinkler Systems	
22-21 13 26			Deluge Fire-Suppression Sprinkler Systems	
22-21 13 29			Water Spray Fixed Systems	
22-21 13 36			Antifreeze Sprinkler Systems	
22-21 13 39			Foam-Water Systems	
22-21 16 00		Fire-Suppression Pressure Maintenance Pumps		
22-21 20 00		Fire-Extinguishing Systems		
22-21 21 00		Carbon-Dioxide Fire-Extinguishing Systems		
22-21 21 13			Carbon-Dioxide Fire-Extinguishing Piping	
22-21 21 16			Carbon-Dioxide Fire-Extinguishing Equipment	
22-21 22 00		Clean-Agent Fire-Extinguishing Systems		
22-21 22 13			Clean-Agent Fire-Extinguishing Piping	
22-21 22 16			Clean-Agent Fire-Extinguishing Equipment	
22-21 23 00		Wet-Chemical Fire-Extinguishing Systems		
22-21 23 13			Wet-Chemical Fire-Extinguishing Piping	
22-21 23 16			Wet-Chemical Fire-Extinguishing Equipment	
22-21 24 00		Dry-Chemical Fire-Extinguishing Systems		
22-21 24 13			Dry-Chemical Fire-Extinguishing Piping	
22-21 24 16			Dry-Chemical Fire-Extinguishing Equipment	
22-21 30 00		Fire Pumps		
22-21 31 00		Centrifugal Fire Pumps		
22-21 31 13			Electric-Drive, Centrifugal Fire Pumps	
22-21 31 16			Diesel-Drive, Centrifugal Fire Pumps	
22-21 32 00		Vertical-Turbine Fire Pumps		
22-21 32 13			Electric-Drive, Vertical-Turbine Fire Pumps	
22-21 32 16			Diesel-Drive, Vertical-Turbine Fire Pumps	
22-21 33 00		Positive-Displacement Fire Pumps		
22-21 33 13			Electric-Drive, Positive-Displacement Fire Pumps	
22-21 33 16			Diesel-Drive, Positive-Displacement Fire Pumps	
22-21 40 00		Fire-Suppression Water Storage		
22-21 41 00		Storage Tanks for Fire-Suppression Water		
22-21 41 13			Pressurized Storage Tanks for Fire-Suppression Water	
22-21 41 16			Elevated Storage Tanks for Fire-Suppression Water	
22-21 41 19			Roof-Mounted Storage Tanks for Fire-Suppression Water	
22-21 41 23			Ground Suction Storage Tanks for Fire-Suppression Water	
22-21 41 26			Underground Storage Tanks for Fire-Suppression Water	
22-21 41 29			Storage Tanks for Fire-Suppression Water Additives	
22-22 00 00	Plumbing			
22-22 01 00		Operation and Maintenance of Plumbing		
22-22 01 10			Operation and Maintenance of Plumbing Piping and Pumps	
22-22 01 30			Operation and Maintenance of Plumbing Equipment	
22-22 01 40			Operation and Maintenance of Plumbing Fixtures	
22-22 01 50			Operation and Maintenance of Pool and Fountain Plumbing Systems	
22-22 01 60			Operation and Maintenance of Laboratory and Healthcare Systems	
22-22 05 00		Common Work Results for Plumbing		
22-22 05 13			Common Motor Requirements for Plumbing Equipment	
22-22 05 16			Expansion Fittings and Loops for Plumbing Piping	
22-22 05 19			Meters and Gages for Plumbing Piping	
22-22 05 23			General-Duty Valves for Plumbing Piping	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-22 05 29			Hangers and Supports for Plumbing Piping and Equipment	
22-22 05 33			Heat Tracing for Plumbing Piping	
22-22 05 48			Vibration and Seismic Controls for Plumbing Piping and Equipment	
22-22 05 53			Identification for Plumbing Piping and Equipment	
22-22 05 73			Facility Drainage Manholes	
22-22 05 76			Facility Drainage Piping Cleanouts	
22-22 07 00		Plumbing Insulation		
22-22 07 16			Plumbing Equipment Insulation	
22-22 07 19			Plumbing Piping Insulation	
22-22 08 00		Commissioning of Plumbing		
22-22 09 00		Instrumentation and Control for Plumbing		
22-22 10 00		Plumbing Piping		
22-22 11 00		Facility Water Distribution		
22-22 11 13			Facility Water Distribution Piping	
22-22 11 16			Domestic Water Piping	
22-22 11 19			Domestic Water Piping Specialties	
22-22 11 23			Domestic Water Pumps	
22-22 11 23 13				Domestic-Water Packaged Booster Pumps
22-22 11 23 23				Close-Coupled, In-Line, Sealless Centrifugal Domestic-Water Pumps
22-22 11 23 26				Close-Coupled, Horizontally Mounted, In-Line Centrifugal Domestic-Water Pumps
22-22 11 23 29				Close-Coupled, Vertically Mounted, In-Line Centrifugal Domestic-Water Pumps
22-22 11 23 33				Separately Coupled, In-Line Centrifugal Domestic-Water Pumps
22-22 11 23 36				Separately Coupled, Horizontally Mounted, In-Line Centrifugal Domestic-Water Pumps
22-22 12 00		Facility Potable-Water Storage Tanks		
22-22 12 13			Facility Roof-Mounted, Potable-Water Storage Tanks	
22-22 12 16			Facility Elevated, Potable-Water Storage Tanks	
22-22 12 19			Facility Ground-Mounted, Potable-Water Storage Tanks	
22-22 12 23			Facility Indoor Potable-Water Storage Tanks	
22-22 12 23 13				Facility Steel, Indoor Potable-Water Storage Pressure Tanks
22-22 12 23 16				Facility Steel, Indoor Potable-Water Storage Non-Pressure Tanks
22-22 12 23 23				Facility Plastic, Indoor Potable-Water Storage Pressure Tanks
22-22 12 23 26				Facility Plastic, Indoor Potable-Water Storage Non-Pressure Tanks
22-22 13 00		Facility Sanitary Sewerage		
22-22 13 13			Facility Sanitary Sewers	
22-22 13 16			Sanitary Waste and Vent Piping	
22-22 13 19			Sanitary Waste Piping Specialties	
22-22 13 19 13				Sanitary Drains
22-22 13 19 23				Fats, Oils, and Grease Disposal Systems
22-22 13 19 26				Grease Removal Devices
22-22 13 19 33				Backwater Valves
22-22 13 19 36				Air-Admittance Valves
22-22 13 23			Sanitary Waste Interceptors	
22-22 13 26			Sanitary Waste Separators	
22-22 13 29			Sanitary Sewerage Pumps	
22-22 13 29 13				Wet-Pit-Mounted, Vertical Sewerage Pumps
22-22 13 29 16				Submersible Sewerage Pumps
22-22 13 29 23				Sewerage Pump Reverse-Flow Assemblies
22-22 13 29 33				Sewerage Pump Basins and Pits
22-22 13 33			Packaged, Submersible Sewerage Pump Units	
22-22 13 36			Packaged, Wastewater Pump Units	
22-22 13 43			Facility Packaged Sewage Pumping Stations	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-22 13 43 13				Facility Dry-Well Packaged Sewage Pumping Stations
22-22 13 43 16				Facility Wet-Well Packaged Sewage Pumping Stations
22-22 13 53			Facility Septic Tanks	
22-22 13 63			Facility Gray Water Tanks	
22-22 14 00		Facility Storm Drainage		
22-22 14 13			Facility Storm Drainage Piping	
22-22 14 16			Rainwater Leaders	
22-22 14 19			Sump Pump Discharge Piping	
22-22 14 23			Storm Drainage Piping Specialties	
22-22 14 26			Facility Storm Drains	
22-22 14 26 13				Roof Drains
22-22 14 26 16				Facility Area Drains
22-22 14 26 19				Facility Trench Drains
22-22 14 29			Sump Pumps	
22-22 14 29 13				Wet-Pit-Mounted, Vertical Sump Pumps
22-22 14 29 16				Submersible Sump Pumps
22-22 14 29 19				Sump-Pump Basins and Pits
22-22 14 33			Packaged, Pedestal Drainage Pump Units	
22-22 14 36			Packaged, Submersible, Drainage Pump Units	
22-22 14 53			Rainwater Storage Tanks	
22-22 15 00		General Service Compressed-Air Systems		
22-22 15 13			General Service Compressed-Air Piping	
22-22 15 16			General Service Compressed-Air Valves	
22-22 15 19			General Service Packaged Air Compressors and Receivers	
22-22 15 19 13				General Service Packaged Reciprocating Air Compressors
22-22 15 19 16				General Service Packaged Liquid-Ring Air Compressors
22-22 15 19 19				General Service Packaged Rotary-Screw Air Compressors
22-22 15 19 23				General Service Packaged Sliding-Vane Air Compressors
22-22 30 00		Plumbing Equipment		
22-22 31 00		Domestic Water Softeners		
22-22 31 13			Residential Domestic Water Softeners	
22-22 31 16			Commercial Domestic Water Softeners	
22-22 32 00		Domestic Water Filtration Equipment		
22-22 32 13			Domestic-Water Bag-Type Filters	
22-22 32 16			Domestic-Water Freestanding Cartridge Filters	
22-22 32 19			Domestic-Water Off-Floor Cartridge Filters	
22-22 32 23			Domestic-Water Carbon Filters	
22-22 32 26			Domestic-Water Sand Filters	
22-22 32 26 13				Domestic-Water Circulating Sand Filters
22-22 32 26 16				Domestic-Water Multimedia Sand Filters
22-22 32 26 19				Domestic-Water Greensand Filters
22-22 33 00		Electric Domestic Water Heaters		
22-22 33 13			Instantaneous Electric Domestic Water Heaters	
22-22 33 13 13				Flow-Control, Instantaneous Electric Domestic Water Heaters
22-22 33 13 16				Thermostat-Control, Instantaneous Electric Domestic Water Heaters
22-22 33 30			Residential, Electric Domestic Water Heaters	
22-22 33 30 13				Residential, Small-Capacity Electric Domestic Water Heaters
22-22 33 30 16				Residential, Storage Electric Domestic Water Heaters
22-22 33 30 23				Residential, Collector-to-Tank, Solar-Electric Domestic Water Heaters
22-22 33 30 26				Residential, Collector-to-Tank, Heat-Exchanger-Coil, Solar-Electric Domestic Water Heaters
22-22 33 33			Light-Commercial Electric Domestic Water Heaters	
22-22 33 36			Commercial Domestic Water Electric Booster Heaters	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-22 33 36 13				Commercial Domestic Water Electric Booster Heaters
22-22 33 36 16				Commercial Storage Electric Domestic Water Heaters
22-22 34 00		Fuel-Fired Domestic Water Heaters		
22-22 34 13			Instantaneous, Tankless, Gas	Domestic Water Heaters
22-22 34 30			Residential Gas	Domestic Water Heaters
22-22 34 30 13				Residential, Atmospheric, Gas Domestic Water Heaters
22-22 34 30 16				Residential, Direct-Vent, Gas Domestic Water Heaters
22-22 34 30 19				Residential, Power-Vent, Gas Domestic Water Heaters
22-22 34 36			Commercial Gas	Domestic Water Heaters
22-22 34 36 13				Commercial, Atmospheric, Gas Domestic Water Heaters
22-22 34 36 16				Commercial, Power-Burner, Gas Domestic Water Heaters
22-22 34 36 19				Commercial, Power-Vent, Gas Domestic Water Heaters
22-22 34 36 23				Commercial, High-Efficiency, Gas Domestic Water Heaters
22-22 34 36 26				Commercial, Coil-Type, Finned-Tube, Gas Domestic Water Heaters
22-22 34 36 29				Commercial, Grid-Type, Finned-Tube, Gas Domestic Water Heaters
22-22 34 46			Oil-Fired	Domestic Water Heaters
22-22 34 46 13				Large-Capacity, Oil-Fired Domestic Water Heaters
22-22 34 56			Dual-Fuel-Fired	Domestic Water Heaters
22-22 35 00		Domestic Water Heat Exchangers		
22-22 35 13			Instantaneous	Domestic Water Heat Exchangers
22-22 35 13 13				Heating-Fluid-in-Coil, Instantaneous Domestic Water Heat Exchangers
22-22 35 13 16				Domestic-Water-in-Coil, Instantaneous Domestic Water Heat Exchangers
22-22 35 13 19				Heating-Fluid-in-U-Tube-Coil, Instantaneous Domestic Water Heat Exchangers
22-22 35 23			Circulating,	Domestic Water Heat Exchangers
22-22 35 23 13				Circulating, Compact Domestic Water Heat Exchangers
22-22 35 23 16				Circulating, Storage Domestic Water Heat Exchangers
22-22 35 29			Noncirculating,	Domestic Water Heat Exchangers
22-22 35 29 13				Noncirculating, Compact Domestic Water Heat Exchangers
22-22 35 29 16				Noncirculating, Storage Domestic Water Heat Exchangers
22-22 35 36			Domestic Water Brazed-Plate	Heat Exchangers
22-22 35 39			Domestic Water Frame-and-Plate	Heat Exchangers
22-22 35 43			Domestic Water Heat Reclaimers	
22-22 40 00		Plumbing Fixtures		
22-22 41 00		Residential Plumbing Fixtures		
22-22 41 13			Residential Water Closets, Urinals, and Bidets	
22-22 41 13 13				Residential Water Closets
22-22 41 13 16				Residential Urinals
22-22 41 13 19				Residential Bidets
22-22 41 16			Residential Lavatories and Sinks	
22-22 41 16 13				Residential Lavatories
22-22 41 16 19				Residential Sinks
22-22 41 19			Residential Bathtubs	
22-22 41 23			Residential Showers	
22-22 41 26			Residential Disposers	
22-22 41 36			Residential Laundry Trays	
22-22 41 39			Residential Faucets, Supplies, and Trim	
22-22 42 00		Commercial Plumbing Fixtures		
22-22 42 13			Commercial Water Closets, Urinals, and Bidets	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-22 42 13 13				Commercial Water Closets
22-22 42 13 16				Commercial Urinals
22-22 42 16			Commercial Lavatories and Sinks	
22-22 42 16 13				Commercial Lavatories
22-22 42 16 16				Commercial Sinks
22-22 42 19			Commercial Bathtubs	
22-22 42 23			Commercial Showers	
22-22 42 26			Commercial Disposers	
22-22 42 29			Shampoo Bowls	
22-22 42 33			Wash Fountains	
22-22 42 36			Commercial Laundry Trays	
22-22 42 39			Commercial Faucets, Supplies, and Trim	
22-22 42 43			Flushometers	
22-22 43 00		Healthcare Plumbing Fixtures		
22-22 43 13			Healthcare Water Closets	
22-22 43 16			Healthcare Sinks	
22-22 43 19			Healthcare Bathtubs	
22-22 43 23			Healthcare Showers	
22-22 43 39			Healthcare Faucets	
22-22 43 43			Healthcare Plumbing Fixture Flushometers	
22-22 45 00		Emergency Plumbing Fixtures		
22-22 45 13			Emergency Showers	
22-22 45 16			Eyewash Equipment	
22-22 45 19			Self-Contained Eyewash Equipment	
22-22 45 23			Personal Eyewash Equipment	
22-22 45 26			Eye/Face Wash Equipment	
22-22 45 29			Hand-Held Emergency Drench Hoses	
22-22 45 33			Combination Emergency Fixture Units	
22-22 45 36			Emergency Fixture Water-Tempering Equipment	
22-22 46 00		Security Plumbing Fixtures		
22-22 46 13			Security Water Closets and Urinals	
22-22 46 13 13				Security Water Closets
22-22 46 13 16				Security Urinals
22-22 46 16			Security Lavatories and Sinks	
22-22 46 16 13				Security Lavatories
22-22 46 16 16				Security Sinks
22-22 46 19			Security Showers	
22-22 46 39			Security Faucets, Supplies, and Trim	
22-22 46 43			Security Plumbing Fixture Flushometers	
22-22 46 53			Security Plumbing Fixture Supports	
22-22 47 00		Drinking Fountains and Water Coolers		
22-22 47 13			Drinking Fountains	
22-22 47 16			Pressure Water Coolers	
22-22 47 19			Water-Station Water Coolers	
22-22 47 23			Remote Water Coolers	
22-22 50 00		Pool and Fountain Plumbing Systems		
22-22 51 00		Swimming Pool Plumbing Systems		
22-22 51 13			Swimming Pool Piping	
22-22 51 16			Swimming Pool Pumps	
22-22 51 19			Swimming Pool Water Treatment Equipment	
22-22 51 23			Swimming Pool Equipment Controls	
22-22 52 00		Fountain Plumbing Systems		
22-22 52 13			Fountain Piping	
22-22 52 16			Fountain Pumps	
22-22 52 19			Fountain Water Treatment Equipment	
22-22 52 23			Fountain Equipment Controls	
22-22 60 00		Gas and Vacuum Systems for Laboratory and Healthcare Facilities		
22-22 61 00		Compressed-Air Systems for Laboratory and Healthcare Facilities		
22-22 61 13			Compressed-Air Piping for Laboratory and Healthcare Facilities	
22-22 61 13 53				Laboratory Compressed-Air Piping
22-22 61 13 70				Healthcare Compressed-Air Piping
22-22 61 13 74				Dental Compressed-Air Piping
22-22 61 19			Compressed-Air Equipment for Laboratory and Healthcare Facilities	
22-22 61 19 53				Laboratory Compressed-Air Equipment
22-22 61 19 70				Healthcare Compressed-Air Equipment

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-22 61 19 74				Dental Compressed-Air Equipment
22-22 62 00		Vacuum Systems for Laboratory and Healthcare Facilities		
22-22 62 13			Vacuum Piping for Laboratory and Healthcare Facilities	
22-22 62 13 53				Laboratory Vacuum Piping
22-22 62 13 70				Healthcare, Surgical Vacuum Piping
22-22 62 13 74				Dental Vacuum Piping
22-22 62 19			Vacuum Equipment for Laboratory and Healthcare Facilities	
22-22 62 19 53				Laboratory Vacuum Equipment
22-22 62 19 70				Healthcare Vacuum Equipment
22-22 62 19 74				Dental Vacuum and Evacuation Equipment
22-22 62 23			Waste Anesthesia-Gas Piping	
22-22 63 00		Gas Systems for Laboratory and Healthcare Facilities		
22-22 63 13			Gas Piping for Laboratory and Healthcare Facilities	
22-22 63 13 53				Laboratory Gas Piping
22-22 63 13 70				Healthcare Gas Piping
22-22 63 19			Gas Storage Tanks for Laboratory and Healthcare Facilities	
22-22 63 19 53				Laboratory Gas Storage Tanks
22-22 63 19 70				Healthcare Gas Storage Tanks
22-22 66 00		Chemical-Waste Systems for Laboratory and Healthcare Facilities		
22-22 66 53			Laboratory Chemical-Waste and Vent Piping	
22-22 66 70			Healthcare Chemical-Waste and Vent Piping	
22-22 66 83			Chemical-Waste Tanks	
22-22 66 83 13				Chemical-Waste Dilution Tanks
22-22 66 83 16				Chemical-Waste Neutralization Tanks
22-22 67 00		Processed Water Systems for Laboratory and Healthcare Facilities		
22-22 67 13			Processed Water Piping for Laboratory and Healthcare Facilities	
22-22 67 13 13				Distilled-Water Piping
22-22 67 13 16				Reverse-Osmosis Water Piping
22-22 67 13 19				Deionized-Water Piping
22-22 67 19			Processed Water Equipment for Laboratory and Healthcare Facilities	
22-22 67 19 13				Distilled-Water Equipment
22-22 67 19 16				Reverse-Osmosis Water Equipment
22-22 67 19 19				Deionized-Water Equipment
22-23 00 00	Heating, Ventilating, and Air-Conditioning (HVAC)			
22-23 01 00		Operation and Maintenance of HVAC Systems		
22-23 01 10			Operation and Maintenance of Facility Fuel Systems	
22-23 01 20			Operation and Maintenance of HVAC Piping and Pumps	
22-23 01 30			Operation and Maintenance of HVAC Air Distribution	
22-23 01 30 51				HVAC Air-Distribution System Cleaning
22-23 01 50			Operation and Maintenance of Central Heating Equipment	
22-23 01 60			Operation and Maintenance of Central Cooling Equipment	
22-23 01 60 71				Refrigerant Recovery/Recycling
22-23 01 70			Operation and Maintenance of Central HVAC Equipment	
22-23 01 80			Operation and Maintenance of Decentralized HVAC Equipment	
22-23 01 90			Diagnostic Systems for HVAC	
22-23 05 00		Common Work Results for HVAC		
22-23 05 13			Common Motor Requirements for HVAC Equipment	
22-23 05 16			Expansion Fittings and Loops for HVAC Piping	
22-23 05 19			Meters and Gages for HVAC Piping	
22-23 05 23			General-Duty Valves for HVAC Piping	
22-23 05 29			Hangers and Supports for HVAC Piping and Equipment	
22-23 05 33			Heat Tracing for HVAC Piping	
22-23 05 48			Vibration and Seismic Controls for HVAC	
22-23 05 53			Identification for HVAC Piping and Equipment	
22-23 05 63			Anti-Microbial Coatings for HVAC Ducts and Equipment	
22-23 05 66			Anti-Microbial Ultraviolet Emitters for HVAC Ducts and Equipment	
22-23 05 93			Testing, Adjusting, and Balancing for HVAC	
22-23 07 00		HVAC Insulation		
22-23 07 13			Duct Insulation	
22-23 07 16			HVAC Equipment Insulation	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-23 07 19			HVAC Piping Insulation	
22-23 08 00		Commissioning of HVAC		
22-23 09 00		Instrumentation and Control for HVAC		
22-23 09 13			Instrumentation and Control Devices for HVAC	
22-23 09 13 13				Actuators and Operators
22-23 09 13 23				Sensors and Transmitters
22-23 09 13 33				Control Valves
22-23 09 13 43				Control Dampers
22-23 09 23			Direct-Digital Control System for HVAC	
22-23 09 33			Electric and Electronic Control System for HVAC	
22-23 09 43			Pneumatic Control System for HVAC	
22-23 09 53			Pneumatic and Electric Control System for HVAC	
22-23 09 93			Sequence of Operations for HVAC Controls	
22-23 10 00		Facility Fuel Systems		
22-23 11 00		Facility Fuel Piping		
22-23 11 13			Facility Fuel-Oil Piping	
22-23 11 16			Facility Gasoline Piping	
22-23 11 23			Facility Natural-Gas Piping	
22-23 11 26			Facility Liquefied-Petroleum Gas Piping	
22-23 12 00		Facility Fuel Pumps		
22-23 12 13			Facility Fuel-Oil Pumps	
22-23 12 16			Facility Gasoline Dispensing Pumps	
22-23 13 00		Facility Fuel-Storage Tanks		
22-23 13 13			Facility Underground Fuel-Oil, Storage Tanks	
22-23 13 13 13				Double-Wall Steel, Underground Fuel-Oil, Storage Tanks
22-23 13 13 16				Composite, Steel, Underground Fuel-Oil, Storage Tanks
22-23 13 13 19				Jacketed, Steel, Underground Fuel-Oil, Storage Tanks
22-23 13 13 23				Glass-Fiber-Reinforced-Plastic, Underground Fuel-Oil, Storage Tanks
22-23 13 13 33				Fuel-Oil Storage Tank Pumps
22-23 13 23			Facility Aboveground Fuel-Oil, Storage Tanks	
22-23 13 23 13				Vertical, Steel, Aboveground Fuel-Oil, Storage Tanks
22-23 13 23 16				Horizontal, Steel, Aboveground Fuel-Oil, Storage Tanks
22-23 13 23 19				Containment-Dike, Steel, Aboveground Fuel-Oil, Storage Tanks
22-23 13 23 23				Insulated, Steel, Aboveground Fuel-Oil, Storage Tanks
22-23 13 23 26				Concrete-Vaulted, Steel, Aboveground Fuel-Oil, Storage Tanks
22-23 20 00		HVAC Piping and Pumps		
22-23 21 00		Hydronic Piping and Pumps		
22-23 21 13			Hydronic Piping	
22-23 21 13 13				Underground Hydronic Piping
22-23 21 13 23				Aboveground Hydronic Piping
22-23 21 13 33				Ground-Loop Heat-Pump Piping
22-23 21 16			Hydronic Piping Specialties	
22-23 21 23			Hydronic Pumps	
22-23 21 23 13				In-Line Centrifugal Hydronic Pumps
22-23 21 23 16				Base-Mounted, Centrifugal Hydronic Pumps
22-23 21 23 19				Vertical-Mounted, Double-Suction Centrifugal Hydronic Pumps
22-23 21 23 23				Vertical-Turbine Hydronic Pumps
22-23 21 29			Automatic Condensate Pump Units	
22-23 22 00		Steam and Condensate Piping and Pumps		
22-23 22 13			Steam and Condensate Heating Piping	
22-23 22 13 13				Underground Steam and Condensate Heating Piping
22-23 22 13 23				Aboveground Steam and Condensate Heating Piping
22-23 22 16			Steam and Condensate Heating Piping Specialties	
22-23 22 23			Steam Condensate Pumps	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-23 22 23 13				Electric-Driven Steam Condensate Pumps
22-23 22 23 23				Pressure-Powered Steam Condensate Pumps
22-23 23 00		Refrigerant Piping		
22-23 23 13			Refrigerant Piping Valves	
22-23 23 16			Refrigerant Piping Specialties	
22-23 23 19			Refrigerant Safety Relief Valve Discharge Piping	
22-23 23 23			Refrigerants	
22-23 24 00		Internal-Combustion Engine Piping		
22-23 24 13			Internal-Combustion Engine Remote-Radiator Coolant Piping	
22-23 24 16			Internal-Combustion Engine Exhaust Piping	
22-23 25 00		HVAC Water Treatment		
22-23 25 13			Water Treatment for Closed-Loop Hydronic Systems	
22-23 25 16			Water Treatment for Open Hydronic Systems	
22-23 25 19			Water Treatment for Steam System Feedwater	
22-23 25 23			Water Treatment for Humidification Steam System Feedwater	
22-23 30 00		HVAC Air Distribution		
22-23 31 00		HVAC Ducts and Casings		
22-23 31 13			Metal Ducts	
22-23 31 13 13				Rectangular Metal Ducts
22-23 31 13 16				Round and Flat-Oval Spiral Ducts
22-23 31 13 19				Metal Duct Fittings
22-23 31 16			Nonmetal Ducts	
22-23 31 16 13				Fibrous-Glass Ducts
22-23 31 16 16				Thermoset Fiberglass-Reinforced Plastic Ducts
22-23 31 16 19				PVC Ducts
22-23 31 16 26				Concrete Ducts
22-23 31 19			HVAC Casings	
22-23 32 00		Air Plenums and Chases		
22-23 32 13			Fabricated, Metal Air Plenums	
22-23 32 33			Air-Distribution Ceiling Plenums	
22-23 32 36			Air-Distribution Floor Plenums	
22-23 32 39			Air-Distribution Wall Plenums	
22-23 32 43			Air-Distribution Chases Formed by General Construction	
22-23 32 48			Acoustical Air Plenums	
22-23 33 00		Air Duct Accessories		
22-23 33 13			Dampers	
22-23 33 13 13				Volume-Control Dampers
22-23 33 13 16				Fire Dampers
22-23 33 13 19				Smoke-Control Dampers
22-23 33 13 23				Backdraft Dampers
22-23 33 19			Duct Silencers	
22-23 33 23			Turning Vanes	
22-23 33 33			Duct-Mounting Access Doors	
22-23 33 43			Flexible Connectors	
22-23 33 46			Flexible Ducts	
22-23 33 53			Duct Liners	
22-23 34 00		HVAC Fans		
22-23 34 13			Axial HVAC Fans	
22-23 34 16			Centrifugal HVAC Fans	
22-23 34 23			HVAC Power Ventilators	
22-23 34 33			Air Curtains	
22-23 35 00		Special Exhaust Systems		
22-23 35 13			Dust Collection Systems	
22-23 35 13 13				Sawdust Collection Systems
22-23 35 16			Engine Exhaust Systems	
22-23 35 16 13				Positive-Pressure Engine Exhaust Systems
22-23 35 16 16				Mechanical Engine Exhaust Systems
22-23 36 00		Air Terminal Units		
22-23 36 13			Constant-Air-Volume Units	
22-23 36 16			Variable-Air-Volume Units	
22-23 37 00		Air Outlets and Inlets		
22-23 37 13			Diffusers, Registers, and Grilles	
22-23 37 16			Fabric Air Distribution Devices	
22-23 37 23			HVAC Gravity Ventilators	
22-23 37 23 13				HVAC Gravity Dome Ventilators

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-23 37 23 16				HVAC Gravity Louvered-Penthouse Ventilators
22-23 37 23 19				HVAC Gravity Upblast Ventilators
22-23 38 00		Ventilation Hoods		
22-23 38 13			Commercial-Kitchen Hoods	
22-23 38 13 13				Listed Commercial-Kitchen Hoods
22-23 38 13 16				Standard Commercial-Kitchen Hoods
22-23 38 16			Fume Hoods	
22-23 40 00		HVAC Air Cleaning Devices		
22-23 41 00		Particulate Air Filtration		
22-23 41 13			Panel Air Filters	
22-23 41 16			Renewable-Media Air Filters	
22-23 41 19			Washable Air Filters	
22-23 41 23			Extended Surface Filters	
22-23 41 33			High-Efficiency Particulate Filtration	
22-23 41 43			Ultra-Low Penetration Filtration	
22-23 41 46			Super Ultra-Low Penetration Filtration	
22-23 42 00		Gas-Phase Air Filtration		
22-23 42 13			Activated-Carbon Air Filtration	
22-23 42 16			Chemically-Impregnated Adsorption Air Filtration	
22-23 42 19			Catalytic-Adsorption Air Filtration	
22-23 43 00		Electronic Air Cleaners		
22-23 43 13			Washable Electronic Air Cleaners	
22-23 43 16			Agglomerator Electronic Air Cleaners	
22-23 43 23			Self-Contained Electronic Air Cleaners	
22-23 50 00		Central Heating Equipment		
22-23 51 00		Breechings, Chimneys, and Stacks		
22-23 51 13			Draft Control Devices	
22-23 51 13 13				Draft-Induction Fans
22-23 51 13 16				Vent Dampers
22-23 51 13 19				Barometric Dampers
22-23 51 16			Fabricated Breechings and Accessories	
22-23 51 19			Fabricated Stacks	
22-23 51 23			Gas Vents	
22-23 51 33			Insulated Sectional Chimneys	
22-23 51 43			Flue-Gas Filtration Equipment	
22-23 51 43 13				Gaseous Filtration
22-23 51 43 16				Particulate Filtration
22-23 52 00		Heating Boilers		
22-23 52 13			Electric Boilers	
22-23 52 16			Condensing Boilers	
22-23 52 16 13				Stainless-Steel Condensing Boilers
22-23 52 16 16				Aluminum Condensing Boilers
22-23 52 17			Low Mass Boilers	
22-23 52 19			Pulse Combustion Boilers	
22-23 52 23			Cast-Iron Boilers	
22-23 52 33			Water-Tube Boilers	
22-23 52 33 13				Finned Water-Tube Boilers
22-23 52 33 16				Steel Water-Tube Boilers
22-23 52 33 19				Copper Water-Tube Boilers
22-23 52 39			Fire-Tube Boilers	
22-23 52 39 13				Scotch Marine Boilers
22-23 52 39 16				Steel Fire-Tube Boilers
22-23 52 83			Boiler Blowdown Systems	
22-23 53 00		Heating Boiler Feedwater Equipment		
22-23 53 13			Boiler Feedwater Pumps	
22-23 53 16			Deaerators	
22-23 54 00		Furnaces		
22-23 54 13			Electric-Resistance Furnaces	
22-23 54 16			Fuel-Fired Furnaces	
22-23 54 16 13				Gas-Fired Furnaces
22-23 54 16 16				Oil-Fired Furnaces
22-23 55 00		Fuel-Fired Heaters		
22-23 55 13			Fuel-Fired Duct Heaters	
22-23 55 13 13				Oil-Fired Duct Heaters
22-23 55 13 16				Gas-Fired Duct Heaters
22-23 55 23			Gas-Fired Radiant Heaters	
22-23 55 33			Fuel-Fired Unit Heaters	
22-23 55 33 13				Oil-Fired Unit Heaters

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-23 55 33 16				Gas-Fired Unit Heaters
22-23 56 00		Solar Energy Heating Equipment		
22-23 56 13			Heating Solar Collectors	
22-23 56 13 13				Heating Solar Flat-Plate Collectors
22-23 56 13 16				Heating Solar Concentrating Collectors
22-23 56 13 19				Heating Solar Vacuum-Tube Collectors
22-23 56 16			Packaged Solar Heating Equipment	
22-23 57 00		Heat Exchangers for HVAC		
22-23 57 13			Steam-to-Steam Heat Exchangers	
22-23 57 16			Steam-to-Water Heat Exchangers	
22-23 57 19			Liquid-to-Liquid Heat Exchangers	
22-23 57 19 13				Plate-Type, Liquid-to-Liquid Heat Exchangers
22-23 57 19 16				Shell-Type, Liquid-to-Liquid Heat Exchangers
22-23 57 33			Direct Geoechange Heat Exchangers	
22-23 60 00		Central Cooling Equipment		
22-23 61 00		Refrigerant Compressors		
22-23 61 13			Centrifugal Refrigerant Compressors	
22-23 61 13 13				Non-Condensable Gas Purge Equipment
22-23 61 16			Reciprocating Refrigerant Compressors	
22-23 61 19			Scroll Refrigerant Compressors	
22-23 61 23			Rotary-Screw Refrigerant Compressors	
22-23 62 00		Packaged Compressor and Condenser Units		
22-23 62 13			Packaged Air-Cooled Refrigerant Compressor and Condenser Units	
22-23 62 23			Packaged Water-Cooled Refrigerant Compressor and Condenser Units	
22-23 63 00		Refrigerant Condensers		
22-23 63 13			Air-Cooled Refrigerant Condensers	
22-23 63 23			Water-Cooled Refrigerant Condensers	
22-23 63 33			Evaporative Refrigerant Condensers	
22-23 64 00		Packaged Water Chillers		
22-23 64 13			Absorption Water Chillers	
22-23 64 13 13				Direct-Fired Absorption Water Chillers
22-23 64 13 16				Indirect-Fired Absorption Water Chillers
22-23 64 16			Centrifugal Water Chillers	
22-23 64 16 13				Air-Cooled Centrifugal Water Chillers
22-23 64 16 16				Water-Cooled Centrifugal Water Chillers
22-23 64 19			Reciprocating Water Chillers	
22-23 64 23			Scroll Water Chillers	
22-23 64 26			Rotary-Screw Water Chillers	
22-23 65 00		Cooling Towers		
22-23 65 13			Forced-Draft Cooling Towers	
22-23 65 13 13				Open-Circuit, Forced-Draft Cooling Towers
22-23 65 13 16				Closed-Circuit, Forced-Draft Cooling Towers
22-23 65 16			Natural-Draft Cooling Towers	
22-23 65 23			Field-Erected Cooling Towers	
22-23 65 33			Liquid Coolers	
22-23 70 00		Central HVAC Equipment		
22-23 71 00		Thermal Storage		
22-23 71 13			Thermal Heat Storage	
22-23 71 13 13				Room Storage Heaters for Thermal Storage
22-23 71 13 16				Heat-Pump Boosters for Thermal Storage
22-23 71 13 19				Central Furnace Heat-Storage Units
22-23 71 13 23				Pressurized-Water Thermal Storage Tanks
22-23 71 16			Chilled-Water Thermal Storage	
22-23 71 19			Ice Storage	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-23 71 19 13				Internal Ice-on-Coil Thermal Storage
22-23 71 19 16				External Ice-on-Coil Thermal Storage
22-23 71 19 19				Encapsulated-Ice Thermal Storage
22-23 71 19 23				Ice-Harvesting Thermal Storage
22-23 71 19 26				Ice-Slurry Thermal Storage
22-23 72 00		Air-to-Air Energy Recovery Equipment		
22-23 72 13			Heat-Wheel Air-to-Air Energy-Recovery Equipment	
22-23 72 16			Heat-Pipe Air-to-Air Energy-Recovery Equipment	
22-23 72 19			Fixed-Plate Air-to-Air Energy-Recovery Equipment	
22-23 72 23			Packaged Air-to-Air Energy-Recovery Units	
22-23 73 00		Indoor Central-Station Air-Handling Units		
22-23 73 13			Modular Indoor Central-Station Air-Handling Units	
22-23 73 23			Custom Indoor Central-Station Air-Handling Units	
22-23 73 33			Indoor Indirect Fuel-Fired Heating and Ventilating Units	
22-23 73 33 13				Indoor Indirect Oil-Fired Heating and Ventilating Units
22-23 73 33 16				Indoor Indirect Gas-Fired Heating and Ventilating Units
22-23 73 39			Indoor, Direct Gas-Fired Heating and Ventilating Units	
22-23 74 00		Packaged Outdoor HVAC Equipment		
22-23 74 13			Packaged, Outdoor, Central-Station Air-Handling Units	
22-23 74 23			Packaged, Outdoor, Heating-Only Makeup-Air Units	
22-23 74 23 13				Packaged, Direct-Fired, Outdoor, Heating-Only Makeup-Air Units
22-23 74 23 16				Packaged, Indirect-Fired, Outdoor, Heating-Only Makeup-Air Units
22-23 74 33			Dedicated Outdoor-Air Units	
22-23 75 00		Custom-Packaged Outdoor HVAC Equipment		
22-23 75 13			Custom-Packaged, Outdoor, Central-Station Air-Handling Units	
22-23 75 23			Custom-Packaged, Outdoor, Heating and Ventilating Makeup-Air Units	
22-23 75 33			Custom-Packaged, Outdoor, Heating and Cooling Makeup Air-Conditioners	
22-23 76 00		Evaporative Air-Cooling Equipment		
22-23 76 13			Direct Evaporative Air Coolers	
22-23 76 16			Indirect Evaporative Air Coolers	
22-23 76 19			Combined Direct and Indirect Evaporative Air Coolers	
22-23 80 00		Decentralized HVAC Equipment		
22-23 81 00		Decentralized Unitary HVAC Equipment		
22-23 81 13			Packaged Terminal Air-Conditioners	
22-23 81 16			Room Air-Conditioners	
22-23 81 19			Self-Contained Air-Conditioners	
22-23 81 19 13				Small-Capacity Self-Contained Air-Conditioners
22-23 81 19 16				Large-Capacity Self-Contained Air-Conditioners
22-23 81 23			Computer-Room Air-Conditioners	
22-23 81 26			Split-System Air-Conditioners	
22-23 81 26 13				Small-Capacity Split-System Air-Conditioners
22-23 81 26 16				Large-Capacity Split-System Air-Conditioners
22-23 81 43			Air-Source Unitary Heat Pumps	
22-23 81 46			Water-Source Unitary Heat Pumps	
22-23 82 00		Convection Heating and Cooling Units		
22-23 82 13			Valance Heating and Cooling Units	
22-23 82 14			Chilled Beams	
22-23 82 16			Air Coils	
22-23 82 19			Fan Coil Units	
22-23 82 23			Unit Ventilators	
22-23 82 26			Induction Units	
22-23 82 29			Radiators	
22-23 82 33			Convectors	
22-23 82 36			Finned-Tube Radiation Heaters	
22-23 82 39			Unit Heaters	
22-23 82 39 13				Cabinet Unit Heaters
22-23 82 39 16				Propeller Unit Heaters

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-23 82 39 19				Wall and Ceiling Unit Heaters
22-23 82 41			Water-to-Water Heat Pumps	
22-23 83 00		Radiant Heating Units		
22-23 83 13			Radiant-Heating Electric Cables	
22-23 83 13 16				Radiant-Heating Electric Mats
22-23 83 16			Radiant-Heating Hydronic Piping	
22-23 83 23			Radiant-Heating Electric Panels	
22-23 83 26			Gas-Fired Radiant Heaters	
22-23 83 33			Electric Radiant Heaters	
22-23 84 00		Humidity Control Equipment		
22-23 84 13			Humidifiers	
22-23 84 13 13				Heated-Pan Humidifiers
22-23 84 13 16				Wetted-Element Humidifiers
22-23 84 13 18				Atomizing Humidifiers
22-23 84 13 23				Direct-Steam-Injection Humidifiers
22-23 84 13 26				Jacketed, Steam Humidifiers
22-23 84 13 29				Self-Contained Steam Humidifiers
22-23 84 13 33				Portable Humidifiers
22-23 84 16			Mechanical Dehumidification Units	
22-23 84 16 13				Outdoor, Mechanical Dehumidification Units
22-23 84 16 16				Indoor, Mechanical Dehumidification Units
22-23 84 16 19				Portable Dehumidifiers
22-23 84 19			Desiccant Dehumidification Units	
22-25 00 00	Integrated Automation			
22-25 01 00		Operation and Maintenance of Integrated Automation		
22-25 01 10			Operation and Maintenance of Integrated Automation Network Equipment	
22-25 01 20			Operation and Maintenance of Integrated Equipment	
22-25 01 30			Operation and Maintenance of Integrated Automation Instrumentation and Terminal Devices	
22-25 01 90			Diagnostic Systems for Integrated Automation	
22-25 05 00		Common Work Results for Integrated Automation		
22-25 05 13			Conductors and Cables for Integrated Automation	
22-25 05 26			Grounding and Bonding for Integrated Automation	
22-25 05 28			Pathways for Integrated Automation	
22-25 05 28 29				Hangers and Supports for Integrated Automation
22-25 05 28 33				Conduits and Backboxes for Integrated Automation
22-25 05 28 36				Cable Trays for Integrated Automation
22-25 05 28 39				Surface Raceways for Integrated Automation
22-25 05 48			Vibration and Seismic Controls for Integrated Automation	
22-25 05 53			Identification for Integrated Automation	
22-25 08 00		Commissioning of Integrated Automation		
22-25 10 00		Integrated Automation Network Equipment		
22-25 11 00		Integrated Automation Network Devices		
22-25 11 13			Integrated Automation Network Servers	
22-25 11 16			Integrated Automation Network Routers, Bridges, Switches, Hubs, and Modems	
22-25 11 19			Integrated Automation Network Operator Workstations	
22-25 12 00		Integrated Automation Network Gateways		
22-25 12 13			Hardwired Integration Network Gateways	
22-25 12 16			Direct-Protocol Integration Network Gateways	
22-25 12 19			Neutral-Protocol Integration Network Gateways	
22-25 12 23			Client-Server Information/Database Integration Network Gateways	
22-25 13 00		Integrated Automation Control and Monitoring Network		
22-25 13 13			Integrated Automation Control and Monitoring Network Supervisory Control	
22-25 13 16			Integrated Automation Control and Monitoring Network Integration Panels	
22-25 13 19			Integrated Automation Control and Monitoring Network Interoperability	
22-25 14 00		Integrated Automation Local Control Units		
22-25 14 13			Integrated Automation Remote Control Panels	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-25 14 16			Integrated Automation Application-Specific Control Panels	
22-25 14 19			Integrated Automation Terminal Control Units	
22-25 14 23			Integrated Automation Field Equipment Panels	
22-25 15 00		Integrated Automation Software		
22-25 15 13			Integrated Automation Software for Network Gateways	
22-25 15 16			Integrated Automation Software for Control and Monitoring Networks	
22-25 15 19			Integrated Automation Software for Local Control Units	
22-25 30 00		Integrated Automation Instrumentation and Terminal Devices		
22-25 31 00		Integrated Automation Instrumentation and Terminal Devices for Facility Equipment		
22-25 32 00		Integrated Automation Instrumentation and Terminal Devices for Conveying Equipment		
22-25 33 00		Integrated Automation Instrumentation and Terminal Devices for Fire-Suppression Systems		
22-25 34 00		Integrated Automation Instrumentation and Terminal Devices for Plumbing		
22-25 35 00		Integrated Automation Instrumentation and Terminal Devices for HVAC		
22-25 35 13			Integrated Automation Actuators and Operators	
22-25 35 16			Integrated Automation Sensors and Transmitters	
22-25 35 19			Integrated Automation Control Valves	
22-25 35 23			Integrated Automation Control Dampers	
22-25 35 26			Integrated Automation Compressed Air Supply	
22-25 36 00		Integrated Automation Instrumentation and Terminal Devices for Electrical Systems		
22-25 36 13			Integrated Automation Power Meters	
22-25 36 16			Integrated Automation KW Transducers	
22-25 36 19			Integrated Automation Current Sensors	
22-25 36 23			Integrated Automation Battery Monitors	
22-25 36 26			Integrated Automation Lighting Relays	
22-25 36 29			Integrated Automation UPS Monitors	
22-25 37 00		Integrated Automation Instrumentation and Terminal Devices for Communications Systems		
22-25 38 00		Integrated Automation Instrumentation and Terminal Devices for Electronic Safety and Security Systems		
22-25 50 00		Integrated Automation Facility Controls		
22-25 51 00		Integrated Automation Control of Facility Equipment		
22-25 52 00		Integrated Automation Control of Conveying Equipment		
22-25 53 00		Integrated Automation Control of Fire-Suppression Systems		
22-25 54 00		Integrated Automation Control of Plumbing		
22-25 55 00		Integrated Automation Control of HVAC		
22-25 56 00		Integrated Automation Control of Electrical Systems		
22-25 57 00		Integrated Automation Control of Communications Systems		
22-25 58 00		Integrated Automation Control of Electronic Safety and Security Systems		
22-25 90 00		Integrated Automation Control Sequences		
22-25 91 00		Integrated Automation Control Sequences for Facility Equipment		
22-25 92 00		Integrated Automation Control Sequences for Conveying Equipment		
22-25 93 00		Integrated Automation Control Sequences for Fire-Suppression Systems		
22-25 94 00		Integrated Automation Control Sequences for Plumbing		
22-25 95 00		Integrated Automation Control Sequences for HVAC		
22-25 96 00		Integrated Automation Control Sequences for Electrical Systems		
22-25 97 00		Integrated Automation Control Sequences for Communications Systems		
22-25 98 00		Integrated Automation Control Sequences for Electronic Safety and Security Systems		
22-26 00 00	Electrical			
22-26 01 00		Operation and Maintenance of Electrical Systems		
22-26 01 10			Operation and Maintenance of Medium-Voltage Electrical Distribution	
22-26 01 20			Operation and Maintenance of Low-Voltage Electrical Distribution	
22-26 01 26			Maintenance Testing of Electrical Systems	
22-26 01 30			Operation and Maintenance of Facility Electrical Power Generating and Storing Equipment	
22-26 01 40			Operation and Maintenance of Electrical and Cathodic Protection Systems	
22-26 01 50			Operation and Maintenance of Lighting	
22-26 01 50 51				Luminaire Relamping
22-26 01 50 81				Luminaire Replacement
22-26 05 00		Common Work Results for Electrical		
22-26 05 13			Medium-Voltage Cables	
22-26 05 13 13				Medium-Voltage Open Conductors
22-26 05 13 16				Medium-Voltage, Single- and Multi-Conductor Cables

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-26 05 19			Low-Voltage Electrical Power	Conductors and Cables
22-26 05 19 13				Undercarpet Electrical Power Cables
22-26 05 19 23				Manufactured Wiring Assemblies
22-26 05 23			Control-Voltage Electrical Power	Cables
22-26 05 26			Grounding and Bonding for Electrical	Systems
22-26 05 29			Hangers and Supports for Electrical	Systems
22-26 05 33			Raceway and Boxes for Electrical	Systems
22-26 05 33 13				Conduit for Electrical Systems
22-26 05 33 16				Boxes for Electrical Systems
22-26 05 33 23				Surface raceways for Electrical Systems
22-26 05 36			Cable Trays for Electrical	Systems
22-26 05 39			Underfloor Raceways for Electrical	Systems
22-26 05 43			Underground Ducts and Raceways for	Electrical Systems
22-26 05 46			Utility Poles for Electrical	Systems
22-26 05 48			Vibration and Seismic Controls for	Electrical Systems
22-26 05 53			Identification for Electrical	Systems
22-26 05 73			Overcurrent Protective Device	Coordination Study
22-26 05 83			Wiring Connections	
22-26 08 00		Commissioning of Electrical	Systems	
22-26 09 00		Instrumentation and Control for	Electrical Systems	
22-26 09 13			Electrical Power Monitoring	
22-26 09 15			Peak Load Controllers	
22-26 09 16			Electrical Controls and Relays	
22-26 09 17			Programmable Controllers	
22-26 09 19			Enclosed Contactors	
22-26 09 23			Lighting Control Devices	
22-26 09 26			Lighting Control Panelboards	
22-26 09 33			Central Dimming Controls	
22-26 09 33 13				Multichannel Remote-Controlled Dimmers
22-26 09 33 16				Remote-Controlled Dimming Stations
22-26 09 36			Modular Dimming Controls	
22-26 09 36 13				Manual Modular Dimming Controls
22-26 09 36 16				Integrated Multipreset Modular Dimming Controls
22-26 09 43			Network Lighting Controls	
22-26 09 43 13				Digital-Network Lighting Controls
22-26 09 43 16				Addressable Fixture Lighting Control
22-26 09 61			Theatrical Lighting Controls	
22-26 10 00		Medium-Voltage Electrical	Distribution	
22-26 11 00		Substations		
22-26 11 13			Primary Unit Substations	
22-26 11 16			Secondary Unit Substations	
22-26 12 00		Medium-Voltage Transformers		
22-26 12 13			Liquid-Filled, Medium-Voltage	Transformers
22-26 12 16			Dry-Type, Medium-Voltage	Transformers
22-26 12 19			Pad-Mounted, Liquid-Filled, Medium-Voltage	Transformers
22-26 13 00		Medium-Voltage Switchgear		
22-26 13 13			Medium-Voltage Circuit Breaker	Switchgear
22-26 13 16			Medium-Voltage Fusible Interrupter	Switchgear
22-26 13 19			Medium-Voltage Vacuum Interrupter	Switchgear
22-26 13 23			Medium-Voltage Metal-Enclosed	Switchgear
22-26 13 26			Medium-Voltage Metal-Clad	Switchgear
22-26 13 29			Medium-Voltage Compartmentalized	Switchgear
22-26 16 00		Medium-Voltage Metering		
22-26 18 00		Medium-Voltage Circuit Protection	Devices	
22-26 18 13			Medium-Voltage Cutouts	
22-26 18 16			Medium-Voltage Fuses	
22-26 18 19			Medium-Voltage Lightning Arresters	
22-26 18 23			Medium-Voltage Surge Arresters	
22-26 18 26			Medium-Voltage Reclosers	
22-26 18 29			Medium-Voltage Enclosed Bus	
22-26 18 33			Medium-Voltage Enclosed Fuse	Cutouts
22-26 18 36			Medium-Voltage Enclosed Fuses	
22-26 18 39			Medium-Voltage Motor Controllers	
22-26 20 00		Low-Voltage Electrical	Transmission	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-26 21 00		Low-Voltage Electrical Service	Entrance	
22-26 21 13			Low-Voltage Overhead Electrical Service	Entrance
22-26 21 16			Low-Voltage Underground Electrical Service	Entrance
22-26 22 00		Low-Voltage Transformers		
22-26 22 13			Low-Voltage Distribution Transformers	
22-26 22 16			Low-Voltage Buck-Boost Transformers	
22-26 22 19			Control and Signal Transformers	
22-26 23 00		Low-Voltage Switchgear		
22-26 23 13			Paralleling Low-Voltage Switchgear	
22-26 24 00		Switchboards and Panelboards		
22-26 24 13			Switchboards	
22-26 24 16			Panelboards	
22-26 24 19			Motor-Control Centers	
22-26 25 00		Enclosed Bus Assemblies		
22-26 26 00		Power Distribution Units		
22-26 27 00		Low-Voltage Distribution Equipment		
22-26 27 13			Electricity Metering	
22-26 27 16			Electrical Cabinets and Enclosures	
22-26 27 19			Multi-Outlet Assemblies	
22-26 27 23			Indoor Service Poles	
22-26 27 26			Wiring Devices	
22-26 27 73			Door Chimes	
22-26 28 00		Low-Voltage Circuit Protective Devices		
22-26 28 13			Fuses	
22-26 28 16			Enclosed Switches and Circuit Breakers	
22-26 28 16 13				Enclosed Circuit Breakers
22-26 28 16 16				Enclosed Switches
22-26 29 00		Low-Voltage Controllers		
22-26 29 13			Enclosed Controllers	
22-26 29 13 13				Across-the-Line Motor Controllers
22-26 29 13 16				Reduced-Voltage Motor Controllers
22-26 29 23			Variable-Frequency Motor Controllers	
22-26 29 33			Controllers for Fire Pump Drivers	
22-26 29 33 13				Full-Service Controllers for Fire Pump Electric-Motor Drivers
22-26 29 33 16				Limited-Service Controllers for Fire Pump Electric-Motor Drivers
22-26 29 33 19				Controllers for Fire Pump Diesel Engine Drivers
22-26 30 00		Facility Electrical Power Generating and Storing Equipment		
22-26 31 00		Photovoltaic Collectors		
22-26 32 00		Packaged Generator Assemblies		
22-26 32 13			Engine Generators	
22-26 32 13 13				Diesel-Engine-Driven Generator Sets
22-26 32 13 16				Gas-Engine-Driven Generator Sets
22-26 32 13 26				Gas-Turbine Engine-Driven Generators
22-26 32 16			Steam-Turbine Generators	
22-26 32 19			Hydro-Turbine Generators	
22-26 32 23			Wind Energy Equipment	
22-26 32 26			Frequency Changers	
22-26 32 29			Rotary Converters	
22-26 32 33			Rotary Uninterruptible Power Units	
22-26 33 00		Battery Equipment		
22-26 33 13			Batteries	
22-26 33 16			Battery Racks	
22-26 33 19			Battery Units	
22-26 33 23			Central Battery Equipment	
22-26 33 33			Static Power Converters	
22-26 33 43			Battery Chargers	
22-26 33 46			Battery Monitoring	
22-26 33 53			Static Uninterruptible Power Supply	
22-26 35 00		Power Filters and Conditioners		
22-26 35 13			Capacitors	
22-26 35 16			Chokes and Inductors	
22-26 35 23			Electromagnetic-Interference Filters	
22-26 35 26			Harmonic Filters	
22-26 35 33			Power Factor Correction Equipment	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-26 35 36			Slip Controllers	
22-26 35 43			Static-Frequency Converters	
22-26 35 46			Radio-Frequency-Interference Filters	
22-26 35 53			Voltage Regulators	
22-26 36 00		Transfer Switches		
22-26 36 13			Manual Transfer Switches	
22-26 36 23			Automatic Transfer Switches	
22-26 40 00		Electrical and Cathodic Protection		
22-26 41 00		Facility Lightning Protection		
22-26 41 13			Lightning Protection for Structures	
22-26 41 13 13				Lightning Protection for Buildings
22-26 41 16			Lightning Prevention and Dissipation	
22-26 41 19			Early Streamer Emission Lightning Protection	
22-26 41 23			Lightning Protection Surge Arresters and Suppressors	
22-26 42 00		Cathodic Protection		
22-26 42 13			Passive Cathodic Protection for Underground and Submerged Piping	
22-26 42 16			Passive Cathodic Protection for Underground Storage Tank	
22-26 43 00		Surge Protective Devices		
22-26 43 13			Transient-Voltage Suppression for Low-Voltage Electrical Power Circuits	
22-26 50 00		Lighting		
22-26 51 00		Interior Lighting		
22-26 51 13			Interior Lighting Fixtures, Lamps, And Ballasts	
22-26 52 00		Emergency Lighting		
22-26 53 00		Exit Signs		
22-26 54 00		Classified Location Lighting		
22-26 55 00		Special Purpose Lighting		
22-26 55 23			Outline Lighting	
22-26 55 29			Underwater Lighting	
22-26 55 33			Hazard Warning Lighting	
22-26 55 36			Obstruction Lighting	
22-26 55 39			Helipad Lighting	
22-26 55 53			Security Lighting	
22-26 55 59			Display Lighting	
22-26 55 61			Theatrical Lighting	
22-26 55 63			Detention Lighting	
22-26 55 70			Healthcare Lighting	
22-26 55 83			Broadcast Lighting	
22-26 56 00		Exterior Lighting		
22-26 56 13			Lighting Poles and Standards	
22-26 56 16			Parking Lighting	
22-26 56 19			Roadway Lighting	
22-26 56 23			Area Lighting	
22-26 56 26			Landscape Lighting	
22-26 56 29			Site Lighting	
22-26 56 33			Walkway Lighting	
22-26 56 36			Flood Lighting	
22-26 56 68			Exterior Athletic Lighting	
22-27 00 00	Communications			
22-27 01 00		Operation and Maintenance of Communications Systems		
22-27 01 10			Operation and Maintenance of Structured Cabling and Enclosures	
22-27 01 20			Operation and Maintenance of Data Communications	
22-27 01 30			Operation and Maintenance of Voice Communications	
22-27 01 40			Operation and Maintenance of Audio-Video Communications	
22-27 01 50			Operation and Maintenance of Distributed Communications and Monitoring	
22-27 05 00		Common Work Results for Communications		
22-27 05 13			Communications Services	
22-27 05 13 13				Dialtone Services
22-27 05 13 23				T1 Services
22-27 05 13 33				DSL Services
22-27 05 13 43				Cable Services
22-27 05 13 53				Satellite Services
22-27 05 26			Grounding and Bonding for Communications Systems	
22-27 05 28			Pathways for Communications Systems	
22-27 05 29			Hangers and Supports for Communications Systems	
22-27 05 33			Conduits and Backboxes for Communications Systems	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-27 05 36			Cable Trays for Communications Systems	
22-27 05 39			Surface Raceways for Communications Systems	
22-27 05 43			Underground Ducts and Raceways for Communications Systems	
22-27 05 46			Utility Poles for Communications Systems	
22-27 05 48			Vibration and Seismic Controls for Communications Systems	
22-27 05 53			Identification for Communications Systems	
22-27 08 00		Commissioning of Communications		
22-27 10 00		Structured Cabling		
22-27 11 00		Communications Equipment Room Fittings		
22-27 11 13			Communications Entrance Protection	
22-27 11 16			Communications Cabinets, Racks, Frames and Enclosures	
22-27 11 19			Communications Termination Blocks and Patch Panels	
22-27 11 23			Communications Cable Management and Ladder Rack	
22-27 11 26			Communications Rack Mounted Power Protection and Power Strips	
22-27 13 00		Communications Backbone Cabling		
22-27 13 13			Communications Copper Backbone Cabling	
22-27 13 13 13				Communications Copper Cable Splicing and Terminations
22-27 13 23			Communications Optical Fiber Backbone Cabling	
22-27 13 23 13				Communications Optical Fiber Splicing and Terminations
22-27 13 33			Communications Coaxial Backbone Cabling	
22-27 13 33 13				Communications Coaxial Splicing and Terminations
22-27 13 43			Communications Services Cabling	
22-27 13 43 13				Dialtone Services Cabling
22-27 13 43 23				T1 Services Cabling
22-27 13 43 33				DSL Services Cabling
22-27 13 43 43				Cable Services Cabling
22-27 13 43 53				Satellite Services Cabling
22-27 15 00		Communications Horizontal Cabling		
22-27 15 00 16				Voice Communications Horizontal Cabling
22-27 15 00 19				Data Communications Horizontal Cabling
22-27 15 00 23				Audio-Video Communications Horizontal Cabling
22-27 15 00 39				Patient Monitoring and Telemetry Communications Horizontal Cabling
22-27 15 00 43				Nurse Call and Intercom Communications Horizontal Cabling
22-27 15 00 46				Paging Communications Horizontal Cabling
22-27 15 00 49				Intermediate Frequency/Radio Frequency Communications Horizontal Cabling
22-27 15 00 53				Antennas Communications Horizontal Cabling
22-27 15 13			Communications Copper Horizontal Cabling	
22-27 15 23			Communications Optical Fiber Horizontal Cabling	
22-27 15 33			Communications Coaxial Horizontal Cabling	
22-27 15 43			Communications Faceplates and Connectors	
22-27 16 00		Communications Connecting Cords, Devices and Adapters		
22-27 16 13			Communications Custom Cable Assemblies	
22-27 16 16			Communications Media Converters, Adapters, and Transceivers	
22-27 16 19			Communications Patch Cords, Station Cords, and Cross Connect Wire	
22-27 20 00		Data Communications		
22-27 21 00		Data Communications Network Equipment		
22-27 21 13			Data Communications Firewalls	
22-27 21 16			Data Communications Routers, CSU/DSU, Multiplexers, Codec's, and Modems	
22-27 21 26			Data Communications Network Management	
22-27 21 29			Data Communications Switches and Hubs	
22-27 21 33			Data Communications Wireless Access Points	
22-27 22 00		Data Communications Hardware		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-27 22 13			Data Communications Mainframes	
22-27 22 16			Data Communications Storage and Backup	
22-27 22 19			Data Communications Servers	
22-27 22 23			Data Communications Desktops	
22-27 22 26			Data Communications Laptops	
22-27 22 29			Data Communications Handhelds	
22-27 24 00		Data Communications Peripheral Data Equipment		
22-27 24 13			Printers	
22-27 24 16			Scanners	
22-27 24 19			External Drives	
22-27 24 23			Audio-Video Devices	
22-27 24 26			Virtual Reality Equipment	
22-27 24 29			Disaster Recovery Equipment	
22-27 25 00		Data Communications Software		
22-27 25 13			Virus Protection Software	
22-27 25 16			Application Suites	
22-27 25 19			Email Software	
22-27 25 23			Graphics/Multimedia Software	
22-27 25 26			Customer Relationship Management Software	
22-27 25 29			Operating System Software	
22-27 25 33			Database Software	
22-27 25 37			Virtual Private Network Software	
22-27 25 39			Internet Conferencing Software	
22-27 26 00		Data Communications Programming and Integration Services		
22-27 26 13			Web Development	
22-27 26 16			Database Development	
22-27 26 19			Application Development	
22-27 26 23			Network Integration Requirements	
22-27 26 26			Data Communications Integration Requirements	
22-27 30 00		Voice Communications		
22-27 31 00		Voice Communications Switching and Routing Equipment		
22-27 31 13			PBX/ Key Systems	
22-27 31 23			Internet Protocol Voice Switches	
22-27 32 00		Voice Communications Terminal Equipment		
22-27 32 13			Telephone Sets	
22-27 32 16			Wireless Transceivers	
22-27 32 23			Elevator Telephones	
22-27 32 26			Ring-Down Emergency Telephones	
22-27 32 29			Facsimiles and Modems	
22-27 32 36			TTY Equipment	
22-27 32 43			Radio Communications Equipment	
22-27 33 00		Voice Communications Messaging		
22-27 33 16			Voice Mail and Auto Attendant	
22-27 33 23			Interactive Voice Response	
22-27 33 26			Facsimile Servers	
22-27 34 00		Call Accounting		
22-27 34 13			Toll Fraud Equipment and Software	
22-27 34 16			Telemanagement Software	
22-27 35 00		Call Management		
22-27 35 13			Digital Voice Announcers	
22-27 35 16			Automatic Call Distributors	
22-27 35 19			Call Status and Management Displays	
22-27 35 23			Dedicated 911 Systems	
22-27 40 00		Audio-Video Communications		
22-27 41 00		Audio-Video Systems		
22-27 41 13			Architecturally Integrated Audio-Video Equipment	
22-27 41 16			Integrated Audio-Video Systems and Equipment	
22-27 41 16 25				Integrated Audio-Video Systems and Equipment for Restaurants and Bars
22-27 41 16 28				Integrated Audio-Video Systems and Equipment for Conference Rooms
22-27 41 16 29				Integrated Audio-Video Systems and Equipment for Board Rooms
22-27 41 16 51				Integrated Audio-Video Systems and Equipment for Classrooms
22-27 41 16 52				Integrated Audio-Video Systems and Equipment for Religious Facilities
22-27 41 16 61				Integrated Audio-Video Systems and Equipment for Theaters

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-27 41 16 62				Integrated Audio-Video Systems and Equipment for Auditoriums
22-27 41 16 63				Integrated Audio-Video Systems and Equipment for Stadiums and Arenas
22-27 41 19			Portable Audio-Video Equipment	
22-27 41 23			Audio-Video Accessories	
22-27 41 33			Master Antenna Television Systems	
22-27 41 43			Audio-Video Conferencing	
22-27 42 00		Electronic Digital Systems		
22-27 42 13			Point of Sale Systems	
22-27 42 16			Transportation Information Display Systems	
22-27 42 19			Public Information Systems	
22-27 50 00		Distributed Communications and Monitoring Systems		
22-27 51 00		Distributed Audio-Video Communications Systems		
22-27 51 13			Paging Systems	
22-27 51 13 13				Overhead Paging Systems
22-27 51 16			Public Address Systems	
22-27 51 19			Sound Masking Systems	
22-27 51 23			Intercommunications and Program Systems	
22-27 51 23 20				Commercial Intercommunications and Program Systems
22-27 51 23 30				Residential Intercommunications and Program Systems
22-27 51 23 50				Educational Intercommunications and Program Systems
22-27 51 23 63				Detention Intercommunications and Program Systems
22-27 51 23 70				Healthcare Intercommunications and Program Systems
22-27 51 26			Assistive Listening Systems	
22-27 52 00		Healthcare Communications and Monitoring Systems		
22-27 52 13			Patient Monitoring and Telemetry Systems	
22-27 52 16			Telemedicine Systems	
22-27 52 19			Healthcare Imaging Systems	
22-27 52 23			Nurse Call/Code Blue Systems	
22-27 53 00		Distributed Systems		
22-27 53 13			Clock Systems	
22-27 53 13 13				Wireless Clock Systems
22-27 53 16			Infrared and Radio Frequency Tracking Systems	
22-27 53 19			Internal Cellular, Paging, and Antenna Systems	
22-27 60 00		Wireless Transceivers		
22-28 00 00	Electronic Safety and Security			
22-28 01 00		Operation and Maintenance of Electronic Safety and Security		
22-28 01 10			Operation and Maintenance of Electronic Access Control and Intrusion Detection	
22-28 01 10 51				Maintenance and Administration of Electronic Access Control and Intrusion Detection
22-28 01 10 71				Revisions and Upgrades of Electronic Access Control and Intrusion Detection
22-28 01 20			Operation and Maintenance of Electronic Surveillance	
22-28 01 30			Operation and Maintenance of Electronic Detection and Alarm	
22-28 01 30 51				Maintenance and Administration of Electronic Detection and Alarm
22-28 01 30 71				Revisions and Upgrades of Electronic Detection and Alarm
22-28 01 40			Operation and Maintenance of Electronic Monitoring and Control	
22-28 01 40 51				Maintenance and Administration of Electronic Monitoring and Control
22-28 01 40 71				Revisions and Upgrades of Electronic Monitoring and Control
22-28 05 00		Common Work Results for Electronic Safety and Security		
22-28 05 13			Conductors and Cables for Electronic Safety and Security	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-28 05 13 13				CCTV Communications Conductors and Cables
22-28 05 13 16				Access Control Communications Conductors and Cables
22-28 05 13 19				Intrusion Detection Communications Conductors and Cables
22-28 05 13 23				Fire Alarm Communications Conductors and Cables
22-28 05 26			Grounding and Bonding for Electronic Safety and Security	
22-28 05 28			Pathways for Electronic Safety and Security	
22-28 05 28 29				Hangers and Supports for Electronic Safety and Security
22-28 05 28 33				Conduits and Backboxes for Electronic Safety and Security
22-28 05 28 36				Cable Trays for Electronic Safety and Security
22-28 05 28 39				Surface Raceways for Electronic Safety and Security
22-28 05 48			Vibration and Seismic Controls for Electronic Safety and Security	
22-28 05 53			Identification for Electronic Safety and Security	
22-28 08 00		Commissioning of Electronic Safety and Security		
22-28 10 00		Electronic Access Control and Intrusion Detection		
22-28 13 00		Access Control		
22-28 13 13			Access Control Global Applications	
22-28 13 16			Access Control Systems and Database Management	
22-28 13 19			Access Control Systems Infrastructure	
22-28 13 26			Access Control Remote Devices	
22-28 13 33			Access Control Interfaces	
22-28 13 33 16				Access Control Interfaces to Access Control Hardware
22-28 13 33 26				Access Control Interfaces to Intrusion Detection
22-28 13 33 33				Access Control Interfaces to Video Surveillance
22-28 13 33 36				Access Control Interfaces to Fire Alarm
22-28 13 43			Access Control Identification Management Systems	
22-28 13 53			Security Access Detection	
22-28 13 53 13				Security Access Metal Detectors
22-28 13 53 16				Security Access X-Ray Equipment
22-28 13 53 23				Security Access Explosive Detection Equipment
22-28 13 53 29				Security Access Sniffing Equipment
22-28 13 63			Access Control Vehicle Identification System	
22-28 16 00		Intrusion Detection		
22-28 16 13			Intrusion Detection Control, GUI, and Logic Systems	
22-28 16 16			Intrusion Detection Systems Infrastructure	
22-28 16 19			Intrusion Detection Remote Devices and Sensors	
22-28 16 33			Intrusion Detection Interfaces	
22-28 16 33 13				Intrusion Detection Interfaces to Remote Monitoring
22-28 16 33 16				Intrusion Detection Interfaces to Access Control Hardware
22-28 16 33 23				Intrusion Detection Interfaces to Access Control System
22-28 16 33 33				Intrusion Detection Interfaces to Video Surveillance
22-28 16 33 36				Intrusion Detection Interfaces to Fire Alarm
22-28 16 43			Perimeter Security Systems	
22-28 20 00		Electronic Surveillance		
22-28 23 00		Video Surveillance		
22-28 23 13			Video Surveillance Control and Management Systems	
22-28 23 16			Video Surveillance Monitoring and Supervisory Interfaces	
22-28 23 19			Digital Video Recorders and Analog Recording Devices	
22-28 23 23			Video Surveillance Systems Infrastructure	
22-28 23 26			Video Surveillance Remote Positioning Equipment	
22-28 23 29			Video Surveillance Remote Devices and Sensors	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-28 26 00		Electronic Personal Protection Systems		
22-28 26 13			Electronic Personal Safety Detection Systems	
22-28 26 16			Electronic Personal Safety Alarm Annunciation and Control Systems	
22-28 26 19			Electronic Personal Safety Interfaces to Remote Monitoring	
22-28 26 23			Electronic Personal Safety Emergency Aid Devices	
22-28 30 00		Electronic Detection and Alarm		
22-28 31 00		Fire Detection and Alarm		
22-28 31 11			Digital, Addressable Fire-Alarm Systems	
22-28 31 12			Zoned (DC Loop) Fire-Alarm Systems	
22-28 31 13			Fire Detection and Alarm Control, GUI, and Logic Systems	
22-28 31 23			Fire Detection and Alarm Annunciation Panels and Fire Stations	
22-28 31 33			Fire Detection and Alarm Interfaces	
22-28 31 33 13				Fire Detection and Alarm Interfaces to Remote Monitoring
22-28 31 33 16				Fire Detection and Alarm Interfaces to Access Control Hardware
22-28 31 33 23				Fire Detection and Alarm Interfaces to Access Control System
22-28 31 33 26				Fire Detection and Alarm Interfaces to Intrusion Detection
22-28 31 33 33				Fire Detection and Alarm Interfaces to Video Surveillance
22-28 31 33 43				Fire Detection and Alarm Interfaces to Elevator Control
22-28 31 43			Fire Detection Sensors	
22-28 31 46			Smoke Detection Sensors	
22-28 31 49			Carbon-Monoxide Detection Sensors	
22-28 31 53			Fire Alarm Initiating Devices	
22-28 31 53 13				Fire Alarm Pull Stations
22-28 31 53 23				Fire Alarm Level Detectors Switches
22-28 31 53 33				Fire Alarm Flow Switches
22-28 31 53 43				Fire Alarm Pressure Sensors
22-28 31 63			Fire Alarm Integrated Audio Visual Evacuation Systems	
22-28 31 63 13				Fire Alarm Horns and Strobes
22-28 32 00		Radiation Detection and Alarm		
22-28 32 13			Radiation Detection and Alarm Control, GUI, and Logic Systems	
22-28 32 23			Radiation Detection and Alarm Integrated Audio Evacuation Systems	
22-28 32 33			Radiation Detection Sensors	
22-28 32 43			Radiation Dosimeters	
22-28 33 00		Gas Detection and Alarm		
22-28 33 13			Gas Detection and Alarm Control, GUI, and Logic Systems	
22-28 33 23			Gas Detection and Alarm Integrated Audio Evacuation Systems	
22-28 33 33			Gas Detection Sensors	
22-28 34 00		Fuel-Oil Detection and Alarm		
22-28 34 13			Fuel-Oil Detection and Alarm Control, GUI, and Logic Systems	
22-28 34 23			Fuel-Oil Detection and Alarm Integrated Audio Evacuation Systems	
22-28 34 33			Fuel-Oil Detection Sensors	
22-28 35 00		Refrigerant Detection and Alarm		
22-28 35 13			Refrigerant Detection and Alarm Control, GUI, and Logic Systems	
22-28 35 23			Refrigerant Detection and Alarm Integrated Audio Evacuation Systems	
22-28 35 33			Refrigerant Detection Sensors	
22-28 36 00		Water Detection and Alarm		
22-28 36 13			Water Detection and Alarm Control, GUI, and Logic Systems	
22-28 36 33			Water Detection Sensors	
22-28 39 00		Mass Notification Systems		
22-28 40 00		Electronic Monitoring and Control		
22-28 46 00		Electronic Detention Monitoring and Control Systems		
22-28 46 13			Hard-Wired Detention Monitoring and Control Systems	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-28 46 16			Relay-Logic Detention Monitoring and Control Systems	
22-28 46 19			PLC Electronic Detention Monitoring and Control Systems	
22-28 46 23			Computer-Based Detention Monitoring and Control Systems	
22-28 46 26			Discreet-Logic Detention Monitoring and Control Systems	
22-28 46 29			Discreet-Distributed Intelligence Detention Monitoring and Control Systems	
22-31 00 00	Earthwork			
22-31 01 00		Maintenance of Earthwork		
22-31 01 10			Maintenance of Clearing	
22-31 01 20			Maintenance of Earth Moving	
22-31 01 40			Maintenance of Shoring and Underpinning	
22-31 01 50			Maintenance of Excavation Support and Protection	
22-31 01 60			Maintenance of Special Foundations and Load Bearing Elements	
22-31 01 62			Maintenance of Driven Piles	
22-31 01 62 61				Driven Pile Repairs
22-31 01 63			Maintenance of Bored and Augered Piles	
22-31 01 63 61				Bored and Augered Pile Repairs
22-31 01 70			Maintenance of Tunneling and Mining	
22-31 01 70 61				Tunnel Leak Repairs
22-31 05 00		Common Work Results for Earthwork		
22-31 05 13			Soils for Earthwork	
22-31 05 16			Aggregates for Earthwork	
22-31 05 19			Geosynthetics for Earthwork	
22-31 05 19 13				Geotextiles for Earthwork
22-31 05 19 16				Geomembranes for Earthwork
22-31 05 19 19				Geogrids for Earthwork
22-31 05 23			Cement and Concrete for Earthwork	
22-31 08 00		Commissioning of Earthwork		
22-31 08 13			Pile Load Testing	
22-31 08 13 13				Dynamic Pile Load Testing
22-31 08 13 16				Static Pile Load Testing
22-31 09 00		Geotechnical Instrumentation and Monitoring of Earthwork		
22-31 09 13			Geotechnical Instrumentation and Monitoring	
22-31 09 13 13				Groundwater Monitoring During Construction
22-31 09 16			Foundation Performance Instrumentation	
22-31 09 16 26				Bored and Augered Pile Load Tests
22-31 10 00		Site Clearing		
22-31 11 00		Clearing and Grubbing		
22-31 12 00		Selective Clearing		
22-31 13 00		Selective Tree and Shrub Removal and Trimming		
22-31 13 13			Selective Tree and Shrub Removal	
22-31 13 16			Selective Tree and Shrub Trimming	
22-31 14 00		Earth Stripping and Stockpiling		
22-31 14 13			Soil Stripping and Stockpiling	
22-31 14 13 13				Soil Stripping
22-31 14 13 16				Soil Stockpiling
22-31 14 13 23			Topsoil Stripping and Stockpiling	
22-31 14 16			Sod Stripping and Stockpiling	
22-31 14 16 13				Sod Stripping
22-31 14 16 16				Sod Stockpiling
22-31 20 00		Earth Moving		
22-31 21 00		Off-Gassing Mitigation		
22-31 21 13			Radon Mitigation	
22-31 21 13 13				Radon Venting
22-31 21 16			Methane Mitigation	
22-31 21 16 13				Methane Venting
22-31 22 00		Grading		
22-31 22 13			Rough Grading	
22-31 22 16			Fine Grading	
22-31 22 16 13				Roadway Subgrade Reshaping
22-31 22 19			Finish Grading	
22-31 22 19 13				Spreading and Grading Topsoil
22-31 23 00		Excavation and Fill		
22-31 23 13			Subgrade Preparation	
22-31 23 16			Excavation	
22-31 23 16 13				Trenching

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-31 23 16 16				Structural Excavation for Minor Structures
22-31 23 16 26				Rock Removal
22-31 23 19			Dewatering	
22-31 23 23			Fill	
22-31 23 23 13				Backfill
22-31 23 23 23				Compaction
22-31 23 23 33				Flowable Fill
22-31 23 23 43				Geofoam
22-31 23 33			Trenching and Backfilling	
22-31 24 00		Embankments		
22-31 24 13			Roadway Embankments	
22-31 24 16			Railway Embankments	
22-31 25 00		Erosion and Sedimentation Controls		
22-31 25 14			Stabilization Measures for Erosion and Sedimentation Control	
22-31 25 14 13				Hydraulically-Applied Erosion Control
22-31 25 14 16				Rolled Erosion Control Mats and Blankets
22-31 25 24			Structural Measures for Erosion and Sedimentation Control	
22-31 25 24 13				Rock Barriers
22-31 25 34			Retention Measures for Erosion and Sedimentation Controls	
22-31 25 34 13				Rock Basins
22-31 30 00		Earthwork Methods		
22-31 31 00		Soil Treatment		
22-31 31 13			Rodent Control	
22-31 31 13 16				Rodent Control Bait Systems
22-31 31 13 19				Rodent Control Traps
22-31 31 13 23				Rodent Control Electronic Systems
22-31 31 13 26				Rodent Control Repellants
22-31 31 16			Termite Control	
22-31 31 16 13				Chemical Termite Control
22-31 31 16 16				Termite Control Bait Systems
22-31 31 16 19				Termite Control Barriers
22-31 31 19			Vegetation Control	
22-31 31 19 13				Chemical Vegetation Control
22-31 32 00		Soil Stabilization		
22-31 32 13			Soil Mixing Stabilization	
22-31 32 13 13				Asphalt Soil Stabilization
22-31 32 13 16				Cement Soil Stabilization
22-31 32 13 19				Lime Soil Stabilization
22-31 32 13 23				Fly-Ash Soil Stabilization
22-31 32 13 26				Lime-Fly-Ash Soil Stabilization
22-31 32 16			Chemical Treatment Soil Stabilization	
22-31 32 16 13				Polymer Emulsion Soil Stabilization
22-31 32 17			Water Injection Soil Stabilization	
22-31 32 19			Geosynthetic Soil Stabilization and Layer Separation	
22-31 32 19 13				Geogrid Soil Stabilization
22-31 32 19 16				Geotextile Soil Stabilization
22-31 32 19 19				Geogrid Layer Separation
22-31 32 19 23				Geotextile Layer Separation
22-31 32 23			Pressure Grouting Soil Stabilization	
22-31 32 23 13				Cementitious Pressure Grouting Soil Stabilization
22-31 32 23 16				Chemical Pressure Grouting Soil Stabilization
22-31 32 33			Shotcrete Soil Slope Stabilization	
22-31 32 36			Soil Nailing	
22-31 32 36 13				Driven Soil Nailing
22-31 32 36 16				Grouted Soil Nailing
22-31 32 36 19				Corrosion-Protected Soil Nailing
22-31 32 36 23				Jet-Grouted Soil Nailing
22-31 32 36 26				Launched Soil Nailing
22-31 33 00		Rock Stabilization		
22-31 33 13			Rock Bolting and Grouting	
22-31 33 23			Rock Slope Netting	
22-31 33 26			Rock Slope Wire Mesh	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-31 33 33			Shotcrete Rock Slope Stabilization	
22-31 33 43			Vegetated Rock Slope Stabilization	
22-31 34 00		Soil Reinforcement		
22-31 34 19			Geosynthetic Soil Reinforcement	
22-31 34 19 13				Geogrid Soil Reinforcement
22-31 34 19 16				Geotextile Soil Reinforcement
22-31 34 23			Fiber Soil Reinforcement	
22-31 34 23 13				Geosynthetic Fiber Soil Reinforcement
22-31 35 00		Slope Protection		
22-31 35 19			Geosynthetic Slope Protection	
22-31 35 19 13				Geogrid Slope Protection
22-31 35 19 16				Geotextile Slope Protection
22-31 35 19 19				Slope Protection with Mulch Control Netting
22-31 35 23			Slope Protection with Slope Paving	
22-31 35 23 13				Cast-In-Place Concrete Slope Paving
22-31 35 23 16				Precast Concrete Slope Paving
22-31 35 23 19				Concrete Unit Masonry Slope Paving
22-31 35 26			Containment Barriers	
22-31 35 26 13				Clay Containment Barriers
22-31 35 26 16				Geomembrane Containment Barriers
22-31 35 26 23				Bentonite Slurry Trench
22-31 36 00		Gabions		
22-31 36 13			Gabion Boxes	
22-31 36 19			Gabion Mattresses	
22-31 36 19 13				Vegetated Gabion Mattresses
22-31 37 00		Riprap		
22-31 37 13			Machined Riprap	
22-31 37 16			Non-Machined Riprap	
22-31 37 16 13				Rubble-Stone Riprap
22-31 37 16 16				Concrete Unit Masonry Riprap
22-31 37 16 19				Sacked Sand-Cement Riprap
22-31 40 00		Shoring and Underpinning		
22-31 41 00		Shoring		
22-31 41 13			Timber Shoring	
22-31 41 16			Sheet Piling	
22-31 41 16 13				Steel Sheet Piling
22-31 41 16 16				Plastic Sheet Piling
22-31 41 19			Metal Hydraulic Shoring	
22-31 41 19 13				Aluminum Hydraulic Shoring
22-31 41 23			Pneumatic Shoring	
22-31 41 33			Trench Shielding	
22-31 43 00		Concrete Raising		
22-31 43 13			Pressure Grouting	
22-31 43 13 13				Concrete Pressure Grouting
22-31 43 13 16				Polyurethane Pressure Grouting
22-31 43 16			Compaction Grouting	
22-31 43 19			Mechanical Jacking	
22-31 45 00		Vibroflotation and Densification		
22-31 45 13			Vibroflotation	
22-31 45 16			Densification	
22-31 46 00		Needle Beams		
22-31 46 13			Cantilever Needle Beams	
22-31 48 00		Underpinning		
22-31 48 13			Underpinning Piers	
22-31 48 19			Bracket Piers	
22-31 48 23			Jacked Piers	
22-31 48 33			Micropile Underpinning	
22-31 50 00		Excavation Support and Protection		
22-31 51 00		Anchor Tiebacks		
22-31 51 13			Excavation Soil Anchors	
22-31 51 16			Excavation Rock Anchors	
22-31 52 00		Cofferdams		
22-31 52 13			Sheet Piling Cofferdams	
22-31 52 16			Timber Cofferdams	
22-31 52 19			Precast Concrete Cofferdams	
22-31 53 00		Cribbing and Walers		
22-31 53 13			Timber Cribwork	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-31 54 00		Ground Freezing		
22-31 56 00		Slurry Walls		
22-31 56 13			Bentonite Slurry Walls	
22-31 56 13 13				Soil-Bentonite Slurry Walls
22-31 56 13 16				Cement-Bentonite Slurry Walls
22-31 56 13 19				Slag-Cement-Bentonite Slurry Walls
22-31 56 13 23				Soil-Cement-Bentonite Slurry Walls
22-31 56 13 26				Pozzolan-Bentonite Slurry Walls
22-31 56 13 29				Organically-Modified Bentonite Slurry Walls
22-31 56 16			Attipulgite Slurry Walls	
22-31 56 16 13				Soil-Attipulgite Slurry Walls
22-31 56 19			Slurry-Geomembrane Composite Slurry Walls	
22-31 56 23			Lean Concrete Slurry Walls	
22-31 56 26			Bio-Polymer Trench Drain	
22-31 60 00		Special Foundations and Load-Bearing Elements		
22-31 62 00		Driven Piles		
22-31 62 13			Concrete Piles	
22-31 62 13 13				Cast-in-Place Concrete Piles
22-31 62 13 16				Concrete Displacement Piles
22-31 62 13 19				Precast Concrete Piles
22-31 62 13 23				Prestressed Concrete Piles
22-31 62 13 26				Pressure-Injected Footings
22-31 62 16			Steel Piles	
22-31 62 16 13				Sheet Steel Piles
22-31 62 16 16				Steel H Piles
22-31 62 16 19				Unfilled Tubular Steel Piles
22-31 62 19			Timber Piles	
22-31 62 23			Composite Piles	
22-31 62 23 13				Concrete-Filled Steel Piles
22-31 62 23 16				Wood and Cast-In-Place Concrete Piles
22-31 63 00		Bored Piles		
22-31 63 13			Bored and Augered Test Piles	
22-31 63 16			Auger Cast Grout Piles	
22-31 63 19			Bored and Socketed Piles	
22-31 63 19 13				Rock Sockets for Piles
22-31 63 23			Bored Concrete Piles	
22-31 63 23 13				Bored and Belled Concrete Piles
22-31 63 23 16				Bored Friction Concrete Piles
22-31 63 26			Drilled Caissons	
22-31 63 26 13				Fixed End Caisson Piles
22-31 63 26 16				Concrete Caissons for Marine Construction
22-31 63 29			Drilled Concrete Piers and Shafts	
22-31 63 29 13				Uncased Drilled Concrete Piers
22-31 63 29 16				Cased Drilled Concrete Piers
22-31 63 33			Drilled Micropiles	
22-31 64 00		Caissons		
22-31 64 13			Box Caissons	
22-31 64 16			Excavated Caissons	
22-31 64 19			Floating Caissons	
22-31 64 23			Open Caissons	
22-31 64 26			Pneumatic Caissons	
22-31 64 29			Sheeted Caissons	
22-31 66 00		Special Foundations		
22-31 66 13			Special Piles	
22-31 66 13 13				Rammed Aggregate Piles
22-31 66 15			Helical Foundation Piles	
22-31 66 16			Special Foundation Walls	
22-31 66 16 13				Anchored Foundation Walls
22-31 66 16 23				Concrete Cribbing Foundation Walls
22-31 66 16 26				Metal Cribbing Foundation Walls
22-31 66 16 33				Manufactured Modular Foundation Walls
22-31 66 16 43				Mechanically Stabilized Earth Foundation Walls
22-31 66 16 46				Slurry Diaphragm Foundation Walls

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-31 66 16 53				Soldier-Beam Foundation Walls
22-31 66 16 56				Permanently-Anchored Soldier-Beam Foundation Walls
22-31 66 19			Refrigerated Foundations	
22-31 68 00		Foundation Anchors		
22-31 68 13			Rock Foundation Anchors	
22-31 68 16			Helical Foundation Anchors	
22-31 70 00		Tunneling and Mining		
22-31 71 00		Tunnel Excavation		
22-31 71 13			Shield Driving Tunnel Excavation	
22-31 71 16			Tunnel Excavation by Drilling and Blasting	
22-31 71 19			Tunnel Excavation by Tunnel Boring Machine	
22-31 71 23			Tunneling by Cut and Cover	
22-31 72 00		Tunnel Support Systems		
22-31 72 13			Rock Reinforcement and Initial Support	
22-31 72 16			Steel Ribs and Lagging	
22-31 73 00		Tunnel Grouting		
22-31 73 13			Cement Tunnel Grouting	
22-31 73 16			Chemical Tunnel Grouting	
22-31 74 00		Tunnel Construction		
22-31 74 13			Cast-in-Place Concrete Tunnel Lining	
22-31 74 16			Precast Concrete Tunnel Lining	
22-31 74 19			Shotcrete Tunnel Lining	
22-31 75 00		Shaft Construction		
22-31 75 13			Cast-in-Place Concrete Shaft Lining	
22-31 75 16			Precast Concrete Shaft Lining	
22-31 77 00		Submersible Tube Tunnels		
22-31 77 13			Trench Excavation for Submerged Tunnels	
22-31 77 16			Tube Construction (Outfitting Tunnel Tubes)	
22-31 77 19			Floating and Laying Submerged Tunnels	
22-32 00 00	Exterior Improvements			
22-32 01 00		Operation and Maintenance of Exterior Improvements		
22-32 01 11			Paving Cleaning	
22-32 01 11 51				Rubber and Paint Removal from Paving
22-32 01 11 52				Rubber Removal from Paving
22-32 01 11 53				Paint Removal from Paving
22-32 01 13			Flexible Paving Surface Treatment	
22-32 01 13 61				Slurry Seal (Latex Modified)
22-32 01 13 62				Asphalt Surface Treatment
22-32 01 16			Flexible Paving Rehabilitation	
22-32 01 16 71				Cold Milling Asphalt Paving
22-32 01 16 72				Asphalt Paving Reuse
22-32 01 16 73				In Place Cold Reused Asphalt Paving
22-32 01 16 74				In Place Hot Reused Asphalt Paving
22-32 01 16 75				Heater Scarifying of Asphalt Paving
22-32 01 17			Flexible Paving Repair	
22-32 01 17 61				Sealing Cracks in Asphalt Paving
22-32 01 17 62				Stress-Absorbing Membrane Interlayer
22-32 01 19			Rigid Paving Surface Treatment	
22-32 01 19 61				Sealing of Joints in Rigid Paving
22-32 01 19 62				Patching of Rigid Paving
22-32 01 23			Base Course Reconditioning	
22-32 01 26			Rigid Paving Rehabilitation	
22-32 01 26 71				Grooving of Concrete Paving
22-32 01 26 72				Grinding of Concrete Paving
22-32 01 26 73				Milling of Concrete Paving
22-32 01 26 74				Concrete Overlays
22-32 01 26 75				Concrete Paving Reuse
22-32 01 29			Rigid Paving Repair	
22-32 01 29 61				Partial Depth Patching of Rigid Paving
22-32 01 29 62				Concrete Paving Raising
22-32 01 29 63				Subsealing and Stabilization
22-32 01 30			Operation and Maintenance of Site Improvements	
22-32 01 30 13				Snow Removal
22-32 01 80			Operation and Maintenance of Irrigation	
22-32 01 90			Operation and Maintenance of Planting	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-32 01 90 13				Fertilizing
22-32 01 90 16				Amending Soils
22-32 01 90 19				Mowing
22-32 01 90 23				Pruning
22-32 01 90 26				Watering
22-32 01 90 29				Topsoil Preservation
22-32 01 90 33				Tree and Shrub Preservation
22-32 05 00		Common Work Results for Exterior Improvements		
22-32 05 13			Soils for Exterior Improvements	
22-32 05 16			Aggregates for Exterior Improvements	
22-32 05 19			Geosynthetics for Exterior Improvements	
22-32 05 19 13				Geotextiles for Exterior Improvements
22-32 05 19 16				Geomembranes for Exterior Improvements
22-32 05 19 19				Geogrids for Exterior Improvements
22-32 05 23			Cement and Concrete for Exterior Improvements	
22-32 05 33			Common Work Results for Planting	
22-32 08 00		Commissioning of Exterior Improvements		
22-32 10 00		Bases, Ballasts, and Paving		
22-32 11 00		Base Courses		
22-32 11 13			Subgrade Modifications	
22-32 11 13 13				Lime-Treated Subgrades
22-32 11 13 16				Bituminous-Treated Subgrades
22-32 11 16			Subbase Courses	
22-32 11 16 13				Sand-Clay Subbase Courses
22-32 11 16 16				Aggregate Subbase Courses
22-32 11 23			Aggregate Base Courses	
22-32 11 23 13				Sand-Clay Base Courses
22-32 11 23 23				Base Course Drainage Layers
22-32 11 26			Asphaltic Base Courses	
22-32 11 26 13				Plant Mix Asphaltic Base Courses
22-32 11 26 16				Road Mix Asphaltic Base Courses
22-32 11 26 19				Bituminous-Stabilized Base Courses
22-32 11 29			Lime Treated Base Courses	
22-32 11 29 13				Lime-Fly Ash-Treated Base Courses
22-32 11 33			Cement-Treated Base Courses	
22-32 11 33 13				Portland Cement-Stabilized Base Courses
22-32 11 36			Concrete Base Courses	
22-32 11 36 13				Lean Concrete Base Courses
22-32 11 36 16				Plain Cement Concrete Base Courses
22-32 11 36 19				Hydraulic Cement Concrete Base Courses
22-32 12 00		Flexible Paving		
22-32 12 13			Preparatory Coats	
22-32 12 13 13				Tack Coats
22-32 12 13 16				Asphaltic Tack Coats
22-32 12 13 19				Prime Coats
22-32 12 13 23				Asphaltic Prime Coats
22-32 12 16			Asphalt Paving	
22-32 12 16 13				Plant-Mix Asphalt Paving
22-32 12 16 16				Road-Mix Asphalt Paving
22-32 12 16 19				Cold-Mix Asphalt Paving
22-32 12 16 23				Reinforced Asphalt Paving
22-32 12 16 26				Fiber-Modified Asphalt Paving
22-32 12 16 29				Polymer-Modified Asphalt Paving
22-32 12 16 33				Granulated Rubber-Modified Asphalt Paving
22-32 12 16 36				Athletic Asphalt Paving
22-32 12 19			Asphalt Paving Wearing Courses	
22-32 12 19 13				Road-Mix Asphalt Paving Wearing Courses
22-32 12 19 16				Resin-Modified Asphalt Paving Wearing Courses

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-32 12 19 19				Porous Friction Asphalt Paving Wearing Courses
22-32 12 33			Flexible Paving Surface Treatments	
22-32 12 36			Seal Coats	
22-32 12 36 13				Asphaltic Seal and Fog Coats
22-32 12 36 16				Coal Tar Seal Coats
22-32 12 36 19				Coal Tar Seal Coats with Unvulcanized Rubber
22-32 12 36 23				Fuel-Resistant Sealers
22-32 12 43			Porous Flexible Paving	
22-32 12 73			Asphalt Paving Joint Sealants	
22-32 13 00		Rigid Paving		
22-32 13 13			Concrete Paving	
22-32 13 13 13				Exposed Aggregate Concrete Paving
22-32 13 13 16				Power-Compacted Concrete Paving
22-32 13 13 19				Prestressed Concrete Paving
22-32 13 13 23				Concrete Paving Surface Treatment
22-32 13 13 33				Plain Concrete Paving
22-32 13 16			Decorative Concrete Paving	
22-32 13 16 13				Patterned Concrete Paving
22-32 13 16 16				Roller-Compacted Concrete Paving
22-32 13 16 19				Imprinted Concrete Paving
22-32 13 16 23				Stamped Concrete Paving
22-32 13 43			Pervious Concrete Paving	
22-32 13 73			Concrete Paving Joint Sealants	
22-32 13 73 13				Fuel-Resistant Concrete Paving Joint Sealants
22-32 13 73 16				Field-Molded Concrete Paving Joint Sealants
22-32 13 73 19				Compression Concrete Paving Joint Sealants
22-32 14 00		Unit Paving		
22-32 14 13			Precast Concrete Unit Paving	
22-32 14 13 13				Interlocking Precast Concrete Unit Paving
22-32 14 13 16				Precast Concrete Unit Paving Slabs
22-32 14 13 19				Porous Precast Concrete Unit Paving
22-32 14 16			Brick Unit Paving	
22-32 14 23			Asphalt Unit Paving	
22-32 14 26			Wood Paving	
22-32 14 29			Recycled-Rubber Paving	
22-32 14 40			Stone Paving	
22-32 14 43			Porous Unit Paving	
22-32 15 00		Aggregate Surfacing		
22-32 15 13			Cinder Surfacing	
22-32 15 40			Crushed Stone Surfacing	
22-32 16 00		Curbs, Gutters, Sidewalks, and Driveways		
22-32 16 13			Curbs and Gutters	
22-32 16 13 13				Cast-In-Place Concrete Curbs and Gutters
22-32 16 13 16				Steel Faced Curbs
22-32 16 13 23				Precast Concrete Curbs and Gutters
22-32 16 13 33				Asphalt Curbs
22-32 16 13 43				Stone Curbs
22-32 16 23			Sidewalks	
22-32 16 33			Driveways	
22-32 17 00		Paving Specialties		
22-32 17 13			Parking Bumpers	
22-32 17 13 13				Metal Parking Bumpers
22-32 17 13 16				Plastic Parking Bumpers
22-32 17 13 19				Precast Concrete Parking Bumpers
22-32 17 13 23				Rubber Parking Bumpers
22-32 17 13 26				Wood Parking Bumpers
22-32 17 16			Speed Bumps	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-32 17 23			Pavement Markings	
22-32 17 23 13				Painted Pavement Markings
22-32 17 23 23				Raised Pavement Markings
22-32 17 23 33				Plastic Pavement Markings
22-32 17 26			Tactile Warning Surfacing	
22-32 17 43			Pavement Snow Melting Systems	
22-32 18 00		Athletic and Recreational Surfacing		
22-32 18 13			Synthetic Grass Surfacing	
22-32 18 16			Synthetic Resilient Surfacing	
22-32 18 16 13				Playground Protective Surfacing
22-32 18 23			Athletic Surfacing	
22-32 18 23 13				Baseball Field Surfacing
22-32 18 23 16				Natural Baseball Field Surfacing
22-32 18 23 19				Synthetic Baseball Field Surfacing
22-32 18 23 23				Field Sport Surfacing
22-32 18 23 26				Natural Field Sport Surfacing
22-32 18 23 29				Synthetic Field Sport Surfacing
22-32 18 23 33				Running Track Surfacing
22-32 18 23 36				Natural Running Track Surfacing
22-32 18 23 39				Synthetic Running Track Surfacing
22-32 18 23 43				Recreational Court Surfacing
22-32 18 23 53				Tennis Court Surfacing
22-32 18 23 56				Natural Tennis Court Surfacing
22-32 18 23 59				Synthetic Tennis Court Surfacing
22-32 30 00		Site Improvements		
22-32 31 00		Fences and Gates		
22-32 31 11			Gate Operators	
22-32 31 13			Chain Link Fences and Gates	
22-32 31 13 23				Recreational Court Fences and Gates
22-32 31 13 26				Tennis Court Fences and Gates
22-32 31 13 29				Tennis Court Wind Breaker
22-32 31 13 33				Chain Link Backstops
22-32 31 13 53				High-Security Chain Link Fences and Gates
22-32 31 16			Welded Wire Fences and Gates	
22-32 31 17			Expanded Metal Fences and Gates	
22-32 31 19			Decorative Metal Fences and Gates	
22-32 31 23			Plastic Fences and Gates	
22-32 31 26			Wire Fences and Gates	
22-32 31 29			Wood Fences and Gates	
22-32 31 32			Composite Fences and Gates	
22-32 31 53			Cattle Guards	
22-32 32 00		Retaining Walls		
22-32 32 13			Cast-in-Place Concrete Retaining Walls	
22-32 32 16			Precast Concrete Retaining Walls	
22-32 32 19			Unit Masonry Retaining Walls	
22-32 32 23			Segmental Retaining Walls	
22-32 32 23 13				Segmental Concrete Unit Masonry Retaining Walls
22-32 32 23 16				Manufactured Modular Walls
22-32 32 26			Metal Crib Retaining Walls	
22-32 32 29			Timber Retaining Walls	
22-32 32 34			Reinforced Soil Retaining Walls	
22-32 32 36			Gabion Retaining Walls	
22-32 32 43			Soldier-Beam Retaining Walls	
22-32 32 53			Stone Retaining Walls	
22-32 34 00		Fabricated Bridges		
22-32 34 13			Fabricated Pedestrian Bridges	
22-32 34 23			Fabricated Roadway Bridges	
22-32 34 33			Fabricated Railway Bridges	
22-32 35 00		Screening Devices		
22-32 35 13			Screens and Louvers	
22-32 35 16			Sound Barriers	
22-32 39 00		Manufactured Site Specialties		
22-32 39 13			Manufactured Metal Bollards	
22-32 70 00		Wetlands		
22-32 71 00		Constructed Wetlands		
22-32 72 00		Wetlands Restoration		
22-32 80 00		Irrigation		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-32 82 00		Irrigation Pumps		
22-32 84 00		Planting Irrigation		
22-32 84 13			Drip Irrigation	
22-32 84 23			Underground Sprinklers	
22-32 86 00		Agricultural Irrigation		
22-32 90 00		Planting		
22-32 91 00		Planting Preparation		
22-32 91 13			Soil Preparation	
22-32 91 13 13				Hydro-Punching
22-32 91 13 16				Mulching
22-32 91 13 19				Planting Soil Mixing
22-32 91 13 23				Structural Soil Mixing
22-32 91 13 26				Planting Beds
22-32 91 16			Planting Soil Stabilization	
22-32 91 16 13				Blanket Planting Soil Stabilization
22-32 91 16 16				Mat Planting Soil Stabilization
22-32 91 16 19				Netting Planting Soil Stabilization
22-32 91 19			Landscape Grading	
22-32 91 19 13				Topsoil Placement and Grading
22-32 92 00		Turf and Grasses		
22-32 92 13			Hydro-Mulching	
22-32 92 16			Plugging	
22-32 92 19			Seeding	
22-32 92 19 13				Mechanical Seeding
22-32 92 19 16				Hydraulic Seeding
22-32 92 23			Sodding	
22-32 92 26			Sprigging	
22-32 92 26 13				Stolonizing
22-32 93 00		Plants		
22-32 93 13			Ground Covers	
22-32 93 23			Plants and Bulbs	
22-32 93 33			Shrubs	
22-32 93 43			Trees	
22-32 94 00		Planting Accessories		
22-32 94 13			Landscape Edging	
22-32 94 16			Landscape Timbers	
22-32 94 19			Landscape Surfacing	
22-32 94 33			Planters	
22-32 94 43			Tree Grates	
22-32 94 46			Tree Grids	
22-32 96 00		Transplanting		
22-32 96 13			Ground Cover Transplanting	
22-32 96 23			Plant and Bulb Transplanting	
22-32 96 33			Shrub Transplanting	
22-32 96 43			Tree Transplanting	
22-33 00 00	Utilities			
22-33 01 00		Operation and Maintenance of Utilities		
22-33 01 10			Operation and Maintenance of Water Utilities	
22-33 01 20			Operation and Maintenance of Wells	
22-33 01 30			Operation and Maintenance of Sewer Utilities	
22-33 01 30 13				Sewer and Manhole Testing
22-33 01 30 16				TV Inspection of Sewer Pipelines
22-33 01 30 51				Maintenance of Sewer Utilities
22-33 01 30 52				Pond and Reservoir Maintenance
22-33 01 30 61				Sewer and Pipe Joint Sealing
22-33 01 30 62				Manhole Grout Sealing
22-33 01 30 71				Rehabilitation of Sewer Utilities
22-33 01 30 72				Relining Sewers
22-33 01 50			Operation and Maintenance of Fuel Distribution Lines	
22-33 01 50 51				Cleaning Fuel-Storage Tanks
22-33 01 50 71				Lining of Steel Fuel-Storage Tanks
22-33 01 60			Operation and Maintenance of Hydronic and Steam Energy Utilities	
22-33 01 70			Operation and Maintenance of Electrical Utilities	
22-33 01 80			Operation and Maintenance of Communications Utilities	
22-33 05 00		Common Work Results for Utilities		
22-33 05 13			Manholes and Structures	
22-33 05 13 13				Manhole Grade Adjustment
22-33 05 16			Utility Structures	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-33 05 16 13				Precast Concrete Utility Structures
22-33 05 16 53				Rebuilding Utility Structures
22-33 05 19			Pressure Piping Tied Joint Restraint System	
22-33 05 23			Trenchless Utility Installation	
22-33 05 23 13				Utility Horizontal Directional Drilling
22-33 05 23 16				Utility Pipe Jacking
22-33 05 23 19				Microtunneling
22-33 05 23 23				Utility Pipe Ramming
22-33 05 23 26				Utility Impact Molding
22-33 05 23 29				Cable Trenching and Plowing
22-33 05 26			Utility Identification	
22-33 05 26 13				Utility Identification Signs
22-33 05 26 16				Utility Identification Markers
22-33 05 26 19				Utility Identification Flags
22-33 05 26 23				Utility Identification Trace Wires
22-33 08 00		Commissioning of Utilities		
22-33 08 10			Commissioning of Water Utilities	
22-33 08 20			Commissioning of Wells	
22-33 08 30			Commissioning of Sanitary Sewerage Utilities	
22-33 08 40			Commissioning of Storm Drainage Utilities	
22-33 08 50			Commissioning of Fuel Distribution Utilities	
22-33 08 60			Commissioning of Hydronic and Steam Energy Utilities	
22-33 08 70			Commissioning of Electrical Utilities	
22-33 08 80			Commissioning of Communications Utilities	
22-33 09 00		Instrumentation and Control for Utilities		
22-33 09 10			Instrumentation and Control for Water Utilities	
22-33 09 20			Instrumentation and Control for Wells	
22-33 09 30			Instrumentation and Control for Sanitary Sewerage Utilities	
22-33 09 40			Instrumentation and Control for Storm Drainage Utilities	
22-33 09 50			Instrumentation and Control for Fuel Distribution Utilities	
22-33 09 60			Instrumentation and Control for Hydronic and Steam Energy Utilities	
22-33 09 70			Instrumentation and Control for Electrical Utilities	
22-33 09 80			Instrumentation and Control for Communications Utilities	
22-33 10 00		Water Utilities		
22-33 11 00		Water Utility Distribution Piping		
22-33 11 13			Public Water Utility Distribution Piping	
22-33 11 13 13				Ductile Iron Public Water Utility Distribution Piping
22-33 11 13 16				Cast Iron Public Water Utility Distribution Piping
22-33 11 13 23				Plastic Public Water Utility Distribution Piping
22-33 11 13 26				Galvanized Steel Public Water Utility Distribution Piping
22-33 11 13 33				Concrete Public Water Utility Distribution Piping
22-33 11 16			Site Water Utility Distribution Piping	
22-33 11 19			Fire Suppression Utility Water Distribution Piping	
22-33 12 00		Water Utility Distribution Equipment		
22-33 12 13			Water Service Connections	
22-33 12 13 13				Water Supply Backflow Preventer Assemblies
22-33 12 16			Water Utility Distribution Valves	
22-33 12 19			Water Utility Distribution Fire Hydrants	
22-33 12 23			Water Utility Pumping Stations	
22-33 12 33			Water Utility Metering	
22-33 13 00		Disinfecting of Water Utility Distribution		
22-33 16 00		Water Utility Storage Tanks		
22-33 16 13			Aboveground Water Utility Storage Tanks	
22-33 16 13 13				Steel Aboveground Water Utility Storage Tanks
22-33 16 13 16				Prestressed Concrete Aboveground Water Utility Storage Tanks
22-33 16 13 19				Plastic Aboveground Water Utility Storage Tanks
22-33 16 16			Underground Water Utility Storage Tanks	
22-33 16 19			Elevated Water Utility Storage Tanks	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-33 20 00		Wells		
22-33 21 00		Water Supply Wells		
22-33 21 13			Public Water Supply Wells	
22-33 21 16			Irrigation Water Wells	
22-33 22 00		Test Wells		
22-33 23 00		Extraction Wells		
22-33 24 00		Monitoring Wells		
22-33 24 13			Groundwater Monitoring Wells	
22-33 25 00		Recharge Wells		
22-33 26 00		Relief Wells		
22-33 29 00		Well Abandonment		
22-33 30 00		Sanitary Sewerage Utilities		
22-33 31 00		Sanitary Utility Sewerage Piping		
22-33 31 13			Public Sanitary Utility Sewerage Piping	
22-33 31 16			Industrial Waste Utility Sewerage Piping	
22-33 32 00		Wastewater Utility Pumping Stations		
22-33 32 13			Packaged Utility Lift Stations	
22-33 32 13 13				Packaged Sewage Lift Stations, Wet Well Type
22-33 32 16			Packaged Utility Wastewater Pumping Stations	
22-33 32 16 13				Packaged Sewage Grinder Pumping Units
22-33 32 19			Public Utility Wastewater Pumping Stations	
22-33 33 00		Low Pressure Utility Sewerage		
22-33 33 13			Sanitary Utility Sewerage	
22-33 33 16			Combined Utility Sewerage	
22-33 34 00		Sanitary Utility Sewerage Force Mains		
22-33 34 13			Sanitary Utility Sewerage Inverted Siphons	
22-33 36 00		Utility Septic Tanks		
22-33 36 13			Utility Septic Tank and Effluent Wet Wells	
22-33 36 16			Utility Septic Tank Effluent Pumps	
22-33 36 33			Utility Drainage Field	
22-33 39 00		Sanitary Utility Sewerage Structures		
22-33 39 13			Sanitary Utility Sewerage Manholes, Frames, and Covers	
22-33 39 23			Sanitary Utility Sewerage Cleanouts	
22-33 40 00		Storm Drainage Utilities		
22-33 41 00		Storm Utility Drainage Piping		
22-33 41 13			Public Storm Utility Drainage Piping	
22-33 42 00		Culverts		
22-33 42 13			Pipe Culverts	
22-33 42 13 13				Public Pipe Culverts
22-33 42 16			Concrete Culverts	
22-33 42 16 13				Precast Concrete Culverts
22-33 42 16 16				Cast-in-Place Concrete Culverts
22-33 44 00		Storm Utility Water Drains		
22-33 44 13			Utility Area Drains	
22-33 44 13 13				Catchbasins
22-33 44 16			Utility Trench Drains	
22-33 44 19			Utility Storm Water Treatment	
22-33 44 19 13				In-Line Utility Storm Water Filters
22-33 44 19 16				Catch Basin Insert Utility Storm Water Filters
22-33 44 19 19				Utility Oil and Gas Separators
22-33 45 00		Storm Utility Drainage Pumps		
22-33 46 00		Subdrainage		
22-33 46 13			Foundation Drainage	
22-33 46 13 13				Foundation Drainage Piping
22-33 46 13 16				Geocomposite Foundation Drainage
22-33 46 16			Subdrainage Piping	
22-33 46 16 13				Subdrainage Piping
22-33 46 16 16				Geocomposite Subdrainage
22-33 46 16 19				Pipe Underdrains
22-33 46 19			Underslab Drainage	
22-33 46 19 13				Underslab Drainage Piping
22-33 46 19 16				Geocomposite Underslab Drainage
22-33 46 23			Drainage Layers	
22-33 46 23 16				Gravel Drainage Layers
22-33 46 23 19				Geosynthetic Drainage Layers
22-33 46 26			Geotextile Subsurface Drainage Filtration	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-33 46 33			Retaining Wall Drainage	
22-33 47 00		Ponds and Reservoirs		
22-33 47 13			Pond and Reservoir Liners	
22-33 47 13 13				Pond Liners
22-33 47 13 53				Reservoir Liners
22-33 47 16			Pond and Reservoir Covers	
22-33 47 16 13				Pond Covers
22-33 47 16 53				Reservoir Covers
22-33 47 19			Water Ponds and Reservoirs	
22-33 47 19 13				Water Distribution Ponds
22-33 47 19 16				Water Retainage Reservoirs
22-33 47 19 23				Cooling Water Ponds
22-33 47 19 33				Fire-Protection Water Ponds
22-33 47 23			Sanitary Sewerage Lagoons	
22-33 47 26			Storm Drainage Ponds and Reservoirs	
22-33 47 26 13				Stabilization Ponds
22-33 47 26 16				Retention Basins
22-33 47 26 19				Leaching Pits
22-33 49 00		Storm Drainage Structures		
22-33 49 13			Storm Drainage Manholes, Frames, and Covers	
22-33 49 23			Storm Drainage Water Retention Structures	
22-33 50 00		Fuel Distribution Utilities		
22-33 51 00		Natural-Gas Distribution		
22-33 51 13			Natural-Gas Piping	
22-33 51 33			Natural-Gas Metering	
22-33 52 00		Liquid Fuel Distribution		
22-33 52 13			Fuel-Oil Distribution	
22-33 52 13 13				Fuel-Oil Piping
22-33 52 13 23				Fuel-Oil Pumps
22-33 52 16			Gasoline Distribution	
22-33 52 16 13				Gasoline Piping
22-33 52 16 23				Gasoline Pumps
22-33 52 19			Diesel Fuel Distribution	
22-33 52 19 13				Diesel Fuel Piping
22-33 52 19 23				Diesel Fuel Pumps
22-33 52 43			Aviation Fuel Distribution	
22-33 52 43 13				Aviation Fuel Piping
22-33 52 43 16				Aviation Fuel Connections
22-33 52 43 19				Aviation Fuel Grounding
22-33 52 43 23				Aviation Fuel Pumps
22-33 56 00		Fuel-Storage Tanks		
22-33 56 13			Aboveground Fuel-Storage Tanks	
22-33 56 16			Underground Fuel-Storage Tanks	
22-33 56 43			Aviation Fuel-Storage Tanks	
22-33 56 43 13				Aboveground Aviation Fuel-Storage Tanks
22-33 56 43 16				Underground Aviation Fuel-Storage Tanks
22-33 56 53			Compressed Gases Storage Tanks	
22-33 60 00		Hydronic and Steam Energy Utilities		
22-33 61 00		Hydronic Energy Distribution		
22-33 61 13			Underground Hydronic Energy Distribution	
22-33 61 23			Aboveground Hydronic Energy Distribution	
22-33 61 33			Hydronic Energy Distribution Metering	
22-33 63 00		Steam Energy Distribution		
22-33 63 13			Underground Steam and Condensate Distribution Piping	
22-33 63 23			Aboveground Steam and Condensate Distribution Piping	
22-33 63 33			Steam Energy Distribution Metering	
22-33 70 00		Electrical Utilities		
22-33 71 00		Electrical Utility Transmission and Distribution		
22-33 71 13			Electrical Utility Towers	
22-33 71 13 13				Precast Concrete Electrical Utility Towers
22-33 71 13 23				Steel Electrical Utility Towers
22-33 71 13 33				Wood Electrical Utility Towers
22-33 71 16			Electrical Utility Poles	
22-33 71 16 13				Precast Concrete Electrical Utility Poles
22-33 71 16 23				Steel Electrical Utility Poles
22-33 71 16 33				Wood Electrical Utility Poles
22-33 71 19			Electrical Underground Ducts and Manholes	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-33 71 19 13				Electrical Manholes and Handholes
22-33 71 23			Insulators and Fittings	
22-33 71 23 13				Suspension Insulators
22-33 71 23 16				Post Insulators
22-33 71 23 23				Potheads
22-33 71 26			Transmission and Distribution Equipment	
22-33 71 26 13				Capacitor Banks
22-33 71 26 16				Coupling Capacitors
22-33 71 26 23				Current Transformers
22-33 71 26 26				Potential Transformers
22-33 71 36			Extra-High-Voltage Wiring	
22-33 71 36 13				Overhead Extra-High-Voltage Wiring
22-33 71 39			High-Voltage Wiring	
22-33 71 39 13				Overhead High-Voltage Wiring
22-33 71 39 23				Underground High-Voltage Wiring
22-33 71 39 33				Underwater High-Voltage Wiring
22-33 71 49			Medium-Voltage Wiring	
22-33 71 49 13				Overhead Medium-Voltage Wiring
22-33 71 49 23				Underground Medium-Voltage Wiring
22-33 71 49 33				Underwater Medium-Voltage Wiring
22-33 71 53			Direct-Current Transmission	
22-33 71 73			Electrical Utility Services	
22-33 71 73 33				Electric Meters
22-33 71 83			Transmission and Distribution Specialties	
22-33 72 00		Utility Substations		
22-33 72 13			Deadend Structures	
22-33 72 23			Structural Bus Supports	
22-33 72 23 13				Bus Support Insulators
22-33 72 26			Substation Bus Assemblies	
22-33 72 26 13				Aluminum Substation Bus Assemblies
22-33 72 26 16				Copper Substation Bus Assemblies
22-33 72 33			Control House Equipment	
22-33 72 33 13				Relays
22-33 72 33 16				Substation Control Panels
22-33 72 33 23				Power-Line Carriers
22-33 72 33 26				Substation Metering
22-33 72 33 33				Raceway and Boxes for Utility Substations
22-33 72 33 36				Cable Trays for Utility Substations
22-33 72 33 43				Substation Backup Batteries
22-33 72 33 46				Substation Converter Stations
22-33 72 43			Substation Control Wiring	
22-33 73 00		Utility Transformers		
22-33 73 13			Liquid-Filled Utility Transformers	
22-33 73 23			Dry-Type Utility Transformers	
22-33 75 00		High-Voltage Switchgear and Protection Devices		
22-33 75 13			Air High-Voltage Circuit Breaker	
22-33 75 16			Oil High-Voltage Circuit Breaker	
22-33 75 19			Gas High-Voltage Circuit Breaker	
22-33 75 23			Vacuum High-Voltage Circuit Breaker	
22-33 75 36			High-Voltage Utility Fuses	
22-33 75 39			High-Voltage Surge Arresters	
22-33 75 43			Shunt Reactors	
22-33 77 00		Medium-Voltage Utility Switchgear and Protection Devices		
22-33 77 13			Air Medium-Voltage Circuit Breaker	
22-33 77 16			Oil Medium-Voltage Circuit Breaker	
22-33 77 19			Gas Medium-Voltage Circuit Breaker	
22-33 77 23			Vacuum Medium-Voltage Circuit Breaker	
22-33 77 26			Medium-Voltage Utility Fusible Interrupter Switchgear	
22-33 77 33			Medium-Voltage Utility Cutouts	
22-33 77 36			Medium-Voltage Utility Fuses	
22-33 77 39			Medium-Voltage Utility Surge Arresters	
22-33 77 53			Medium-Voltage Utility Reclosers	
22-33 79 00		Site Grounding		
22-33 79 13			Site Improvements Grounding	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-33 79 13 13				Electric Fence Grounding
22-33 79 16			Tower Grounding	
22-33 79 16 13				Communications Tower Grounding
22-33 79 16 16				Antenna Tower Grounding
22-33 79 19			Utilities Grounding	
22-33 79 19 13				Electrical Utilities Grounding
22-33 79 19 16				Communications Utilities Grounding
22-33 79 23			Utility Substation Grounding	
22-33 79 83			Site Grounding Conductors	
22-33 79 83 13				Grounding Wire, Bar, and Rod
22-33 79 83 16				Chemical Rod
22-33 79 83 23				Conductive Concrete
22-33 79 83 33				Earth Grounding Enhancement
22-33 79 83 43				Deep Earth Grounding
22-33 79 93			Site Lightning Protection	
22-33 79 93 13				Lightning Strike Counters
22-33 79 93 16				Lightning Strike Warning Devices
22-33 80 00		Communications Utilities		
22-33 81 00		Communications Structures		
22-33 81 13			Communications Transmission Towers	
22-33 81 16			Antenna Towers	
22-33 81 19			Communications Utility Poles	
22-33 81 23			Aerial Cable Installation Hardware	
22-33 81 26			Communications Underground Ducts, Manholes, and Handholes	
22-33 81 29			Communications Vaults, Pedestals and Enclosures	
22-33 81 33			Communications Blowers, Fans, and Ventilation	
22-33 82 00		Communications Distribution		
22-33 82 13			Copper Communications Distribution Cabling	
22-33 82 13 13				Copper Splicing and Terminations
22-33 82 23			Optical Fiber Communications Distribution Cabling	
22-33 82 23 13				Optical Fiber Splicing and Terminations
22-33 82 33			Coaxial Communications Distribution Cabling	
22-33 82 33 13				Coaxial Splicing and Terminations
22-33 82 43			Grounding and Bonding for Communications Distribution	
22-33 82 46			Cable Pressurization Equipment	
22-33 82 53			Cleaning, Lubrication and Restoration Chemicals	
22-33 83 00		Wireless Communications Distribution		
22-33 83 13			Laser Transmitters and Receivers	
22-33 83 16			Microwave Transmitters and Receivers	
22-33 83 19			Infrared Transmitters and Receivers	
22-33 83 23			UHF/VHF Transmitters and Antennas	
22-34 00 00		Transportation		
22-34 01 00		Operation and Maintenance of Transportation		
22-34 01 13			Operation and Maintenance of Roadways	
22-34 01 23			Operation and Maintenance of Railways	
22-34 01 23 13				Track Removal and Salvage
22-34 01 23 81				Track Crosstie Replacement
22-34 01 33			Operation and Maintenance of Airfields	
22-34 01 43			Operation and Maintenance of Bridges	
22-34 05 00		Common Work Results for Transportation		
22-34 05 13			Common Work Results for Roadways	
22-34 05 23			Common Work Results for Railways	
22-34 05 33			Common Work Results for Airports	
22-34 05 43			Common Work Results for Bridges	
22-34 08 00		Commissioning of Transportation		
22-34 08 13			Commissioning of Roadways	
22-34 08 23			Commissioning of Railways	
22-34 08 33			Commissioning of Airfields	
22-34 08 43			Commissioning of Bridges	
22-34 10 00		Guideways/Railways		
22-34 11 00		Rail Tracks		
22-34 11 13			Track Rails	
22-34 11 13 13				Light Rail Track
22-34 11 13 23				Heavy Rail Track
22-34 11 16			Welded Track Rails	
22-34 11 16 13				In-Track Butt-Welded Track Rail
22-34 11 16 16				Pressure-Welded Track Rail

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-34 11 16 19				Thermite-Welded Track Rail
22-34 11 19			Track Rail Joints	
22-34 11 23			Special Trackwork	
22-34 11 23 13				Ballasted Special Track Rail
22-34 11 23 16				Direct-Fixation Track
22-34 11 23 23				Running Rail
22-34 11 23 26				Precurved Running Rail
22-34 11 26			Ballasted Track Rail	
22-34 11 26 13				Track Rail Ballast
22-34 11 26 16				Track Rail Subballast
22-34 11 29			Embedded Track Rail	
22-34 11 33			Track Cross Ties	
22-34 11 33 13				Concrete Track Cross Ties
22-34 11 33 16				Timber Track Cross Ties
22-34 11 33 19				Resilient Track Cross Ties
22-34 11 36			Track Rail Fasteners	
22-34 11 36 13				Direct-Fixation Fasteners
22-34 11 39			Track Collector Pans	
22-34 11 39 13				Fiberglass Track Collector Pans
22-34 11 93			Track Appurtenances and Accessories	
22-34 12 00		Monorails		
22-34 12 13			Elevated Monorails	
22-34 12 16			On-Grade Monorails	
22-34 12 19			Below-Grade Monorails	
22-34 12 23			Maglev Monorail	
22-34 12 63			Monorail Track	
22-34 13 00		Funiculars		
22-34 13 13			Inclined Railway	
22-34 14 00		Cable Transportation		
22-34 14 13			Aerial Tramways	
22-34 14 19			Gondolas	
22-34 14 26			Funitels	
22-34 14 33			Chairlifts	
22-34 14 39			Surface Lifts	
22-34 14 46			Ropeway Tows	
22-34 14 53			Cable Car Systems	
22-34 20 00		Traction Power		
22-34 21 00		Traction Power Distribution		
22-34 21 13			High Power Static Frequency Converters	
22-34 21 16			Traction Power Substations	
22-34 21 16 13				AC Traction Power Substations
22-34 21 16 16				DC Traction Power Substations
22-34 21 19			Traction Power Switchgear	
22-34 21 19 13				AC Traction Power Switchgear
22-34 21 19 16				DC Traction Power Switchgear
22-34 21 19 23				Frequency Changer
22-34 21 23			Traction Power Transformer-Rectifier Units	
22-34 23 00		Overhead Traction Power		
22-34 23 13			Traction Power Poles	
22-34 23 16			Overhead Cable Suspension	
22-34 23 23			Overhead Traction Power Cables	
22-34 24 00		Third Rail Traction Power		
22-34 24 13			Bottom-Contact Third Rail	
22-34 24 16			Side-Contact Third Rail	
22-34 24 19			Top-Contact Third Rail	
22-34 40 00		Transportation Signaling and Control Equipment		
22-34 41 00		Roadway Signaling and Control Equipment		
22-34 41 13			Traffic Signals	
22-34 41 16			Traffic Control Equipment	
22-34 41 23			Roadway Monitoring Equipment	
22-34 42 00		Railway Signaling and Control Equipment		
22-34 42 13			Railway Signals	
22-34 42 13 13				General Railway Signal Requirements
22-34 42 13 16				Signal Solid State Coded Track Circuits
22-34 42 16			Train Control Wires and Cables	
22-34 42 19			Vital Interlocking Logic Controllers	
22-34 42 23			Railway Control Equipment	
22-34 42 23 13				Mainline Train Control Room Equipment

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-34 42 23 16				Yard Train Control Room Equipment
22-34 42 23 19				Integrated Control Equipment
22-34 42 23 23				Interlocking Railway Control Equipment
22-34 42 26			Rail Network Equipment	
22-34 42 29			Station Agent Equipment	
22-34 42 33			Yard Management Equipment	
22-34 42 36			Supervisory Control and Data Acquisition	
22-34 43 00		Airfield Signaling and Control Equipment		
22-34 43 13			Airfield Signals	
22-34 43 13 13				Airfield Runway Identification Lights
22-34 43 13 16				Airfield Runway and Taxiway Inset Lighting
22-34 43 16			Airfield Landing Equipment	
22-34 43 16 13				Microwave Airfield Landing Equipment
22-34 43 16 16				Instrument Airfield Landing Equipment
22-34 43 16 19				Airfield Visual-Approach Slope Indicator Equipment
22-34 43 16 23				Airfield Short-Approach Lighting Equipment
22-34 43 16 26				Airfield Omni-Directional-Approach Lighting Equipment
22-34 43 16 29				Airfield Low-Intensity-Approach Lighting Equipment
22-34 43 16 33				Airfield High-Intensity-Approach Lighting Equipment
22-34 43 16 36				Airfield Precision-Approach Path Indicator Equipment
22-34 43 19			Airfield Traffic Control Tower Equipment	
22-34 43 23			Weather Observation Equipment	
22-34 43 23 13				Automatic Weather Observation Equipment
22-34 43 23 16				Airfield Wind Cones
22-34 43 26			Airfield Control Equipment	
22-34 43 26 13				Airfield Lighting Control Equipment
22-34 43 26 16				Airfield Lighting PLC Control Equipment
22-34 43 26 19				Airfield Lighting Regulator Assembly
22-34 48 00		Bridge Signaling and Control Equipment		
22-34 48 13			Operating Bridge Signals	
22-34 48 16			Operating Bridge Control Equipment	
22-34 50 00		Transportation Fare Collection Equipment		
22-34 52 00		Vehicle Fare Collection		
22-34 52 16			Vehicle Ticketing Equipment	
22-34 52 16 13				Vehicle Ticket Vending Machines
22-34 52 26			Vehicle Fare Collection Equipment	
22-34 52 26 13				Vehicle Coin Fare Collection Equipment
22-34 52 26 16				Vehicle Electronic Fare Collection Equipment
22-34 52 33			Vehicle Fare Gates	
22-34 54 00		Passenger Fare Collection		
22-34 54 16			Passenger Ticketing Equipment	
22-34 54 16 13				Passenger Ticket Vending Machines
22-34 54 16 16				Passenger Addfare Machines
22-34 54 16 23				Passenger Intermodal Transfer Machines
22-34 54 26			Passenger Fare Collection Equipment	
22-34 54 26 13				Passenger Coin Fare Collection Equipment
22-34 54 26 16				Passenger Electronic Fare Collection Equipment
22-34 54 33			Passenger Fare Gates	
22-34 70 00		Transportation Construction and Equipment		
22-34 71 00		Roadway Construction		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-34 71 13			Vehicle Barriers	
22-34 71 13 13				Vehicle Median Barriers
22-34 71 13 16				Vehicle Crash Barriers
22-34 71 13 19				Vehicle Traffic Barriers
22-34 71 13 26				Vehicle Guide Rails
22-34 71 13 29				Vehicle Barrier Fenders
22-34 71 16			Impact Attenuating Devices	
22-34 71 19			Vehicle Delineators	
22-34 71 19 13				Fixed Vehicle Delineators
22-34 71 19 16				Flexible Vehicle Delineators
22-34 72 00		Railway Construction		
22-34 72 13			Railway Line	
22-34 72 16			Railway Siding	
22-34 73 00		Airfield Construction		
22-34 73 13			Aircraft Tiedowns	
22-34 73 16			Airfield Grounding	
22-34 73 16 13				Aircraft Static Grounding
22-34 73 19			Jet Blast Barriers	
22-34 73 23			Manufactured Airfield Control Towers	
22-34 73 26			Manufactured Helipads	
22-34 75 00		Roadway Equipment		
22-34 75 13			Operable Roadway Equipment	
22-34 75 13 13				Active Vehicle Barriers
22-34 76 00		Railway Equipment		
22-34 76 13			Roadway Crossing Control Equipment	
22-34 77 00		Transportation Equipment		
22-34 77 13			Passenger Loading Bridges	
22-34 77 13 13				Fixed Aircraft Passenger Loading Bridges
22-34 77 13 16				Movable Aircraft Passenger Loading Bridges
22-34 77 13 23				Ship Passenger Loading Bridges
22-34 77 16			Baggage Handling Equipment	
22-34 77 16 13				Baggage Scanning Equipment
22-34 77 16 16				Baggage Scales
22-34 77 16 19				Baggage Conveying Equipment
22-34 80 00		Bridges		
22-34 81 00		Bridge Machinery		
22-34 81 13			Single-Swing Bridge Machinery	
22-34 81 16			Double-Swing Bridge Machinery	
22-34 81 19			Cantilever Bridge Machinery	
22-34 81 23			Lift Bridge Machinery	
22-34 81 26			Sliding Bridge Machinery	
22-34 81 29			Pontoon Bridge Machinery	
22-34 81 32			Bascule Bridge Machinery	
22-34 82 00		Bridge Specialties		
22-34 82 13			Bridge Vibration Dampers	
22-34 82 13 13				Visco Elastic Bridge Vibration Dampers
22-34 82 13 16				Tuned-Mass Bridge Vibration Dampers
22-34 82 19			Bridge Pier Protection	
22-34 82 19 13				Bridge Pier Ice Shields
22-35 00 00	Waterway and Marine Construction			
22-35 01 00		Operation and Maintenance of Waterway and Marine Construction		
22-35 01 30			Operation and Maintenance of Coastal Construction	
22-35 01 40			Operation and Maintenance of Waterway Construction	
22-35 01 40 51				Waterway Dredging
22-35 01 40 92				Preservation of Water Courses
22-35 01 50			Operation and Maintenance of Marine Construction	
22-35 01 50 51				Marine Dredging
22-35 01 50 71				Channel Excavation, Cleaning and Deepening
22-35 01 70			Operation and Maintenance of Dams	
22-35 05 00		Common Work Results for Waterway and Marine Construction		
22-35 05 30			Common Work Results for Coastal Construction	
22-35 05 40			Common Work Results for Waterway Construction	
22-35 05 50			Common Work Results for Marine Construction	
22-35 05 70			Common Work Results for Dams	
22-35 08 00		Commissioning of Waterway and Marine Construction		
22-35 08 30			Commissioning of Coastal Construction	
22-35 08 40			Commissioning of Waterway Construction	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-35 08 50			Commissioning of Marine Construction	
22-35 08 70			Commissioning of Dams	
22-35 10 00		Waterway and Marine Signaling and Control Equipment		
22-35 11 00		Signaling and Control Equipment for Waterways		
22-35 11 13			Signaling Equipment for Waterways	
22-35 11 53			Control Equipment for Waterways	
22-35 12 00		Marine Signaling and Control Equipment		
22-35 12 13			Marine Signaling Equipment	
22-35 12 13 13				Lighthouse Equipment
22-35 12 33			Marine Navigation Equipment	
22-35 12 53			Marine Control Equipment	
22-35 13 00		Signaling and Control Equipment for Dams		
22-35 13 13			Signaling Equipment for Dams	
22-35 13 53			Control Equipment for Dams	
22-35 20 00		Waterway and Marine Construction and Equipment		
22-35 20 13			Hydraulic Fabrications	
22-35 20 13 13				Hydraulic Bifurcation Panels
22-35 20 13 16				Hydraulic Bulkheads
22-35 20 13 19				Hydraulic Manifolds
22-35 20 13 23				Hydraulic Penstocks
22-35 20 13 26				Hydraulic Trashracks
22-35 20 16			Hydraulic Gates	
22-35 20 16 13				Hydraulic Spillway Crest Gates
22-35 20 16 19				Hydraulic Head Gates
22-35 20 16 26				Hydraulic Sluice Gates
22-35 20 16 33				Hydraulic Miter Gates
22-35 20 16 39				Hydraulic Sector Gates
22-35 20 16 46				Hydraulic Tainter Gates and Anchorages
22-35 20 16 53				Hydraulic Vertical Lift Gates
22-35 20 16 59				Hydraulic Closure Gates
22-35 20 19			Hydraulic Valves	
22-35 20 19 13				Hydraulic Butterfly Valves
22-35 20 19 23				Hydraulic Regulating Valves
22-35 20 23			Dredging	
22-35 20 23 13				Mechanical Dredging
22-35 20 23 23				Hydraulic Dredging
22-35 20 23 33				Integrated Dredging and Dewatering
22-35 30 00		Coastal Construction		
22-35 31 00		Shoreline Protection		
22-35 31 16			Seawalls	
22-35 31 16 13				Concrete Seawalls
22-35 31 16 16				Segmental Seawalls
22-35 31 16 19				Steel Sheet Piling Seawalls
22-35 31 16 23				Timber Seawalls
22-35 31 16 40				Stone Seawalls
22-35 31 19			Revetments	
22-35 31 19 13				Sacked Cement-Sand Revetments
22-35 31 19 16				Concrete Unit Masonry Revetments
22-35 31 19 36				Gabion Revetments
22-35 31 19 40				Stone Revetments
22-35 31 23			Breakwaters	
22-35 31 23 13				Rubble Mound Breakwaters
22-35 31 23 16				Precast Breakwater Modules
22-35 31 26			Jetties	
22-35 31 26 13				Concrete Jetties
22-35 31 26 16				Concrete Unit Masonry Jetties
22-35 31 26 36				Gabion Jetties
22-35 31 26 40				Stone Jetties
22-35 31 29			Groins	
22-35 31 29 13				Concrete Groins
22-35 31 29 16				Concrete Unit Masonry Groins
22-35 31 29 26				Steel Groins
22-35 31 29 36				Gabion Groins
22-35 31 29 40				Stone Groins
22-35 32 00		Artificial Reefs		
22-35 32 13			Scrap Material Artificial Reefs	
22-35 32 13 13				Scrap Concrete Artificial Reefs
22-35 32 13 19				Scrap Steel Artificial Reefs

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-35 32 13 33				Sunken Ship Artificial Reefs
22-35 32 16			Constructed Artificial Reefs	
22-35 32 16 13				
22-35 32 16 19				Constructed Steel Artificial Reefs
22-35 40 00		Waterway Construction and Equipment		
22-35 41 00		Levees		
22-35 41 13			Landside Levee Berms	
22-35 41 13 13				Stability Landside Levee Berms
22-35 41 13 16				Seepage Landside Levee Berms
22-35 41 16			Levee Cutoff Trenches	
22-35 41 19			Levee Relief Wells	
22-35 42 00		Waterway Bank Protection		
22-35 42 13			Piling Bank Protection	
22-35 42 13 19				Steel Sheet Piling Bank Protection
22-35 42 13 23				Timber Piling Bank Protection
22-35 42 13 26				Plastic Piling Bank Protection
22-35 42 29			Grout-Bag Bank Protection	
22-35 42 34			Soil Reinforcement Bank Protection	
22-35 42 35			Slope Protection Bank Protection	
22-35 42 36			Gabion Bank Protection	
22-35 42 37			Riprap Bank Protection	
22-35 42 53			Wall Bank Protection	
22-35 42 53 16				Concrete Unit Masonry Wall Bank Protection
22-35 42 53 19				Segmental Wall Bank Protection
22-35 42 53 40				Stone Wall Bank Protection
22-35 43 00		Waterway Scour Protection		
22-35 43 29			Grout-Bag Scour Protection	
22-35 43 34			Soil Reinforcement Scour Protection	
22-35 43 35			Slope Protection Scour Protection	
22-35 43 36			Gabion Scour Protection	
22-35 43 37			Riprap Scour Protection	
22-35 43 53			Wall Scour Protection	
22-35 43 53 13				Concrete Unit Masonry Wall Scour Protection
22-35 43 53 16				Segmental Wall Scour Protection
22-35 43 53 40				Stone Wall Scour Protection
22-35 49 00		Waterway Structures		
22-35 49 13			Floodwalls	
22-35 49 13 13				Concrete Floodwalls
22-35 49 13 16				Masonry Floodwalls
22-35 49 23			Waterway Locks	
22-35 49 23 13				Concrete Waterway Locks
22-35 49 23 23				Piling Waterway Locks
22-35 49 26			Floodgate Machinery	
22-35 50 00		Marine Construction and Equipment		
22-35 51 00		Floating Construction		
22-35 51 13			Floating Piers	
22-35 51 13 23				Floating Wood Piers
22-35 51 13 26				Floating Plastic Piers
22-35 51 23			Pontoons	
22-35 52 00		Offshore Platform Construction		
22-35 52 13			Fixed Offshore Platform Construction	
22-35 52 23			Semi-Submersible Offshore Platform Construction	
22-35 52 33			Floating Offshore Platform Construction	
22-35 53 00		Underwater Construction		
22-35 53 23			Underwater Harbor Deepening	
22-35 53 33			Underwater Pipeline Construction	
22-35 53 43			Underwater Foundation Construction	
22-35 53 53			Underwater Structures Construction	
22-35 53 63			Underwater Waterproofing	
22-35 59 00		Marine Specialties		
22-35 59 13			Marine Fenders	
22-35 59 13 13				Prestressed Concrete Marine Fender Piling
22-35 59 13 16				Resilient Foam-Filled Marine Fenders
22-35 59 13 19				Rubber Marine Fenders
22-35 59 23			Buoys	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-35 59 23 13				Mooring Buoys
22-35 59 23 16				Anchor Pendant Buoys
22-35 59 23 19				Navigation Buoys
22-35 59 29			Mooring Devices	
22-35 59 29 13				Quick-Release Mooring Hooks
22-35 59 29 16				Laser Docking Systems
22-35 59 29 19				Capstans
22-35 59 33			Marine Bollards and Cleats	
22-35 59 33 13				Cast-Steel Marine Bollards and Cleats
22-35 59 33 16				Cast-Iron Marine Bollards and Cleats
22-35 59 33 19				Stainless-Steel Marine Bollards and Cleats
22-35 59 33 23				Plastic Marine Bollards and Cleats
22-35 59 93			Marine Chain and Accessories	
22-35 59 93 13				Marine Chain
22-35 59 93 16				Marine Shackles
22-35 59 93 19				Marine Chain Tensioners
22-35 70 00		Dam Construction and Equipment		
22-35 71 00		Gravity Dams		
22-35 71 13			Concrete Gravity Dams	
22-35 71 16			Masonry Gravity Dams	
22-35 71 19			Rockfill Gravity Dams	
22-35 72 00		Arch Dams		
22-35 72 13			Concrete Arch Dams	
22-35 73 00		Embankment Dams		
22-35 73 13			Earth Embankment Dam	
22-35 73 16			Rock Embankment Dams	
22-35 74 00		Buttress Dams		
22-35 74 13			Concrete Buttress Dams	
22-35 79 00		Auxiliary Dam Structures		
22-35 79 13			Fish Ladders	
22-35 79 13 13				Concrete Fish Ladders
22-40 00 00	Process Integration			
22-40 01 00		Operation and Maintenance of Process Integration		
22-40 01 10			Operation and Maintenance of Gas and Vapor Process Piping	
22-40 01 20			Operation and Maintenance of Liquids Process Piping	
22-40 01 30			Operation and Maintenance of Solid and Mixed Materials Piping and Chutes	
22-40 01 40			Operation and Maintenance of Process Piping and Equipment Protection	
22-40 05 00		Common Work Results for Process Integration		
22-40 05 13			Common Work Results for Process Piping	
22-40 05 13 13				Steel Process Piping
22-40 05 13 16				Lined or Internally-Coated Steel Process Piping
22-40 05 13 19				Stainless-Steel Process Piping
22-40 05 13 23				Aluminum Alloys Process Piping
22-40 05 13 33				Brass, Bronze, Copper, and Copper Alloys Process Piping
22-40 05 13 43				Nickel and Nickel Alloys Process Piping
22-40 05 13 53				Ductile, Malleable, and Cast Iron Alloys Process Piping
22-40 05 13 63				Titanium and Titanium Alloys Process Piping
22-40 05 13 73				Plastic Process Piping
22-40 05 13 76				Fiberglass-Reinforced Plastic and Resins Process Piping
22-40 05 13 93				Other Metals Process Piping
22-40 05 23			Common Work Results for Process Valves	
22-40 05 23 13				Carbon Steel Process Valves
22-40 05 23 16				Low and Intermediate Alloy Steel Process Valves
22-40 05 23 19				Stainless-Steel Process Valves
22-40 05 23 33				Brass and Iron Process Valves
22-40 05 23 43				Nickel and Nickel Alloys Steel Process Valves

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-40 05 23 73				Plastic and Plastic Lined Process Valves
22-40 05 23 93				Other Metals Process Valves
22-40 10 00		Gas and Vapor Process Piping		
22-40 11 00		Steam Process Piping		
22-40 11 13			Low-Pressure Steam Process Piping	
22-40 11 16			Intermediate-Pressure Steam Process Piping	
22-40 11 19			High-Pressure Steam Process Piping	
22-40 11 23			Condensate Process Piping	
22-40 12 00		Compressed Air Process Piping		
22-40 12 13			Breathing Compressed Air Process Piping	
22-40 12 16			Non-Breathing Compressed Air Process Piping	
22-40 13 00		Inert Gases Process Piping		
22-40 13 13			Argon Process Piping	
22-40 13 16			Carbon-Dioxide Process Piping	
22-40 13 19			Helium Process Piping	
22-40 13 23			Krypton Process Piping	
22-40 13 26			Neon Process Piping	
22-40 13 29			Nitrogen Process Piping	
22-40 13 33			Xenon Process Piping	
22-40 13 93			Mixed Inert Gases Process Piping	
22-40 14 00		Fuel Gases Process Piping		
22-40 14 13			Blast Furnace Piping	
22-40 14 16			Blue (Water) Fuel Gas Piping	
22-40 14 19			Butane Piping	
22-40 14 23			Carbon-Monoxide Piping	
22-40 14 26			Chlorine Fuel Gas Piping	
22-40 14 29			Coke Oven Gas Piping	
22-40 14 33			Ethane-Gas Piping	
22-40 14 36			Hydrogen Fuel Gas Piping	
22-40 14 39			Liquid Natural-Gas Process Piping	
22-40 14 43			Methylacetylene-Propadiene Fuel Gas Piping	
22-40 14 49			Natural-Gas Process Piping	
22-40 14 49 13				Synthetic Natural-Gas Piping
22-40 14 49 23				Propane-Air Mixes Fuel Gas Piping
22-40 14 53			Octane Fuel Gas Piping	
22-40 14 59			Propane Fuel Gas Process Piping	
22-40 14 63			Sewage Fuel Gas Piping	
22-40 14 93			Mixed Fuel Gases Piping	
22-40 15 00		Combustion System Gas Piping		
22-40 15 13			Combustion Air Piping	
22-40 15 16			Oxygen Combustion System Gas Piping	
22-40 15 19			Flue-Gas Combustion System Piping	
22-40 15 23			Exothermic-Gas Combustion System Piping	
22-40 15 26			Endothermic-Gas Combustion System Piping	
22-40 15 29			Disassociated-Ammonia-Gas Combustion System Piping	
22-40 16 00		Specialty and High-Purity Gases Piping		
22-40 16 13			Ammonia Gas Piping	
22-40 16 16			Boron Gas Piping	
22-40 16 26			Diborane Gas Piping	
22-40 16 29			Fluorine Gas Piping	
22-40 16 33			Hydrogen Sulfide Gas Piping	
22-40 16 36			Nitrous-Oxide Gas Process Piping	
22-40 16 39			Ozone Gas Piping	
22-40 16 43			Phosphine Gas Piping	
22-40 16 46			Silane Gas Piping	
22-40 16 49			Sulfur-Dioxide Gas Piping	
22-40 16 53			Specialty Gas Mixtures Piping	
22-40 16 56			High-Purity Gas Piping Components	
22-40 17 00		Welding and Cutting Gases Piping		
22-40 17 13			Acetylene Welding and Cutting Piping	
22-40 17 16			Acetylene-Hydrogen Mix Welding and Cutting Piping	
22-40 17 19			Methylacetylene-Propadiene Welding and Cutting Piping	
22-40 17 23			Oxygen Welding and Cutting Piping	
22-40 17 26			Inert Gas Welding and Cutting Piping	
22-40 18 00		Vacuum Systems Process Piping		
22-40 18 13			Low-Vacuum Systems Process Piping	
22-40 18 16			High-Vacuum Systems Process Piping	
22-40 20 00		Liquids Process Piping		
22-40 21 00		Liquid Fuel Process Piping		
22-40 21 13			Bio Fuels Process Piping	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-40 21 16			Gasoline Process Piping	
22-40 21 19			Diesel Process Piping	
22-40 21 23			Fuel-Oils Process Piping	
22-40 21 23 13				No. 2 Fuel-Oil Process Piping
22-40 21 23 16				No. 4 Fuel-Oil Process Piping
22-40 21 23 19				No. 5 Fuel-Oil Process Piping
22-40 21 23 23				No. 6 Fuel-Oil Process Piping
22-40 21 23 26				Kerosene Process Piping
22-40 21 23 29				Tar Process Piping
22-40 22 00		Petroleum Products Piping		
22-40 22 13			Heavy-Fractions Petroleum Products Piping	
22-40 22 16			Light-Fractions Petroleum Products Piping	
22-40 23 00		Water Process Piping		
22-40 23 13			De-Ionized Water Process Piping	
22-40 23 16			Distilled-Water Process Piping	
22-40 23 19			Process Plant Water Piping	
22-40 23 23			Potable Water Process Piping	
22-40 23 29			Recirculated Water Process Piping	
22-40 23 33			Reverse-Osmosis Water Process Piping	
22-40 23 36			Sanitary Water Process Piping	
22-40 24 00		Specialty Liquid Chemicals Piping		
22-40 24 13			Alcohol Piping	
22-40 24 16			Gel Piping	
22-40 24 19			Slurries Process Piping	
22-40 24 23			Thixotropic Liquid Piping	
22-40 25 00		Liquid Acids and Bases Piping		
22-40 25 13			Liquid Acids Piping	
22-40 25 16			Liquid Bases Piping	
22-40 26 00		Liquid Polymer Piping		
22-40 30 00		Solid and Mixed Materials Piping and Chutes		
22-40 32 00		Bulk Materials Piping and Chutes		
22-40 32 13			Abrasive Materials Piping and Chutes	
22-40 32 16			Nonabrasive Materials Piping and Chutes	
22-40 33 00		Bulk Materials Valves		
22-40 33 13			Airlock Bulk Materials Valves	
22-40 33 16			Blind Bulk Materials Valves	
22-40 33 19			Butterfly Bulk Materials Valves	
22-40 33 23			Cone Bulk Materials Valves	
22-40 33 26			Diverter Bulk Materials Valves	
22-40 33 29			Double or Single Dump Bulk Materials Valves	
22-40 33 33			Knife and Slide Gate Bulk Materials Valves	
22-40 33 36			Pinch Bulk Materials Valves	
22-40 33 39			Swing Bulk Materials Valves	
22-40 33 43			Specialty Bulk Materials Valves	
22-40 34 00		Pneumatic Conveying Lines		
22-40 34 13			Dense Phase Pneumatic Conveying Lines	
22-40 34 16			Dilute Phase Pneumatic Conveying Lines	
22-40 40 00		Process Piping and Equipment Protection		
22-40 41 00		Process Piping and Equipment Heat Tracing		
22-40 41 13			Process Piping Heat Tracing	
22-40 41 13 13				Process Piping Electrical Resistance Heat Tracing
22-40 41 13 16				Process Piping Electrical Conductance Heat Tracing
22-40 41 13 19				Process Piping Gas Heat Tracing
22-40 41 13 23				Process Piping Steam Heat Tracing
22-40 41 13 26				Process Piping Thermal Fluids Heat Tracing
22-40 41 23			Process Equipment Heat Tracing	
22-40 41 23 13				Process Equipment Electrical Resistance Heat Tracing
22-40 41 23 16				Process Equipment Electrical Conductance Heat Tracing
22-40 41 23 19				Process Equipment Gas Heat Tracing
22-40 41 23 23				Process Equipment Steam Heat Tracing
22-40 41 23 26				Process Equipment Thermal Fluids Heat Tracing
22-40 42 00		Process Piping and Equipment Insulation		
22-40 42 13			Process Piping Insulation	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-40 42 13 13				Cryogenic Temperature Process Piping Insulation
22-40 42 13 16				Low Temperature Process Piping Insulation
22-40 42 13 19				Intermediate Temperature Process Piping Insulation
22-40 42 13 23				High Temperature Process Piping Insulation
22-40 42 13 26				Process Piping Insulation for Specialty Applications
22-40 42 23			Process Equipment Insulation	
22-40 42 23 13				Cryogenic Temperature Process Equipment Insulation
22-40 42 23 16				Low Temperature Process Equipment Insulation
22-40 42 23 19				Intermediate Temperature Process Equipment Insulation
22-40 42 23 23				High Temperature Process Equipment Insulation
22-40 42 23 26				Process Equipment Insulation for Specialty Applications
22-40 46 00		Process Corrosion Protection		
22-40 46 16			Coatings and Wrappings for Process Corrosion Protection	
22-40 46 42			Cathodic Process Corrosion Protection	
22-40 47 00		Refractories		
22-40 47 13			Silica Refractories	
22-40 47 16			Alumina Refractories	
22-40 47 19			Carbon and Graphite Refractories	
22-40 47 23			Castable Refractories	
22-40 47 26			Rammed Refractories	
22-40 47 29			Refractory Concrete	
22-40 80 00		Commissioning of Process Systems		
22-40 90 00		Instrumentation and Control for Process Systems		
22-40 91 00		Primary Process Measurement Devices		
22-40 91 13			Chemical Properties Process Measurement Devices	
22-40 91 13 13				Ammonia Process Measurement Devices
22-40 91 13 16				Chlorine Process Measurement Devices
22-40 91 13 19				Fluoride Process Measurement Devices
22-40 91 13 23				Gas Analysis Process Measurement Devices
22-40 91 13 26				Gas Chromatograph Process Measurement Devices
22-40 91 13 29				pH Level Process Measurement Devices
22-40 91 16			Electromagnetic Process Measurement Devices	
22-40 91 16 13				Amperes Process Measurement Devices
22-40 91 16 16				Capacitance Process Measurement Devices
22-40 91 16 19				Conductivity Process Measurement Devices
22-40 91 16 23				Inductance Process Measurement Devices
22-40 91 16 26				Lumens Process Measurement Devices
22-40 91 16 29				Magnetic Field Process Measurement Devices
22-40 91 16 33				Electrical Power Process Measurement Devices
22-40 91 16 36				Radiation Process Measurement Devices
22-40 91 16 39				Electrical Resistance Process Measurement Devices
22-40 91 16 43				Ultraviolet Sensors
22-40 91 16 46				Voltage Process Measurement Devices
22-40 91 19			Physical Properties Process Measurement Devices	
22-40 91 19 13				Density Process Measurement Devices

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-40 91 19 16				Humidity Process Measurement Devices
22-40 91 19 19				Mass Process Measurement Devices
22-40 91 19 23				Particle Counters Process Measurement Devices
22-40 91 19 26				Gas Pressure Process Measurement Devices
22-40 91 19 29				Liquid Pressure Process Measurement Devices
22-40 91 19 33				Stress/Strain Process Measurement Devices
22-40 91 19 36				Temperature Process Measurement Devices
22-40 91 19 39				Vapor Pressure Process Measurement Devices
22-40 91 19 43				Weight Process Measurement Devices
22-40 91 23			Miscellaneous Properties Measurement Devices	
22-40 91 23 13				Acceleration Process Measurement Devices
22-40 91 23 16				Angle Process Measurement Devices
22-40 91 23 19				Color Process Measurement Devices
22-40 91 23 23				Count Process Measurement Devices
22-40 91 23 26				Distance Process Measurement Devices
22-40 91 23 29				Energy Process Measurement Devices
22-40 91 23 33				Flow Process Measurement Devices
22-40 91 23 36				Level Process Measurement Devices
22-40 91 23 39				Physical Resistance Process Measurement Devices
22-40 91 23 43				RPM Process Measurement Devices
22-40 91 23 46				Time Process Measurement Devices
22-40 91 23 49				Turbidity Process Measurement Devices
22-40 91 23 53				Velocity Process Measurement Devices
22-40 92 00		Primary Control Devices		
22-40 92 13			Primary Control Valves	
22-40 92 13 13				Electrically-Operated Primary Control Valves
22-40 92 13 16				Hydraulically-Operated Primary Control Valves
22-40 92 13 19				Pneumatically-Operated Primary Control Valves
22-40 92 13 23				Pressure-Relief Primary Control Valves
22-40 92 13 26				Solenoid Primary Control Valves
22-40 92 13 29				Specialty Primary Control Valves
22-40 92 29			Current-To-Pressure Converters	
22-40 92 33			Self-Contained Flow Controllers	
22-40 92 36			Linear Actuators and Positioners	
22-40 92 39			Self-Contained Pressure Regulators	
22-40 92 43			Rotary Actuators	
22-40 92 46			Saturable Core Reactors	
22-40 92 49			Variable Frequency Drives	
22-40 92 53			Voltage-To-Pressure Converters	
22-40 93 00		Analog Controllers/Recorders		
22-40 93 13			Analog Controllers	
22-40 93 13 13				Electronic Analog Controllers
22-40 93 13 16				Electro-Hydraulic Analog Controllers
22-40 93 13 19				Electro-Pneumatic Analog Controllers

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-40 93 13 23				Hydraulic Analog Controllers
22-40 93 13 26				Pneumatic Analog Controllers
22-40 93 23			Chart Recorders	
22-40 94 00		Digital Process Controllers		
22-40 94 13			Digital Process Control Computers	
22-40 94 13 13				Host Digital Process Control Computers
22-40 94 13 16				Personal Digital Process Control Computers
22-40 94 13 19				Personal Digital Assistant Digital Process Control Computers
22-40 94 23			Distributed Process Control Systems	
22-40 94 33			Human – Machine Interfaces	
22-40 94 43			Programmable Logic Process Controllers	
22-40 95 00		Process Control Hardware		
22-40 95 13			Process Control Panels and Hardware	
22-40 95 13 13				Local Process Control Panels and Hardware
22-40 95 13 23				Main Process Control Panels and Hardware
22-40 95 20			Process Control Display Devices	
22-40 95 23			Process Control Input/Output Modules	
22-40 95 26			Process Control Instrument Air Piping and Devices	
22-40 95 33			Process Control Networks	
22-40 95 33 13				Cabled Process Control Networks
22-40 95 33 23				Fiber Optic Process Control Networks
22-40 95 33 33				Wireless Process Control Networks
22-40 95 43			Process Control Hardware Interfaces	
22-40 95 46			Process Control Mounting Racks and Supports	
22-40 95 49			Process Control Routers	
22-40 95 53			Process Control Switches	
22-40 95 56			Process Control Transformers	
22-40 95 63			Process Control Wireless Equipment	
22-40 95 63 13				Process Control Wireless Transmitters
22-40 95 63 16				Process Control Wireless Receivers
22-40 95 63 19				Process Control Wireless Repeaters
22-40 95 73			Process Control Wiring	
22-40 95 73 23				Process Control Cable
22-40 95 73 33				Process Control Conduit, Raceway and Supports
22-40 95 73 43				Process Control Junction Boxes
22-40 96 00		Process Control Software		
22-40 96 10			Process Control Software Architecture	
22-40 96 15			Process Control Software Input/Output Lists	
22-40 96 20			Process Control Software Instrument Lists	
22-40 96 25			Process Control Software Logic Diagrams	
22-40 96 30			Process Control Software Loop Diagrams	
22-40 96 35			Process Control Software Programming	
22-40 96 40			Process Control Software Reports	
22-40 97 00		Process Control Auxiliary Devices		
22-40 97 10			Process Control Annunciators	
22-40 97 15			Process Control Gages	
22-40 97 20			Process Control Rotameters	
22-40 97 25			Process Control Potentiometers	
22-40 97 30			Process Control Test Equipment	
22-41 00 00	Material Processing and Handling Equipment			
22-41 01 00		Operation and Maintenance of Material Processing and Handling Equipment		
22-41 01 10			Operation and Maintenance of Bulk Material Processing Equipment	
22-41 01 20			Operation and Maintenance of Piece Material Handling Equipment	
22-41 01 30			Operation and Maintenance of Manufacturing Equipment	
22-41 01 40			Operation and Maintenance of Container Processing and Packaging	
22-41 01 50			Operation and Maintenance of Material Storage	
22-41 01 60			Operation and Maintenance of Mobile Plant Equipment	
22-41 08 00		Commissioning of Material Processing and Handling Equipment		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-41 08 10			Commissioning of Bulk Material Processing Equipment	
22-41 08 20			Commissioning of Piece Material Handling Equipment	
22-41 08 30			Commissioning of Manufacturing Equipment	
22-41 08 40			Commissioning of Container Processing and Packaging	
22-41 08 50			Commissioning of Material Storage	
22-41 08 60			Commissioning of Mobile Plant Equipment	
22-41 10 00		Bulk Material Processing Equipment		
22-41 11 00		Bulk Material Sizing Equipment		
22-41 11 13			Bulk Material Agglomerators	
22-41 11 16			Bulk Material Air Mill Classifiers	
22-41 11 19			Bulk Material Centrifuges	
22-41 11 23			Bulk Material Crushers	
22-41 11 26			Bulk Material Cyclones	
22-41 11 29			Bulk Material Fluid Bed Separators	
22-41 11 33			Bulk Material Grinders	
22-41 11 36			Bulk Material Homogenizers	
22-41 11 39			Bulk Material Lump Breakers	
22-41 11 43			Bulk Material Mills	
22-41 11 46			Bulk Material Pulverizers	
22-41 11 49			Bulk Material Screens	
22-41 11 53			Bulk Material Shredders	
22-41 11 56			Bulk Material Sieves	
22-41 12 00		Bulk Material Conveying Equipment		
22-41 12 13			Bulk Material Conveyors	
22-41 12 13 13				Airslide Bulk Material Conveyors
22-41 12 13 16				Auger Bulk Material Conveyors
22-41 12 13 19				Belt Bulk Material Conveyors
22-41 12 13 23				Container Bulk Material Conveyors
22-41 12 13 26				Drag Chain Bulk Material Conveyors
22-41 12 13 29				Hopper Bulk Material Conveyors
22-41 12 13 33				Reciprocating Bulk Material Conveyors
22-41 12 13 36				Screw Bulk Material Conveyors
22-41 12 13 39				Stacking and Reclaim Bulk Material Conveyors
22-41 12 13 43				Trough Bulk Material Conveyors
22-41 12 13 46				Tube Bulk Material Conveyors
22-41 12 13 49				Vibratory Bulk Material Conveyors
22-41 12 13 53				Weigh Belt Bulk Material Conveyors
22-41 12 16			Bucket Elevators	
22-41 12 19			Pneumatic Conveyors	
22-41 12 19 13				Dense Phase Pneumatic Conveyors
22-41 12 19 16				Dilute Phase Pneumatic Conveyors
22-41 13 00		Bulk Material Feeders		
22-41 13 13			Bin Activators/Live Bin Bottoms	
22-41 13 23			Feeders	
22-41 13 23 13				Airlock Bulk Material Feeders
22-41 13 23 16				Apron Bulk Material Feeders
22-41 13 23 19				Rotary-Valve Bulk Material Feeders
22-41 13 23 23				Screw Bulk Material Feeders
22-41 13 23 26				Vibratory Bulk Material Feeders
22-41 13 23 29				Volumetric Bulk Material Feeders
22-41 13 23 33				Weigh Bulk Material Feeders
22-41 14 00		Batching Equipment		
22-41 14 13			Bag-Handling Batching Equipment	
22-41 14 16			Batch Cars/Transports	
22-41 14 19			Batch Hoppers	
22-41 14 23			Bulk Bag-Handling Batching Equipment	
22-41 14 26			Blenders	
22-41 14 29			Drum-Handling Batching Equipment	
22-41 14 33			Mixers	
22-41 14 36			Weigh Scales	
22-41 20 00		Piece Material Handling Equipment		
22-41 21 00		Conveyors		
22-41 21 13			Automatic Guided Vehicle Systems	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-41 21 23			Piece Material Conveyors	
22-41 21 23 13				Belt Piece Material Conveyors
22-41 21 23 16				Container Piece Material Conveyors
22-41 21 23 19				Drag-Chain Piece Material Conveyors
22-41 21 23 23				Hopper Piece Material Conveyors
22-41 21 23 26				Monorail Piece Material Conveyors
22-41 21 23 29				Power and Free Piece Material Conveyors
22-41 21 23 33				Reciprocating Piece Material Conveyors
22-41 21 23 36				Roller Piece Material Conveyors
22-41 21 23 39				Vibratory Piece Material Conveyors
22-41 21 23 43				Walking-Beam Piece Material Conveyors
22-41 21 23 46				Weigh-Belt Piece Material Conveyors
22-41 21 23 53				Postal Conveyors
22-41 21 26			Piece Material Diverter Gates	
22-41 21 29			Piece Material Gravity Slides	
22-41 21 33			Piece Material Transfer Cars	
22-41 21 36			Piece Material Turntables	
22-41 21 39			Piece Material Feeders	
22-41 21 39 13				Piece Material Vibratory Feeders
22-41 22 00		Cranes and Hoists		
22-41 22 13			Cranes	
22-41 22 13 13				Bridge Cranes
22-41 22 13 16				Gantry Cranes
22-41 22 13 19				Jib Cranes
22-41 22 13 23				Mobile Cranes
22-41 22 13 26				Tower Cranes
22-41 22 13 29				Specialty Cranes
22-41 22 23			Hoists	
22-41 22 23 13				Fixed Hoists
22-41 22 23 16				Portable Hoists
22-41 22 23 19				Monorail Hoists
22-41 22 23 23				Specialty Hoists
22-41 22 33			Derricks	
22-41 23 00		Lifting Devices		
22-41 23 13			Clamps	
22-41 23 16			Grabs	
22-41 23 19			Hooks	
22-41 23 23			Lifts	
22-41 23 26			Slings	
22-41 23 29			Spreader Bars/Beams	
22-41 23 33			Tongs	
22-41 24 00		Specialty Material Handling Equipment		
22-41 24 13			Aeration Devices	
22-41 24 16			Bin Vibrators	
22-41 24 19			Dehydrators	
22-41 24 23			Hydrators	
22-41 24 26			Hydraulic Power Systems	
22-41 24 29			Lubrication Systems	
22-41 24 33			Magnetic Separators	
22-41 24 36			Metal Detectors	
22-41 24 39			Railcar Movers	
22-41 24 43			Turnheads/Distributors	
22-41 24 46			Sorting Machines	
22-41 24 46 13				Postal Sorting Machines
22-41 30 00		Manufacturing Equipment		
22-41 31 00		Manufacturing Lines and Equipment		
22-41 31 13			Manufacturing Lines	
22-41 31 13 13				Assembly Lines
22-41 31 13 16				Casting Lines
22-41 31 13 19				Coating Lines
22-41 31 13 23				Converting Lines
22-41 31 13 26				Disassembly Lines
22-41 31 13 29				Extrusion Lines

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-41 31 13 33				Machining Lines
22-41 31 13 36				Molding Lines
22-41 31 13 39				Finishing/Painting Lines
22-41 31 13 43				Painting Lines
22-41 31 13 46				Pickling Lines
22-41 31 13 49				Plating Lines
22-41 31 13 53				Polishing Lines
22-41 31 13 56				Press Lines
22-41 31 13 59				Rolling/Calendaring Lines
22-41 31 13 63				Web Processing Lines
22-41 31 16			Pick and Place Systems	
22-41 31 19			Manufacturing-Line Robots	
22-41 31 23			Specialty Assembly Machines	
22-41 32 00		Forming Equipment		
22-41 32 13			Bending Equipment	
22-41 32 16			Blow-Molding Equipment	
22-41 32 19			Brake-Forming Equipment	
22-41 32 23			Cold-Forming Equipment	
22-41 32 26			Die-Casting Equipment	
22-41 32 29			Drawing Equipment	
22-41 32 33			Electroforming Equipment	
22-41 32 36			Forging Equipment	
22-41 32 39			Extruding Equipment	
22-41 32 43			Metal-Spinning Equipment	
22-41 32 46			Piercing Equipment	
22-41 32 49			Powder Metal-Forming Equipment	
22-41 32 53			Pressing Equipment	
22-41 32 56			Roll-Forming Equipment	
22-41 32 59			Shearing Equipment	
22-41 32 63			Spinning Equipment	
22-41 32 66			Stretching/Leveling Equipment	
22-41 32 69			Swaging Equipment	
22-41 33 00		Machining Equipment		
22-41 33 13			Automatic Screw Machining Equipment	
22-41 33 16			Boring Equipment	
22-41 33 19			Broaching Equipment	
22-41 33 23			Drilling Equipment	
22-41 33 26			Electro-Discharge Machining Equipment	
22-41 33 29			Grinding Equipment	
22-41 33 33			Hobbing Equipment	
22-41 33 36			Lapping Equipment	
22-41 33 39			Lathe Equipment	
22-41 33 43			Leveling Equipment	
22-41 33 46			Machining Center Equipment	
22-41 33 53			Milling Equipment	
22-41 33 53 13				Horizontal Milling Equipment
22-41 33 53 16				Vertical Milling Equipment
22-41 33 60			Multi-Axis Machine Equipment	
22-41 33 63			Planing Equipment	
22-41 33 66			Reaming Equipment	
22-41 33 69			Routing Equipment	
22-41 33 73			Sawing Equipment	
22-41 33 76			Shaping Equipment	
22-41 33 79			Threading Equipment	
22-41 34 00		Finishing Equipment		
22-41 34 13			Anodizing Equipment	
22-41 34 16			Barrel Tumbling Equipment	
22-41 34 23			Coating Equipment	
22-41 34 23 13				Diffusion Coating Equipment
22-41 34 23 16				Dipping Coating Equipment
22-41 34 23 19				Film Coating Equipment
22-41 34 23 23				Phosphatizing Coating Equipment
22-41 34 23 26				Plasma Coating Equipment
22-41 34 23 29				Hardface Welding Coating Equipment
22-41 34 23 33				Spray Painting Booth
22-41 34 26			Deburring Equipment	
22-41 34 36			Electroplating Equipment	
22-41 34 46			Grinding Equipment	
22-41 34 49			Honing Equipment	
22-41 34 53			Lapping Equipment	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-41 34 56			Shot Peening Equipment	
22-41 34 59			Superfinishing/Polishing Equipment	
22-41 35 00		Dies and Molds		
22-41 35 13			Dies	
22-41 35 13 13				Drawing Dies
22-41 35 13 16				Extrusion Dies
22-41 35 13 19				Press Dies
22-41 35 13 23				Rotary Dies
22-41 35 13 26				Rule Dies
22-41 35 33			Molds	
22-41 36 00		Assembly and Testing Equipment		
22-41 36 13			Applicators	
22-41 36 13 13				Adhesive Applicators
22-41 36 13 16				Lubricant Applicators
22-41 36 13 19				Sealer Applicators
22-41 36 16			Fixtures and Jigs	
22-41 36 19			Joining Equipment	
22-41 36 19 13				Adhesive Joining Equipment
22-41 36 19 16				Arc-Welding Equipment
22-41 36 19 19				Brazing Equipment
22-41 36 19 23				Resistance-Welding Equipment
22-41 36 19 26				Riveting Equipment
22-41 36 19 29				Sintering Equipment
22-41 36 19 33				Soldering Equipment
22-41 36 23			Cutting Equipment	
22-41 36 23 13				Cutting Torches
22-41 36 23 16				High-Pressure Water Cutting Equipment
22-41 36 23 19				Laser Cutting Equipment
22-41 36 23 23				Plasma Cutting Equipment
22-41 36 26			Process Tools	
22-41 36 26 13				Air Process Tools
22-41 36 26 16				Electric Process Tools
22-41 36 26 19				Hydraulic Process Tools
22-41 36 26 23				Manual Process Tools
22-41 36 29			Manufacturing Measurement and Testing Equipment	
22-41 36 29 13				Gages, Rules, and Blocks
22-41 36 29 16				Penetrant Measurement and Testing Equipment
22-41 36 29 19				Laser Measurement and Testing Equipment
22-41 36 29 23				Magnaflux Measurement and Testing Equipment
22-41 36 29 26				Optical Comparators
22-41 36 29 29				Profilometers
22-41 36 29 33				Radiograph Measurement and Testing Equipment
22-41 36 29 36				Surface Tables
22-41 36 29 39				Ultrasonic Measurement and Testing Equipment
22-41 36 29 43				Test Weigh Scales
22-41 40 00		Container Processing and Packaging		
22-41 41 00		Container Filling and Sealing		
22-41 41 13			Bulk Container Fillers/Packers	
22-41 41 16			Container Cappers	
22-41 41 19			Container Fillers	
22-41 41 19 13				Bag Fillers
22-41 41 19 16				Box Fillers
22-41 41 19 19				Bottle Fillers
22-41 41 23			Container Sealers	
22-41 42 00		Container Packing Equipment		
22-41 42 13			Box Packing Equipment	
22-41 42 13 13				Box Makers
22-41 42 13 16				Box Packers
22-41 42 16			Bulk Material Loaders	
22-41 42 16 13				Container Bulk Material Loaders
22-41 42 16 23				Truck Bulk Material Loaders
22-41 42 16 26				Railcar Bulk Material Loaders
22-41 42 16 29				Ship Bulk Material Loaders
22-41 42 16 33				Barge Bulk Material Loaders
22-41 42 19			Carton Packers	
22-41 42 23			Carton Sealers	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-41 42 26			Carton Shrink Wrappers	
22-41 42 29			Carton Stackers	
22-41 43 00		Shipping Packaging		
22-41 43 13			Banding/Strapping Equipment	
22-41 43 16			Barcode Equipment	
22-41 43 16 13				Barcode Readers
22-41 43 16 16				Barcode Printers
22-41 43 19			Labeling Equipment	
22-41 43 23			Pallet Stacking/Wrapping Equipment	
22-41 50 00		Material Storage		
22-41 51 00		Automatic Material Storage		
22-41 51 13			Automatic Storage/Automatic Retrieval Systems	
22-41 52 00		Bulk Material Storage		
22-41 52 13			Bins and Hoppers	
22-41 52 13 13				Fixed Bins and Hoppers
22-41 52 13 23				Portable Bins and Hoppers
22-41 52 13 33				Bulk Material Containers
22-41 52 13 43				Returnable Bins and Hoppers
22-41 52 13 53				Throwaway Bins and Hoppers
22-41 52 16			Silos	
22-41 52 16 13				Concrete Silos
22-41 52 16 16				Concrete Masonry Unit Silos
22-41 52 16 19				Steel Silos
22-41 52 19			Material Storage Tanks	
22-41 52 19 13				Horizontal Material Storage Tanks
22-41 52 19 23				Vertical Material Storage Tanks
22-41 52 19 33				Portable Material Storage Tanks
22-41 53 00		Storage Equipment and Systems		
22-41 53 13			Storage Cabinets	
22-41 53 16			Container Storage Systems	
22-41 53 19			Flat Files	
22-41 53 23			Storage Racks	
22-41 53 23 13				Mobile Storage Racks
22-41 53 26			Mezzanine Storage Systems	
22-41 60 00		Mobile Plant Equipment		
22-41 61 00		Mobile Earth Moving Equipment		
22-41 61 13			Backhoes	
22-41 61 16			Bulldozers	
22-41 61 19			Compactors	
22-41 61 23			Excavators	
22-41 61 26			Graders	
22-41 61 29			Payloaders	
22-41 61 33			Trenchers	
22-41 62 00		Trucks		
22-41 62 13			Cement Mixer Trucks	
22-41 62 16			Dump Trucks	
22-41 62 19			Flatbed Trucks	
22-41 62 23			Forklift Trucks	
22-41 62 26			Pickup Trucks	
22-41 62 29			Tank Trucks	
22-41 63 00		General Vehicles		
22-41 63 13			Bicycles	
22-41 63 16			Carts	
22-41 63 19			Maintenance Vehicles	
22-41 63 23			Utility Vehicles	
22-41 63 26			Vans	
22-41 63 29			Wagons	
22-41 64 00		Rail Vehicles		
22-41 64 13			Locomotives	
22-41 64 13 13				Diesel Locomotives
22-41 64 13 23				Electric Locomotives
22-41 64 16			Mobile Railcar Movers	
22-41 65 00		Mobile Support Equipment		
22-41 65 13			Mobile Air Compressors	
22-41 65 16			Mobile Generators	
22-41 65 19			Mobile Welders	
22-41 66 00		Miscellaneous Mobile Equipment		
22-41 66 13			Mobile Boring and Drilling Rigs	
22-41 66 16			Mobile Lifts and Cherrypickers	
22-41 66 19			Mobile Paving Equipment	
22-41 66 23			Mobile Sweepers/Vacuums	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-41 67 00		Plant Maintenance Equipment		
22-41 67 13			Plant Lube Oil System	
22-41 67 16			Plant Fall Protection Equipment	
22-41 67 19			Plant Safety Equipment	
22-41 67 23			Plant Maintenance Tools	
22-41 67 26			Plant Maintenance Washing Equipment	
22-42 00 00	Process Heating, Cooling, and Drying Equipment			
22-42 01 00		Operation and Maintenance of Process Heating, Cooling, and Drying Equipment		
22-42 01 10			Operation and Maintenance of Process Heating Equipment	
22-42 01 20			Operation and Maintenance of Process Cooling Equipment	
22-42 01 30			Operation and Maintenance of Process Drying Equipment	
22-42 08 00		Commissioning of Process Heating, Cooling, and Drying Equipment		
22-42 08 10			Commissioning of Heating Equipment	
22-42 08 20			Commissioning of Cooling Equipment	
22-42 08 30			Commissioning of Drying Equipment	
22-42 10 00		Process Heating Equipment		
22-42 11 00		Process Boilers		
22-42 11 13			Low-Pressure Process Boilers	
22-42 11 16			Intermediate-Pressure Process Boilers	
22-42 11 19			High-Pressure Process Boilers	
22-42 11 23			Specialty Process Boilers	
22-42 12 00		Process Heaters		
22-42 12 13			Electric Process Heaters	
22-42 12 16			Fuel-Fired Process Heaters	
22-42 12 19			Thermoelectric Process Heaters	
22-42 12 23			Solar Process Heaters	
22-42 12 26			Specialty Process Heaters	
22-42 13 00		Industrial Heat Exchangers and Recuperators		
22-42 13 13			Industrial Gas-to-Gas Heat Exchangers	
22-42 13 16			Industrial Liquid-to-Gas/Gas-to-Liquid Heat Exchangers	
22-42 13 19			Industrial Liquid-to-Liquid Heat Exchangers	
22-42 13 23			Industrial Gas Radiation Heat Exchangers	
22-42 13 26			Industrial Solar Radiation Heat Exchangers	
22-42 14 00		Industrial Furnaces		
22-42 14 13			Annealing Furnaces	
22-42 14 16			Atmosphere Generators	
22-42 14 19			Industrial Baking Furnaces	
22-42 14 23			Industrial Brazing Furnaces	
22-42 14 26			Industrial Calcining Furnaces	
22-42 14 29			Industrial Heat-Treating Furnaces	
22-42 14 33			Industrial Melting Furnaces	
22-42 14 33 13				Ceramics and Glass Melting Furnaces
22-42 14 33 16				Ferrous Melting Furnaces
22-42 14 33 19				Non-Ferrous Melting Furnaces
22-42 14 36			Primary Refining Furnaces	
22-42 14 43			Reactor Furnaces	
22-42 14 46			Industrial Reheat Furnaces	
22-42 14 53			Industrial Sintering Furnaces	
22-42 14 56			Industrial Vacuum Furnaces	
22-42 15 00		Industrial Ovens		
22-42 15 13			Industrial Drying Ovens	
22-42 15 16			Industrial Curing Ovens	
22-42 15 19			Industrial Specialty Ovens	
22-42 20 00		Process Cooling Equipment		
22-42 21 00		Process Cooling Towers		
22-42 21 13			Open-Circuit Process Cooling Towers	
22-42 21 16			Closed-Circuit Process Cooling Towers	
22-42 22 00		Process Chillers and Coolers		
22-42 22 13			Centrifugal Process Chillers and Coolers	
22-42 22 16			Reciprocating Process Chillers and Coolers	
22-42 22 19			Refrigerant Process Chillers and Coolers	
22-42 22 23			Rotary Process Chillers and Coolers	
22-42 22 26			Thermoelectric Process Chillers and Coolers	
22-42 23 00		Process Condensers and Evaporators		
22-42 23 13			Process Condensers	
22-42 23 16			Process Cooling Evaporators	
22-42 23 19			Process Humidifiers	
22-42 30 00		Process Drying Equipment		
22-42 31 00		Gas Dryers and Dehumidifiers		
22-42 31 13			Drying Evaporators	
22-42 31 16			Desiccant Equipment	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-42 31 19			Regenerative Dryers	
22-42 31 23			Refrigerant Dryers	
22-42 32 00		Material Dryers		
22-42 32 13			Centrifugal Material Dryers	
22-42 32 16			Conveyor Material Dryers	
22-42 32 19			Flash Material Dryers	
22-42 32 23			Fluid-Bed Material Dryers	
22-42 32 26			Material Roasters	
22-42 32 29			Rotary-Kiln Material Dryers	
22-42 32 33			Spray Material Dryers	
22-42 32 36			Tower Material Dryers	
22-42 32 39			Vacuum Material Dryers	
22-42 32 43			Specialty Material Dryers	
22-43 00 00	Process Gas and Liquid Handling, Purification, and Storage Equipment			
22-43 01 00		Operation and Maintenance of Process Gas and Liquid Handling, Purification, and Storage Equipment		
22-43 01 10			Operation and Maintenance of Gas Handling Equipment	
22-43 01 10 13				Gas Blowers Maintenance and Rehabilitation
22-43 01 10 16				Gas Compressors Maintenance and Rehabilitation
22-43 01 20			Operation and Maintenance of Liquid Handling Equipment	
22-43 01 20 13				Liquid Pumps Maintenance and Rehabilitation
22-43 01 20 16				Liquid Process Equipment Maintenance and Rehabilitation
22-43 01 30			Operation and Maintenance of Gas and Liquid Hi-Purification Equipment	
22-43 01 40			Operation and Maintenance of Gas and Liquid Storage	
22-43 01 40 13				Non-pressurized Tanks Cleaning, Maintenance, and Rehabilitation
22-43 01 40 16				Pressurized Tanks Cleaning, Maintenance, and Rehabilitation
22-43 05 00		Common Work Results for Process Gas and Liquid Handling, Purification and Storage		
22-43 05 10			Common Work Results for Gas Handling Equipment	
22-43 05 20			Common Work Results for Liquid Handling Equipment	
22-43 05 30			Common Work Results for Liquid Hi-Purification Equipment	
22-43 05 40			Common Work Results for Gas and Liquid Storage	
22-43 08 00		Commissioning of Process Gas		
22-43 08 10			Commissioning of Gas Handling Equipment	
22-43 08 20			Commissioning of Liquid Handling Equipment	
22-43 08 30			Commissioning of Gas and Liquid Purification Equipment	
22-43 08 40			Commissioning of Gas and Liquid Storage	
22-43 10 00		Gas Handling Equipment		
22-43 11 00		Gas Fans, Blowers, Pumps, and Boosters		
22-43 11 11			Direct Drive Single Stage Centrifugal Blowers	
22-43 11 12			Integrally Geared Single Stage Centrifugal Blowers	
22-43 11 13			Separately Geared Single Stage Centrifugal Blowers	
22-43 11 14			Direct Drive Integral Shaft Single Stage Centrifugal Blowers	
22-43 11 17			Horizontally Split Multistage Centrifugal Blowers	
22-43 11 18			Vertically Split Multistage Centrifugal Blowers	
22-43 11 19			Centrifugal Fans	
22-43 11 23			Axial Blowers	
22-43 11 26			Axial Fans	
22-43 11 31			Rotary Helical Screw Blowers	
22-43 11 33			Rotary Lobe Blowers	
22-43 11 34			Regenerative Rotary Blowers	
22-43 11 36			Rotary Vane Blowers	
22-43 11 41			Gas-handling Venturi Jet Pumps	
22-43 11 43			Gas-handling Vacuum Pumps	
22-43 11 46			Gas Boosters	
22-43 12 00		Gas Compressors		
22-43 12 11			Centrifugal Compressors	
22-43 12 13			Diagonal or Mixed-Flow Compressors	
22-43 12 16			Axial-flow Compressors	
22-43 12 33			Single-acting Reciprocating Compressors	
22-43 12 34			Double-acting Reciprocating Compressors	
22-43 12 37			Diaphragm Reciprocating Compressors	
22-43 12 51			Rotary Screw Compressors	
22-43 12 53			Rotary Vane Compressors	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-43 12 56			Rotary Liquid-ring Compressors	
22-43 12 57			Rotary Scroll Compressors	
22-43 13 00		Gas Process Equipment		
22-43 13 13			Gas Blenders	
22-43 13 19			Gas Mixers	
22-43 13 23			Gas Pressure Regulators	
22-43 13 31			Gas Separation Equipment	
22-43 13 33			Gas Dehydration Equipment	
22-43 13 36			Combined Gas Separation and Dehydration Equipment	
22-43 13 39			Gas Recovery and Condensing Equipment	
22-43 13 43			Waste Gas Burner System	
22-43 13 46			Gas Control and Safety Equipment	
22-43 15 00		Process Air and Gas Filters		
22-43 15 13			Blower Intake and Turbine Air Filters	
22-43 15 13 13				Static Prefilters
22-43 15 13 16				Static Final Filters
22-43 15 13 19				Static HEPA Filters
22-43 15 13 23				Pulse Filters
22-43 15 33			Grease Filters	
22-43 15 43			Mist Eliminators	
22-43 15 63			High-temperature Air Filters	
22-43 15 73			Multiple-application Air Filters	
22-43 15 73 11				Air Filter Media
22-43 15 73 12				Permanent Washable Filters
22-43 15 73 13				Poly-ring Air Filters
22-43 15 73 15				Rigid Cell Filters
22-43 15 73 17				Automatic Roll-type Air Filters
22-43 15 76			Chemical Media for Air and Gas Filters	
22-43 20 00		Liquid Handling Equipment		
22-43 21 00		Liquid Pumps		
22-43 21 13			Centrifugal Liquid Pumps	
22-43 21 16			Diaphragm Liquid Pumps	
22-43 21 19			Dispensing Liquid Pumps	
22-43 21 23			Drum Liquid Pumps	
22-43 21 26			Gear Liquid Pumps	
22-43 21 29			Metering Liquid Pumps	
22-43 21 33			Piston/Plunger Liquid Pumps	
22-43 21 36			Positive Displacement Liquid Pumps	
22-43 21 39			Submersible Liquid Pumps	
22-43 21 43			Sump Liquid Pumps	
22-43 21 46			Vane Liquid Pumps	
22-43 22 00		Liquid Process Equipment		
22-43 22 13			Liquid Aeration Devices	
22-43 22 16			Liquid Agitators	
22-43 22 19			Liquid Blenders	
22-43 22 23			Liquid Centrifuges	
22-43 22 26			Liquid Deaerators	
22-43 22 29			Drum Handling Liquid Process Equipment	
22-43 22 33			Liquid Emulsifiers	
22-43 22 36			Liquid Evaporators	
22-43 22 39			Liquid Feeders	
22-43 22 56			Liquid Process Mixers	
22-43 22 59			Liquid Process Pressure Regulators	
22-43 22 63			Liquid Separation Towers	
22-43 22 66			Liquid Weigh Systems	
22-43 22 69			Liquid Grease Receiving and Dewatering Systems	
22-43 22 73			Liquid Fillers	
22-43 22 76			Liquid Screeners	
22-43 22 79			Liquid Clarifiers	
22-43 22 83			Liquid Classifiers	
22-43 22 86			Liquid Homogenizers	
22-43 22 89			Liquid Presses	
22-43 22 96			Liquid Versators	
22-43 22 99			Liquid Votators	
22-43 27 00		Process Liquid Filters		
22-43 27 13			Cyclonic Liquid Filters	
22-43 27 16			Centrifugal Horizontal Pressure Leaf Liquid Filters	
22-43 27 19			Press Liquid Filters	
22-43 27 23			Liquid Bag Filters	
22-43 27 33			Mechanically Cleaned Liquid Filters	
22-43 27 43			Tubular Backwashing Liquid Filters	
22-43 27 53			Vacuum Belt Liquid Filters	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-43 27 63			Woven Media Liquid Filters	
22-43 27 63 13				Disc Liquid Filters
22-43 27 63 23				Rotating Drum Liquid Filters
22-43 27 63 33				Layer Liquid Filters
22-43 27 63 43				Candle Liquid Filters
22-43 27 63 53				Vertical Leaf Liquid Filters
22-43 27 73			Nonwoven Media Liquid Filters	
22-43 27 73 13				Surface Liquid Filters
22-43 27 73 23				Depth Liquid Filters
22-43 30 00		Gas and Liquid Purification Equipment		
22-43 31 00		Gas and Liquid Purification Filtration Equipment		
22-43 31 13			Gas and Liquid Purification Filters	
22-43 31 13 13				Activated Carbon-Gas and Liquid Purification Filters
22-43 31 13 16				Gas and Liquid Purification Filter Presses
22-43 31 13 19				High-Purity Cartridge Gas and Liquid Purification Filters
22-43 31 13 23				Membrane Diaphragm Gas and Liquid Purification Filters
22-43 31 13 26				Multimedia Gas and Liquid Purification Filters
22-43 31 13 29				Pretreatment Cartridge Gas and Liquid Purification Filters
22-43 31 13 33				Ultrafilter Units
22-43 32 00		Gas and Liquid Purification Process Equipment		
22-43 32 13			Gas and Liquid Purification Process Beds	
22-43 32 13 13				Anion-Gas and Liquid Purification Process Beds
22-43 32 13 16				Cation-Gas and Liquid Purification Process Beds
22-43 32 23			Gas and Liquid Purification Process Clarifier Systems	
22-43 32 26			Gas and Liquid Purification Decarbonators	
22-43 32 29			Electronic De-Ionization Purification Units	
22-43 32 33			External Regeneration Systems	
22-43 32 36			Mixed-Bed Ion-Exchange Vessels	
22-43 32 39			Gas and Liquid Purification Mixed Beds	
22-43 32 39 13				Externally Regenerable Gas and Liquid Purification Mixed Beds
22-43 32 39 16				In-Situ Regenerable Gas and Liquid Purification Mixed Beds
22-43 32 53			Packed-Bed Ion-Exchange Vessels	
22-43 32 56			Reverse-Osmosis Purification Units	
22-43 32 59			Gas and Liquid Purification Scrubbers	
22-43 32 63			Ultraviolet Sterilizers	
22-43 32 66			Vacuum Degasifiers	
22-43 32 69			Chemical Feed Systems	
22-43 32 73			Ozonation Equipment	
22-43 32 76			Chlorination Equipment	
22-43 40 00		Gas and Liquid Storage		
22-43 41 00		Non-pressurized Tanks and Vessels		
22-43 41 11			Bolted Steel Tanks	
22-43 41 13			Welded Steel Tanks	
22-43 41 13 13				Glass-lined Welded Steel Tanks
22-43 41 13 23				Rubber-lined Welded Steel Tanks
22-43 41 13 33				Epoxy-lined Welded Steel Tanks
22-43 41 13 43				Ceramic-lined Welded Steel Tanks
22-43 41 23			Stainless Steel Tanks	
22-43 41 26			Aluminum Tanks	
22-43 41 31			Metallic Specialty Tanks	
22-43 41 41			Polyvinyl Chloride Tanks	
22-43 41 43			Polyethylene Tanks	
22-43 41 45			Fiberglass Reinforced Plastic Tanks	
22-43 41 53			Wood Stave Tanks	
22-43 41 63			Precast Concrete Tanks	
22-43 41 73			Ceramic Tanks	
22-43 41 83			Non-metallic Specialty Tanks	
22-43 42 00		Pressurized Tanks and Vessels		
22-43 42 11			Cast Iron Pressure Tank	
22-43 42 13			Ductile Iron Pressure Tanks	
22-43 42 21			Welded Steel Pressure Tanks	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-43 42 23			Glass-lined Steel Pressure Tanks	
22-43 42 26			Welded Steel Gas Storage Sphere	
22-43 42 33			Stainless Steel Pressure Tanks	
22-43 42 36			Aluminum Pressure Tanks	
22-43 42 41			Metallic Specialty Pressure Tanks	
22-43 42 53			Fiberglass Reinforced Plastic Pressure Tanks	
22-43 42 83			Non-metallic Specialty Pressure Tanks	
22-44 00 00	Pollution and Waste Control Equipment			
22-44 01 00		Operation and Maintenance of	Pollution and Waste Control Equipment	
22-44 01 10			Operation and Maintenance of Air Pollution Control	
22-44 01 20			Operation and Maintenance of Noise Pollution Control	
22-44 01 30			Operation and Maintenance of Odor Control Equipment	
22-44 01 40			Operation and Maintenance of Water Pollution Control Equipment	
22-44 01 50			Operation and Maintenance of Solid Waste Control and Reuse	
22-44 01 60			Operation and Maintenance of Waste Thermal Processing Equipment	
22-44 05 00		Common Work Results for	Pollution and Waste Control Equipment	
22-44 08 00		Commissioning of	Pollution and Waste Control Equipment	
22-44 08 10			Commissioning of Air Pollution Control	
22-44 08 20			Commissioning of Noise Pollution Control	
22-44 08 30			Commissioning of Odor Control Equipment	
22-44 08 40			Commissioning Water Pollution Control Equipment	
22-44 08 50			Commissioning Solid Waste Control and Reuse	
22-44 08 60			Commissioning of Waste Thermal Processing Equipment	
22-44 10 00		Air Pollution Control		
22-44 11 00		Particulate Control Equipment		
22-44 11 13			Fugitive Dust Control	
22-44 11 16			Fugitive Dust Barrier Systems	
22-44 11 19			Atmospheric Air Quality Monitoring Equipment	
22-44 11 20			Gravitational Separators	
22-44 11 31			Venturi Scrubbing Equipment	
22-44 11 33			Spray Tower/Chamber Scrubbing Equipment	
22-44 11 36			Cyclone Scrubbing Equipment	
22-44 11 51			Pulse Jet Fabric Filtration Equipment	
22-44 11 53			Reverse Flow Fabric Filtration Equipment	
22-44 11 54			Shake/Deflate Fabric Filtration Equipment	
22-44 11 56			Cartridge Filtration Equipment	
22-44 11 59			Disposable Dry Filtration Equipment	
22-44 11 71			Cyclone Dust Collection Equipment	
22-44 11 73			Multicyclone Dust Collection Equipment	
22-44 11 76			Mist Elimination Equipment	
22-44 11 93			Wet Electrostatic Precipitator Equipment	
22-44 11 96			Dry Plate Electrostatic Precipitator Equipment	
22-44 13 00		Gaseous Air Pollution Control	Equipment	
22-44 13 11			Spray Tower/Chamber Absorption Equipment	
22-44 13 13			Packed Tower/Chamber Absorption Equipment	
22-44 13 14			Tray Tower Absorption Equipment	
22-44 13 16			Jet Bubbling Reactor Equipment	
22-44 13 17			Venturi Absorption Equipment	
22-44 13 20			Vacuum Extraction Systems	
22-44 13 31			Powdered Injection Adsorption Equipment	
22-44 13 33			Fluidized Bed Adsorption Equipment	
22-44 13 34			Fixed Bed Adsorption Equipment	
22-44 13 36			Rotary Bed Adsorption Equipment	
22-44 13 39			Radial Bed Adsorption Equipment	
22-44 13 51			Thermal Oxidation Equipment	
22-44 13 53			Catalytic Oxidation Equipment	
22-44 13 56			Flare Oxidation Equipment	
22-44 13 59			Claus Sulfur Recovery Equipment	
22-44 13 71			Thermal Reduction Equipment	
22-44 13 73			Catalytic Reduction Equipment	
22-44 13 76			Non-catalytic Reduction Equipment	
22-44 13 77			Selective Non-catalytic Reduction Equipment	
22-44 13 81			Condensation Systems	
22-44 13 83			Contact Condensing Equipment	
22-44 13 86			Solvent Recovery Equipment	
22-44 13 91			Biofilter Media	
22-44 13 93			Fixed Bed Biofilter Equipment	
22-44 13 96			Fixed Bed Biotrickling Filter Equipment	
22-44 13 97			Fixed Bed Bioscrubbing Equipment	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-44 20 00		Noise Pollution Control		
22-44 21 00		Noise Pollution Control Equipment		
22-44 21 13			Fixed Noise Abatement Barriers	
22-44 21 16			Flexible Noise Abatement Barriers	
22-44 21 19			Portable Noise Abatement Barriers	
22-44 21 23			Noise Pollution Silencers	
22-44 21 26			Frequency Cancellers	
22-44 30 00		Odor Control		
22-44 31 00		Odor Treatment Equipment		
22-44 31 11			Wet Chemical Packed Tower Odor Control Equipment	
22-44 31 13			Chemical Mist System Odor Control Equipment	
22-44 31 16			Activated Carbon Adsorption Odor Control Equipment	
22-44 31 19			Packaged Odor Control Systems	
22-44 31 21			Odor Control Biofilters	
22-44 31 28			Odor Control Biofilter Aeration Floor	
22-44 31 29			Odor Control Biofilter Media	
22-44 31 31			Odor Control Biotrickling Filter Equipment	
22-44 31 33			Odor Control Bioscrubbing Equipment	
22-44 31 41			Odor Control Vapor Combustion Equipment	
22-44 31 83			Adjusting and Balancing Odor Control Systems	
22-44 32 00		Odor Dispersing and Masking/Counteracting Equipment		
22-44 32 13			Odor Dispersing Exhaust Stacks	
22-44 32 13 13				Fan-equipped Odor Dispersing Exhaust Stacks
22-44 32 23			Odor Masking/Counteracting Equipment	
22-44 40 00		Water Pollution Control Equipment		
22-44 41 00		Water Pollution Containment and Cleanup Equipment		
22-44 41 13			Spill Cleanup	
22-44 41 21			Containment Booms	
22-44 41 23			Marine Spill Accessories	
22-44 41 31			Spill Decks	
22-44 41 32			Drum Containment Units	
22-44 41 33			Containment Pallets	
22-44 41 34			Prefabricated Spill Containment Curbing	
22-44 41 36			Prefabricated Spill Containment Berms	
22-44 41 37			Prefabricated Berms for Tank Containment	
22-44 41 41			Collapsible Storage Tanks	
22-44 50 00		Solid Waste Control and Reuse		
22-44 51 00		Solid Waste Collection, Transfer, and Hauling Equipment		
22-44 51 13			Solid Waste Portable Containers	
22-44 51 16			Solid Waste Stationary Containers	
22-44 51 23			Solid Waste Transfer Trailers	
22-44 53 00		Solid Waste Processing Equipment		
22-44 53 11			Live-floor Storage Bins	
22-44 53 13			Refuse Cranes and Accessories	
22-44 53 16			Solid Waste Screens	
22-44 53 21			Car Crushers	
22-44 53 23			Shears and Guillotines	
22-44 53 26			Shredders and Grinders	
22-44 53 27			Perforators	
22-44 53 31			Bag Breakers	
22-44 53 33			Granulators	
22-44 53 36			Crumb Rubber Systems	
22-44 53 39			Briquetters	
22-44 53 41			Vibratory Table Separation Equipment	
22-44 53 43			Ferrous Metals Separation Equipment	
22-44 53 44			Eddy Current Separators	
22-44 53 46			Single-stream Materials Separation Equipment	
22-44 53 49			Ballistic Separators	
22-44 53 51			Air Classifying Equipment	
22-44 53 52			Air Knives	
22-44 53 53			Optical Sorting Equipment	
22-44 53 56			Packaged Sorting Stations	
22-44 53 59			Packaged Reclaimer Stations	
22-44 53 61			Solid Waste Compactors	
22-44 53 63			Solid Waste Baling Equipment	
22-44 53 64			Bagging Equipment	
22-44 53 66			Wrappers	
22-44 53 73			Solid Waste Liquid Extraction Equipment	
22-44 55 00		Composting Equipment		
22-44 55 11			Electromechanical Composters	
22-44 55 13			Compost Screening Equipment	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-44 55 16			Compost Shredding Equipment	
22-44 55 23			Compost Pile Turning Equipment	
22-44 55 26			Compost Mixing and Blending Equipment	
22-44 55 33			In-vessel Composting Equipment	
22-44 55 43			Compost Pad System	
22-44 55 73			Compost Liquid Extraction Equipment	
22-44 60 00		Waste Thermal Processing Equipment		
22-44 61 00		Waste-to-Energy Plants		
22-44 61 13			Waste Receiving, Management, and Feed Equipment	
22-44 61 16			Mass Burn Combustion Equipment	
22-44 61 23			Refuse-derived Fuel Feed Equipment	
22-44 61 26			Refuse-derived Fuel Combustion Equipment	
22-44 61 29			Modular Combustion System Equipment	
22-44 61 31			Ash Handling Equipment	
22-44 61 33			Post-combustion Ferrous Metals Recovery Equipment	
22-44 61 36			Post-combustion Non-ferrous Metals Recovery Equipment	
22-44 62 00		Fluidized Bed Combustion Equipment		
22-44 63 00		Rotary Kiln Incinerators		
22-44 64 00		Gasification Equipment		
22-44 64 13			Counter-current Fixed Bed Gasification Equipment	
22-44 64 23			Co-current Fixed Bed Gasification Equipment	
22-44 64 33			Fluidized Bed Gasification Equipment	
22-44 64 43			Entrained Flow Gasification Equipment	
22-44 64 53			Plasma Arc Gasification Equipment	
22-44 65 00		Pyrolysis Equipment		
22-44 66 00		Hazardous Waste and Medical Waste Incinerators		
22-44 67 00		Heat Recovery Equipment for Waste Thermal Processing		
22-44 68 00		Synthesis Gas Cleanup and Handling Equipment		
22-45 00 00	Industry-Specific Manufacturing Equipment			
22-45 08 00		Commissioning of Industry-Specific Manufacturing Equipment		
22-45 11 00		Oil and Gas Extraction Equipment		
22-45 11 01			Operation and Maintenance of Oil and Gas Extraction Equipment	
22-45 11 10 thru			User Defined Oil and Gas Extraction Equipment	
22-45 12 99				
22-45 13 00		Mining Machinery and Equipment		
22-45 13 01			Operation and Maintenance of Mining Machinery and Equipment	
22-45 13 10 thru			User Defined Mining Machinery and Equipment	
22-45 14 99				
22-45 15 00		Food Manufacturing Equipment		
22-45 15 01			Operation and Maintenance of Food Manufacturing Equipment	
22-45 15 10 thru			User Defined Food Manufacturing Equipment	
22-45 16 99				
22-45 17 00		Beverage and Tobacco Manufacturing Equipment		
22-45 17 01			Operation and Maintenance of Beverage and Tobacco Manufacturing Equipment	
22-45 17 10 thru			User Defined Beverage and Tobacco Manufacturing Equipment	
22-45 18 99				
22-45 19 00		Textiles and Apparel Manufacturing Equipment		
22-45 19 01			Operation and Maintenance of Textiles and Apparel Manufacturing Equipment	
22-45 19 10 thru			User Defined Textiles and Apparel Manufacturing Equipment	
22-45 20 99				
22-45 21 00		Leather and Allied Product Manufacturing Equipment		
22-45 21 01			Operation and Maintenance of Leather and Allied Product Manufacturing Equipment	
22-45 21 10 thru			User Defined Leather and Allied Product Manufacturing Equipment	
22-45 22 99				
22-45 23 00		Wood Product Manufacturing Equipment		
22-45 23 01			Operation and Maintenance of Wood Product Manufacturing Equipment	
22-45 23 10 thru			User Defined Wood Product Manufacturing Equipment	
22-45 24 99				
22-45 25 00		Paper Manufacturing Equipment		
22-45 25 01			Operation and Maintenance of Paper Manufacturing Equipment	
22-45 25 10 thru			User Defined Paper Manufacturing Equipment	
22-45 26 99				
22-45 27 00		Printing and Related Manufacturing Equipment		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-45 27 01			Operation and Maintenance of Printing and Related Manufacturing Equipment	
22-45 27 10 thru 22-45 28 99			User Defined Printing and Related Manufacturing Equipment	
22-45 29 00		Petroleum and Coal Products	Manufacturing Equipment	
22-45 29 01			Operation and Maintenance of Petroleum and Coal Products Manufacturing Equipment	
22-45 29 10 thru 22-45 30 99			User Defined Petroleum and Coal Products Manufacturing Equipment	
22-45 31 00		Chemical	Manufacturing Equipment	
22-45 31 01			Operation and Maintenance of Chemical Manufacturing Equipment	
22-45 31 10 thru 22-45 32 99			User Defined Chemical Manufacturing Equipment	
22-45 33 00		Plastics and Rubber	Manufacturing Equipment	
22-45 33 01			Operation and Maintenance of Plastics and Rubber Manufacturing Equipment	
22-45 33 10 thru 22-45 34 99			User Defined Plastics and Rubber Manufacturing Equipment	
22-45 35 00		Nonmetallic Mineral Product	Manufacturing Equipment	
22-45 35 01			Operation and Maintenance of Nonmetallic Mineral Product Manufacturing Equipment	
22-45 35 10 thru 22-45 36 99			User Defined Nonmetallic Mineral Product Manufacturing Equipment	
22-45 37 00		Primary Metal	Manufacturing Equipment	
22-45 37 01			Operation and Maintenance of Primary Metal Manufacturing Equipment	
22-45 37 10 thru 22-45 38 99			User Defined Primary Metal Manufacturing Equipment	
22-45 39 00		Fabricated Metal Product	Manufacturing Equipment	
22-45 39 01			Operation and Maintenance of Fabricated Metal Product Manufacturing Equipment	
22-45 39 10 thru 22-45 40 99			User Defined Fabricated Metal Product Manufacturing Equipment	
22-45 41 00		Machinery	Manufacturing Equipment	
22-45 41 01			Operation and Maintenance of Machinery Manufacturing Equipment	
22-45 41 10 thru 22-45 42 99			User Defined Machinery Manufacturing Equipment	
22-45 43 00		Computer and Electronic Product	Manufacturing Equipment	
22-45 43 01			Operation and Maintenance of Computer and Electronic Product Manufacturing Equipment	
22-45 43 10 thru 22-45 44 99			User Defined Computer and Electronic Product Manufacturing Equipment	
22-45 45 00		Electrical Equipment, Appliance, and Component	Manufacturing Equipment	
22-45 45 01			Operation and Maintenance of Electrical Equipment, Appliance, and Component Manufacturing Equipment	
22-45 45 10 thru 22-45 46 99			User Defined Electrical Equipment, Appliance, and Component Manufacturing Equipment	
22-45 47 00		Transportation	Manufacturing Equipment	
22-45 47 01			Operation and Maintenance of Transportation Manufacturing Equipment	
22-45 47 10 thru 22-45 48 99			User Defined Transportation Manufacturing Equipment	
22-45 49 00		Furniture and Related Product	Manufacturing Equipment	
22-45 49 01			Operation and Maintenance of Furniture and Related Product Manufacturing Equipment	
22-45 49 10 thru 22-45 50 99			User Defined Furniture and Related Product Manufacturing Equipment	
22-45 51 00		Other	Manufacturing Equipment	
22-45 51 01			Operation and Maintenance of Other Manufacturing Equipment	
22-45 51 10 thru 22-45 52 99			User Defined Other Manufacturing Equipment	
22-46 00 00	Water and Wastewater Equipment			
22-46 01 00		Operation and Maintenance of Water and Wastewater	Equipment	
22-46 01 07			Operation and Maintenance of Packaged Treatment Equipment	
22-46 01 20			Operation and Maintenance of Preliminary Treatment Equipment	
22-46 01 30			Operation and Maintenance of Chemical Feed Equipment	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-46 01 40			Operation and Maintenance of Clarification and Mixing Equipment	
22-46 01 50			Operation and Maintenance of Secondary Treatment Equipment	
22-46 01 60			Operation and Maintenance of Advanced Treatment Equipment	
22-46 01 70			Operation and Maintenance of Residuals Handling and Treatment	
22-46 05 00		Common Work Results for Water and Wastewater Equipment		
22-46 07 00		Packaged Water and Wastewater Treatment Equipment		
22-46 07 13			Packaged Water Treatment Equipment	
22-46 07 53			Packaged Wastewater Treatment Equipment	
22-46 08 00		Commissioning of Water and Wastewater Equipment		
22-46 08 07			Commissioning of Packaged Treatment Equipment	
22-46 08 20			Commissioning of Preliminary Treatment Equipment	
22-46 08 30			Commissioning of Chemical Feed Equipment	
22-46 08 40			Commissioning of Clarification and Mixing Equipment	
22-46 08 50			Commissioning of Secondary Treatment Equipment	
22-46 08 60			Commissioning of Advanced Treatment Equipment	
22-46 08 70			Commissioning of Residuals Handling and Treatment	
22-46 20 00		Water and Wastewater Preliminary Treatment Equipment		
22-46 21 00		Screening Equipment		
22-46 21 11			Climber-type Bar Screens	
22-46 21 13			Chain-and-Rake Bar Screens	
22-46 21 16			Flexible Rake Bar Screens	
22-46 21 17			Catenary Bar Screens	
22-46 21 19			Continuous Belt Screens	
22-46 21 23			Cylindrical Bar Screens	
22-46 21 26			Step Screens	
22-46 21 33			Rotary Drum Screens	
22-46 21 39			Spiral Screens	
22-46 21 43			Band Screens	
22-46 21 46			Disc Screens	
22-46 21 51			Traveling Water Screens	
22-46 21 53			Perforated Plate Screens	
22-46 21 56			Wedge Wire Screens	
22-46 21 57			Element Screens	
22-46 21 71			Trash Raking Equipment	
22-46 21 73			Screenings Washing and Compacting Equipment	
22-46 21 76			Vacuum Screenings Conveying Equipment	
22-46 21 79			Screenings Storage Containers	
22-46 21 83			Septage Receiving Equipment	
22-46 23 00		Grit Removal and Handling Equipment		
22-46 23 13			Chain-and-Bucket Grit Removal Equipment	
22-46 23 16			Chain-and-Flight Grit Removal Equipment	
22-46 23 23			Vortex Grit Removal Equipment	
22-46 23 27			Cyclone Degritters	
22-46 23 33			Aerated Grit Removal Equipment	
22-46 23 43			Inline Baffled Grit Removal Equipment	
22-46 23 53			Traveling Bridge Grit Removal Equipment	
22-46 23 63			Grit Classifying and Washing Equipment	
22-46 23 66			Grit Storage Containers	
22-46 24 00		Grinding and Shredding Equipment		
22-46 24 13			Macerators	
22-46 24 16			Comminutors	
22-46 24 23			Inline Grinders	
22-46 24 33			Open-channel Grinders	
22-46 24 36			Modular Grinding-Screening-Compacting Equipment	
22-46 25 00		Oil and Grease Separation and Removal Equipment		
22-46 25 13			Coalescing Oil-Water Separators	
22-46 25 16			API Oil-Water Separators	
22-46 25 23			Grease Traps	
22-46 25 33			Dissolved Air Flotation Grease and Oil Separation Equipment	
22-46 25 41			Helical Scum Skimming and Removal Equipment	
22-46 25 43			Tipping Trough Scum Skimming and Removal Equipment	
22-46 25 46			Chain and Flight Scum Collection and Removal Equipment	
22-46 25 47			Floating Scum Skimming and Removal Equipment	
22-46 30 00		Water and Wastewater Chemical Feed Equipment		
22-46 31 00		Gas Chemical Feed Equipment		
22-46 31 11			Chlorine Gas Feed Equipment	
22-46 31 13			Sulfur Dioxide Gas Feed Equipment	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-46 31 16			Ammonia Gas Feed Equipment	
22-46 31 23			Gas Storage, Weighing, and Leak Detection Equipment	
22-46 31 26			Emergency Gas Treatment Systems	
22-46 31 33			Chlorine Dioxide Reactors	
22-46 31 43			Carbon Dioxide Gas Feed Equipment	
22-46 31 53			Ozone Generating and Feed Equipment	
22-46 31 56			Liquid Oxygen Storage and Feed Equipment	
22-46 31 59			Cleaning Requirements for Oxygen Service	
22-46 31 83			Gas Chemical Feed Accessories and Safety Equipment	
22-46 33 00		Liquid Chemical Feed Equipment		
22-46 33 13			Sodium Hypochlorite Generating Equipment	
22-46 33 23			Liquid Chemical Weighing Equipment	
22-46 33 33			Polymer Blending and Feed Equipment	
22-46 33 41			Liquid Chemical Feed System Coordination and Integration	
22-46 33 42			Diaphragm-type Metering Pumps	
22-46 33 44			Peristaltic Metering Pumps	
22-46 33 46			Progressing Cavity Metering Pumps	
22-46 33 48			Lobe Metering Pumps	
22-46 33 53			Drum Pumps	
22-46 33 66			Liquid Chemical Transfer Pumps	
22-46 33 73			Liquid Chemical Diffusers	
22-46 33 83			Liquid Chemical Feed Accessories and Safety Equipment	
22-46 36 00		Dry Chemical Feed Equipment		
22-46 36 11			Dry Chemical Feed System Coordination and Integration	
22-46 36 13			Storage Silos	
22-46 36 23			Dry Chemical Weighing Equipment	
22-46 36 33			Volumetric Feed Equipment	
22-46 36 36			Gravimetric Feed Equipment	
22-46 36 43			Lime Slaking Equipment	
22-46 36 53			Chemical Tablet Feeding Equipment	
22-46 36 83			Dry Chemical Feed Accessories and Safety Equipment	
22-46 40 00		Water and Wastewater Clarification and Mixing Equipment		
22-46 41 00		Mixing Equipment		
22-46 41 11			Rapid Mixers	
22-46 41 13			Inline Blender-type Rapid Mixers	
22-46 41 16			Induction-type Rapid Mixing Equipment	
22-46 41 17			Inline Static Mixers	
22-46 41 21			Jet Mixing Equipment	
22-46 41 23			Submersible Mixers	
22-46 41 26			Floating Mechanical Mixers	
22-46 41 27			Paddle Mixers	
22-46 41 29			Pin Mixers	
22-46 41 31			Vertical Reel Flocculation Equipment	
22-46 41 33			Horizontal Reel Flocculation Equipment	
22-46 41 34			Vertical Turbine Flocculation Equipment	
22-46 41 36			Walking-beam Flocculation Equipment	
22-46 41 38			Horizontal Oscillating Flocculation Equipment	
22-46 41 41			Top-entering Tank Mixers	
22-46 41 43			Side-entry Tank Mixers	
22-46 41 46			Portable Tank Mixers	
22-46 43 00		Clarifier Equipment		
22-46 43 11			Chain-and-Flight Clarifier Equipment	
22-46 43 14			Traveling Bridge Clarifier Equipment	
22-46 43 16			Differential Head Clarifier Equipment	
22-46 43 18			Oscillating Scraper-type Clarifier Equipment	
22-46 43 21			Circular Clarifier Equipment	
22-46 43 53			Solids Contact Clarifier Equipment	
22-46 43 61			Flocculating Clarifier, Pulsating Sludge Blanket Type	
22-46 43 63			Dissolved Air Flotation Equipment for Water Treatment	
22-46 43 66			Ballasted High-rate Clarifier Equipment	
22-46 43 67			High-rate Clarification/Thickening Equipment	
22-46 43 73			Tube Settlers	
22-46 43 76			Inclined Plate Settlers	
22-46 46 00		Sediment Removal Equipment		
22-46 46 13			Tipping Sediment Flushing Tanks	
22-46 46 16			Flushing Gates	
22-46 46 23			Water Cannon	
22-46 46 26			Nozzle Systems	
22-46 50 00		Water and Wastewater Secondary Treatment Equipment		
22-46 51 00		Air and Gas Diffusion Equipment		
22-46 51 11			Fixed Mechanical Aerators	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-46 51 13			Floating Mechanical Aerators	
22-46 51 16			Submersible Aspirating Aerator Equipment	
22-46 51 17			Jet Aeration Equipment	
22-46 51 21			Coarse Bubble Diffusers	
22-46 51 23			Swing-type Channel Aeration Equipment	
22-46 51 26			Shear Box Diffusers	
22-46 51 31			Flexible Membrane Tube Diffusers	
22-46 51 33			Flexible Membrane Disc Diffusers	
22-46 51 36			Ceramic Disc Fine Bubble Diffusers	
22-46 51 43			Floating Membrane Diffusers	
22-46 51 46			Membrane Diffusers	
22-46 51 53			Cascading Aerators	
22-46 51 63			Pure-oxygen Generating Equipment	
22-46 53 00		Biological Treatment Systems		
22-46 53 13			Rotating Biological Contactors	
22-46 53 23			Trickling Filter Rotary Distributor Equipment	
22-46 53 24			Trickling Filter Media	
22-46 53 26			Bio-towers	
22-46 53 33			Moving-bed Biological Reactors	
22-46 53 36			Integrated Fixed-film Activated Sludge Equipment	
22-46 53 41			Intermittent Sand Filters for Wastewater Treatment	
22-46 53 43			Deep-bed Denitrification Filters	
22-46 53 46			Biologically Activated Filters	
22-46 53 49			Membrane Biological Reactors	
22-46 53 53			Sequencing Batch Reactors	
22-46 53 61			Oxidation Ditch Equipment	
22-46 53 63			Vertical Loop Reactors	
22-46 60 00		Water and Wastewater Advanced Treatment Equipment		
22-46 61 00		Filtration Equipment		
22-46 61 13			Filter Media	
22-46 61 16			Filter Surface Wash Agitators	
22-46 61 17			Filter Air Scour Equipment	
22-46 61 19			Wash Water Troughs	
22-46 61 21			Pressure Filters	
22-46 61 23			Gravity Filters	
22-46 61 26			High-rate Sand Filters	
22-46 61 29			Traveling Bridge Filters	
22-46 61 33			Microfiltration and Ultrafiltration Membrane Equipment	
22-46 61 41			Disc Cloth Filters	
22-46 61 43			Rotary Drum Cloth Filters	
22-46 61 46			Automatic Backwash Cloth Filter Equipment	
22-46 61 53			Cartridge Filters	
22-46 61 63			Bag Filters	
22-46 61 73			Automatic Straining Equipment	
22-46 63 00		Demineralization Equipment		
22-46 63 11			Ion-exchange Vessel Media	
22-46 63 13			Mixed Bed Ion-exchange Vessel Systems	
22-46 63 16			Packed Bed Ion-exchange Vessel Systems	
22-46 63 17			Electrodialysis Reversal Equipment	
22-46 63 23			Reverse Osmosis and Nanofiltration Membrane Equipment	
22-46 63 31			Multiple-effect Distillation Equipment	
22-46 63 33			Desalination Mechanical Vapor Compression Equipment	
22-46 63 34			Desalination Thermal Vapor Compression Equipment	
22-46 63 36			Desalination Multi-stage Flash Equipment	
22-46 63 41			Desalination Falling Film Evaporators	
22-46 63 43			Desalination Rising Film Evaporators	
22-46 63 53			Desalination Forced-circulation Crystallizing Equipment	
22-46 63 63			Desalination Spray Dry Evaporation Equipment	
22-46 63 73			Demineralization Energy Recovery Equipment	
22-46 66 00		Ultraviolet Equipment		
22-46 66 13			Closed-vessel Low-pressure/Low-intensity Ultraviolet Treatment Equipment	
22-46 66 16			Closed-vessel Low-pressure/High-intensity Ultraviolet Treatment Equipment	
22-46 66 23			Closed-vessel Medium-pressure Ultraviolet Treatment Equipment	
22-46 66 53			Open-channel Low-pressure/Low-intensity Ultraviolet Treatment Equipment	
22-46 66 56			Open-channel Low-pressure/High-intensity Ultraviolet Treatment Equipment	
22-46 66 63			Open-channel Medium-pressure Ultraviolet Treatment Equipment	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-46 70 00		Water and Wastewater Residuals Handling and Treatment		
22-46 71 00		Residuals Thickening Equipment		
22-46 71 13			Circular Gravity Thickeners	
22-46 71 16			Gravity Belt Thickeners	
22-46 71 23			Dissolved Air Flotation Thickening Equipment	
22-46 71 33			Rotary Drum Thickening Equipment	
22-46 71 36			Centrifuge Thickening Equipment	
22-46 71 43			Disc Thickeners	
22-46 71 46			Thickening Screw Press	
22-46 71 53			Scum Concentrator Equipment	
22-46 73 00		Residuals Stabilization		
22-46 73 11			Radial Beam Fixed Digester Covers	
22-46 73 12			Dual Deck Truss-type Fixed Digester Covers	
22-46 73 14			Radial Beam Floating Digester Covers	
22-46 73 16			Dual Deck Truss-type Floating Digester Covers	
22-46 73 17			Radial Beam Floating Gas-holding Digester Covers	
22-46 73 18			Dual Deck Truss-type Floating Gas-holding Digester Covers	
22-46 73 19			Digester Appurtenances	
22-46 73 21			Aerobic Digester Aeration Equipment	
22-46 73 24			Autothermal Thermophilic Aerobic Digestion Equipment	
22-46 73 26			Egg-shaped Digesters	
22-46 73 31			External Draft Tube Digester Mixing System	
22-46 73 32			Internal Draft Tube Digester Mixing System	
22-46 73 33			Confined Gas Mixing System	
22-46 73 34			Unconfined Gas Mixing System	
22-46 73 41			Digester Heating Equipment	
22-46 73 63			Residuals Pasteurization Equipment	
22-46 76 00		Residuals Dewatering Equipment		
22-46 76 13			Vacuum Filters	
22-46 76 21			Belt Filter Presses	
22-46 76 23			Plate-and-Frame Filter Presses	
22-46 76 26			Rotary Presses	
22-46 76 27			Screw Presses	
22-46 76 33			Dewatering Centrifuges	
22-46 76 53			Belt Dryers	
22-46 76 60			Direct-heat Residuals Drying Equipment	
22-46 76 70			Indirect-heat Residuals Drying Equipment	
22-46 78 00		Thermal Treatment of Residuals		
22-46 78 13			Multiple-hearth Sludge Incinerators	
22-46 78 23			Fluidized-bed Sludge Incinerators	
22-46 78 33			Ash Handling Equipment	
22-46 78 41			Recuperative Air Preheating Equipment	
22-46 78 46			Regenerative Thermal Oxidizers	
22-46 78 47			Waste Heat Recovery Boilers	
22-46 78 49			Waste Heat Recovery Heat Exchangers	
22-46 78 73			Thermal Oxidation Equipment	
22-48 00 00	Electrical Power Generation			
22-48 01 00		Operation and Maintenance for Electrical Power Generation		
22-48 01 10			Operation and Maintenance of Electrical Power Generation Equipment	
22-48 01 70			Operation and Maintenance of Electrical Power Generation Testing	
22-48 05 00		Common Work Results for Electrical Power Generation		
22-48 08 00		Commissioning of Electrical Power Generation		
22-48 09 00		Instrumentation and Control for Electrical Power Generation		
22-48 10 00		Electrical Power Generation Equipment		
22-48 11 00		Fossil Fuel Plant Electrical Power Generation Equipment		
22-48 11 13			Fossil Fuel Electrical Power Plant Boilers	
22-48 11 16			Fossil Fuel Electrical Power Plant Condensers	
22-48 11 19			Fossil Fuel Electrical Power Plant Steam Turbines	
22-48 11 23			Fossil Fuel Electrical Power Plant Gas Turbines	
22-48 11 26			Fossil Fuel Electrical Power Plant Generators	
22-48 12 00		Nuclear Fuel Plant Electrical Power Generation Equipment		
22-48 12 13			Nuclear Fuel Reactors	
22-48 12 13 13				Nuclear Fuel Fission Reactors
22-48 12 13 16				Nuclear Fuel Fusion Reactors
22-48 12 23			Nuclear Fuel Electrical Power Plant Steam Generators	
22-48 12 26			Nuclear Fuel Electrical Power Plant Condensers	
22-48 12 29			Nuclear Fuel Electrical Power Plant Turbines	
22-48 12 33			Nuclear Fuel Electrical Power Generators	
22-48 13 00		Hydroelectric Plant Electrical Power Generation Equipment		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title
22-48 13 13			Hydroelectric Power Plant Water Turbines	
22-48 13 16			Hydroelectric Power Plant Electrical Power Generators	
22-48 14 00		Solar Energy Electrical Power	Generation Equipment	
22-48 14 13			Solar Energy Collectors	
22-48 14 13 13				Amorphous Solar Energy Collectors
22-48 14 13 16				Plate Cell Solar Energy Collectors
22-48 14 13 19				Vacuum Tube Solar Energy Collectors
22-48 15 00		Wind Energy Electrical Power	Generation Equipment	
22-48 15 13			Windmills	
22-48 15 16			Wind Energy Electrical Power Generators	
22-48 16 00		Geothermal Energy Electrical Power	Generation Equipment	
22-48 16 13			Geothermal Energy Heat Pumps	
22-48 16 16			Geothermal Energy Condensers	
22-48 16 19			Geothermal Energy Steam Turbines	
22-48 16 23			Geothermal Energy Electrical Power Generators	
22-48 17 00		Electrochemical Energy Electrical Power	Generation Equipment	
22-48 17 13			Electrical Power Generation Batteries	
22-48 18 00		Fuel Cell Electrical Power	Generation Equipment	
22-48 18 13			Electrical Power Generation Fuel Cells	
22-48 18 16			Hydrogen Control Equipment	
22-48 19 00		Electrical Power Control Equipment		
22-48 19 13			Electrical Power Generation Battery Charging Equipment	
22-48 19 16			Electrical Power Generation Inverters	
22-48 19 19			Electrical Power Generation Solar Tracking Equipment	
22-48 19 23			Electrical Power Generation Transformers	
22-48 19 26			Electrical Power Generation Voltage Regulators	
22-48 70 00		Electrical Power Generation Testing		
22-48 71 00		Electrical Power Generation Test Equipment		
22-48 71 13			Electrical Power Generation Corona Test Equipment	
22-48 71 16			Electrical Power Generation Current Test Equipment	
22-48 71 19			Electrical Power Generation Power Test Equipment	
22-48 71 23			Electrical Power Generation Resistance Test Equipment	
22-48 71 26			Electrical Power Generation Voltage Test Equipment	



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2 REFERENCE STANDARD

Chapter 2.7 OmniClass™ Table 23 – Products – June 2010

Introduction

OmniClass™ Table 23 – Products is an existing industry standard developed, managed, published and copyrighted by the Construction Specifications Institute, approved through the NBIMS-US V2 consensus process. *OmniClass™ Table 23 – Products* is incorporated in NBIMS-US V2 by reference so that it can be easily referenced in BIM Information Exchanges. Document follows.



A Strategy for Classifying the Built Environment

Table 23 - Products

Table 23 - Products

Definition

Products are components or assemblies of components intended for permanent incorporation into construction entities.

Discussion

Products are the basic building blocks used for construction. A product may be a single manufactured item, a manufactured assembly consisting of many parts, or a manufactured operational stand-alone system.

This table provides a means to identify product classes without regard for their application. In comparison, Table 22 – Work Results provides multiple potential classifications for many products, depending upon the applications to which they may be put. For example, a panel of glass can be used in a window, as cabinet shelving, or in an interior sidelight to a door opening. All of those applications are different work results.

Examples

Concrete, Common Brick, Door, Metal Window, Electrical Junction Boxes, Pipe Culverts, Fire Tube Boiler, Curtain Walls, Textured Paints, Vinyl Coated Fabric Wall Covering, Demountable Partitions, Pre Engineered Structures

Table Uses

Classifying construction product classes by their appearance or unique functional information, and storing, analyzing, and retrieving product information.

Table Users

Product information providers, product manufacturers and their literature representing product information, product suppliers, product distributors, cost estimators, constructors, facility managers, software developers and vendors.

Legacy Documents

- Construction Project Information Committee. *Uniclass: Unified Classification for the Construction Industry*, Table L, Products. RIBA Publications, 1997.
- Construction Specifications Institute (CSI), Construction Specifications Canada (CSC) MasterFormat: Master List of Numbers and Titles for the Construction Industry. Alexandria, VA: CSI, 2010.
- International Organization for Standardization (ISO). ISO 12006-2, *Table 4.13, Construction Products (by function)*. Geneva: ISO, 2001.
- General Services Administration equipment and asset management lists
- Department of Veterans Affairs medical equipment lists
- Department of State equipment and asset management lists
- Department of Homeland Security equipment and asset management lists
- Autodesk Seek <http://seek.autodesk.com/>
- McGraw Hill Construction Sweets Network <http://products.construction.com/>
- Reed Construction Data SmartBuilding Index <http://www.reedconstructiondata.com/smartbuildingindex/>

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OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-11 00 00	Site Products								Products used on the project grounds and site.	Includes bricks, blocks, basic materials, concrete mixtures, landscaping and horticulture products, planting equipment, ground anchorages, ground improvement products, sheeting and revetments, retention structures. Also includes temporary site products.
23-11 11 00		Ground Anchorages							Plates or augers imbedded in the soil that limit lateral building movement to prevent structure failure.	
23-11 11 11			Retaining Stabilizing Ground Anchors							
23-11 11 11 11				Retaining Stabilizing Ground Components						
23-11 11 11 11 11					Stabilizing Ground Anchor Heads					
23-11 11 11 11 13					Stabilizing Ground Tendons					
23-11 11 11 13				Stabilizing Ground Grouted Anchors						
23-11 11 11 15				Stabilizing Ground Plate Anchors						
23-11 11 11 17				Stabilizing Ground Rock Bolts						
23-11 11 11 19				Stabilizing Ground Rock Anchors						
23-11 11 11 21				Stabilizing Ground Anchor Tiebacks						
23-11 11 13			Earth Reinforcement Anchors							
23-11 11 13 11				Earth Reinforcement Soil Nails						
23-11 13 00		Ground Improvement Products							These products generally aim to increase the bearing capacity of the soil and to reduce or to speed up settlement.	
23-11 13 11			Soil Stabilization Products							
23-11 13 11 11				Soil Stabilization Injectable Chemicals						
23-11 13 11 13				Soil Stabilization Pressure Grouting						
23-11 13 11 15				Ground Freezing Soil Stabilization						
23-11 13 11 17				Soil Stabilization Fills						
23-11 13 11 17 11					Soil Stabilization Fill Blocks					
23-11 13 11 17 13					Soil Stabilization Compressible Fill					
23-11 13 11 19				Other Soil Stabilizations						
23-11 13 11 21				Piped Field Drainage						
23-11 13 11 21 11					Field Drainage Land Drainage Pipes					
23-11 13 11 23				Field Drainage Blocks						
23-11 13 11 25				Field Drainage Geocomposite Drains						
23-11 13 11 25 11					Field Drainage Geocomposite Edge Drains					
23-11 13 11 25 13					Field Drainage Geocomposite In Place Wall Drains					
23-11 13 11 27				Geotextile Subsurface Drainage Filtration						
23-11 15 00		Sheeting and Revetments							Preserves or protects an area against erosion and are used to hold up the face of an excavation.	
23-11 15 11			Sheeting Geosynthetics							
23-11 15 11 11				Sheeting Geotextiles						
23-11 15 11 13				Sheeting Geogrids						
23-11 15 11 15				Sheeting Geomembranes						
23-11 15 11 17				Sheeting Geocomposites						
23-11 15 11 19				Sheeting Mulch Control Netting						
23-11 15 11 21				Sheeting Synthetic Erosion Controls						
23-11 15 11 23				Sheeting Re vegetation Mats						
23-11 15 11 25				Sheeting Turf Reinforcement Mats						
23-11 15 13			Revetments							
23-11 15 13 11				Revetment Soil Blankets						
23-11 15 13 13				Pool Revetments						
23-11 15 13 15				Trench Revetments						
23-11 15 13 17				Revetment Rock Linings						
23-11 15 13 19				Revetment Ripraps						
23-11 17 00		Retention Structures							Structures built to control erosion or the advance of a mass of earth or water.	
23-11 17 11			Sheet Piles							
23-11 17 13			Retaining Walls							
23-11 17 13 11				Retaining Diaphragm Walls						
23-11 17 13 11 11					Retaining Slurry Wall Membranes					
23-11 17 13 13				Continuous Retaining Walls						
23-11 17 13 15				Retaining Crib Walls						
23-11 17 15			Gabions							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-11 17 17			Fascines							
23-11 19 00		Slide and Avalanche Protection							Products which assist in the protection of the site from avalanches or landslides.	
23-11 19 11			Bolt Down Snow Fences							
23-11 19 13			Clamp on Equipment							
23-11 21 00		Pavements							Durable surfaces which usually include a public area or thoroughfare that will bear travel	
23-11 21 11			Porous Paving						Includes Grasscrete Sheets	Not a precast concrete block.
23-11 21 13			Roadways							
23-11 21 13 11				Portable Roadways						
23-11 21 13 13				Roadway Surfacing						
23-11 21 13 13 11					Roadway Antiskid Texturing					
23-11 21 13 15				Detectable Warning Surfaces for Roadways						
23-11 21 13 15 11					Crosswalks			Crosswalks		
23-11 21 13 15 13					Warning Tiles			Warning Tiles		
23-11 21 15			Runways							
23-11 21 15 11				Portable Runway						
23-11 21 15 13				Helicopter Landing Pads						
23-11 21 15 15				Runway Surfacing						
23-11 21 15 15 11					Runway Antiskid Texturing					
23-11 21 17			Paving Blocks							
23-11 21 17 11				Unit Pavers						
23-11 21 17 11 11					Asphalt Block Pavers					
23-11 21 17 11 13					Brick Pavers					
23-11 21 17 11 15					Interlocking Precast Concrete Pavers					
23-11 21 17 11 17					Precast Concrete Pavers					
23-11 21 17 11 19					Pressed Pavers					
23-11 21 17 11 21					Stone Pavers					
23-11 21 19			Pavement Slabs							
23-11 21 21			Pavement Drainage							
23-11 21 21 11				Culverts						
23-11 21 21 11 11					Pipe Culverts					
23-11 21 21 11 11 11						Metal Pipe Arch Culverts				
23-11 21 21 11 13					Concrete Culverts					
23-11 21 21 11 13 11						Concrete Arch Buried Bridge Culverts				
23-11 21 21 11 13 13						Concrete Arch Culverts				
23-11 21 21 11 13 15						Concrete Box Culverts				
23-11 21 21 11 13 17						Concrete Rigid Frame Culverts				
23-11 21 21 13				Catch Basins						
23-11 21 21 15				Channels						
23-11 21 21 17				Cleanouts						
23-11 23 00		Parking Controls							Products which control the flow and access of traffic within a given parking area.	
23-11 23 11			Parking Meters							
23-11 23 13			Parking Ticket Dispensers							
23-11 23 15			Parking Coin Machine Units							
23-11 23 17			Parking Key and Card Control Units							
23-11 23 19			Parking Gates							
23-11 23 21			Parking Dividers							
23-11 23 23			Parking Signs							
23-11 23 23 11				Handicap Parking Signs						
23-11 23 23 13				Parking Time Zone Signs						
23-11 23 23 15				Parking Tow Away Signs						
23-11 25 00		Site Barrier Products							Products which divide and or protect a given site.	
23-11 25 11			Perimeter Entry Devices					Access Control Device		
23-11 25 11 11				Anti Ram Wedge Barriers				Delta Barrier		
23-11 25 13			Perimeter Walls							
23-11 25 13 11				Precast Perimeter Concrete Panel Perimeter Walls						
23-11 25 13 13				Precast Perimeter Post Perimeter Walls						
23-11 25 15			Perimeter Gates							
23-11 25 15 11				Drop Arm Gates						
23-11 25 15 11 11					Anti Ram Drop Arm Gates					
23-11 25 15 13				Rolling Gates						
23-11 25 15 15				Sliding Gates				Horizontally rolling gate		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-11 25 15 11					Anti Ram Sliding Gates			Horizontally rolling gate		
23-11 25 15 13					Anti Climb Sliding Gates			Horizontally rolling gate		
23-11 25 15 17				Swinging Gates						
23-11 25 15 19				Folding Gates						
23-11 25 17			Gate Hardware							
23-11 25 19			Fences							
23-11 25 19 11				Barbed Wire Fences						
23-11 25 19 13				Concertina Wire Fences						
23-11 25 19 15				Composite Fences						
23-11 25 19 17				Ornamental Metal Fences						
23-11 25 19 19				Chain Link Metal Fences						
23-11 25 19 21				Panel Fences						
23-11 25 19 23				Plastic Fences						
23-11 25 19 25				Post Fences						
23-11 25 19 27				Rail Fences						
23-11 25 19 29				Razor Wire Fences						
23-11 25 19 31				Wood Fences						
23-11 25 19 33				Fencing Fabrics						
23-11 25 19 35				Fencing Accessories						
23-11 25 19 35 11					Barbed Wire					
23-11 25 19 35 13					Concertina Wire					
23-11 25 19 35 15					Fence Posts					
23-11 27 00		Landscaping							horticulture - The science or art of cultivating fruits, vegetables, flowers, or ornamental plants, caring for gardens etc. Landscaping refers to any activity that modifies the visible features of an area of land, including but not limited to: # living e	When a site is prepared, the land is modified thus referring to landscaping. Horticulture is broader but doesn't seem fulfill the role of what happens when we are talking about site preparations.
23-11 27 11			Plant Maintenance and Preparation Products							
23-11 27 11 11				Topsoil						
23-11 27 11 11 11					Loam					
23-11 27 11 11 13					Peat Soil					
23-11 27 11 13				Soil Fertilizers						
23-11 27 11 15				Soil Herbicides						
23-11 27 11 15 11					Combined Soil Fertilizer and Herbicides					
23-11 27 11 17				Mulch						
23-11 27 11 19				Soil Mats						
23-11 27 11 21				Plant Netting						
23-11 27 11 23				Landscaping Stakes						
23-11 27 11 25				Landscaping Blankets						
23-11 27 11 27				Landscaping Ground Covers						
23-11 27 11 29				Landscaping Forms						Sand.
23-11 27 11 31				Landscaping Stabilizers						Sand.
23-11 27 11 33				Lime						
23-11 27 11 35				Mowing Equipment						
23-11 27 11 35 11					Lawnmowers					
23-11 27 11 35 13					Garden Tractors					
23-11 27 11 37				Pruning Equipment						
23-11 27 11 39				Watering Equipment						
23-11 27 13			Planting Accessories							
23-11 27 13 11				Landscaping Edging						
23-11 27 13 13				Landscape Timbers						
23-11 27 13 15				Landscape Stone						
23-11 27 13 15 11					Boulders					
23-11 27 13 17				Planters						
23-11 27 13 19				Tree Grates						
23-11 27 13 21				Tree Grids						
23-11 27 13 23				Tree Guards						
23-11 27 13 25				Plant Tubs						
23-11 27 15			Irrigation Equipment							
23-11 27 15 11				Irrigation Sprinklers						
23-11 27 15 11 11					Installed Sprinkler Heads					
23-11 27 15 11 13					Portable Lawn Sprinklers					
23-11 27 15 13				Irrigation Hoses						
23-11 27 15 13 11					Irrigation Weep Hoses					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-11 27 17			Lawns and Grasses							
23-11 27 17 11				Hydro Mulch						
23-11 27 17 13				Grass Plugs						
23-11 27 17 15				Grass Seeds and Soil Supplements						
23-11 27 17 17				Sod						
23-11 27 19			Plants							
23-11 27 19 11				Shrubs						
23-11 27 19 13				Trees						
23-11 27 19 15				Plants						
23-11 27 19 17				Plant Bulbs						
23-11 27 19 19				Floral Plant						
23-11 27 19 21				Non Flowering Plant						
23-11 27 21			Pond Equipment							
23-11 27 21 11				Pond Liners						
23-11 27 21 13				Pond Filters						
23-11 29 00		Site Furnishings							(Includes: Street Furniture) Permanently installed furnishings to the construction site.	
23-11 29 11			Bicycle Racks and Shelters							
23-11 29 11 11				Bicycle Racks						
23-11 29 11 13				Bicycle Shelters						
23-11 29 11 15				Bicycle Lockers						
23-11 29 13			Exterior Seating							12 93 43 precast concrete picnic tables (like the one's at McDonalds outside), yes they are permanent & outdoors. Also, recycled plastic products i.e.: permanent benches for outdoors.
23-11 29 13 11				Exterior Benches					Exterior benches are outdoor commercial grade benches that are usually permanently installed such as park benches, monument benches, etc. For Example concrete bench.	
23-11 29 13 13				Exterior Chairs					Exterior chairs are outdoor commercial grade chairs that are usually permanently installed such as park seating, monument seating, etc. For example: Concrete chair.	
23-11 29 15			Exterior Tables						Exterior tables are outdoor commercial grade tables that are usually permanently installed such as park tables, monument tables, etc. For Example concrete table.	
23-11 29 17			Patio Furniture						Patio furniture is residential grade exterior furniture that is typically not permanently installed.	
23-11 29 17 11				Patio Seating						
23-11 29 17 11 11					Patio Chairs					
23-11 29 17 11 13					Patio Benches					
23-11 29 17 11 15					Patio Chaise Lounges					
23-11 29 17 11 17					Patio Sofas					
23-11 29 17 13				Patio Tables						
23-11 29 17 13 11					Patio Dining Tables					
23-11 29 17 13 13					Patio Sofa Tables					
23-11 29 19			Exterior Trash Receptacles							
23-11 29 19 11				Exterior Wood Trash Receptacles						
23-11 29 19 13				Exterior Concrete Trash Receptacles						
23-11 29 19 15				Exterior Metal Trash Receptacles						
23-11 29 21			Exterior Specialties							
23-11 29 21 11				Sundials						
23-11 29 21 13				Garden Ornaments						
23-11 29 21 15				Bird Houses						
23-11 29 21 17				Bird Feeders						
23-11 29 21 19				Bird Baths						
23-11 29 23			Exterior Storage Structures							
23-11 29 23 11				Storage Sheds						
23-11 29 23 13				Barns						
23-11 29 25			Flagpoles							
23-11 29 25 11				Automatic Flagpoles						
23-11 29 25 13				Ground Set Flagpoles						
23-11 29 25 15				Nautical Flagpoles						
23-11 29 25 17				Wall Mounted Flagpoles						
23-11 29 27			Exterior Fountains							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-11 29 27 11				Exterior Ornamental Fountains					(See: Interior Ornamental Fountains #2590)	
23-11 29 29			Memorials and Statuary							
23-11 29 31			Monuments							
23-11 29 33			Exterior Directional Signs						See: Manufactured Exterior Specialties	
23-11 29 33 11				Finger Post Signs						
23-11 29 33 13				Street Nameplates						
23-11 29 33 15				Illuminated Directional Signs						
23-11 29 33 17				Directional Sign Markers						
23-11 29 35			Bollards						See Facility and Occupant Protection Products	
23-11 29 35 11				Active Anti Ram Bollards					Pneumatic or Hydraulic	
23-11 29 35 13				Passive Anti Ram Bollards					Embedded in concrete	
23-11 29 35 15				Architectural Bollards						
23-11 29 37			Public Lighting Columns							
23-11 31 00		Athletic and Recreational Surfaces							Exterior surfacing which can be used for athletic or recreational activities.	
23-11 31 11			Sports Field Surfacing							
23-11 31 13			Playground Surfaces							
23-13 00 00	Structural and Exterior Enclosure Products								Products used to provide the facility's structure or to enclose the facility or provide protection from the elements.	Includes exterior finishes, foundations, structural concrete products, envelop enclosure products, structural framing products, roofing products, and thermal and moisture protection.
23-13 11 00		Loose Granular Fills, Aggregates, Chips, and Fibers							Products used to level or fill an area of the site.	
23-13 11 11			Powder Fillers							
23-13 11 11 11				Mineral Powder Fillers						
23-13 11 11 13				Metal Powder Fillers						
23-13 11 11 15				Synthetic Powder Fillers						
23-13 11 11 17				Residue Powder Fillers						
23-13 11 13			Aggregates							
23-13 11 13 11				Dense Fills and Aggregates						
23-13 11 13 13				Lightweight Fills and Aggregates						
23-13 11 13 15				Heavyweight Fills and Aggregates						
23-13 11 15			Fibers and Shavings							
23-13 11 15 11				Mineral Fibers and Shavings						
23-13 11 15 13				Vegetable Fibers and Shavings						
23-13 11 15 15				Synthetic Fibers and Shavings						
23-13 11 15 17				Other Fibers and Shavings						
23-13 13 00		Binding Agents and Admixtures							Specially formulated products which modify the properties of either paint or concrete to give it certain characteristics not obtainable with plain mixes.	
23-13 13 11			Binding Agents						Portion of paint that solidifies as it dries and is able to bind the pigment.	
23-13 13 11 11				Cement						
23-13 13 11 11 11					Standard Cement					
23-13 13 11 11 13					Specialized Cement					
23-13 13 11 11 13 11						High Sulfate Resistant Cement				
23-13 13 11 11 13 13						Low Alkali Cement				
23-13 13 11 11 13 15						Low Heat Cement				
23-13 13 11 11 13 17						Alumina Cement				
23-13 13 11 13				Lime						
23-13 13 11 13 11					Hydraulic Lime					
23-13 13 11 13 13					Air Hardening Lime					
23-13 13 11 15				Bitumen Asphalt						
23-13 13 11 17				Resinous Binders						
23-13 13 11 19				Gypsum						
23-13 13 13			Cement Admixtures						Admixtures are specially formulated products that are added to concrete, mortar or grout during the mixing process in order to modify the concrete properties in the plastic and / or hardened state.	
23-13 13 13 11				Cement Plasticizing Agents						
23-13 13 13 13				Cement Water Retaining Agents						
23-13 13 13 15				Cement Air Entraining Agents						
23-13 13 13 17				Cement Gas Generating Agents						
23-13 13 13 19				Cement Setting Retarders						
23-13 13 13 21				Cement Setting Accelerators						
23-13 13 13 23				Cement Frostproofing Agents						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-13 13 13 25				Cement Waterproofing Agents						
23-13 13 13 27				Cement Coloring Agents						
23-13 13 13 29				Cement Admixtures for Injections						
23-13 13 13 31				Cement Admixtures for Projections						
23-13 13 13 33				Cement Adherence Proofing Agents						
23-13 13 13 35				Cement Bonding Agents						
23-13 13 13 37				Cement Replacements						
23-13 13 13 39				Other Cement Admixtures						
23-13 13 15			Gypsum Admixtures							
23-13 15 00		Mixtures							The assembled, blended, commingled ingredients of mortar, concrete or the like.	
23-13 15 11			Concretes							
23-13 15 11 11				Cementitious Concretes						
23-13 15 11 13				Resinous Concretes						
23-13 15 11 15				Hydrocarbon Concretes						
23-13 15 11 17				Low Density Concretes						
23-13 15 13			Mortars							
23-13 15 13 11				Portland Cement Lime Mortars				Abbreviation: PCL		
23-13 15 13 13				Masonry Cement Mortars						
23-13 15 13 15				Mortar Cements						
23-13 15 13 17				Gypsum Based Mortars						
23-13 15 13 19				Resinous Mortar						
23-13 15 13 21				Chemical Resistant Mortar						
23-13 15 13 23				Refractory Mortar						
23-13 15 13 25				Premixed Mortar						
23-13 15 13 27				Surface Bonding Mortar						
23-13 15 13 29				Mortar Pigments						
23-13 15 15			Grouts							
23-13 15 15 11				Concrete Grouts						
23-13 15 15 11 11					Shrink Resistant Concrete Grouts					
23-13 15 15 11 13					Catalyzed Metallic Concrete Grouts					
23-13 15 15 11 15					Epoxy Concrete Grouts					
23-13 15 15 11 17					Nonmetallic Concrete Grouts					
23-13 15 15 13				Masonry Grouts						
23-13 15 15 13 11					Chemical Resistant Masonry Grouts					
23-13 17 00		Profiles							Products or materials involved with supporting the structural and exterior enclosure.	
23-13 17 11			Rigid Profiles							
23-13 17 11 11				Ferrous Metal Rigid Profiles						
23-13 17 11 13				Non Ferrous Metal Rigid Profiles						
23-13 17 11 15				Wood Rigid Profiles						
23-13 17 11 15 11					Lumber Rigid Profiles					
23-13 17 11 15 11 11						Hardwood Rigid Profiles				
23-13 17 11 15 11 13						Softwood Rigid Profiles				
23-13 17 11 15 11 15						Laminated Rigid Profiles				
23-13 17 11 15 13						Non Structural Heavy Timber Rigid Profiles				
23-13 17 11 17				Plastic Rigid Profiles						
23-13 17 11 19				Composite Rigid Profiles						
23-13 17 13			Flexible Profiles							
23-13 17 13 11				Plastic Flexible Profiles						
23-13 17 13 13				Rubber Flexible Profiles						
23-13 17 13 13 11					Natural Rubber Flexible Profiles					
23-13 17 13 13 13					Butyl Flexible Profiles					
23-13 17 13 13 15					Neoprene Flexible Profiles					
23-13 17 13 13 17					Silicone Flexible Profiles					
23-13 17 13 13 19					Polysulfide Flexible Profiles					
23-13 17 15			Precast Profiles							
23-13 17 15 11				Precast Hollow Core Sheets					Prefabricated concrete slabs used to support the structure, can be used in parking garages or apartment buildings.	
23-13 17 15 13				Precast Tees					Slab with a single leg in the middle of it.	
23-13 17 15 15				Precast Double Tees					Two legs beneath a slab to span a long distance.	
23-13 17 17			Lath							
23-13 17 17 11				Gypsum Lath					See: Fixed partitions.	
23-13 17 17 13				Lead Lined Lath						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-13 17 17 15				Metal Lath						
23-13 17 17 17				Veneer Plaster Base Lath						
23-13 17 17 19				Wood Lath						
23-13 19 00		Sheets, Boards, and Slabs							Products or materials involved with supporting the structural and exterior enclosure.	
23-13 19 11			Thin Flexible Sheets						(Includes: Textiles, Mesh)	
23-13 19 11 11				Thin Sheets						
23-13 19 11 11 11					Thin Metal Sheets					
23-13 19 11 11 13					Thin Wood Sheets				(Includes: Veneers)	
23-13 19 11 11 15					Building Papers					
23-13 19 11 11 17					Thin Plastic Sheets					
23-13 19 11 11 19					Thin Rubber Sheets					
23-13 19 11 13				Textiles						
23-13 19 11 15				Mesh for General Use						
23-13 19 13			Rigid Sheets, Slabs, Plates							
23-13 19 13 11				Solid Sheets						
23-13 19 13 11 11					Solid Stone Sheets					
23-13 19 13 11 13					Solid Cementitious Sheets					
23-13 19 13 11 15					Solid Mineral Sheets				(Excludes: Cementitious Sheets)	
23-13 19 13 11 17					Solid Glass Sheets					
23-13 19 13 11 19					Solid Metal Sheets					
23-13 19 13 11 21					Solid Wood Based Sheets					
23-13 19 13 11 23					Solid Plastic Sheets					
23-13 19 13 11 25					Solid Resin Sheets					
23-13 19 13 11 27					Solid Fiberglass Sheets					
23-13 19 13 13				Hollow Core Sheets						
23-13 19 13 13 11					Wood Based Hollow Core Sheets					
23-13 19 13 13 13					Mineral Hollow Core Sheets				(Excludes: Cementitious Hollow Core Sheets)	
23-13 19 13 13 15					Metal Hollow Core Sheets					
23-13 19 13 13 17					Plastic Hollow Core Sheets					
23-13 19 15			Gratings							
23-13 19 17			Blankets, Quilts							
23-13 21 00		Blocks and Bricks							Any block or brick units involved with supporting the structural and exterior enclosure. See: Simulated Stone	
23-13 21 11			Concrete Masonry Units							
23-13 21 11 11				Concrete Blocks						
23-13 21 11 13				Exposed Aggregate Concrete Masonry Units						
23-13 21 11 15				Fluted Concrete Masonry Units						
23-13 21 11 17				Interlocking Concrete Masonry Units						
23-13 21 11 19				Molded Face Concrete Masonry Units						
23-13 21 11 21				Prefaced Concrete Masonry Units						
23-13 21 11 23				Preinsulated Concrete Masonry Units						
23-13 21 11 25				Sound Absorbing Concrete Masonry Units						
23-13 21 11 27				Split Face Concrete Masonry Units						
23-13 21 13			Calcium Silicate Masonry Units							
23-13 21 15			Glass Masonry Units							
23-13 21 17			Adobe Masonry Units							
23-13 21 19			Clay Masonry Units							
23-13 21 19 11				Common Bricks						
23-13 21 19 13				Face Bricks						
23-13 21 19 15				Fire Bricks						
23-13 21 19 17				Glazed Bricks						
23-13 21 19 19				Ceramic Glazed Clay Masonry Units						
23-13 21 19 21				Clay Tile						
23-13 21 19 23				Structural Clay Tiles						
23-13 21 19 25				Clay Flue Linings						
23-13 21 19 27				Terra Cotta Units						
23-13 21 21			Masonry Anchorage and Reinforcement							
23-13 21 21 11				Masonry Reinforcing						
23-13 21 21 11 11					Continuous Joint Reinforcing					
23-13 21 21 11 13					Reinforcing Bars					
23-13 21 21 13				Masonry Ties						
23-13 21 21 13 11					Flexible Masonry Ties					
23-13 21 21 13 13					Masonry Veneer Ties					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-13 21 21 13 15					Rigid Masonry Ties					
23-13 21 21 15				Masonry Anchors						
23-13 21 21 15 11					Masonry Veneer Anchors					
23-13 21 21 15 13					Stone Masonry Anchors					
23-13 21 23				Special Profiles for Masonry						
23-13 21 23 11				Special Masonry Shapes						
23-13 21 23 13				Masonry Sills and Thresholds						
23-13 21 23 15				Masonry Moldings						
23-13 21 23 17				Masonry Copings						
23-13 21 23 19				Masonry Quoins						
23-13 21 23 21				Masonry Cornices						
23-13 21 25				Structural Support for Masonry						
23-13 21 25 11				Lintels						
23-13 21 25 11 11					Lintel Former Units					
23-13 21 25 13				Wall Connectors and Starters						
23-13 21 25 15				Supports for Masonry						
23-13 21 25 15 11					Masonry Angles					
23-13 21 25 15 11 11						Masonry Shelf Angles				
23-13 21 25 15 13					Gussets					
23-13 21 27				Ancillary Products for Masonry						
23-13 21 27 11				Embedded Flashing						
23-13 21 27 13				Cavity Closers						
23-13 21 27 15				Cavity Weep and Ventilation Units						
23-13 21 27 15 11					Cavity Weeps					
23-13 21 27 15 13					Cavity Vents					
23-13 21 27 15 15					Cavity Drainage Material					
23-13 21 27 17				Masonry Joint Materials						
23-13 21 27 17 11					Masonry Control Joints					
23-13 21 27 17 13					Masonry Expansion Joints					
23-13 21 27 19				Airbricks						
23-13 23 00				Mechanical Fasteners, Adhesives, and Sealants					Any mechanical fasteners, adhesives and sealants involved with the structural and exterior enclosure.	
23-13 23 11				Mechanical Fasteners						
23-13 23 11 11				Cast In Anchorages						
23-13 23 11 11 11					Rail Anchors					
23-13 23 11 11 13					Screw Cases					
23-13 23 11 11 15					Anchor Blocks					
23-13 23 11 11 17					Cast In Anchorages Inserts					
23-13 23 11 11 17 11						Cast In Anchorages Inserts Adjustable Wedges				
23-13 23 11 11 17 13						Cast In Anchorages Inserts Adjustable Boxes				
23-13 23 11 11 17 15						Threaded Cast In Anchorages Inserts				
23-13 23 11 11 19					Dovetail Slots					
23-13 23 11 13				Multi Purpose Mechanical Fasteners						
23-13 23 11 13 11					Plugs					
23-13 23 11 13 13					Staples					
23-13 23 11 13 15					Nails					
23-13 23 11 13 17					Rivets					
23-13 23 11 13 19					Screws					
23-13 23 11 13 21					Bolts and Nuts					
23-13 23 11 13 23					Threaded Rods and Nuts					
23-13 23 11 13 25					Bandings					
23-13 23 11 15				Structural Mechanical Fasteners in Hardened Concrete and Masonry						
23-13 23 11 15 11					Expansion Anchors					
23-13 23 11 15 13					Undercut Anchors					
23-13 23 11 15 15					Bonded Anchors					
23-13 23 11 17				Mechanical Fasteners for Metal Structures						
23-13 23 11 19				Mechanical Fasteners for Wood Structures						
23-13 23 11 19 11					Nail Plates					
23-13 23 11 19 13					Wood Connectors					
23-13 23 11 19 15					Framing Anchors					
23-13 23 11 21				Mechanical Fasteners for Glass Structures						
23-13 23 13				Welded Joint Products						
23-13 23 13 11					Soldering Products					
23-13 23 13 13					Brazing Products					

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23-13 23 13 15				Welding Products						
23-13 23 15			Adhesives							
23-13 23 15 11				Natural Adhesives and Glues						
23-13 23 15 13				Synthetic Adhesives						
23-13 23 15 15				Sound Proofing Adhesive						
23-13 23 17			General Purpose Tape							
23-13 23 19			Joint Fillers, Sealants, and Mastics							
23-13 23 19 11				Joint Fillers						
23-13 23 19 11 11					Backer Rods					
23-13 23 19 13				Putties						
23-13 23 19 15				Construction Sealants						
23-13 23 19 15 11					Elastomeric Construction Sealants					
23-13 23 19 15 13					Rigid Construction Sealants					
23-13 23 19 15 15					Sanitary Construction Sealants					
23-13 23 19 15 17					Chemical Resistant Construction Sealants					
23-13 23 19 15 19					Water Immersed Construction Sealants					
23-13 23 19 17				Preformed Joint Seals						
23-13 23 19 17 11					Compression Seals					
23-13 23 19 17 13					Joint Gaskets					
23-13 23 21			Ropes, Wires, and Cables							
23-13 23 21 11				Ropes						
23-13 23 21 13				Wires						
23-13 23 21 15				Cables						
23-13 25 00			Thermal and Moisture Protective Products						Products which include materials used to seal the outside of the building against moisture, thermal, and air penetration.	
23-13 25 11			Fireproofing							
23-13 25 11 11				Board Fireproofing						
23-13 25 11 11 11					Calcium Silicate Board Fireproofing					
23-13 25 11 11 13					Slag Fiberboard Fireproofing					
23-13 25 11 13				Blanket Fireproofing						
23-13 25 11 13 11					Blanket Fireproofing Smoke Containment Barriers					
23-13 25 11 15				Fireproofing Coatings						
23-13 25 11 15 11					Cement Aggregate Fireproofing					
23-13 25 11 15 13					Cementitious Fireproofing					
23-13 25 11 15 15					Foamed Magnesium Oxychloride Fireproofing					
23-13 25 11 15 17					Intumescent Mastic Fireproofing					
23-13 25 11 15 19					Magnesium Cement Fireproofing					
23-13 25 11 15 21					Mineral Fiber Cementitious Fireproofing					
23-13 25 11 15 23					Miner Fiber Fireproofing					
23-13 25 13			Firestopping							
23-13 25 13 11				Penetrations Firestopping						
23-13 25 13 11 11					Annular Space Protection Firestopping					
23-13 25 13 11 13					Fire Resistant Joint Sealants					
23-13 25 13 11 15					Firestopping Foams					
23-13 25 13 11 15 11						Intumescent Firestopping Foams				
23-13 25 13 11 15 13						Silicone Firestopping Foams				
23-13 25 13 11 17					Firestopping Mortars					
23-13 25 13 11 19					Firestopping Pillows					
23-13 25 13 11 21					Firestopping Thermal Barriers for Plastics					
23-13 25 13 13				Fire Safing					(Includes: Perimeter Fire Containment)	
23-13 25 13 13 11					Fire Safing Fibrous Blankets					
23-13 25 13 13 13					Fire Safing Sealants					
23-13 25 13 13 15					Fire Safing Clip Anchors					
23-13 25 15			Dampproofings							
23-13 25 15 11				Dampproofing Membranes						
23-13 25 15 13				Dampproofing Coatings						
23-13 25 15 13 11					Bituminous Dampproofing Coatings					
23-13 25 15 13 13					Cementitious Dampproofing Coatings					
23-13 25 17			Waterproofing							
23-13 25 17 11				Built Up Bituminous Waterproofing						
23-13 25 17 13				Sheet Waterproofing						
23-13 25 17 13 11					Bituminous Sheet Waterproofing					
23-13 25 17 13 13					Elastomeric Sheet Waterproofing					
23-13 25 17 13 15					Modified Bituminous Sheet Waterproofing					

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23-13 25 17 13 17					Thermoplastic Sheet Waterproofing					
23-13 25 17 15				Fluid Applied Waterproofing						
23-13 25 17 15 11					Hot Applied Rubberized Asphalt					
23-13 25 17 17				Sheet Metal Waterproofing						
23-13 25 17 19				Cementitious and Reactive Waterproofing						
23-13 25 17 19 11					Acrylic Modified Cement Waterproofing					
23-13 25 17 19 13					Crystalline Waterproofing					
23-13 25 17 19 15					Metal Oxide Waterproofing					
23-13 25 17 21				Bentonite Waterproofing						
23-13 25 17 21 11					Bentonite Panel Waterproofing					
23-13 25 17 21 13					Bentonite Sheet Waterproofing					
23-13 25 17 23				Waterproof Traffic Coatings						
23-13 25 17 23 11					Pedestrian Waterproof Traffic Coatings					
23-13 25 17 23 13					Vehicular Waterproof Traffic Coatings					
23-13 25 19			Thermal Insulation							
23-13 25 19 11				Slab and Board Thermal Insulation						
23-13 25 19 11 11					Polystyrene Slab and Board Thermal Insulation					
23-13 25 19 11 11 11						Expanded Polystyrene Slab and Board Thermal Insulation				
23-13 25 19 11 11 13						Extruded Polystyrene Slab and Board Thermal Insulation				
23-13 25 19 11 13						Urethane Slab and Board Thermal Insulation				
23-13 25 19 11 15						Perlite Slab and Board Thermal Insulation				
23-13 25 19 11 17						Fiberglass Slab and Board Thermal Insulation				
23-13 25 19 13				Blanket Thermal Insulation					(Includes: Batts, Quilts)	
23-13 25 19 13 11					Fiberglass Blanket Thermal Insulation					
23-13 25 19 13 13					Rock Wool Blanket Thermal Insulation					
23-13 25 19 15				Thermal Insulation Coatings						
23-13 25 19 15 11					Sprayed Thermal Insulation Coatings					
23-13 25 19 15 11 11						Sprayed Cellulose Thermal Insulation Coatings				
23-13 25 19 17				Loose Fill Thermal Insulation						
23-13 25 19 17 11					Granular Fill Thermal Insulation					
23-13 25 21			Sound Isolation Insulation							
23-13 25 21 11				Slab and Board Sound Isolation Insulation						
23-13 25 21 13				Fiberglass Slab and Board Sound Isolation Insulation						
23-13 25 21 15				Blanket Sound Isolation Insulation					(Includes: Batts, Quilts)	
23-13 25 21 15 11					Fiberglass Blanket Sound Isolation Insulation					
23-13 25 21 15 13					Rock Wool Blanket Sound Isolation Insulation					
23-13 25 21 17				Sound Isolation Coatings						
23-13 25 21 19				Sound Isolation Loose Fills						
23-13 25 21 19 11					Granular Sound Isolation Loose Fills					
23-13 25 23			Damage Prevention Products						(Note: By special preventative function)	
23-13 25 23 11				Products for Prevention of Biological Damage						
23-13 25 23 11 11					Coatings for Prevention of Biological Damage					
23-13 25 23 13				Products for Prevention of Chemical Damage						
23-13 25 23 13 11					Tiles and Slabs for Prevention of Chemical Damage					
23-13 25 23 13 13					Sheets for Prevention of Chemical Damage					
23-13 25 23 13 15					Coatings for Prevention of Chemical Damage					
23-13 25 23 15				Products for Prevention of Abrasive Wear						
23-13 25 25			Air Barriers							
23-13 25 27			Vapor Barriers							
23-13 27 00			Maintenance Products and Chemicals for Construction						Maintenance products and chemicals used in the structural and exterior enclosure.	
23-13 27 11			Cleaning and Maintenance Products							
23-13 27 11 11				Cleaning Products						
23-13 27 11 13				Maintenance Products						
23-13 27 11 15				Combined Cleaning and Protection Products						
23-13 27 13			Repair Products							
23-13 27 13 11				Repair Mortars						
23-13 27 13 13				Concrete Restoration and Cleaning Products						
23-13 27 13 13 11					Concrete Cleaning Products					
23-13 27 13 13 13					Concrete Resurfacing Products					
23-13 27 13 13 15					Concrete Rehabilitation Products					
23-13 27 13 15				Masonry Restoration and Cleaning Products						
23-13 27 13 15 11					Unit Masonry Restoration Products					
23-13 27 13 15 13					Stone Restoration products					
23-13 27 13 15 15					Unit Masonry Cleaning Products					

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23-13 27 13 15 17					Stone Cleaning products					
23-13 27 13 17				Metal Restoration and Cleaning Products						
23-13 27 13 19				Wood and Plastic Restoration and Cleaning Products						
23-13 27 13 19 11					Wood Restoration and Cleaning Products					
23-13 27 13 19 13					Plastic Restoration and Cleaning Products					
23-13 27 15			Chemicals for Construction							
23-13 27 15 11				Solvents						
23-13 27 15 13				Acids						
23-13 27 15 15				Alkalis						
23-13 27 15 17				Salts						
23-13 29 00		Foundations							The entire masonry substructure below the first floor or frame of a building, including the footing upon which the building rests; the soil or rock upon which a building or other structures rests.	
23-13 29 11			Foundation Piles							
23-13 29 11 11				Foundation Pile Components						
23-13 29 11 11 11					Pile Casings (Linings)					
23-13 29 11 11 13					Cores and Mandrels					
23-13 29 11 11 15					Pile Extension Pieces					
23-13 29 11 11 17					Pile Shoes					
23-13 29 11 11 19					Pile Splices					
23-13 29 11 11 21					Pile Caps					
23-13 29 11 13				Driven Piles						
23-13 29 11 13 11					Composite Driven Piles					
23-13 29 11 13 13					Concrete Filled Steel Driven Piles					
23-13 29 11 13 15					Precast Concrete Driven Piles					
23-13 29 11 13 17					Rolled Steel Section Driven Piles					
23-13 29 11 13 19					Unfilled Tubular Steel Driven Piles					
23-13 29 11 13 21					Wood Driven Piles					
23-13 29 11 13 23					Sheet Driven Piles					
23-13 29 11 15				Screw Piles						
23-13 29 13			Caissons, Foundation Casings							
23-13 29 13 11				Well Foundation Casings						
23-13 29 13 13				Caissons						
23-13 29 15			Shallow Foundations							
23-13 29 15 11				Column Bases						
23-13 29 15 13				Grade Beams						
23-13 29 15 15				Strip Foundation Blocks						
23-13 29 17			Special Foundations							
23-13 29 17 11				Controlled Modulus Columns						
23-13 29 17 13				Other Special Foundations						
23-13 31 00		Structural Concrete Products							A special type of concrete that carries a structural load or forms an integral part of a structure.	
23-13 31 11			Structural Concrete							
23-13 31 13			Ready Mixed Concrete							
23-13 31 15			Precast Structural Concrete							
23-13 31 17			Concrete Formwork							
23-13 31 17 11				Steel Forms						
23-13 31 17 13				Prefabricated Stair Forms						
23-13 31 17 15				Concrete Form Liners						
23-13 31 17 17				Insulated Concrete Forms						
23-13 31 19			Non Formwork							
23-13 31 21			Reinforcement and Prestressing Components							
23-13 31 21 11				Reinforcement Components						
23-13 31 21 11 11					Reinforcing Steel					
23-13 31 21 11 13					Reinforcement Steel Mesh					
23-13 31 21 11 13 11						Welded Wire Fabric Reinforcing				
23-13 31 21 11 15					Fibrous Reinforcing				(Note: Steel Fibers)	
23-13 31 21 11 15 11						Steel Fibrous Reinforcing				
23-13 31 21 11 15 13						Synthetic Fibrous Reinforcing				
23-13 31 21 11 17					Reinforcement Couplers					
23-13 31 21 11 19					Reinforcement Spacers					
23-13 31 21 11 21					Reinforcement Accessories					
23-13 31 21 13				Prestressing Components						
23-13 31 21 13 11					Stressing Tendons					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples	
23-13 31 21 13 11 11						Steel Stressing Tendons					
23-13 31 21 13 11 11 11							Steel Strand Stressing Tendons				
23-13 31 21 13 11 11 13							Steel Wire Stressing Tendons				
23-13 31 21 13 11 11 15							Steel Bar Stressing Tendons				
23-13 31 21 13 11 13						Glass Fibers					
23-13 31 21 13 13					Steel Bars						
23-13 31 21 13 15					Glass Fiber Tendons						
23-13 31 21 13 17					Prestressing Couplers						
23-13 31 21 13 19					Tendon Sheathing						
23-13 31 21 13 19 11						Tendon Sheathing Ducts					
23-13 31 21 13 21						Prestressing Anchorages					
23-13 31 21 15				Post Tensioning Products							
23-13 31 21 17				Complete Reinforcement Cages							
23-13 31 21 19				Cast In Jointing							
23-13 31 21 19 11					Expansion and Contraction Joints				(Includes: Crack Inducers)		
23-13 31 21 19 13					Waterstops						
23-13 31 23				Concrete Finishing Products							
23-13 31 23 11				Stamped Concrete Finishing Products							
23-13 31 23 13				Colored Concrete Finishing Products							
23-13 33 00		Envelope Enclosure Products							Products used in the envelop enclosure of a structure.		
23-13 33 11				Sliding Glass Wall Systems							
23-13 33 13				Folding Glass Wall Systems							
23-13 33 15				Wall Exteriors							
23-13 33 15 11				Blast Resistant Wall Exteriors							
23-13 33 17				Infill Facades							
23-13 33 17 11				Exterior Wall Assemblies							
23-13 33 19				Precast Concrete Facade							
23-13 33 19 11				Cladding and Curtainwall Panels							
23-13 33 19 11 11					Opening Infill Units						
23-13 33 19 11 13					Imbedded Material Finish Mix, Tiles, Brick						
23-13 33 21				Entrances							
23-13 33 21 11				Aluminum-Framed Entrances							
23-13 33 21 11 11					Automatic Aluminum-Framed Entrances						
23-13 33 21 11 13					Revolving Door Aluminum-Framed Entrances						
23-13 33 21 11 15					Balanced Door Aluminum-Framed Entrances						
23-13 33 21 11 17					Pressure-Resistant Aluminum-Framed Entrances						
23-13 33 21 11 19					Intensive Care Unit/Critical Care Unit Aluminum-Framed Entrances						
23-13 33 21 13				Bronze-Framed Entrances							
23-13 33 21 13 11					Automatic Bronze-Framed Entrances						
23-13 33 21 13 13					Revolving Door Bronze-Framed Entrances						
23-13 33 21 13 15					Balanced Door Bronze-Framed Entrances						
23-13 33 21 13 17					Pressure-Resistant Bronze-Framed Entrances						
23-13 33 21 13 19					Intensive Care Unit/Critical Care Unit Bronze-Framed Entrances						
23-13 33 21 15				Stainless-Steel-Framed Entrances							
23-13 33 21 15 11					Automatic Stainless-Steel-Framed Entrances						
23-13 33 21 15 13					Revolving Door Stainless-Steel-Framed Entrances						
23-13 33 21 15 15					Balanced Door Stainless-Steel-Framed Entrances						
23-13 33 21 15 17					Pressure-Resistant Stainless-Steel-Framed Entrances						
23-13 33 21 15 19					Intensive Care Unit/Critical Care Unit Stainless-Steel-Framed Entrances						
23-13 33 21 17				Steel-Framed Entrances							
23-13 33 21 17 11					Automatic Steel-Framed Entrances						
23-13 33 21 17 13					Revolving Door Steel-Framed Entrances						
23-13 33 21 17 15					Balanced Door Steel-Framed Entrances						
23-13 33 21 17 17					Pressure-Resistant Steel-Framed Entrances						
23-13 33 21 17 19					Intensive Care Unit/Critical Care Unit Steel-Framed Entrances						
23-13 33 21 19				All-Glass Entrances							
23-13 33 21 19 11					Automatic All-Glass Entrances						
23-13 33 21 19 13					Revolving Door All-Glass Entrances						
23-13 33 21 19 15					Balanced Door All-Glass Entrances						
23-13 33 21 19 17					Pressure-Resistant All-Glass Entrances						
23-13 33 21 19 19					Intensive Care Unit/Critical Care Unit All-Glass Entrances						
23-13 33 23				Storefronts							
23-13 33 23 11				Aluminum-Framed Storefronts							
23-13 33 23 11 11					Automatic Aluminum-Framed Storefronts						

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23-13 33 23 11 13					Revolving Door Aluminum-Framed	Storefronts				
23-13 33 23 11 15					Balanced Door Aluminum-Framed	Storefronts				
23-13 33 23 11 17					Pressure-Resistant Aluminum-Framed	Storefronts				
23-13 33 23 11 19					Intensive Care Unit/Critical Care Unit Aluminum-Framed	Storefronts				
23-13 33 23 13				Bronze-Framed Storefronts						
23-13 33 23 13 11					Automatic Bronze-Framed	Storefronts				
23-13 33 23 13 13					Revolving Door Bronze-Framed	Storefronts				
23-13 33 23 13 15					Balanced Door Bronze-Framed	Storefronts				
23-13 33 23 13 17					Pressure-Resistant Bronze-Framed	Storefronts				
23-13 33 23 13 19					Intensive Care Unit/Critical Care Unit Bronze-Framed	Storefronts				
23-13 33 23 15				Stainless-Steel-Framed Storefronts						
23-13 33 23 15 11					Automatic Stainless-Steel-Framed	Storefronts				
23-13 33 23 15 13					Revolving Door Stainless-Steel-Framed	Storefronts				
23-13 33 23 15 15					Balanced Door Stainless-Steel-Framed	Storefronts				
23-13 33 23 15 17					Pressure-Resistant Stainless-Steel-Framed	Storefronts				
23-13 33 23 15 19					Intensive Care Unit/Critical Care Unit Stainless-Steel-Framed	Storefronts				
23-13 33 23 17				Steel-Framed Storefronts						
23-13 33 23 17 11					Automatic Steel-Framed	Storefronts				
23-13 33 23 17 13					Revolving Door Steel-Framed	Storefronts				
23-13 33 23 17 15					Balanced Door Steel-Framed	Storefronts				
23-13 33 23 17 17					Pressure-Resistant Steel-Framed	Storefronts				
23-13 33 23 17 19					Intensive Care Unit/Critical Care Unit Steel-Framed	Storefronts				
23-13 33 23 19				All-Glass Storefronts						
23-13 33 23 19 11					Automatic All-Glass	Storefronts				
23-13 33 23 19 13					Revolving Door All-Glass	Storefronts				
23-13 33 23 19 15					Balanced Door All-Glass	Storefronts				
23-13 33 23 19 17					Pressure-Resistant All-Glass	Storefronts				
23-13 33 23 19 19					Intensive Care Unit/Critical Care Unit All-Glass	Storefronts				
23-13 33 25			Precast Modules						Made up of unitized bathrooms, prison cells, stairwells, service cores	
23-13 33 27			Glazed Facade and Roof Structures							
23-13 33 27 11				Curtain Walls						
23-13 33 27 11 11					Curtain Wall Components					
23-13 33 27 11 11 11						Curtain Wall Frames				
23-13 33 27 11 11 13						Curtain Wall Sections				
23-13 33 27 11 11 15						Curtain Wall Infill Panels				
23-13 33 27 11 13					Metal Framed Curtain Wall					
23-13 33 27 11 15					Translucent Curtain Wall Assemblies					
23-13 33 27 13				Structural Glazing						
23-13 33 27 13 11					Structural Glass Curtain Walls					
23-13 33 27 15				Suspended Glazing						
23-13 33 27 17				Patent Glazing					Metal glazing-bars supporting glass without putty, employed in roofs and walls. A dry assembly system of glass and metal.	
23-13 33 27 19				Glazed Roof Structures						
23-13 33 27 19 11					Sections for Glazed Roofs					
23-13 33 27 19 13					Sloped Glazing Assemblies					
23-13 33 27 19 15					Translucent Roof Assemblies					
23-13 33 27 19 17					Translucent Wall Assemblies					
23-13 35 00		Framing Products							Products involved with the structural framing of a building.	
23-13 35 11			Structural Frames							
23-13 35 11 11				Beam Column Frames						
23-13 35 11 13				Column Slab Frames						
23-13 35 11 13 11					Columns					
23-13 35 11 13 13					Beams					
23-13 35 11 15				Portal Frames						
23-13 35 11 17				Structural Racking						
23-13 35 11 19				Structural Bearings						
23-13 35 11 19 11					Structural Roller Bearings					
23-13 35 11 19 13					Structural Slide Bearings					
23-13 35 11 19 15					Structural Rocker Bearings					
23-13 35 11 19 17					Structural Fixed Bearings					
23-13 35 11 21				Vibration and Earthquake Controls						
23-13 35 13			Non Structural Framing Products							
23-13 35 15			Space Frames							

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23-13 35 15 11				Booms Braces						
23-13 35 15 13				Couplers						
23-13 35 15 15				Complete Space Frames						
23-13 35 17			Geodesic Structures							
23-13 35 19			Rafters, Beams, and Joists							
23-13 35 19 11				Trussed Rafters						
23-13 35 19 13				Trussed Beams and Joists						
23-13 35 19 13 11					Trussed Metal Joists					
23-13 35 19 13 13					Trussed Composite Joist Assemblies					
23-13 35 19 13 15					Trussed Metal Web Wood Joists					
23-13 35 19 13 17					Wood Trusses					
23-13 35 19 13 19					Metal Trusses					
23-13 35 19 15				Web Beams and Joists						
23-13 35 19 15 11					Wood Joists					
23-13 35 19 15 13					Wood Beams					
23-13 35 19 15 15					Heavy Timber Construction					
23-13 35 19 15 17					Engineered Wood Products					
23-13 35 19 17				Precast Concrete Beams						
23-13 35 19 17 11					Precast Concrete Doubletee Beams					
23-13 35 19 17 13					Precast Concrete Hollowcore Beams					
23-13 35 19 17 15					Precast Concrete Inverted Tee Beams					
23-13 35 19 17 17					Precast Concrete Spandrel Beams					
23-13 35 21			Structural Walls							
23-13 35 21 11				Concrete Structural Walls						
23-13 35 21 13				Masonry Structural Walls						
23-13 35 21 15				Wood Framed Structural Walls						
23-13 35 21 17				Metal Framed Structural Walls						
23-13 35 21 19				Structural Panels						
23-13 35 21 19 11					Cementitious Reinforced Structural Panels					
23-13 35 21 19 13					Stressed Skin Structural Panels					
23-13 35 21 19 15					Structural Insulated Panels				(Abbreviation: SIP)	
23-13 35 21 21				Other Structural Walls						
23-13 35 23			Structural Floors and Flat Roofs							
23-13 35 23 11				Structural Floor Decks						
23-13 35 23 11 11					Concrete Structural Floor Decks					
23-13 35 23 11 13					Metal Structural Floor Decks					
23-13 35 23 11 13 11						Raceway Deck Systems				
23-13 35 23 11 13 13						Acoustical Metal Floor Decks				
23-13 35 23 11 15					Wood Structural Floor Decks					
23-13 35 23 13				Structural Roof Decks						
23-13 35 23 13 11					Concrete Structural Roof Decks					
23-13 35 23 13 13					Metal Structural Roof Decks					
23-13 35 23 13 13 11						Acoustical Metal Roof Deck				
23-13 35 23 13 15					Wood Structural Roof Decks					
23-13 35 23 15				Structural Grating Floors						
23-13 35 23 17				Balconies and Overhang Units						
23-13 35 23 17 11					Balcony Components					
23-13 35 23 17 11 11						Balcony Holders and Mechanical Fasteners				
23-13 35 23 17 13					Concrete Balconies and Overhang Units					
23-13 35 23 17 15					Metal Balconies and Overhang Units					
23-13 35 23 17 17					Wood Balconies and Overhang Units					
23-13 35 25			Structural Profiled Roofs							
23-13 35 25 11				Prefabricated Shell Roofs						
23-13 35 25 13				Simulated Stones						
23-13 37 00		Multi-Function Exterior Coverings, Claddings, Linings							Covering of the building involved in protecting the building from effects of the weather and which products may have more than one function. Cladding is siding or a non-loadbearing wall. Roofing is the material put on a roof to make it water-tight.	
23-13 37 11			Multi-Function Exterior Claddings							
23-13 37 13			Exterior Wall Cladding							
23-13 37 15			Exterior Siding							
23-13 37 15 11				Metal Exterior Siding						
23-13 37 15 13				Composition Exterior Siding						
23-13 37 15 15				Mineral Fiber Cement Exterior Siding						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-13 37 15 17				Plastic Exterior Siding						
23-13 37 15 19				Wood Exterior Siding						
23-13 37 17			Multi Function Exterior Linings							
23-13 37 17 11				Sheathing Products						
23-13 37 19			Exterior Plasters							
23-13 37 21			Preformed Exterior Casings							
23-13 37 23			Ancillary Products for Coverings and Claddings							
23-13 37 23 11				Supports for Coverings and Claddings						
23-13 37 23 13				Mechanical Fasteners for Coverings and Claddings						
23-13 37 23 15				Movement and Dividing Joints for Coverings and Claddings						
23-13 37 23 17				Joint Coverings, Flashings, Tapes						
23-13 37 23 19				Reinforcements for Coverings and Claddings						
23-13 37 23 21				Trims, Edgings, Capping						
23-13 37 23 23				Spacers						
23-13 37 23 25				Profile Fillers						
23-13 37 23 27				Underlays, Linings, Separations						
23-13 37 23 29				Beddings, Adhesives for Coverings and Claddings						
23-13 37 23 31				Sealants for Coverings and Claddings						
23-13 39 00		Roof Coverings, Claddings, Linings							Covering of the upper most part of the building involved in protecting the building from effects of the weather.	
23-13 39 11			Exterior Roof Panels							
23-13 39 11 11				Exterior Metal Roof Panels						
23-13 39 11 13				Exterior Plastic Roof Panels						
23-13 39 11 15				Exterior Wood Roof Panels						
23-13 39 11 17				Exterior Composite Roof Panels						
23-13 39 11 19				Exterior Faced Roof Panels						
23-13 39 11 21				Exterior Aggregate Coated Panels						
23-13 39 11 23				Exterior Porcelain Enameled Faced Panels						
23-13 39 11 25				Exterior Tile Faced Panels						
23-13 39 11 27				Exterior Fiber Reinforced Cementitious Panels						
23-13 39 11 29				Exterior Glass Fiber Reinforced Cementitious Panels						
23-13 39 11 31				Exterior Miner Fiber Reinforced Cementitious Panels						
23-13 39 13			Roof Underlayment							
23-13 39 15			Roof Shingles							
23-13 39 15 11				Asphalt Roof Shingles						
23-13 39 15 13				Fiberglass Reinforced Roof Shingles						
23-13 39 15 15				Metal Roof Shingles					Does not include metal roof tiles.	
23-13 39 15 17				Mineral Fiber Cement Roof Shingles						
23-13 39 15 19				Plastic Roof Shingles						
23-13 39 15 21				Porcelain Enamel Roof Shingles						
23-13 39 15 23				Wood Shingles					Does not include wood shakes.	
23-13 39 15 25				Concrete Roof Shingles						
23-13 39 17			Roof Tiles							
23-13 39 17 11				Clay Roof Tiles						
23-13 39 17 13				Concrete Roof Tiles						
23-13 39 17 15				Metal Roof Tiles						
23-13 39 17 17				Mineral Fiber Cement Roof Tiles						
23-13 39 17 19				Plastic Roof Tiles						
23-13 39 17 21				Ceramic Roof Tiles						
23-13 39 17 23				Tile Roof Mechanical Fasteners						
23-13 39 19			Natural Stone Roofing							
23-13 39 19 11				Roof Slates						
23-13 39 19 11 11					Slate Roof Mechanical Fasteners					
23-13 39 21			Shake Roofing							
23-13 39 21 11				Wood Shakes Roofing						
23-13 39 23			Flat Roofing							
23-13 39 23 11				Acoustical Metal Deck Roofing						
23-13 39 23 13				Structural Deck Roofing						
23-13 39 23 13 11					Concrete Structural Deck Roofing					
23-13 39 23 13 13					Metal Structural Deck Roofing					
23-13 39 23 15				Wood Decking Roofing						
23-13 39 25			Roof Finish Coating							
23-13 39 27			Roof Cladding							
23-13 39 27 11				Roof Cladding Sheets						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-13 39 27 11 11					Metal Roof Panels					
23-13 39 27 11 13					Sheet Metal Roofing					
23-13 39 27 13				Roof Battens Cladding					(Includes: Sarking)	
23-13 39 29			Roof Coverings							
23-13 39 29 11				Thatched Roofing						
23-13 39 29 13				Sod Roofing						
23-13 39 29 15				Vegetated Roof Covering					(Alternate Term: Green Roofs)	
23-13 39 29 15 11					Vegetated Roof Planting Modules					
23-13 39 29 17				Coated Foam Roof Covering						
23-13 39 31			Roof Membranes							
23-13 39 31 11				Single Layer Roof Membranes						
23-13 39 31 11 11					Chlorinated Polyethylene (CPE) Single Layer Roof Membranes					
23-13 39 31 11 13					Chlorosulfonated Polyethylene (CSPE) Single Layer Roof Membranes					
23-13 39 31 11 15					Copolymer Alloy (CPA) Single Layer Roof Membranes					
23-13 39 31 11 17					Elastomeric Single Layer Roof Membranes					
23-13 39 31 11 19					Ethylene Interpolymer (EIP) Single Layer Roof Membranes					
23-13 39 31 11 21					Ethylene Propylene Diene Monomer (EPDM) Single Layer Roof Membranes					
23-13 39 31 11 23					Nitrile Butadiene Polymer (NBP) Single Layer Roof Membranes					
23-13 39 31 11 25					Polyisobutylene (PIB) Single Layer Roof Membranes					
23-13 39 31 11 27					Polyvinyl chloride (PVC) Single Layer Roof Membranes					
23-13 39 31 11 29					Thermoplastic Alloy (TPA) Single Layer Roof Membranes					
23-13 39 31 11 31					Thermoplastic Single Layer Roof Membranes					
23-13 39 31 13				Multi Layer Roof Membranes						
23-13 39 31 13 11					Asphalt Multi Layer Roof Membranes					
23-13 39 31 13 13					Built Up Bituminous Multi Layer Roof Membranes					
23-13 39 31 13 15					Coal Tar Multi Layer Roof Membranes					
23-13 39 31 13 17					Cold Applied Bituminous Multi Layer Roof Membranes					
23-13 39 31 13 19					Cold Applied Mastic Multi Layer Roof Membranes					
23-13 39 31 13 21					Glass Fiber Reinforced Asphalt Emulsion Multi Layer Roof Membranes					
23-13 39 31 13 23					Modified Bituminous Multi Layer Roof Membranes			(APP, SBS, etc)		
23-13 39 31 15				Fluid Applied Roofing						
23-13 39 31 17				Coated Foam Roofing						
23-13 39 31 19				Roll Roofing						
23-13 39 33			Roof Decking						(Includes: Roof Screeds)	
23-13 39 33 11				Cementitious Deck Roofing						
23-13 39 33 11 11					Cementitious Composite Insulation Deck Roofing					
23-13 39 33 11 13					Cementitious Lightweight Cellular Deck Roofing					
23-13 39 33 11 15					Cementitious Lightweight Insulating Deck Roofing					
23-13 39 33 13				Lightweight Concrete Roofing Insulation						
23-13 39 33 13 11					Composite Concrete and Insulation Deck Roofing					
23-13 39 33 13 13					Lightweight Cellular Concrete Deck Roofing					
23-13 39 33 13 15					Lightweight Insulating Concrete Deck Roofing					
23-13 39 33 15				Concrete Deck Roofing						
23-13 39 33 15 11					Concrete Composite Insulation Deck Roofing					
23-13 39 33 15 13					Concrete Lightweight Cellular Deck Roofing					
23-13 39 33 15 15					Concrete Lightweight Insulating Deck Roofing					
23-13 39 33 17				Concrete Roof Topping						
23-13 39 35			Roof Finishing Coatings							
23-13 39 37			Renovation Products for Roof Coverings and Claddings							
23-13 41 00		Roof Specialties and Accessories							Products involved in the upper covering of the envelope of the building that are considered as either an accessory or specialty.	
23-13 41 11			Roof Edgings and Trims							
23-13 41 11 11				Roof Copings						
23-13 41 11 13				Roof Counterflashing Systems						
23-13 41 11 15				Roof Gravel Stops						
23-13 41 11 17				Roof Fascias						
23-13 41 11 19				Roof Reglets						
23-13 41 11 21				Roof Scuppers						
23-13 41 13			Roof Flashings							
23-13 41 13 11				Laminated Sheet Flexible Roof Flashings						
23-13 41 13 13				Modified Bituminous Sheet Flexible Roof Flashings						
23-13 41 13 15				Plastic Sheet Flexible Roof Flashings						
23-13 41 13 17				Rubber Sheet Flexible Roof Flashings						
23-13 41 13 19				Self Adhering Sheet Flexible Roof Flashings						

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23-13 41 13 21				Roof Vent Flashings						
23-13 41 13 23				Roof Flashing Drip Caps						
23-13 41 13 25				Roof Penetration Flashings						
23-13 41 15			Roof Expansion Joints							
23-13 41 17			Roof Vents							
23-13 41 17 11				Roof Relief Vents						
23-13 41 17 13				Roof Ridge Vents						
23-13 41 17 15				Roof Smoke Vents						
23-13 41 17 17				Gravity Roof Vents						
23-13 41 17 19				Automatic Roof Vents						
23-13 41 17 21				Fire Vents						
23-13 41 19			Roof Walkways							
23-13 41 19 11				Roof Pavers						
23-13 41 19 11 11					Precast Concrete Roof Pavers					
23-13 41 19 11 13					Pedestals Roof Pavers					
23-13 41 19 13				Roof Treads						
23-13 41 19 13 11					Rubber Roof Treads					
23-13 41 21			Roof Snow Guards							
23-13 41 23			Roof Piping Portals							
23-13 41 25			Roof Domes							
23-13 41 27			Roof Turrets							
23-13 41 29			Roof Lanterns							
23-13 41 31			Roof Curb							
23-13 41 31 11				Structural Roof Curb						
23-13 41 31 13				Acoustical Roof Curb						
23-13 41 31 15				Manufactured Roof Curbs						
23-13 41 33			Roof Gutters							
23-13 41 35			Roof Soffits							
23-13 41 37			Roof Splash Blocks							
23-13 41 39			Roof Drains							
23-13 41 39 11				Roof Downspouts						
23-13 41 39 13				Roof Drains With Strainer						
23-13 41 39 15				Roof Drains Without Strainer						
23-13 41 39 17				Eavestroughs						
23-13 41 39 17 11					Mechanical Fasteners for Downspouts					
23-13 41 39 17 13					Downspout Strainers					
23-13 41 39 19				Siphonic Roof Drains						
23-15 00 00	Interior and Finish Products								Products used inside the facility to finish surfaces and divide spaces.	Includes interior finishes such as paints ceilings, and flooring, and interior space division materials such as a gypsum board and other partitions.
23-15 11 00		Space Division Products							Products which divide spaces between the internal parts of a facility.	(Note: Non-Demountable Walls)
23-15 11 11			Fixed Partitions							
23-15 11 11 11				Gypsum Board Fixed Partitions						
23-15 11 11 11 11					Metal Framed Gypsum Board Fixed Partitions					
23-15 11 11 11 13					Wood Framed Gypsum Board Fixed Partitions					
23-15 11 11 13				Plaster Fixed Partitions						
23-15 11 11 13 11					Gypsum Plaster Fixed Partitions					
23-15 11 11 13 13					Portland Cement Plaster Fixed Partitions					
23-15 11 11 13 15					Metal Framed Plaster Fixed Partitions					
23-15 11 11 13 17					Wood Framed Plaster Fixed Partitions					
23-15 11 11 15				Masonry Fixed Partitions						
23-15 11 13			Demountable Partitions							
23-15 11 13 11				General Demountable Partitions						
23-15 11 13 11 11					Demountable Partitions Component					
23-15 11 13 11 11 11						Partition Frames				
23-15 11 13 11 11 13						Partition Infill Panels				
23-15 11 13 11 11 15						Mechanical Fasteners for Partitions				
23-15 11 13 11 11 17						Joint Fillers and Tapes				
23-15 11 13 11 13					Gypsum Board Demountable Partitions					
23-15 11 13 11 15					Metal Demountable Partitions					
23-15 11 13 11 17					Wood Demountable Partitions					
23-15 11 15			Sanitary Partitions and Cubicles							
23-15 11 15 11				Toilet Compartments and Urinal Screens						
23-15 11 15 11 11					Metal Toilet Compartment and Urinal Screens					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-15 11 15 11 13					Plastic Laminate Toilet Compartment and Urinal Screens					
23-15 11 15 11 15					Plastic Toilet Compartment and Urinal Screens					
23-15 11 15 11 17					Particleboard Toilet Compartment and Urinal Screens					
23-15 11 15 11 19					Stone Toilet Compartment and Urinal Screens					
23-15 11 15 13				Shower and Dressing Compartments						
23-15 11 15 13 11					Metal Shower and Dressing Compartments					
23-15 11 15 13 13					Plastic Laminate Shower and Dressing Compartments					
23-15 11 15 13 15					Plastic Shower and Dressing Compartments					
23-15 11 15 13 17					Particleboard Shower and Dressing Compartments					
23-15 11 15 13 19					Stone Shower and Dressing Compartments					
23-15 11 15 15				Cubicles						
23-15 11 15 15 11					Cubicle Curtains					
23-15 11 15 15 13					Cubicle Track and Hardware					
23-15 11 15 17				Storage Wall Partitions and Compartments						
23-15 11 15 17 11					Wire Mesh Partitions					
23-15 11 15 19				Modular Corridor Linings						
23-15 11 15 21				Combined Partitions and Ceilings						
23-15 11 17			Operable Partitions						(Note: Room Dividers)	
23-15 11 17 11				Horizontally Sliding Partitions						
23-15 11 17 13				Folding Panel Partitions						
23-15 11 17 15				Accordion Folding Partitions						
23-15 11 17 17				Coiling Partitions						
23-15 11 17 19				Vertically Sliding Room Dividers						
23-15 13 00			Multi-Function Interior Coverings, Claddings, Linings						Interior covering, cladding and lining products used inside the facility to finish surfaces and divide spaces that have more than one function.	
23-15 13 11			Multi Function Interior Claddings							
23-15 13 13			Interior Wall and Ceiling Cladding							
23-15 13 15			Interior Siding							
23-15 13 15 11				Metal Interior Siding						
23-15 13 15 13				Composition Interior Siding						
23-15 13 15 15				Mineral Fiber Cement Interior Siding						
23-15 13 15 17				Plastic Interior Siding						
23-15 13 15 19				Wood Interior Siding						
23-15 13 17			Multi Function Interior Linings							
23-15 13 19			Wall Panels							
23-15 13 19 11				Metal Wall Panels						
23-15 13 19 13				Plastic Wall Panels						
23-15 13 19 15				Wood Wall Panels						
23-15 13 19 17				Composite Wall Panels						
23-15 13 19 19				Faced Wall Panels						
23-15 13 19 21				Aggregate Coated Wall Panels						
23-15 13 19 23				Porcelain Enameled Faced Wall Panels						
23-15 13 19 25				Tile Faced Wall Panels						
23-15 13 19 27				Fiber Reinforced Cementitious Wall Panels						
23-15 13 19 29				Glass Fiber Reinforced Cementitious Wall Panels						
23-15 13 19 31				Miner Fiber Reinforced Cementitious Wall Panels						
23-15 13 19 33				Flexible Wood Wall Sheets						
23-15 13 19 35				Acoustical Wall Treatment						
23-15 13 21			Ceiling Panels							
23-15 13 21 11				Metal Ceiling Panels						
23-15 13 21 13				Plastic Ceiling Panels						
23-15 13 21 15				Wood Ceiling Panels						
23-15 13 21 17				Composite Ceiling Panels						
23-15 13 21 19				Faced Ceiling Panels						
23-15 13 21 21				Aggregate Coated Ceiling Panels						
23-15 13 21 23				Porcelain Enameled Faced Ceiling Panels						
23-15 13 21 25				Tile Faced Ceiling Panels						
23-15 13 21 27				Fiber Reinforced Cementitious Ceiling Panels						
23-15 13 21 29				Glass Fiber Reinforced Cementitious Ceiling Panels						
23-15 13 21 31				Miner Fiber Reinforced Cementitious Ceiling Panels						
23-15 13 21 33				Flexible Wood Ceiling Sheets						
23-15 13 21 35				Acoustical Ceiling Treatment						
23-15 13 23			Interior Plasters							
23-15 13 25			Preformed Interior Casings							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-15 15 00		Wall Coverings, Claddings, Linings							Interior covering, cladding and lining products used inside the facility to finish surfaces and divide spaces	
23-15 15 11			Wall Cladding Sections							
23-15 15 11 11				Metal Wall Cladding Sections						
23-15 15 11 13				Wood Wall Cladding Sections						
23-15 15 11 15				Plastics Wall Cladding Sections						
23-15 15 11 17				Other Wall Cladding Sections						
23-15 15 13			Wall Tiles							
23-15 15 13 11				Natural Stone Wall Tiles						
23-15 15 13 13				Reconstituted Stone Wall Tiles						
23-15 15 13 15				Cementitious Wall Tiles						
23-15 15 13 17				Clay Based Wall Tiles						
23-15 15 13 19				Metal Wall Tiles						
23-15 15 13 21				Vegetable Based Wall Tiles						
23-15 15 13 23				Plastics Wall Tiles						
23-15 15 13 25				Other Wall Tiles						
23-15 15 15			Wall Cladding Panels							
23-15 15 15 11				Wall Stone Facing						
23-15 15 15 13				Cementitious Wall Cladding Panels						
23-15 15 15 13 11					Precast Concrete Wall Cladding Panels					
23-15 15 15 15				Metal Wall Cladding Panels						
23-15 15 15 17				Wood Based Wall Cladding Panels						
23-15 15 15 19				Plastic Wall Cladding Panels						
23-15 15 15 19 11					Plastic Wall Cladding Blocks					
23-15 15 15 21				Other Wall Cladding Panels						
23-15 15 17			Wall Cladding Sheets							
23-15 15 17 11				Fiber Based Wall Cladding Sheets						
23-15 15 17 13				Metal Wall Cladding Sheets						
23-15 15 17 15				Plastic Wall Cladding Sheets						
23-15 15 17 17				Fiberglass Reinforced Panels						
23-15 15 19			Wall Coverings							
23-15 15 19 11				Wallpaper						
23-15 15 19 13				Wall Fabrics						
23-15 15 19 15				Plastic Wall Coverings						
23-15 15 19 17				Cork Wall Covering						
23-15 15 19 19				Vinyl Coated Fabric Wall Covering						
23-15 15 19 21				Vinyl Wall Covering						
23-15 15 19 23				Wall Carpet						
23-15 15 19 25				Wall Veneers						
23-15 15 21			Wall Blocks							
23-15 15 23			Wall Linings							
23-15 15 25			Wall Finish Coatings							
23-15 15 27			 Renders							
23-15 15 29			Acoustical Wall Finishes							
23-15 15 31			Wall Specialties and Trim							
23-15 15 31 11				Wall Pilasters						
23-15 15 31 13				Wall Niches						
23-15 15 31 15				Wall Moldings						
23-15 15 31 17				Renovating Wall Coverings						
23-15 15 31 19				Renovating Wall Claddings						
23-15 15 33			Wall Finish Restoration Products							
23-15 15 35			Security Wall Protection Products							
23-15 15 35 11				Blast Resistant Wall Exteriors						
23-15 15 35 13				Blast Resistant Wall Interiors						
23-15 17 00		Floor Coverings							Floor covering products used inside the facility to finish surfaces.	
23-15 17 11			Flooring Specialties and Accessories							
23-15 17 11 11				Floor Toppings						
23-15 17 11 11 11					Concrete Floor Toppings					
23-15 17 11 13				Floor Underlayments						
23-15 17 11 13 11					Cementitious Floor Underlayments					
23-15 17 11 13 11 11						Gypsum Floor Underlayments				
23-15 17 11 13 11 13						Portland Cement Floor Underlayments				
23-15 17 11 13 13					Acoustical Underlayments					
23-15 17 11 13 15					Crack Prevention Mat Underlayments					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-15 17 11 15				Floor Treatment Products						
23-15 17 11 15 11					Floor Sealers					
23-15 17 11 15 13					Floor Hardeners					
23-15 17 11 15 15					Slip Resistant Floor Treatment					
23-15 17 11 15 17					Static Resistant Floor Treatment					
23-15 17 11 15 19					Acid Resistant Floor Treatment					
23-15 17 11 17				Floor Base and Accessories						
23-15 17 11 17 11					Base and Accessories for Floor Coverings					
23-15 17 11 17 13					Acoustic Floor Mountings					
23-15 17 11 19				Floor Mats and Grilles						
23-15 17 11 19 11					Floor Mats					
23-15 17 11 19 13					Floor Grilles					
23-15 17 11 19 15					Floor Gratings					
23-15 17 11 21				Flooring Restoration Products						
23-15 17 11 21 11					Bamboo					
23-15 17 13			Floor Covering Strips, Tiles, Blocks, and Slabs							
23-15 17 13 11			Wood Flooring							
23-15 17 13 11 11					Cushioned Wood Flooring Assemblies					
23-15 17 13 11 13					Mastic Set Wood Flooring Assemblies					
23-15 17 13 11 15					Resilient Wood Flooring Assemblies					
23-15 17 13 11 17					Wood Athletic Flooring					
23-15 17 13 11 19					Wood Block Flooring					
23-15 17 13 11 21					Wood Composition Flooring					
23-15 17 13 11 23					Wood Parquet Flooring					
23-15 17 13 11 25					Wood Strip Flooring					
23-15 17 13 13				Tile Flooring						
23-15 17 13 13 11					Clay Based Flooring					
23-15 17 13 13 13					Ceramic Tile Flooring					
23-15 17 13 13 13 11						Ceramic Mosaic Tile Flooring				
23-15 17 13 13 13 13						Conductive Tile Flooring				
23-15 17 13 13 15					Quarry Tile Flooring					
23-15 17 13 13 17					Chemical Resistant Quarry Tile Flooring					
23-15 17 13 13 17 11						Porcelain Tile Flooring				
23-15 17 13 13 17 13						Glass Mosaic Tile Flooring				
23-15 17 13 13 17 15						Plastic Tile Flooring				
23-15 17 13 13 17 17						Metal Tile Flooring				
23-15 17 13 13 17 19						Natural Cut Stone Tile Flooring				
23-15 17 13 13 17 21						Tile Flooring Restoration Products				
23-15 17 13 15				Terrazzo Flooring						
23-15 17 13 15 11					Portland Cement Terrazzo Flooring					
23-15 17 13 15 13					Precast Terrazzo Flooring					
23-15 17 13 15 15					Conductive Terrazzo Flooring					
23-15 17 13 15 17					Plastic matrix Terrazzo Flooring					
23-15 17 13 15 19					Terrazzo Flooring Restoration Products					
23-15 17 13 17				Masonry Flooring						
23-15 17 13 17 11					Brick Flooring					
23-15 17 13 17 11 11						Chemical Resistant Brick Flooring				
23-15 17 13 17 13					Stone Flooring					
23-15 17 13 17 15					Other Masonry Flooring					
23-15 17 13 19				Precast Tile and Slab Flooring						
23-15 17 13 21				Metal Flooring						
23-15 17 15			Resilient Flooring							
23-15 17 15 11				Cork Flooring						
23-15 17 15 13				Plastic Flooring						
23-15 17 15 15				Rubber Flooring						
23-15 17 15 17				Linoleum Flooring						
23-15 17 15 19				Mechanical Fasteners for Resilient Floor Coverings						
23-15 17 15 19 11					Floor Clips					
23-15 17 15 19 13					Carpet Grippers					
23-15 17 15 19 15					Stair Rods					
23-15 17 15 21				Other Resilient Flooring						
23-15 17 17			Carpet Flooring							
23-15 17 17 11				Carpet Cushions						
23-15 17 17 13				Carpet Tiles						
23-15 17 17 15				Indoor Carpet Flooring						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-15 17 17 17				Outdoor Carpet Flooring						
23-15 17 17 19				Sheet Carpet Flooring						
23-15 17 19			Preformed Flooring Equipment Systems							
23-15 17 19 11				Floating Floors						
23-15 17 19 13				Portable Floors						
23-15 17 19 15				Convertible Floors						
23-15 17 19 17				Gymnasium or Dance Flooring						
23-15 17 21			Access Flooring Components							
23-15 17 21 11				Access Floor Frames						
23-15 17 21 13				Access Floor Infill Panels						
23-15 17 23			Rigid Grid Access Flooring							
23-15 17 25			Snap On Stringer Access Flooring							
23-15 17 27			Stringerless Access Flooring							
23-15 17 29			Floor Finishing Coatings							
23-15 17 29 11				Industrial Floor Coatings						
23-15 17 29 13				Fluid Applied Flooring						
23-15 17 29 13 11					Elastomeric Liquid Flooring					
23-15 17 29 13 13					Epoxy Marble Chip Flooring					
23-15 17 29 13 15					Magnesium Oxychloride Flooring					
23-15 17 29 13 17					Mastic Fills Flooring					
23-15 17 29 13 19					Resinous Flooring					
23-15 17 29 13 21					Seamless Quartz Flooring					
23-15 19 00		Ceiling Coverings, Claddings, and Linings							Ceiling coverings, claddings, and linings used inside the facility to finish surfaces.	
23-15 19 11			Ceiling Baffles							
23-15 19 13			Ceiling Clouds							
23-15 19 15			Ceiling Tiles, Panels, Strips, and Sections							
23-15 19 15 11				Ceiling Tiles						
23-15 19 15 11 11					Acoustical Ceiling Tile					
23-15 19 15 13				Ceiling Panels						
23-15 19 15 13 11					Acoustical Ceiling Panels					
23-15 19 15 13 13					Mirror Ceiling Panels					
23-15 19 15 13 15					Curved Ceiling Panels					
23-15 19 15 13 17					Metal Ceiling Panels					
23-15 19 15 15				Ceiling Covering Strips						
23-15 19 15 15 11					Linear Metal Ceiling Covering Strips					
23-15 19 15 15 13					Linear Wood Ceiling Covering Strips					
23-15 19 15 17				Ceiling Covering Sections						
23-15 19 15 17 11					Suspended Decorative Ceiling Grids					
23-15 19 17			Ceiling Finishing Coatings							
23-15 19 17 11				Textured Ceilings						
23-15 19 17 11 11					Gypsum Panel Textured Ceilings					
23-15 19 17 11 13					Metal Panel Textured Ceilings					
23-15 19 19			Ceiling Specialties and Accessories							
23-15 19 19 11				Roses Ceiling Centerpieces						
23-15 19 19 13				Ceiling Coving						
23-15 19 19 15				Ceiling Cornices						
23-15 19 19 17				Ceiling Friezes						
23-15 19 19 19				Integral Speaking Panels						
23-15 19 21			Ceiling Assembly Restoration Products							
23-15 19 23			Ceilings							
23-15 19 23 11				Suspended Ceilings						
23-15 19 23 11 11					Suspended Ceiling Components					
23-15 19 23 11 11 11						Suspended Ceilings, Suspension Assembly				
23-15 19 23 11 11 13						Suspended Ceilings, Panels and Tiles				
23-15 19 23 11 11 15						Suspended Ceilings, Grids				
23-15 19 23 11 11 17						Mechanical Fasteners for Suspended Ceilings				
23-15 19 23 11 13				Acoustical Ceilings						
23-15 19 23 11 13 11						Metal Pan Acoustical Ceilings				
23-15 19 23 11 13 13						Acoustical Panel Ceilings				
23-15 19 23 11 13 15						Acoustical Tile Ceilings				
23-15 19 23 11 15				Specialty Ceilings						
23-15 19 23 11 15 11						Integrated Ceilings				
23-15 19 23 11 15 13						Linear Ceilings				
23-15 19 23 11 15 13 11							Metal Linear Ceilings			

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-15 19 23 11 15 13 13							Wood Linear Ceilings			
23-15 19 23 11 15 15						Luminous Ceilings				
23-15 19 23 11 15 17						Mirror Panel Ceilings				
23-15 19 23 11 15 19						Textured Ceilings				
23-15 19 23 11 15 21						Suspended Decorative Grids				
23-15 19 23 11 15 23						Clean Room Ceilings				
23-15 19 23 13				Stretched Fabric Ceilings					(Includes: Tensed Ceilings)	
23-15 21 00		Surface Applied Coatings							Surface applied coating products used inside the facility to finish surfaces.	
23-15 21 11			Paints and Varnishes							
23-15 21 11 11				General Purpose Paints and Varnishes						
23-15 21 11 11 11					Solvent Based General Purpose Paints and Varnishes					
23-15 21 11 11 13					Water Based General Purpose Paints and Varnishes					
23-15 21 11 13				Textured Paints						
23-15 21 11 13 11					Solvent Based Textured Paints					
23-15 21 11 13 13					Water Based Textured Paints					
23-15 21 13				Paints for Particular Applications						
23-15 21 13 11				Corrosion Prevention Paints						
23-15 21 13 13				Solar Reflective Paints						
23-15 21 13 15				Fluorescent Paints						
23-15 21 13 17				Line Paints						
23-15 21 13 19				Roadway Marking Paints						
23-15 21 13 21				Swimming Pool Paints						
23-15 21 13 23				Coatings for Concrete and Masonry						
23-15 21 13 25				Mold/Mildew Resistant Coatings						
23-15 21 15				Powder Coating Services						
23-15 21 15 11				Factory Applied Metal Powder Coatings						
23-15 21 17				Inorganic Metal Treatments						
23-15 21 17 11				Galvanized Coatings						
23-15 21 17 13				Anodized Coatings						
23-15 21 17 15				Electro Plated Coatings						
23-15 21 17 17				Vitreous Enameling						
23-15 21 19				Stains and Decorative Surface Impregnations						
23-15 21 19 11				Decorative Wood Conservation Products						
23-15 21 19 13				Stains						
23-15 21 19 13 11					Opaque Stains					
23-15 21 19 13 11 11						Exterior Opaque Stains				
23-15 21 19 13 11 13						Interior Opaque Stains				
23-15 21 19 13 13					Transparent Stains					
23-15 21 19 13 13 11						Exterior Transparent Stains				
23-15 21 19 13 13 13						Interior Transparent Stains				
23-15 21 21				High Performance Coatings						
23-15 21 21 11				Abrasion Resistant Coatings						
23-15 21 21 13				Chemical Resistant Coatings						
23-15 21 21 15				Elastomeric Coatings						
23-15 21 21 17				Fire Resistant Coatings						
23-15 21 21 19				Graffiti Resistant Coatings						
23-15 21 21 21				High Building Coatings						
23-15 21 21 23				Intumescent Paints						
23-15 21 21 25				Marine Coatings						
23-15 21 21 27				Textured Plastic Coatings						
23-15 21 23				Protective Surface Impregnations						
23-15 21 23 11				Surface Consolidation Hardening Impregnations						
23-15 21 23 13				Impregnations Protecting from Biological Attack						
23-15 21 23 13 11					Wood Treatment Protecting from Biological Attack					
23-15 21 23 15				Impregnations Protecting from Fire						
23-15 21 23 15 11					Wood Treatment Protecting from Fire					
23-15 21 23 15 11 11						Fire Retardant Treatment				
23-15 21 23 17				Water Repellents						
23-15 21 23 17 11					Acrylic Water Repellents					
23-15 21 23 17 13					Silane Water Repellents					
23-15 21 23 17 15					Silicone Water Repellents					
23-15 21 23 17 17					Siloxane Water Repellents					
23-15 21 23 17 19					Stearate Water Repellents					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-17 00 00	Openings, Passages, and Protection Products								Products which allow for access within a facility or between a facility and the outside.	Includes products such as doors, windows, frames, fire doors, hatches, louvers, and awnings, shutters, and other protection of openings.
23-17 11 00	Doors								A hinged, pivoted or sliding member, permitting passage through a wall.	
23-17 11 11	Door Components									
23-17 11 11 11	Door Frames									
23-17 11 11 13	Preassembled Door and Frame Units									
23-17 11 11 15	Door Fanlights									
23-17 11 11 17	Door Sections									
23-17 11 11 17 11	Structural Door Sections									
23-17 11 11 17 13	Door Cladding Sections									
23-17 11 11 19	Door Linings and Boards									
23-17 11 11 21	Door Renovation Sets									
23-17 11 11 23	Door Sidelites									
23-17 11 11 25	Door Accessories									
23-17 11 11 25 11	Door Peep Holes									
23-17 11 11 25 13	Door Buffers									
23-17 11 11 25 15	Door Stops									
23-17 11 11 25 17	Door Mail Openings									
23-17 11 11 25 19	Door Mail Slots									
23-17 11 11 25 21	Door Louvers									
23-17 11 11 25 23	Door Lights									
23-17 11 13	Metal Doors									
23-17 11 13 11	Hollow Metal Doors									
23-17 11 13 13	Aluminum Doors									
23-17 11 13 13 11	Aluminum Screen Doors									
23-17 11 13 13 13	Aluminum Storm Doors									
23-17 11 13 15	Steel Doors									
23-17 11 13 15 11	Steel Screen Doors									
23-17 11 13 15 13	Steel Storm Doors									
23-17 11 13 17	Bronze Doors									
23-17 11 13 19	Sliding Metal Doors									
23-17 11 13 21	Folding Metal Doors									
23-17 11 13 23	Revolving Metal Doors									
23-17 11 13 25	Overhead Metal Doors									
23-17 11 13 25 11	Roller Shutter Overhead Metal Doors									
23-17 11 13 25 13	Sectional Overhead Metal Doors									
23-17 11 15	Wood Doors									
23-17 11 15 11	Carved Wood Doors									
23-17 11 15 13	Flush Wood Doors									
23-17 11 15 15	Clad Wood Doors									
23-17 11 15 17	Prefinished Wood Doors									
23-17 11 15 19	Stile and Rail Wood Doors									
23-17 11 15 21	Wood Storm Doors									
23-17 11 15 23	Wood Screen Doors									
23-17 11 15 25	Sliding Wood Doors									
23-17 11 15 27	Folding Wood Doors									
23-17 11 15 29	Revolving Wood Doors									
23-17 11 15 31	Overhead Wood Doors									
23-17 11 15 31 11	Roller Shutter Overhead Wood Doors									
23-17 11 15 31 13	Sectional Overhead Wood Doors									
23-17 11 17	Plastic Doors									
23-17 11 17 11	Laminated Plastic Doors									
23-17 11 17 13	Solid Plastic Doors									
23-17 11 17 15	Plastic Storm Doors									
23-17 11 17 17	Plastic Screen Doors									
23-17 11 17 19	Sliding Plastic Doors									
23-17 11 17 21	Folding Plastic Doors									
23-17 11 17 23	Revolving Plastic Doors									
23-17 11 17 25	Overhead Plastic Doors									
23-17 11 17 25 11	Roller Shutter Overhead Plastic Doors									
23-17 11 17 25 13	Sectional Overhead Plastic Doors									
23-17 11 19	Composite Doors									
23-17 11 19 11	Fiberglass Composite Doors									

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-17 11 19 13				Sliding Composite Doors						
23-17 11 19 15				Folding Composite Doors						
23-17 11 19 17				Composite Hinged Doors						
23-17 11 19 19				Revolving Composite Doors						
23-17 11 19 21				Overhead Composite Doors						
23-17 11 19 21 11							Roller Shutter Overhead Composite Doors			
23-17 11 19 21 13							Sectional Overhead Composite Doors			
23-17 11 21			Glazed Doors					Glass Doors		
23-17 11 21 11				Glazed Hinged Doors						
23-17 11 23			All Glass Doors							
23-17 11 23 11				Swinging All Glass Doors				Swing Door	Swing door is a special hinged door that allows the door to open either outwards or inwards, usually sprung to keep closed.	
23-17 11 23 13				Sliding All Glass Doors						
23-17 11 23 15				Folding All Glass Doors and Grilles						
23-17 11 23 15 11							Accordion Folding All Glass Doors			
23-17 11 23 15 13							Panel Folding All Glass Doors			
23-17 11 23 15 15							Bifold All Glass Doors			
23-17 11 23 17				Revolving All Glass Doors						
23-17 11 23 19				Balanced All Glass Doors						
23-17 11 25			Passage Grilles							
23-17 11 25 11				Sliding Passage Grilles						
23-17 11 25 13				Folding Passage Grilles						
23-17 11 25 13 11							Accordion Folding Passage Grilles			
23-17 11 25 15				Rolling Grilles						
23-17 11 27			Access Doors						A provision for access to concealed plumbing or other equipment without disturbing the wall or fixtures which usually includes frames.	
23-17 11 27 11				Trap Doors						
23-17 11 27 13				Access Doors						
23-17 11 27 15				Floor Hatches						
23-17 11 27 17				Roof Hatches						
23-17 11 27 19				Security Floor Hatches						
23-17 11 27 21				Security Roof Hatches						
23-17 11 27 21 11							Forced Entry and Ballistic Resistant Roof Hatches			
23-17 11 27 21 13							Ballistic Resistant Roof Hatches			
23-17 11 27 23				Man Hole Accesses					Manholes specifically related to equipment access such as tanks & boilers, for traditional utilities manholes, see Utility and Transportation Products.	
23-17 11 29			Access Panels							
23-17 11 29 11				Equipment Access Panels						
23-17 11 31			Fire Doors						Fire doors are doors specifically designed to withstand exposure to a fire for a minimum specified period of time.	
23-17 11 31 11				Fire Rated Doors						
23-17 11 31 11 11							Fire Rated Overhead Doors			
23-17 11 31 11 13							Fire Rated Rolling Doors			
23-17 11 31 11 15							Fire Rated Sliding Doors			
23-17 11 31 11 17							Fire Rated Hinged Doors			
23-17 11 31 11 19							Fire Rated Revolving Doors			
23-17 11 33			Temperature Rate of Rise	Temperature Rate of Rise Fire Rated Doors					Are fire doors designed to withstand exposure to a fire for a minimum specified period of time and to minimize the transmission of heat, degree Fahrenheit or Celsius, from one side of the door to the other side of the door.	
23-17 11 33 11							Temperature Rate of Rise Fire Rated Overhead Doors			
23-17 11 33 13							Temperature Rate of Rise Fire Rated Rolling Doors			
23-17 11 33 15							Temperature Rate of Rise Fire Rated Sliding Doors			
23-17 11 33 17							Temperature Rate of Rise Fire Rated Hinged Doors			
23-17 11 33 19							Temperature Rate of Rise Fire Rated Revolving Doors			
23-17 11 35			Fire Shutters							
23-17 11 37			Controlled Environment Doors							
23-17 11 37 11				Cold Storage Doors						
23-17 11 37 13				Sound Control Doors						
23-17 11 37 15				Radiation Protection Doors						
23-17 11 37 15 11							Electromagnetic Shielding Doors			
23-17 11 37 15 13							Radio Frequency Protection Doors		Used to protect people from RF radiation	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-17 11 37 15 15					BO Shielding Doors					
23-17 11 37 15 17					X Ray Protection Doors					
23-17 11 37 15 19					Nuclear Radiation Protection Doors					
23-17 11 37 15 21					High Energy Magnetic Pulse Protection Doors					
23-17 11 39			Detention Doors							
23-17 11 41			Hanger Doors							
23-17 11 43			Lightproof Doors							
23-17 11 43 11				Revolving Darkroom Door						
23-17 11 45			Traffic Doors							
23-17 11 45 11				Flexible Traffic Doors						
23-17 11 45 13				Flexible Strip Doors						
23-17 11 45 15				Rigid Panel Traffic Doors						
23-17 11 45 17				Rapid Opening Doors						
23-17 11 47			Pressure Resistant Doors							
23-17 11 47 11				Airtight Doors						
23-17 11 47 13				Watertight Doors						
23-17 11 49			Security Rated Door							
23-17 11 49 11				Blast Resistant Doors						
23-17 11 49 13				Forced Entry Door						
23-17 11 49 13 11					Multi Forced Entry Lock Door					
23-17 11 49 13 13					Single Forced Entry Lock Door					
23-17 11 49 15				Forced Entry and Ballistic Resistant Door						
23-17 11 49 17				Ballistic Resistant Door						
23-17 13 00		Windows							An opening in a wall for light and ventilation, with all its paraphernalia	
23-17 13 11			Window Components							
23-17 13 11 11				Window Sections						
23-17 13 11 13				Window Linings and Boards						
23-17 13 11 15				Window Vents						
23-17 13 11 17				Window Frames						
23-17 13 11 19				Transoms						
23-17 13 11 21				Sidelites						
23-17 13 11 23				Retractable Screens				Movable Screens	Retractable screen doors provide an attractive barrier to unwelcome insects while ensuring views are maintained, and without the nuisance of a swinging screen door.	
23-17 13 13			Metal Windows							
23-17 13 13 11				Metal Fixed Windows						
23-17 13 13 13				Metal Horizontal Sliding Windows						
23-17 13 13 15				Metal Single Hung Windows						
23-17 13 13 17				Metal Double Hung Windows						
23-17 13 13 19				Metal Triple Hung Windows						
23-17 13 13 21				Metal Awning Windows						
23-17 13 13 23				Metal Casement Windows						
23-17 13 13 25				Metal Hopper Windows						
23-17 13 13 27				Metal Vertical Pivoted Windows						
23-17 13 13 29				Metal Jalousie Windows						
23-17 13 15			Wood Windows							
23-17 13 15 11				Wood Fixed Windows						
23-17 13 15 13				Wood Horizontal Sliding Windows						
23-17 13 15 15				Wood Single Hung Windows						
23-17 13 15 17				Wood Double Hung Windows						
23-17 13 15 19				Wood Triple Hung Windows						
23-17 13 15 21				Wood Awning Windows						
23-17 13 15 23				Wood Casement Windows						
23-17 13 15 25				Wood Hopper Windows						
23-17 13 15 27				Wood Vertical Pivoted Windows						
23-17 13 15 29				Wood Jalousie Windows						
23-17 13 17			Plastic Windows							
23-17 13 17 11				Plastic Fixed Windows						
23-17 13 17 13				Plastic Horizontal Sliding Windows						
23-17 13 17 15				Plastic Single Hung Windows						
23-17 13 17 17				Plastic Double Hung Windows						
23-17 13 17 19				Plastic Triple Hung Windows						
23-17 13 17 21				Plastic Awning Windows						

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23-17 13 17 23				Plastic Casement Windows						
23-17 13 17 25				Plastic Hopper Windows						
23-17 13 17 27				Plastic Vertical Pivoted Windows						
23-17 13 17 29				Plastic Jalousie Windows						
23-17 13 17 31				Plastic Jalousie Awning Windows						
23-17 13 19			Composite Windows						includes fiberglass	
23-17 13 19 11				Composite Fixed Windows						
23-17 13 19 13				Composite Horizontal Sliding Windows						
23-17 13 19 15				Composite Single Hung Windows						
23-17 13 19 17				Composite Double Hung Windows						
23-17 13 19 19				Composite Triple Hung Windows						
23-17 13 19 21				Composite Awning Windows						
23-17 13 19 23				Composite Casement Windows						
23-17 13 19 25				Composite Hopper Windows						
23-17 13 19 27				Composite Vertical Pivoted Windows						
23-17 13 19 29				Composite Jalousie Windows						
23-17 13 19 31				Composite Jalousie Awning Windows						
23-17 13 21			Projecting Windows							
23-17 13 21 11				Bay Windows						
23-17 13 21 11 11					Angles Bay Windows					
23-17 13 21 11 13					Box Bay Windows					
23-17 13 21 13				Bow Windows						
23-17 13 23			Roof Windows						A sloped window used for daylighting, built into a roof structure that is within reach where a skylight is not within reach. See: Skylights	
23-17 13 25			Masonry Windows							
23-17 13 25 11				Glass Masonry Unit Windows						
23-17 13 27			Special Purpose Windows							
23-17 13 27 11				Fire Rated Windows						
23-17 13 27 13				Detention Windows						
23-17 13 27 15				Pass Windows						
23-17 13 27 17				Controlled Environment Windows						
23-17 13 27 17 11					Sound Control Windows					
23-17 13 27 17 13					Radiation Protection Windows					
23-17 13 27 17 13 11						Electromagnetic Shielding Windows				
23-17 13 27 17 13 13						BO Shielding Windows				
23-17 13 27 17 13 15						Radio Frequency Protection Windows				
23-17 13 27 17 13 17						X Ray Protection Windows				
23-17 13 27 17 13 19						Nuclear Radiation Protection Windows				
23-17 13 27 17 13 21						High Energy Magnetic Pulse Protection Windows				
23-17 13 29			Security Windows							
23-17 13 29 11				Ballistic Resistant Windows				Bullet Resistant Windows		
23-17 13 29 11 11					Teller Forced Entry and Ballistic Resistant Windows					
23-17 13 29 13				Blast Resistant Windows						
23-17 13 29 13 11					Blast Resistant Structural Muntin Windows					
23-17 13 29 13 13					Blast Resistant Window Frames					
23-17 13 29 15				Impact Resistant Windows				hurricane windows, coastal windows		
23-17 13 29 17				Forced Entry Resistant Windows						
23-17 13 29 19				Radio Frequency Shielding Windows						
23-17 13 29 21				Security Window Films						
23-17 13 29 21 11					Shatter Resistant Security Window Films					
23-17 13 29 23				Security Window Curtains						
23-17 13 29 23 11					Security Window Blast Curtains					
23-17 15 00		Glazing							Wiki: Glazing is a transparent part of a wall, usually made of glass or plastic (acrylic and polycarbonate). Glazing also describes the work done by a professional "glazier". Common types of glazing used in architectural applications include clear and tinted.	
23-17 15 11			Glass Glazing							
23-17 15 11 11				Bent Glass						
23-17 15 11 13				Chemically Strengthened Glass						
23-17 15 11 15				Coated Glass						
23-17 15 11 17				Composite Glass						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-17 15 11 19				Decorative Glass						
23-17 15 11 21				Fire Rated Glass						
23-17 15 11 23				Float Glass						
23-17 15 11 25				Heat Strengthened Glass						
23-17 15 11 27				Impact Resistant Glass						
23-17 15 11 29				Insulating Glass						
23-17 15 11 31				Laminated Glass						
23-17 15 11 33				Low Emissivity Glass						
23-17 15 11 35				Rolled Glass						
23-17 15 11 37				Spandrel Glass						
23-17 15 11 39				Tempered Glass						
23-17 15 11 41				Wired Glass						
23-17 15 13			Plastic Glazing							
23-17 15 13 11				Ballistics Resistant Plastic Glazing						
23-17 15 13 13				Decorative Plastic Glazing						
23-17 15 13 15				Insulating Plastic Glazing						
23-17 15 13 17				Translucent Plastic Glazing						
23-17 15 13 19				Transparent Plastic Glazing						
23-17 15 15			Security Glass							
23-17 15 15 11				Laminated Security Glass						
23-17 15 17			Tinted Glass							
23-17 15 19			Glazing by Special Function							
23-17 15 19 11				Security Glazing						
23-17 15 19 13				Ballistics Resistant Glass Glazing						
23-17 15 19 15				Pressure Resistant Glazing						
23-17 15 19 17				Hurricane Resistant Glazing						
23-17 15 19 19				Radiation Resistant Glazing						
23-17 15 19 21				Switchable Privacy Glass						
23-17 15 21			Glazing Components							
23-17 15 21 11				Glazing Frames						
23-17 15 21 13				Glazing Sections						
23-17 15 21 15				Mechanical Glazing Fasteners						
23-17 15 23			Glazing Accessories							
23-17 15 23 11				Glazing Beads						
23-17 15 23 13				Condensation Channels						
23-17 15 23 15				Glazing Sealants and Tapes						
23-17 15 23 17				Glazing Gaskets						
23-17 15 23 19				Glazing Leading Material						
23-17 15 25			Protective Films							
23-17 15 25 11				Solar Control Films						
23-17 15 25 13				Safety Films						
23-17 15 25 15				Security Films						
23-17 15 25 17				Decorative Films						
23-17 17 00		Skylights						Rooflights	An opening in a roof or ceiling for admitting daylight. Includes: Rooflights	
23-17 17 11			Skylight Components							
23-17 17 11 11				Skylight Hardware						
23-17 17 13			Unit Skylights							Note: Individual Units
23-17 17 13 11				Domed Unit Skylights						
23-17 17 13 13				Pyramidal Unit Skylights						
23-17 17 13 15				Vaulted Unit Skylights						
23-17 17 13 17				Single Slope Unit Skylights						
23-17 17 13 19				Octagonal Unit Skylights						
23-17 17 13 21				Tubular Skylights						
23-17 17 15			Metal Framed Skylights							
23-17 17 15 11				Domed Metal Framed Skylights						
23-17 17 15 13				Pyramidal Metal Framed Skylights						
23-17 17 15 15				Ridge Metal Framed Skylights						
23-17 17 15 17				Vaulted Metal Framed Skylights						
23-17 17 15 19				Single Slope Metal Framed Skylights						
23-17 17 15 21				Octagonal Metal Framed Skylights						
23-17 19 00		Hardware for Openings								Metal fittings permanently incorporated in a building as adjuncts to products in openings.
23-17 19 11			Hardware for Doors							
23-17 19 11 11				Rotation, Pivoting Door Gear						

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23-17 19 11 13				Sliding Door Gear						
23-17 19 11 15				Door Guiding Hardware						
23-17 19 11 17				Door Holding Hardware						
23-17 19 11 17 11					Door Hold Open Hardware					
23-17 19 11 19				Door Closing Hardware						
23-17 19 11 19 11					Door Closers					
23-17 19 11 19 11 11						Manual Floor Door Closers				
23-17 19 11 19 11 13						Manual Surface Door Closers				
23-17 19 11 19 11 15						Manual Concealed Overhead Door Closers				
23-17 19 11 19 11 17						Power Operator Floor Door Closers				
23-17 19 11 19 11 19						Power Operator Surface Door Closers				
23-17 19 11 19 11 21						Power Operator Concealed Overhead Door Closers				
23-17 19 11 21				Door Barrier Locks						
23-17 19 11 21 11					Door Deadbolt Locks					
23-17 19 11 21 13					Door Chains					
23-17 19 11 21 15					Door Electric Strike Locks					
23-17 19 11 21 17					Door Electromagnetic Locks					
23-17 19 11 21 17 11						Door Time Locks				
23-17 19 11 21 17 13						Door Time Delay Combination Locks				
23-17 19 11 21 19					Door Latches					
23-17 19 11 21 21					Door Mortise Locks					
23-17 19 11 21 21 11						Door Electric Mortise Locks				
23-17 19 11 21 21 13						Door Electronic Mortise Locks				
23-17 19 11 21 23					Door Pin Tumbler Locks			Key Lock		
23-17 19 11 21 23 11						Door Tubular Pin Tumbler Locks		Key Lock		
23-17 19 11 21 25					Door Flush Bolts					
23-17 19 11 23				Door Cores						
23-17 19 11 25				Door Cylinders						
23-17 19 11 27				Door Key Control Systems						
23-17 19 11 29				Personnel Door Access						
23-17 19 11 29 11					Door Position Switches					
23-17 19 11 29 13					Door Emergency Exit Panic Bars			Crash Bar, Exit Device		
23-17 19 11 29 15					Door End of Line Devices			Line supervision		
23-17 19 11 29 17					Door Request to Exit Switches					
23-17 19 11 29 19					Personnel Access Door Keypads					
23-17 19 11 29 19 11						Door Infrared Request to Exit Switches		Passive Infrared Detector RQE		
23-17 19 11 31				Automatic Door Controls and Operators						
23-17 19 11 31 11					Card Key Door Locking Hardware					
23-17 19 11 31 13					Electrical Door Locking Control					
23-17 19 11 31 15					Electromagnetic Door Holders					
23-17 19 11 31 17					Sensors for Automatic Doors					
23-17 19 11 33				Door Exiting Hardware						
23-17 19 13				Hardware for Windows						
23-17 19 13 11				Sliding Window Gear						
23-17 19 13 11 11					Horizontal Sliding Window Gear					
23-17 19 13 11 13					Vertical Sliding Window Gear					
23-17 19 13 13				Horizontal Pivoting Window Gear						
23-17 19 13 15				Window Tilt and Turn Gear						
23-17 19 13 17				Louwer Gear						
23-17 19 13 19				Automatic Window Equipment						
23-17 19 13 21				Window Barrier Locks						
23-17 19 13 21 11					Window Deadbolt Locks					
23-17 19 13 21 13					Window Latches					
23-17 19 13 21 15					Window Mortise Locks					
23-17 19 13 21 17					Window Flush Bolts					
23-17 19 13 23				Window Lifts						
23-17 19 13 25				Window Operators						
23-17 19 13 25 11					Manual Surface Window Closers					
23-17 19 13 25 13					Manual Concealed Overhead Window Closers					
23-17 19 13 25 15					Power Operator Surface Window Closers					
23-17 19 13 25 17					Power Operator Concealed Overhead Window Closers					
23-17 19 15				Weatherstripping and Seals						
23-17 19 15 11				Door Weatherstripping and Seals						
23-17 19 15 11 11					Acoustic Seals					

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23-17 19 15 11 13					Astragals					
23-17 19 15 11 15					Perimeter Gasketing					
23-17 19 15 13				Thresholds						
23-17 19 15 15				Window Weatherstripping and Seals						
23-17 19 17				Other Openings Hardware						
23-17 19 17 11				Door Stops						
23-17 21 00		Protection of Openings							Any product which assists in the protection of the opening.	
23-17 21 11			Exterior Protection of Openings							
23-17 21 11 11				Projecting Screens						
23-17 21 11 11 11					Solid Canopies					
23-17 21 11 11 13					Louvered Canopies					
23-17 21 11 11 15					Solid Vertical Fins					
23-17 21 11 11 17					Louvered Vertical Fins					
23-17 21 11 11 19					Manual Awnings					
23-17 21 11 11 21					Powered Awnings					
23-17 21 11 13				Exterior Shutters						
23-17 21 11 13 11					Folding Exterior Shutters					
23-17 21 11 13 13					Shutter Components					
23-17 21 11 13 13 11						Roller Shutter Gear				
23-17 21 11 13 13 13						Roller Shutter Sections				
23-17 21 11 13 13 15						Roller Shutter Casings				
23-17 21 11 13 15					Sliding Exterior Shutters					
23-17 21 11 13 17					Swinging Exterior Shutters					
23-17 21 11 13 19					Coiling Exterior Shutters					
23-17 21 11 15				Exterior Louvers and Grilles						
23-17 21 11 15 11					Fixed Exterior Louvers and Grilles					
23-17 21 11 15 13					Roller Exterior Louvers and Grilles					
23-17 21 11 15 15					Sliding Exterior Louvers and Grilles					
23-17 21 11 17				Storm Panels						
23-17 21 11 17 11					Demountable Storm Panels					
23-17 21 11 17 13					Movable Storm Panels					
23-17 21 13			Interior Window Treatment							
23-17 21 13 11				Window Blinds						
23-17 21 13 11 11					Horizontal Window Blinds					
23-17 21 13 11 13					Vertical Window Blinds					
23-17 21 13 11 15					Window Blind Components					
23-17 21 13 11 15 11						Window Slats				
23-17 21 13 11 15 13						Window Vanes				
23-17 21 13 11 15 15						Blinds Hardware			Includes motorized controls.	
23-17 21 13 13				Curtains and Drapes						
23-17 21 13 13 11					Drapery Tracks					
23-17 21 13 15				Window Interior Shutters						
23-17 21 13 17				Window Shades						
23-17 21 13 17 11					Cellular/Pleated Shades					
23-17 21 13 17 13					Roller Shades					
23-17 21 15			Fire and Smoke Shutters and Curtains							
23-17 21 15 11				Fire Shutters						
23-17 21 15 11 11					Vertical Fire Shutters					
23-17 21 15 11 13					Horizontal Fire Shutters					
23-17 21 15 13				Smoke Curtains						
23-17 21 15 13 11					Water Spray Smoke Curtains					
23-17 21 15 15				Smoke Shutters						
23-17 21 17			Insect Screens							
23-17 21 17 11				Complete Insect Screens						
23-17 21 17 13				Components						
23-17 21 17 13 11					Frames for Insect Screens					
23-17 21 17 13 13					Mesh for Insect Screens					
23-17 23 00		Circulation and Escape Products							Products which aid in the circulation or escape of occupants from the facility.	
23-17 23 11			Ramps							
23-17 23 13			Walkways							
23-17 23 15			Ladders							
23-17 23 15 11				Ladder Component Products						
23-17 23 15 11 11					Ladder Hardware					
23-17 23 15 11 13					Rungs					

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23-17 23 15 13				Vertical Ladders							
23-17 23 15 15				Ship Ladders							
23-17 23 17			Stairs								
23-17 23 17 11				Stair Component Products							
23-17 23 17 11 11					Stair Treads						
23-17 23 17 11 13					Stair Nosings						
23-17 23 17 11 15					Stair Tread Coverings						
23-17 23 17 11 17					Stair Railings						
23-17 23 17 11 19					Stair Handrails						
23-17 23 17 11 21					Stair Barrier Gates						
23-17 23 17 13				Spiral Stairs							
23-17 23 17 13 11					Metal Spiral Stairs						
23-17 23 17 13 13					Wood Spiral Stairs						
23-17 23 17 15				Retractable Stairs							
23-17 23 19			Fire Escapes								
23-17 23 19 11				Escape Ladders, Stairs							
23-17 23 19 11 11					Fire Escapes						
23-17 23 19 13				Escape Slides							
23-17 23 21			Evacuation Equipment								
23-17 23 21 11				Evacuation Slings							
23-17 23 21 13				Evacuation Chairs							
23-17 25 00			Circulation Guiding and Protection Products							Products which guide occupants in the circulation or escape from the facility.	
23-17 25 11			Guardrails					Railings, Balustrades	Includes: Railings and Balustrades		
23-17 25 11 11				Guardrail Component Products							
23-17 25 11 11 11					Cable Infill Systems						
23-17 25 11 11 13					Infill Panels						
23-17 25 11 11 15					Posts, Newel Posts, Pickets						
23-17 25 11 11 17					Railing						
23-17 25 13			Handrails								
23-17 25 13 11				Rope Handrails							
23-17 25 13 13				Capping							
23-17 25 13 15				Chain Handrails							
23-17 25 15			Impact Protection Products								
23-17 25 15 11				Impact Guard Rails							
23-17 25 15 11 11					Bumper Guards						
23-17 25 15 13				Corner Guards							
23-17 25 15 15				Column Protectors							
23-17 25 15 17				Door and Wall Protector Products							
23-17 25 15 17 11					Impact Resistant Wall Protection Products						
23-19 00 00		Specialty Products							Architectural and other accessories and ornamentation used on the exterior and interior of the facility, and other miscellaneous products.	Includes steeples, spires, lockers, fireplaces, stoves, flagpoles, scales, specialty bathroom products, and engineered structures.	
23-19 11 00		Information Display Specialties							Specialties which display information.		
23-19 11 11			Information Signs								
23-19 11 13			Display Lettering								
23-19 11 15			Display Numerals								
23-19 11 17			Notice Boards					Bulletin Board, Pin Board			
23-19 11 19			Writing Boards								
23-19 11 19 11				Interactive Multi Media Whiteboards							
23-19 11 19 13				Chalk Boards							
23-19 11 19 15				Dry Erase Boards							
23-19 11 19 17				Drawing Boards							
23-19 11 21			Plaques								
23-19 11 23			Poster Display Units								
23-19 11 25			Display Screens								
23-19 11 27			Pictograms								
23-19 11 29			Directory Boards								
23-19 11 31			Electronic Copy Boards								
23-19 11 33			Magnetic Boards								
23-19 13 00		Lockers									
23-19 13 11			Metal Lockers								
23-19 13 13			Plastic Laminate Lockers								

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23-19 13 15			Solid Core Lockers							
23-19 15 00		Communication Specialties							Specialties aiding in communication.	
23-19 15 11			Mail Boxes						See: Manufactured Exterior Specialties	
23-19 15 13			Mail Racks							
23-19 15 15			Pigeonholes							
23-19 15 17			Mail Trolleys							
23-19 15 19			Mail Handling Equipment							
23-19 15 21			Telephone Booths							
23-19 17 00		Fireplaces							An opening on a hearth, served by a chimney flue, where an open fire may be placed.	
23-19 17 11			Electric Fireplace							
23-19 17 13			Fuel Oil Fireplace							
23-19 17 15			Gas Fireplace							
23-19 17 17			Solid Fuel Fireplace					Wood Fireplace, Charcoal Fireplace	Includes wood, charcoal, and pellet.	
23-19 17 19			Fireplace Doors							
23-19 17 21			Fireplace Water Heaters							
23-19 19 00		Flue and Chimney Products								
23-19 19 11			Complete Flue and Chimney Systems						Residential and Commercial Fireplaces only - Industrial smoke stacks to be found in Utility and Transportation Products	
23-19 19 11 11				Chimney Gas Vents						
23-19 19 11 13				Fabricated Stacks						
23-19 19 11 15				Fabricated Breechings and Accessories						
23-19 19 11 17				Insulated Sectional Chimneys						
23-19 19 13			Fireplace Ductwork							
23-19 19 13 11				Fireplace B Vent Ductwork						
23-19 19 13 13				Fireplace Direct Vent Ductwork						
23-19 19 13 15				Fireplace Free Vent Ductwork						
23-19 19 13 17				Fireplace Tri Wall Vent Ductwork						
23-19 19 13 19				Fireplace Dampers						
23-19 19 15			Flue and Chimney Systems Components							
23-19 19 15 11				Draft Control Devices						
23-19 19 15 13				Fireplace Lintels						
23-19 19 15 15				Flue Linings						
23-19 19 15 17				Flue Caps						
23-19 19 15 19				Flue Cowls						
23-19 19 15 21				Chimney Dampers						
23-19 19 15 23				Fire Shutter Extinguishers						
23-19 19 15 25				Flue Gas Purifiers						
23-19 21 00		Hearths							The floor of a fireplace; also the portion of the floor immediately in front of the fireplace, which can be made of brick, tile or stone.	
23-19 23 00		Kilns							A furnace or oven for drying, charring, hardening, baking, calcining, sintering, or burning various materials or a chamber used for drying lumber.	
23-19 25 00		Pest Control Devices								
23-19 25 11			Bird Control Devices							
23-19 25 11 11				Roost Inhibitors						
23-19 25 11 11 11					Bird Wire					
23-19 25 11 11 13					Bird Spikes					
23-19 25 11 11 15					Bird Netting					
23-19 25 11 13				Bird Flight Diverters						
23-19 25 11 15				Bird Repellant Devices						
23-19 25 11 15 11					Sonic Repellant Devices					
23-19 25 11 15 13					Ultra Sonic Repellant Devices					
23-19 25 11 15 15					Visual Devices					
23-19 25 11 17				Bird Attractors						
23-19 25 11 19				Bird Control Accessories						
23-19 25 11 19 11					Mounting Clips					
23-19 25 11 19 13					Extension Speakers				Extends sound for best utilization of audio products.	
23-19 25 11 19 15					Solar Panels				Constantly charges a repeller's battery.	
23-19 25 11 19 17					Spikes Adhesives					
23-19 25 11 19 19					Foot Pumps				for inflating balloon (visual) devices	
23-19 25 11 19 21					Caulking Guns					

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23-19 25 13			Insect Control Devices							
23-19 25 13 11				Electronic Insect Repellers						
23-19 25 13 11 11					Automatic Misting Systems					
23-19 25 13 11 13					Vacuum System s					
23-19 25 13 11 15					Sonic Repellers					
23-19 25 13 11 17					Ultrasonic Repellers					
23-19 25 13 11 19					Electromagnetic Repellers					
23-19 25 13 13				Fly Traps						
23-19 25 13 15				Screens						
23-19 25 13 17				Foam Sealants						
23-19 25 13 19				Fly Boards						
23-19 25 13 21				Insect Control Accessories						
23-19 25 13 21 11					Nozzles					
23-19 25 13 21 13					Tubing					
23-19 25 13 21 15					Risers					
23-19 25 13 21 17					Fittings					
23-19 25 13 21 19					Remote Controls					
23-19 25 15			Rodent Control Devices							
23-19 25 15 11				Traps						
23-19 25 15 11 11					Snap Traps					
23-19 25 15 11 13					Glue Traps					
23-19 25 15 11 15					Sticky Traps					
23-19 25 15 11 17					Electronic Traps					
23-19 25 15 13				Ultrasonic Rodent Control Devices						
23-19 25 15 15				Electronic Rodent Control Devices						
23-19 25 15 17				Proofing Devices						
23-19 25 15 19				Tracking Products						
23-19 25 15 21				Spray Devices						
23-19 25 15 23				Rodent Control Accessories						
23-19 27 00		Manufactured Exterior Specialties							Exterior specialties which are manufactured before they are delivered to the site. See also: Mail Boxes, Exterior Directional Signs	
23-19 27 11			Weathervanes							
23-19 27 13			Clocks							
23-19 27 15			Cupolas							
23-19 27 17			Spires							
23-19 27 19			Steeples							
23-19 27 21			Towers							
23-19 27 23			Industrial Breechings							
23-19 27 23 11				Industrial Breechings						
23-19 27 23 13				Fabricated Industrial Breechings						
23-19 27 23 15				Fabricated Industrial Breechings Accessories						
23-19 27 25			Industrial Chimneys							
23-19 27 25 11				Industrial Chimney Shafts						
23-19 27 25 13				Industrial Chimney Linings						
23-19 27 25 15				Industrial Chimney Draft Control Devices						
23-19 27 25 17				Industrial Insulated Sectional Chimneys						
23-19 27 27			Industrial Stacks							
23-19 29 00		Complete Buildings							Buildings prefabricated and ready for incorporation into the site.	
23-19 29 11			Pre Engineered Structures					Systems Buildings		Includes: Systems Buildings
23-19 29 11 11				Pre Engineered Structure Component						
23-19 29 11 11 11					Lift Shaft Components					
23-19 29 11 13				Framed Pre Engineered Buildings						
23-19 29 11 15				Panel Structure Pre Engineered Buildings						
23-19 29 11 17				Cubicle Structure Pre Engineered Buildings						
23-19 29 11 19				Air Supported Pre Engineered Buildings						
23-19 29 11 21				Cable Supported Pre Engineered Buildings						
23-19 29 11 23				Fabric Pre Engineered Building Structures						
23-19 29 11 25				Prefabricated Dome Structures						
23-19 29 11 27				Portable Buildings					Portable buildings are buildings that can be moved by man power.	
23-19 29 11 29				Mobile Buildings					Mobile structures are buildings that require a vehicle to move.	
23-19 29 13			Covers and Shelters						Items which are prefabricated and complete building products, not adjunct to a building.	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-19 29 13 11				General Purpose Shelters						
23-19 29 13 13				Shelters for Public Transport						
23-19 29 13 13 11					Bus Stop Shelters					
23-19 29 13 13 13					Train Platform Shelters					
23-19 29 13 15				Walkway Coverings						
23-19 29 13 17				Shelters for Civil Protection						
23-19 29 13 19				Animal Shelters						
23-19 29 13 19 11					Kennels					
23-19 29 13 21				Car Shelters				Carport		
23-19 29 13 23				Shelters for Services						
23-19 29 13 25				Garden Umbrellas						
23-19 29 15				Special Purpose Buildings						
23-19 29 15 11				Observatories						
23-19 29 15 13				Control Booths						
23-19 29 15 15				Greenhouses						
23-19 29 15 15 11					Glazed Greenhouse Structures					
23-19 29 15 17				Summerhouses						
23-19 29 15 17 11					Gazebos					
23-19 29 15 17 13					Pavilions					
23-19 29 15 19				Kiosks						
23-19 29 15 21				Public Restrooms						
23-19 29 15 23				Sauna Buildings						
23-19 29 15 25				Funerary Construction Products						
23-19 29 15 25 11					Preassembled Mausoleums					
23-19 29 15 27				General Purpose Booths						See also: 23-19 31 21 11 Plant Office Shelter and Booth
23-19 29 15 27 11					Ticket Booths					
23-19 29 15 27 13					Parking Attendant Booths					
23-19 29 15 27 15					Toll Booths					
23-19 29 15 27 17					Guard Booths					
23-19 29 15 27 19					Valet Booths					
23-19 29 17				Building Modules						
23-19 29 17 11				Prison Cells						
23-19 29 17 13				Hotel Rooms						
23-19 29 17 15				Dormitory Rooms						
23-19 29 19				Integrated Assemblies						
23-19 29 19 11				Sound, Vibration and Seismic Control Products						
23-19 29 19 11 11					Floating Floor Construction Products					
23-19 31 00		Room Units								Prefabricated rooms ready for placement on or into the site.
23-19 31 11				General Purpose Room Units						
23-19 31 11 11				Prefabricated General Purpose Rooms						
23-19 31 13				Storage Room Units						
23-19 31 15				Special Purpose Rooms						
23-19 31 15 11				Athletic Rooms						
23-19 31 15 11 11					Handball Racquetball Courts					
23-19 31 15 13				Conservatories				Solarium		
23-19 31 15 13 11					Solarium Specialties					
23-19 31 15 15				Planetariums						
23-19 31 15 17				Saunas						
23-19 31 15 19				Steam Baths						
23-19 31 17				Sanitary Room Units						
23-19 31 17 11				Bathroom Units						
23-19 31 17 13				Lavatory Units						
23-19 31 19				Controlled Environment Rooms						
23-19 31 19 11				Clean Rooms						
23-19 31 19 13				Insulated Rooms						
23-19 31 19 13 11					Cold Storage Rooms					
23-19 31 19 15				Sound Conditioned Rooms						
23-19 31 19 15 11					Practice Booths					
23-19 31 19 17				Hyperbaric Rooms						
23-19 31 19 19				Radiation Protected Rooms						
23-19 31 19 19 11					Electromagnetic Shielded Rooms					
23-19 31 19 19 13					RF Shielded Rooms					
23-19 31 19 19 15					BO Shielded Rooms					
23-19 31 19 19 17					Radio Frequency Protected Rooms					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-19 31 19 19 19					X Ray Protected Rooms					
23-19 31 19 19 21					Nuclear Radiation Protected Rooms					
23-19 31 19 19 23					High Energy Magnetic Pulse Protected Rooms					
23-19 31 21				Plant and Control Room Units						
23-19 31 21 11				Plant Office Shelters and Booths						See also: 23-19 29 15 27 General Purpose Booths
23-19 31 23				Corridor Units						
Furnishings, Fixtures and Equipment Products										
23-21 00 00									Amenities and other products that enable the use and enjoyment of the facility, both interior and exterior.	Includes recreational and fitness equipment, art, playground equipment, pools, potted plants, furniture, and food service and other light duty equipment. Does not include industrial equipment.
23-21 11 00				Commercial Furniture					Equipment for inhabited interiors and outlying spaces such as tables, chairs, beds and desks used at the commercial level.	
23-21 11 11				Commercial Storage Units						
23-21 11 11 11				Commercial Storage Shelves						
23-21 11 11 13				Commercial Storage Supports						
23-21 11 11 15				Commercial Storage Racking						
23-21 11 11 17				Commercial Mobile Storage Units						
23-21 11 11 19				Commercial Filing Cabinets						
23-21 11 11 21				Architecture Plan Chests				Architecture Map Chest		
23-21 11 11 23				Commercial Desks						
23-21 11 11 25				Commercial Bookcases						
23-21 11 11 27				Commercial Key Hangers						
23-21 13 00				Retail and Office Equipment and Furnishings					Equipment for inhabited interiors such as desks, cash registers and file cabinets used in offices and retail spaces.	
23-21 13 11				Registration Equipment						
23-21 13 13				Checkroom Equipment						
23-21 13 15				Mercantile Equipment and Furnishings						
23-21 13 17				Barber Shop Equipment						
23-21 13 19				Beauty Shop Equipment						
23-21 13 21				Cash Registers						
23-21 13 23				Checkout Equipment						
23-21 13 25				Office Equipment						
23-21 13 25 11				Drafting Equipment						
23-21 13 25 13				Plotters						
23-21 13 25 15				Drawing Equipment						
23-21 13 25 17				Office Accessories						
23-21 15 00				Wardrobe and Closet Specialties					Equipment for inhabited interiors and having to do with wardrobes and closets such as coat racks and shelving units.	
23-21 15 11				Wardrobes						
23-21 15 13				Chests of Drawers						
23-21 15 15				Clothing Lockers						
23-21 15 17				Clothing Racks						
23-21 15 17 11				Coat Racks						
23-21 15 17 13				Hat Racks						
23-21 15 19				Clothing Hangers						
23-21 15 19 11				Shoe Trees						
23-21 15 19 13				Coat Hooks						
23-21 15 19 15				Coat Hangers						
23-21 15 19 17				Coat Rails						
23-21 15 21				Cloakroom Units						
23-21 15 23				Umbrella Storage Stands						
23-21 15 25				Checkroom Equipment						
23-21 15 25 11				Manual Checkroom Equipment						
23-21 15 25 13				Automated Checkroom Equipment						
23-21 15 27				Clothing Shelving Units						
23-21 15 27 11				Clothing Shelves						
23-21 15 27 13				Clothing Shelving and Storage Units						
23-21 17 00				Interior Refuse Disposal Furniture					Furniture which aids in the disposal of waste. See also: Site Products	
23-21 17 11				Interior Waste Bins						
23-21 17 13				Interior Ash Trays						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-21 17 15			Interior Refuse Holders							
23-21 19 00		Casework							Assembled cabinetry or millwork.	
23-21 19 11			Modular General Casework							Casework which can be used for more than one purpose, is prefabricated (not customized) and is not in the specialty category.
23-21 19 11 11				Metal Modular General Casework						
23-21 19 11 13				Wood Modular General Casework						
23-21 19 11 15				Plastic Modular General Casework						
23-21 19 13			Custom General Casework							
23-21 19 15			Specialty Casework						Casework only used for one purpose.	
23-21 19 15 11				Bank Specialty Casework						
23-21 19 15 13				Hospitality Specialty Casework						
23-21 19 15 15				Medical Specialty Casework				Healthcare Specialty Casework		
23-21 19 15 15 11					Hospital Specialty Casework					
23-21 19 15 15 13					Nurse Station Specialty Casework					
23-21 19 15 15 15					Exam Room Specialty Casework					
23-21 19 15 15 17					Dental Specialty Casework					
23-21 19 15 15 19					Pharmacy Specialty Casework					
23-21 19 15 17				Display Specialty Casework						
23-21 19 15 19				Religious Specialty Casework						
23-21 19 15 21				Library Specialty Casework						
23-21 19 15 21 11					Library Specialty Casework Study Carrels					
23-21 19 15 21 13					Library Specialty Casework Book Stacks					
23-21 19 15 21 15					Library Specialty Casework Periodical Racks					
23-21 19 15 23				Educational Specialty Casework						
23-21 19 15 23 11					Educational Specialty Casework Study Carrels					
23-21 19 15 25				Laboratory Specialty Casework						
23-21 19 15 25 11					Metal Laboratory Specialty Casework					
23-21 19 15 25 13					Plastic-Laminate-Clad Laboratory Specialty Casework					
23-21 19 15 25 15					Wood Laboratory Specialty Casework					
23-21 19 15 25 17					Solid-Plastic Laboratory Specialty Casework					
23-21 19 15 27				Mortuary Specialty Casework						
23-21 19 15 29				Commercial Kitchen Specialty Casework						
23-21 19 15 31				Darkroom Specialty Casework						
23-21 19 15 33				Residential Specialty Casework						
23-21 19 15 33 11					Residential Kitchen Specialty Casework					
23-21 19 15 33 13					Residential Bathroom Specialty Casework					
23-21 19 15 33 15					Residential Dormitory Specialty Casework					
23-21 19 15 35				Utility Room Specialty Casework						
23-21 19 15 39				Mailroom Casework						
23-21 19 17			Casework Components					counters, countertops		
23-21 19 17 11				Casework Component Cabinets						
23-21 19 17 13				Casework Component Hardware						
23-21 19 17 15				Casework Component Work Surfaces				Counters		Includes: Counters
23-21 21 00		Food Service Equipment and Furnishings						Restaurant Equipment	Equipment used in food service and furnishings related to use in food service. See: Residential Furniture and Equipment Commercial - is Industrial grade products. Residential - consumer grade products.	
23-21 21 11		Commercial Food Services Cabinets								
23-21 21 11 11				Commercial Hot Cabinets				Heated Food Cabinet		
23-21 21 11 13				Commercial Cold Cabinets						
23-21 21 11 15				Commercial Combination Hot Cold Cabinets						
23-21 21 11 17				Commercial Pastry Cabinets						
23-21 21 11 19				Commercial Warming Cabinets						
23-21 21 11 21				Commercial Snack Cabinets						
23-21 21 13		Commercial Food Cooking Equipment								
23-21 21 13 11				Commercial Bain Maries						
23-21 21 13 13				Commercial Beverage Equipment						
23-21 21 13 13 11					Commercial Coffee Makers					
23-21 21 13 13 13					Commercial Coffee Warmers					
23-21 21 13 13 15					Commercial Iced Tea Makers					
23-21 21 13 15				Commercial Broilers						
23-21 21 13 15 11					Commercial Steam Broilers					
23-21 21 13 15 13					Commercial Infra Red Broilers					
23-21 21 13 15 15					Commercial Gas Broilers					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-21 21 13 17				Commercial Food Cookers						
23-21 21 13 17 11					Commercial Food Induction Cookers					
23-21 21 13 17 13					Commercial Pasta Cookers					
23-21 21 13 17 15					Commercial Food Pressure Cookers					
23-21 21 13 17 17					Commercial Rice Cookers					
23-21 21 13 19				Commercial Crepe Machines						
23-21 21 13 21				Commercial Fryers						
23-21 21 13 21 11					Commercial Deep Fryers					
23-21 21 13 21 13					Commercial Pressure Fryers					
23-21 21 13 23				Commercial Frying Pans						
23-21 21 13 23 11					Commercial Tilting Frying Pans					
23-21 21 13 25				Commercial Griddles						
23-21 21 13 27				Commercial Grills						
23-21 21 13 27 11					Commercial Barbecue Grills					
23-21 21 13 27 13					Commercial Char Broiler Grills					
23-21 21 13 27 15					Commercial Hot Dog Grills					
23-21 21 13 29				Commercial Kettles						
23-21 21 13 29 11					Commercial Poacher Kettles					
23-21 21 13 29 13					Commercial Salmon Kettles					
23-21 21 13 31				Commercial Ovens						
23-21 21 13 31 11					Commercial Barbeque Ovens					
23-21 21 13 31 13					Commercial Combination Convection Ovens					
23-21 21 13 31 15					Commercial Convection Ovens					
23-21 21 13 31 17					Commercial Microwave Ovens					
23-21 21 13 31 19					Commercial Pastry Ovens					
23-21 21 13 31 21					Commercial Pizza Ovens					
23-21 21 13 31 23					Commercial Proofer Ovens					
23-21 21 13 31 25					Commercial Smoker Ovens					
23-21 21 13 33				Commercial Popcorn Machines						
23-21 21 13 35				Commercial Ranges						
23-21 21 13 37				Commercial Rotisseries						
23-21 21 13 39				Commercial Food Steamers						
23-21 21 13 39 11					Commercial High Pressure Food Steamer					
23-21 21 13 41				Commercial Skillets						
23-21 21 13 41 11					Commercial Tilt Skillets					
23-21 21 13 43				Commercial Stoves						
23-21 21 13 45				Commercial Toasters						
23-21 21 13 45 11					Commercial Toaster Conveyors					
23-21 21 13 47				Commercial Waffle Irons						
23-21 21 13 49				Commercial Small Specialized Cooking Equipment						
23-21 21 15				Commercial Food Services Warming Equipment						
23-21 21 15 11				Commercial Food Warmers						
23-21 21 15 13				Commercial Food Warmer Stations				Dump Station		
23-21 21 15 15				Commercial Hot Plates						
23-21 21 15 17				Commercial Steam Tables						
23-21 21 17				Commercial Food Services Cooling Equipment						
23-21 21 17 11				Commercial Refrigerated Tables						
23-21 21 19				Commercial Dishwasher Equipment						
23-21 21 19 11				Commercial Dishwashers						
23-21 21 19 11 11					Commercial Steam Dishwashers					
23-21 21 19 11 13					Commercial Dishwasher Conveyors					
23-21 21 19 11 15					Commercial Dishwasher Tray Conveyors					
23-21 21 21				Commercial Food Disposal Equipment						
23-21 21 21 11				Commercial Waste Disposal Units						
23-21 21 21 13				Commercial Garbage Disposals						
23-21 21 21 15				Commercial Garbage Pulpers						
23-21 21 23				Commercial Food Display Equipment						
23-21 21 23 11				Commercial Food Display Coolers				Show Case		
23-21 21 23 11 11					Commercial Freezer Food Display Cases					
23-21 21 23 11 13					Commercial Heated Food Display Cases					
23-21 21 23 11 15					Commercial Refrigerated Food Display Cases					
23-21 21 23 11 17					Commercial Unconditioned Food Display Cases					
23-21 21 23 13				Commercial Food Guards				Sneeze Guard		
23-21 21 25				Commercial Food and Beverage Dispensing Equipment						
23-21 21 25 11				Commercial Soda Fountain Equipment						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-21 21 25 13				Commercial Bottled Water Dispensers						
23-21 21 25 15				Commercial Bowl and Plate Dispensers						
23-21 21 25 17				Commercial Bread Dispensers						
23-21 21 25 19				Commercial Cappuccino or Espresso Dispensers						
23-21 21 25 21				Commercial Carbonated Beverage Dispensers						
23-21 21 25 23				Commercial Coffee Dispensers						
23-21 21 25 25				Commercial Condiment Dispensers						
23-21 21 25 27				Commercial Cream Dispensers						
23-21 21 25 29				Commercial Cup Dispensers						
23-21 21 25 31				Commercial Cup and Saucer Dispensers						
23-21 21 25 33				Commercial Bubbler Dispensers						
23-21 21 25 35				Commercial Drinking Glass Dispensers						
23-21 21 25 37				Commercial Flatware Dispensers						
23-21 21 25 39				Commercial Hot Chocolate Dispensers						
23-21 21 25 41				Commercial Hot Water Dispensers						
23-21 21 25 43				Commercial Ice Cream Dispensers						
23-21 21 25 45				Commercial Milk Dispensers						
23-21 21 25 47				Commercial Milkshake Dispensers						
23-21 21 25 49				Commercial Non Carbonated Beverage Dispensers						
23-21 21 25 49 11				Commercial Refrigerated Non Carbonated Beverage Dispensers						
23-21 21 25 51				Commercial Plate Dispensers						
23-21 21 25 53				Commercial Saucer Dispensers						
23-21 21 25 55				Commercial Slush Dispensers						
23-21 21 25 57				Commercial Soft Serve Ice Cream Dispensers						
23-21 21 25 59				Commercial Syrup Pump Dispensers						
23-21 21 25 61				Commercial Tray Dispensers						
23-21 21 25 63				Commercial Water Filter System						
23-21 21 25 65				Commercial Filtration Equipment						
23-21 21 27			Commercial Refrigerators And Freezers							
23-21 21 27 11				Commercial Blast Chillers					Rapidly cools food	
23-21 21 27 13				Commercial Freezers						
23-21 21 27 13 11					Commercial Blast Freezers				Accelerated freezing not meant for long term storage	
23-21 21 27 13 13					Commercial Chest Freezers					
23-21 21 27 13 15					Commercial Flammable Liquid Freezers					
23-21 21 27 13 17					Commercial Freeze Drying Equipment					
23-21 21 27 13 19					Commercial Plate Freezers					
23-21 21 27 13 21					Commercial Sub Zero Freezers					
23-21 21 27 13 23					Commercial Upright Freezers					
23-21 21 27 13 25					Commercial Upright Reach In Freezers					
23-21 21 27 13 27					Commercial Upright Pass Through Freezers					
23-21 21 27 13 29					Commercial Upright Roll In Freezers					
23-21 21 27 13 31					Commercial Walk In Freezers					
23-21 21 27 15				Commercial Refrigerators						
23-21 21 27 15 11					Commercial Flammable Liquid Refrigerators					
23-21 21 27 15 13					Commercial Liquid Nitrogen Refrigerators					
23-21 21 27 15 15					Commercial Refrigerated Containers					
23-21 21 27 15 17					Commercial Refrigerated Tanks					
23-21 21 27 15 19					Commercial Refrigerated Vessels					
23-21 21 27 15 21					Commercial Upright Refrigerators					
23-21 21 27 15 23					Commercial Upright Reach In Refrigerators					
23-21 21 27 15 25					Commercial Upright Pass Through Refrigerators					
23-21 21 27 15 27					Commercial Upright Roll In Refrigerators					
23-21 21 27 15 29					Commercial Walk In Refrigerators					
23-21 21 27 17				Commercial Refrigerator Freezers						
23-21 21 27 19				Commercial Food Storage Coolers						
23-21 21 27 19 11					Commercial Walk In Coolers					
23-21 21 29			Commercial Ice Machines							
23-21 21 29 11				Commercial Block Ice Makers						
23-21 21 29 13				Commercial Cube Ice Makers						
23-21 21 29 15				Commercial Flaker Ice Makers						
23-21 21 29 17				Commercial Ice Dispensers						
23-21 21 29 19				Commercial Ice Shaver Dispensers						
23-21 21 29 21				Commercial Ice Maker Bins						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-21 21 31			Commercial Food Preparation Equipment							
23-21 21 31 11				Commercial Food Mixers						
23-21 21 31 13				Commercial Food Peelers						
23-21 21 31 15				Commercial Food Processors						
23-21 21 31 17				Commercial Food Service Stations						
23-21 21 31 19				Commercial Food Slicers						
23-21 21 31 19 11					Commercial Electric Food Slicers					
23-21 21 31 19 13					Commercial Mechanical Food Slicers					
23-21 21 31 21				Commercial Food Preparation Tables						
23-21 21 31 21 11					Commercial Refrigerated Food Preparation Tables					
23-21 21 31 23				Commercial Drink Making Equipment						
23-21 21 33			Commercial Food Service Furniture					Restaurant Furniture		See also: Residential Furniture and Equipment
23-21 21 33 11				Commercial Bar Stools						
23-21 21 33 13				Commercial Restaurant Chairs						
23-21 21 33 15				Commercial Restaurant Booths						
23-21 21 33 17				Commercial Restaurant Seating Units						
23-21 21 33 19				Commercial Restaurant Tables						
23-21 21 35			Commercial Serving Counters							
23-21 21 35 11				Commercial Bars						
23-21 21 35 11 11					Commercial Beverage Bars					
23-21 21 35 11 13					Commercial Salad Bars					
23-21 21 35 11 15					Commercial Bar Equipment					
23-21 21 35 13				Commercial Serving Counters						
23-21 21 35 13 11					Commercial Condiment Counters					
23-21 21 35 13 13					Commercial Serving Counters					
23-21 21 35 15				Commercial Service Line Equipment						
23-21 21 37			Commercial Food Service Storage Equipment							
23-21 21 37 11				Commercial Bottle Racks						
23-21 21 39			Commercial Food Service Delivery Equipment							
23-21 21 39 11				Commercial Food Delivery Conveyors						
23-21 21 39 13				Commercial Food Delivery Carts						
23-21 21 39 15				Commercial Restaurant Turntables						
23-21 21 41			Commercial Food Service Ventilation Equipment							
23-21 21 41 11				Commercial Food Hood Equipment						
23-21 21 41 11 11					Commercial Food Service Hoods					
23-21 21 41 13				Commercial Food Ventilation Equipment						
23-21 21 41 13 11					Commercial Food Ventilation Fire Suppression Systems					
23-21 21 41 13 13					Commercial Catering Ventilation					
23-21 21 43			Commercial Food Processing Equipment							
23-21 21 45			Commercial Food Weighing Equipment							
23-21 21 47			Commercial Food Wrapping Equipment							
23-21 23 00		Residential Furniture and Equipment							Non-commercial furniture and equipment used internally or in the outlying spaces of the building. See: Commercial Food Service Furniture or Food Service Equipment and Furnishings	
23-21 23 11			Complete Residential Dining Room Suites							
23-21 23 13			Residential Seating							
23-21 23 13 11				Residential Chairs						
23-21 23 13 13				Residential Settees						
23-21 23 13 15				Residential Sofas						
23-21 23 13 17				Residential Stools						
23-21 23 13 19				Residential Benches						
23-21 23 13 21				Residential Chaises Longues						
23-21 23 13 23				Residential Sofa Beds						
23-21 23 13 25				Residential Chair Beds						
23-21 23 15			Residential Tables							
23-21 23 15 11				Residential Dining Room Tables						
23-21 23 15 13				Residential Sideboards						
23-21 23 15 15				Residential End Tables						
23-21 23 15 17				Residential Coffee Tables						
23-21 23 17			Residential Storage Units							
23-21 23 17 11				Residential Cabinet						
23-21 23 17 13				Residential China Cabinets						
23-21 23 17 15				Residential Cupboards						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-21 23 17 17				Residential Chests						
23-21 23 19			Residential Bedroom Furniture							
23-21 23 19 11				Complete Residential Bedroom Suites						
23-21 23 19 13				Residential Beds						
23-21 23 19 13 11					Residential Headboards					
23-21 23 19 13 13					Residential Footboards					
23-21 23 19 13 15					Residential Cots					
23-21 23 19 13 17					Residential Mattresses					
23-21 23 19 15				Residential Bedside Units					File or storage cabinet and table lamp combination	
23-21 23 19 17				Residential Dressing Tables						
23-21 23 19 19				Residential Dressers						
23-21 23 21			Residential Food Cabinets						See: Residential Casework	
23-21 23 23			Residential Food Cooking Equipment							
23-21 23 23 11				Residential Broilers						
23-21 23 23 11 11					Residential Steam Broilers					
23-21 23 23 11 13					Residential Infra Red Broilers					
23-21 23 23 11 15					Residential Gas Broilers					
23-21 23 23 13				Residential Food Cookers						
23-21 23 23 13 11					Residential Food Induction Cookers					
23-21 23 23 13 13					Residential Pasta Cookers					
23-21 23 23 13 15					Residential Food Pressure Cookers					
23-21 23 23 13 17					Residential Rice Cookers					
23-21 23 23 15				Residential Crepe Machines						
23-21 23 23 17				Residential Fryers						
23-21 23 23 17 11					Residential Deep Fryers					
23-21 23 23 17 13					Residential Pressure Fryers					
23-21 23 23 19				Residential Griddles						
23-21 23 23 21				Residential Grills						
23-21 23 23 21 11					Residential Barbecue Grills					
23-21 23 23 21 13					Residential Char Broiler Grills					
23-21 23 23 21 15					Residential Hot Dog Grills					
23-21 23 23 23				Residential Kettles						
23-21 23 23 23 11					Residential Poacher Kettles					
23-21 23 23 23 13					Residential Salmon Kettles					
23-21 23 23 25				Residential Ovens and Stoves					A stove can include both units (which is referred to as a range), the burners (or cooktops) as well as the oven, or just one of the two units dependent on the setup of the home. An oven is an enclosed compartment or receptacle in which one can bake or heat an item.	
23-21 23 23 25 11					Residential Stoves			Kitchen Range, cooking stove, kitchen stove, or cooker, cookstove.		
23-21 23 23 25 13					Residential Combination Convection Ovens					
23-21 23 23 25 15					Residential Convection Ovens					
23-21 23 23 25 17					Residential Gas Ovens					
23-21 23 23 25 19					Residential Electric Ovens					
23-21 23 23 25 21					Residential Microwave Ovens					
23-21 23 23 27				Residential Rotisseries						
23-21 23 23 29				Residential Food Steamers						
23-21 23 23 29 11					Residential High Pressure Food Steamer					
23-21 23 23 31				Residential Small Specialized Cooking Equipment						
23-21 23 25			Residential Dishwashers							
23-21 23 25 11				Residential Electric Dishwashers						
23-21 23 25 13				Residential Gas Dishwashers						
23-21 23 27			Residential Waste Disposal Units					Garbage Disposals		
23-21 23 27 11				Residential Garbage Disposals						
23-21 23 27 13				Residential Garbage Compactors						
23-21 23 27 13 11					Residential Coffee Dispensers					
23-21 23 29			Residential Food and Beverage Dispensing Equipment							
23-21 23 29 11				Residential Cappuccino or Espresso Dispensers						
23-21 23 29 13				Residential Bubbler Dispensers						
23-21 23 29 15				Residential Hot Water Dispensers						
23-21 23 31			Residential Water Filter System							
23-21 23 33			Residential Refrigerators And Freezers							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-21 23 33 11				Residential Freezers						
23-21 23 33 11 11					Residential Chest Freezers					
23-21 23 33 11 13					Residential Sub Zero Freezers					
23-21 23 33 11 15					Residential Upright Freezers					
23-21 23 33 13				Residential Refrigerators						
23-21 23 33 13 11					Residential Upright Refrigerators					
23-21 23 33 15				Residential Refrigerator Freezers						
23-21 23 35				Residential Ice Machines						
23-21 23 35 11				Residential Cube Ice Makers						
23-21 23 35 13				Residential Ice Dispensers						
23-21 23 37				Residential Food Preparation Equipment						
23-21 23 37 11				Residential Food Mixers						
23-21 23 37 13				Residential Food Peelers						
23-21 23 37 15				Residential Food Processors						
23-21 23 37 17				Residential Food Slicers						
23-21 23 37 17 11					Residential Electric Food Slicers					
23-21 23 37 17 13					Residential Mechanical Food Slicers					
23-21 23 37 19				Residential Food Preparation Tables						
23-21 23 39				Residential Kitchen and Dining Room Furniture				Restaurant Furniture		
23-21 23 39 11				Residential Bar Stools						
23-21 23 39 13				Residential Kitchen and Dining Room Chairs						
23-21 23 39 15				Residential Kitchen and Dining Room Tables						
23-21 23 39 17				Residential Bars						
23-21 23 39 17 11					Residential Beverage Bars					
23-21 23 39 17 13					Residential Bar Equipment					
23-21 23 41				Residential Food Storage Equipment						See also: Residential Casework
23-21 23 41 11				Residential Bottle Racks						
23-21 23 43				Residential Cooking Ventilation Equipment						
23-21 23 43 11				Residential Range Hoods						
23-21 23 43 13				Residential Food Ventilation Equipment						
23-21 23 45				Residential Clothes Airers						
23-21 23 45 11				Residential Clothes Stands						
23-21 23 45 13				Residential Clothes Lines						
23-21 23 47				Residential Combination Laundry Washer Dryers						
23-21 23 49				Residential Ironing and Pressing Machines						
23-21 23 51				Residential Laundry Dryers						
23-21 23 51 11				Residential Electric Laundry Dryers						
23-21 23 51 13				Residential Gas Laundry Dryers						
23-21 23 53				Residential Washing Machines						
23-21 23 53 11				Residential Front Loading Laundry Washers						
23-21 23 53 13				Residential Side Loading Laundry Washers						
23-21 23 53 15				Residential Top Loading Laundry Washers						
23-21 25 00			Educational and Cultural Equipment and Furnishings						Equipment or furnishings used in educational settings as well as cultural settings.	
23-21 25 11			Group Seating							
23-21 25 11 11			Auditorium Seating							
23-21 25 11 11 11				Fixed Audience Seating						
23-21 25 11 11 13				Portable Audience Seating						
23-21 25 11 11 13 11					Folding Audience Chairs					
23-21 25 11 11 13 13					Interlocking Audience Chairs					
23-21 25 11 11 13 15					Stacking Audience Chairs					
23-21 25 11 13			Classroom Furniture							
23-21 25 11 13 11				Seat Assembly						
23-21 25 11 13 13				Table Assembly						
23-21 25 11 13 15				Modular Desks						
23-21 25 11 15			Multiple Use Fixed Seating							
23-21 25 11 17			Platforms							
23-21 25 11 17 11				Portable Stages						
23-21 25 11 17 13				Risers						
23-21 25 11 19			Language Laboratory Equipment							
23-21 25 13			Theater and Stage Equipment							
23-21 25 13 11			Acoustical Shells							
23-21 25 13 13			Rigging Systems and Controls							
23-21 25 13 15			Scenery Docks							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-21 25 13 17				Suspension Systems						
23-21 25 13 19				Stage Curtains						
23-21 25 15			Planetarium Equipment and Furnishings							
23-21 25 15 11				Planetarium Projectors						
23-21 25 15 13				Planetarium Seating						
23-21 25 17			Observatory Equipment and Furnishings							
23-21 25 17 11				Telescopes						
23-21 25 19			Ecclesiastical Equipment and Furnishings							
23-21 25 19 11				Religious Seating						
23-21 25 19 11 11					Pews					
23-21 25 19 11 13					Benches					
23-21 25 19 13				Chancel Furnishings						
23-21 25 19 13 11					Lecterns					
23-21 25 19 13 13					Pulpits					
23-21 25 19 13 15					Choir Screens					
23-21 25 19 13 17					Altars					
23-21 25 19 15				Baptisteries						
23-21 25 19 17				Baptismal Fonts						
23-21 25 19 19				Instrumental Equipment						
23-21 25 19 19 11					Organs					
23-21 25 19 19 13					Organ Cases					
23-21 25 19 19 15					Screens					
23-21 25 19 19 17					Bells					
23-21 25 19 19 19					Carillons					
23-21 25 19 21				Synagogue Furniture						
23-21 25 19 23				Mosque Furniture						
23-21 25 19 25				Temple Furniture						
23-21 25 21			Library and Archive Equipment and Furnishings							
23-21 25 21 11				Library Stack Systems						
23-21 25 21 11 11					Library Shelving					
23-21 25 21 13				Book Depositories						
23-21 25 21 15				Book Theft Protection Equipment						
23-21 25 21 17				Library Furniture						
23-21 25 21 17 11					Library Filing Furniture					
23-21 25 21 17 13					Library Display Furniture					
23-21 25 21 17 15					Study Carrels					
23-21 25 23			Exhibition Equipment and Furnishings							
23-21 25 23 11				Display Furniture						
23-21 25 23 11 11					Display Cabinets					
23-21 25 23 11 13					Display Racks					
23-21 25 23 11 15					Display Carousels					
23-21 25 23 13				Gallery Hanging Systems						
23-21 25 23 15				Pedestals				Stands		
23-21 25 23 17				Retail Cabinets						
23-21 25 23 19				Exhibition Stands						
23-21 25 23 21				Shell Schemes					Pre-erected rows of stands or panels for use in exhibitions. Typically includes stand walls, lighting, carpet and possibly a power socket.	
23-21 25 23 23				Exhibit Equipment						
23-21 27 00		Child Furnishings							Furnishings used specifically for children, usually residential use.	
23-21 27 11			Child Beds							
23-21 27 11 11				Infant Cradles						
23-21 27 11 13				Bassinets						
23-21 27 11 15				Infant Beds				Crib		
23-21 27 11 17				Toddler Beds						
23-21 27 11 19				Children Beds						
23-21 27 13			Child Cots							
23-21 27 13 11				Toddler Cots						
23-21 27 13 13				Children Cots						
23-21 27 13 15				Cot Carrier						
23-21 27 15			Child Playpens							
23-21 27 17			Child Benches							
23-21 27 17 11				Toddler Benches						

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23-21 27 17 13				Children Benches						
23-21 27 19			Child Bathtub							
23-21 27 19 11				Infant Bathtubs						
23-21 27 19 13				Toddler Bathtubs						
23-21 27 19 15				Children Bathtubs						
23-21 27 21			Child Chairs							
23-21 27 21 11				Child High Chairs						
23-21 27 21 13				Child Stools						
23-21 27 23			Child Play Panels							
23-21 27 25			Child Indoor Swings							
23-21 27 25 11				Infant Swings						
23-21 27 25 13				Toddler Swings						
23-21 27 27			Child Sofas							
23-21 27 29			Child Strollers							
23-21 27 29 11				Child Carriage Strollers						
23-21 27 29 13				Child Multiple Carriage Strollers						
23-21 27 29 15				Child Perambulators						
23-21 27 29 17				Child Buggies						
23-21 27 31			Child Tables							
23-21 27 31 11				Diaper Changing Tables						
23-21 27 33			Child Storage Units							
23-21 27 33 11				Child File Cabinets						
23-21 27 33 13				Child Kiosks						
23-21 27 33 15				Child Shelves						
23-21 27 33 17				Child Book Display Units						
23-21 27 33 19				Child Card Catalog Units						
23-21 27 33 21				Child Cubbies						
23-21 27 35			Child Dressers							
23-21 29 00		Athletic and Recreational Equipment							Equipment specific to recreational use and athletic sports. Does not include fitness and exercise equipment.	
23-21 29 11			Athletic or Recreation Screening							
23-21 29 11 11				Tennis Court Windbreakers						
23-21 29 13			Athletic Surfacing							
23-21 29 13 11				Baseball Field Surfacing						
23-21 29 13 13				Multi Purpose Court Surfacing						
23-21 29 13 15				Resilient Matting						
23-21 29 13 17				Synthetic Grass Surfacing						
23-21 29 13 19				Synthetic Running Track Surfacing						
23-21 29 13 21				Tennis Court Surfacing						
23-21 29 15			Athletic Equipment							
23-21 29 15 11				Bowling Alley Equipment						
23-21 29 15 13				Goalposts						
23-21 29 15 15				Nets						
23-21 29 15 17				Backstops						
23-21 29 15 19				Scoreboards						
23-21 29 15 21				Time Clocks						
23-21 29 15 23				Floor Sockets						
23-21 29 15 25				Climbing Equipment						
23-21 29 15 25 11					Climbing Walls					
23-21 29 15 25 13					Climbing Ropes					
23-21 29 15 27				Gymnasium Dividers						
23-21 29 15 29				Wall Mats						
23-21 29 15 31				Floor Mats						
23-21 29 15 33				Referee Platforms						
23-21 29 15 35				Athletic Equipment Storage Racks						
23-21 29 17			Playground Equipment							
23-21 29 17 11				Climbing Apparatus						
23-21 29 17 13				Climbing Walls						
23-21 29 17 13 11					Harness Equipment					
23-21 29 17 15				Merry Go Rounds						
23-21 29 17 17				Playhouse Gardens						
23-21 29 17 19				Rope Climbing Equipment						
23-21 29 17 21				Sand Tables						
23-21 29 17 23				Water Tables						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-21 29 17 25				Sandboxes						
23-21 29 17 27				See Saws						
23-21 29 17 27 11					Spring, Rocking Equipment					
23-21 29 17 29				Slides						
23-21 29 17 31				Swings						
23-21 29 17 31 11					Harness Swings					
23-21 29 17 31 13					Rope Swings					
23-21 29 17 31 15					Tire Swings					
23-21 29 17 31 17					Seat Swings			Chair swing		
23-21 29 17 33				Playground Tunnel						
23-21 29 17 35				Play Structures						
23-21 29 19			Recreational Equipment						Abbreviation: Rec Equipment	
23-21 29 19 11				Ping Pong Equipment						
23-21 29 19 13				Arcade Machines						
23-21 29 19 15				Billiards Equipment						
23-21 29 19 17				Sauna Equipment						
23-21 29 19 19				Steam Room Equipment						
23-21 29 19 21				Shooting Range Equipment						
23-21 29 19 23				Swimming Pool Equipment						
23-21 29 19 23 11					Diving Boards					
23-21 29 19 23 13					Starting Blocks					
23-21 29 19 23 15					Ladders					
23-21 29 21			Pools							
23-21 29 21 11				Leisure Whirlpools						
23-21 29 21 13				Hot Tubs						
23-21 29 21 15				Swimming Pools						
23-21 29 21 17				Lap Pools				Therapy Pools		See also: Therapy Pools
23-21 29 23			Spectator Stands					Seating		
23-21 29 23 11				Fixed Stadium Seating				Fixed Arena Seating		Main difference between a stadium and an arena are the acoustics. Doesn't seem to effect seating. Both words in some cases are the same according to other dictionaries. There are 2 MF numbers for each of these items.
23-21 29 23 13				Telescoping Stands						
23-21 29 23 15				Bleachers						
23-21 29 23 15 11					Telescoping Bleachers					
23-21 29 23 17				Telescoping Chair Platforms						
23-21 31 00			Fitness and Exercise Equipment						Equipment used specifically for exercise and fitness, not sports.	
23-21 31 11			Exercise Apparatus							
23-21 31 11 11				Weight Training Exercise Apparatus						
23-21 31 11 11 11					Multi Station Weight Training Exercise Apparatus					
23-21 31 13			Exercise Bars							
23-21 31 13 11				Chinning Bars						
23-21 31 13 13				Weightlifting Bars						
23-21 31 15			Exercise Benches							
23-21 31 15 11				Weightlifting Benches						
23-21 31 15 11 11					Adjustable Utility Weightlifting Benches					
23-21 31 15 11 13					Decline Weightlifting Benches					
23-21 31 15 11 15					Incline Weightlifting Benches					
23-21 31 15 11 17					Supine Weightlifting Benches					
23-21 31 17			Exercise Boards							
23-21 31 17 11				Abdominal Exercise Boards						
23-21 31 17 11 11					Raised and Bent Leg Abdominal Exercise Boards					
23-21 31 19			Exercise Machines							
23-21 31 19 11				Abdominal Exercise Machines						
23-21 31 19 13				Back Extension Exercise Machines						
23-21 31 19 15				Biceps Exercise Machines						
23-21 31 19 17				Chest Exercise Machines						
23-21 31 19 19				Closed Chain Exercise Machines						
23-21 31 19 21				Hip Exercise Machines						
23-21 31 19 21 11					Hip Abduction Exercise Machines					
23-21 31 19 21 13					Hip Adduction Exercise Machines					
23-21 31 19 23				Leg Exercise Machines						
23-21 31 19 23 11					Leg Curl Exercise Machines					

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23-21 31 19 23 13					Leg Extension Exercise Machines					
23-21 31 19 23 15					Leg Press Exercise Machines					
23-21 31 19 23 17					Leg Press Squat Exercise Machines					
23-21 31 19 23 19					Leg Squat Exercise Machines					
23-21 31 19 25				Neck Exercise Machines						
23-21 31 19 27				Pullover Exercise Machines						
23-21 31 19 29				Rotary Shoulder Exercise Machines						
23-21 31 19 31				Rowing Exercise Machines						
23-21 31 19 33				Shoulder Exercise Machines						
23-21 31 19 35				Treadmills						
23-21 31 19 37				Triceps Exercise Machines						
23-21 31 19 39				Continuous Passive Motion CPM Exercisers						
23-21 31 19 41				Ladder Exercisers						
23-21 31 19 43				Exercise Platforms						
23-21 31 19 45				Ramp Curb Exercisers						
23-21 31 19 47				Staircase Exercisers						
23-21 31 19 49				Upper and Lower Extremities Exercisers						
23-21 31 19 51				Upper Body Exercisers						
23-21 31 21			Exercise Floor Mats							
23-21 31 23			Exercise Pulleys							
23-21 31 23 11				Triplex Exercise Pulleys						
23-21 33 00		Industrial and Manufacturing Equipment and Furnishings							Equipment and furnishings specific to industrial use.	
23-21 33 11			Manufacturing Equipment							
23-21 33 13			Manufacturing Furniture							
23-21 33 13 11				Flat Work Surface Furniture			counter, countertop			
23-21 33 13 13				Work Stations						
23-21 33 15			Shop Equipment							
23-21 33 17			Shop Furniture							
23-21 33 17 11				Shop Work Surfaces			shop counters			
23-21 33 17 13				Shop Storage Fittings						
23-21 35 00		Miscellaneous Equipment and Furnishings								
23-21 35 11			Darkroom Equipment and Furnishings							
23-21 35 11 11				Darkroom Processing Equipment						
23-21 35 13			Vending Equipment							
23-21 35 13 11				Vending Machines						
23-21 35 15			Ticket Machines							
23-21 35 17			Change Machines							
23-21 35 19			Vehicle Service Equipment							
23-21 35 19 11				Compressed Air Vehicle Service Equipment						
23-21 35 19 13				Fuel Dispensing Equipment						
23-21 35 19 15				Vehicle Lubrication Equipment						
23-21 35 19 17				Tire Changing Equipment						
23-21 35 19 19				Vehicle Washing Equipment						
23-21 35 19 21				Vehicle Hoists						
23-21 35 21			Security and Vault Equipment and Furnishings							
23-21 35 21 11				Safes						
23-21 35 21 13				Safe Deposit Boxes						
23-21 35 21 15				Vault Doors						
23-21 35 21 17				Day Gates						
23-21 35 21 19				Anti Bandit Screens						
23-21 35 21 19 11					Gun Ports					
23-21 35 21 21				Teller and Service Equipment						
23-21 35 21 21 11					Automated Banking Systems					
23-21 35 21 21 13					Money Cart Pass Through					
23-21 35 21 21 15					Package Transfer Units					
23-21 35 21 21 17					Service and Teller Window Units					
23-21 35 21 21 19					Teller Equipment Systems					
23-21 35 21 21 21					Deal Drawers					
23-21 35 21 23				Key Security Cabinets						
23-21 35 21 25				Money Handling Equipment						
23-21 35 23			Detention Equipment and Furnishings							
23-21 35 23 11				Detention Enclosures						
23-21 35 23 13				Detention Furnishings and Specialties						
23-21 35 23 15				Detention Furniture						

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23-21 35 25			Agricultural Equipment							
23-21 35 25 11				Milkers						
23-21 35 25 13				Stock Feeders						
23-21 35 25 15				Stock Waterers						
23-21 35 25 17				Waste Clean Up Equipment						
23-21 37 00		Furnishings, Ornaments, and Decoration							Products used to decorate or improve or make one more comfortable in a space.	
23-21 37 11			Soft Furnishings							
23-21 37 11 11				Rugs						
23-21 37 11 13				Upholstery						
23-21 37 11 15				Cushions						
23-21 37 11 17				Padding						
23-21 37 11 19				Tablecloths						
23-21 37 13			Decoration					ornament	An item that accents or adorns.	
23-21 37 13 11				Commercial Artwork				Paintings, Prints, Photographs	Artwork that is mass produced and can be ordered out of a catalog or online. Non-original artwork.	Includes: Paintings, Prints, Photographs See also: Historic Preservation Products, Fine Art
23-21 37 13 11 11					Wall Hangings					
23-21 37 13 13				Clocks						
23-21 37 13 15				Mirrors					Mirrors used outside of the bathroom. See toilet and bath accessories.	
23-21 37 13 17				Interior Ornamental Fountains					See: Exterior Ornamental Fountains	
23-21 37 13 19				Ornamental Screens						
23-21 37 13 21				Decorative Planters						
23-21 37 13 23				Decorative Vases						
23-21 39 00		Commercial Washing and Waste Disposal Equipment							Equipment used for washing or waste disposal.	
23-21 39 11			Commercial Washing Equipment							
23-21 39 11 11				High Pressure Washing Equipment						
23-21 39 13			Drain Boards							
23-21 41 00		Commercial Laundry Equipment							Commercial equipment used in laundering clothes. See Residential Furniture and Equipment for residential laundry equipment.	
23-21 41 11			Commercial Clothes Airers							
23-21 41 11 11				Commercial Clothes Dryers						
23-21 41 11 13				Commercial Clothes Stands						
23-21 41 11 15				Commercial Clothes Lines						
23-21 41 13			Commercial Combination Laundry Washer Dryers							
23-21 41 15			Commercial Dry Cleaning Equipment							
23-21 41 17			Commercial Laundry Dispensers							
23-21 41 17 11				Commercial Dry Laundry Detergent Dispensers						
23-21 41 17 13				Commercial Liquid Laundry Detergent Dispensers						
23-21 41 17 15				Commercial Dryer Sheet Dispensers						
23-21 41 19			Commercial Dry Cleaning Machines							
23-21 41 21			Commercial Laundry Extractors							
23-21 41 23			Commercial Flat Work Ironers							
23-21 41 23 11				Commercial Electric Flat Work Ironers						
23-21 41 23 13				Commercial Gas Flat Work Ironers						
23-21 41 23 15				Commercial Steam Flat Work Ironers						
23-21 41 25			Commercial Ironing and Pressing Machines							
23-21 41 27			Commercial Laundry Folding Machines							
23-21 41 29			Commercial Laundry Conveyors							
23-21 41 31			Commercial Laundry Dryers							
23-21 41 31 11				Commercial Electric Laundry Dryers						
23-21 41 31 13				Commercial Gas Laundry Dryers						
23-21 41 31 15				Commercial Steam Laundry Dryers				Laundry Tumbler		
23-21 41 33			Commercial Laundry Presses							
23-21 41 33 11				Commercial Electric Laundry Presses						
23-21 41 33 13				Commercial Gas Laundry Presses						
23-21 41 33 15				Commercial Steam Laundry Presses						
23-21 41 35			Commercial Laundry Spreader Feeders							
23-21 41 37			Commercial Laundry Steam Tunnels							
23-21 41 39			Commercial Laundry Tubs							
23-21 41 41			Commercial Washing Machines							
23-21 41 41 11				Commercial Front Loading Laundry Washers						
23-21 41 41 13				Commercial Side Loading Laundry Washers						
23-21 41 41 15				Commercial Top Loading Laundry Washers						

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23-21 41 41 17				Commercial Tunnel Laundry Washers						
23-21 43 00		Cleaning Equipment							Equipment used for the purpose of cleaning.	
23-21 43 11			Buckets							
23-21 43 11 11				Mop Buckets						
23-21 43 11 13				Waste Paper Baskets						
23-21 43 13			Cleaners							
23-21 43 13 11				Pressure Cleaners						
23-21 43 13 13				Steam Cleaners						
23-21 43 15			Custodial Dispensers							
23-21 43 15 11				Air Freshener Dispensers						
23-21 43 15 13				Bathroom Tissue Dispensers						
23-21 43 15 15				Cleaning Rag Dispensers						
23-21 43 15 17				Facial Tissue Dispensers						
23-21 43 15 19				Hand Cleaner Dispensers						
23-21 43 15 21				Institutional Soap Dispensers						
23-21 43 15 23				Lotion Dispensers						
23-21 43 15 25				Paper Towel Dispensers						
23-21 43 15 27				Sanitary Goods Dispensers						
23-21 43 15 29				Toilet Accessories Dispensers						
23-21 43 15 31				Toilet Tissue Dispensers						
23-21 43 15 33				Urinal Accessories Dispensers						
23-21 43 17			Duct Cleaning Machines							
23-21 43 19			Floor Cleaning Equipment							
23-21 43 19 11				Floor Burnishers						
23-21 43 19 13				Floor Polishers						
23-21 43 19 15				Floor Scrapers						
23-21 43 19 17				Floor Scrubbers						
23-21 43 19 19				Floor Sweepers						
23-21 43 19 19 11						Carpet Sweepers				
23-21 43 19 21						Floor Washing Machines				
23-21 43 21			Room Cleaning Equipment							
23-21 43 21 11				Vacuum Cleaning Equipment						
23-21 43 21 11 11						Vacuum Cleaning Systems				
23-21 43 21 11 11 11							Centralized Vacuum Cleaning System			
23-21 43 21 11 13						Vacuum Cleaners				
23-21 43 21 11 13 11							Heavy Duty Tank Vacuum Cleaners			
23-21 43 21 11 13 13							Wet Dry Combination Vacuum Cleaners			
23-21 43 21 11 13 15							Wet Vacuum Cleaners			
23-21 43 21 13				Floor and Wall Cleaning						
23-21 43 21 15				Housekeeping Carts						
23-21 43 23			Sanitary Waste Receptacles					Trash Can		
23-21 43 23 11				Installed Sanitary Waste Receptacles						
23-21 43 23 13				Portable Sanitary Waste Receptacles						
23-21 43 25			Custodial Sinks							
23-21 43 25 11				Mop Sinks						
23-21 43 27			Custodial Washers							
23-21 43 27 11				Trash Can Pedestal Washers						
23-21 45 00		Historic Preservation Products								
23-21 45 11			Fine Art							Historical documents and high value original art work.
										High value original works of art that are not mass produced, a Monet painting versus a teamwork poster, and describes any art form developed primarily for aesthetics and/or concept rather than utility.
23-21 45 11 11				Two Dimensional Art						
23-21 45 11 11 11						Fine Art Paintings				
23-21 45 11 11 13						Fine Art Drawings				
23-21 45 11 11 15						Fine Art Printmaking				
23-21 45 11 11 15 11							Fine Art Lithography			
23-21 45 11 11 15 13							Fine Art Intaglio			
23-21 45 11 11 15 15							Fine Art Prints			
23-21 45 11 11 17						Fine Art Photography				
23-21 45 11 11 19						Fine Art Graphic Designs				
23-21 45 11 11 21						Fine Art Illustrations				
23-21 45 11 13				Three Dimensional Art						
23-21 45 11 13 11						Fine Art Sculpture				

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-21 45 11 13 13					Fine Art Ceramics					
23-21 45 11 13 13 11						Fine Art Pottery				
23-21 45 11 13 15					Fine Art Mosaics					
23-21 45 11 13 15 11						Fine Art Tile				
23-21 45 11 13 17					Fine Art Glass					
23-21 45 11 13 17 11						Fine Art Stained Glass				
23-21 45 11 13 17 13						Fine Art Etched Glass				
23-21 45 11 13 19					Fine Art Architecture					
23-21 45 11 13 19 11						Fine Art Decorative Architecture				
23-21 45 11 13 21					Fine Art Textile					
23-21 45 11 13 21 11						Fine Art Tapestry				
23-21 45 11 15				Four Dimensional Art					Four dimensional art is art work that requires time as a factor to the piece of art.	
23-21 45 11 15 11					Fine Art Film				Movie or documentary using film as a medium	
23-21 45 11 15 13					Fine Art Video				Artwork using VHS, BETA, or digital encoding such as DVD, MPEG, as its main medium.	
23-21 45 13			Historic Documents						Historical documents such as the Constitution.	
23-21 45 13 11				Historic Paper Documents						
23-21 45 13 13				Historic Velum Documents						
23-21 45 13 15				Historic Parchment Documents						
23-21 45 15			Historic Architectural Items							
23-21 45 15 11				Historic Architectural Models						
23-21 45 15 13				Historic Architectural Constructions						
23-21 45 15 15				Historic Architectural Designs						
23-21 45 15 17				Historic Decorative Architectures						
23-21 47 00		Musical Equipment							Equipment placed into the building or within a space having to do with music.	
23-21 47 11			Conductor Equipment							
23-21 47 11 11				Conductor Podium						
23-21 47 11 13				Conductor Platform						
23-21 47 13			Musical Instrument							
23-21 47 13 11				String Instrument						
23-21 47 13 11 11					Piano					
23-23 00 00	Conveying Systems and Material Handling Products								Products that comprise systems to transport people or materials.	Includes elevator equipment, dumbwaiters, lifts, conveyors, hoists, and cranes.
23-23 11 00		Vertical Transportation Equipment							Equipment moving people in a vertical motion.	
23-23 11 11			Elevators						Elevators are selected by type of traction or hydraulic and then function.	
23-23 11 11 11				Traction Elevators						
23-23 11 11 11 11					Freight Traction Elevators					
23-23 11 11 11 13					Passenger Traction Elevators					
23-23 11 11 11 15					Residential Traction Elevators					
23-23 11 11 11 17					Service Traction Elevators				elevators designed for materials only versus freight which includes in its design people and materials.	
23-23 11 11 13				Hydraulic Elevators						
23-23 11 11 13 11					Freight Hydraulic Elevators					
23-23 11 11 13 13					Passenger Hydraulic Elevators					
23-23 11 11 13 15					Residential Hydraulic Elevators					
23-23 11 11 13 17					Service Hydraulic Elevators					
23-23 11 11 15				Pneumatic Elevators						
23-23 11 11 15 11					Pneumatic Passenger Elevators					
23-23 11 11 17				Rack and Pinion Elevators						
23-23 11 11 19				Elevator Cabs						
23-23 11 11 21				Elevator Equipment and Controls						
23-23 11 11 21 11					Elevator Doors					
23-23 11 11 21 13					Elevator Controls					
23-23 11 11 23				Elevator Restoration Products						
23-23 11 13			Escalators							
23-23 13 00		Lifting Equipment							Products which comprise systems to transport materials via lifting.	
23-23 13 11			Lifts							
23-23 13 11 11				Boom Lifts						
23-23 13 11 13				Fork Lifts						
23-23 13 11 15				Man Lifts						
23-23 13 11 17				Patient Lifts						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-23 13 11 17 11					Installed Patient Lifts					
23-23 13 11 17 13					Portable Patient Lifts					
23-23 13 11 19				Platform Lifts						
23-23 13 11 19 11					Elevating Platform Lifts					
23-23 13 11 19 13					Inclined Platform Lifts					
23-23 13 11 19 15					Scissor Platform Lifts					
23-23 13 11 21				Scaffold Lifts						
23-23 13 11 23				Stage Screen Lifts						
23-23 13 11 25				Wheel Chair Lifts						
23-23 13 11 25 11					Hydraulic Wheel Chair Lifts					
23-23 13 11 25 11 11						Hydraulic Wheel Chair Rail Lifts				
23-23 13 11 25 11 13						Hydraulic Wheel Chair Stair Lifts				
23-23 13 11 25 11 15						Hydraulic Wheel Chair Vertical Lifts				
23-23 13 11 25 13					Mechanical Wheel Chair Lifts					
23-23 13 11 25 13 11						Mechanical Wheel Chair Rail Lifts				
23-23 13 11 25 13 13						Mechanical Wheel Chair Stair Lifts				
23-23 13 11 25 13 15						Mechanical Wheel Chair Vertical Lifts				
23-23 15 00		Horizontal Transportation Equipment							Products which comprise systems to transport people and materials in a horizontal fashion.	
23-23 15 11			Moving Walks							
23-23 15 13			People Movers							
23-23 15 13 11				Monorails						
23-23 15 13 13				Duorails						
23-23 15 13 15				Maglevs						
23-23 15 15			Jetways							
23-23 15 17			Transportation Gangways							
23-23 17 00		Materials Handling							Products which comprise systems to transport or move materials.	
23-23 17 11			Dumbwaiters							
23-23 17 11 11				Manual Dumbwaiters						
23-23 17 11 13				Hydraulic Dumbwaiters						
23-23 17 11 15				Traction Dumbwaiters						
23-23 17 13			Material Transport							
23-23 17 13 11				Automated Document Filing and Retrieval						
23-23 17 13 13				Automated Guided Vehicles						
23-23 17 13 13 11					Guided Vehicle Material Handling					
23-23 17 13 13 13					Track Vehicle Material Handling					
23-23 17 15			Conveyors							
23-23 17 15 11				Conveyor Components						
23-23 17 15 11 11					Conveyor Belts					
23-23 17 15 11 13					Conveyor Rollers					
23-23 17 15 13				Belt Conveyors						
23-23 17 15 15				Bucket Conveyors						
23-23 17 15 17				Container Conveyors						
23-23 17 15 19				Hopper and Track Conveyors						
23-23 17 15 21				Monorail Conveyors						
23-23 17 15 23				Oscillating Conveyors						
23-23 17 15 25				Pneumatic Conveyors						
23-23 17 15 27				Roller Conveyors						
23-23 17 15 29				Scoop Conveyors						
23-23 17 15 31				Screw Conveyors						
23-23 17 15 33				Selective Vertical Conveyors						
23-23 17 15 35				Postal Conveyors						
23-23 17 15 37				Baggage Conveying and Dispensing Equipment						
23-23 17 15 37 11					Baggage Conveyors					
23-23 17 15 37 13					Baggage Dispensing Units					
23-23 17 17			Chutes							
23-23 17 17 11				Coal Chutes						
23-23 17 17 13				Dry Bulk Materials Chutes						
23-23 17 17 15				Laundry and Linen Chutes						
23-23 17 17 17				Package Chutes						
23-23 17 17 19				Refuse Chutes						
23-23 17 19			Feeder Equipment							
23-23 17 19 11				Apron Feeders						
23-23 17 19 13				Reciprocating Plate Feeders						

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23-23 17 19 15				Rotary Airlock Feeders						
23-23 17 19 17				Rotary Flow Feeders						
23-23 17 19 19				Vibratory Feeders						
23-23 17 21			Pneumatic Tube Systems					Vacuum Tube System		
23-23 17 21 11				Pneumatic Tubes						
23-23 17 21 13				Pneumatic Tube Controls						
23-23 17 21 15				Pneumatic Tube Vacuum Boxes						
23-23 17 21 17				Document Conveying Systems						
23-23 17 23			Cranes							
23-23 17 23 11				Hydraulic Cranes						
23-23 17 23 11 11					Hydraulic Bridge Cranes					
23-23 17 23 11 11 11						Top Running Hydraulic Overhead Cranes		Above Rail Overhead Bridge Crane		
23-23 17 23 11 11 13						Underslung Hydraulic Overhead Cranes		Below Rail Overhead Bridge Crane		
23-23 17 23 11 13					Hydraulic Gantry Cranes					
23-23 17 23 11 15					Hydraulic Jib Cranes					
23-23 17 23 11 17					Hydraulic Mobile Cranes					
23-23 17 23 11 19					Hydraulic Terrain Cranes					
23-23 17 23 11 21					Hydraulic Top Running Overhead Cranes					
23-23 17 23 11 23					Hydraulic Tower Cranes					
23-23 17 23 11 25					Hydraulic Track Cranes					
23-23 17 23 11 27					Hydraulic Underslung Overhead Cranes					
23-23 17 23 11 29					Hydraulic Workshop Cranes					
23-23 17 23 13				Mechanical Cranes						
23-23 17 23 13 11					Mechanical Bridge Cranes					
23-23 17 23 13 11 11						Top Running Mechanical Overhead Cranes				
23-23 17 23 13 11 13						Underslung Mechanical Overhead Cranes				
23-23 17 23 13 13					Mechanical Gantry Cranes					
23-23 17 23 13 15					Mechanical Jib Cranes					
23-23 17 23 13 17					Mechanical Mobile Cranes					
23-23 17 23 13 19					Mechanical Terrain Cranes					
23-23 17 23 13 21					Mechanical Top Running Overhead Cranes					
23-23 17 23 13 23					Mechanical Tower Cranes					
23-23 17 23 13 25					Mechanical Track Cranes					
23-23 17 23 13 27					Mechanical Underslung Overhead Cranes					
23-23 17 23 13 29					Mechanical Workshop Cranes					
23-23 17 23 15				Electric Cranes						
23-23 17 23 15 11					Electric Bridge Cranes					
23-23 17 23 15 13					Top Running Electric Overhead Cranes					
23-23 17 23 15 15					Underslung Electric Overhead Cranes					
23-23 17 23 15 17					Electric Gantry Cranes					
23-23 17 23 15 19					Electric Jib Cranes					
23-23 17 23 15 21					Electric Mobile Cranes					
23-23 17 23 15 23					Electric Terrain Cranes					
23-23 17 23 15 25					Electric Top Running Overhead Cranes					
23-23 17 23 15 27					Electric Tower Cranes					
23-23 17 23 15 29					Electric Track Cranes					
23-23 17 23 15 31					Electric Underslung Overhead Cranes					
23-23 17 23 15 33					Electric Workshop Cranes					
23-23 17 25			Derricks							
23-23 17 27			Hoists							
23-23 17 27 11				Fixed Hoists						
23-23 17 27 11 11					Pneumatic Fixed Hoists					
23-23 17 27 11 13					Electric Fixed Hoists					
23-23 17 27 11 15					Manual Fixed Hoists			Manual Chain Hoist, Ratchet Hoist		
23-23 17 27 11 17					Hydraulic Fixed Hoists					
23-23 17 27 13				Trolley Hoists						
23-23 17 27 13 11					Pneumatic Trolley Hoists					
23-23 17 27 13 13					Electric Trolley Hoists					
23-23 17 27 13 15					Manual Trolley Hoists					
23-23 17 27 13 17					Hydraulic Trolley Hoists					
23-23 19 00		Turntables							a motorized rotating platform used for displaying items	
23-23 19 11			Stage Turntables							
23-23 19 13			Exhibit and Display Turntables							

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23-23 19 15			Vehicular Turntable							
23-23 21 00		Parking Systems							A product that is delivered as an entire system for use in parking cars.	
23-23 21 11			Car Parking Systems							
23-23 23 00		Loading Dock Equipment							Equipment used in the process of loading and unloading products.	
23-23 23 11			Loading Dock Bumpers Seals							
23-23 23 13			Dock Levelers							
23-23 23 13 11				Powered Dock Levelers						
23-23 23 13 13				Manual Dock Levelers						
23-23 23 13 15				Hydraulic Dock Levelers						
23-23 23 15			Loading Dock Lifts							
23-23 23 15 11				Powered Loading Dock Lifts						
23-23 23 15 13				Manual Loading Dock Lifts						
23-23 23 17			Loading Dock Ramps And Bridges							
23-23 23 17 11				Portable Loading Dock Ramps				Movable Loading Dock Ramp		
23-23 23 17 13				Portable Loading Dock Bridges						
23-23 23 17 15				Portable Loading Dock Platforms						
23-23 23 19			Loading Dock Seals							
23-23 23 19 11				Inflatable Loading Dock Seals						
23-23 23 19 13				Loading Dock Weather Seals						
23-23 23 21			Loading Dock Shelters							
23-23 23 23			Loading Dock Vehicle Restraints							
23-23 23 23 11				Electric Loading Dock Vehicle Restraints						
23-23 23 23 13				Electro Magnetic Loading Dock Vehicle Restraints						
23-23 23 23 15				Hydraulic Loading Dock Vehicle Restraints						
23-23 25 00		Scaffolding							A temporary structure used to support people and material (usually modular) in the construction or repair of buildings and other large structures	
23-23 25 11			Suspended Scaffolding							
23-23 25 11 11				Beam Suspended Scaffolding						
23-23 25 11 13				Carriage Suspended Scaffolding						
23-23 25 11 15				Hook Suspended Scaffolding						
23-23 25 13			Scaffolding Rope Climbers							
23-23 25 13 11				Scaffolding Manual Rope Climbers						
23-23 25 13 13				Scaffolding Powered Rope Climbers						
23-23 25 15			Scaffolding Telescoping Platforms							
23-23 25 15 11				Electric and Battery Scaffolding Telescoping Platforms						
23-23 25 15 13				Pneumatic Scaffolding Telescoping Platforms						
23-23 25 17			Powered Scaffolding							
23-25 00 00	Medical and Laboratory Equipment								Products used specifically in medical and laboratory applications.	Includes dental equipment, radiology equipment, operating room equipment, and microscopes.
23-25 11 00		Anesthesiology and Respiratory Products								
23-25 11 11			Anesthesiology Furnishings							
23-25 11 13			Anesthesiology Equipment							
23-25 11 13 11				Anesthesia Carts						
23-25 11 13 13				Anesthesia Gas Equipment						
23-25 11 13 15				Anesthesia Absorber Units						
23-25 11 13 17				Anesthesia Temperature Control Units						
23-25 11 13 19				Anesthesia Intrathecal Pumps						
23-25 11 13 21				Anesthesia Equipment Calibrators						
23-25 11 13 23				Anesthesia Inhalation Analgesia Units						
23-25 11 13 23 11					Anesthesia Inhalation Analgesia Central Gases and Vacuum Units					
23-25 11 13 23 13					Anesthesia Inhalation Analgesia Central Vacuum Only Units					
23-25 11 13 25				Respiratory Monitoring Products						
23-25 11 13 25 11					Apnea Monitors					
23-25 11 13 25 13					Arterial Blood Gas Monitors					
23-25 11 13 25 15					Carbon Dioxide End Tidal Monitors					
23-25 11 13 25 17					Esophageal Motility Recording Units					
23-25 11 13 25 19					Esophageal Stethoscopes					
23-25 11 13 25 21					Oxygen Analyzers					
23-25 11 13 25 23					Oxygen Monitors					
23-25 11 13 25 25					Respiratory Monitoring Kits					
23-25 11 13 27				Pulmonary Function Products						
23-25 11 13 27 11					Bedside Pulmonary Function Screeners					
23-25 11 13 27 13					Body Plethysmographs					

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23-25 11 13 27 15					Pneumotachs					
23-25 11 13 27 15 11						Lilly Pneumotachs				
23-25 11 13 27 15 13						Fleisch Pneumotachs				
23-25 11 13 27 17					Pulmonary Calibration Devices					
23-25 11 13 27 19					Pulmonary Function Calculators					
23-25 11 13 27 21					Pulmonary Function With Computer Analyzers					
23-25 11 13 27 23					Pulmonary Gas Analyzers					
23-25 11 13 27 25					Pulmonary Gas Monitors					
23-25 11 13 27 27					Pulmonary Peak Flowmeters					
23-25 11 13 27 29					Pulmonary Pressure Monitors					
23-25 11 13 27 31					Pulmonary Ventilation Monitors					
23-25 11 13 27 33					Respiratory Temperature Monitors					
23-25 11 13 27 35					Sleep Study Monitors					
23-25 11 13 27 37					Spirometers					
23-25 11 13 27 37 11						Diagnostic Spirometers				
23-25 11 13 27 37 13						Monitoring Spirometers				
23-25 11 13 27 37 15						Therapeutic Spirometers				
23-25 11 13 29				Oxygen Delivery Products						
23-25 11 13 29 11					Oxygen Concentrators					
23-25 11 13 29 13					Oxygen Air Blenders					
23-25 11 13 29 15					Oxygen Timers					
23-25 11 13 29 17					Oxygen Compressors					
23-25 11 13 29 19					Medical Oxygen Head Hoods					
23-25 11 13 29 21					Medical Oxygen Aerosol Tents					
23-25 11 13 29 23					Medical Hyperbaric Chambers					
23-25 11 13 29 25					Medical Inhalators					
23-25 11 13 29 27					Oxygen Therapy Delivery Equipment					
23-25 11 13 29 29					Medical Oxygen Insufflators					
23-25 11 13 29 31					Liquid Oxygen Converters					
23-25 11 13 31				Airway Management Products						
23-25 11 13 31 11					Airway Pressure Gages					
23-25 11 13 31 13					Pharyngometers					
23-25 11 13 33				Intubation Products						
23-25 11 13 33 11					Laryngoscopes					
23-25 11 13 33 13					Intubation Benders					
23-25 11 13 33 15					Intubation Gauges					
23-25 11 13 33 17					Carbon Dioxide Patient Detectors					
23-25 11 13 33 19					Intubation Suction Pumps					
23-25 11 13 35				Negative Pressure Ventilators						
23-25 11 13 35 11					Iron Lungs					
23-25 11 13 35 13					Chest Cuirass Products					
23-25 11 13 37				Positive Pressure Ventilators						
23-25 11 13 37 11					Intermittent Positive Pressure Breathing Ventilator Units			IPPB Units		
23-25 11 13 37 13					Non Invasive Continuous Positive Air Pressure Ventilator Units					
23-25 11 13 37 15					Non Invasive Bi Level Ventilator Units					
23-25 11 13 37 17					Transport Ventilators					
23-25 11 13 37 19					Adult Intensive Care Ventilators					
23-25 11 13 37 21					High Frequency Ventilators					
23-25 11 13 37 23					Home Care Ventilators					
23-25 11 13 37 25					Positive End Expiratory Pressure Ventilator Valves			PEEP Valve		
23-25 11 13 37 27					Ventilator Water Traps					
23-25 11 13 37 29					Ventilator Gas Sampling Ports					
23-25 11 13 37 31					Ventilator Heat Exchangers					
23-25 11 13 37 33					Ventilator Moisture Exchangers					
23-25 11 13 39				Resuscitation Products						
23-25 11 13 39 11					Manual Resuscitators					
23-25 11 13 39 13					Pneumatic Resuscitators					
23-25 11 13 39 15					Electro Mechanical Resuscitators					
23-25 11 13 41				Lung Fluid Products						
23-25 11 13 41 11					Pleural Cavity Drainage Units					
23-25 11 15				Anesthesiology Prefabricated Structures						
23-25 11 15 11					Anesthesiology Gas Columns					
23-25 13 00		Audiology Products								
23-25 13 11			Audiology Equipment							
23-25 13 11 11				Audiometers						
23-25 13 11 11 11					Diagnostic Audiometers					
23-25 13 11 11 13					Group Screening Audiometers					

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23-25 13 11 11 15					Middle Ear Impedance Diagnostic Audiometers					
23-25 13 11 13				Audiometric Bone Vibrators						
23-25 13 11 15				Middle Ear Analyzers						
23-25 13 11 17				Auditory Function Screening Units						
23-25 13 11 19				Auditory Test Graphic Recorders						
23-25 13 11 21				Auditory Analyzers						
23-25 13 11 21 11					Evoked Potential Auditory Analyzers					
23-25 13 11 23				Ear Fenestrometers						
23-25 13 11 25				Electrocochleographs						
23-25 13 11 27				Hearing Aides						
23-25 13 11 29				Hearing Aid Analyzers						
23-25 13 11 31				Tinnitus Analyzers						
23-25 13 11 33				Toynbee Diagnostic Tubes						
23-25 13 11 35				Tympanometers						
23-25 13 13			Audiology Prefabricated Structures							
23-25 13 13 11				Audio Booths						
23-25 13 13 13				Double Wall Audio Booths						
23-25 13 13 13 11					Definitive Test Double Wall Audio Booths					
23-25 13 13 15				Single Wall Audio Booths						
23-25 13 13 17				Acoustic Hearing Test Chambers						
23-25 15 00		Autopsy and Postmortem Products								
23-25 15 11			Autopsy and Postmortem Furnishings							
23-25 15 11 11				Postmortem Refrigerators and Freezers						
23-25 15 11 11 11					Cadaver Cabinet Refrigerators					
23-25 15 11 11 13					Cadaver Freezers					
23-25 15 11 11 15					Cadaver Refrigerated Rooms					
23-25 15 11 11 17					Cadaver Refrigerators					
23-25 15 11 11 19					Cadaver Walk In Refrigerators					
23-25 15 11 13				Autopsy Tables						
23-25 15 11 13 11					Autopsy Body Boards					
23-25 15 11 13 13					Autopsy Dissecting Tank Tables					
23-25 15 11 13 15					Autopsy Head Rests					
23-25 15 11 13 17					Autopsy Sinks					
23-25 15 11 13 19					Mobile Autopsy Tables					
23-25 15 11 13 21					Stationary Autopsy Tables					
23-25 15 11 15				Embalming Sinks						
23-25 15 13			Autopsy and Postmortem Equipment							
23-25 15 13 11				Cadaver Lifts						
23-25 15 13 11 11					Cadaver Electric Lifts					
23-25 15 13 11 13					Cadaver Hydraulic Lifts					
23-25 15 13 11 15					Cadaver Scissor Lift Trolleys					
23-25 15 13 13				Autopsy Equipment						
23-25 15 13 13 11					Autopsy Fluid Collection Vacuum Aspirators					
23-25 15 13 13 13					Autopsy Hanging Scales					
23-25 15 13 13 15					Autopsy Saws					
23-25 15 13 13 17					Bone Dust Collectors					
23-25 15 13 15				Cadaver Transport And Storage Products						
23-25 15 13 15 11					Autopsy Carts					
23-25 15 13 15 13					Body Transport Containers					
23-25 15 13 15 15					Cadaver Carriers					
23-25 15 13 15 17					Cadaver Lifter Or Transfer Devices					
23-25 15 13 15 19					Cadaver Storage Cabinets					
23-25 15 13 15 21					Cadaver Storage Racks					
23-25 15 13 15 23					Cadaver Trays					
23-25 15 15			Autopsy and Postmortem Prefabricated Structures							
23-25 15 15 11				Autopsy Workstations						
23-25 15 15 11 11					Autopsy Grossing Workstations					
23-25 15 15 11 13					Embalming Workstations					
23-25 15 15 11 15					Autopsy Down Draft Workstations					
23-25 15 17			Autopsy and Postmortem Devices							
23-25 17 00		Dental Products								
23-25 17 11			Dental Furnishings							
23-25 17 11 11				Dental Cabinets						
23-25 17 11 11 11					Mobile Dental Cabinets					
23-25 17 11 11 13					Dental Operating Stool					
23-25 17 11 13				Dental Examination Chairs						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 17 11 15				Dental Stools						
23-25 17 11 17				Dental Cabinets						
23-25 17 11 19				Dental Tables						
23-25 17 11 21				Dental Combination Furniture Sets						
23-25 17 11 23				Dental Impression Water Baths						
23-25 17 11 25				Dental Lighting Products						
23-25 17 11 25 11					Dental Fiber Optic Lights					
23-25 17 11 25 13					Dental Operating Illumination Sets					
23-25 17 11 25 15					Dental Operating Light Tripods					
23-25 17 11 25 17					General Dental Lights					
23-25 17 13			Dental Equipment							
23-25 17 13 11				Dental Furnaces						
23-25 17 13 11 11					Dental Burnout Laboratory Furnaces					
23-25 17 13 11 13					Porcelain Glazing Laboratory Furnaces					
23-25 17 13 11 15					Vacuum Porcelain Furnaces					
23-25 17 13 13				Dental Specialized Hoods						
23-25 17 13 13 11					Dental Acrylic Floor Standing Fume Hoods					
23-25 17 13 13 13					Dental Fishmouth Hoods					
23-25 17 13 13 15					Dental Splash Hoods					
23-25 17 13 13 17					Dental Splash Hoods with Shield					
23-25 17 13 15				Dental Procedure Products						
23-25 17 13 15 01					Calcium Hydroxide Placement Tools					
23-25 17 13 15 03					Composite Placement Tools					
23-25 17 13 15 05					Crown Or Bridge Removers					
23-25 17 13 15 07					Dental Amalgam Carvers					
23-25 17 13 15 09					Dental Amalgamator					
23-25 17 13 15 11					Dental Anesthesia Sets					
23-25 17 13 15 13					Dental Bur Holders					
23-25 17 13 15 15					Dental Burnishers					
23-25 17 13 15 17					Dental Burs					
23-25 17 13 15 19					Dental Calipers					
23-25 17 13 15 21					Dental Cryosurgical Units					
23-25 17 13 15 23					Dental Dehydrators					
23-25 17 13 15 25					Dental Depth Gauges					
23-25 17 13 15 27					Dental Drills					
23-25 17 13 15 29					Dental Elevators					
23-25 17 13 15 31					Dental Excavators					
23-25 17 13 15 33					Dental Expanders					
23-25 17 13 15 35					Dental Filler Contouring Instruments					
23-25 17 13 15 37					Dental Fracture Detecting Tools					
23-25 17 13 15 39					Dental Gages					
23-25 17 13 15 41					Dental Guides					
23-25 17 13 15 43					Dental Heat Carriers					
23-25 17 13 15 45					Dental Hygiene Instruments					
23-25 17 13 15 47					Dental Instrument Cassettes					
23-25 17 13 15 49					Dental Instrument Sharpening Equipment					
23-25 17 13 15 51					Dental Instrument Trays					
23-25 17 13 15 53					Dental Instruments Mats					
23-25 17 13 15 55					Dental Lasers					
23-25 17 13 15 57					Dental Mallets					
23-25 17 13 15 59					Dental Mixing Slabs					
23-25 17 13 15 61					Dental Nippers					
23-25 17 13 15 63					Dental Operative Brushes					
23-25 17 13 15 65					Dental Oral Suction Devices					
23-25 17 13 15 67					Dental Pin Benders					
23-25 17 13 15 69					Dental Pin Drivers					
23-25 17 13 15 71					Dental Placement Instruments					
23-25 17 13 15 73					Dental Pulp Testers					
23-25 17 13 15 75					Dental Reamers					
23-25 17 13 15 77					Dental Retraction Cord Packing Instruments					
23-25 17 13 15 79					Dental Retractors					
23-25 17 13 15 81					Dental Saliva Ejectors					
23-25 17 13 15 83					Dental Scalars					
23-25 17 13 15 85					Dental Spreaders					
23-25 17 13 15 87					Dental Tooth Separators					
23-25 17 13 15 89					Dental Vitality Testers					
23-25 17 13 15 91					Dentoscopes					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 17 13 15 93					Intraoral Lights					
23-25 17 13 15 95					Pneumatic Dental Chisels					
23-25 17 13 15 97					Temporomandibular Joint (TMJ) Dental Videoscopes					
23-25 17 13 17				Dental Tanks						
23-25 17 13 17 11					Dental Blow Out Tanks					
23-25 17 13 17 13					Dental Curing Tanks					
23-25 17 13 17 15					Dental Washout Blow Out Tanks					
23-25 17 13 19				Dental Polishing and Grinding Machines						
23-25 17 13 19 11					Dental Combination Grinding and Polishing Machines					
23-25 17 13 19 13					Dental Grinding Machines					
23-25 17 13 19 15					Dental Polishing Machines					
23-25 17 13 21				Dental Imaging Products						
23-25 17 13 21 11					Cephalometric Radiographic Fluoroscopic Units					
23-25 17 13 21 13					Dental Film Processors					
23-25 17 13 21 15					Dental Radioactive Tracers					
23-25 17 13 21 17					Dental Radiographic Fluoroscopic Units					
23-25 17 13 21 17 11						Panographic Cephalo Dental Radiographic Fluoroscopic Units				
23-25 17 13 21 17 13						Panographic Dental Radiographic Fluoroscopic Units				
23-25 17 13 21 19					Dental Radiography Film Analyzers					
23-25 17 13 21 21					Dental Radiology Film Hangers					
23-25 17 13 21 23					Dental Radiology Film Holders					
23-25 17 13 21 25					Dental Radiology Film Mounts					
23-25 17 13 21 27					Dental X Ray Duplicators					
23-25 17 13 21 29					Dental X Ray Units					
23-25 17 13 21 31					Dental X Ray Viewers					
23-25 17 13 23				Dental Sterilization Products						
23-25 17 13 23 11					Dental Steam Cleaners					
23-25 17 13 25				Dental Laboratory Products						
23-25 17 13 25 11					Dental Air Abrasion Units					
23-25 17 13 25 13					Dental Burners					
23-25 17 13 25 15					Dental Casting Machines					
23-25 17 13 25 17					Dental Curing Units					
23-25 17 13 25 17 11						2 Stage Dental Curing Units				
23-25 17 13 25 17 13						3 Stage Dental Curing Units				
23-25 17 13 25 19					Dental Dust Collectors					
23-25 17 13 25 21					Dental Gold Platers					
23-25 17 13 25 23					Dental Lathes					
23-25 17 13 25 25					Dental Model Trimmers					
23-25 17 13 25 27					Dental Models					
23-25 17 13 25 29					Dental Plaster Traps					
23-25 17 13 25 31					Dental Resin Curing Units					
23-25 17 13 25 31 11						Dental Visible Light Resin Curing Units				
23-25 17 13 25 33					Dental Resins Processing Units					
23-25 17 13 25 35					Dental Sandblasters					
23-25 17 13 25 37					Dental Soldering Machines					
23-25 17 13 25 39					Dental Torches					
23-25 17 13 25 41					Dental Vacuum Units					
23-25 17 13 25 43					Dental Vibrators					
23-25 17 13 25 45					Dental Waxing Units					
23-25 17 15			Dental Prefabricated Structures							
23-25 17 15 11				Dental Lab Workcenters						
23-25 17 15 11 11					Dental Lab Die Trimming Workcenters					
23-25 17 15 11 13					Dental Lab Equipment Workcenters					
23-25 17 15 11 15					Dental Lab Metal Grinding Workcenters					
23-25 17 15 11 17					Dental Lab Microblasting Workcenters					
23-25 17 15 11 19					Dental Lab Plaster Workcenters					
23-25 17 15 11 21					Dental Lab Polishing Workcenters					
23-25 17 15 11 23					Dental Lab Surveying and Milling Workcenters					
23-25 19 00		Dermatology Products								
23-25 19 11			Dermatology Furnishings							
23-25 19 13			Dermatology Equipment							
23-25 19 13 11				Phototherapy Products						
23-25 19 13 11 11					Phototherapy Air Circulators					
23-25 19 13 11 13					Phototherapy Blankets					
23-25 19 13 11 15					Phototherapy Light Mats					
23-25 19 13 11 17					Phototherapy Patient Protection Devices					
23-25 19 13 11 19					Phototherapy Power Units					

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23-25 19 13 11 21					Phototherapy Warmer Beds					
23-25 19 15			Dermatology Prefabricated Structures							
23-25 19 15 11				Ultraviolet Treatment Booths						
23-25 19 15 13				Hand and Foot Ultraviolet Treatment Booths						
23-25 19 17			Dermatology Devices							
23-25 21 00		Emergency Trauma and Intensive Care Products								
23-25 21 11			Emergency Trauma and Intensive Furnishings							
23-25 21 11 11				Catheter Storage Cabinets						
23-25 21 13			Emergency Trauma and Intensive Equipment							
23-25 21 13 11				Emergency Carts						
23-25 21 13 13				Emergency Transportation Products						
23-25 21 13 13 11					Air Evacuation Stretchers					
23-25 21 13 13 13					Ambulance Cots					
23-25 21 13 13 15					Anti Shock Garments					
23-25 21 13 13 17					Basket Stretchers					
23-25 21 13 13 19					Scoop Stretchers					
23-25 21 13 13 21					Spine Boards					
23-25 21 13 13 23					Water Rescue Tubes					
23-25 21 13 15				Emergency Airway Management Products						
23-25 21 13 15 11					Emergency Laryngoscope Kits					
23-25 21 13 15 13					Emergency Oropharyngeal Airway Devices					
23-25 21 13 15 15					Emergency Suction Units					
23-25 21 13 15 17					Emergency Tracheal Tube Kits					
23-25 21 13 17				Emergency Kits						
23-25 21 13 17 11					Emergency Dental Kits					
23-25 21 13 17 13					Emergency First Aid Kits					
23-25 21 13 17 15					Emergency Fracture Kits					
23-25 21 13 17 17					Emergency Intravenous IV Kits					
23-25 21 13 17 19					Emergency Medical First Response Kits					
23-25 21 13 17 21					Emergency Medical Technician Kits					
23-25 21 13 17 23					Emergency Obstetrics Kits					
23-25 21 13 17 25					Emergency Resuscitation Kits					
23-25 21 13 17 27					Emergency Services Trauma Kits					
23-25 21 13 17 29					Emergency Ventriculostomy Kits					
23-25 21 13 19				Emergency Resuscitation Products						
23-25 21 13 19 11					Defibrillators					
23-25 21 13 19 11 11						Acute Care Defibrillators				
23-25 21 13 19 11 13						Acute Care Defibrillator With Monitors				
23-25 21 13 19 11 15						Automatic Defibrillators				
23-25 21 13 19 11 17						Defibrillator with Cardioscopes				
23-25 21 13 19 11 19						Portable Defibrillators				
23-25 21 13 19 13					Defibrillator Analyzers					
23-25 21 13 19 15					Emergency Aspirators					
23-25 21 13 19 17					Emergency Resuscitators					
23-25 21 13 19 17 11						Emergency Manual Resuscitators				
23-25 21 13 19 17 13						Emergency Pulmonary Resuscitators				
23-25 21 13 19 17 15						Emergency Oxygen Powered Resuscitators				
23-25 21 13 21				Acute Care Monitoring Units						
23-25 21 13 21 11					Acute Care Fetal Monitoring Units					
23-25 21 13 21 13					Acute Care Maternal Monitoring Units					
23-25 21 13 21 15					Cardiac Output Monitoring Units					
23-25 21 13 21 17					Intracranial Pressure Monitoring Units			ICP Units		
23-25 21 13 21 19					Multiparameter Vital Sign Units					
23-25 21 15		Emergency Trauma and Intensive Prefabricated Structures								
23-25 21 15 11				Intensive Care Unit Prefabricated Service Columns						
23-25 21 15 13				Trauma Workcenters						
23-25 23 00		Endocrinology Products								
23-25 23 11			Endocrinology Furnishings							
23-25 23 11 11				Dialysis Chairs						
23-25 23 11 13				Dialysis Tables						
23-25 23 13			Endocrinology Equipment							
23-25 23 13 11				Peritoneal Dialysis Products						
23-25 23 13 11 11					Continuous Ambulatory Peritoneal Dialysis Transfer Units			CAPD Unit		
23-25 23 13 11 13					Dialysis Boxes					
23-25 23 13 11 15					Pheresis Units					
23-25 23 13 11 17					Peritoneal Dialysis Units					
23-25 23 13 11 17 11						Hollow Peritoneal Dialysis Units				

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23-25 23 13 13				Hemodialysis Products						
23-25 23 13 13 11					Hemodialysis Blood Oxygen Demand Units					
23-25 23 13 13 13					Hemodialysis Conductivity Meters					
23-25 23 13 13 15					Hemodialysis Filters					
23-25 23 13 13 17					Hemodialysis Level Detectors					
23-25 23 13 13 19					Hemodialysis Pressure Pumps					
23-25 23 13 13 21					Hemodialysis Reprocessing Units					
23-25 23 13 13 23					Hemodialysis Tanks					
23-25 23 13 13 25					Hemodialysis Unit Arterial Pressure Monitors					
23-25 23 13 13 27					Hemodialysis Unit Blood Pumps					
23-25 23 13 13 29					Hemodialysis Unit Heparin Infusion Pumps					
23-25 23 13 13 31					Hemodialysis Unit Single Pass Converters					
23-25 23 13 13 33					Hemodialysis Unit Stands					
23-25 23 13 13 35					Hemodialysis Unit Temperature Monitors					
23-25 23 13 13 37					Hemodialysis Unit Test Equipment					
23-25 23 13 13 39					Hemodialysis Units					
23-25 23 13 13 41					Hemodialysis Warming Baths					
23-25 23 13 15				Continuous Renal Replacement Therapy Products				CRRT Units		
23-25 23 13 15 11					Continuous Arteriovenous Dialysis Units			CAVHD Units		
23-25 23 13 15 13					Continuous Arteriovenous Hemofiltration Units			CAVH Units		
23-25 23 13 15 15					Continuous Venovenous Hemodialysis Units					
23-25 23 13 15 17					Continuous Venovenous Hemofiltration Units					
23-25 23 13 15 19					Renal Dialysis Cartridge Flushing Units					
23-25 23 13 15 21					Slow Continuous Ultrafiltration Units			SCUF Units		
23-25 23 15				Endocrinology Prefabricated Structures						
23-25 25 00				Gastroenterology and Hepatology Products						
23-25 25 11				Gastroenterology Furnishings						
23-25 25 11 11					Proctology Examination Tables					
23-25 25 11 13					Urological Procedure Table					
23-25 25 11 13 11					Endoscope Storage Cabinets					
23-25 25 11 13 13					Endoscope Wall Hangers					
23-25 25 11 13 15					Endoscopic Procedure Carts					
23-25 25 13				Gastroenterology Equipment						
23-25 25 15				Gastroenterology Prefabricated Structures						
23-25 25 17				Gastroenterology Devices						
23-25 27 00				General Internal Medicine Products						
23-25 27 11				General Internal Medicine Furnishings						
23-25 27 11 11					Intravenous Transport Products					
23-25 27 11 11 11					Intravenous Equipment Hangers					
23-25 27 11 11 13					Intravenous Infusion Gravity Systems Mounted Racks					
23-25 27 11 11 15					Intravenous Infusion Gravity Systems Mounted Tracks					
23-25 27 11 11 17					Intravenous Line Poles					
23-25 27 11 11 19					Intravenous Line Stands					
23-25 27 11 11 21					Intravenous Wheelchair Poles					
23-25 27 13				General Internal Medicine Equipment						
23-25 27 13 11					Endoscopy Carts					
23-25 27 13 11 11					Fiberoptic Endoscopy Carts					
23-25 27 13 11 11 11					Basic Fiberoptic Endoscopy Carts					
23-25 27 13 11 11 13					Fiberoptic Endoscopy Carts With Video Accessories					
23-25 27 13 11 11 15					Fiberoptic Endoscopy Carts With Video Accessories And Information Management					
23-25 27 13 11 13					Video Endoscopy Carts					
23-25 27 13 11 13 11					Video Endoscopy Carts CCD Scope And Information Management					
23-25 27 13 13				Intravenous Pump Products						
23-25 27 13 13 11					General Use Intravenous Pumps					
23-25 27 13 13 13					Intravenous Infusion Pump Analyzers					
23-25 27 13 13 15					Intravenous Infusion Pump Sensors					
23-25 27 13 13 17					Intravenous Infusion Pump Transducers					
23-25 27 13 13 19					Intravenous Syringe Pumps					
23-25 27 13 13 21					Multichannel Intravenous Pumps					
23-25 27 13 15				Urological Products						
23-25 27 13 15 11					Cystometry Transducers					
23-25 27 13 15 13					Urethral Sound Sets					
23-25 27 13 15 15					Urethral Stone Remover Sets					
23-25 27 13 15 17					Urodynamic Catheters					
23-25 27 13 15 19					Urological Perculators					
23-25 27 13 17				Endoscopes Products						
23-25 27 13 17 11					Rigid Endoscopes					

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23-25 27 13 17 13					Flexible Endoscopes					
23-25 27 13 17 15					Cystourethroscopes					
23-25 27 13 17 17					Resectoscopes					
23-25 27 13 17 19					Laparoscopes					
23-25 27 13 17 21					Laparoscopic Telescopes					
23-25 27 13 17 23					Cystoscopes					
23-25 27 13 17 25					Endoscopic Sphincterotomes					
23-25 27 13 17 27					Duodenoscopes					
23-25 27 13 17 27 11						Combination Duodenoscope and Choledochoscopes				
23-25 27 13 17 27 13						Therapeutic Duodenoscopes				
23-25 27 13 17 27 15						Fiberoptic Therapeutic Duodenoscopes				
23-25 27 13 17 27 17						Video Therapeutic Duodenoscopes				
23-25 27 13 17 29					Esophagoscopes					
23-25 27 13 17 31					Endoscopic Equipment Sets					
23-25 27 13 17 33					Endoscopic Heater Probe Units					
23-25 27 13 17 35					Endoscopic Imaging Equipment					
23-25 27 13 17 37					Endoscopic Insufflation Units					
23-25 27 13 17 39					Endoscopic Distention Units					
23-25 27 13 17 41					Endoscopic Printers					
23-25 27 13 17 43					Endoscopic Video Cameras					
23-25 27 13 17 45					Endoscopic Recorders					
23-25 27 13 17 47					Enteroscopes					
23-25 27 13 17 47 11						Therapeutic Fiberoptic Enteroscopes				
23-25 27 13 17 47 13						Therapeutic Video Enteroscopes				
23-25 27 13 19				Gastroscope Products						
23-25 27 13 19 11					Therapeutic Fiberoptic Gastrosopes					
23-25 27 13 19 13					Therapeutic Video Gastrosopes					
23-25 27 13 21				Sigmoidoscope Products						
23-25 27 13 21 11					Therapeutic Sigmoidoscopes					
23-25 27 13 21 13					Fiberoptic Therapeutic Sigmoidoscopes					
23-25 27 13 21 15					Video Therapeutic Sigmoidoscopes					
23-25 27 13 23				Colonoscopy Products						
23-25 27 13 23 11					Mobile Colonoscopy System With Accessories					
23-25 27 13 23 13					Therapeutic Colonoscopes					
23-25 27 13 23 13 11						Fiberoptic Therapeutic Colonoscopes				
23-25 27 13 23 13 13						Video Therapeutic Colonoscopes				
23-25 27 15										
23-25 29 00										
23-25 29 11										
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23-25 29 13 13 33					Therapeutic Exercise Pulleys					
23-25 29 13 13 35					Therapeutic Exercise Resistive Equipment					
23-25 29 13 13 37					Therapeutic Exercise Skateboards					
23-25 29 13 13 39					Therapeutic Exercise Therapeutic Balls					
23-25 29 13 13 41					Therapeutic Exercise Treadmills					
23-25 29 13 13 43					Therapeutic Exercise Vestibular Motion Equipment					
23-25 29 13 13 45					Therapeutic Exercise Weight Belts					
23-25 29 13 13 47					Therapeutic Exercise Weight Machines					
23-25 29 13 13 49					Therapeutic Exercise Wrist Exercisers					
23-25 29 13 15				Gait Training Products						
23-25 29 13 15 11					Gait Training Bars					
23-25 29 13 15 13					Gait Training Bikes					
23-25 29 13 15 15					Gait Training Parallel Bars					
23-25 29 13 15 17					Gait Training Ramps					
23-25 29 13 15 19					Gait Training Stairs					
23-25 29 13 15 21					Gait Training Walkers					
23-25 29 13 17				Electrotherapy Equipment						
23-25 29 13 17 11					Electrotherapy Combination Units					
23-25 29 13 17 13					Galvanic Stimulators					
23-25 29 13 17 15					Faradic Stimulators					
23-25 29 13 17 17					Neuromuscular Stimulators					
23-25 29 13 17 17 11						Multi Channel Neuromuscular Stimulators				
23-25 29 13 17 17 13						interferential Neuromuscular Stimulators				
23-25 29 13 17 17 15						Portable Neuromuscular Stimulators				
23-25 29 13 17 19					Therapeutic Short Wave Diathermy Units					
23-25 29 13 17 21					Transcutaneous Electric Nerve Stimulation Units					
23-25 29 13 19				Heat Cold Therapy Products						
23-25 29 13 19 11					Therapeutic Cold Storage Chilling Units					
23-25 29 13 19 13					Therapeutic Heat Lamps					
23-25 29 13 19 15					Therapeutic Hydrocollators					
23-25 29 13 19 17					Therapeutic Combination Heating Cooling Units					
23-25 29 13 19 19					Therapeutic Cooling Blankets					
23-25 29 13 19 21					Therapeutic Cooling Drapes					
23-25 29 13 19 23					Therapeutic Cooling Units					
23-25 29 13 19 25					Therapeutic Cryo Compression Equipment					
23-25 29 13 19 27					Therapeutic Heating Blankets					
23-25 29 13 19 29					Therapeutic Heating Drapes					
23-25 29 13 19 31					Therapeutic Heating Units					
23-25 29 13 19 33					Therapeutic Paraffin Baths					
23-25 29 13 21				Hydrotherapy Products						
23-25 29 13 21 11					Extremity Hydrotherapy Baths					
23-25 29 13 21 13					Extremity Hydrotherapy Tanks					
23-25 29 13 21 15					Full Body Immersion Hydrotherapy Baths					
23-25 29 13 21 17					Full Body Immersion Hydrotherapy Tanks					
23-25 29 13 21 19					Hydrotherapy Bath Chairs					
23-25 29 13 23				Hypothermia and Hyperthermia Units						
23-25 29 13 23 11					Combination Hyperthermia and Hypothermia Units					
23-25 29 13 23 13					Hyperthermia Units					
23-25 29 13 23 15					Hypothermia Units					
23-25 29 13 23 17					Mobile Combination Hyperthermia and Hypothermia Units					
23-25 29 13 23 19					Mobile Hyperthermia Units					
23-25 29 13 23 21					Mobile Hypothermia Units					
23-25 29 15				Health Exercise and Physical Therapy Prefabricated Structures						
23-25 29 15 11				Nourishment Stations						
23-25 31 00		Hematology Products								
23-25 31 11			Hematology Furnishings							
23-25 31 11 11				Blood Refrigerators and Freezers						
23-25 31 11 11 11					Blood Bank Refrigerators					
23-25 31 11 11 13					Blood Freezers					
23-25 31 11 11 13 11						Double Compartment Blood Freezers				
23-25 31 11 11 13 13						Blood Plasma Freezers				
23-25 31 11 11 15					Dry Tissue Freezers					
23-25 31 11 11 17					Plasma Storage Freezers					
23-25 31 11 13				Hematology Baths						
23-25 31 11 13 11					Serology Water Baths					
23-25 31 11 13 13					Tissue Processing Water Baths					
23-25 31 11 15				Hematology Cabinets						

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23-25 31 11 15 11					Paraffin Block Cabinets					
23-25 31 13			Hematology Equipment							
23-25 31 13 11				Hematology Analyzers						
23-25 31 13 11 11					Blood Lead Analyzers					
23-25 31 13 11 13					BUN Analyzers					
23-25 31 13 11 13 11						Discrete BUN Analyzers				
23-25 31 13 11 15					PH Blood Gas Analyzers					
23-25 31 13 11 17					Blood Typing Centrifuges					
23-25 31 13 13			Blood And Transfusion Products							
23-25 31 13 13 11					Blood Conservation Equipment					
23-25 31 13 13 13					Blood Containers					
23-25 31 13 13 15					Blood Transfusion Equipment					
23-25 31 13 13 17					Blood Warming and Transfusion Equipment					
23-25 31 13 13 19					Blood Warming Equipment					
23-25 31 13 13 21					Blood Waste Collection Equipment					
23-25 31 15			Hematology Prefabricated Structures							
23-25 31 15 11				Blood Bank Workcenters						
23-25 31 15 13				Hematology Workcenters						
23-25 33 00		Medical Gas Products								
23-25 33 11			Medical Air Pressure Control Cabinets							
23-25 33 13			Medical Gas Alarm Modules							
23-25 33 15			Medical Gas Cylinder Carts							
23-25 33 17			Medical Gas Cylinder Stands							
23-25 33 19			Medical Gas Delivery Columns							
23-25 33 21			Medical Gas Filtering Equipment							
23-25 33 23			Medical Gas Manifolds							
23-25 33 25			Medical Gas Outlets							
23-25 33 27			Medical Gas Service Tracks							
23-25 33 29			Medical Gas Shutoff Valves							
23-25 33 31			Medical Gas Treatment Equipment							
23-25 33 33			Medical Gas Valve Boxes							
23-25 35 00		Nursing Products								
23-25 35 11			Nursing Furnishings							
23-25 35 11 11				Freestanding Nursing Table Bath and Showers						
23-25 35 13			Nursing Equipment							
23-25 35 13 11				Nursing Station Telecommunications Equipment						
23-25 35 13 11 11					Nurse Communication Modules					
23-25 35 13 11 13					Nurse Intercoms					
23-25 35 13 11 15					Nurse Room Control Equipment					
23-25 35 13 11 17					Nurse Room Control Exit Monitors					
23-25 35 15			Nursing Prefabricated Structures							
23-25 35 15 11				Nurse Stations						
23-25 37 00		Obstetrics and Gynecology Products								
23-25 37 11			Obstetrics and Gynecology Furnishings							
23-25 37 11 11				Obstetrics and Gynecology Beds						
23-25 37 11 11 11					Birthing Beds					
23-25 37 11 11 13					Electric Birthing Beds					
23-25 37 11 13				Obstetrics and Gynecology Tables						
23-25 37 11 13 11					Beast Biopsy Tables					
23-25 37 11 13 13					Gynecological Exam Tables					
23-25 37 11 13 15					Obstetrical Examination Tables					
23-25 37 13			Obstetrics and Gynecology Equipment							
23-25 37 13 11				Obstetrics and Gynecology Carts						
23-25 37 13 11 11					Fetal Monitoring Carts					
23-25 37 13 13				Breast Biopsy Products						
23-25 37 13 13 11					Minimally Invasive Breast Biopsy Premium Loading Units					
23-25 37 13 13 13					Minimally Invasive Breast Biopsy Vacuum Units					
23-25 37 15			Obstetrics and Gynecology Prefabricated Structures							
23-25 39 00		Ophthalmology Products								
23-25 39 11			Ophthalmology Furnishings							
23-25 39 11 11				Ophthalmology Tables						
23-25 39 11 11 11					Ophthalmologic Instrument Tables					
23-25 39 11 13				Ophthalmology Cabinets						
23-25 39 11 13 11					Lens Measuring Instrument Cabinets					
23-25 39 13			Ophthalmology Equipment							
23-25 39 13 11				Ophthalmic Diagnostic Exam Products						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 39 13 11 11					Autorefractors					
23-25 39 13 11 13					Binocular Vision Test Sets					
23-25 39 13 11 15					Chart Projectors					
23-25 39 13 11 17					Color Perception Testing Lanterns					
23-25 39 13 11 19					Combination Refractor Keratometers					
23-25 39 13 11 21					Contact Lens Gonioscope					
23-25 39 13 11 23					Corneal Topographers					
23-25 39 13 11 25					Corneal Topography Units					
23-25 39 13 11 27					Depth Perception Units					
23-25 39 13 11 29					Electronystagmographs					
23-25 39 13 11 31					Electroretinogram Systems					
23-25 39 13 11 33					Exophthalmometers					
23-25 39 13 11 35					Eye Occluders					
23-25 39 13 11 37					Keratometer Ophthalmometers					
23-25 39 13 11 39					Keratoscopes					
23-25 39 13 11 41					Ophthalmic Colorimeters					
23-25 39 13 11 43					Ophthalmic Distometers					
23-25 39 13 11 45					Ophthalmic Drums					
23-25 39 13 11 47					Ophthalmic Euthyscopes					
23-25 39 13 11 49					Ophthalmic Eye Test Lenses					
23-25 39 13 11 51					Ophthalmic Instrument Pads					
23-25 39 13 11 53					Ophthalmic Instrument Tables					
23-25 39 13 11 55					Ophthalmic Lens Holders					
23-25 39 13 11 57					Ophthalmic Lensometers					
23-25 39 13 11 57 11						Ophthalmic Soft Contact Lensometers				
23-25 39 13 11 59					Ophthalmic Perimeters					
23-25 39 13 11 61					Ophthalmic Photometers					
23-25 39 13 11 63					Ophthalmic Prisms					
23-25 39 13 11 65					Ophthalmic Retinoscope Accessories					
23-25 39 13 11 67					Ophthalmic Retinoscopes					
23-25 39 13 11 69					Ophthalmic Slit Lamps					
23-25 39 13 11 71					Ophthalmic Spectrophotometers					
23-25 39 13 11 73					Ophthalmic Speculas					
23-25 39 13 11 75					Ophthalmic Tonometers					
23-25 39 13 11 75 11						Ophthalmic Applanation Tonometers				
23-25 39 13 11 75 13						Ophthalmic Noncontact Tonometers				
23-25 39 13 11 77					Ophthalmic Transilluminators					
23-25 39 13 11 79					Ophthalmic Visual Field Plotters					
23-25 39 13 11 81					Ophthalmic Visual Function Analyzers					
23-25 39 13 11 83					Ophthalmic Visuometers					
23-25 39 13 11 85					Ophthalmodynamometers					
23-25 39 13 11 87					Ophthalmometers					
23-25 39 13 11 89					Ophthalmometer Base Plates					
23-25 39 13 11 91					Pachymeters					
23-25 39 13 11 91 11						Ultrasound Pachymeters				
23-25 39 13 11 91 13						Corneal Ultrasound Pachymeters				
23-25 39 13 11 92					Phoropter Units					
23-25 39 13 11 93					Pseudoisochromatic Plate Sets					
23-25 39 13 11 94					Tachistoscopes					
23-25 39 13 11 95					Tangent Screens					
23-25 39 13 11 96					Viewing Stands For Vision Acuity Testing					
23-25 39 13 11 97					Vision Testing Stereoscopes					
23-25 39 13 13				Ophthalmic Equipment						
23-25 39 13 13 11					Lens Edging Machines					
23-25 39 13 13 11 11						Lens Edging Automatic Beveling Machines				
23-25 39 13 13 11 13						Lens Edging Automatic Machines				
23-25 39 13 13 13					Ophthalmic Lasers					
23-25 39 13 13 13 11						Dual Fiber Photocoagulation Ophthalmic Lasers				
23-25 39 13 13 13 13						Ophthalmic Laser With Ophthalmoscopes				
23-25 39 13 13 13 15						Ophthalmic Laser With Slit Lamps				
23-25 39 13 13 13 17						Semiconductor Diode Ophthalmic Lasers				
23-25 39 13 13 15					Phacofragmentation (Cusa) Units					
23-25 39 13 15				Obstetrical And Gynecological Kits						
23-25 39 13 15 11					Amniocentesis Kits					
23-25 39 13 15 13					Obstetrical Extraction Units					
23-25 39 13 15 15					Gynecology Drainage Kits					
23-25 39 15				Ophthalmology Prefabricated Structures						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 41 00		Orthopedics Products								
23-25 41 11			Orthopedics Furnishings							
23-25 41 11 11				Orthopedics Tables						
23-25 41 11 11 11					Medical Casting Tables					
23-25 41 11 11 13					Orthopedic Operating Tables					
23-25 41 11 11 15					Orthopedic Fracture Operating Tables					
23-25 41 11 13				Orthopedics Sinks						
23-25 41 11 13 11					Plaster Sinks					
23-25 41 13		Orthopedics Equipment								
23-25 41 13 11				Orthopedics Carts						
23-25 41 13 11 11					Plaster Carts					
23-25 41 15		Orthopedic And Prosthetic And Sports Medicine Products								
23-25 41 15 11				Casting Equipment And Products						
23-25 41 15 11 11					Broken Arm Casting Machines					
23-25 41 15 11 13					Cast Carts					
23-25 41 15 11 15					Cast Cutters					
23-25 41 15 11 17					Cast Impression Trays					
23-25 41 15 11 19					Cast Saws					
23-25 41 15 11 21					Cast Stands					
23-25 41 15 11 23					Cast Vacuum Units					
23-25 41 15 11 25					Casting Induction Machines					
23-25 41 15 11 27					Casting Machine Guards					
23-25 41 15 11 29					Chrome Cobalt Casting Machines					
23-25 41 15 13				Orthopedic Traction Products						
23-25 41 15 13 11					Mobile Traction Carts					
23-25 41 15 13 13					Orthopedic Traction Weights					
23-25 41 15 13 15					Orthopedic Upper Limb Appliances					
23-25 41 17		Orthopedics Prefabricated Structures								
23-25 43 00		Otolaryngology Products								
23-25 43 11			Otolaryngology Furnishings							
23-25 43 13			Otolaryngology Equipment							
23-25 43 13 11				Nasal Equipment						
23-25 43 13 11 11					Nasal Bleeding Control Devices					
23-25 43 13 11 13					Nasal Flowmeters					
23-25 43 13 11 15					Nasal Irrigation Devices					
23-25 43 13 11 17					Olfactometers					
23-25 43 13 11 19					Rhinoanemometers					
23-25 43 13 13				Taste Equipment						
23-25 43 13 13 11					Gustometers					
23-25 43 13 15				Ear Equipment						
23-25 43 13 15 11					Earmold Equipment					
23-25 43 15		Otolaryngology Prefabricated Structures								
23-25 45 00		Patient Care Products								
23-25 45 11			Patient Care Furnishings							
23-25 45 11 11				Patient Beds						
23-25 45 11 11 11					Electric Patient Beds					
23-25 45 11 11 13					Electric Special Care Patient Beds					
23-25 45 11 11 15					Hospital Bedside Rails					
23-25 45 11 11 17					Hospital Head Boards					
23-25 45 11 13				Medical Mattresses						
23-25 45 11 13 11					Hospital Bed Mattresses					
23-25 45 11 13 13					Medical Pressure Reduction Mattresses					
23-25 45 11 15				Patient Baths						
23-25 45 11 17				Patient Showers						
23-25 45 11 17 11					Free Standing Patient Showers					
23-25 45 11 17 13					Patient's Combination Toilets					
23-25 45 11 19				Patient Seating						
23-25 45 11 19 11					Hospital Recliners					
23-25 45 11 19 13					Patient Chairs					
23-25 45 11 21				Physically Challenged Transport Equipment						
23-25 45 11 21 11					Physically Challenged Multifunctional Mobility Devices					
23-25 45 11 21 13					Physically Challenged Positioning Devices					
23-25 45 11 21 15					Physically Challenged Standing Aids					
23-25 45 11 21 17					Physically Challenged Whole Body Sliding Devices					
23-25 45 11 21 19					Physically Challenged Whole Body Turning Devices					
23-25 45 11 21 21					Rollators					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 45 11 21 23					Walkers					
23-25 45 11 23				Physically Challenged Baths and Showers						
23-25 45 11 23 11					Physically Challenged Bath Chairs					
23-25 45 11 23 13					Physically Challenged Bath Lifts					
23-25 45 11 23 15					Physically Challenged Bath Safety Rails					
23-25 45 11 23 17					Physically Challenged Bathboards					
23-25 45 11 23 19					Physically Challenged Shower Seats					
23-25 45 11 23 21					Physically Challenged Showers					
23-25 45 11 23 23					Physically Challenged Sitz Baths					
23-25 45 11 25				Physically Challenged Baths and Showers						
23-25 45 11 25 11					Physically Challenged Toilet Arm Supports					
23-25 45 11 25 13					Physically Challenged Toilet Frames					
23-25 45 11 25 15					Physically Challenged Toilet Grab Bars					
23-25 45 11 25 17					Physically Challenged Toilet Seat Lifters					
23-25 45 11 25 19					Physically Challenged Toilet Seats					
23-25 45 11 25 21					Physically Challenged Toilets					
23-25 45 13				Patient Care Equipment						
23-25 45 15				Patient Care Prefabricated Structures						
23-25 47 00		Patient Clinical Diagnostic Products								
23-25 47 11			Patient Clinical Diagnostic Furnishings							
23-25 47 11 11				Privacy Screens						
23-25 47 11 11 11					Patient Cubicle Curtain Tracks					
23-25 47 11 11 13					Patient Cubicle Curtains					
23-25 47 11 11 15					Patient Cubicle Screens					
23-25 47 11 13				Patient Clinical Diagnostic Tables						
23-25 47 11 13 11					Examination Treatment Tables					
23-25 47 11 13 13					Medical Procedure Tables					
23-25 47 11 13 15					Minor Surgical Tables					
23-25 47 11 13 17					Treatment Tables					
23-25 47 11 15				Patient Clinical Diagnostic Sinks						
23-25 47 11 15 11					Clinic Sinks					
23-25 47 11 15 13					Clinic Scrub Sinks					
23-25 47 11 17				Patient Clinical Diagnostic Storage Products						
23-25 47 11 17 11					Patient Records Shelving Units					
23-25 47 11 19				Patient Clinical Diagnostic Seating						
23-25 47 11 19 11					Clinical Examination Chairs					
23-25 47 11 19 13					Physician Stools					
23-25 47 11 21				Patient Clinical Diagnostic Cabinets						
23-25 47 11 21 11					Exam Room Cabinets					
23-25 47 11 21 13					Pass Through Specimen Cabinets					
23-25 47 11 21 15					Treatment Cabinets					
23-25 47 11 23				Patient Clinical Diagnostic Monitor Arms						
23-25 47 11 23 11					Medical Facility Monitor Ceiling Arms					
23-25 47 11 23 13					Medical Facility Monitor Wall Arms					
23-25 47 13				Patient Clinical Diagnostic Equipment						
23-25 47 13 11				Blood Pressure Units And Related Products						
23-25 47 13 11 11					Aneroid Blood Pressure Units					
23-25 47 13 11 13					Aneroid Sphygmomanometers					
23-25 47 13 11 15					Blood Pressure Recording Units					
23-25 47 13 11 17					Electronic Blood Pressure Units					
23-25 47 13 11 19					Mercury Blood Pressure Units					
23-25 47 13 11 21					Sphygmomanometers					
23-25 47 13 13				Electrocardiography EKG Units And Related Products						
23-25 47 13 13 11					Electrocardiography Units			EKG		
23-25 47 13 13 11 11						Multiple Channel Electrocardiograph Units		EKG		
23-25 47 13 13 11 13						Single Channel Electrocardiograph Units		EKG		
23-25 47 13 13 13					Electrocardiography Cable Lead Testers			EKG		
23-25 47 13 13 15					Electrocardiography Graphic Recorders			EKG		
23-25 47 13 13 17					Electrocardiography Monitors			EKG		
23-25 47 13 13 19					Electrocardiography Unit Analyzers			EKG		
23-25 47 13 13 21					Long Term Continuous Electrocardiography Monitoring Units			Holter Monitoring Unit		
23-25 47 13 13 23					Electrocardiography Transmitters			EKG		
23-25 47 13 15				Pulse Dosimeters Products						
23-25 47 13 15 11					Co Oximeters					
23-25 47 13 15 13					Pulse Oximeter Cables					
23-25 47 13 15 15					Pulse Oximeter Probes					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 47 13 15 17					Pulse Oximeter Sensors					
23-25 47 13 15 19					Pulse Oximeter Units					
23-25 47 13 17				Medical Exam Diagnostic Products						
23-25 47 13 17 11					Angioscopes					
23-25 47 13 17 13					Anoscopes					
23-25 47 13 17 15					Binocular Ophthalmoscopes					
23-25 47 13 17 15 11						Direct Binocular Ophthalmoscopes				
23-25 47 13 17 15 13						Indirect Binocular Ophthalmoscopes				
23-25 47 13 17 17					Body Composition Analyzer					
23-25 47 13 17 19					Bronchoscopes					
23-25 47 13 17 21					Colposcopes					
23-25 47 13 17 23					Dermatoscopes					
23-25 47 13 17 25					Electroencephalograph EEG					
23-25 47 13 17 27					Electromyographs					
23-25 47 13 17 29					Electronic Stethoscopes					
23-25 47 13 17 31					Fiberoptic Bronchoscopes					
23-25 47 13 17 31 11						Adult Fiberoptic Bronchoscopes				
23-25 47 13 17 31 13						Adult Large Channel Fiberoptic Bronchoscopes				
23-25 47 13 17 31 15						Adult Slim Casing Fiberoptic Bronchoscopes				
23-25 47 13 17 31 17						Examination Fiberoptic Bronchoscopes				
23-25 47 13 17 31 19						Pediatric Fiberoptic Bronchoscopes				
23-25 47 13 17 31 21						Therapeutic Fiberoptic Bronchoscopes				
23-25 47 13 17 33					Goniometers					
23-25 47 13 17 35					Hand Held Vascular Dopplers					
23-25 47 13 17 37					Mechanical Stethoscopes					
23-25 47 13 17 39					Nasopharyngoscopes					
23-25 47 13 17 41					Neurological Discriminators					
23-25 47 13 17 43					Neurological Sensors					
23-25 47 13 17 45					Ophthalmoscopes					
23-25 47 13 17 47					Otoscopes					
23-25 47 13 17 49					Patient Thermoregulators					
23-25 47 13 17 51					Proctoscopes					
23-25 47 13 17 53					Stethoscopic Phonocardiographs					
23-25 47 13 17 55					Therapeutic Bronchoscopes					
23-25 47 13 17 57					Vaginoscopes					
23-25 47 13 19				Patient Weight Scales						
23-25 47 13 19 11					Diaper Weight Scales					
23-25 47 13 19 13					Infant Scales					
23-25 47 13 19 15					Patient Bed Scales					
23-25 47 13 19 17					Patient Chair Scales					
23-25 47 13 19 19					Patient Floor Scales					
23-25 47 13 19 21					Patient Sling Scales					
23-25 47 13 19 23					Patient Table Scales					
23-25 47 13 19 25					Wheelchair Platform Scales					
23-25 47 13 21				Patient Clinical Diagnostic Analyzers						
23-25 47 13 21 11					Amino Acid Analyzers					
23-25 47 13 21 13					Bilirubinometers					
23-25 47 13 21 15					Blood Bank Analyzers					
23-25 47 13 21 17					Blood Gas Analyzers					
23-25 47 13 21 19					Blood Chemistry Analyzers					
23-25 47 13 21 21					Chemistry Analyzers					
23-25 47 13 21 23					Coagulation Analyzers					
23-25 47 13 21 23 11						Automatic Coagulation Analyzers				
23-25 47 13 21 23 13						Fibrometers				
23-25 47 13 21 25					Deoxyribonucleic Sequence Analyzers					
23-25 47 13 21 27					Toxicology Analyzers					
23-25 47 13 21 29					Hematology Analyzers					
23-25 47 13 21 29 11						Differential Hematology Analyzers				
23-25 47 13 21 31					Histology Analyzers					
23-25 47 13 21 33					Breath Hydrogen Analyzers					
23-25 47 13 21 35					Immunology Analyzers					
23-25 47 13 21 37					Microbiology Analyzers					
23-25 47 13 21 39					Protein Analyzers					
23-25 47 13 21 41					Radioisotopic Analyzers					
23-25 47 13 21 43					Urinalysis Analyzers					
23-25 47 13 21 43 11						Advanced Urinalysis Analyzers				
23-25 47 13 21 43 13						Basic Urinalysis Analyzers				

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 47 13 21 45					Glucose Analyzers					
23-25 47 13 21 47					Drug Screening Chemistry Analyzers					
23-25 47 13 21 49					High Capacity Strat Chemistry Analyzers					
23-25 47 13 21 51					Multichannel Chemistry Analyzer					
23-25 47 13 21 53					Stat Chemistry Analyzers					
23-25 47 13 21 55					Enzyme Immuni Assay Analysis Units					
23-25 47 13 21 55 11							Advanced Enzyme Immuni Assay Analysis Units			
23-25 47 13 21 55 13							Basic Enzyme Immuni Assay Analysis Units			
23-25 47 13 21 55 15							Plate Washer Enzyme Immuni Assay Analysis Units			
23-25 47 13 21 55 17							Hemoglobinometers			
23-25 47 13 23				Patient Clinical Testing Products						
23-25 47 13 23 11					Cholesterol Meters					
23-25 47 13 23 13					Cholesterol Monitors					
23-25 47 13 23 15					Glucose Meters					
23-25 47 13 23 17					Glucose Monitors					
23-25 47 15				Patient Clinical Diagnostic Prefabricated Structures						
23-25 47 15 11				Exam Work Centers						
23-25 47 15 13				Gross Pathology Stations						
23-25 47 15 15				Hospital equipment power columns						
23-25 47 15 17				Medical Preparation Work Centers						
23-25 49 00				Patient Transportation and Lifting Equipment					Medical equipment used to transport or lift patients.	
23-25 49 11				Patient transport products						
23-25 49 11 11				Patient Transport Trolleys						
23-25 49 11 13				Patient Gurneys						
23-25 49 11 15				Geriatric Chairs						
23-25 49 11 17				Patient Transport Incubators						
23-25 49 11 19				Patient Scooters						
23-25 49 11 21				Patient Stretchers						
23-25 49 11 21 11					Cadaver Transport Stretchers					
23-25 49 11 21 13					Labor Recover Stretchers					
23-25 49 11 21 15					MRI Compatible Stretchers					
23-25 49 11 21 17					Surgical Recovery Stretchers					
23-25 49 11 23				Patient Mobile Stretchers						
23-25 49 11 23 11					Tapered Head Mobile Stretchers					
23-25 49 11 23 13					9 Position Mobile Stretchers					
23-25 49 11 25				Wheelchairs						
23-25 49 11 25 11					Electric Wheelchairs					
23-25 49 11 25 13					Manual Wheelchairs					
23-25 49 11 27				Patient Shifting Boards						
23-25 49 11 29				Patient Transfer Mats						
23-25 49 13				Patient lifts						
23-25 49 13 11				Patient Scissor Lifts						
23-25 49 13 13				Clinical Hydraulic Lifts						
23-25 49 13 15				Patient Suspended Seats						
23-25 49 13 17				Patient Suspended Slings						
23-25 49 13 19				Patient Ceiling Hoists						
23-25 49 13 21				Clinical Infant Slings						
23-25 49 13 21 11					Patient Hoists					
23-25 51 00				Pediatrics Products						
23-25 51 11				Pediatrics Furnishings						
23-25 51 11 11				Pediatric Beds						
23-25 51 11 11 11					Pediatric Bassinets					
23-25 51 11 11 13					Pediatric Beds					
23-25 51 11 11 15					Pediatric Cribs					
23-25 51 11 11 17					Pediatric Examination Tables					
23-25 51 11 11 19					Pediatric Incubators					
23-25 51 11 11 21					Pediatric Infant Positioning Cradles					
23-25 51 11 11 23					Pediatric Infant Warmers					
23-25 51 13				Pediatrics Equipment						
23-25 51 13 11				Pediatrics Ventilators						
23-25 51 13 11 11					Pediatric Intensive Care Ventilators					
23-25 51 13 11 13					Infant Intensive Care Ventilators					
23-25 51 15				Pediatrics Prefabricated Structures						
23-25 51 15 11				Infant Prefabricated Service Columns						
23-25 53 00				Pharmacology Products						
23-25 53 11				Pharmacology Furnishings						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 53 11 11				Pharmacy Shelving Units						
23-25 53 11 13				Pharmacology Cabinets						
23-25 53 11 13 11					Medicine Cabinets					
23-25 53 11 13 13					Narcotic Cabinets					
23-25 53 11 13 13 11						Narcotic Cabinets With Safe				
23-25 53 13			Pharmacology Equipment							
23-25 53 13 11				Pharmacology Carts						
23-25 53 13 11 11					Medication Carts					
23-25 53 13 11 13					Unit Dose Medication Carts					
23-25 53 13 13				Tablet Products						
23-25 53 13 13 11					Tablet Crushers					
23-25 53 13 13 13					Tablet Crusher Dispensers					
23-25 53 13 13 15					Tablet Cutters					
23-25 53 15			Pharmacology Prefabricated Structures							
23-25 53 15 11				Pharmacy Stations						
23-25 55 00		Psychiatric and Psychology Products								
23-25 55 11			Psychiatric and Psychology Furnishings							
23-25 55 11 11				Psychiatric Beds						
23-25 55 11 11 11					Psychiatric Patient Showers					
23-25 55 11 11 13					Psychiatric Platform Bed Without Visible Legs					
23-25 55 11 11 15					Psychiatric Platform Beds					
23-25 55 11 11 17					Psychiatric Platform Beds					
23-25 55 13			Psychiatric and Psychology Equipment							
23-25 55 15			Psychiatric and Psychology Prefabricated Structures							
23-25 57 00		Sterilization Medical Products								
23-25 57 11			Sterilizer Equipment							
23-25 57 11 11				Chemical Sterilizers						
23-25 57 11 13				Dry Heat Sterilizers						
23-25 57 11 15				Filter Sterilizers						
23-25 57 11 17				Gas Sterilizers						
23-25 57 11 19				Glass Bead Sterilizers						
23-25 57 11 21				Hot Air Sterilizers						
23-25 57 11 23				Needle Sterilizers						
23-25 57 11 25				Powered Instrument Cleaning Devices						
23-25 57 11 27				Radiation Sterilizers						
23-25 57 11 29				Sanitizer Heaters						
23-25 57 11 31				Steam Autoclaves						
23-25 57 11 33				Steam Sterilizers						
23-25 57 11 35				Sterilization Cabinets						
23-25 57 11 37				Sterilization Lamps						
23-25 57 11 39				Sterilization Water Recovery Equipment						
23-25 57 11 41				Double Chamber Ultrasonic Cleaners						
23-25 57 11 43				Single Chamber Ultrasonic Cleaners						
23-25 59 00		Surgical Products								
23-25 59 11			Surgical Furnishings							
23-25 59 11 11				Surgical Beds						
23-25 59 11 11 11					Surgical Bedside Rails					
23-25 59 11 13				Surgical Sinks						
23-25 59 11 13 11					Surgeon Scrub Sinks					
23-25 59 11 13 13					Surgeon's Instrument Sinks					
23-25 59 11 15				Surgical Tables						
23-25 59 11 15 11					Surgical Instrument Tables					
23-25 59 11 15 13					Spinal Operating Tables					
23-25 59 11 15 15					Surgical Operating Tables					
23-25 59 11 15 17					Straddle Instrument Tables					
23-25 59 11 15 19					Medical Dressing Instrument Tables					
23-25 59 11 15 21					Cesarean Section Patient Procedure Tables					
23-25 59 11 15 23					Delivery Room Patient Procedure Tables					
23-25 59 11 15 25					Surgical Instrument Tables					
23-25 59 11 15 27					Operating Room Patient Fracture Tables					
23-25 59 11 15 29					Operating Room Patient Procedure Tables					
23-25 59 11 15 31					Surgical Equipment Stands					
23-25 59 11 17				Surgical Seating						
23-25 59 11 17 11					Surgeon Stools					
23-25 59 11 17 13					Rolling Surgeons Stools					
23-25 59 11 17 15					Surgical Step Stools					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 59 11 19				Surgical Cabinets						
23-25 59 11 19 11					Surgical Instrument Cabinets					
23-25 59 13			Surgical Equipment							
23-25 59 13 11				Surgical Carts						
23-25 59 13 11 11					Sterilizable Loading Carts					
23-25 59 13 11 13					Surgical Case Carts					
23-25 59 13 11 15					Surgical Dressing Carts					
23-25 59 13 11 17					Operating Room Case Carts					
23-25 59 13 13				Cardiovascular Products						
23-25 59 13 13 11					Heart And Lung Machines					
23-25 59 13 13 13					Intraaortic Balloon Pumps					
23-25 59 13 13 15					Intracardiac Suction Devices					
23-25 59 13 13 17					Perfusion Blood Parameter Monitors					
23-25 59 13 13 19					Perfusion Bubble Traps					
23-25 59 13 13 21					Perfusion Cardioplegia Sets					
23-25 59 13 13 23					Perfusion Cardiotomy Reservoirs					
23-25 59 13 13 25					Perfusion Centrifugal Equipment					
23-25 59 13 13 27					Perfusion Heaters					
23-25 59 13 13 29					Perfusion Coolers					
23-25 59 13 13 31					Perfusion Dual Heater And Cooler Units					
23-25 59 13 13 33					Perfusion Haemoconcentrators					
23-25 59 13 13 35					Perfusion Oxygen Saturation Monitors					
23-25 59 13 13 37					Perfusion Oxygenators					
23-25 59 13 13 39					Perfusion Pump Heads					
23-25 59 13 13 41					Perfusion Venous Reservoirs					
23-25 59 13 13 43					Ventricular Assist Devices					
23-25 59 13 13 45					Perfusion Pumps					
23-25 59 13 13 47					Cardiovascular Reservoirs					
23-25 59 13 13 49					Surgical Coronary Artery Blowers					
23-25 59 13 13 51					Surgical Coronary Artery Misters					
23-25 59 13 15				Surgical Equipment						
23-25 59 13 15 11					Surgical Basin Stands					
23-25 59 13 15 13					Cryosurgery Equipment					
23-25 59 13 15 15					Electrocautery Equipment					
23-25 59 13 15 17					Ophthalmic Irrigation Equipment					
23-25 59 13 15 19					Ophthalmic Surgery Phacoemulsification Equipment					
23-25 59 13 15 21					Ophthalmic Surgery Extrusion Equipment					
23-25 59 13 15 23					Surgical Irrigation Pumps					
23-25 59 13 15 25					Pulsed Lavage Units With Suction					
23-25 59 13 15 27					Pulsed Lavage Units With Out Suction					
23-25 59 13 15 29					Surgical Lasers					
23-25 59 13 15 29 11						CO2 Surgical Lasers				
23-25 59 13 15 29 13						KTP Surgical Lasers				
23-25 59 13 15 31					Surgical Lithotripters					
23-25 59 13 15 31 11						Extracorporeal Lithotripters				
23-25 59 13 15 31 13						Ultrasound Lithotripters				
23-25 59 13 15 33					Surgical Microscopes					
23-25 59 13 15 35					Surgical Magnifiers					
23-25 59 13 15 37					Surgical Pneumatic Tourniquets					
23-25 59 13 15 39					Surgical Electric Tourniquets					
23-25 59 13 15 41					Surgical Aspirators					
23-25 59 13 15 41 11						General Purpose Aspirator Pressure Units				
23-25 59 13 15 41 13						Low Pressure High Volume Suction Chest and Abdomen Aspirators				
23-25 59 13 15 41 15						Low Pressure Low Volume Suction Surgical Aspirators				
23-25 59 13 15 41 17						Mobile Uterine Aspirators				
23-25 59 13 15 43					Surgical Urological Tables					
23-25 59 13 15 45					Vitreo Retinal Fragmatome Surgery Equipment					
23-25 59 13 15 47					Microsurgery Equipment					
23-25 59 13 15 49					Operating Room Medication Dispensers					
23-25 59 13 15 51					Surgical Dermatomes					
23-25 59 13 15 53					Surgical Dermabraders					
23-25 59 13 15 55					Surgical Dermameshers					
23-25 59 13 15 57					Surgical Pneumatic Saws					
23-25 59 13 15 59					Surgical Pneumatic Drills					
23-25 59 13 15 61					Surgical Power Pin Drivers					
23-25 59 13 15 63					Surgical Power Saws					
23-25 59 13 15 65					Surgical Power Drills					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 59 13 15 67					Surgical Power Pin Drivers					
23-25 59 13 15 69					Surgical Reamers					
23-25 59 13 15 71					Surgical Shavers					
23-25 59 13 15 73					Electrosurgical Units					
23-25 59 13 15 73 11						Dual Output Electrosurgical Units				
23-25 59 13 15 73 13						Endoscopy Electrosurgical Units				
23-25 59 13 15 73 15						Monopolar Electrosurgical Units				
23-25 59 13 15 73 17						Unblended Mobile Electrosurgical Units				
23-25 59 13 17				Surgical Lighting Fixtures						
23-25 59 13 17 11					Surgical Operating Room Lighting Fixtures					
23-25 59 13 19				Surgical Support Products						
23-25 59 13 19 11					Surgical Basin Sets					
23-25 59 13 19 13					Surgical Bone Cement Mixing Equipment					
23-25 59 13 19 15					Surgical Suction Canisters					
23-25 59 13 19 17					Surgical Glove Drying Or Powdering Equipment					
23-25 59 13 19 19					Surgical Fluid Decanting Devices					
23-25 59 15				Surgical Prefabricated Structures						
23-25 59 15 11				Surgical Prefabricated Service Columns						
23-25 61 00		Veterinary and Animal Products								
23-25 61 11			Veterinary and Animal Furnishings							
23-25 61 11 11				Veterinary Tables						
23-25 61 11 11 11					Veterinary Operating Tables					
23-25 61 11 11 13					Postmortem Animal Dissection Tables					
23-25 61 11 11 15					Necropsy Tables					
23-25 61 11 11 17					Veterinary Surgical Tables					
23-25 61 11 13				Veterinary Sinks						
23-25 61 11 13 11					Animal Cage Washing Sinks					
23-25 61 11 15				Veterinary Storage Chests						
23-25 61 13			Veterinary and Animal Equipment							
23-25 61 13 11				Animal Containment Products						
23-25 61 13 11 10					Cage Washers					
23-25 61 13 11 11					Small Animal Laboratory Cages					
23-25 61 13 11 13					Large Animal Laboratory Cages					
23-25 61 13 11 15					Large Animal Mobile Kennels					
23-25 61 13 11 15 11						Intensive Care Large Animal Mobile Kennels				
23-25 61 13 11 17					Small Animal Mobile Kennels					
23-25 61 13 11 17 11						Intensive Care Small Animal Mobile Kennels				
23-25 61 13 11 19					Aquaria Equipment					
23-25 61 13 11 21					Animal Catching Devices					
23-25 61 13 11 23					Fish Aeration Systems					
23-25 61 15			Veterinary Equipment							
23-25 61 15 11				Veterinary Blood Pressure Testers						
23-25 61 15 13				Veterinary Kymograph Testers						
23-25 61 15 15				Veterinary Pyrogenic Testers						
23-25 61 15 17				Veterinary Stereotoxic Equipment						
23-25 61 15 19				Veterinary Electrocardiographs ECG						
23-25 61 17				Veterinary and Animal Prefabricated Structures						
23-25 63 00		X Ray and Imagery Products								
23-25 63 11			X Ray and Imagery Furnishings							
23-25 63 11 11				X Ray and Imagery Sinks						
23-25 63 11 11 11					Film Processing Sinks					
23-25 63 11 11 13					Lead Lined Sinks					
23-25 63 11 11 13 11						Lead Lined With Decay Storage Sinks				
23-25 63 11 13				X Ray and Imagery Protective Barriers						
23-25 63 11 13 11					X Ray Protective Screens					
23-25 63 11 13 13					Radiofrequency Proective Screens					
23-25 63 11 13 15					Radiological Shielding Apron Racks					
23-25 63 11 13 17					Portable Radioactive Materials Containers					
23-25 63 11 13 19					Radiological Shielding Freestanding Screens					
23-25 63 11 13 21					Radiological Shielding Wall					
23-25 63 11 13 23					Radiological Shielding Ceiling Panels					
23-25 63 11 13 25					Radiological Shielding Floor Installed Panels					
23-25 63 11 15				X Ray and Imagery Storage Units						
23-25 63 11 15 11					Lead Lined Storage Cabinets					
23-25 63 11 15 13					Photographic Slides Storage Cabinets					
23-25 63 13			X Ray and Imagery Equipment							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-25 63 13 11				X Ray and Imagery Carts						
23-25 63 13 11 11					Radium Transport Carts					
23-25 63 13 13				Computed Tomography	CT and CAT Products					
23-25 63 13 13 11					Computed Tomography CT Complete Stationary Units					
23-25 63 13 13 13					Computed Tomography CT Mobile Units					
23-25 63 13 13 15					Computed Tomography CT Van Units					
23-25 63 13 13 17					Computed Tomography CT Consoles					
23-25 63 13 13 19					Computed Tomography CT Power Conditioners					
23-25 63 13 13 21					Computed Tomography CT Tables					
23-25 63 13 13 23					Computed Tomography CT Chairs					
23-25 63 13 13 25					Computed Tomography CAT Complete Stationary Units					
23-25 63 13 13 27					Computed Tomography CAT Mobile Units					
23-25 63 13 13 29					Computed Tomography CAT Transportable Units					
23-25 63 13 13 31					Computed Tomography CAT Van Units					
23-25 63 13 13 33					Computed Tomography CAT Consoles					
23-25 63 13 13 35					Computed Tomography CAT Power Conditioners					
23-25 63 13 13 37					Computed Tomography CAT Tables					
23-25 63 13 13 39					Computed Tomography CAT Chairs					
23-25 63 13 13 41					Computerized Tomography Phantoms					
23-25 63 13 13 41 11						Body Computerized Tomography Phantoms				
23-25 63 13 13 41 13						Head Computerized Tomography Phantoms				
23-25 63 13 13 41 15						Performance Computerized Tomography Phantoms				
23-25 63 13 13 43					Computed Tomography CT Radiotherapy Simulators					
23-25 63 13 13 45					Computed Tomography CAT Radiotherapy Simulators					
23-25 63 13 15				Magnetic Resonance Imaging Products				MRI		
23-25 63 13 15 11					Medical Magnetic Resonance Imaging Complete Stationary Unit Installation					
23-25 63 13 15 13					Medical Magnetic Resonance Imaging Mobile Units					
23-25 63 13 15 15					Medical Magnetic Resonance Imaging Transportable Units					
23-25 63 13 15 17					Medical Magnetic Resonance Imaging Van Units					
23-25 63 13 15 19					Medical Magnetic Resonance Imaging Monitors					
23-25 63 13 15 21					Medical Magnetic Resonance Imaging Scanners					
23-25 63 13 15 23					Medical Magnetic Resonance Imaging Tables					
23-25 63 13 17				Ultrasound Doppler And Echo Imaging Products						
23-25 63 13 17 11					Cardiac Ultrasound Units					
23-25 63 13 17 13					Cardiac Doppler Units					
23-25 63 13 17 15					Cardiac Echo Units					
23-25 63 13 17 17					Cardioscopes					
23-25 63 13 17 19					Fetal Ultrasound Units					
23-25 63 13 17 21					Fetal Echo Units					
23-25 63 13 17 23					Gynecological Ultrasound Units					
23-25 63 13 17 25					Gynecological Echo Units					
23-25 63 13 17 27					Mammographic Ultrasound Units					
23-25 63 13 17 29					Mammographic Echo Units					
23-25 63 13 17 31					Medical Ultrasound Bone Densitometers					
23-25 63 13 17 33					Medical Ultrasound Or Doppler Or Echo Monitors					
23-25 63 13 17 35					Medical Ultrasound Or Doppler Or Echo Printers					
23-25 63 13 17 37					Medical Ultrasound Transducers					
23-25 63 13 17 39					Medical Doppler Transducers					
23-25 63 13 17 41					Medical Echo Transducers					
23-25 63 13 17 43					Medical General Use Ultrasound Units					
23-25 63 13 17 45					Medical General Use Doppler Units					
23-25 63 13 17 47					Medical General Use Pulse Echo Units					
23-25 63 13 17 49					Medical General Use Echography Units					
23-25 63 13 17 51					Thesiometers					
23-25 63 13 17 53					Vaginal Ultrasound Or Echo Probes					
23-25 63 13 17 55					Vascular Ultrasound Units					
23-25 63 13 17 57					Medical Ultrasound Ophthalmic Scanners					
23-25 63 13 19				X Ray Products						
23-25 63 13 19 11					Chest X Ray Equipment					
23-25 63 13 19 13					Mammography X Ray Equipment					
23-25 63 13 19 15					Medical C Arm X Ray Units					
23-25 63 13 19 17					Medical Cine Fluoroscopy Equipment					
23-25 63 13 19 19					Medical Radiology And Fluoroscopy RF Equipment					
23-25 63 13 19 21					Medical Radioisotope Scanners					
23-25 63 13 19 23					Medical X Ray Buckys					
23-25 63 13 19 25					Medical X Ray Quality Assurance Calibration Devices					
23-25 63 13 19 27					Medical X Ray Tables					
23-25 63 13 19 29					Medical X Ray Stands					

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23-25 63 13 19 31					Medical X Ray Chairs					
23-25 63 13 19 33					Medical X Ray Cabinets					
23-25 63 13 19 35					Medical X Ray Tomography Units					
23-25 63 13 19 37					Medical Diagnostic Use X Ray Units					
23-25 63 13 19 39					Medical Xeroradiography Units					
23-25 63 13 19 41					X Ray Bone Densitometers					
23-25 63 13 19 43					Medical X Ray Intensifying Screens					
23-25 63 13 19 45					Medical X Ray Water Coolers					
23-25 63 13 19 47					Medical Imaging Procedure Trays					
23-25 63 13 19 49					Medical X Ray Film Hot Spot Lights					
23-25 63 13 19 51					Medical X Ray Film Large Rack Viewing Systems					
23-25 63 13 19 53					Medical X Ray Film View Boxes					
23-25 63 13 19 55					Medical X Ray Film Illuminator Windows					
23-25 63 13 19 57					Medical X Ray Film Illuminator Screens					
23-25 63 13 19 59					Medical X Ray Film Stereoscopes					
23-25 63 13 21				Gamma Cameras Products						
23-25 63 13 21 11					Medical General Use Gamma Cameras					
23-25 63 13 21 13					Lymphatic Mapping Navigator Equipment					
23-25 63 13 21 15					Lymphatic Mapping Probes					
23-25 63 13 21 17					Lymphatic Mapping Collimators					
23-25 63 13 23				Gamma Radiation Therapy Products						
23-25 63 13 23 11					Radiosurgical Gamma Knife Collimators					
23-25 63 13 23 13					Radiosurgical Gamma Knife Units					
23-25 63 13 23 15					Radiosurgical Gamma Scintillators					
23-25 63 13 25				Linear Accelerator Intensity Modulated Radiation Therapy Units				IMRT Units		
23-25 63 13 25 11					Medical Linear Accelerator Intensity Modulated Radiation Therapy IMRT Two Dimensional Units					
23-25 63 13 25 13					Medical Linear Accelerator Intensity Modulated Radiation Therapy IMRT Three Dimensional Units					
23-25 63 13 25 15					Medical Linear Accelerator Intensity Modulated Radiation Therapy IMRT Collimators					
23-25 63 13 25 17					Dual Energy Linear Accelerator					
23-25 63 13 27				Medical Positron Emission Tomography Units				PET		
23-25 63 13 27 11					Medical Positron Emission Tomography PET Units					
23-25 63 13 29				Medical Single Photon Emission Computed Tomography Units				SPECT		
23-25 63 13 29 11					Medical Single Photon Emission Computed Tomography SPECT Units					
23-25 63 13 31				Radiotherapy Teletherapy Products						
23-25 63 13 31 11					Radiotherapy Teletherapy Cobalt 60 Equipment					
23-25 63 13 31 13					Radiotherapy Teletherapy Linear Accelerators					
23-25 63 13 31 15					Radiotherapy Teletherapy Orthovoltage X Ray Machines					
23-25 63 13 31 17					Radiotherapy Teletherapy Superficial X Ray Machines					
23-25 63 13 31 19					Radiotherapy Cutters					
23-25 63 13 31 19 11						Radiotherapy Beam Block Cutters				
23-25 63 13 31 19 13						Radiotherapy Compensator Cutters				
23-25 63 13 33				Radiographic Fluoroscopic Units						
23-25 63 13 33 11					Computerized Tomography Radiographic Fluoroscopic Units					
23-25 63 13 33 13					Digital Angio Biplane Radiographic Fluoroscopic Units					
23-25 63 13 33 15					Digital Cardiac Radiographic Fluoroscopic Units					
23-25 63 13 33 17					Digital Chest Radiographic Fluoroscopic Units					
23-25 63 13 33 19					Mammographic Radiographic Fluoroscopic Units					
23-25 63 13 33 21					Non Tilt Table Radiographic Units					
23-25 63 13 33 23					Table Radiographic Fluoroscopic Units					
23-25 63 13 33 23 11						Remote Table Radiographic Fluoroscopic Units				
23-25 63 13 33 25					Urologic Radiographic Fluoroscopic Units					
23-25 63 13 33 25 11						Computerized Tomography Urologic Radiographic Fluoroscopic Units				
23-25 63 13 35				Radiation Detection Or Monitoring Products						
23-25 63 13 35 11					Radiation Dosimeters					
23-25 63 13 35 13					Radiation Badges					
23-25 63 13 35 15					Radiation Detectors					
23-25 63 15				X Ray and Imagery Prefabricated Structures						
23-25 63 15 11					Radiological Shielding Chambers					
23-25 63 15 13					Radiological Shielding Rooms					
23-25 63 15 15					Radiological Shielding Safes					
23-25 63 17				Specialized Medical Computer Equipment						
23-25 63 17 11					Computer Assisted Cardiology Management System					
23-25 63 17 13					Nuclear Medicine Clinical Computers					
23-25 63 17 15					DIN PACS Computer System					
23-25 63 17 17					Holter Monitor Analysis Computer System					
23-25 63 17 19					Mean Cell Volume Computers					

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23-25 63 17 21				Radiation Therapy Treatment Planning Computers							
23-25 65 00		Biological Protection and Preservation Products							Furnishings specific to medical and laboratory.		
23-25 65 11		Biological Safety Cabinets									
23-25 65 11 11				Biological Safety Class I Cabinets							
23-25 65 11 13				Biological Safety Class II Cabinets							
23-25 65 11 15				Biological Safety Class III Cabinets							
23-25 65 11 17				Cryogenic Freezers							
23-25 65 11 19				Biological Freezers							
23-25 65 11 21				Biological Refrigerators							
23-25 65 13		Cabinet Bases									
23-25 65 13 11				Biological Safety Class I Cabinet Bases							
23-25 65 13 13				Biological Safety Class II Cabinet Bases							
23-25 65 13 15				Biological Safety Class III Cabinet Bases							
23-25 67 00		Hazardous Materials Products									
23-25 67 11		Hazardous Materials Cabinets									
23-25 67 11 11				Acid Storage Cabinets							
23-25 67 11 13				Flammable Storage Cabinets							
23-25 67 13		Hazardous Materials Refrigerators and Freezers									
23-25 67 13 11				Flammable Material Storage Refrigerators							
23-25 67 13 13				Flammable Material Storage Freezers							
23-25 67 13 15				Flammable Material Storage Refrigerator Freezers							
23-25 67 13 17				Explosion Proof Refrigerators							
23-25 67 13 19				Explosion Proof Refrigerator Freezers							
23-25 69 00		Laboratory and Scientific Products							Fume and debris hoods specific to medical and laboratory.		
23-25 69 11		Laboratory Furnishings									
23-25 69 11 11			Laboratory Tables								
23-25 69 11 11 11				Microscope Tables							
23-25 69 11 13			Laboratory Seating								
23-25 69 11 15			Laboratory Fume hoods								
23-25 69 11 15 11				Bench Fume hoods							
23-25 69 11 15 11 11				Horizontal Laminar Flow Bench Fume hoods							
23-25 69 11 15 13				Floor Standing Fume hoods							
23-25 69 11 15 13 11				Horizontal Laminar Flow Free Standing Fume hoods							
23-25 69 11 15 13 13				Explosion Proof Floor Standing Fume hoods							
23-25 69 11 15 13 15				Perchloric Floor Standing Fume Hoods							
23-25 69 11 15 15				Histopathology Staining Fume Hoods							
23-25 69 11 15 17				Horizontal Laminar Flow Fume Hoods							
23-25 69 13		Laboratory And Scientific Equipment									
23-25 69 13 11			Microscopes								
23-25 69 13 11 11				Acoustic Microscopes							
23-25 69 13 11 13				Binocular Microscopes							
23-25 69 13 11 13 11				Phase Contrast Binocular Microscopes							
23-25 69 13 11 13 13				Binocular Light Compound Microscopes							
23-25 69 13 11 15				Bore scope Inspection Equipment							
23-25 69 13 11 17				Combination Electron And Light Microscopes							
23-25 69 13 11 19				Dark field Microscopes							
23-25 69 13 11 21				Digital Image Varytipping Microscopes							
23-25 69 13 11 23				Dissecting Light Microscopes							
23-25 69 13 11 25				Electron Microscopes							
23-25 69 13 11 27				Fluorescence Microscopes							
23-25 69 13 11 29				Fluorescent Microscopes							
23-25 69 13 11 31				Inverted Microscopes							
23-25 69 13 11 33				Ion Microscopes							
23-25 69 13 11 35				Laser Scanning Microscopes							
23-25 69 13 11 37				Metallurgical Microscopes							
23-25 69 13 11 39				Monocular Microscopes							
23-25 69 13 11 41				Operating Microscopes							
23-25 69 13 11 43				Photographic Fluorescent Microscopes							
23-25 69 13 11 45				Photographic Microscopes							
23-25 69 13 11 47				Polarizing Microscopes							
23-25 69 13 11 49				Projection Microscopes							
23-25 69 13 11 51				Scanning Electron Microscopes							
23-25 69 13 11 53				Scanning Light Microscopes							
23-25 69 13 11 55				Scanning Probe Microscopes							
23-25 69 13 11 57				Spinning Disk Microscopes							

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23-25 69 13 11 59					Stereo Microscopes					
23-25 69 13 11 61					Tissue Culture Inverted Microscopes					
23-25 69 13 11 63					Transmission Electron Microscopes					
23-25 69 13 11 65					Trinocular Microscopes					
23-25 69 13 11 67					Wide Field Microscopes					
23-25 69 13 13				Optical Equipment						
23-25 69 13 13 11					Telescopes					
23-25 69 13 13 13					Binoculars					
23-25 69 13 13 15					Videoscopes					
23-25 69 13 13 17					Fiberscopes					
23-25 69 13 15				Laboratory Disruption Equipment						
23-25 69 13 15 11					French Pressure Cells					
23-25 69 13 15 13					Homogenizers					
23-25 69 13 15 15					Laboratory Blenders					
23-25 69 13 15 17					Laboratory Crushers					
23-25 69 13 15 19					Laboratory Disintegrators					
23-25 69 13 15 21					Laboratory Emulsifiers					
23-25 69 13 15 23					Laboratory Mills					
23-25 69 13 15 25					Laboratory Presses					
23-25 69 13 15 27					Laboratory Pulverizers					
23-25 69 13 15 29					Laboratory Tissue Grinders					
23-25 69 13 15 31					Liquid Measuring Cans					
23-25 69 13 15 33					Mortars					
23-25 69 13 15 35					Pestles					
23-25 69 13 17				Laboratory Heating Drying Equipment						
23-25 69 13 17 11					Laboratory Dry Baths					
23-25 69 13 17 13					Bunsen Burner			Gas Burner		
23-25 69 13 17 15					Laboratory Hotplates					
23-25 69 13 17 17					Laboratory Incinerators					
23-25 69 13 17 19					Laboratory Infrared Dryers					
23-25 69 13 17 21					Laboratory Spirit Burners					
23-25 69 13 17 23					Laboratory Temperature Cycling Chambers					
23-25 69 13 17 25					Laboratory Thermal Cyclers					
23-25 69 13 17 27					Laboratory Warming Cabinets					
23-25 69 13 17 29					Stirring Hotplates					
23-25 69 13 19				Histology Equipment						
23-25 69 13 19 11					Tissue Embedding Stations					
23-25 69 13 19 13					Embedding Molds					
23-25 69 13 19 15					Embedding Capsules					
23-25 69 13 19 17					Embedding Compounds					
23-25 69 13 19 19					Histological Staining Units					
23-25 69 13 19 21					Tissue Processors					
23-25 69 13 19 21 11								Automatic Tissue Processors		
23-25 69 13 19 21 13								Electron Microscopy Tissue Processors		
23-25 69 13 19 21 15								Vacuum Tissue Processors		
23-25 69 13 19 23					Tissue Culture Units					
23-25 69 13 19 25					Ultrasonic Tissue Disintegrators					
23-25 69 13 19 27					Microtomes					
23-25 69 13 19 27 11								Tilt Rotary Microtomes		
23-25 69 13 19 27 13								Refrigerated Tilt Rotary Microtomes		
23-25 69 13 19 29					Slide Warmers					
23-25 69 13 19 31					Slide Dryers					
23-25 69 13 19 33					Slide Stainers					
23-25 69 13 21				Laboratory Cooling Equipment						
23-25 69 13 21 11					Liquid Nitrogen Dewars					
23-25 69 13 21 13					Ultra Cold Upright Cabinets					
23-25 69 13 21 15					Ultra Cold Freezers					
23-25 69 13 21 17					Ultralow Upright Cabinets					
23-25 69 13 21 19					Ultralow Freezers					
23-25 69 13 21 21					Ultra Cold Chest Freezers					
23-25 69 13 21 23					Ultralow Chest Freezers					
23-25 69 13 21 25					Liquid Nitrogen Freezers					
23-25 69 13 21 27					Laboratory Cold Water Circulators					
23-25 69 13 21 29					Chromatography Refrigerators					
23-25 69 13 21 31					Laboratory Plate Freezers					
23-25 69 13 21 33					Laboratory Cold Traps					
23-25 69 13 23				Centrifuges						

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23-25 69 13 23 11					Benchtop Centrifuges					
23-25 69 13 23 13					Centrifuge Buckets					
23-25 69 13 23 15					Centrifuge Rotors					
23-25 69 13 23 17					Cytology Centrifuges					
23-25 69 13 23 19					Floor Centrifuges					
23-25 69 13 23 21					Microcentrifuges					
23-25 69 13 23 23					Microhematocrit Centrifuges					
23-25 69 13 23 25					Refrigerated Benchtop Centrifuges					
23-25 69 13 23 27					Refrigerated Floor Centrifuges					
23-25 69 13 23 29					Refrigerated Microcentrifuges					
23-25 69 13 23 31					Serological Centrifuges					
23-25 69 13 23 31 11						Multiple Speed Serological Centrifuges				
23-25 69 13 23 33					Tabletop Centrifuges					
23-25 69 13 23 35					Ultracentrifuges					
23-25 69 13 23 37					Vacuum Centrifuges					
23-25 69 13 25				Incubators						
23-25 69 13 25 11					CO2 Incubators					
23-25 69 13 25 13					Cooled Biological Oxygen Demand BOD Incubators					
23-25 69 13 25 15					Dry Wall Dual Chamber Carbon Dioxide Incubators					
23-25 69 13 25 17					Dry Wall Dual Chamber Carbon Dioxide Incubators With Humidity Control					
23-25 69 13 25 19					Dry Wall Dual Chamber Three Gas Incubators					
23-25 69 13 25 21					Dry Wall Dual Chamber Three Gas Incubators With Humidity Control					
23-25 69 13 25 23					Dry Wall Single Chamber Carbon Dioxide Incubators					
23-25 69 13 25 25					Dry Wall Single Chamber Carbon Dioxide Incubators With Humidity Control					
23-25 69 13 25 27					Dry Wall Single Chamber Three Gas Incubators					
23-25 69 13 25 29					Dry Wall Single Chamber Three Gas Incubators With Humidity Control					
23-25 69 13 25 31					Forced Air General Purpose Incubators					
23-25 69 13 25 33					Gravity Convection General Purpose Incubators					
23-25 69 13 25 35					Mechanical Convection General Purpose Incubators					
23-25 69 13 25 37					Multipurpose Incubators					
23-25 69 13 25 39					Plate Incubators					
23-25 69 13 25 41					Refrigerated Incubators					
23-25 69 13 25 43					Shaking Incubators					
23-25 69 13 25 45					Water Jacketed Dual Chamber Carbon Dioxide Incubators					
23-25 69 13 25 47					Water Jacketed Dual Chamber Carbon Dioxide Incubators With Humidity Control					
23-25 69 13 25 49					Water Jacketed Dual Chamber Three Gas Incubators					
23-25 69 13 25 51					Water Jacketed Dual Chamber Three Gas Incubators With Humidity Control					
23-25 69 13 25 53					Water Jacketed Single Chamber Carbon Dioxide Incubators					
23-25 69 13 25 55					Water Jacketed Single Chamber Carbon Dioxide Incubators With Humidity Control					
23-25 69 13 25 57					Water Jacketed Single Chamber Three Gas Incubators					
23-25 69 13 25 59					Water Jacketed Single Chamber Three Gas Incubators With Humidity Control					
23-25 69 13 27				Laboratory Ovens						
23-25 69 13 27 11					Laboratory Ageing Ovens					
23-25 69 13 27 13					Laboratory Cleanroom Ovens					
23-25 69 13 27 15					Laboratory Drying Cabinets					
23-25 69 13 27 17					Laboratory Drying Ovens					
23-25 69 13 27 19					Laboratory Gravity Convection Ovens					
23-25 69 13 27 21					Laboratory Induction Dryers					
23-25 69 13 27 23					Laboratory Mechanical Convection Ovens					
23-25 69 13 27 25					Laboratory Vacuum Ovens					
23-25 69 13 29				Laboratory Distillers						
23-25 69 13 29 11					Laboratory Water Distillers					
23-27 00 00	General Facility Services Products								Facility Service products that have uses in multiple disciplines.	Includes piping, pumps, motors, and integrated control systems.
23-27 11 00		General Instruments and Controls							Instruments and controls used in multiple disciplines.	
23-27 11 11			Temperature Measuring Instrument And Controls							
23-27 11 11 11				Temperature Alarm Modules						
23-27 11 11 13				Temperature Control Modules						
23-27 11 11 15				Temperature Controllers						
23-27 11 11 15 11					Digital Temperature Controllers					
23-27 11 11 15 13					Electric Temperature Controllers					
23-27 11 11 15 15					Pneumatic Hating Controllers					
23-27 11 11 15 17					Hydraulic Temperature Controllers					
23-27 11 11 17				Temperature Detectors						
23-27 11 11 17 11					Thermocouple Detectors					
23-27 11 11 17 13					RTD Detectors					
23-27 11 11 19				Temperature Indicators						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-27 11 11 21				Temperature Recorders						
23-27 11 11 23				Temperature Sensors						
23-27 11 11 23 11					Thermocouple Probes					
23-27 11 13			Pressure Measuring Instrument And Controls							
23-27 11 13 11				Pressure Alarm Modules						
23-27 11 13 13				Pressure Control Modules						
23-27 11 13 15				Pressure Controllers						
23-27 11 13 15 11					Digital Pressure Controllers					
23-27 11 13 15 13					Electric Pressure Controllers					
23-27 11 13 15 15					Pneumatic Hating Controllers					
23-27 11 13 15 17					Hydraulic Pressure Controllers					
23-27 11 13 17				Pressure Detectors						
23-27 11 13 19				Pressure Indicators						
23-27 11 13 21				Pressure Recorders						
23-27 11 13 23				Pressure Sensors						
23-27 11 13 25				Differential Pressure Alarm Modules						
23-27 11 13 27				Differential Pressure Control Modules						
23-27 11 13 29				Differential Pressure Controllers						
23-27 11 13 29 11					Digital Differential Pressure Controllers					
23-27 11 13 29 13					Electric Differential Pressure Controllers					
23-27 11 13 29 15					Pneumatic Hating Controllers					
23-27 11 13 29 17					Hydraulic Differential Pressure Controllers					
23-27 11 13 31				Differential Pressure Detectors						
23-27 11 13 33				Differential Pressure Indicators						
23-27 11 13 35				Differential Pressure Recorders						
23-27 11 13 37				Differential Pressure Sensors						
23-27 11 15			Flow Measuring Instrument And Controls							
23-27 11 15 11				Flow Alarm Modules						
23-27 11 15 13				Flow Control Modules						
23-27 11 15 15				Flow Controllers						
23-27 11 15 15 11					Digital Flow Controllers					
23-27 11 15 15 13					Electric Flow Controllers					
23-27 11 15 15 15					Pneumatic Hating Controllers					
23-27 11 15 15 17					Hydraulic Flow Controllers					
23-27 11 15 17				Flow Detectors						
23-27 11 15 19				Flow Indicators						
23-27 11 15 21				Flow Recorders						
23-27 11 15 23				Flow Sensors						
23-27 11 17			Concentration Measuring Instrument And Controls							
23-27 11 17 11				Humidity Concentration Measuring Instruments						
23-27 11 17 13				Carbon Dioxide (CO ₂) Concentration Measuring Instruments						
23-27 11 17 15				Ozone Concentration Measuring Instruments						
23-27 11 17 17				Other Gas Concentration Measuring Instruments						
23-27 11 19			Heat Measuring Instrument And Controls							
23-27 11 19 11				Heat Detectors						
23-27 11 19 13				Heating Controllers						
23-27 11 19 13 11					Digital Heating Controllers					
23-27 11 19 13 13					Electric Heating Controllers					
23-27 11 19 13 15					Pneumatic Hating Controllers					
23-27 11 19 13 17					Hydraulic Heating Controllers					
23-27 11 19 15				Heating Programmers						
23-27 11 19 17				Heating Optimizers				Heating Economizer		
23-27 11 21			Level Measuring Instrument And Controls							
23-27 11 21 11				Level Alarm Modules						
23-27 11 21 13				Level Control Modules						
23-27 11 21 15				Level Controllers						
23-27 11 21 15 11					Digital Level Controllers					
23-27 11 21 15 13					Electric Level Controllers					
23-27 11 21 15 15					Pneumatic Hating Controllers					
23-27 11 21 15 17					Hydraulic Level Controllers					
23-27 11 21 17				Level Detectors						
23-27 11 21 19				Level Indicators						
23-27 11 21 19 11					Level Gage Glasses					
23-27 11 21 19 13					Level Bull's Eyes					
23-27 11 21 21				Level Recorders						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-27 11 21 23				Level Sensors						
23-27 11 23			Weighing Instrument And Controls							
23-27 11 23 11				Weight Alarm Modules						
23-27 11 23 13				Weight Control Modules						
23-27 11 23 15				Weight Detectors						
23-27 11 23 17				Weight Indicators						
23-27 11 23 19				Weight Recorders						
23-27 11 23 21				Weight Sensors						
23-27 11 25			Metal Concentration Instrument And Controls							
23-27 11 25 11				Metal Detectors						
23-27 11 27			Gas Instrument And Controls							
23-27 11 27 11				Gas Alarm Modules						
23-27 11 27 13				Gas Control Modules						
23-27 11 27 15				Gas Controllers						
23-27 11 27 15 11					Digital Gas Controllers					
23-27 11 27 15 13					Electric Gas Controllers					
23-27 11 27 15 15					Pneumatic Hating Controllers					
23-27 11 27 15 17					Hydraulic Gas Controllers					
23-27 11 27 17				Gas Detectors						
23-27 11 27 17 11					Air Pollution Detectors					
23-27 11 27 17 13					Radon Detectors					
23-27 11 27 17 15					Carbon Dioxide Detectors					
23-27 11 27 17 17					Hydrogen Detectors					
23-27 11 27 17 19					Oxygen Detectors					
23-27 11 27 17 21					Halon Detectors					
23-27 11 27 19				Gas Indicators						
23-27 11 27 21				Gas Analyzers						
23-27 11 29			Infrared Instrument And Controls							
23-27 11 29 11				Photoelectric Cells						
23-27 11 29 13				Infrared Control Modules						
23-27 11 29 15				Infrared Controllers						
23-27 11 29 15 11					Digital Infrared Controllers					
23-27 11 29 15 13					Electric Infrared Controllers					
23-27 11 29 15 15					Pneumatic Hating Controllers					
23-27 11 29 15 17					Hydraulic Infrared Controllers					
23-27 13 00		Control and Monitoring Boards Panels							Control and monitoring boards panels used in multiple disciplines.	
23-27 13 11			Internal Climate Monitoring and Control Panel							
23-27 13 13			Building Control Systems							
23-27 13 13 11				Building Automated Control Panels						
23-27 13 13 13				Building Automated Systems						
23-27 13 13 15				Building Monitoring Control Panels						
23-27 13 15			Process Control Panels							
23-27 13 15 11				Gaseous Waste Monitoring and Control Panels						
23-27 15 00		Building Automation and Control							Building automation and control equipment used in multiple disciplines.	
23-27 15 11			Building Clock Controls							
23-27 15 13			Building Door Controls							
23-27 15 15			Elevator Monitoring and Controls							
23-27 15 17			Energy Monitoring and Controls							
23-27 15 19			Building Environmental Controls							
23-27 15 21			Building Lighting Controls							
23-27 15 21 11				Building Lighting Control Panel						
23-27 15 21 13				Lighting Relay Control Panel						
23-27 15 23			HVAC Controls							
23-27 15 23 11				HVAC Main Control Panels						
23-27 15 23 13				HVAC Local Control Panels						
23-27 15 23 15				HVAC Control Clocks						
23-27 15 25			Equipment Control Panels							
23-27 17 00		Pumps							Devices used to move fluids, such as liquids or gases.	
23-27 17 11			Axial Split Pumps							
23-27 17 13			Centrifugal Pumps							
23-27 17 15			Diaphragm Pumps							
23-27 17 17			Duplex Pumps							
23-27 17 19			Gear Pumps							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-27 17 21			Liquid Ring Pumps							
23-27 17 23			Macerator Pumps							
23-27 17 23 11				Combined Macerator Pumps						
23-27 17 25			Progressive Cavity Pumps							
23-27 17 27			Ram Pumps							
23-27 17 29			Reciprocating Pumps							
23-27 17 31			Rotary Pumps							
23-27 17 31 11				Rotary Cam Pumps						
23-27 17 31 13				Rotary Lobe Pumps						
23-27 17 31 15				Rotary Screw Pumps						
23-27 17 31 17				Rotary Vane Pumps						
23-27 17 33			Rotating Piston Pumps							
23-27 17 35			Sewage Ejectors							
23-27 17 35 11				Submersible Sewage Ejectors						
23-27 17 37			Simplex Pumps							
23-27 17 39			Sliding Vane Pumps							
23-27 17 41			Turbine Pumps							
23-27 17 43			Worm Gear Pumps							
23-27 17 45			Pump Components							
23-27 19 00		Engines							Machines designed to convert energy into useful mechanical motion	
23-27 19 11			Reciprocating Engines							
23-27 19 13			Rotary Engines							
23-27 19 15			Turbine Engines					Turbine		
23-27 21 00		Compressors							Mechanical products that increase the pressure of a gas by reducing its volume.	
23-27 21 11			Axial Flow Compressors							
23-27 21 13			Centrifugal Compressors							
23-27 21 15			Reciprocating Compressors							
23-27 21 15 11				Diaphragm Reciprocating Compressors				Piston Compressor		
23-27 21 15 13				Double Acting Reciprocating Compressors				Piston Compressor		
23-27 21 15 15				Single Acting Reciprocating Compressors				Piston Compressor		
23-27 21 17			Rotary Compressors							
23-27 21 17 11				Rotary Liquid Ring Compressors						
23-27 21 17 13				Rotary Lobe Compressors						
23-27 21 17 15				Rotary Screw Compressors						
23-27 21 17 17				Rotary Scroll Compressors				Barrel Compressor		
23-27 21 17 19				Rotary Vane Compressors						
23-27 23 00		Heat Exchangers							Products built for efficient heat transfer from one medium to another.	
23-27 23 11			Heat Exchanger Economizers							
23-27 23 13			Plate and Frame Heat Exchangers							
23-27 23 13 11				Plate and Frame Regenerative Heat Exchangers						
23-27 23 15			Shell and Tube Heat Exchangers							
23-27 23 15 11				Shell and Tube Regenerative Heat Exchangers						
23-27 23 17			Tube and Fin Heat Exchangers							
23-27 23 19			Spiral Heat Exchangers							
23-27 23 19 11				Heat Exchangers for Ventilation Air						
23-27 23 21			Adiabatic Wheel Heat Exchangers					Air Preheater		
23-27 23 23			Plate and Fin Heat Exchangers							
23-27 23 23 11				Straight Fin Plate and Fin Heat Exchangers						
23-27 23 23 13				Offset Fin Plate and Fin Heat Exchangers						
23-27 23 23 15				Wavy Fin Plate and Fin Heat Exchangers						
23-27 23 25			Fluid Heat Exchangers						Heat exchanger with a gas passing upwards through a shower of fluid.	
23-27 25 00		Heaters for Supplied Liquids							Products used to heat supplied liquids.	
23-27 25 11			Liquid Electric Heaters							
23-27 25 13			Liquid Gas Heaters							
23-27 25 15			Liquid Steam Heaters							
23-27 25 17			Liquid Fuel Oil Heaters							
23-27 25 17 11				Fuel Oil Pre Heaters						
23-27 27 00		Pressure Reducing Stations							Products used to reduce pressure at a station.	
23-27 27 11			Multiple Stage Pressure Reducing Stations					Steam/Water/Gas Pressure Reducing Station		
23-27 27 13			Single Stage Pressure Reducing Stations					Steam/Water/Gas Pressure Reducing Station		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-27 29 00		Tanks and Storage Structures							Prefabricated structures used to hold fluids or gases.	
23-27 29 11			Reservoirs							
23-27 29 13			Tank Foundations							
23-27 29 13 11				Tank Support Structures						
23-27 29 13 13				Tank Foundation Slabs						
23-27 29 15			Specialized Tanks							
23-27 29 15 11				Cryogenic Tanks						
23-27 29 15 13				Flash Tanks						
23-27 29 15 13 11					Steam Flash Tanks					
23-27 29 15 15				Septic Tanks						
23-27 29 15 17				Siphon Tanks						
23-27 29 17			Storage Constructions							
23-27 29 17 11				Water Towers						
23-27 29 17 13				Silos						
23-27 29 17 15				Storage Bunkers						
23-27 29 19			Tanks							
23-27 29 19 11				Multiple Wall Tanks						
23-27 29 19 11 11					Multiple Walled Pressure Tanks					
23-27 29 19 11 13					Multiple Walled Vacuum Tanks					
23-27 29 19 11 15					Multiple Walled Vented Tanks					
23-27 29 19 13				Single Walled Tanks						
23-27 29 19 13 11					Single Walled Pressure Tanks					
23-27 29 19 13 13					Single Walled Vacuum Tanks					
23-27 29 19 13 15					Single Walled Vented Tanks					
23-27 29 21			Tank Containments					Berm		
23-27 29 21 11				Aboveground Tank Containments						
23-27 29 21 11 11					Aboveground Primary Tank Containments					
23-27 29 21 11 13					Aboveground Secondary Tank Containments					
23-27 29 21 11 15					Aboveground Tertiary Tank Containments					
23-27 29 21 13				Underground Tank Containments						
23-27 29 21 13 11					Underground Primary Tank Containments					
23-27 29 21 13 13					Underground Secondary Tank Containments					
23-27 29 21 13 15					Underground Tertiary Tank Containments					
23-27 29 23			Tank Linings							
23-27 29 23 11				Tank Bladders						
23-27 29 23 13				Rubber Tank Linings						
23-27 29 25			Tank Components							
23-27 29 25 11				Overflow Regulators						
23-27 29 25 13				Fill and Valve Caps						
23-27 29 25 15				Tank Vents						
23-27 31 00		Valves							Products regulating the flow fluids by opening, closing, or partially obstructing various passageways. See: Plumbing Specific Products and Equipment.	
23-27 31 11			Backflow Preventors					Double Check Valve		
23-27 31 13			Balancing Valves							
23-27 31 13 11				Gate Balancing Valves						
23-27 31 13 13				Butterfly Balancing Valves						
23-27 31 13 15				Plug Balancing Valves						
23-27 31 13 17				Globe Balancing Valves						
23-27 31 13 19				Check Balancing Valves						
23-27 31 13 21				Diaphragm Balancing Valves						
23-27 31 15			Ball Valves						All valves are controlled in some fashion either manually or automatically. The addition of a valve actuator defines the control.	
23-27 31 17			Butterfly Valves							
23-27 31 17 11				Lug Pattern Butterfly Valves						
23-27 31 17 13				Wafer Pattern Butterfly Valves						
23-27 31 19			Check Valves							
23-27 31 19 11				Ball Check Valves						
23-27 31 19 13				Clapper CheckValves				Fire Sprinkler Check Valve, flush valves		
23-27 31 19 15				Cone Type Check Valves						
23-27 31 19 17				Demand Check Valves				Quick Disconnect Check Valve		
23-27 31 19 19				Diaphragm Check Valves						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-27 31 19 21				Lift Check Valves						
23-27 31 19 23				Spring Type Check Valves						
23-27 31 19 25				Stop Check Valves						
23-27 31 19 27				Swing Check Valves						
23-27 31 21			Diaphragm Valves							
23-27 31 23			Float Valves							
23-27 31 25			Gate Valves							
23-27 31 27			Globe Valves							
23-27 31 29			Mixing Valves							
23-27 31 29 11				Manual Mixing Valves						
23-27 31 29 13				Pressure Balanced Controlled Mixing Valves						
23-27 31 29 15				Thermostatically Controlled Mixing Valves						
23-27 31 31			Needle Valves							
23-27 31 33			Orifice Valves							
23-27 31 35			Pinch Valves							
23-27 31 37			Plug Drain Valves					Mud Valve		
23-27 31 39			Plug Valves							
23-27 31 41			Poppet Valves							
23-27 31 43			Post Indicator Valves						Used in Fire Sprinkler Systems	
23-27 31 45			Preaction Valves					Deluge Valve		
23-27 31 45 11				Electronic Actuated Preaction Valves				Deluge Valve		
23-27 31 45 13				Water Seal Enabled Preaction Valves				Deluge Valve		
23-27 31 47			Pressure Regulating Valves					Pressure Reducing Valve. Component of Pressure Reducing Station		
23-27 31 49			Relief Valves						Automatically regulating, protection valve that maintains design system pressure by slowly opening and closing.	
23-27 31 49 11				Pressure Relief Valves						
23-27 31 49 13				Pressure Temperature Relief Valves						
23-27 31 51			Rupture Disks							
23-27 31 53			Safety Valves						Valve that pops open when system pressure exceeds design criteria.	
23-27 31 53 11				Pressure Safety Valves						
23-27 31 53 13				Pressure Temperature Safety Valves						
23-27 31 55			Sentinel Valves							
23-27 31 57			Slider Valves							
23-27 31 59			Slush Valves							
23-27 31 61			Thermostatic Expansion Valves							
23-27 31 63			Valves Boxes						Prefab box with ball valves. Primarily used in medical gas applications	
23-27 33 00		Valve Actuators							Products utilizing a source of power to operate a valve. All Valve Actuators are DDC or non-DDC.	
23-27 33 11			Electrical Valve Actuators					Inductive Coil, Magnetic-driven Valve Actuator		
23-27 33 11 11				Solenoid Valve Actuators				Electronic Valve Actuator		
23-27 33 13			Hydraulic Valve Actuators							
23-27 33 15			Motor Operated Valve Actuators							
23-27 33 17			Pneumatic Valve Actuators							
23-27 35 00		Variable Speed Drives							Products used for controlling the rotational speed of an alternating current (AC) electric motor by controlling the electrical power supplied to the motor.	
23-27 35 11			Hydraulic Variable Speed Drives					Transmission		
23-27 35 11 11				Hydrodynamic Variable Speed Drives				Fluid Couplings Drive Transmission		
23-27 35 11 13				Hydrostatic Variable Speed Drives				Hydraulic Drive Transmission		
23-27 35 11 15				Hydroviscous Variable Speed Drives				Oil Film Disc Drive Transmission		
23-27 35 13			Variable Pitch Drives					Transmission		
23-27 35 13 11				Pulley Variable Pitch Drives				Transmission		
23-27 35 13 13				Traction Variable Pitch Drives				Transmission	Typically rollers that are moved or diameter changed to change speed.	
23-27 35 15			Transmission Devices							
23-27 35 15 11				Fluid Drive Transmissions						
23-27 35 15 13				Gear Boxes						
23-27 37 00		Liquid Traps							Products which trap liquids.	

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-27 37 11			Grease Traps							
23-27 37 13			Oil Traps							
23-27 37 15			Steam Traps							
23-27 37 15 11				Disc Steam Traps						
23-27 37 15 13				Float and Thermostatic Steam Traps						
23-27 37 15 15				Float Steam Trap						
23-27 37 15 17				Inverted Basket Steam Traps						
23-27 37 15 19				Orifice Steam Traps						
23-27 39 00		Piping							Systems of pipes used to convey fluids from one location to another.	
23-27 39 11			Double Walled Pipes							
23-27 39 11 11				Aboveground Double Walled Pipes						
23-27 39 11 13				Underground Double Walled Pipes						
23-27 39 13			Single Walled Pipes							
23-27 39 13 11				Aboveground Single Walled Pipes						
23-27 39 13 13				Underground Single Walled Pipes						
23-27 41 00		Pipe Repair Equipment							Equipment used to repair pipes.	
23-27 41 11			Pipe Band It Kits							
23-27 43 00		Pipe Fittings							Products used in pipe and plumbing systems to connect straight pipe or tubing sections, to adapt to different sizes or shapes, and to sometimes regulate fluid flow.	
23-27 43 11			Mechanical Pipe Fasteners							
23-27 43 13			Mechanical Pipe Supports							
23-27 43 15			Pipe Expansion Joints							
23-27 43 17			Water Hammer Arrestors							
23-27 43 19			Pipe Expansion Compensators							
23-27 45 00		Pipe Flanges							a ridge that prevents a sliding motion or a projecting rim or rib for strength or for attachments.	
23-27 45 11			Blind Pipe Flanges							
23-27 45 13			Lap Joint Pipe Flanges							
23-27 45 15			Orifice Pipe Flanges							
23-27 45 17			Plate Pipe Flanges							
23-27 45 19			Reducing Pipe Flanges							
23-27 45 21			Slip On Pipe Flanges							
23-27 45 23			Socket Weld Pipe Flanges							
23-27 45 25			Spectacle Pipe Flanges							
23-27 45 27			Threaded Pipe Flanges							
23-27 45 29			Weldneck Pipe Flanges							
23-27 47 00		Pipe Adapters							A product used for connecting two parts such as two different diameters of an apparatus.	
23-27 47 11			Female Pipe Adapters							
23-27 47 13			Male Pipe Adapters							
23-27 47 15			Terminal Pipe Adapters							
23-27 47 17			Hi Low Converter Pipe Adapters							
23-27 47 19			Twist To Lock Y Cord Pipe Adapters							
23-27 47 21			Auto Converter Pipe Adapters							
23-27 47 23			Conduit Box Pipe Adapters							
23-27 47 25			Reduce Drive Pipe Adapters							
23-27 47 27			Red Pipe Adapters							
23-27 49 00		Pipe Couplings							a short collar consisting of a threaded sleeve to connect two pipes.	
23-27 49 11			Rigid Pipe Couplings							
23-27 49 13			Flexible Pipe Couplings							
23-27 49 13 11				Coil Spring Pipe Couplings						
23-27 49 13 13				Double Loop Pipe Couplings						
23-27 49 13 15				Tire Pipe Couplings						
23-27 49 13 17				Flexible Link Pipe Couplings						
23-27 49 13 19				Multi Jaw Pipe Couplings						
23-27 49 13 21				Helical Flex Pipe Couplings						
23-27 49 13 23				Magnetic Pipe Couplings						
23-27 49 13 25				Metal Bellows Pipe Couplings						
23-27 49 13 27				Diaphragm Pipe Couplings						
23-27 49 13 29				Roller Chain Pipe Couplings						
23-27 49 13 31				Schmidt Pipe Couplings						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-27 49 13 33				Shear Pipe Couplings						
23-27 49 13 35				Sliding Block Pipe Couplings						
23-27 49 13 37				Steel Grid Pipe Couplings						
23-27 49 13 39				Spider Pipe Couplings						
23-27 49 13 41				Flexible Disc Pipe Couplings						
23-27 51 00		Pipe Elbows							installed between two lengths of pipe or tube allowing a change of direction, and can be 90° or 45°.	
23-27 51 11			45 Degree Pipe Elbows							
23-27 51 13			90 Degree Pipe Elbows							
23-27 51 15			Reducing Pipe Elbows							
23-27 53 00		Pipe Caps							A type of pipe fitting which covers the end of a pipe.	
23-27 53 11			Threaded Pipe Caps							
23-27 53 13			Tapered Pipe Caps							
23-27 53 15			Anti-roll Pipe Caps							
23-27 53 17			Knurled Pipe Caps							
23-27 53 19			Slotted Head Pipe Caps							
23-27 53 21			Retaining Ring Pipe Caps							
23-27 53 23			Tear Tab Pipe Caps							
23-27 53 25			Hanger Tip Pipe Caps							
23-27 53 27			Pull Tab Pipe Caps							
23-27 53 29			Vented Pipe Caps							
23-27 55 00		Liquid Treatment Components							Components used in the process of treating liquids.	
23-27 55 11			Liquid Filters							
23-27 55 11 11				Water Filters						
23-27 55 13			Liquid Sterilizers							
23-27 55 15			Liquid Salinators							
23-27 55 17			Liquid Chlorinators							
23-27 55 19			Liquid Ionizers					Ozone Treatment		
23-27 55 21			Liquid Deionizers							
23-27 55 23			Liquid Deaerators							
23-27 55 23 11				Centrifugal Liquid Deaerators						
23-27 55 23 13				Spray Type Liquid Deaerators						
23-27 55 23 15				Tray Type Liquid Deaerators						
23-27 55 25			Liquid Disinfecting Ultraviolet Lighting							
23-27 55 27			Liquid Softeners							
23-27 55 27 11				Water Softeners						Equipment, not the salt
23-27 55 29			Liquid Strainers							
23-27 55 29 11				Basket Strainers						
23-27 55 29 13				Conical Strainers						
23-27 55 29 15				Tee Strainers						
23-27 55 29 17				Y Strainers						
23-27 55 29 19				Reverse Osmosis Units						
23-27 55 29 21				Solid Separators						
23-27 55 31			Liquid Chemical Feeders							
23-27 55 31 11				Liquid Chemical Feeders						
23-27 55 31 13				Solid Chemical Feeders						
23-27 55 31 15				Gas Chemical Feeders						
23-27 55 33			Liquid Treatment Package Units							
23-27 55 33 11				Water Treatment Package Units						
23-27 55 35			Liquid Separators						Separators to remove air from liquid or separate liquids, such as oil water separator	
23-27 55 35 11				Centrifuge Liquid Separators						
23-27 55 35 13				Demister Pad Liquid Separators						
23-27 55 35 15				Electrical Cyclone Liquid Separators						
23-27 55 35 17				Hydro Cyclone Liquid Separators						
23-27 55 35 19				Mechanical Liquid Separators						
23-27 55 35 21				Mist Eliminator Liquid Separators						
23-27 55 35 23				Tangential Liquid Separators						
23-27 55 35 25				Magnetic Electronic Water Treatment						
23-27 55 35 27				Oil Water Curtain Separators						
23-27 57 00		Gas Treatment Components							Components used in the treatment of supplied liquid gas.	
23-27 57 11			Vapor Traps					P Trap		
23-27 57 13			Extractors							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-27 57 13 11				Extractors for Process Air						
23-27 57 15			Air Injectors							
23-27 57 17			Air Ejectors							
23-27 57 19			Air Scrubbers							
23-27 57 19 11				Dual Throat Air Scrubbers						
23-27 57 19 13				Multiple Venture Air Scrubbers						
23-27 57 19 15				Packed Bed Air Scrubbers						
23-27 57 21			Supply Gas Treatment							
23-27 57 21 11				Steam Treatment						
23-27 57 21 13				Fuel Gas Treatment						
23-27 57 21 13 11					Gas Filters					
23-27 57 23			Electronic Air Purifiers							
23-27 57 25			Mechanically Aided Air Scrubbers							
23-27 57 27			Air Filters							
23-27 57 27 11				Air Filter Components						
23-27 57 27 11 11					Air Filter Media					
23-27 57 27 11 13					Control Air Filter Assemblies					
23-27 57 27 13				High Efficiency Air Filters						
23-27 57 27 15				ULPA Filters						
23-27 57 27 17				HEPA Filters						
23-27 57 27 19				Bag Filters						
23-27 57 27 21				Air Filter Housings						
23-27 57 27 23				Air Charcoal Filters						
23-27 57 27 25				Roll Type Filters						
23-27 57 29			Dust Collectors							
23-27 57 31			Electronic Air Cleaners							
23-27 57 33			Air Fresheners							
23-27 57 35			Air Treatment Components							
23-27 57 35 11				Air Deodorization Products						
23-27 57 35 13				Moisture Absorbents						
23-27 59 00		Recycling Equipment							Equipment used in the recycling process.	
23-27 59 11			Recycling Balers							
23-27 59 11 11				Recycling Cardboard Balers						
23-27 59 11 13				Recycling Paper Balers						
23-27 59 11 15				Recycling Plastic Balers						
23-27 59 11 17				Recycling Wood Balers						
23-27 59 13			Recycling Bins							
23-27 59 15			Recycling Compactors							
23-27 59 15 11				Cardboard Compactors						
23-27 59 15 13				Metal Compactors						
23-27 59 15 15				Paper Compactors						
23-27 59 15 17				Plastic Compactors						
23-27 59 15 19				Trash Compactors				Mixed Waste Compactor, Pulper		
23-27 59 15 21				Wood Compactors						
23-27 61 00		Incinerators								
23-27 61 11			Trash Incinerators							
23-27 61 13			Document Incinerators							
23-27 63 00		Mechanical Insulation and Linings							Equipment used for mechanical insulation and lining.	
23-27 63 11			Pipe Insulation							
23-27 63 13			Equipment Insulation Blankets							
23-27 65 00		Equipment Acoustic Insulation							Equipment used for acoustic insulation.	
23-27 65 11			Sound Dampening Equipment Mounts							
23-27 67 00		Corrosion Proofing Equipment							Equipment used to prevent corrosion.	
23-27 67 11			Zinc Bars							
23-27 67 13			Zinc Tapes							
23-27 69 00		Antivibration Mountings							Mounts used for reducing vibration.	
23-27 69 11			Vibration Equipment Mounts							
23-27 71 00		Building Maintenance Equipment							Equipment used in the maintenance of the building.	
23-27 71 11			Window Washing Systems							
23-27 71 13			Building Maintenance Cradles and Platforms							

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23-27 71 15			Roof Trolley Systems							
23-27 71 17			Traveling Ladder Systems							
23-27 71 19			Ancillary Building Maintenance Items							
23-27 71 19 11				Building Safety Tracks						
23-27 71 19 13				Anchors for Building Maintenance						
23-27 71 21			Fall Arrest Systems							
23-29 00 00	Facility and Occupant Protection Products								Products intended to protect both the occupant and facility from harm.	Includes environmental detectors, spill kits, fire safety items, sprinklers, defibrillators, detectors, alarms, and access control. See also "Information and Communication Specific Products and Equipment".
23-29 11 00		Security Detection and Monitoring							Products used to detect and monitor the facility or it's occupants.	
23-29 11 11			Closed Circuit Television Equipment							
23-29 11 11 11				Infra Red CCTV Cameras						
23-29 11 11 13				Visual Light Wavelength CCTV Cameras						
23-29 11 11 15				CCTV Camera Enclosures						
23-29 11 11 17				Security Camera Controllers						
23-29 11 11 19				Security Camera Multiplexors						
23-29 11 11 21				Security Camera Monitoring System Panels						
23-29 11 13			Security Video Imaging System Equipment							
23-29 11 13 11				Security Video Monitors						
23-29 11 13 13				Security Video Recorders						
23-29 11 13 13 11					Security Analog Video Recorders					
23-29 11 13 13 13					Security Digital Video Recorders					
23-29 11 15			Explosive Detectors							
23-29 11 15 11				Explosive Detector Sniffers						
23-29 11 15 11 11					Chemical Explosive Detectors					
23-29 11 15 11 13					Particulate Explosive Detectors					
23-29 11 15 11 17					Explosive Detector Spectral Analyzers					
23-29 11 15 13										
23-29 11 17			Security Metal Detectors							
23-29 11 17 11				Security Weather Resistant Walk Through Metal Detectors						
23-29 11 17 13				Security Indoor Walk Through Metal Detectors						
23-29 11 17 15				Security Hand Held Metal Detectors						
23-29 11 19			Security X Ray Machines							
23-29 11 19 11				Security X Ray Conveyor Machines						
23-29 11 19 13				Security Personnel X Ray Machines						
23-29 11 21			Security Sensors							
23-29 11 21 11				Audio Security Sensors				Glass Beak Sensor		
23-29 11 21 13				Security Ground Loop Sensors						
23-29 11 21 15				Infra Red Security Sensors						
23-29 11 21 17				Ultrasonic Security Sensors						
23-29 11 21 19				Security Vibration Sensors						
23-29 11 23			Intrusion Detection Devices							
23-29 11 23 11				Intrusion Detection Buried Cables						
23-29 11 23 13				Intrusion Detection Fiber Optic Fence Line Loops						
23-29 11 23 15				Intrusion Detection Microwave Alarms						
23-29 11 23 17				Intrusion Detection Photoelectric Sensors						
23-29 11 23 19				Intrusion Detection Door Monitoring Switches						
23-29 11 23 21				Pressure Mats						
23-29 11 23 23				Door Micro Switch Contacts						
23-29 11 23 25				Window Micro Switch Contacts						
23-29 11 23 27				Break Glass Detection						
23-29 11 23 29				Movement Vibration Detection						
23-29 11 23 31				Infra Red Radiation Personnel Detectors						
23-29 11 23 33				Microwave Personnel Detectors						
23-29 11 23 35				Security Autodialers						
23-29 11 25			Presence Detection Registration							
23-29 11 25 11				Personnel Clocking In and Recording Equipment						
23-29 11 25 13				Surveillance Mirrors						
23-29 11 25 15				Manual Alert Control						
23-29 11 25 17				Security Door Bells						
23-29 11 25 19				Security Buzzers						
23-29 11 27			Security Keypads							
23-29 11 27 11				Alarm Keypads						
23-29 11 27 13				Security Keypads						

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23-29 11 29			Vehicle Inspection Devices							
23-29 11 29 11				Undercarriage Inspection Lighting						
23-29 13 00		Security Access Controls							Equipment used to protect the occupants and the facility through access control.	
23-29 13 11			Personnel Biometric Readers							
23-29 13 11 11				Fingerprint Readers						
23-29 13 11 13				Hand Geometry Readers						
23-29 13 11 15				Iris Scanners						
23-29 13 11 17				Retinal Scanners						
23-29 13 11 19				Vein Recognition Readers						
23-29 13 13			Personnel Card Readers							
23-29 13 13 11				Personnel Contact Card Readers						
23-29 13 13 11 11					Mag Stripe Personnel Contact Card Readers					
23-29 13 13 11 13					Smart Card Personnel Contact Card Readers					
23-29 13 13 11 15					Weigand Personnel Contact Card Readers					
23-29 13 13 13				Personnel Contactless Card Readers						
23-29 13 13 13 11					Barcode Personnel Contactless Card Readers					
23-29 13 13 13 13					Near Field Proximity Personnel Contactless Card Readers			Personal Identity Verification		
23-29 13 13 13 15					Proximity Personnel Contactless Card Readers					
23-29 13 15			Personnel Counting Equipment							
23-29 13 17			Security Door Answering Controls							
23-29 13 19			Electronic Key Equipment							
23-29 13 21			Security Personnel Access Keypads							
23-29 13 23			Access Control Turnstiles					barrier gate		
23-29 13 23 11				Waist Height Turnstiles						
23-29 13 23 13				Full Height Turnstiles				Rotary Gate. Full-height comb version		
23-29 13 23 15				Portable Post and Railing Barriers						
23-29 15 00		Secure Storage Structures and Products							Storage structures and products using security measures.	
23-29 15 11			Vaults							
23-29 15 11 11				Prefabricated Room Vaults						
23-29 15 11 13				Commercial Vaults						
23-29 15 11 15				Residential Vaults						
23-29 15 13			Safes							
23-29 15 13 11				Commercial Safes						
23-29 15 13 13				Residential Safes						
23-29 15 15			Lockers							
23-29 15 15 11				Metal Lockers						
23-29 15 15 13				Wood Lockers						
23-29 15 15 15				Plastic Laminate Clad Lockers						
23-29 15 15 17				Plastic Lockers						
23-29 15 15 19				Glass Lockers						
23-29 15 15 21				Wire Mesh Storage Lockers						
23-29 17 00		Property Storage Locks							Locks used for property storage.	
23-29 17 11			Bicycle Locks							
23-29 17 13			Padlocks							
23-29 17 13 11				Combination Padlocks						
23-29 17 13 13				Pin Tumbler Padlocks						
23-29 19 00		Chemical Biological Radiological Protection							Products used to protect occupants and the building from chemical, biological, and radiological threats.	
23-29 19 11			Prefabricated Mail Screening Products							
23-29 19 13			Biological Safety Cabinets							
23-29 21 00		Equipment for Security of Information							Equipment used for the security of information.	
23-29 21 11			Centralized Code Reading Equipment							
23-29 23 00		Fireproofing Components							Products used to fireproof the facility.	
23-29 23 11			Fireproofing Gaskets							
23-29 23 13			Fireproofing Fillers for Threaded Couplings							
23-29 23 15			Fireproof Pipe Sleeves							
23-29 23 17			Smoke Seals for Ductwork							
23-29 25 00		Fire Fighting Equipment							Equipment used to fight off a fire.	
23-29 25 11			Fire Fighting Terminals							
23-29 25 11 11				Fire Fighting Terminal Components						
23-29 25 11 13				Water Fire Fighting Terminals						
23-29 25 11 15				Gaseous Fire Fighting Terminals						

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23-29 25 11 17				Foam Fire Fighting Terminals						
23-29 25 11 19				Powder Fire Fighting Terminals						
23-29 25 11 21				Fire Fighting Media					Note: Powder, Foam	
23-29 25 11 23				Fire Fighting Gas Terminals						
23-29 25 13			Fire Hydrants							
23-29 25 13 11				Dry Barrel Fire Hydrants						
23-29 25 13 13				Wet Barrel Fire Hydrants						
23-29 25 15			Fire Hose Equipment							
23-29 25 15 11				Fire Hoses						
23-29 25 15 13				Fire Hose Outlets						
23-29 25 15 15				Cabinets for Fire Hoses						
23-29 25 15 17				Fire Hose Reels						
23-29 25 15 19				Fire Hose Connectors						
23-29 25 15 19 11					Fire Fighting Standpipes					
23-29 25 15 19 13					Fire Fighting Pumper Connections					
23-29 25 17			Fire Nozzles							
23-29 25 17 11				Fire Fog Nozzles						
23-29 25 17 13				Fire Stream Nozzles						
23-29 25 17 15				Fire Electrical Rated Nozzles						
23-29 25 19			Fire Extinguishers							
23-29 25 19 11				Stored Pressure Fire Extinguishers						
23-29 25 19 11 11					Stored Pressure Fire Extinguishers With Gauge					
23-29 25 19 13				Non Stainless Steel Fire Extinguishers						
23-29 25 19 15				Non Rechargeable Fire Extinguishers						
23-29 25 19 17				Gas Cart Fire Extinguishers				Gas Cylinder		
23-29 25 19 17 11					Gas Cart Fire Extinguishers With Gauge					
23-29 25 19 19				Foam Fire Extinguishers						
23-29 27 00		Fire Ventilation Equipment								Equipment used to ventilate in the event of fire.
23-29 27 11			Fire Fighting Smoke Extractors					Tornado Blowers		
23-29 29 00		Fire Detection Devices								Products used to detect a fire.
23-29 29 11			Fire Alarm Pull Stations					Fire Alarm Box		
23-29 29 11 11				Addressable Fire Alarm Pull Stations						
23-29 29 11 13				Non Addressable Fire Alarm Pull Stations						
23-29 29 13			Fire Detectors							
23-29 29 13 11				Smoke Detectors						
23-29 29 13 11 11					Spot Type Photoelectric Smoke Detectors					
23-29 29 13 11 13					Spot Type Ionization Smoke Detectors					
23-29 29 13 11 15					Spot Type Duct Photoelectric Smoke Detectors					
23-29 29 13 11 17					Spot Type Duct Ionization Smoke Detectors					
23-29 29 13 11 19					Beam Type Smoke Detectors					
23-29 29 13 13				Heat Detectors						
23-29 29 13 13 11					Fixed Temperature Heat Detectors					
23-29 29 13 13 13					Rate of Rise Heat Detectors					
23-29 29 13 15				Flame Detectors						
23-29 29 13 17				Spark and Ember Detectors						
23-29 29 13 19				Radiant Energy Detectors						
23-29 29 15			Fire Switches							
23-29 29 15 11				Pressure Fire Alarm Water Flow Switches						
23-29 29 15 13				Paddle Fire Alarm Water Flow Switches						
23-29 29 15 15				Fire Tamper Switches						
23-29 31 00		Fire Notification Appliances								Appliances used in fire notification.
23-29 31 11			Fire Alarm Annunicator Panels							
23-29 31 11 11				Audible Fire Alarm Annunicator Panels						
23-29 31 11 13				Visible Fire Alarm Annunicator Panels						
23-29 31 11 15				Combination Fire Alarm Annunicator Panels						
23-29 31 13			Fire Alarm Control Panels							
23-29 31 13 11				Main Fire Alarm Control Panels						
23-29 31 13 13				Secondary Fire Alarm Control Panels						
23-29 31 13 15				Fire Alarm Audio Control Panels						
23-29 31 13 17				Fire Alarm Smoke Control Panels						
23-29 31 15			Audible Fire Notification Devices							
23-29 31 15 11				Audible Fire Notification Devices Bell						
23-29 31 15 13				Audible Fire Notification Devices Horn						
23-29 31 15 15				Audible Fire Notification Devices Chime						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-29 31 15 17				Audible Fire Notification Devices	Speaker					
23-29 31 17			Visible Fire Notification Devices							
23-29 31 17 11				Visible Fire Notification Device	Lights					
23-29 31 19			Combination Audible and Visible Fire Notification Devices							
23-29 31 21			Fire Alarm Communicators							
23-29 31 23			Fire Alarm Central Stations							
23-29 31 23 11				Fire Alarm Central Station	Transmitters					
23-29 31 23 13				Fire Alarm Central Station	Receivers					
23-29 31 23 15				Fire Alarm Central Station	Combination Transmitter and Receivers					
23-29 31 25			Fire Alarm Event Recorders							
23-29 31 27			Fire Alarm Event Printers							
23-29 31 29			Fire Alarm Remote Controllers							
23-29 31 31			Fire Alarm Remote Amplifiers							
23-29 31 33			Fire Pump Controllers							
23-29 31 35			Jockey Pump Controllers							
23-29 33 00		Fire Suppression System Components							Components specific to fire suppression when protecting the facility and occupant from harm.	
23-29 33 11			Water Based Suppression Equipment							
23-29 33 11 11				Pendant Sprinkler Heads						
23-29 33 11 11 11					Wet Pendant Sprinkler Heads					
23-29 33 11 11 13					Dry Pendant Sprinkler Heads					
23-29 33 11 11 15					Open Pendant Sprinkler Heads					
23-29 33 11 13				Upright Sprinkler Heads						
23-29 33 11 13 11					Wet Upright Sprinkler Heads					
23-29 33 11 13 13					Dry Upright Sprinkler Heads					
23-29 33 11 13 15					Open Upright Sprinkler Heads					
23-29 33 11 15				Side Wall Sprinkler Heads						
23-29 33 11 15 11					Wet Side Wall Sprinkler Heads					
23-29 33 11 15 13					Dry Side Wall Sprinkler Heads					
23-29 33 11 17				Dry Pipe Valves				Deluge Valve		
23-29 33 11 19				Water Mist Systems						
23-29 33 13			Non Water Based Suppression Equipment							
23-29 33 13 11				Clean Agent Gaseous Suppression Equipment						
23-29 33 13 13				Carbon Dioxide Suppression Equipment						
23-29 33 13 15				Halon Suppression Equipment						
23-29 33 13 17				Wet Chemical Fire Suppression Equipment						
23-29 33 13 19				Dry Chemical Fire Suppression Equipment						
23-29 33 13 21				Foam Fire Suppression Equipment						
23-29 33 15			Fire Blankets							
23-29 35 00		Fire Rescue Component							Products used in fire rescue when protecting the facility and occupant from harm.	
23-29 35 11			Evacuation Chairs							
23-29 35 13			Evacuation Slides							
23-29 37 00		Occupational Safety and Health Equipment							Equipment specific to occupational safety and health equipment when protecting the facility and occupant from harm.	
23-29 37 11			Emergency Drench Hoses							
23-29 37 13			Emergency Eye Wash Stations							
23-29 37 13 11				Counter Top Eye Wash Stations						
23-29 37 13 13				Floor Mounted Eye Wash Stations						
23-29 37 13 15				Combination Emergency Eye Wash Stations						
23-29 37 13 17				Dedicated Emergency Eye Wash Stations						
23-29 37 15			Emergency Showers							
23-29 37 15 11				Combination Emergency Showers						
23-29 37 15 13				Dedicated Emergency Showers						
23-29 39 00		Environmental Safety Equipment							Equipment specific to environmental safety. when protecting the facility and occupant from harm.	
23-29 39 11			Environmental Spill Kits							
23-29 39 13			Pollution Monitoring and Control							
23-29 39 13 11				Air Pollution Monitoring Systems						
23-29 39 13 13				Water Pollution Monitoring Systems						
23-29 39 15			Built In Failure Detection							
23-29 39 15 11				Infiltration Detection						
23-29 39 15 13				Service Leak Detection						
23-29 39 15 13 11					Gas Leak Detection Agents					

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23-29 39 15 13 13					Water Leak Detection					
23-31 00 00	Plumbing Specific Products and Equipment								Products specifically related to plumbing.	Includes toilets, sinks, faucets, drains, and plumbing fixtures and equipment. See "General Facility Services Products" for pipes, hangers, and pumps.
23-31 11 00	Faucets								is a valve controlling release of liquids or gas.	
23-31 11 11	Ball Faucets								Ball faucets are easy to identify since they have a single handle that attaches to the faucet base with a round base. The ball shaped control has chambers built into it to control water volume and mix hot and cold.	
23-31 11 11 11	Sink Ball Faucets									
23-31 11 11 13	Bathtub Ball Faucets									
23-31 11 11 15	Shower Ball Faucets									
23-31 11 13	Compression Faucets								Compression faucets are the traditional old style faucets with two handles, one each for cold and hot. Inside each handle is a valve that opens to allow water to flow and close to block the flow. A rubber washer on the base of the valve gets "compressed"	
23-31 11 13 11	Sink Compression Faucets									
23-31 11 13 13	Bathtub Compression Faucets									
23-31 11 13 15	Shower Compression Faucets									
23-31 11 15	Cartridge Faucets								Cartridge faucets can be either single handled or two handled. The inside of the faucet has a stem cartridge that moves up and down to control water flow. Single handled cartridge faucets operate up and down to regulate water flow, and left and right to c	
23-31 11 15 11	Sink Cartridge Faucets									
23-31 11 15 13	Bathtub Cartridge Faucets									
23-31 11 15 15	Shower Cartridge Faucets									
23-31 11 17	Disc Faucets								Disc faucets are single handled with a cylindrical shaped body. Inside the faucet are ceramic discs that slide over each other, controlling flow and temperature.	
23-31 11 17 11	Sink Disc Faucets									
23-31 11 17 13	Bathtub Disc Faucets									
23-31 11 17 15	Shower Disc Faucets									
23-31 11 19	Faucet Mixing Valves								Anti Scalding Device	Faucet mixing valves are used to mix hot and cold water inputs to the faucet to ensure that personnel are prevented from being scalded.
23-31 11 19 11	Thermostatically Controlled Faucet Mixing Valves									
23-31 11 19 13	Pressure Sensitive Faucet Mixing Valves									
23-31 11 19 15	Pressure Balanced Faucet Mixing Valves									
23-31 13 00	Sinks								Lavatory	is a bowl-shaped fixture that is used for washing the hands or small objects.
23-31 13 11	Single Sinks									
23-31 13 13	Dual Sinks									
23-31 13 15	Multiple Sinks									
23-31 13 17	Sink Components									
23-31 13 17 11	Sink Splashbacks									
23-31 13 17 13	Sink Drains									
23-31 13 19	Specialty Sinks									
23-31 13 19 11	Sacristy									
23-31 13 19 13	Darkroom Sinks									
23-31 13 19 15	Hairdressing Sinks									
23-31 13 19 17	Mop Sinks									
23-31 13 19 19	Service Sinks									
23-31 15 00	Bathtubs								is a plumbing fixture used for bathing	
23-31 15 11	Bath Shower Units									
23-31 15 13	Sitz Baths									
23-31 15 15	Jacuzzi Baths									
23-31 15 17	Bathtub Components									
23-31 15 17 11	Bathtub Enclosures									
23-31 15 17 13	Bathtub Splashbacks									
23-31 15 17 15	Bathtub Panels									
23-31 15 17 17	Bathtub Seats									
23-31 15 17 19	Bathtub Screens									
23-31 15 17 21	Bathtub Grab Bars									

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23-31 15 17 23				Bathtub Drains						
23-31 17 00		Showers							is an area in which one bathes underneath a spray of water.	
23-31 17 11			Shower Compartments							
23-31 17 13			Shower Receptors					Shower Pan		
23-31 17 15			Shower Enclosure Bases							
23-31 17 17			Shower Enclosures							
23-31 17 19			Shower Head Fixtures							
23-31 17 21			Shower Splashbacks							
23-31 17 23			Shower Seats							
23-31 17 25			Shower Screens							
23-31 17 27			Shower Curtains							
23-31 17 29			Shower Drains							
23-31 17 31			Shower Rods							
23-31 19 00		Toilets							a plumbing fixture and disposal system primarily intended for the disposal of the bodily wastes	
23-31 19 11			Combination Toilets							Note: Combination Water Closet and Lavatory
23-31 19 11 11				Detention Combination Toilets						
23-31 19 13			Incinerating Toilets							
23-31 19 15			Tankless Toilets							
23-31 19 15 11				Floor Mounted Tankless Toilets						
23-31 19 15 13				Wall Mounted Tankless Toilets						
23-31 19 17			Toilets With Tank							
23-31 19 17 11				Floor Mounted Toilets With Tank						
23-31 19 17 13				Wall Mounted Toilets With Tank						
23-31 19 19			Water Closets						room which contains a flush toilet, usually accompanied by a washbowl or sink	
23-31 19 19 11				Water Operated Water Closets						
23-31 19 19 13				Chemical Biological Sanitary Disposal Units						
23-31 19 19 15				Sanitary Macerators						
23-31 19 19 17				Water Closet Seats						
23-31 19 19 19				Water Closet Tanks						
23-31 19 19 21				Sanitary Disposal Connectors						
23-31 21 00		Urinals							is a specialized toilet for urinating into generally used by males from a standing position.	
23-31 21 11			Incinerating Urinals							
23-31 21 13			Water Flush Urinals							
23-31 21 13 11				Floor Water Flush Urinals						
23-31 21 13 13				Wall Mounted Water Flush Urinals						
23-31 21 15			Waterless Urinals							
23-31 21 15 11				Floor Waterless Urinals						
23-31 21 15 13				Wall Mounted Waterless Urinals						
23-31 23 00		Bidets							is a low-mounted plumbing fixture or type of sink intended for washing the genitalia & inner buttocks.	
23-31 25 00		Toilet and Bath Specialties							Basically specialties found in toilet and bath.	
23-31 25 11			Restroom Partitions							
23-31 25 11 11				Toilet Partitions						
23-31 25 11 13				Toilet Door Partitions						
23-31 25 11 15				Urinal Partitions						
23-31 25 11 17				Shower Partitions						
23-31 25 13			Bathroom Cabinets							
23-31 25 15			Hand Dryers							
23-31 25 17			Hair Dryers							
23-31 25 19			Restroom Paper Towel Accessories							
23-31 25 19 11				Paper Towel Dispensers						
23-31 25 19 13				Paper Towel Dispenser With Disposal Units						
23-31 25 21			Toilet Paper Dispensers							
23-31 25 23			Feminine Hygiene Components							
23-31 25 23 11				Sanitary Napkin Dispensers						
23-31 25 23 13				Sanitary Napkin Dispenser With Disposal Units						
23-31 25 23 15				Tampon Dispensers						
23-31 25 23 17				Tampon Dispenser With Disposal Units						
23-31 25 23 19				Combination Sanitary Napkin and Tampon Dispensers						
23-31 25 23 21				Combination Sanitary Napkin and Tampon Dispenser With Disposal Units						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-31 25 25			Towel Bars							
23-31 25 25 11				Electric Heated Towel Bars						
23-31 25 25 13				Water Heated Towel Bars						
23-31 25 27			Robe Hooks							
23-31 25 29			Restroom Hand Soap Components							
23-31 25 29 11				Hand Soap Holders						
23-31 25 29 13				Hand Soap Dispensers						
23-31 25 31			Diaper Changing Units							
23-31 25 33			Bathroom Deodorizers							
23-31 27 00		Floor Drains							is a plumbing fixture installed in the floor of a structure or space, mainly designed to remove any standing water near it.	
23-31 27 11			Floor Drain Plugs							
23-31 27 13			Floor Drain Plug Chains							
23-31 27 15			Floor Drain Covers							
23-31 29 00		Hot Water Heaters							A tank for heating and storing hot water.	
23-31 29 11			Instantaneous Hot Water Heaters					Tankless Hot Water Heater		Includes: Instantaneous Showers
23-31 29 11 11				Electric Instantaneous Hot Water Heaters						
23-31 29 11 13				Gas Instantaneous Hot Water Heaters						
23-31 29 13			Hot Water Tank Heaters							
23-31 29 13 11				Hot Water Tank Electric Heaters						
23-31 29 13 13				Hot Water Tank Gas Heaters						
23-31 29 13 15				Hot Water Tank Steam Heaters						
23-31 29 13 17				Hot Water Tank Fuel Oil Heaters						
23-31 31 00		Drinking Fountains						Water Cooler	A device which provides a jet of drinking water for public use.	
23-31 31 11			Drinking Fountain With Coolers						Drinking fountains that use water cooling condenser.	
23-31 31 13			Drinking Fountains With Direct Expansion Cooling						Drinking fountains with direct expansion refrigeration units.	
23-31 33 00		Complete Sanitary Suites							A prefabricated suite for sanitary use such as a port-a-potty.	
23-31 33 11			Complete Bathroom Suites							
23-31 35 00		Plumbing Tubing							Tubing used specifically to plumbing.	
23-31 35 11			Tubing Reducers							
23-31 35 13			Tubing Couplings							
23-31 35 15			Tubing Elbows							
23-31 35 17			Tubing Plugs							
23-31 35 19			Tubing Tees							
23-33 00 00		HVAC Specific Products and Equipment							Products specifically related to HVAC.	Includes complete cooling and heating systems, heat pumps, air handling units, air ductwork, and HVAC instrumentation and control devices. See "General Facility Services Products" for pipes, hangers, and pumps.
23-33 11 00		Commercial Boilers							a closed vessel in which water or other fluid is heated on a commercial scale	
23-33 11 11			Boiler Controls							
23-33 11 11 11				Boiler Control Panels						
23-33 11 11 13				Boiler Burner Controls						
23-33 11 13			Condensing Boilers							
23-33 11 15			Fire Tube Boilers							
23-33 11 15 11				High Pressure Steam Fire Tube Boilers						
23-33 11 15 13				High Temperature Hot Water Fire Tube Boilers						
23-33 11 15 15				Low Pressure Steam Fire Tube Boilers						
23-33 11 15 17				Low Temperature Hot Water Fire Tube Boilers						
23-33 11 17			Flexible Tube Boilers							
23-33 11 17 11				High Pressure Steam Flexible Tube Boilers						
23-33 11 17 13				High Temperature Hot Water Flexible Tube Boilers						
23-33 11 17 15				Low Pressure Steam Flexible Tube Boilers						
23-33 11 17 17				Low Temperature Hot Water Flexible Tube Boilers						
23-33 11 19			Sectionalized Cast Iron Boilers							
23-33 11 19 11				Low Pressure Steam Sectionalized Cast Iron Boilers						
23-33 11 19 13				Low Temperature Hot Water Sectionalized Cast Iron Boilers						
23-33 11 21			Water Tube Boilers							
23-33 11 21 11				High Pressure Steam Water Tube Boilers						
23-33 11 21 13				High Temperature Hot Water Tube Boilers						
23-33 11 21 15				Low Pressure Steam Water Water Tube Boilers						
23-33 11 21 17				Low Temperature Hot Water Water Tube Boilers						

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23-33 11 22			Electric Boilers							
23-33 11 23			Boiler Components							
23-33 11 23 11				Boiler Joint Fillers and Sealants						
23-33 11 23 13				Boiler Fuel Burners						
23-33 11 23 15				Boiler Fuel Oil Filters						
23-33 11 23 17				Boiler Nozzles						
23-33 11 23 19				Boiler Induction Blowers						
23-33 11 23 21				Boiler Fuel Gas Heat Recovery Devices						
23-33 11 23 23				Boiler Draft Fans						
23-33 13 00		Furnaces							is a device used for heating.	
23-33 13 11			Furnace Controls							
23-33 13 11 11				Furnace Control Panels						
23-33 13 11 13				Furnace Burner Controls						
23-33 13 13			Coal Fired Furnaces							
23-33 13 15			Electric Resistance Furnaces							
23-33 13 17			Natural Gas Fired Furnaces							
23-33 13 19			Gasoline Fired Furnaces							
23-33 13 21			Fuel Oil Fired Furnaces							
23-33 13 23			Oil Fired Furnaces							
23-33 13 25			Propane Fired Furnaces							
23-33 13 27			Furnace Components							
23-33 13 27 11				Furnace Joint Fillers and Sealants						
23-33 13 27 13				Furnace Fuel Burners						
23-33 13 27 15				Furnace Fuel Oil Filters						
23-33 13 27 17				Furnace Nozzles						
23-33 13 27 19				Furnace Fuel Gas Heat Recovery Devices						
23-33 15 00		HVAC Heating Units							any device or system for heating a building.	
23-33 15 11			Propane HVAC Heaters							
23-33 15 11 11				Indoor Propane HVAC Heaters					Propane Heater that is designed to be ducted to be directly vented outdoors.	
23-33 15 11 13				Outdoor Propane HVAC Heaters						
23-33 15 13			Heating Stoves							
23-33 15 13 11				Cast Iron Heating Stoves						
23-33 15 13 13				Stone Heating Stoves						
23-33 15 13 15				Welded Steel Heating Stoves						
23-33 15 13 17				Heating Stove Components						
23-33 15 13 17 11					Heating Stove Fenders					
23-33 15 13 17 13					Heating Stove Hoods					
23-33 15 13 17 15					Heating Stove Pipes					
23-33 15 15			Specialized Surface Heating Products							
23-33 15 15 11				Heating Sheets						
23-33 15 15 11 11					Heating Sheets for Walls					
23-33 15 15 11 13					Heating Sheets for Ceilings					
23-33 15 15 11 15					Embedded Electric Heating Sheets					
23-33 15 15 11 17					Heating Sheets for Glazing					
23-33 15 15 13				Heating Cables						
23-33 15 15 15				Pipe Heat Tape						
23-33 15 15 17				Cable Heat Trace						
23-33 15 15 19				Heated Ceiling Panels				Convactor		
23-33 15 15 21				Pipe Heat Tracing						
23-33 15 17			Fuel Fired HVAC Heaters							
23-33 15 17 11				Fuel Fired HVAC Duct Heaters						
23-33 15 17 13				Fuel Fired HVAC Radiant Heaters				Salmander Heater		
23-33 15 17 15				Fuel Fired HVAC Unit Heaters						
23-33 15 17 17				Fuel Fired HVAC Air Heaters						
23-33 15 19			Forced Air Fuel Fired HVAC Heaters							
23-33 15 19 11				Forced Air Fuel Fired HVAC Duct Heaters						
23-33 15 19 13				Forced Air Fuel Fired HVAC Radiant Heaters				Salmander Heater		
23-33 15 19 15				Forced Air Fuel Fired HVAC Unit Heaters						
23-33 15 19 17				Forced Air Fuel Fired HVAC Air Heaters						
23-33 15 21			Hydronic HVAC Heaters						Hydronic heaters use either steam or water to provide heating using pipes usually arranged with fins or elongated sections to increase surface area.	
23-33 15 21 11				Cast Iron Radiators						
23-33 15 21 13				Finned Tube Radiators						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-33 15 21 15				Plate Radiators						
23-33 15 21 17				Radiation Heating Panels						
23-33 15 23			Forced Air Hydronic HVAC Heaters						Hydronic heaters use either steam or water to provide heating using pipes usually arranged with fins or elongated sections to increase surface area.	
23-33 15 23 11				Forced Air Cast Iron Radiators						
23-33 15 23 13				Forced Air Finned Tube Radiators						
23-33 15 23 15				Forced Air Plate Radiators						
23-33 15 23 17				Forced Air Radiation Heating Panels						
23-33 15 25			Electric HVAC Heaters					Convectors		
23-33 15 25 11				Halogen Electric HVAC Heaters				Convector		
23-33 15 25 13				Infrared Plate HVAC Heaters				Convector		
23-33 15 25 15				Ultraviolet HVAC Heaters				Convector		
23-33 15 25 17				Electric HVAC Resistive Unit Heaters						
23-33 15 27			Forced Air Electric HVAC Heaters					Convectors		
23-33 15 27 11				Forced Air Halogen Electric HVAC Heaters				Convector		
23-33 15 27 13				Forced Air Infrared Plate HVAC Heaters				Convector		
23-33 15 27 15				Forced Air Ultraviolet HVAC Heaters				Convector		
23-33 15 27 17				Forced Air Electric HVAC Resistive Unit Heaters						
23-33 15 29			HVAC Steam Hot Water Converters							
23-33 17 00		Heat Pumps							a device that moves heat from one location (the 'source') to another location (the 'sink' or 'heat sink') using mechanical work.	
23-33 17 11			Packaged Heat Pumps							
23-33 17 11 11				Air Source Packaged Heat Pumps						
23-33 17 11 13				Water Source Packaged Heat Pumps						
23-33 17 13			Split System Heat Pumps							
23-33 17 13 11				Air Source Split System Heat Pumps						
23-33 17 13 13				Water Source Split System Heat Pumps						
23-33 19 00		Cooling and Freeze Components							Components used in the cooling and freezing cycle.	
23-33 19 11			Cooling Freeze Plant Accessories							
23-33 19 11 11				Refrigerant Liquid						
23-33 21 00		Chillers							is a product that removes heat from a liquid via a vapor-compression or absorption refrigeration cycle.	
23-33 21 11			Absorption Chillers							
23-33 21 11 11				Direct Fired Absorption Chillers				Gas Fired Absorption Chiller		
23-33 21 11 13				Steam Absorption Chillers						
23-33 21 13			Chillers							
23-33 21 13 11				Central Package Unit Chillers						
23-33 21 13 13				Centrifugal Chillers						
23-33 21 13 13 11					Packaged Centrifugal Chillers					
23-33 21 13 13 13					Split System Centrifugal Chillers					
23-33 21 13 15				Reciprocating Chillers						
23-33 21 13 15 11					Packaged Reciprocating Chillers					
23-33 21 13 15 13					Split System Reciprocating Chillers					
23-33 21 13 17				Rotary Chillers						
23-33 21 13 17 11					Packaged Rotary Chillers					
23-33 21 13 17 13					Split System Rotary Chillers					
23-33 21 13 19				Rotary Screw Chillers						
23-33 21 13 19 11					Packaged Rotary Screw Chillers					
23-33 21 13 19 13					Split System Rotary Screw Chillers					
23-33 21 13 21				Screw Chillers						
23-33 21 13 21 11					Packaged Screw Chillers					
23-33 21 13 21 13					Split System Screw Chillers					
23-33 21 13 23				Scroll Chillers						
23-33 21 13 23 11					Packaged Scroll Chillers					
23-33 21 13 23 13					Split System Scroll Chillers					
23-33 23 00		Cooling Towers							heat removal devices used to extract waste heat to the atmosphere.	
23-33 23 11			Mechanical Draft Cooling Towers							
23-33 23 13			Natural Draft Cooling Towers							
23-33 23 15			Cooling Ponds							
23-33 25 00		Air Handling Units							is a device used to condition and circulate air as part of an HVAC system.	
23-33 25 11			Built Up Air Handling Units							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-33 25 11 11				Built Up Indoor Air Handling Units						
23-33 25 11 13				Built Up Rooftop Air Handling Units						
23-33 25 13			Customized Air Handling Units							
23-33 25 13 11				Customized Indoor Air Handling Units						
23-33 25 13 13				Customized Rooftop Air Handling Units						
23-33 25 15			Heating and Ventilating Units						Type of AHU, without cooling	
23-33 25 17			Modular Air Handling Units							
23-33 25 17 11				Modular Indoor Air Handling Units						
23-33 25 17 13				Modular Rooftop Air Handling Units						
23-33 25 19			Pre Fabricated Air Handling Units							
23-33 27 00		Air Humidity Control Equipment							Equipment used in the control of humidity.	
23-33 27 11			Air Washers							
23-33 27 11 11				Convection Air Washers						
23-33 27 11 13				Evaporative Air Washers						
23-33 27 13			Dehumidifiers							
23-33 27 13 11				Dehumidifiers						
23-33 27 13 11 11					Swimming Pool Dehumidification Units					
23-33 27 13 13				Permanently Installed Dehumidifiers						
23-33 27 13 15				Portable Dehumidifiers						
23-33 27 15			Air Humidifiers							
23-33 27 17			Vaporizers							
23-33 29 00		HVAC Dampers							Devices deadens, restrains, or depresses in HVAC.	
23-33 29 11			3 Way Diverter Dampers						For changing over gas flow or simultaneously isolating one duct.	
23-33 29 13			Backdraft Dampers							
23-33 29 13 11				Opposed Blade Backdraft Dampers						
23-33 29 13 11 11					Spring Loaded Opposed Blade Backdraft Dampers					
23-33 29 13 11 13					Counter Weight Balanced Opposed Blade Backdraft Dampers					
23-33 29 13 13				Parallel Backdraft Dampers						
23-33 29 13 13 11					Spring Loaded Parallel Backdraft Dampers					
23-33 29 13 13 13					Counter Weight Balanced Parallel Backdraft Dampers					
23-33 29 15			Bi Plane Dampers						Two dampers in one. The blades are designed as hollow, which when closed and fitted with seals, form compartments which can be pressurized with seal air.	
23-33 29 17			Butterfly Dampers							
23-33 29 17 11				Automatically Control Butterfly Dampers						
23-33 29 17 13				Manual Butterfly Dampers						
23-33 29 19			Dampers							
23-33 29 19 11				Automatically Control Dampers						
23-33 29 19 13				Manual Dampers						
23-33 29 21			Diffuser Firestop Flaps							
23-33 29 23			Fire Dampers							
23-33 29 23 11				Manual Fire Dampers						
23-33 29 23 13				Automatic Fire Dampers						
23-33 29 25			Smoke Dampers							
23-33 29 25 11				Manual Smoke Dampers						
23-33 29 25 13				Automatic Smoke Dampers						
23-33 29 27			Non Return Dampers					Flap Isolators	For geometrical reasons these are two bladed and open towards the center of the duct.	
23-33 29 29			Guillotine Dampers						For shut-off use.	
23-33 29 31			Louvre Dampers						With parallel blade motion. Used for isolation and flow control. The blades rotate in the same direction.	
23-33 29 31 11				Louvre Dampers with Opposed Blade Motion					Single blade dampers. Used for on/off flow control.	
23-33 29 33			Movable Blade Wall Louvers							
23-33 29 33 11				Double Panel Wall Louvers						
23-33 29 35			Static Pressure Regulating Dampers						Application Manages Excess Static Pressure In Zone Systems	
23-33 29 37			Volume Control Dampers							
23-33 29 37 11				Opposed Blade Volume Control Dampers						
23-33 29 37 11 11					Manual Opposed Blade Volume Control Dampers					
23-33 29 37 11 13					Automatic Opposed Blade Volume Control Dampers					
23-33 29 37 13				Parallel Volume Control Dampers						
23-33 29 37 13 11					Manual Parallel Volume Control Dampers					
23-33 29 37 13 13					Automatic Parallel Volume Control Dampers					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-33 29 39			Fire Shutters for Air Ductwork							
23-33 31 00		Air Circulators							Products used for the movement of air in a circulator or circuit.	
23-33 31 11			Air Curtains					Specialized Blower		
23-33 31 11 11				Heated Air Curtains				Specialized Blower		
23-33 31 11 13				Non Heated Air Curtains				Specialized Blower		
23-33 31 13			Blowers							
23-33 31 13 11				Permanently Installed Blowers						
23-33 31 13 13				Portable Blowers						
23-33 31 15			Exhaust Hoods						Exhaust hoods are specialized ventilation systems that include fans and ducting to ensure a safe environment.	
23-33 31 15 11				Canopy Exhaust Hoods						
23-33 31 15 13				Chemical Fume Hoods						
23-33 31 15 15				Perchloric Acid Fume Hoods						
23-33 31 15 17				Radio Isotope Fume Hoods						
23-33 31 15 19				Snorkel Exhaust Hoods						
23-33 31 15 21				Grease Exhaust Hoods						
23-33 31 17			Exhaust Hood Fire Suppression System							
23-33 31 17 11				Chemical Exhaust Hood Fire Suppression Systems					Product is sold as a complete system	
23-33 31 17 13				Gas Exhaust Hood Fire Suppression Systems					Product is sold as a complete system	
23-33 31 19			Fans							
23-33 31 19 11				Axial Fans						
23-33 31 19 11 11					Axial Plug Fans					
23-33 31 19 11 13					Axial Vane Fans					
23-33 31 19 11 15					Ceiling Fans					
23-33 31 19 11 17					Propeller Fans					
23-33 31 19 11 19					Tube Axial Fans					
23-33 31 19 11 21					Variable Pitch Axial Vane Fans					
23-33 31 19 13				Centrifugal Fans						
23-33 31 19 13 11					Centrifugal Plug Fans					
23-33 31 19 13 13					Double Inlet Centrifugal Fans					
23-33 31 19 13 15					Single Inlet Centrifugal Fans					
23-33 31 21			Power Ventilators							
23-33 31 21 11				Centrifugal Power Ventilators						
23-33 31 21 11 11					Down Blast Centrifugal Power Ventilators					
23-33 31 21 11 13					Up Blast Centrifugal Power Ventilators					
23-33 31 21 13				Propeller Power Ventilators						
23-33 31 21 13 11					Down Blast Propeller Power Ventilators					
23-33 31 21 13 13					Up Blast Propeller Power Ventilators					
23-33 33 00		HVAC Fan Coil Units							Devices consisting of a heating or cooling coil and a fan and controls the temperature of air in a space.	
23-33 33 11			Fan Coil Units						A fan coil unit (FCU) is a simple device consisting of a heating or cooling coil and fan	
23-33 33 11 11				Fan Coil Cooling Units					Wall Mount/Ceiling Mounted/Surface Mounted/Concealed Mounted/Floor Mounted	
23-33 33 11 11 11					2 Pipe Fan Coil Cooling Units					
23-33 33 11 11 13					4 Pipe Fan Coil Cooling Units					
23-33 33 11 13				Fan Coil Heating Units					Wall Mount/Ceiling Mounted/Surface Mounted/Concealed Mounted/Floor Mounted	
23-33 33 11 13 11					4 Pipe Fan Coil Heating Units					
23-33 33 11 13 13					2 Pipe Fan Coil Heating Units					
23-33 33 11 15				Fan Coil Heating and Cooling Units					Wall Mount/Ceiling Mounted/Surface Mounted/Concealed Mounted/Floor Mounted	
23-33 33 11 15 11					2 Pipe Fan Coil Heating and Cooling Units					
23-33 33 11 15 13					4 Pipe Fan Coil Heating and Cooling Units					
23-33 35 00		HVAC Coils							a series of loops specific to HVAC.	
23-33 35 11			HVAC Coils							
23-33 35 11 11				HVAC Glycol Coils						
23-33 35 11 13				HVAC Steam Coils						
23-33 35 11 15				HVAC Water Coils						
23-33 37 00		Refrigerant Condensing Units							Vapor condensers in a refrigeration system, where the refrigerant is liquefied and discharges its heat to the environment.	

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23-33 37 11			Packaged Refrigerant Coils and Fan Units							
23-33 37 13			Refrigerant Condensing Coils							
23-33 37 15			Refrigerant Evaporators							
23-33 39 00		Air Conditioning Equipment							Equipment used for air conditioning purposes.	
23-33 39 11			Air Conditioners							
23-33 39 11 11				Room Air Conditioners						
23-33 39 13			High Pressure Air Conditioning Units						Air Handler that maintains more than 6 inches of static pressure	
23-33 39 15			Make Up Air Units							
23-33 39 15 11				Make Up Air Units With Heat					Hot Water would be a design power source attribute or captured by the coil associated with the MAU	
23-33 39 15 13				Make Up Air Units Without Heat						
23-33 39 17			Packaged Air Conditioners							
23-33 39 17 11				Dual Pack Packaged Air Conditioners						
23-33 39 17 11 11					Air Cooled Dual Pack Packaged Air Conditioners					
23-33 39 17 11 13					Water Cooled Dual Pack Packaged Air Conditioners					
23-33 39 17 13				Single Pack Packaged Air Conditioners						
23-33 39 17 13 11					Air Cooled Single Pack Packaged Air Conditioners					
23-33 39 17 13 13					Water Cooled Single Pack Packaged Air Conditioners					
23-33 39 17 13 15					Unitary Air Conditioning Equipment					
23-33 39 19			Packaged Terminal Air Conditioning Units							
23-33 39 19 11				Fixed Packaged Terminal Air Conditioners						
23-33 39 19 11 11					Air Cooled Fixed Packaged Terminal Air Conditioners					
23-33 39 19 11 13					Water Cooled Fixed Packaged Terminal Air Conditioners					
23-33 39 19 13				Portable Packaged Terminal Air Conditioners						
23-33 39 19 13 11					Air Cooled Portable Packaged Terminal Air Conditioners					
23-33 39 19 13 13					Water Cooled Portable Packaged Terminal Air Conditioners					
23-33 39 19 15				Window Packaged Terminal Air Conditioners						
23-33 39 19 15 11					Air Cooled Window Packaged Terminal Air Conditioners					
23-33 39 19 15 13					Water Cooled Window Packaged Terminal Air Conditioners					
23-33 39 21			Split System Air Conditioning Units							
23-33 41 00		HVAC Air Terminals							Units at the end of a branch duct through which air is transferred or delivered to the conditioned space.	
23-33 41 11			Fan Powered Terminal Air Units							
23-33 41 11 11				Mixing Fan Powered Terminal Air Units						
23-33 41 11 11 11					Single Duct Mixing Fan Powered Terminal Air Units					
23-33 41 11 11 13					Dual Duct Mixing Fan Powered Terminal Air Units					
23-33 41 11 13				Non Mixing Fan Powered Terminal Air Units						
23-33 41 11 13 11					Single Duct Mixing Fan Powered Terminal Air Units					
23-33 41 11 13 13					Dual Duct Mixing Fan Powered Terminal Air Units					
23-33 41 13			Induction Terminal Air Units							
23-33 41 13 11				Constant Volume Air Induction Terminal Air Units						
23-33 41 13 11 11					Single Duct Constant Volume Air Induction Terminal Air Units					
23-33 41 13 11 13					Dual Duct Constant Volume Air Induction Terminal Air Units					
23-33 41 13 13				Variable Air Volume Induction Terminal Air Units						
23-33 41 13 13 11					Single Duct Variable Air Volume Induction Terminal Air Units					
23-33 41 13 13 13					Dual Duct Variable Air Volume Induction Terminal Air Units					
23-33 41 15			HVAC Mixing Boxes							
23-33 41 17			Terminal Air Units							
23-33 41 17 11				Constant Volume Air Terminal Units						
23-33 41 17 11 11					Dual Duct Constant Volume Air Terminal Units					
23-33 41 17 11 13					Single Duct Constant Volume Air Terminal Units					
23-33 41 17 13				Variable Air Volume Terminal Units						
23-33 41 17 13 11					Dual Duct Variable Air Volume Terminal Units					
23-33 41 17 13 13					Single Duct Variable Air Volume Terminal Units					
23-33 41 19			Exhaust Terminals							
23-33 43 00		HVAC Condenser Units							Unit specific to HVAC which condenses air.	
23-33 43 11			Air Cooled Condenser Units							
23-33 43 11 11				Indoor Air Cooled Condenser Units						
23-33 43 11 13				Outdoor Air Cooled Condenser Units						
23-33 43 13			Evaporative Condenser Units							
23-33 43 15			Refrigeration Condenser Units							
23-33 43 15 11				Air Cooled Refrigeration Condenser Units						
23-33 43 15 13				Water Cooled Refrigeration Condenser Units						

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23-33 43 17			Water Cooled Condenser Units							
23-33 43 17 11				Indoor Water Cooled Condenser Units						
23-33 45 00		HVAC Coolers							Devices specific to HVAC used to cool the air.	
23-33 45 11			HVAC Dry Coolers					Glycol Cooler		
23-33 45 13			HVAC Evaporative Coolers							
23-33 47 00		Air Dryers							A compressed air dryer is a product for removing water vapor from compressed air.	
23-33 47 11			Refrigerated Air Dryers							
23-33 47 13			Regenerative Desiccant Air Dryers							
23-33 49 00		HVAC Ductwork							The system of ducts in a particular building used for HVAC.	
23-33 49 11			Ventilation Diffusers							
23-33 49 11 11				Ceiling Ventilation Diffusers						
23-33 49 11 11 11					Ceiling Linear Ventilation Diffusers					
23-33 49 11 13				Wall Ventilation Diffusers						
23-33 49 11 15				Floor Ventilation Diffusers						
23-33 49 13			Ventilation Ducts							
23-33 49 13 11				Round Ventilation Ducts						
23-33 49 13 11 11					Flexible Ventilation Ducts					
23-33 49 13 13				Square Ventilation Ducts						
23-33 49 15			Duct Access Panels							
23-33 49 17			Duct Insulation							
23-33 49 17 11				Duct Covering Insulation						
23-33 49 17 13				Duct Liner Insulation						
23-33 49 19			Ductwork Distribution Collectors							
23-33 49 21			Ductwork Expansion Vessels							
23-33 49 21 11				Air Outlets and Inlets						
23-33 49 21 13				Ductwork Guide Vanes						
23-33 49 21 15				Ductwork Air Mixers						
23-33 49 21 17				Ductwork Sound Attenuators						
23-33 49 23			Grilles							
23-33 49 23 11				Exhaust Air Grilles						
23-33 49 23 13				Return Air Grilles						
23-33 49 23 15				Supply Air Grilles						
23-33 49 23 17				Transfer Air Grilles						
23-33 49 25			Ventilation Registers							
23-33 49 25 11				Exhaust Air Ventilation Registers						
23-33 49 25 13				Return Air Ventilation Registers						
23-33 49 25 15				Supply Air Ventilation Registers						
23-33 49 27			Ventilators						See Air Circulator Section for Power Ventilators	
23-33 49 27 11				Gravity Ventilators						
23-33 49 27 13				Intake and Relief Ventilators						
23-33 49 27 15				Relief Ventilators						
23-33 49 27 17				Intake Ventilators						
23-33 49 29			Air Ductwork Accessories							
23-33 49 29 11				Access Fittings for Air Ductwork						
23-33 49 29 13				Couplings for Air Ductwork						
23-33 49 29 15				Hangers for Air Ductwork						
23-33 49 29 17				Supports for Air Ductwork						
23-33 49 29 19				Mechanical Fasteners for Air Ductwork						
23-33 51 00		HVAC Specialized Equipment							Specialized equipment for HVAC.	
23-33 51 11			Refrigerant Monitors							
23-33 51 13			Refrigerant Purge Units							
23-33 51 15			Ultraviolet Disinfection Lighting							
23-33 53 00		Solar Water Heating Equipment							Equipment used to heat water through solar power.	
23-33 53 11			Solar Water Heating Packaged Units							
23-33 53 13			Solar Water Heating Collector Components							
23-33 53 13 11				Solar Water Heating Absorber Plates						
23-33 53 13 13				Solar Water Heating Absorber Tubing						
23-33 53 13 15				Solar Water Heating Coatings and Surface Treatment						
23-33 53 13 17				Solar Water Heating Collector Insulation						
23-33 53 13 19				Solar Water Heating Glazing						
23-33 53 13 21				Solar Water Heating Housing and Framing						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-33 53 13 23				Solar Water Heating Reflectors						
23-33 53 15			Solar Water Heating Collector Units							
23-33 53 15 11				Solar Water Heating Flat Plate Collectors						
23-33 53 15 13				Solar Water Heating Concentrating Collectors						
23-33 53 15 15				Solar Water Heating Vacuum Tube Collectors						
23-33 55 00		Energy HVAC Recovery Equipment							Equipment used to recover HVAC energy.	
23-33 55 11			Heat Pipes							
23-33 55 13			Heat Wheels							
23-35 00 00	Electrical and Lighting Specific Products and Equipment								Products specifically related to electricity and lighting.	Includes power transformers, filters, conditioners, luminaries, lighting, switches, and electrical and lighting control devices. See "General Facility Services Products" for conduits and wires.
23-35 11 00		Electrical Generators							Devices which convert mechanical energy to electrical energy	
23-35 11 11			Single Unit Electrical Generators							
23-35 11 11 11				Engine Electrical Generators					Electrical Generator setup to be direct coupled to an engine.	
23-35 11 11 13				Motor Electrical Generators					Electrical Generator setup to be directly coupled to a motor.	
23-35 11 12			Single Unit Electrical Generator Engines							
23-35 11 12 11				Electrical Generation Diesel Engines						
23-35 11 12 13				Electrical Generation Gas Engines						
23-35 11 12 15				Electrical Generation Natural Gas Engines						
23-35 11 12 15 11					Electrical Generation Natural Gas Turbines					
23-35 11 12 17				Electrical Generation Steam Turbines						
23-35 11 13			Motor Generator Sets						Electromagnetic set with a mechanical driver	
23-35 11 13 11				Alternating Current Frequency Converters					AC to AC Frequency Converter	
23-35 11 13 13				Alternating Current Generator Sets					AC Generator with a motor driver	
23-35 11 13 15				Direct Current Generator Sets					DC Generator with a motor driver	
23-35 11 13 17				Multiple Frequency Electrical Generator Sets				Variable Frequency Electrical Generator		
23-35 11 13 19				Multiple Voltage Electrical Generator Sets				Variable Voltage Electrical Generator		
23-35 11 15			Engine Generator Sets							
23-35 11 15 11				Diesel Generator Sets					AC Generator with a diesel engine as the driver	
23-35 11 15 13				Gas Generator Sets					AC Generator with a gas engine as the driver	
23-35 11 15 15				Natural Gas Generator Sets					AC Generator with a natural gas engine as the driver	
23-35 11 15 17				Steam Turbine Generator Sets					AC Generator with a steam turbine as the driver	
23-35 11 15 19				Thermal Generator Sets			Geo-Thermal		AC Generator with a thermal turbine as the driver	
23-35 11 15 21				Hydro Turbine Generator Sets					AC Generator with a water turbine as the driver	
23-35 11 15 23				Wind Generator Sets					AC Generator with a wind turbine as the driver	
23-35 11 17			Photovoltaic Generators					Solar Generator	DC Generator using solar power, all solar power creates DC that is stored or converted in a DC to AC converter	
23-35 11 17 11				Photoelectric Cell						
23-35 11 17 12				Photoelectric Panel						
23-35 11 17 13				Photovoltaic Array						
23-35 11 17 15				Photovoltaic Collectors						
23-35 13 00		Transformers							is a device that transfers electrical energy from one circuit to another through inductively coupled conductors.	
23-35 13 11			Current Transformers							
23-35 13 13			Instrument Transformers					Control Transformer		
23-35 13 13 11				Current Instrument Transformers				Control Transformer		
23-35 13 13 13				Pulse Instrument Transformers				Control Transformer		
23-35 13 13 15				Voltage Instrument Transformers				Control Transformer		
23-35 13 15			Electrical Network Transformers					Distribution Transformer, Step-Up=Buck Boost		Typically High Voltage (over 600 Volts). Network in electrical distribution refers to the Utility side of the electrical network grid.
23-35 13 15 11				Electrical Network Isolation Transformers						Typically High Voltage (over 600 Volts).
23-35 13 15 11 11					Electrical Network Dry Isolation Transformers					Typically High Voltage (over 600 Volts).
23-35 13 15 11 13					Electrical Network Oil Filled Isolation Transformers					Typically High Voltage (over 600 Volts).
23-35 13 15 13				Electrical Network Step Down Transformers						Typically High Voltage (over 600 Volts).
23-35 13 15 13 11					Electrical Network Dry Step Down Transformers					Typically High Voltage (over 600 Volts).
23-35 13 15 13 13					Electrical Network Oil Filled Step Down Transformers					Typically High Voltage (over 600 Volts).

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-35 13 15 15				Electrical Network Step Up Transformers						Typically High Voltage (over 600 Volts).
23-35 13 15 15 11					Electrical Network Dry Step Up Transformers					Typically High Voltage (over 600 Volts).
23-35 13 15 15 13					Electrical Network Oil Filled Step Up Transformers					Typically High Voltage (over 600 Volts).
23-35 13 17			Power Transformers							
23-35 13 17 11				Power Harmonic Mitigation Transformers						Typically under 600 Volts
23-35 13 17 11 11					Power Dry Harmonic Mitigation Transformers					Typically under 600 Volts
23-35 13 17 11 13					Power Oil Filled Harmonic Mitigation Transformers					Typically under 600 Volts
23-35 13 17 13				Power Isolation Transformers						Typically under 600 Volts
23-35 13 17 13 11					Power Dry Isolation Transformers					Typically under 600 Volts
23-35 13 17 13 13					Power Oil Filled Isolation Transformers					Typically under 600 Volts
23-35 13 17 15				Power Step Down Transformers						Typically under 600 Volts
23-35 13 17 15 11					Power Dry Step Down Transformers					Typically under 600 Volts
23-35 13 17 15 13					Power Oil Filled Step Down Transformers					Typically under 600 Volts
23-35 13 17 17				Power Step Up Transformers						Typically under 600 Volts
23-35 13 17 17 11					Power Dry Step Up Transformers					Typically under 600 Volts
23-35 13 17 17 13					Power Oil Filled Step Up Transformers					Typically under 600 Volts
23-35 13 19			Transformer Accessories							
23-35 13 19 11				Transformer Commutators						
23-35 13 19 13				Transformer Ballasts						
23-35 15 00		Electric Motors							uses electrical energy to produce mechanical energy, usually through the interaction of magnetic fields and current-carrying conductors.	
23-35 15 11			Alternating Current (AC) Motors							
23-35 15 11 11				Single Phase AC Motors						
23-35 15 11 11 11					Multi Speed Single Phase AC Motors					
23-35 15 11 11 13					Single Speed Single Phase AC Motors					
23-35 15 11 11 15					Synchronous Single Phase AC Motors					
23-35 15 11 13				Three Phase AC Motors						
23-35 15 11 13 11					Multi Speed Three Phase AC Motors					
23-35 15 11 13 13					Single Speed Three Phase AC Motors					
23-35 15 11 13 15					Synchronous Three Phase AC Motors					
23-35 15 13			Direct Current (DC) Motors							
23-35 15 13 11				Brushless DC Motors						
23-35 15 13 13				Compound Wound DC Motors						
23-35 15 13 15				Coreless DC Motors						
23-35 15 13 17				Limited Angle Torque DC Motors						
23-35 15 13 19				Linear DC Motors						
23-35 15 13 21				Permanent Magnetic DC Motors						
23-35 15 13 23				Series Wound DC Motors						
23-35 15 13 25				Shunt Wound DC Motors						
23-35 15 13 27				Step DC Motors						
23-35 15 15			DC Servo Motors							
23-35 15 17			Dynamotors							
23-35 15 19			Hydraulic Driven Motors							
23-35 15 21			Pneumatic Driven Motors							
23-35 15 23			Steam Driven Motors							
23-35 17 00		Variable Speed Drives							Electrical equipment used to control the speed of motors and machinery to reduce energy usage under lower loads.	
23-35 17 11			Direct Current Electronic Speed Controller Drives							
23-35 17 13			Slip Controlled Drives					Eddy Current Drive		
23-35 17 15			Variable Frequency Drives							
23-35 17 15 11				Pulse Width Variable Frequency Drives						
23-35 17 15 13				Current Source Input Variable Frequency Drives						
23-35 17 15 15				Variable Voltage Input Variable Frequency Drives						
23-35 19 00		Batteries							an array of electrochemical cells for electricity storage, either individually linked and stored in a single unit	
23-35 19 11			Battery Racks							
23-35 19 13			Non Rechargeable Batteries							
23-35 19 13 11				Alkaline Batteries						
23-35 19 13 13				Dry Cell Batteries						
23-35 19 13 15				Lithium Batteries						
23-35 19 13 17				Silver Oxide Batteries						
23-35 19 13 19				Zinc Air Batteries						
23-35 19 13 21				Zinc Coal Batteries				Zinc Carbon Battery		

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-35 19 15			Rechargeable Batteries							
23-35 19 15 11				Alkaline Batteries						
23-35 19 15 13				Lead Acid Batteries						
23-35 19 15 13 11					Sealed Lead Acid Batteries			Gel Cap Lead Acid Battery		
23-35 19 15 13 13					Wet Cell Lead Acid Batteries					
23-35 19 15 15				Lithium Batteries				Unsealed Lead Acid Battery		
23-35 19 15 17				Manganese Batteries						
23-35 19 15 19				Mercuric Oxide Batteries				Mercury Battery		
23-35 19 15 21				Nickel Cadmium Batteries						
23-35 19 15 23				Nickel Hydrogen Batteries						
23-35 19 15 25				Nickel Iron Batteries						
23-35 19 15 27				Nickel Metal Hydride Batteries						
23-35 19 15 29				Nickel Sodium Chloride Batteries						
23-35 19 15 31				Silver Oxide Batteries				Silver Zinc Battery		
23-35 21 00		Battery Chargers							a product used to put energy into a secondary cell or usually a rechargeable battery by forcing an electric current through it.	
23-35 23 00		Power Conditioning Equipment							Equipment intended to improve the quality of the power that is delivered to electrical load equipment	
23-35 23 11			Harmonic Control Devices							
23-35 23 11 11				Electric Interference Suppressor Filters						
23-35 23 11 13				Harmonic Filters						
23-35 23 13			Power Converters						A converter is an electrical device that converts alternating current (AC) to direct current (DC)	
23-35 23 13 11				Rotary Converters						
23-35 23 15			Static Power Converters							
23-35 23 15 11				Static Rectifiers						
23-35 23 15 13				Ondulators						
23-35 23 15 15				Combined Converter Sets						
23-35 23 15 17				Direct Current (DC) Drive Controllers						
23-35 23 15 19				Slip Controllers						
23-35 23 15 21				Static Frequency Converters						
23-35 23 15 23				Static Uninterruptible Power Supplies						
23-35 23 15 25				Variable Frequency Controllers						
23-35 23 15 27				Frequency Changers						
23-35 23 15 29				Rotary Uninterruptible Power Units						
23-35 23 17			Power Inverters						An inverter is an electrical or electro-mechanical device that converts direct current (DC) to alternating current (AC)	
23-35 23 17 11				Commutator Inverters				Electric Rotary Converter Generator		
23-35 23 17 13				Solid State Inverters						
23-35 23 19			Powerfactor Correction Devices							
23-35 23 19 11				Capacitive and Inductive Power Correction Devices						
23-35 23 19 13				Capacitive Power Correction Devices						
23-35 23 19 15				Inductive Power Correction Devices						
23-35 23 19 17				Capacitors						
23-35 23 19 19				Power Factor Controls (Cosines Phi)						
23-35 23 21			Uninterrupted Power Supply (UPS) Units							
23-35 23 21 11				Uninterruptible Power Supply Component Systems						
23-35 23 21 13				Uninterruptible Power Supply Packaged Units						
23-35 25 00		Electrical Instrumentation and Controls							Instruments which measure and control electricity.	
23-35 25 11			Electrical Meters							
23-35 25 11 11				Power Meters					Power meters are kilowatt or watt meters that do not take into account hours.	
23-35 25 11 13				Voltage Meters						
23-35 25 11 15				Resistance Meters						
23-35 25 11 17				Frequency Meters						
23-35 25 11 19				Multi Meters						
23-35 25 11 21				Current Meters						
23-35 25 11 23				Amp Hour Meters						
23-35 25 11 25				Power Factor Meters						
23-35 25 11 27				Kilowatt Hour Meters						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-35 25 11 27 11					Electromechanical Remote Kilowatt Hour Meters				Meters used to measure energy usage and determine utility costs. Remote Meters have communication ability to allow measuring energy usage from a remote location.	
23-35 25 11 27 13					Electromechanical Kilowatt Hour Meters				Meters used to measure energy usage and determine utility costs.	
23-35 25 11 27 15					Solid State Remote Kilowatt Hour Meters				Meters used to measure energy usage and determine utility costs. Remote Meters have communication ability to allow measuring energy usage from a remote location.	
23-35 25 11 27 17					Solid State Kilowatt Hour Meters				Meters used to measure energy usage and determine utility costs.	
23-35 25 11 29				Multiple Tariff Meters				Variable Rate Meter		
23-35 25 13			Electrical Energy Recording Devices							
23-35 25 13 11				Watt Hour Recorders				Electricity Usage Meters		
23-35 25 15			Electrical Network Protection Modules					High Voltage Protection Module		
23-35 25 17			Electrical Power Protection Modules					Low Voltage Protection Module		
23-35 25 19			Motor Starters							
23-35 25 21			Programmable Logic Controllers							
23-35 25 23			Electrical Control Panels							
23-35 25 25			Electrical Line Supervisor Sets							
23-35 27 00		Electrical Terminals								
23-35 27 11			Electrical Receptacles						Products used to prevent electrical shock or hazards to the occupants.	
23-35 27 11 11				Electrical Receptacle Terminal Units						
23-35 27 11 13				Ground Fault Receptacles						
23-35 27 11 15				Electrical Extension Cords						
23-35 27 11 17				Electrical Receptacle Accessories						
23-35 27 11 17 11					Electrical Telltale Lamps					
23-35 27 11 17 13					Electrical Receptacle Protectors					
23-35 27 11 17 15					Electrical Receptacle Adapters					
23-35 27 13			Electrical Plug Connectors							Includes: Pin Plugs
23-35 29 00		Circuit Breakers							an automatic switch designed to protect an electrical circuit from damage caused by overload or short circuit.	
23-35 29 11			Air Circuit Breakers							
23-35 29 11 11				Network Distribution Air Circuit Breakers						
23-35 29 11 13				Power Distribution Air Circuit Breakers						
23-35 29 13			Gas Circuit Breakers							
23-35 29 13 11				Network Distribution Gas Circuit Breakers						
23-35 29 13 13				Power Distribution Gas Circuit Breakers						
23-35 29 15			Ground Fault Circuit Breakers							
23-35 29 17			Molded Case Circuit Breakers							
23-35 29 17 11				Shunt Molded Case Circuit Breakers						
23-35 29 19			Oil Circuit Breakers							
23-35 29 19 11				Network Distribution Oil Circuit Breakers						
23-35 29 19 13				Power Distribution Oil Circuit Breakers						
23-35 29 21			Vacuum Circuit Breakers							
23-35 29 21 11				Network Distribution Vacuum Circuit Breakers						
23-35 29 21 13				Power Distribution Vacuum Circuit Breakers						
23-35 29 23			Ground Fault Circuit Interrupters							
23-35 29 25			Network Protectors						Automatic network disconnect designed as a protection device.	
23-35 29 27			Electrical Disconnects						These disconnects are large network or transmission disconnects. Equipment disconnects can be found under disconnect switch	
23-35 29 27 11				Air Disconnects						
23-35 29 27 13				Vacuum Disconnects						
23-35 29 27 15				Gas Disconnects						
23-35 29 29			Fuses							
23-35 29 29 11				Fuse Panels						
23-35 29 29 13				Fuse Holders						
23-35 31 00		Electrical Power Distribution Devices							Devices used in electrical power distribution.	
23-35 31 11			Power Supply Devices							
23-35 31 13			Distribution Panel Boards						Primarily used for feeder circuits	
23-35 31 15			Electrical Distribution Control Panels							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-35 31 17			Electrical Panel Boards						Primarily used for branch circuits. Commonly called Electrical Panels	
23-35 31 19			Electrical Panel Meter Sockets							
23-35 31 21			Load Centers							
23-35 31 23			Motor Control Centers							
23-35 31 25			Power Control and Monitoring Assemblies							
23-35 31 27			Power Distribution Units						A PDU is an electrical panel with an isolation transformer and is a self contained unit as brought off the shelf.	
23-35 31 27 11				Multiple Section Power Distribution Units						
23-35 31 27 13				Stand Alone Power Distribution Units						
23-35 31 29			Switchboards						Switchboard only contains high voltage breakers	
23-35 31 29 11				Distribution Switchboards						
23-35 31 29 13				Paralleling Switchboards						
23-35 31 31			Switchgear						Switchgear contains both high voltage breakers and their controls	
23-35 31 31 11				Distribution Switchgear						
23-35 31 31 11 11					Electronic Controlled Distribution Switchgear					
23-35 31 31 11 13					Mechanically Controlled Distribution Switchgear					
23-35 31 31 11 15					Remote Controlled Distribution Switchgear					
23-35 31 31 11 17					Time Controlled Distribution Switchgear					
23-35 31 31 13				Paralleling Switchgear						
23-35 31 31 13 11					Electronic Controlled Paralleling Switchgear					
23-35 31 31 13 13					Mechanically Controlled Paralleling Switchgear					
23-35 31 31 13 15					Remote Controlled Paralleling Switchgear					
23-35 31 31 13 17					Time Controlled Paralleling Switchgear					
23-35 31 33			Electrical Busbars							
23-35 31 33 11				Aluminum Electrical Busbars				Bus Bar, Busway		
23-35 31 33 13				Copper Electrical Busbars				Bus Bar, Busway		
23-35 31 35			Electrical Feeders						Denotes identification for electrical feeders into facilities.	
23-35 33 00		Electrical Ducting Wireways Components							Components used in electrical ducting wireways.	Includes: Trunking
23-35 33 11			Electrical Service Penetrations							
23-35 33 13			Electrical Conductor Components							
23-35 33 13 11				Electrical Conductor Rails						
23-35 33 13 13				Electrical Conductor Couplings						
23-35 33 13 15				Electrical Conductor Insulation						
23-35 33 13 17				Electrical Support Wires						
23-35 33 13 19				Conductor Mechanical Fasteners						
23-35 33 15			Electrical Junction Boxes							
23-35 33 15 11				Electrical Ceiling Junction Boxes						
23-35 33 15 13				Electrical Wall Junction Boxes						
23-35 33 17			Electrical Conduits							Note: Circular cross-section.
23-35 33 17 11				Electrical Cable Reels						
23-35 33 17 13				Mechanical Fasteners for Conduits						
23-35 33 17 15				Mechanical Fasteners for Trunking						
23-35 33 19			Electrical Cable Trays							Note: Telecomm and Electrical
23-35 33 21			Electrical Bus Ducts					Bus Duct		
23-35 33 21 11				Aluminum Electrical Bus Ducts				Bus Duct		
23-35 33 21 13				Copper Electrical Bus Ducts				Bus Duct		
23-35 33 23			Electrical Racks							Note: Telecomm and Electrical
23-35 33 23 11				Horizontal Electrical Racks						Note: Telecomm and Electrical
23-35 33 23 13				Vertical Electrical Racks						Note: Telecomm and Electrical
23-35 33 25			Electrical Wireways						Includes: Trunking Note: Non-circular cross-section	Includes: Trunking
23-35 33 25 11				Underfloor Electrical Wireways						
23-35 33 25 13				Vertical Electrical Wire Raceways						
23-35 33 25 15				Horizontal Electrical Wire Raceways						
23-35 33 25 17				Ceiling Grid Electrical Systems						
23-35 33 25 17 11					Ceiling Grid Electrical Wire Tracks					
23-35 33 25 17 13					Ceiling Grid Electrical Wire Track Connectors					
23-35 35 00		Electrical Contactors							An electrically controlled switch used for switching a power or control circuit.	
23-35 37 00		Electrical Switches							device consisting of a mechanical or electrical or electronic device for making or breaking or changing the connections in a circuit	
23-35 37 11			Automatic Transfer Switches							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-35 37 11 11				Normal Power Seeking Automatic Transfer Switches					Senses power loss, goes to backup power source	
23-35 37 11 13				Power Seeking Automatic Transfer Switches						
23-35 37 13			Manual Transfer Switches						Transfer circuit from one power source to another	
23-35 37 15			Barrel Switches						A switch that connects or disconnects multiple combinations of circuits.	
23-35 37 15 11				Barrel Key Switches						
23-35 37 17			Dimmer Control Switches						A variable or multi-stage switch used to control voltage or current. Usually used to control lighting levels.	
23-35 37 17 11				Lighting Dimmer Rheostats						
23-35 37 17 12				Ganged Lighting Dimmers						
23-35 37 17 13				Dimmers						
23-35 37 19			Disconnect Switches						Switch used to isolate equipment from power sources.	
23-35 37 19 11				Fused Disconnect Switches						
23-35 37 19 13				Non Fused Disconnect Switches						
23-35 37 21			Drum Switches					Drum Controller	Start, stop and change the speed and/or rotation of reversible AC and DC motors.	
23-35 37 23			Flow Switches						A fluid flow detector that creates a circuit when a paddle is pushed into position.	
23-35 37 25			Key Lock Switches						Key-operated switch	
23-35 37 27			Limit Switches							
23-35 37 27 11				Level Switches				Float Switch		
23-35 37 27 13				Reed Switches						
23-35 37 29			Modular Wiring System Switches							Note: Refer to electrical distribution system for Furniture/Lighting
23-35 37 31			Photocell Switches						Light-sensitive switch	
23-35 37 33			Pressure Switches							
23-35 37 33 11				Differential Pressure Switches					Pressure on both sides	
23-35 37 35			Rocker Switches							
23-35 37 35 11				Mercury Switches				Rocker Switch	Makes an electronic contact when physically disturbed.	
23-35 37 37			Time Switches							
23-35 37 39			Foot Switches							
23-35 37 41			Joysticks							
23-35 37 43			Programmable Logic Control Switches							
23-35 37 45			Proximity Switches							
23-35 37 47			Pull Chain Switches							
23-35 37 49			Push Button Switches							
23-35 37 51			Radio Frequency Switches							
23-35 37 53			Rotary Switches							
23-35 37 55			Slide Switches							
23-35 37 57			Snap Switches							
23-35 37 59			Speed Switches							
23-35 37 61			Tamper Switches							
23-35 37 63			Temperature Switches							
23-35 37 65			Vacuum Switches							
23-35 39 00		Electric Power Protection Devices							Devices used in electric power protection.	
23-35 39 11			Electrical Grounding Device					Earth Ground		
23-35 39 13			Earth Connection Electrodes							
23-35 39 13 11				Electrical Ground Plates						
23-35 39 13 13				Electrical Ground Rods						
23-35 39 15			Lightning Protection							
23-35 39 15 11				Lightning Arresters						
23-35 39 15 13				Lightning Rods				Air Terminal		
23-35 39 17			Surge Protection Devices							
23-35 41 00		Electrical Isolation Equipment							Equipment used in electrical isolation.	
23-35 41 11			Electronic Chokes						AC Current Isolator on DC Circuits. Also used for security applications.	
23-35 41 13			Signal Converters					Instrumentation Transformer		
23-35 43 00		Electrical Relays							Relays are electrical devices that provide operation or protection and resulting control or alarm signal.	
23-35 43 11			Auxiliary Protective Relays							
23-35 43 13			Control Relays							
23-35 43 15			Current Differential Relays							
23-35 43 15 11				Current Differential Solid State Relays						
23-35 43 17			General Purpose Relays							

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-35 43 19			Ground Fault Relays							
23-35 43 19 11				Ground Fault Solid State Relays						
23-35 43 21			Load Shedding Relays							
23-35 43 23			Lockout Relays							
23-35 43 23 11				Automatic Reset Lockout Relays						
23-35 43 23 13				Manual Reset Lockout Relays						
23-35 43 25			Mercury Relays							
23-35 43 27			Over Current Relays							
23-35 43 27 11				Overcurrent Directional, Induction Disc Relays						
23-35 43 27 13				Over Current Induction Disc Relays						
23-35 43 27 15				Over Current Thermal Relays						
23-35 43 27 17				Over Current Solid State Relays						
23-35 43 29			Overload Relays							
23-35 43 29 11				Overload Solid State Relays						
23-35 43 31			Phase Failure Relays							
23-35 43 31 11				Phase Failure Solid State Relays						
23-35 43 33			Power Relays							
23-35 43 35			Time Relays							
23-35 43 35 11				Reverse Current Time Relays						
23-35 43 35 11 11					Reverse Current Solid State Time Relays					
23-35 43 35 13				Reverse Power Time Relays						
23-35 43 35 13 11					Reverse Power Solid State Time Relays					
23-35 43 35 15				Power Factor Time Relays						
23-35 43 35 15 11					Power Factor Solid State Time Relays					
23-35 43 37			Voltage Relays							
23-35 43 37 11				Under Voltage Relays						
23-35 43 37 11 11					Under Voltage Solid State Relays					
23-35 43 37 13				Over Voltage Relays						
23-35 43 37 13 11					Over Voltage Solid State Relays					
23-35 43 37 15				Over Under Voltage Relays						
23-35 43 37 15 11					Over Under Voltage Solid State Relays					
23-35 45 00		Non Electrical Lighting							Products not using electricity to light an area.	
23-35 45 11			Lanterns							
23-35 45 11 11				Alcohol Lanterns						
23-35 45 11 13				Butane Lanterns						
23-35 45 11 15				Kerosene Lanterns						
23-35 45 11 17				Natural Gas Lanterns						
23-35 45 11 19				Propane Lanterns						
23-35 45 13			Torches							
23-35 45 13 11				Alcohol Torches						
23-35 45 13 13				Butane Torches						
23-35 45 13 15				Kerosene Torches						
23-35 45 13 17				Natural Gas Torches						
23-35 45 13 19				Propane Torches						
23-35 45 15			Lamps							
23-35 45 15 11				Alcohol Lamps						
23-35 45 15 13				Butane Lamps						
23-35 45 15 15				Kerosene Lamps						
23-35 45 15 17				Natural Gas Lamps						
23-35 45 15 19				Propane Lamps						
23-35 45 17			Solar Tubes					Light Tube		
23-35 45 19			Strobe Light Fixtures							
23-35 47 00		Electrical Lighting							The application of light to achieve some aesthetic or practical effect.	
23-35 47 11			Lighting Fixtures							
23-35 47 11 11				Non Weather Rated Lighting Fixtures						
23-35 47 11 11 11					Non Weather Rated Fluorescent Lighting Fixtures					
23-35 47 11 11 13					Non Weather Rated Halogen Lighting Fixtures					
23-35 47 11 11 15					Non Weather Rated High Intensity Discharge Lighting Fixtures					
23-35 47 11 11 17					Non Weather Rated Incandescent Lighting Fixtures					
23-35 47 11 11 19					Non Weather Rated Light Emitting Diode Lighting Fixtures					
23-35 47 11 13				Submersible Lighting Fixtures						
23-35 47 11 13 11					Submersible Fluorescent Lighting Fixtures					
23-35 47 11 13 13					Submersible Halogen Lighting Fixtures					
23-35 47 11 13 15					Submersible High Intensity Discharge Lighting Fixtures					

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23-35 47 11 13 17					Submersible Incandescent Lighting Fixtures					
23-35 47 11 13 19					Submersible Light Emitting Diode Lighting Fixtures					
23-35 47 11 15				Weather Rated Lighting Fixtures						
23-35 47 11 15 11					Weather Rated Fluorescent Lighting Fixtures					
23-35 47 11 15 13					Weather Rated Halogen Lighting Fixtures					
23-35 47 11 15 15					Weather Rated High Intensity Discharge Lighting Fixtures					
23-35 47 11 15 17					Weather Rated Incandescent Lighting Fixtures					
23-35 47 11 15 19					Weather Rated Light Emitting Diode Lighting Fixtures					
23-35 47 11 17				Chandelier						
23-35 47 11 18				Explosion Proof Lighting Fixtures						
23-35 47 11 18 11					Explosion Proof Fluorescent Lighting Fixtures					
23-35 47 11 18 13					Explosion Proof Halogen Lighting Fixtures					
23-35 47 11 18 15					Explosion Proof High Intensity Discharge Lighting Fixtures					
23-35 47 11 18 17					Explosion Proof Incandescent Lighting Fixtures					
23-35 47 11 18 19					Explosion Proof Light Emitting Diode Lighting Fixtures					
23-35 47 11 19				Hazardous Lighting Fixtures						
23-35 47 11 19 11					Hazardous Fluorescent Lighting Fixtures					
23-35 47 11 19 13					Hazardous Halogen Lighting Fixtures					
23-35 47 11 19 15					Hazardous High Intensity Discharge Lighting Fixtures					
23-35 47 11 19 17					Hazardous Incandescent Lighting Fixtures					
23-35 47 11 19 19					Hazardous Light Emitting Diode Lighting Fixtures					
23-35 47 11 20				Security Lighting Fixtures						
23-35 47 11 21				Specialized Lighting Fixtures						
23-35 47 11 21 11					Lighting Bollards					
23-35 47 11 21 13					Lighting Poles					
23-35 47 11 21 15					Lighting Posts					
23-35 47 11 21 17					Buried Uplights					
23-35 47 11 21 19					Floodlight Fixtures					
23-35 47 11 21 21					Spotlight Fixtures					
23-35 47 11 21 21 11						Focus Spotlight Fixture				
23-35 47 11 21 21 13						Follow Spotlight Fixture				
23-35 47 11 21 21 15						Spotlight Bank Fixture				
23-35 47 11 21 21 17						Pin Spotlight Fixture				
23-35 47 11 21 23					Street and Roadway Lighting Fixtures					
23-35 47 11 21 25					Aircraft Paving Lighting Fixtures					
23-35 47 13			Emergency Lighting							
23-35 47 13 11				Hard Wired Emergency Lighting						
23-35 47 13 13				Emergency Lighting With Battery Backup						
23-35 47 13 15				Passive Emergency Lighting Strips						
23-35 47 13 17				Emergency Lighting Strobe						
23-35 47 15			Exit Illuminated Signs							
23-35 47 15 11				Battery Backup Exit Illuminated Signs						
23-35 47 15 13				Hard Wired Backup Exit Illuminated Signs						
23-35 47 15 15				Self Illuminated Exit Illuminated Signs						
23-35 47 17			Fiber Optic Lighting							
23-35 47 19			Communication Lighting Specialties							
23-35 47 19 11				Illuminated Signs Boards						
23-35 47 21			Accessories for Lighting							
23-35 47 21 11				Lampholders						
23-35 47 21 13				Lighting Diffusers						
23-35 47 21 15				Lighting Ballasts						
23-35 47 21 17				Lighting Tracks						
23-35 47 21 19				Lampshades						
23-35 47 23			Lamps						a fixture emitting light	
23-35 47 23 11				Halogen Lamps						
23-35 47 23 13				Incandescent Lamps						Includes: Halogen-Incandescent Lamps
23-35 47 23 15				Discharge Lamps						
23-35 47 23 15 11					Fluorescent Lamps					
23-35 47 23 15 13					Compact Fluorescent Lamps					
23-35 47 23 15 15					Sodium Vapor Lamps					
23-35 47 23 15 17					High Pressure Discharge Lamps					
23-35 47 23 17				Light Emitting Diode Lamps						
23-37 00 00	Information and Communication Specific Products and Equipment								Products which aid in the collection & exchange of related data between one or more entities.	Includes speakers, microphones, video monitors, audio/visual products, and IT equipment. See "General Facility Services Products" for conduits and wires.

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23-37 11 00		Information Technology and Telecommunications Ducting Wireways Components							Telecommunications includes telephone, audio, cable, video, and information technology. Information Technology is split out under certain areas due to shielding and specialized requirements between telecommunications and information technology.	
23-37 11 11		Communication Service Penetrations								
23-37 11 13		Communication Cable Trays								
23-37 11 15		Communication Racks								
23-37 11 15 11				Information Technology Racks						
23-37 11 15 13				Telephone Racks						
23-37 11 15 15				Fiber Optic Equipment						
23-37 11 15 15 11					Fiber Optic Cabinets					
23-37 11 15 15 13					Fiber Adapter Panels					
23-37 11 17		Communication Wireways								
23-37 11 17 11				Information Technology Wireways						
23-37 11 17 11 11					Underfloor Information Technology Wireways					
23-37 11 17 11 13					Vertical Information Technology Wire Raceways					
23-37 11 17 11 15					Horizontal Information Technology Wire Raceways					
23-37 11 17 13				Telecommunications Wireways						
23-37 11 17 13 11					Underfloor Telecommunications Wireways					
23-37 11 17 13 13					Vertical Telecommunications Wire Raceways					
23-37 11 17 13 15					Horizontal Telecommunications Wire Raceways					
23-37 11 17 15				Complete Visual Signaling						
23-37 11 17 15 11					Mechanical Signal Equipment					
23-37 13 00		Information Technology Equipment							Computer based equipment systems designed to aid in the collection or exchange of related data between one or more entities.	
23-37 13 11		Personal Computer Equipment								
23-37 13 11 11				Desktop Personal Computers						
23-37 13 11 13				Laptop Personal Computers						
23-37 13 11 15				Tablet Personal Computers						
23-37 13 11 17				Tower Stack Personal Computers						
23-37 13 11 19				Workstation Personal Computers						
23-37 13 11 21				Personal Digital Assistants				PDA, Organizer		
23-37 13 11 23				Internal Computing Components						
23-37 13 11 23 11					Computer Processing Units			CPU		
23-37 13 11 23 13					Computer Controller Cards					
23-37 13 11 23 15					Computer Memory Cards					
23-37 13 11 23 17					Personal Computer Modem Cards					
23-37 13 11 23 19					Personal Computer Network Interface Cards					
23-37 13 11 23 21					Personal Computer Video Cards					
23-37 13 13		Personal Computer and Network Security Devices								
23-37 13 13 11				Computer Firewalls						
23-37 13 13 13				Computer Intrusion Detection Devices				IDS		
23-37 13 13 15				Computer Intrusion Protection Devices				IPS		
23-37 13 15		Local Area Network Devices						LAN		
23-37 13 15 11				Local Area Network Bridges						
23-37 13 15 13				Local Area Network Communication Hardware						
23-37 13 15 15				Local Area Network Disk Drives						
23-37 13 15 17				Local Area Network Hubs						
23-37 13 15 19				Local Area Network Load Balancers						
23-37 13 15 21				Local Area Network Routers						
23-37 13 15 23				Local Area Network Servers						
23-37 13 15 25				Local Area Network Switches						
23-37 13 15 27				Local Area Network Tape Drives						
23-37 13 15 29				Local Area Network Wireless Devices						
23-37 13 17		Wide Area Network Devices						WAN		
23-37 13 17 11				Wide Area Network Bridges						
23-37 13 17 13				Wide Area Network Communication Hardware						
23-37 13 17 15				Wide Area Network Disk Drives						
23-37 13 17 17				Wide Area Network Hubs						
23-37 13 17 19				Wide Area Network Load Balancers						
23-37 13 17 21				Wide Area Network Routers						
23-37 13 17 23				Wide Area Network Servers						

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23-37 13 17 25				Wide Area Network Switches						
23-37 13 17 27				Wide Area Network Tape Drives						
23-37 13 17 29				Wide Area Network Wireless Devices						
23-37 13 19			Computer Storage Devices							
23-37 13 19 11				Computer Optic Drives						
23-37 13 19 11 11					Compact Disk Drives			CD, Compact Disc		
23-37 13 19 11 13					Digital Video Disc Drives			Digital Versatile Disc, Digital Video Disc		
23-37 13 19 11 15					Combination Compact Disk and Digital Video Disc Drives					
23-37 13 19 13				Hard Disk Drives				Hard Drive		
23-37 13 19 15				Flash Memory Drives						
23-37 13 19 17				Computer Tape Drives						
23-37 13 21			Computer Monitors							
23-37 13 21 11				Computer Liquid Crystal Display Monitors						
23-37 13 21 13				Computer Catho Ray Tube Monitors						
23-37 13 23			Computer Printers							
23-37 13 23 11				Computer Laser Printers						
23-37 13 23 13				Computer Inkjet Printers						
23-37 13 23 15				Computer Plotter Printers						
23-37 13 25			Computer Scanners							
23-37 13 27			Computer Video Conferencing Equipment							
23-37 15 00		Audio Visual Equipment							Equipment involving the use of sound and visuals to aid in the collection or exchange of related data between one or more entities.	
23-37 15 11			Cameras							
23-37 15 11 11				Analog Cameras						
23-37 15 11 13				Digital Cameras						
23-37 15 13			Camera Recorders							
23-37 15 13 11				Digital Camcorders						
23-37 15 13 13				Film Camcorders						
23-37 15 15			Digital Music Players							
23-37 15 17			Projection Equipment							
23-37 15 17 11				Projection Screens						
23-37 15 17 13				Projection Screen Stands						
23-37 15 19			Video Projectors							
23-37 15 19 11				Video Slide Projectors						
23-37 15 19 13				Video Overhead Projectors						
23-37 15 19 15				Video Film Projectors						
23-37 15 19 17				Video Slide Projectors						
23-37 15 19 19				Video Digital Projectors						
23-37 15 21			Audio Visual Recorders					Camcorder		
23-37 15 21 11				Audio Recorders						
23-37 15 21 13				Video Recorders						
23-37 15 21 15				Audio Video Recorders						
23-37 15 23			Stereo Equipment							
23-37 15 23 11				Stereo Amplifiers						
23-37 15 23 13				Stereo Patch Panels						
23-37 15 23 15				Stereo Speakers						
23-37 15 25			Televisions							
23-37 15 25 11				Cathoray Tube Televisions						
23-37 15 25 13				Liquid Crystal Display Televisions						
23-37 15 25 15				Plasma Display Televisions						
23-37 15 25 17				Projection Screen Televisions						
23-37 15 25 19				Television Mounts						
23-37 15 27			Video Recording Equipment							
23-37 15 29			Audio Equipment							
23-37 15 29 11				Sound Reinforcement Equipment						
23-37 15 29 11 11					Microphones					
23-37 15 29 11 13					Loudspeakers					
23-37 15 29 11 15					Sound Amplifiers					
23-37 15 29 11 17					Audio Equalizers					
23-37 15 29 13				Headphones						
23-37 15 29 15				Audio Reproducing Units						
23-37 17 00		Audio Information Equipment							Equipment involving only the use of sound to aid in the collection or exchange of related data between one or more entities.	

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23-37 17 11			Sound Devices							
23-37 17 13			Signal Devices							
23-37 17 13 11				Bells						
23-37 17 13 13				Carillons						
23-37 17 13 15				Sirens						
23-37 17 13 17				Aerials						
23-37 17 13 19				Speakers						
23-37 17 15			Public Address Equipment						Public Address System, PA	
23-37 19 00		Visual Information Systems								Equipment involving only the use of visuals to aid in the collection or exchange of related data between one or more entities.
23-37 19 11			Cathode Ray Tube (CRT) Video Monitors							
23-37 19 13			Liquid Crystal Display (LCD) Video Monitors							
23-37 19 15			Plasma Video Monitors							
23-37 19 17			Video Walls							
23-37 21 00		Audio Visual Systems								Equipment involving the use of sound and visuals to create a system which aids in the collection or exchange of related data between one or more entities.
23-37 21 11			Broadcasting Receiving Equipment							
23-37 21 13			Film Projectors							
23-37 21 15			Data Multi Media Projectors							
23-37 21 17			Video Reproduction							
23-37 23 00		Telecommunications Equipment								Equipment used to transmit information over significant distances for the purpose of communication
23-37 23 11			Wireless Phone Equipment							
23-37 23 11 11				Wireless Phones					Cell Phone	
23-37 23 11 13				Wireless Phone Chargers					Cell Phone Chargers	
23-37 23 13			Telephones							
23-37 23 13 11				Single Line Telephones						
23-37 23 13 13				Multiple Line Telephones						
23-37 23 15			Telephone Equipment							
23-37 23 15 11				Private Branch Exchanges					PBX	
23-37 23 15 13				Telephone Patch Panels						
23-37 23 17			Intercom Equipment							
23-37 23 17 11				Intercoms						
23-37 23 17 13				Door Entry Telephones						
23-37 23 19			Radio Broadcast Equipment							
23-37 23 19 11				Radio Booths						
23-37 23 19 11 11					Radio Broadcast Booths					
23-37 23 19 11 13					Radio Recording Booths					
23-37 23 19 13				Radio Broadcast Transmitters						
23-37 23 19 15				Radio Broadcast Receivers						
23-37 23 19 17				Radio Communication Base Stations						
23-37 23 19 19				Radio Communication Call Microphones						
23-37 23 19 21				Radio Broadcast Transmission Towers						
23-37 23 21			Radio Communication Equipment							
23-37 23 21 11				Infra Red Radio Communication Equipment						
23-37 23 21 11 11					Infra Red Radio Communication Receivers					
23-37 23 21 11 13					Infra Red Radio Communication Transmitters					
23-37 23 21 11 15					Infra Red Radio Communication Transmitter Receivers					
23-37 23 21 13				Satellite Radio Communication Equipment						
23-37 23 21 13 11					Satellite Radio Communication Transmitters					
23-37 23 21 13 13					Satellite Radio Communication Transmitter Receivers					
23-37 23 21 13 15					Satellite Radio Communications Receivers					
23-37 23 21 15				Wireless Radio Communication Equipment						
23-37 23 21 15 11					Wireless Radio Communication Receivers					
23-37 23 21 15 13					Wireless Radio Communication Transmitters					
23-37 23 21 15 15					Wireless Radio Communication Transmitter Receivers					
23-37 23 21 17				Radio Communication Antenna Towers						
23-37 23 21 19				Radio Communication Transmission Towers						
23-37 23 23			Satellite Communication Equipment							
23-37 23 23 11				Satellite Communication Dishes						
23-37 25 00		Broadcasting Communications Equipment							Television Broadcasting Equipment	Equipment used in the distribution of audio and/or video signals which transmit programs to an audience

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23-37 25 11			Broadcasting Communication Circuits							
23-37 25 13			Broadcasting Intercommunication Equipment							
23-37 25 15			Broadcasting Communication and Data Processing Equipment							
23-37 25 17			Broadcasting Cable Transmission and Reception Equipment							
23-37 25 17 11				Broadcasting Cable Transmission and Reception Amplifiers						
23-37 25 17 13				Broadcasting Cable Transmission and Reception Modulators						
23-37 25 17 15				Broadcasting Cable Transmission and Reception Control Equipment						
23-37 25 19			Broadcast Transmission and Reception Equipment							
23-37 25 19 11				Broadcast Transmitters						
23-37 25 19 13				Broadcast Antennas						
23-37 25 19 15				Broadcast Amplifiers						
23-37 25 19 17				Broadcast Control Equipment						
23-37 25 21			Broadcasting Microwave Transmission and Reception Equipment							
23-37 25 21 11				Broadcasting Microwave Transmitters						
23-37 25 21 13				Broadcasting Microwave Antennas						
23-37 25 21 15				Broadcasting Satellite Dishes						
23-37 25 21 17				Broadcasting Microwave Amplifiers						
23-37 25 21 19				Broadcasting Microwave Receivers						
23-37 25 23			Broadcasting Equipment							
23-37 25 23 11				Television Broadcasting Equipment						
23-37 25 23 13				Multimedia Broadcasting Equipment						
23-37 25 23 15				Broadcasting Light Signals						
23-37 27 00		Emergency Communications							Communication and Information Equipment or systems used in the event of an emergency to quickly notify occupants .	
23-37 27 11			Duress Notification Devices							
23-37 27 13			Mass Notification Systems							
23-37 27 13 11				Emergency Notification Devices						
23-37 27 13 13				Imminent Danger Notification Devices						
23-37 27 15			Intercoms							
23-37 27 15 11				Audio Intercoms						
23-37 27 15 13				Audio Visual Intercoms						
23-37 27 17			Emergency Call Equipment							
23-37 27 17 11				Call Systems for the Disabled						
23-37 27 17 13				Nurse Call Equipment						
23-39 00 00	Utility and Transportation Products								Products used for providing utility services and products specific to transportation applications.	Includes water treatment equipment, water flow controls, floating docks, culverts, large pipes, and roadway monitor and control equipment. See "Site Products" for pavement.
23-39 11 00		Roadway Monitoring and Control							Transportation products used specifically for controlling and/or monitoring traffic.	
23-39 11 11			Traffic Safety Barriers and Protections							
23-39 11 11 11				Safety Barriers						
23-39 11 11 11 11					Crash Barriers (including Impact Attenuating Devices)					
23-39 11 11 11 13					Median Barriers					
23-39 11 11 11 15					Guardrails					
23-39 11 11 13				Noise Barriers						
23-39 11 11 15				Traffic Barriers						
23-39 11 11 15 11					Traffic Delineators					
23-39 11 11 17				Traffic Control						
23-39 11 11 17 11					Traffic Speed Bumps					
23-39 11 11 19				Roadway Curbs						
23-39 11 11 21				Roadway Gutters						
23-39 11 11 23				Roadway Cattle Guards						
23-39 11 13			Roadway Signage							
23-39 11 15			Roadway Markers							
23-39 11 15 11				Roadway Surface Markings						
23-39 11 15 13				Roadway Reflectors						
23-39 11 15 15				Traffic Cones						
23-39 11 15 17				Traffic Signals						
23-39 11 15 19				Traffic Monitoring Equipment						
23-39 11 15 21				Roadway Mirrors						
23-39 11 15 23				Traffic Cameras						
23-39 11 15 25				Traffic Detectors and Sensors						

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23-39 11 17			Vehicle Control Barriers							
23-39 11 17 11				Anti Ram Planters						
23-39 11 17 13				Jersey Barriers						
23-39 11 17 15				Active Tire Shredders						
23-39 11 17 17				Passive Tire Shredders						
23-39 11 19			Bollards						See Facility and Occupant Protection Products	
23-39 11 19 11				Active Anti Ram Bollards					Pneumatic or Hydraulic	
23-39 11 19 13				Passive Anti Ram Bollards					Embedded in concrete	
23-39 11 19 15				Architectural Bollards						
23-39 13 00		Tunnels and Bridges							A passageway used to pass either over or under obstacles.	
23-39 13 11			Tunnels							
23-39 13 11 11				Tunnel Shafts						
23-39 13 11 13				Tunnel Segments						
23-39 13 11 15				Tunnel Linings						
23-39 13 11 17				Tunnel Grouting						
23-39 13 11 17 11					Earth Stabilization Chemical Grouting					
23-39 13 11 17 13					Rock Seam Pressure Grouting					
23-39 13 11 17 15					Tunnel Liner Grouting					
23-39 13 11 19				Microtunneling						
23-39 13 13			Bridges							
23-39 13 13 11				Prefabricated Bridges						
23-39 13 13 13				Bridge Beams						
23-39 13 13 15				Bridge Trusses						
23-39 13 13 17				Bridge Cable						
23-39 13 13 19				Bridge Bearings						
23-39 13 13 19 11					Fixed Bridge Bearings					
23-39 13 13 19 13					Expansion Bridge Bearings					
23-39 13 13 19 15					Multi Rotational Bridge Bearings					
23-39 13 13 21				Bridge Movable Mechanism						
23-39 13 13 23				Bridge Decking						
23-39 13 13 25				Bridge Drainage						
23-39 13 13 27				Bridge Safety Barriers						
23-39 13 13 27 11					Shock Absorbers					
23-39 13 13 27 13					Bridge Parapets					
23-39 13 13 27 15					Bridge Railings					
23-39 13 13 29				Bridge Expansion Joints						
23-39 13 13 29 11					Bridge Expansion Joint Assemblies					
23-39 15 00		Railways							A conveyance of passengers and goods via wheeled vehicles running on rail tracks.	Includes: Cable Ways
23-39 15 11			Railway Track Equipment							
23-39 15 11 11				Railway Ties						
23-39 15 11 11 11					Railway Concrete Ties					
23-39 15 11 11 13					Railway Wood Ties					
23-39 15 11 13				Railway Rails						
23-39 15 11 15				Railway Turnouts						
23-39 15 11 17				Railway Bumpers					End-of-track stopper	
23-39 15 13			Railway Platform Components							
23-39 15 15			Railway Electrification Equipment							
23-39 15 15 11				Railway Surge Arresters						
23-39 15 15 13				Railway Traction Lines						
23-39 15 15 13 11					Railway Traction Line Pylons					
23-39 15 17			Railway Monitoring and Control							
23-39 15 17 11				Railway Signaling Devices						
23-39 15 17 13				Railway Control Instrumentation						
23-39 15 19			Railway Locomotives							
23-39 15 19 11				Railway Diesel Locomotives						
23-39 15 19 13				Railway Electric Locomotives						
23-39 15 21			Railway Cars							
23-39 15 21 11				Railway Passenger Cars						
23-39 15 21 13				Railway Sleeper Cars						
23-39 15 21 15				Railway Baggage Cars						
23-39 15 21 17				Railway Diner Cars						
23-39 15 21 19				Railway Freight Cars						
23-39 15 21 19 11					Railway Box Cars					

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23-39 15 21 19 13					Railway Coal Cars					
23-39 15 21 19 15					Railway Vehicle Carrier Cars					
23-39 15 21 21				Railway Tanker Cars						
23-39 15 21 23				Railway Car Equipment						
23-39 15 21 23 11					Railway Car Bumpers					
23-39 15 21 23 13					Railway Car Electrical Connectors					
23-39 17 00		Funiculars						Cable Railway, Incline Railway	is a cable railway in which a cable attached to a pair of vehicles on rails moves them up and down a steep slope in which the ascending and descending of the vehicles counterbalanced each other.	
23-39 17 11				Cable Trams						
23-39 17 13				Cable Cars						
23-39 17 15				Funicular Cable Rails						
23-39 17 17				Funicular Cables						
23-39 17 19				Aerial Tramways						
23-39 17 21				Chair Lifts						
23-39 17 23				Ski Lifts						
23-39 17 23 11					Ski Pole Lifts					
23-39 17 23 13					Ski Chair Lifts					
23-39 19 00		Aviation Equipment							Equipment related to aviation; including monitoring and control equipment as well as aviation barriers.	
23-39 19 11				Aviation Monitoring and Control						
23-39 19 11 11					Approach Indication Equipment					
23-39 19 11 13					Aviation Monitoring Equipment					
23-39 19 11 13 11						Aviation Windsocks				
23-39 19 13				Aviation Barriers						
23-39 19 13 11					Jet Blast Barriers					
23-39 19 13 13					Aviation Sound Barriers					
23-39 21 00		Marine Construction Waterways and Seaways							Equipment used in marine construction.	
23-39 21 11				Navigation Facilities						
23-39 21 11 11					Components					
23-39 21 11 11 11						Mooring Posts				
23-39 21 11 11 13						Boat Fenders				
23-39 21 11 13					Canal Locks					
23-39 21 11 13 11						Canal Lock Gates				
23-39 21 11 13 11 11							Canal Hydraulic Gates			
23-39 21 11 13 11 13							Canal High Pressure Gates			
23-39 21 11 13 11 15							Canal Hinged Leaf Gates			
23-39 21 11 13 11 17							Canal Radial Gates			
23-39 21 11 13 11 19							Canal Slide Gates			
23-39 21 11 13 11 21							Canal Sluice Gates			
23-39 21 11 13 11 23							Canal Spillway Crest Gates			
23-39 21 11 13 11 25							Canal Vertical Lift Gates			
23-39 21 11 13 13						Canal Hydraulic Valves				
23-39 21 11 13 13 11							Canal Butterfly Valves			
23-39 21 11 13 13 13							Canal Regulating Valves			
23-39 21 11 15				Piers and Docks						
23-39 21 11 15 11						Floating Docks				
23-39 21 11 15 13						Dock Loading Ramps				
23-39 21 11 17				Pontoons						
23-39 21 11 19				Jetties						
23-39 21 13				Waterflow Controls						
23-39 21 13 11					Reservoirs					
23-39 21 13 13					Dams, Dikes					
23-39 21 13 15					Weirs					
23-39 21 13 17					Barrages					
23-39 21 13 19					Bifurcation Panels					
23-39 21 13 21					Manifolds					
23-39 21 13 23					Penstocks and Sluice Gate					
23-39 21 13 25					Trash Rakes					
23-39 21 15				Breakwater Products						
23-39 21 15 11					Bulkheads					
23-39 21 15 13					Seawalls					
23-39 21 15 15					Moles and Breakwater					
23-39 21 15 17					Groins					

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-39 21 17			Marine Monitoring and Control							Includes: Navigation Signals
23-39 21 17 11				Navigation Signs						
23-39 21 17 13				Navigation Lights						
23-39 21 17 15				Navigation Monitoring Equipment						
23-39 23 00		Electrical Utility Equipment							Equipment involved with electrical utilities.	
23-39 23 11			Electrical Transmission Equipment							
23-39 23 11 11				Electrical Utility Poles						
23-39 23 11 13				Electrical Utility Towers						
23-39 25 00		Natural Gas Utility Equipment							Utility equipment involved with natural gas.	
23-39 25 11			Natural Gas Utility Pipeline Equipment							
23-39 27 00		Water Utility Equipment							Equipment used in water utilities.	
23-39 27 11			Water Utility Pipeline Equipment							
23-39 29 00		Waste Water Collection and Removal							Equipment used in liquid waste collection and removal.	
23-39 29 11			Waste Water Drains							
23-39 29 11 11				Waste Water French Drains				Soakaways		
23-39 29 11 13				Waste Water Storm Drain						
23-39 29 11 13 11					Manhole (Goes in Prefab Concrete)				Access Chamber, Utility Hole, Utility Vault	
23-39 29 11 13 13					Manhole Cover				Utility Lid	
23-39 29 11 13 15					Manhole Ladder					
23-39 29 11 13 17					Manhole Rung					
23-39 29 11 15				Waste Water Drainage Pipes, Couplings, Collectors						
23-39 29 11 17				Wastewater Pipework Access Fittings						Includes: Roding Fittings
23-39 29 13		Waste Water Subdrainage								
23-39 29 13 11				Geocomposite Drains						
23-39 29 13 13				Geotextile Subsurface Drainage Filtration						
23-39 29 13 15				Pipe Underdrain and Pavement Base Drain						
23-39 29 13 17				Subgrade Drains						
23-39 29 13 19				Surface Water Drainage Systems						
23-39 29 13 19 11					Surface Water Catch Basins, Grates, and Frames					
23-39 29 13 19 13					Combination Storm Drain and Underdrain Inlets					
23-39 29 13 19 15					Storm Drainage Manholes, Frames, and Covers					
23-39 29 13 19 17					Surface Water Retention Chambers					
23-39 29 13 21				Storm Water Ponds and Reservoirs						
23-39 29 13 21 19					Surface Water Retention Basins					
23-39 29 13 21 21					Storm Water Pond Covers					
23-39 29 13 21 23					Storm Water Pond Liners					
23-39 29 15		Waste Water Channels, Gullies, Gratings, Covers								
23-39 31 00		Packaged Waste Water Treatment							Equipment used in packaged waste water.	
23-39 31 11			Packaged Stations							
23-39 31 11 11				Packaged Pumping Stations						
23-39 31 11 13				Packaged Lift Stations						
23-39 31 13			Packaged Sewage Treatment Plants							
23-39 33 00		Water and Waste Water Preliminary Treatment Equipment							Equipment used in water and wastewater preliminary treatment.	
23-39 33 11			Screening Equipment							
23-39 33 11 11				Climber-type Bar Screens						
23-39 33 11 13				Chain-and-Rage Bar Screens						
23-39 33 11 15				Flexible Rake Bar Screens						
23-39 33 11 17				Catenary Bar Screens						
23-39 33 11 19				Continuous Belt Screens						
23-39 33 11 21				Cylindrical Bar Screens						
23-39 33 11 23				Step Screens						
23-39 33 11 25				Rotary Drum Screens						
23-39 33 11 27				Spiral Screens						
23-39 33 11 29				Band Screens						
23-39 33 11 31				Disc Screens						
23-39 33 11 33				Traveling Screens						
23-39 33 11 35				Perforated Plate Screens						
23-39 33 11 37				Wedge Wire Screens						
23-39 33 11 39				Element Screens						
23-39 33 11 41				Trash Raking Equipment						
23-39 33 11 43				Screenings Washing and Compacting Equipment						
23-39 33 11 45				Vacuum Screenings Conveying Equipment						
23-39 33 11 47				Screenings Storage Containers						
23-39 33 11 49				Septage Receiving Equipment						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-39 33 13			Grit Removal and Handling Equipment							
23-39 33 13 11				Chain-and-Bucket Grit Removal Equipment						
23-39 33 13 13				Chain-and-Flight Grit Removal Equipment						
23-39 33 13 15				Vortex Grit Removal Equipment						
23-39 33 13 17				Cyclone Degritters						
23-39 33 13 19				Aerated Grit Removal Equipment						
23-39 33 13 21				Inline Baffled Grit Removal Equipment						
23-39 33 13 23				Traveling Bridge Grit Removal Equipment						
23-39 33 13 25				Grit Classifying and Washing Equipment						
23-39 33 13 27				Grit Storage Containers						
23-39 33 15			Grinding and Shredding Equipment							
23-39 33 15 11				Macerators						
23-39 33 15 13				Comminutors						
23-39 33 15 15				Inline Grinders						
23-39 33 15 17				Open-Channel Grinders						
23-39 33 15 19				Modular Grinding-Screening-Compacting Equipment						
23-39 33 17			Oil and Grease Separation and Removal Equipment							
23-39 33 17 11				Coalescing Oil-Water Separators						
23-39 33 17 13				API Oil-Water Separators						
23-39 33 17 15				Grease Traps						
23-39 33 17 17				Dissolved Air Flotation Grease and Oil Separation Equipment						
23-39 33 17 19				Helical Scum Skimming and Removal Equipment						
23-39 33 17 21				Tipping Trough Scum Skimming and Removal Equipment						
23-39 33 17 23				Chain and Flight Scum Collection and Removal Equipment						
23-39 33 17 25				Floating Scum Skimming and Removal Equipment						
23-39 35 00		Water and Wastewater Chemical Feed Equipment							Equipment used in water and wastewater chemical feed.	
23-39 35 11			Gas Chemical Feed Equipment							
23-39 35 11 11				Chlorine Gas Feed Equipment						
23-39 35 11 13				Sulfur Dioxide Gas Feed Equipment						
23-39 35 11 15				Ammonia Gas Feed Equipment						
23-39 35 11 17				Gas Storage, Weighing, and Leak Detection Equipment						
23-39 35 11 19				Chlorine Dioxide Reactors						
23-39 35 11 21				Carbon Dioxide Gas Feed Equipment						
23-39 35 11 23				Ozone Generating and Feed Equipment						
23-39 35 11 25				Liquid Oxygen Storage and Feed Equipment						
23-39 35 11 27				Cleaning Requirements for Oxygen Service						
23-39 35 11 29				Gas Chemical Feed Accessories and Safety Equipment						
23-39 35 13			Liquid Chemical Feed Equipment							
23-39 35 13 11				Sodium Hypochlorite Generating Equipment						
23-39 35 13 13				Liquid Chemical Weighing Equipment						
23-39 35 13 15				Polymer Blending and Feed Equipment						
23-39 35 13 17				Diaphragm-type Metering Pumps						
23-39 35 13 19				Peristaltic Metering Pumps						
23-39 35 13 21				Progressing Cavity Metering Pumps						
23-39 35 13 23				Lobe Metering Pumps						
23-39 35 13 25				Drum Pumps						
23-39 35 13 27				Liquid Chemical Transfer Pumps						
23-39 35 13 29				Liquid Chemical Diffusers						
23-39 35 13 31				Liquid Chemical Feed Accessories and Safety Equipment						
23-39 35 15			Dry Chemical Feed Equipment							
23-39 35 15 11				Storage Silos						
23-39 35 15 13				Dry Chemical Weighing Equipment						
23-39 35 15 15				Volumetric Feed Equipment						
23-39 35 15 17				Gravimetric Feed Equipment						
23-39 35 15 19				Lime Slaking Equipment						
23-39 35 15 21				Chemical Tablet Feeding Equipment						
23-39 35 15 23				Dry Chemical Feed Accessories and Safety Equipment						
23-39 37 00		Water and Wastewater Clarification and Mixing Equipment							Equipment used in water and wastewater clarification and mixing.	
23-39 37 11			Mixing Equipment							
23-39 37 11 11				Rapid Mixers						
23-39 37 11 13				Inline Blender-type Rapid Mixers						
23-39 37 11 15				Induction-type Rapid Mixing Equipment						
23-39 37 11 17				Inline Static Mixers						
23-39 37 11 19				Mixing Equipment						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-39 37 11 21				Submersible Mixers						
23-39 37 11 23				Floating Mechanical Mixers						
23-39 37 11 25				Paddle Mixers						
23-39 37 11 27				Pin Mixers						
23-39 37 11 29				Vertical Reel Flocculation Equipment						
23-39 37 11 31				Horizontal Reel Flocculation Equipment						
23-39 37 11 33				Vertical Turbine Flocculation Equipment						
23-39 37 11 35				Walking-beam Flocculation Equipment						
23-39 37 11 37				Horizontal Oscillating Flocculation Equipment						
23-39 37 11 39				Top-entering Tank Mixers						
23-39 37 11 41				Side-entry Tank Mixers						
23-39 37 11 43				Portable Tank Mixers						
23-39 37 13			Clarifier Equipment							
23-39 37 13 11				Chain-and-Flight Clarifier Equipment						
23-39 37 13 13				Traveling Bridge Clarifier Equipment						
23-39 37 13 15				Differential Head Clarifier Equipment						
23-39 37 13 17				Oscillating Scraper-type Clarifier Equipment						
23-39 37 13 19				Circular Clarifier Equipment						
23-39 37 13 21				Solids Contact Clarifier Equipment						
23-39 37 13 23				Flocculating Clarifier, Pulsating Sludge Blanket Type						
23-39 37 13 25				Dissolved Air Flotation Equipment for Water Treatment						
23-39 37 13 27				Ballasted High-rate Clarifier Equipment						
23-39 37 13 29				High rate Clarification/Thickening Equipment						
23-39 37 13 31				Tube Settlers						
23-39 37 13 33				Lined Plate Settlers						
23-39 37 15			Sediment Removal Equipment							
23-39 37 15 11				Tipping Sediment Flushing Tanks						
23-39 37 15 13				Flushing Gates						
23-39 37 15 15				Water Cannon						
23-39 39 00		Water and Wastewater Secondary Treatment Equipment							Equipment used in water and wastewater secondary treatment.	
23-39 39 11			Air and Gas Diffusion Equipment							
23-39 39 11 11				Fixed Mechanical Aerators						
23-39 39 11 13				Floating Mechanical Aerators						
23-39 39 11 15				Submersible Aspirating Aerator Equipment						
23-39 39 11 17				Jet Aeration Equipment						
23-39 39 11 19				Coarse Bubble Diffusers						
23-39 39 11 21				Swing-type Channel Aeration Equipment						
23-39 39 11 23				Shear Box Diffusers						
23-39 39 11 25				Flexible Membrane Tube Diffusers						
23-39 39 11 27				Flexible Membrane Disc Diffusers						
23-39 39 11 29				Ceramic Disc Fine Bubble Diffusers						
23-39 39 11 31				Floating Membrane Diffusers						
23-39 39 11 33				Membrane Diffusers						
23-39 39 11 35				Cascading Aerators						
23-39 39 11 37				Pure-oxygen Generating Equipment						
23-39 39 13			Biological Treatment Systems							
23-39 39 13 11				Rotating Biological Contactors						
23-39 39 13 13				Trickling Filter Rotary Distributor Equipment						
23-39 39 13 15				Trickling Filter Media						
23-39 39 13 17				Bio-towers						
23-39 39 13 19				Moving-bed Biological Reactors						
23-39 39 13 21				Integrated Fixed-film Activated Sludge Equipment						
23-39 39 13 23				Intermittent Sand Filters for Wastewater Treatment						
23-39 39 13 25				Deep-bed Denitrification Filters						
23-39 39 13 27				Biologically Activated Filters						
23-39 39 13 29				Membrane Biological Reactors						
23-39 39 13 31				Sequencing Batch Reactors						
23-39 39 13 33				Oxidation Ditch Equipment						
23-39 39 13 35				Vertical Loop Reactors						
23-39 41 00		Water and Wastewater Advanced Treatment Equipment							Equipment used in water and wastewater advanced treatment.	
23-39 41 11			Filtration Equipment							
23-39 41 11 11				Filter Media						
23-39 41 11 13				Filter Surface Wash Agitators						
23-39 41 11 15				Filter Air Scour Equipment						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-39 41 11 17				Wash Water Troughs						
23-39 41 11 19				Pressure Filters						
23-39 41 11 21				Gravity Filters						
23-39 41 11 23				High-rate Sand Filters						
23-39 41 11 25				Traveling Bridge Filters						
23-39 41 11 27				Microfiltration and Ultrafiltration Membrane Equipment						
23-39 41 11 29				Disc Cloth Filters						
23-39 41 11 31				Rotary Drum Cloth Filters						
23-39 41 11 33				Automatic Backwash Cloth Filter Equipment						
23-39 41 11 35				Cartridge Filters						
23-39 41 11 37				Bag Filters						
23-39 41 11 39				Automatic Straining Equipment						
23-39 41 13			Demineralization Equipment							
23-39 41 13 11				Ion-exchange Vessel Media						
23-39 41 13 13				Electrodialysis Reversal Equipment						
23-39 41 13 15				Reverse Osmosis and Nanofiltration Membrane Equipment						
23-39 41 13 17				Multiple-effect Distillation Equipment						
23-39 41 13 19				Desalination Mechanical Vapor Compression Equipment						
23-39 41 13 21				Desalination Thermal Vapor Compression Equipment						
23-39 41 13 23				Desalination Multi-stage Flash Equipment						
23-39 41 13 25				Desalination Falling Film Evaporators						
23-39 41 13 27				Desalination Rising Film Evaporators						
23-39 41 13 29				Desalination Forced-circulation Crystallizing Equipment						
23-39 41 13 31				Desalination Spray Dry Evaporation Equipment						
23-39 41 13 33				Demineralization Energy Recovery Equipment						
23-39 41 15			Ultraviolet Equipment							
23-39 41 15 11				Closed-vessel Low-pressure/Low-intensity Ultraviolet Treatment Equipment						
23-39 41 15 13				Closed-vessel Low-pressure/High-intensity Ultraviolet Treatment Equipment						
23-39 41 15 15				Closed-vessel Medium-pressure Ultraviolet Treatment Equipment						
23-39 41 15 17				Open-channel Low-pressure/Low-intensity Ultraviolet Treatment Equipment						
23-39 41 15 19				Open-channel Low-pressure/High-intensity Ultraviolet Treatment Equipment						
23-39 41 15 21				Open-channel Medium-pressure Ultraviolet Treatment Equipment						
23-39 43 00		Water and Wastewater Residuals Handling and Treatment							Equipment used in water and wastewater residuals handling and treatment.	
23-39 43 11			Residuals Thickening Equipment							
23-39 43 11 11				Circular Gravity Thickeners						
23-39 43 11 13				Gravity Belt Thickeners						
23-39 43 11 15				Dissolved Air Flotation Thickening Equipment						
23-39 43 11 17				Rotary Drum Thickening Equipment						
23-39 43 11 19				Centrifuge Thickening Equipment						
23-39 43 11 21				Disc Thickeners						
23-39 43 11 23				Thickening Screw Press						
23-39 43 11 25				Scum Concentrator Equipment						
23-39 43 13			Residuals Stabilization							
23-39 43 13 11				Digester Covers and Appurtenances						
23-39 43 13 11 11				Fixed Covers						
23-39 43 13 11 13				Floating Covers						
23-39 43 13 11 15				Gasholder Covers						
23-39 43 13 13				Radial Beam Fixed Digester Covers						
23-39 43 13 15				Dual Deck Truss-type Fixed Digester Covers						
23-39 43 13 17				Radial Beam Floating Digester Covers						
23-39 43 13 19				Dual Deck Truss-type Floating Digester Covers						
23-39 43 13 21				Radial Beam Floating Gas-holding Digester Covers						
23-39 43 13 23				Dual Deck Truss-type Floating Gas-holding Digester Covers						
23-39 43 13 25				Digester Appurtenances						
23-39 43 13 27				Aerobic Digester Aeration Equipment						
23-39 43 13 29				Autothermal Thermophilic Aerobic Digestion Equipment						
23-39 43 13 31				Egg-shaped Digesters						
23-39 43 13 33				Confined Gas Mixing System						
23-39 43 13 35				Digester Heating Equipment						
23-39 43 13 37				Residuals Pasteurization Equipment						
23-39 43 15			Residuals Dewatering Equipment							
23-39 43 15 11				Vacuum Filters						
23-39 43 15 13				Belt Filter Presses						
23-39 43 15 15				Plate-and-Frame Filter Presses						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Level 7 Title	Synonym	Definitions	Discussion/Examples
23-39 43 15 17				Rotary Presses						
23-39 43 15 19				Screw Presses						
23-39 43 15 21				Dewatering Centrifuges						
23-39 43 15 23				Belt Dryers						
23-39 43 15 25				Direct-heat Residuals Drying Equipment						
23-39 43 15 27				Indirect-heat Residuals Drying Equipment						
23-39 43 17			Thermal Treatment of Residuals							
23-39 43 17 11				Multiple-hearth Sludge Incinerators						
23-39 43 17 13				Fluidized-bed Sludge Incinerators						
23-39 43 17 15				Ash Handling Equipment						
23-39 43 17 17				Recuperative Air Preheating Equipment						
23-39 43 17 19				Regenerative Thermal Oxidizers						
23-39 43 17 21				Waste Heat Recovery Boilers						
23-39 43 17 23				Waste Heat Recovery Heat Exchangers						
23-39 43 17 25				Thermal Oxidation Equipment						
23-39 45 00		Septic System Equipment							Equipment used in a septic system.	
23-39 45 11			Liquid Waste Treatment							
23-39 45 11 11				Liquid Waste Decanter						
23-39 45 11 13				Bacterial Filter Tanks						
23-39 45 11 15				Liquid Waste Decanters						
23-39 45 11 17				Liquid Waste Separators						
23-39 45 11 19				Liquid Waste Pond and Reservoir Products						
23-39 45 11 19 11							Liquid Waste Pond Covers			
23-39 45 11 19 13							Liquid Waste Pond Liners			
23-39 45 11 21				Additives for Treatment of Liquid Waste						
23-39 45 11 21 11							Additives for Waste Water and Sewage Treatment			
23-39 45 11 21 13							Additives for Residue Treatment			
23-39 45 13			Liquid Waste Monitoring and Control							
23-39 45 13 11				Detectors of Water Pollution						
23-39 45 15			Solid Waste Disposal Plant Products							Includes: Refuse Disposal
23-39 45 15 11				Chutes and Collectors						
23-39 45 15 13				Pneumatic Waste Equipment						
23-39 45 15 15				Incineration Plant						
23-39 45 15 15 11							Packaged Incinerators			
23-39 45 15 17				Crusher Plant						
23-39 45 15 17 11							Waste Compactors and Destructors			
23-39 45 15 19				Baling Plant						
23-39 45 15 21				Pulping Machines						
23-39 45 17			Solid Waste Handling Products							
23-39 45 19			Solid Waste Impelling Equipment							
23-39 45 21			Solid Waste Treatment Equipment							
23-39 45 21 11				Solid Waste Compactors, Destructors, and Balers						
23-39 45 21 13				Solid Waste Crushers						
23-39 45 21 15				Solid Waste Pulping Machines						
23-39 45 21 17				Solid Waste Shredding Machines						
23-39 45 21 19				Incinerators						
23-39 45 21 19 11							Solid Waste Incinerators			
23-39 45 21 19 13							Packaged Incinerators			
23-39 45 23			Solid Waste Monitoring and Control Equipment							
23-39 45 23 11				Solid Waste Metal Detectors						
23-39 45 23 13				Solid Waste Detectors for Other Solids						
23-39 45 25			Solid Waste Collection and Removal Products							
23-39 45 25 11				Complete Solid Waste Removal Systems						
23-39 45 25 13				Solid Waste Bins						
23-39 45 25 15				Gravity Chute Solid Waste Systems						
23-39 45 25 17				Refuse Disposal Chutes						
23-39 45 25 17 11							Refuse Hoppers			
23-39 45 25 17 13							Refuse Chute Doors			
23-39 45 25 17 15							Refuse Chute Decontamination Units			
23-39 45 27			Solid Waste Handling Systems							
23-39 45 27 11				Refuse Compactors						
23-39 45 27 13				Refuse Containers						
23-39 45 27 15				Dust Collectors						
23-39 45 27 17				Utility Poles						
23-39 47 00		Offshore Structures							Structures used offshore.	



National BIM Standard - United States™ Version 2

2 REFERENCE STANDARD

Chapter 2.8 OmniClass™ Table 32 – Services – June 2010

Introduction

OmniClass™ Table 32 – Services is an existing industry standard developed, managed, published and copyrighted by the Construction Specifications Institute, approved through the NBIMS-US V2 consensus process. *OmniClass™ Table 32 – Services* is incorporated in NBIMS-US V2 by reference so that it can be easily referenced in BIM Information Exchanges. Document follows.



A Strategy for Classifying the Built Environment

Table 32 - Services

Table 32 - Services

Definition

Services are the activities, processes and procedures provided by participants in the design and construction process, and relating to the construction, design, maintenance, renovation, demolition, commissioning, decommissioning, and all other functions occurring in relation to the life cycle of a construction entity.

Discussion

The Services table is based upon actions, which include any service exercised or provided that affects the built environment. Services include all the actions performed by any of the participants in creating and sustaining the built environment, throughout the life span of any construction entity.

Examples

Programming, Bidding, Estimating, Constructing, Surveying, Maintaining, Inspecting

Table Uses

Identifying procedures to be performed and services to be provided, specifying and estimating construction and maintenance costs for building elements, and other coordination and organizational activities related to project management and planning.

Table Users

Cost estimators, facility managers, specifiers, designers, contractors, project managers.

Legacy Sources

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- Abdelhamid, Tariq. *Lean Construction Principles*. Graduate class offering at Michigan State University. 2007.
- International Organization for Standardization (ISO), *ISO 12006-2 Table 4.10 Management Processes (by type of process)*. Geneva: ISO, 2001.
- Construction Project Information Committee. *Unified Classification for the Construction Industry*, UK : Construction Project Information Committee, 1997.

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<http://www.omniclass.org/>. See OmniClass License for more information.

Table 32 Services

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Synonym	Definitions
Numbers and Titles						
32-11 00 00	Transactional Services					Something to be done involving more than one party, usually requiring the exchange of information.
32-11 11 00		Marketing				To sell (professional services); to create an opportunity to sell, or demand (for goods or services).
32-11 13 00		Prequalifying				To determine if (something, someone) has the necessary or desirable qualities, meets the requirements, is fit for (before engaging).
32-11 15 00		Proposing				To present for consideration; present for approval or acceptance; proffer; tender (to offer one's services).
32-11 16 00		Soliciting				To develop and then market (communicate, solicit, publicize) for services to support a specific activity or endeavor, or project.
32-11 17 00		Bidding				To offer (a certain amount) as the price or fee that one will pay or accept.
32-11 17 11			Submitting Bids			To present a bid.
32-11 17 13			Receiving Bids			To acquire or accept a bid.
32-11 23 00		Interviewing				A face to face meeting as to evaluate or question an applicant for employment or to provide a service.
32-11 28 00		Selecting				To choose from a number of choices.
32-11 31 00		Awarding				To give as the result of judging the relative merits of those in competition; grant.
32-11 36 00		Contracting				To make a formal agreement between two or more parties; covenant.
32-11 36 13			Subcontracting			To make a formal secondary agreement to perform work for the prime contractor.
32-11 41 00		Outsourcing				To purchase (services) from outside the company with the direct contract to do so.
32-11 45 00		Leasing				Contracting by one party (landlord or lessor) with another party (tenant or lessee) for the use and possession of lands, buildings, property for a fixed period of time and for fixed payments.
32-11 49 00		Financing				To supply money, credit or capital to or for (a project).
32-11 51 00		Funding				To set aside a sum of money for a particular purpose.
32-11 55 00		Procuring			Acquiring	To get or bring about by some effort; obtain; secure.
32-11 55 11			Quoting			To state the price of something.
32-11 55 13			Buying			To acquire; procure by paying money or its equivalent; purchasing.
32-11 55 15			Selling			To give up, deliver or exchange (property, goods, services, etc.) for money or its equivalent.
32-11 55 17			Returning Goods			To bring, send, carry, or put back; restore or replace.
32-11 61 00		Budgeting				To make a report of estimated expenditure: debit and income: credit; to determine the amount of money needed or allotted for a specific use.
32-11 67 00		Estimating				To make an approximate computation of the probable cost of a piece of work.
32-11 73 00		Pricing				To determine the amount of money to be asked or paid for something.
32-11 73 11			Guaranteed Maximum Pricing			To determine the amount of money to be asked or paid for something as a guaranteed maximum.
32-11 73 13			Unit pricing			To determine the pricing per unit of measure (volume, area or linear).
32-19 00 00	Administrative Services				Directing	To manage or direct the affairs (of a business). [Free Dictionary by Farlex]
32-19 11 00		Managing				To direct or administer (e.g. a business or project).
32-19 11 11			Team Building			To put together (a team; a group of people working together in a coordinated effort).
32-19 11 13			Deciding		Decision-making	To formulate, form, create or (a judgment or conclusion reached or given).
32-19 11 15			Authorizing		Approving	To officially confirm: sanction.
32-19 11 17			Coordinating			To place in proper position or order: adjust; to bring into proper order, rank, etc. so as to have harmonious action; harmonize.
32-19 11 19			Supervising			To oversee, direct or manage.
32-19 31 00		Scheduling				To make a plan allocating work, resources and specifying deadlines for a project; to make a list, inventory of details or a timed plan for a procedure or project.
32-19 31 11			Fast-tracking			A building method in which construction begins even before plans and designs are completed.
32-19 31 13			Expediting			To speed up or make easy the progress or action of; hasten; facilitate.
32-19 31 17			Postponing		Delaying	To postpone as late as possible (in the schedule).
32-19 31 17 11				Allocating Tasks		To determine tasks required to complete the work.
32-19 31 17 13				Allocating Resources		To determine the personnel, tools and other resources required to complete the work.
32-19 31 17 15				Allocating Time		To determine the time necessary to complete the work.
32-19 71 00		Employing				To engage the services or labor of for pay; hire.
32-19 71 11			Recruiting			To seek to employ.
32-19 71 15			Hiring			To get the services of (a person) or the use of (a thing) in return for payment; employ or engage.
32-19 71 19			Terminating			To cease the employment, use of an individual or company; firing.
32-19 91 00		Accounting				To make a financial record of business transactions; to prepare statements of assets, liabilities and operating results of a business.
32-19 91 11			Billing			n, a statement, usually itemized, of charges and goods or services; invoice.
32-19 91 13			Paying		Compensating	To give what is due, as for goods received, services rendered.
32-19 91 15			Reimbursing			To repay or compensate (a person) for expenses.
32-27 00 00	Communication Services					To have an interchange, as of ideas. [Free Dictionary by Farlex]

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Synonym	Definitions
32-27 11 00		Collaborating			Teaming	To work together; to join in cooperative activity; work together in a coordinated effort.
32-27 11 11			Brainstorming			A method of problem solving in which all the members of the group spontaneously contribute ideas.
32-27 11 13			Meeting			To conference in order to confer or have a discussion.
32-27 11 15			Networking			To connect via inter or intra-net for the purpose of exchange of information.
32-27 11 15 11				Social Networking		To confer ideas by way of interconnected technological services.
32-27 31 00		Verbalizing			Expressing; Speaking	To use words to express or communicate meaning.
32-27 31 11			Debating			To discuss opposing reasons; argue; to consider reasons for and against.
32-27 31 13			Negotiating			To discuss in order to reach an agreement.
32-27 31 15			Presenting			To offer for viewing or notice; to offer for consideration (e.g. to present a plan); to put before (an audience) for consideration.
32-27 31 17			Discussing			To consider or examine (a subject) through discourse.
32-27 31 19			Reporting			To make a formal or official presentation of facts or the record of some proceedings, an investigation.
32-27 31 21			Commenting			To state an observation, analysis or criticism; expressing an opinion.
32-27 31 23			Responding		Answering	A statement, verbal or written, or action, in return to a question, argument, letter, etc.; response; reply.
32-27 61 00		Writing				To communicate on paper (symbols, letters or words).
32-27 61 11			Noting			To set down in writing (note-taking).
32-27 61 13			Editing			To make additions, deletions or other changes in (a document, computer file); to revise and make ready (a manuscript) for publication.
32-27 61 15			Emailing			To communicate via the internet.
32-27 61 17			Corresponding			To communicate (with someone) by exchanging letters, especially regularly.
32-27 91 00		Participating				To have or take a part or share with others (in some activity, enterprise, etc.).
32-27 91 11			Attending			To be present at (Meeting; Public Hearing; Retreat; Charette; Workshop; Focus Group).
32-27 93 00		Transmitting				To provide information (requested or offered) to support endeavors.
32-35 00 00		Conceptualization Services				To form an idea of [Yourdictionary.com]; Contriving an idea or explanation and formulating it mentally [wordnetweb.princeton]; Expanded programming (IPD).
32-35 11 00		Visioning			Envisioning	To make an imaginative contemplation; to imagine; to perceive something not actually visible.
32-35 13 00		Forecasting			Predicting	To estimate or calculate in advance; predict or seek to predict (business conditions).
32-35 15 00		Strategizing				To manage or plan prior to engaging in the activity.
32-35 15 11			Goal Setting		Setting Goals	To appoint, establish, allot or assign, etc. (an object or that one strives to attain; aim).
32-35 21 00		Authoring				To make or originate something; creator; originator.
32-35 27 00		Defining				To give the distinguishing characteristics of (performance characteristics); to determine or state the extent and nature of; identifying criteria; to describe the nature of: explain (the problem); to delineate.
32-35 31 00		Interpreting				To explain the meaning of; make understandable; to give one own conception of; to translate (a program in a higher-level language) into machine language and execute it.
32-35 33 00		Assimilating				To incorporate and absorb into the mind.
32-35 37 00		Translating				To move from place or condition to another; to change into another medium or form.
32-35 41 00		Determining				To set limits to; bound; define; to reach a decision about after thought and investigation; to reach a decision about after thought and investigation; decide upon.
32-35 43 00		Formalizing				To give definite form to; to make official, valid, etc. by use of an appropriate form (to formalize an agreement).
32-35 45 00		Formulating				To express (a theory, plan, etc.) in a systematic way; to work out or form in one's mind; devise, develop, contrive, etc.
32-35 46 00		Scoping				To define Scope of Work - to quantify multiple items, activities, services supporting a project.
32-35 47 00		Data Gathering			capturing (data); collecting (data)	To assemble project-related information; to get or collect gradually from various places, sources, etc.; amass; accumulate (to gather information).
32-35 47 11			Studying			Acquiring data; information.
32-35 47 13			Researching			To scholarly investigate; Close, careful study.
32-35 47 15			Searching			To go over or look through for the purpose of finding something; explore; examine (closely and carefully).
32-35 47 17			Reading			To (read or) study to get the meaning of (something written, printed).
32-35 47 19			Investigating			To inquire: search into so as to learn the facts; ; inquire into systematically.
32-35 47 21			Identifying			To recognize as being or show to be the very person or thing known, described or claimed; fix the identity.
32-35 47 23			Surveying			The measurement of dimensional relationships, as of horizontal distances, elevations, directions, and angles, on the earth's surface. [Answers.com]
32-35 47 25			Locating			To discover the position of after a search; to show the position of; to assign to a particular place.
32-35 51 00		Quantifying			Taking inventory	To determine or express the extent of; measure.
32-35 51 11			Taking Off		Scoping	To extract quantity; scope from a source; document.
32-35 51 13			Measuring			The process of determining extent, dimensions, etc., especially as determined by a standard.
32-35 51 15			Enumerating			To determine the number of; count.
32-35 57 00		Information Processing			Critiquing	To analyze and evaluate; to prepare by or subject to a particular method (e.g. processing a Pay App).

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Synonym	Definitions
32-35 57 11			Evaluating			To examine carefully; appraise; to study; to examine in detail; scrutinize (esp. based on a part of the whole, a branch of knowledge; discipline).
32-35 57 13			Analyzing			To separate an intellectual or substantial whole into its parts for individual study; to examine in detail (alternates).
32-35 57 15			Resolving			To break up into separate, constituent elements or parts; analyze.
32-35 57 17			Harmonizing			To bring into agreement.
32-35 57 19			Coordinating			To bring into proper order or relation; adjust (various parts) so as to have harmonious action; harmonize.
32-35 57 21			Comparing			To examine in order to observe or discover similarities or differences.
32-35 57 23			Assessing			To estimate or determine the significance, importance or value of; evaluate.
32-35 57 25			Prioritizing			To arrange or assign (items) in order of priority; precedence in time, order, importance, etc.
32-35 57 27			Rating			To estimate the value, worth, strength, capacity, etc. of; appraise.
32-35 57 29			Benchmarking			A standard or point of reference in measuring or judging quality, value, etc.
32-35 57 31			Data Mining			To intensively analyze data for the purpose of generating information.
32-35 57 33			Optimizing			To make the most of; develop or realize to the utmost extent.
32-35 57 35			Refining			To free from imperfection; make more elegant; to improve, as by adding refinements.
32-35 57 37			Developing			To progress from an earlier to later stage (of design); to elaborate (the problem).
32-35 57 39			Qualifying			To describe by giving the qualities or characteristics of.
32-35 57 41			Selecting			To choose in preference to another or others (products; systems; finishes).
32-35 57 43			Calculating			To make a computation.
32-35 57 45			Allocating			To allot; assign.
32-35 61 00		Organizing				To arrange or assemble into an orderly structured whole.
32-35 61 11			Sorting			To place, separate or arrange according to class or kind.
32-35 61 13			Classifying			To arrange or group in classes according to some system or principle; to place in a class or category.
32-35 61 15			Formatting			To arrange according to a format: general arrangement or plan.
32-35 61 17			Filing			To arrange or keep in order (a paper, document, etc.) for future reference.
32-35 61 19			Archiving			To place or keep (records, papers, documents having documentary interest) in a place where such items are kept.
32-35 61 21			Retrieving			To access (data; files).
32-35 71 00		Reviewing				To restudy.
32-35 71 11			Monitoring			To regulate the performance of (machinery, equipment, etc).
32-35 71 13			Checking			To test, verify, measure or control by investigation, comparison or examination.
32-35 71 15			Tracking			To follow (changes).
32-35 81 00		Value Engineering				To make a comparative analysis of the price/performance of a piece of work.
32-41 00 00	Design Services					An arrangement scheme; to plan out in systematic, often graphic form. [wordnetweb.princeton]
32-41 21 00		Programming			Defining the problem; Stating the problem	To develop a plan or procedure for dealing with some matter; to prepare a document that sets forth the conditions and objectives for a building (design) project including its general purpose and detailed requirements such as a complete listing of rooms required, their sizes, special facilities, etc.
32-41 41 00		Planning			(problem) solving	To find an answer to the stated problem.
32-41 41 11			Master Planning			To make a plan, usually graphic, which depicts all the elements of a project or scheme).
32-41 41 13			Space Planning			
32-41 61 00		Synthesizing				To combine elements, parts into a whole.
32-41 61 11			Problem Solving			To find or provide a satisfactory answer or explanation for; make clear; explain.
32-41 71 00		Designing				Developing, conceptualizing, and refining for presentation design schemes and solutions, and alternatives for review.
32-41 81 00		Validating				To verify; substantiate; to confirm; to prove to be sound: well-grounded on principles, facts, evidence, logic, etc.
32-41 81 11			Verifying			To prove to be true by demonstration, evidence or testimony; confirm or substantiate.
32-41 81 13			Confirming			To make valid by formal approval; ratify; to prove the truth, validity or authenticity of; verify.
32-41 81 15			Clarifying			To make or become easier to understand.
32-49 00 00	Documentation Services					To create a bounded physical representation of a body of information designed with the capacity (and usually intent) to communicate. [Wikipedia]
32-49 11 00		Modeling				To construct a virtual representation of the project; to construct or plan, esp. after a pattern on which something not yet produced will be based. BIM can combine design information; fabrication information; erection instructions; project management logistics.
32-49 11 11			Inputting Project Information			
32-49 11 13			Creating BIM Content			
32-49 11 15			Assembling BIM Content			
32-49 11 17			Annotating BIM Content			
32-49 11 19			Creating BIM Views			
32-49 11 21			Defining BIM Sheets			
32-49 11 23			Creating BIM Schedules			
32-49 11 25			Linking BIM/CAD Files			
32-49 21 00		Annotating				To furnish (a document) with explanatory notes.
32-49 21 11			Assigning			To fix; designate; to attribute: ascribe.
32-49 31 00		Delineating				To draw; depict (to represent in a picture).
32-49 31 11			Rendering			To represent artistically (by a drawing).

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Synonym	Definitions
32-49 31 13			Illustrating			To furnish with explanatory or decorative drawings, designs or pictures.
32-49 31 15			Drawing			To make (lines, figures, pictures, etc) as with a pencil, pen, brush or stylus; diagram; to represent forms and figures on a surface by means of lines.
32-49 31 17			Elevating			To make a flat scale drawing of the front, rear or side of a building.
32-49 31 19			Diagramming			To make a sketch, drawing or plan that explains a thing by outlining its parts and their relationships, workings, etc.; a chart of graph explaining or illustrating ideas, statistics, etc.
32-49 31 21			Sketching			To create an undetailed drawing, esp. one made as a preliminary study; to make a simple, rough drawing or design, done rapidly and without much detail.
32-49 31 23			Drafting			To prepare a drawing to scale and annotated.
32-49 31 25			Detailing			To prepare a drawing to small scale and annotated; to make a separate drawing of a small part or section.
32-49 41 00		Specifying				To write a document detailing project requirements for products, materials, and workmanship.
32-49 51 00		Recording				To make a permanent or official note for future use; to register (a sound or image) in a permanent form.
32-49 51 11			Photographing			To make an image with a camera (film or digital).
32-49 51 13			Filming			To make a moving image with a camera (film or digital).
32-49 51 13 11				Image Processing		To enhance or alter an image utilizing software for the purpose.
32-49 61 00		Record Keeping				To put in writing, print, etc. for future use.
32-49 71 00		Preparing				To make ready, usually for a specific purpose; to put together or make out of ingredients, parts, etc., or according to a plan.
32-49 81 00		Indexing				An alphabetical list of names, objects, etc. together with the page numbers where they appear in the text usually placed at the end of the publication; a list describing the items of a collection.
32-49 81 11			Listing			To make a series of names, words, numbers, etc. set forth in order; catalog.
32-49 91 00		Updating				To bring up to date; make conform to the most recent facts, methods, ideas.
32-49 91 11			Revising		Changing	To (review) carefully and correct, improve, or update where necessary; to change or amend.
32-49 91 13			Correcting		Rectifying	A change that changes a wrong to a right; remove errors from; rectify.
32-49 91 15			Supplementing			Something added especially to make up for a lack or deficiency to give additional information, correct errors in the body of the work, etc.
32-57 00 00		Implementation Services				To apply in a manner consistent with its purpose or design [wordnetweb.princeton]; execution of a plan, idea, model, design, specification, standard. [Wikipedia]
32-57 11 00		Executing				To put into effect: carry out (what is called for in a plan); (note as Part 3 of Specifications).
32-57 21 00		Prototyping				To make a mock-up: original model after which other similar things are patterned; original; model; pattern; archetype.
32-57 21 11			Rapid Prototyping			
32-57 31 00		Supplying				To give, furnish or provide (what is needed or wanted); to meet the needs or requirements of.
32-57 31 10			Resourcing			The work of finding and providing the material, financial, or human resources required for a task.
32-57 31 11			Refining			To free from imperfections; make more elegant, more subtle or precise.
32-57 31 13			Manufacturing			To make by hand or, especially by machinery, often on a large scale and with division of labor.
32-57 31 15			Fabricating			To construct by combining or assembling: make.
32-57 31 15 11				Prefabricating		To construct or combine materials prior to installation.
32-57 31 17			Componentizing			To make into constituent parts (of a whole).
32-57 41 00		Distributing				The process by which commodities get to final consumers, including storing, selling, shipping and advertising; to scatter or spread out, as over a surface; to put (things) in various distinct places.
32-57 41 11			Transporting		See also: Shipping, Delivering	To carry from one place or another, especially over long distances.
32-57 41 13			Shipping			To send or transport by any carrier.
32-57 41 15			Handling			To manage, control, direct products or materials.
32-57 41 17			Delivering			To carry to and leave at the proper place or places; distribute.
32-57 41 19			Storing			To put aside, or accumulate, for use when needed.
32-57 41 21			Staging			To plan, arrange and carry out.
32-57 41 23			Taking Inventory			To make an itemized list or catalog of goods, property.
32-57 51 00		Preconstructing				(efforts that precede actual construction)
32-57 51 11			Surveying			To determine the position, boundaries, area and elevation of part of the earth's surface by measuring angles and distances; a detailed examination: inspection; a comprehensive review.
32-57 51 13			Mapping			To survey or explore for the purpose of making a map.
32-57 51 15			Field Measuring			(the process of measuring in the field).
32-57 51 17			Scanning			To examine, identify or interpret (documents; images; objects); to move a beam of light or electrons over (a surface) to reproduce or transmit an image.
32-57 51 17 11				Facility Scanning		To scan (a facility).
32-57 51 17 13				Document Scanning		To scan (a document).
32-57 51 21			Examining			To review existing conditions prior to preparation/installation.
32-57 51 23			Preparing			To make surfaces: substrates ready to receive new product/assemblies.
32-57 61 00		Constructing				To make, build or create.
32-57 61 11			Building			The act, process, work or business of constructing (a structure).
32-57 61 13			Forming			To create the shape for a given form.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Synonym	Definitions
32-57 61 15			Pouring			To flow (a product).
32-57 61 17			Assembling			To fit or put together the parts.
32-57 61 19			Attaching			To make part of by sticking, tying, etc.: fasten.
32-57 61 21			Fastening			To join or become joined to something else: connect; to fix securely.
32-57 61 21 11				Nailing		To secure using a nail.
32-57 61 21 13				Screwing		To secure using a screw.
32-57 61 23			Adhering			To stick fast (by a substance e.g. glue); bonding.
32-57 61 25			Placing			To put in a particular, assigned or proper place, condition or relation.
32-57 61 27			Craning			To make use of a crane or similar tool for simpler access to heights.
32-57 61 29			Installing			To place in position for use.
32-57 61 31			Erecting			To construct; build; to raise upright.
32-57 61 33			Filling			To place a material in a hole, depression, or location so as to raise its level or make complete.
32-57 61 35			Backfilling			To refill (an excavation) as with earth, etc. previously removed.
32-57 61 37			Finishing			To give (a surface) a particular texture (or color).
32-57 71 00		Postconstructing				Duties performed after the main construction phase.
32-57 71 11			Cleaning			To free from dirt, contamination or impurities.
32-57 71 13			Protecting			To shield from injury, (damage).
32-57 71 15			Commissioning			To authorize to perform certain duties or tasks; to get the building systems to perform as intended and to demonstrate a satisfactory level of control for the operation of a facility.
32-57 71 17			Activating			To make active; cause to engage in activity.
32-57 70 19			Closing Out			To bring to an end; finish.
32-57 81 00		Assuring			Ensuring	To make sure or certain; guarantee.
32-57 81 11			Observing			To examine and study; to notice or perceive (something); to pay special attention to; to examine and study scientifically.
32-57 81 13			Inspecting			To look at carefully; examine critically, especially in order to detect flaws, errors, etc.
32-57 81 15			Certifying			To declare (a payment) true, accurate, certain, etc. by formal statement, often in writing; verify.
32-57 81 17			Testing			To give or undergo a diagnostic test or a test of quality, function, etc.
32-57 81 19			Sampling			To take a part, piece or item as representative of a whole thing, as for testing quality.
32-57 81 21			Warranting			A legally-binding agreement providing for service or replacement of unsatisfactory work or products.
32-57 81 23			Guaranteeing			A legally-binding agreement promising the quality of products and services.
32-57 28 15 25				Monitoring		To check on or regulate the performance of (a piece of equipment).
32-57 91 00		Deconstructing			Dismantling	To take apart; disassemble.
32-57 91 11			Disassembling			To take apart.
32-57 91 13			Demolishing			To tear down; raze.
32-57 91 15			Excavating			To remove or expose (e.g. soil) by digging.
32-57 91 17			Cutting			To divide into parts; to reduce the size of or extent.
32-57 91 19			Disposing			To get rid of; throw away.
32-57 91 21			Salvaging			The saving or rescue of any goods, property, etc. from destruction, damage or waste.
32-57 91 23			Recycling			To use again; bring back; reuse.
32-65 00 00	Utilization Services				Occupancy services	To put into service; make work or employ for a particular purpose or for its inherent ... purpose.
32-65 11 00		Insuring				To contract to be paid in the event of damage, injury, loss of use, etc.
32-65 11 11			Bonding			To contract with an insurance/bonding agency to guarantee payment of a specified sum to the payee in the event of a financial loss caused by the act of a specified employee or company or by some contingency over which the payee has no control.
32-65 21 00		Operating				To put or keep in action; work (a piece of equipment).
32-65 31 00		Maintaining				To keep in a desirable (operating; attractive) condition; to keep in a certain condition especially of efficiency, good repair, etc; preserve.
32-65 41 00		Servicing				To test or otherwise observe an object or system to ensure proper operation.
32-65 51 00		Repairing				To put back in good condition after damage, decay, etc.; renew; restore.
32-65 61 00		Housekeeping			Cleaning	To direct or perform domestic tasks.
32-65 71 00		Upgrading				To improve or enhance the condition of.
32-65 71 11			Renovating		Altering; alteration	To make fresh or sound again as though new; clean up, replace worn and broken parts in, repair, etc.
32-65 71 13			Remodeling			To make over; rebuild.
32-65 73 00		Customizing				To make or build something according to personal or individual specifications.
32-65 81 00		Repurposing				To use an existing item for other use than originally or previously intended or used.
32-65 81 11			Converting			To change from one form or use to another.
32-65 91 00		Moving				To relocate from one place:location to another.
32-73 00 00	Support Services					Services that augment the principle services.
32-73 11 00		Advising				To give advice or an opinion to; counsel.
32-73 11 11			Recommending			To advise; counsel; suggest.
32-73 17 00		Representing				To act or stand in place of; be an agent, proxy or substitute for.
32-73 19 00		Counseling			Legal; providing counsel	Services of, created by, based upon or authorized by law.
32-73 21 00		Testifying				To make a serious declaration to substantiate a fact; bear witness or give evidence especially under oath.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Synonym	Definitions
32-73 17 11			Expert Witness Testimony			To bear witness or give evidence especially under oath in court by a person who is very skilled or highly trained and informed in some special field.
32-73 23 00		Resolving				To find a solution to (e.g. a dispute).
32-73 23 11			Mediating			To settle by means of an intermediary or conciliator between opposing parties.
32-73 23 13			Arbitrating			To settle by means of a person or persons selected to judge a dispute.
32-73 23 15			Litigating			To contest in a lawsuit.
32-73 29 00		Real Estate Appraising				To set a price for; decide the value of, especially officially; to judge the quality or worth of.
32-73 35 00		Assaying				To examine or test (an ore, alloy, drug).
32-73 41 00		Consulting				Services for professional or technical advice.
32-73 41 11			Engineering			The science concerned with putting scientific knowledge to practical uses, divided into different branches.
32-73 47 00		Advertising				To prepare and issue printed or broadcast matter that tells about or praises (a product, service).
32-73 49 00		Public Relations				Services with the general public as through publicity, specifically those functions of an organization concerned with attempting to create favorable public opinion for itself.
32-73 55 00		Document Reproduction			reproduction services; copying	To make a copy, close imitation, duplication, etc. of (a drawing, printed document).
32-73 55 11			Printing			To produce a print; make copies.
32-73 55 13			Plotting			To graphically lay out project variables showing their relationships.
32-73 61 00		Submitting				To commit to the decision, consideration or judgment of another e.g. to a City for review.
32-73 67 00		Assisting				To give help to; to work with as a helper or assistant.
32-73 67 11			Tenant-related Services			Related to a person who pays rent to occupy or use land, a building, etc.
32-73 71 00		Travelling				To go from one place to another.
32-73 91 00		Volunteering				To freely choose to offer or give without being asked or obliged.
32-81 00 00	Governmental Services					To administrate the public policy of a jurisdiction.
32-81 11 00		Licensing				To convey a formal permission to do something especially authorization by law to do some specified thing.
32-81 11 11			Accrediting			To authorize; give credentials; to certify as meeting certain set standards.
32-81 11 13			Certifying			To declare (a thing) true, accurate, certain, etc. by formal statement, often in writing; verify; attest.
32-81 31 00		Plan Reviewing				To review documents for conformance to adopted Codes and Ordinances.
32-81 51 00		Permitting				To issue a document granting permission (to construct); license.
32-81 61 00		Regulating				To control, direct, or govern according to a rule, principle or system; to make uniform, methodical, orderly, etc.
32-81 71 00		Enforcing				To compel observance of (a law, etc.).
32-81 81 00		Inspecting				To observe for conformance to approved (permitted) documents.
32-89 00 00	Overhead Services					The general, continuing costs involved in running a business; non-billable.
32-89 11 00		General Office				
32-89 31 00		Vacation				Voluntary time spent away from work usually for personal matters.
32-89 51 00		Sick Leave				Time spent away from work due to illness or malady.
32-89 61 00		Holiday				Annual celebratory day during which no work is done.
32-89 71 00		Civic Duty				To participate in courtroom proceedings that preclude an individual work.
32-89 81 00		Professional Development				To gain knowledge or skill that strengthen work ability.
32-89 81 11			Training			To instruct so as to make proficient or qualified.
32-89 81 13			Educating		Teaching, instructing	To train or develop the knowledge, skill, mind or character of, especially by formal schooling or study.
32-89 81 15			Mentoring			To teach, coach or advise.



National BIM Standard - United States™ Version 2

2 REFERENCE STANDARD

Chapter 2.9 OmniClass™ Table 36 – Information – June 2010

Introduction

OmniClass™ Table 36 – Information is an existing industry standard developed, managed, published and copyrighted by the Construction Specifications Institute, approved through the NBIMS-US V2 consensus process. *OmniClass™ Table 36 – Information* is incorporated in NBIMS-US V2 by reference so that it can be easily referenced in BIM Information Exchanges. Document follows.



A Strategy for Classifying the Built Environment

Table 36 - Information

Table 36 - Information Definition

Information is data referenced and utilized during the process of creating and sustaining the built environment.

Discussion

Information can exist in various media including both printed and digitized forms. Information can be general reference and regulatory data such as a manufacturing standard, or it can be project specific such as a project manual. Information is the principle tool for communication during the process of creating and sustaining the built environment. Typically, information needs to be filed, stored, and retrieved. The Information table principally classifies types and forms of information accessed, created, used, and exchanged during the life cycle of any project.

Examples

Guides, Periodicals, Design Drawings, Specifications, Codes, Leases, Deeds, Catalogs, Operations and Maintenance Manuals, Record Documents, Reports

Table Uses

This table may be used on its own for organizing general reference information (dictionaries, directories, legislation, standards) where the subject coverage is broad and it would be difficult to classify the material into one of the more detailed tables, or for organizing types of information within a project.

Table Users

Cost estimators, facility managers, specifiers, designers, contractors, project managers.

Legacy Documents

- International Organization for Standardization (ISO). ISO 12006-2, *Table 4.16 Construction Information* (by type of medium). Geneva: ISO, 2001.
- Construction Project Information Committee. *Uniclass: Unified Classification for the Construction Industry*, Uniclass Table A - Form of Information. RIBA Publications, 1997.
- National Institute of Building Sciences (NIBS). *National CAD Standard*. Washington, DC: NIBS, 2007
- International Code Council (ICC). *International Building Code*. Washington, DC: International Code Council, 2009

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<http://www.omniclass.org/>. See OmniClass License for more information.

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Synonym	Definitions
Numbers and Titles								
36-11 00 00	General References							Discipline or industry-wide process and management publications or documents referred to for authoritative information.
36-11 11 00	Indexes							Something that serves to guide, point out, or otherwise facilitate reference.
36-11 13 00	Encyclopedias							A comprehensive reference work containing articles on a wide range of subjects or on numerous aspects of a particular field, usually arranged alphabetically
36-11 13 11	Wikipedia							An organic, dynamic online reference database which utilizes a community-based approach to information gathering.
36-11 15 00	Ontologies							A rigorous and exhaustive organization of some knowledge domain that is usually hierarchical and contains all the relevant entities and their relations.
36-11 15 11	Taxonomies							Division into ordered groups, categories or, scientific classifications (often biological); Information architecture.
36-11 17 00	Terminology References							A reference book containing information such as definitions, synonyms and/or related topics with respect to industry jargon.
36-11 17 11	Dictionaries							A reference book containing an alphabetical list of words, with information given for each word.
36-11 17 13	Glossaries							An alphabetical list of terms peculiar to a field of knowledge with definitions or explanations.
36-11 17 15	Lexicons							A list of terms relating to a particular topic.
36-11 17 17	Thesauri							A book containing systemized lists of synonyms and related words.
36-11 19 00	Catalogs							A publication including a list or itemized display, usually including descriptive information or illustrations.
36-11 19 11	Product Catalogs							A publication consisting of products and their general information.
36-11 21 00	Product Literature							Information, usually provided by a product's manufacturer, relating to the product or service in question.
36-11 23 00	Directories							A book containing an alphabetical or classified listing of data.
36-11 23 11	Membership Directories							a list of individuals or businesses belonging to an organization
36-11 23 13	Professional Directories							A listing of contact information, usually organized by types of work and services performed.
36-11 23 15	Manufacturer Directories							A listing of contact information for companies that produce products.
36-11 23 17	Telephone Directories							A listing of contact information, usually alphabetized, containing telephone numbers.
36-11 25 00	Manuals							A small reference book, especially one giving instruction.
36-11 25 11	Equipment Manuals							A reference book regarding physical products.
36-11 25 13	Software Manuals							A reference book regarding computer programs.
36-11 27 00	Handbooks							A concise reference book providing specific information about a subject.
36-11 27 11	Engineering Handbooks							A concise reference book providing specific information about Engineering.
36-11 29 00	Guides							Guidelines A publication that offers basic information and instruction.
36-11 29 11	Business Practice Guides							A publication that offers basic information and instruction on the policies and procedures of a company.
36-11 29 11 11	Promotional Guides							A publication that offers basic information and instruction on marketing
36-11 29 11 13	Accounting Guides							A publication that offers basic information and instruction on finance.
36-11 29 11 15	Human Relations Guides							A publication that offers basic information and instruction on employee management.
36-11 29 11 17	Insurance Guides							A publication that offers basic information on insurance.
36-11 29 13	Professional Practice Guides							
36-11 29 13 11	Sustainable Practice Guides							Includes: LEED
36-11 29 13 13	Computer Technology Guides							
36-11 29 13 15	Process Management Guides							
36-11 29 13 15 11	Change Management Guides							
36-11 29 15	Information Management Guides							Management of data for filing, retrieval and indexed searches.
36-11 29 17	Resource Scheduling Guides							
36-11 29 19	Educational Guides							
36-11 29 19 11	Registration Guides							
36-11 31 00	Standards							A publication of technical specifications, test methods, definitions, typical procedures made available for use.
36-11 31 11	Classification Standards							
36-11 31 11 11	Metadata Standards							File name/path; date
36-11 31 13	Technical Standards							
36-11 31 15	Production Standards							
36-11 31 15 11	BIM Standards							ref: NBIMS
36-11 31 15 13	CAD Standards							ref:NCS
36-11 31 17	Performance Standards							Standards for the expected, acceptable and quantifiable level of performance to be maintained.
36-11 31 17 11	Sustainability Standards							Includes: LEED
36-11 31 17 11 11	Energy Efficiency Standards							
36-11 31 17 13	Environmental Standards							
36-11 31 17 13 11	Indoor Air Quality (IAQ) Standards							
36-11 31 17 15	Test Standards							Includes: ASTM, Underwriters Laboratories
36-11 31 19	Product / Material Standards							
36-11 31 21	Design Standards							

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36-11 31 23			Quality Management Standards				Includes: ISO 9000	Standards for an ongoing effort to provide services that meet or exceed customer expectations through a structured, systematic process for creating organizational participation in planning and implementing quality improvements.
36-11 33 00		Model Documents						Printed materials used for design, implementation or project management
36-11 33 11			Master Specifications					
36-11 33 13			Standard Procurement Documents					
36-11 33 15			Standard Forms					
36-11 33 17			Standard Forms of Agreement					
36-11 33 17 11				American Institute of Architects				
36-11 33 17 13				ConsensusDocs				
36-11 33 17 15				Engineers Joint Council Documents Committee				
36-11 35 00		Books						A printed or written literary work.
36-11 35 11			General and Introductory Books					
36-11 35 13			Design Interest and Theory Books					
36-11 35 15			Drawing and Presentation Books					
36-11 35 17			History and Styles Books					
36-11 35 19			Building Science and Technology Books					
36-11 35 21			Project Type Portfolios					
36-11 35 23			Project Portfolios					
36-11 35 25			Practitioner Portfolios					
36-11 37 00		Periodicals					Magazines; Trade Journals	A publication issued at regular intervals of more than one day.
36-11 39 00		Newspapers						A weekly or daily publication containing articles on the news, features, reviews and advertisements and usually made up of folded sheets.
36-11 39 11			Newsletters					
36-11 41 00		Tables						A reference list of data used to compare an item with an expected outcome.
36-11 41 11			Measurement Conversion Tables					
36-11 43 00		Reports						A compilation of gathered information.
36-11 43 11			Evaluation Reports					
36-11 45 00		Articles						Written information typically appearing in a periodical.
36-11 47 00		Lists						A series of names, words or other items written or printed.
36-11 49 00		Building Codes						Laws governing public safety and health with respect to construction and occupancy.
36-11 49 11			International Building Codes					
36-11 49 13			Federal Building Codes					
36-11 49 15			State/Provincial Building Codes					
36-11 49 17			County Building Codes					
36-11 49 19			Municipal/City Building Codes					
36-11 51 00		Legal Information						Knowledge regarding laws and statutes.
36-11 51 11			Primary Legislation					
36-11 51 11 11				International Legislation				
36-11 51 11 13				Federal Legislation				
36-11 51 11 15				State/Provincial Legislation				
36-11 51 11 17				County Legislation				
36-11 51 11 19				Municipal/City Legislation				
36-11 51 13			Secondary Legislation					
36-11 51 13 11				Regulations				
36-11 51 13 13				Ordinances				
36-11 51 13 13 11					Zoning Ordinances			
36-11 51 13 15				Bylaws				
36-11 51 15			Professional Practice Registration Legislation					
36-11 51 17			Case Law					
36-11 51 19			Legal Documents					
36-11 51 21			Intellectual Property Rights					
36-11 51 21 11				Patents				
36-11 51 21 13				Copyrights				
36-11 51 21 15				Trademarks				
36-11 53 00		Economic Information						Knowledge including but not limited to geography, population and importation/exportation of goods and services which adds value to the overall economy of a place.
36-11 53 11			Economic Forecasts					Predictions of future financial status.
36-11 53 13			Financial Information					Knowledge regarding the economics of a project.
36-11 53 13 11				Mortgage Tables				Document which sets forth the mortgage payment dates and amounts.
36-11 53 13 13				Property Tax Information				Knowledge that sets forth applicable property taxes.
36-11 55 00		Planning Information						Knowledge that helps determine necessary resources to complete a project.
36-11 55 11			Regional Planning Information					Knowledge of the area of work and surrounding areas that will help in the planning process.
36-11 55 11 11				Population Density				A measurement of the ratio of people present or moving within an area to the amount of space that contains them.
36-11 55 11 13				Fire Hazards				Anything that may cause an uncontrolled burn or put people in danger of a fire.
36-11 55 11 13 11					Fire Sources			Objects or lack of objects which can cause a fire.
36-11 55 11 13 13					Fire Danger, probability			Likelihood that a fire will begin.
36-11 55 11 13 15					Fire Severity			The measure of damage caused by a fire.
36-11 55 13			Facility Planning Information					Knowledge that helps determine necessary resources to complete building a facility.
36-11 55 13 11				Facility Occupancy Planning				
36-11 55 13 11 11					Age			
36-11 55 13 11 13					Gender			
36-11 55 13 11 15					Body Properties			

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36-11 55 13 11 17					User Groups			
36-11 55 13 11 19					Organizational Groups			
36-11 55 13 11 21					Demographics			
36-11 55 13 11 23					Occupancy Type			
36-11 55 13 13				Non-Human Occupancy Information				Any non-human occupant not considered a pest.
36-11 55 13 15				Amenity Concerns				Direct or indirect benefits of the products in, and construction of, a project.
36-11 55 13 15 11					Noise Concerns			
36-11 55 13 15 11 11						External Noise Concerns		
36-11 55 13 15 11 13						Internal Noise Concerns		
36-11 55 13 15 11 15						Impact Noise Concerns		
36-11 55 13 15 11 17						Equipment Noise Concerns		
36-11 55 13 15 13					Air Circulation Information			
36-11 55 13 15 13 11						Air Leakage Information		
36-11 55 13 15 13 13						Air Infiltration Information		
36-11 55 13 15 13 15						Air Tightness Information		
36-11 55 13 15 15					Water Leakage Information			
36-11 55 13 15 17					Thermal Conditions Information			
36-11 55 13 15 19					Condensation Information			
36-11 55 13 17				Health Concerns				
36-11 55 13 17 11					Hygiene			
36-11 55 13 17 13					Ergonomics			
36-11 55 13 17 15					Special Needs		Includes: Americans With Disabilities Act (ADA)	
36-11 55 13 19				Artificial Heat Sources				
36-11 55 13 19 11					Radiant Heat			
36-11 55 13 21				Hazardous Materials Information				
36-11 55 13 21 11					Explosion Danger			
36-11 55 13 21 13					Toxicity of Materials			
36-11 55 13 23				Safety Information				Planning information necessary mitigate possible injury.
36-11 55 13 25				Fire Safety				Information necessary to allow for proper fire prevention, fighting and evacuation.
36-11 55 13 25 11					Egress Information			
36-11 55 13 25 13					Fire Prevention Information			
36-11 55 13 25 15					Fire Fighting Information			
36-11 55 13 25 17					Fire Mitigation Information			
36-11 55 13 27				Accident Prevention Information				
36-11 55 13 29				Explosion Mitigation Information				
36-11 55 13 31				Security Information				
36-11 55 13 31 11					External Security Information			
36-11 55 13 31 13					Internal Security Information			
36-11 55 13 33				Sociological Concerns				
36-11 55 13 33 11					Customs Information			
36-11 55 13 33 13					Cultural Information			
36-11 55 13 35				Economic Concerns				
36-11 55 13 37				Work Requirements				
36-11 55 15			Environmental Planning Information					Knowledge relating to the atmospheric and geological conditions of the area around a planned project that will help determine a variety of variables.
36-11 55 15 11				Atmospheric and Meteorological Planning Information				
36-11 55 15 11 11					Sunlight Information			
36-11 55 15 11 13					Design Temperature			
36-11 55 15 11 15					Precipitation Information			
36-11 55 15 11 17					Humidity Information			
36-11 55 15 11 19					Wind Information			
36-11 55 15 11 21					Lightning Information			
36-11 55 15 11 23					Air Pollution Information			
36-11 55 15 13				Physiographic Planning Information				
36-11 55 15 13 11					Land Area Information			
36-11 55 15 13 13					Water Bodies Information			
36-11 55 15 13 15					Natural Shelter Information			
36-11 55 15 15				Geological Planning Information				
36-11 55 15 15 11					Siesmic Activity Information			
36-11 55 15 15 13					Volcanic Activity Information			
36-11 55 15 17				Pollution Planning Information				
36-11 55 15 17 11					Air Pollution Information			
36-11 55 15 17 11 11						Acid Rain Information		
36-11 55 15 17 11 13						Ozone Concentration Information		
36-11 55 15 17 13					Noise Information			
36-11 55 15 17 13 11						Existing Noise Information		
36-11 55 15 17 13 13						Site Equipment Noise Information		
36-11 55 15 19				Site Biological Characteristics				
36-11 55 15 19 11					Microorganism			
36-11 55 15 19 11 11						Mold, Mildew		
36-11 55 15 19 11 13						Fungal		
36-11 55 15 19 11 15						Bacterial, Viral		
36-11 55 15 19 13					Plant			
36-11 55 15 19 15					Insect Infestation			
36-11 55 15 19 17					Bird Nesting, Attack			
36-11 55 15 19 19					Animal Nesting, Infestation			
36-11 57 00			Marketing/Promotional Information					Information provided with the intent to advocate a particular product or service.
36-11 57 11				Pamphlets				
36-11 57 13				Brochures				
36-11 59 00		Images						
36-11 59 11			Videos					

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36-11 59 13			Slide Shows					Information displayed with the use of a software program usually in the form of a slide show (e.g. PowerPoint)
36-11 61 00		Maps						Graphical display of an area.
36-11 61 11			USGS Maps					
36-11 61 13			Roadmaps					
36-11 63 00		Calendars						The standard date measuring tools for much of the world.
36-11 63 11				Organizational Calendars				
36-11 65 00		Other General Documentation						
36-11 65 11			Wiki					A website that allows the creation and editing of any number of interlinked web pages.
36-11 65 13			Bookmarks					Web sites saved in a browser for easy access later.
36-11 65 15			Blogs					Web entries, usually organized by date, that reflect the viewpoints of the author.
36-51 00 00	Office Resources							Office standards, guidelines, or protocols; Office Knowledge Resources.
36-51 11 00		Office Business Practice Guidelines						
36-51 11 11			Promotional Guidelines					
36-51 11 13			Communication Guidelines					
36-51 11 15			Legal Guidelines					
36-51 11 15 11				Contract Guidelines				
36-51 11 17			Insurance Guidelines					
36-51 11 19			Accounting Guidelines					
36-51 11 21			Human Relation Guidelines					
36-51 11 21 11				Employee Handbook				
36-51 33 00		Office Professional Practice Guidelines						
36-51 33 11			Design Guidelines					
36-51 33 13			Modeling Guidelines					
36-51 33 15			Documentation Guidelines					
36-51 33 17			Quality Management Guidelines					
36-51 33 17 11				Quality Assurance Quality Control (QAQC) Plan				
36-51 53 00		Office Standard Documents						
36-51 53 11			Office Promotional Information					
36-51 53 11 11				Website Information				
36-51 53 11 13				Promotional Literature		Brochures; Mailers		
36-51 53 13			Office Forms of Agreement					
36-51 53 13 11				Attachments				
36-51 53 13 13				Exhibits				
36-51 53 15			Office Graphics					
36-51 53 15 11				Logos				
36-51 53 17			Office Forms					
36-51 53 17 11				Correspondence		Letterheads		
36-51 53 17 13				Transmittals				
36-51 53 17 15				Memoranda				
36-51 53 17 17				Reports				
36-51 53 17 19				Invoices				
36-51 53 17 21				Business Cards				
36-51 53 17 23				Envelops				
36-51 53 17 25				Logs				
36-51 73 00		Office Model Templates						
36-51 73 11			Model Content					
36-51 73 11 11				Model Graphical Content				Graphical
36-51 73 11 11 11					Graphical Content Based on BIM Rules			
36-51 73 11 11 11 11						Parametric Content		Elements/Assemblies/Systems; Components
36-51 73 11 11 11 13						Non-parametric Content		e.g. box geometry
36-51 73 11 11 13					Graphical Content Based on Simple Geometric Rules			
36-51 73 11 11 13 11						Massing/Volumes		
36-51 73 11 11 13 13						Surfaces		
36-51 73 11 11 13 15						Lines		
36-51 73 11 11 13 17						Points		
36-51 73 11 13				Model Annotation Content				Non-graphical
36-51 73 11 13 11					Properties			
36-51 73 11 13 11 11						Object classification schemes		
36-51 73 11 13 11 13						Object geometries		such as volume, area, length
36-51 73 11 13 11 15						Object quantities		
36-51 73 11 13 11 17						Geospatial Information		
36-51 73 11 13 11 19						Zones/Rooms/Spaces		
36-51 73 11 13 11 21						Products/Materials		
36-51 73 11 13 11 23						Calculated Values		
36-51 73 11 13 11 25						Unit Cost Data		
36-51 73 11 13 11 27						References		
36-51 73 11 13 13					Tags			
36-51 73 11 13 13 11						Area Tags		
36-51 73 11 13 13 13						Element Tags		
36-51 73 11 13 13 15						Material Tags		
36-51 73 11 13 15					Annotations			
36-51 73 11 13 15 11						General Notes File		
36-51 73 11 13 15 13						Material Keynotes File		
36-51 73 11 13 17					Symbols			
36-51 73 11 13 17 11						Horizontal Grids		
36-51 73 11 13 17 13						Vertical Levels		
36-51 73 11 13 17 15						Callouts		
36-51 73 11 13 17 17						Section Cuts		
36-51 73 11 13 17 19						View Labels		
36-51 73 13			Model Views					Views extracted from Model Content
36-51 73 13 11				Graphical Views of Model				
36-51 73 13 11 11					3D Views			

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Synonym	Definitions
36-51 73 13 11 11 11						Diagrams		
36-51 73 13 11 11 13						Axonometrics		
36-51 73 13 11 11 15						Perspectives		
36-51 73 13 11 11 17						Rendered Views		
36-51 73 13 11 11 19						Animations		
36-51 73 13 11 13					2D Horizontal Views			
36-51 73 13 11 13 11						Site Plans		
36-51 73 13 11 13 13						Floor Plans		
36-51 73 13 11 13 15						Large-scale Views		
36-51 73 13 11 13 17						Detail/s		
36-51 73 13 11 15					2D Vertical Views:			
36-51 73 13 11 15 11						Site-Building Section/Elevations		
36-51 73 13 11 15 13						Element Section/Elevations		
36-51 73 13 11 15 15						Details		
36-51 73 13 13				Non-graphical Reports of Model				
36-51 73 13 13 11					Schedules			Tables; Logs
36-51 73 13 13 11 11						Sheet Indexes		
36-51 73 13 13 11 13						Area Schedules		
36-51 73 13 13 11 15						Element Schedules		
36-51 73 13 13 11 17						Material Schedules		
36-51 73 13 13 11 19						Keynote Schedules		
36-51 73 13 13 11 21						Revision Log		
36-51 73 13 13 13					Legends			
36-51 73 13 13 13 11						Color Schemes		
36-51 73 15		Sheet Templates					Drawings; Boards	Drawing output format for Model views.
36-51 73 15 11			Title Blocks					Sheet organizational layout and information format
36-51 73 15 11 11					Image Board Title Blocks			
36-51 73 15 11 13					Design Presentation Title Blocks			
36-51 73 15 11 15					Contract Drawing Title Blocks			
36-51 73 15 13			Model Views					
36-51 73 15 15			Legends					
36-51 73 15 17			Schedules					
36-51 75 00		Office Masters						
36-51 75 11			Office Project Schedules					
36-51 75 13			Office Specifications					
36-51 75 15			Office Drawings					
36-51 75 15 11				Office Details				
36-51 75 17			Office Calendars					
36-51 91 00		Office Financial Management Documents						Documents related to the overseeing of budgeting, resource allocation and financial status of company resources.
36-51 91 11			Time Sheets					
36-51 91 13			Cash Flow/ Revenue/ Expenses					
36-51 91 15			Assets/Liabilities					
36-51 91 17			Gross Revenue					
36-51 91 19			Project multipliers/ breakeven/ earnings					
36-51 91 21			Project Budgets					
36-51 91 21 11				Direct Labor by Discipline				
36-51 91 21 13				Expenses				
36-51 91 21 15				Consultant Expenses				
36-51 91 21 17				Contingencies				
36-51 79 00		Other Office Resources						
36-71 00 00	Project Information							Organized project-related data.
36-71 11 00		Project Identifications						Identifying factors used to distinguish the project.
36-71 11 11			Project Name					
36-71 11 13			Project Numbers					
36-71 11 15			Project Location					
36-71 11 15 11				Geographical Location				
36-71 11 15 13				Street Address				
36-71 11 15 15				Legal Description				
36-71 15 00		Real Property Transfer Information						
36-71 15 11			Deeds					
36-71 15 13			Leases					
36-71 15 15			Trusts					
36-71 15 17			Easements					
36-71 15 19			Covenants					
36-71 15 21			Rights-of-Way					
36-71 17 00		Real Property Information						
36-71 17 11			Real Estate Appraisals					
36-71 17 13			Prospectuses					
36-71 17 15			Yield Studies					
36-71 26 00		Project Management Information						Knowledge used to administer project resources.
36-71 26 11			Project Requests for Proposals					
36-71 26 13			Project Proposals					
36-71 26 13 11				Description of Services				
36-71 26 15			Project Schedules					
36-71 26 15 11				Project Schedule / Workplan				
36-71 26 17			Project Financials					
36-71 26 17 11				Proforma analysis				
36-71 26 17 13				Lender Requirements				
36-71 26 17 15				Leasing Assistance				
36-71 26 19			Project Fee/Expense Information					
36-71 26 19 11				Design Fee Worksheet				
36-71 26 19 13				Accounting Report/s				
36-71 26 19 13 11					Progress Reports			
36-71 26 19 13 13					Billing Reports			

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Synonym	Definitions
36-71 26 19 13 15					Unbilled Labor Reports			
36-71 26 19 13 17					Expense Reports			
36-71 26 19 13 19					Estimate to Complete (ETC)			
36-71 26 19 13 21					Estimate at Completion			
36-71 26 19 13 23					Percent Complete			
36-71 26 19 13 25					Invoicing/Payment Schedule			
36-71 26 19 13 27					Accounts Receivable Aging			
36-71 26 19 15				Invoices				
36-71 26 19 15 11					Owner / Client Invoices			
36-71 26 19 15 13					Consultant Invoices			
36-71 26 19 15 15					Vendor Invoices			
36-71 26 19 17				Expenses				
36-71 26 19 17 11					Reimbursable Expenses			
36-71 26 19 17 13					Non-reimbursable Expenses			
36-71 26 19 19				Phase Codes				
36-71 26 21			Project Agreements					
36-71 26 21 11				Scope of Work Clarifications / Items List				
36-71 26 21 13				General Conditions				
36-71 26 21 13 11					Supplementary Conditions			
36-71 26 21 15				Project Delivery Method				
36-71 26 21 15 11					BIM Execution Plan			
36-71 26 21 17				Multiple-Party				
36-71 26 21 17 11					Single Purpose Entity Agreement			
36-71 26 21 19				Two-Party				
36-71 26 21 19 11					Owner / Designer			
36-71 31 21 19 13					Designer / Consultants			
36-71 26 21 19 12					Owner / Contractor			
36-71 26 21 21				Notices to Proceed				
36-71 26 21 21 11					Primary Designer			
36-71 26 21 21 13					Consultants			
36-71 26 23			Project Team Information					
36-71 26 23 11				Team Directory				
36-71 26 23 13				Organization Chart				
36-71 26 25			Project General Information					
36-71 26 25 11				Project Summary Sheet				
36-71 26 25 13				Project Description / Profile				
36-71 26 25 15				Project History				
36-71 26 25 17				Project Master Forms				
36-71 26 25 17 11					QAQC / TQM Checklists			
36-71 26 25 17 13					Metadata		Includes: File name/path; date	
36-71 26 25 19				Mailing List/s				
36-71 26 25 21				Marketing Information				
36-71 26 25 21 11					Project Narrative			
36-71 26 25 21 13					Owner Release / Approvals			
36-71 26 25 21 15					Promotional Material			
36-71 26 25 21 17					Marketing Imagery			
36-71 26 25 21 17 11						Photographs		
36-71 26 25 21 17 13						Videos		
36-71 26 25 21 17 15						Virtual Design Presentations		
36-71 26 25 21 17 17						Animations		
36-71 26 25 21 19					Media Publications			
36-71 26 25 21 19 11						Press Releases		
36-71 26 25 21 19 13						Magazine publications		
36-71 26 25 21 21					Design Awards			
36-71 26 27			Project Information Management					
36-71 31 00		Project Communications						Written or spoken correspondence related to the project.
36-71 31 11		Agenda						
36-71 31 13		Minutes						
36-71 31 13 11				Hearings				
36-71 31 13 13				Conferences				
36-71 31 13 15				Meetings				
36-71 31 13 17				Telephone				
36-71 31 15		Action Items						
36-71 31 17		Email						
36-71 31 19		Transmittals						
36-71 31 21		Facsimile						
36-71 31 23		Correspondence						
36-71 31 25		Memoranda						
36-71 31 27		Directives / Notices						
36-71 45 00		Project Scope Information						Knowledge relating to the scope of the project.
36-71 45 11		Quantity Surveys						
36-71 45 13		Area Quantity Scope Schedules						
36-71 45 15		Element Quantity Scope Schedules						
36-71 45 17		Work-Result Scope Schedules						
36-71 67 00		Project Cost Information						Knowledge relating to the project budget and overall financing.
36-71 67 11		Project Budget Information						
36-71 67 11 11				Area Unit Costs				
36-71 67 11 13				Area-based Budget Analyses				
36-71 67 13		Cost Estimate Information						
36-71 67 13 11				Element-based Cost Estimates				
36-71 67 13 13				Work-result-based Cost Estimates				
36-71 67 13 15				Element Unit Prices				
36-71 67 13 17				Material / Product Unit Prices				
36-71 67 15		Guaranteed Maximum Price						

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Synonym	Definitions
36-71 67 15 11				Initial GMP				
36-71 67 15 13				Revised GMP			Updated GMP	
36-71 67 17			Cost Performance Analyses					Construction Value Analyses and Reports
36-71 67 17 11				Life Cycle Cost Analyses				
36-71 67 17 13				Cost Additions and Reductions Reports				
36-71 67 17 15				Design Changes due to value engineering				
36-71 67 19			Buyout / Bid Information					
36-71 67 19 11				Bid Tabulation				
36-71 67 19 13				Subcontractor Bids				
36-71 67 19 15				Material Supplier Bids				
36-71 81 00		Project Existing Condition Information						Knowledge relating to the project site and preexisting circumstances before the start of physical construction.
36-71 81 11			Site and Surrounding Area Transportation Information					Knowledge regarding civil planning issues such as traffic and how they will impact the project.
36-71 81 11 11				Public Transportation				
36-71 81 11 13				Private Vehicle Traffic Studies				
36-71 81 11 15				Service Vehicle Information				
36-71 81 11 17				Emergency Vehicle Information				
36-71 81 11 19				Vehicular Traffic Density				
36-71 81 13			Land Planning Information					
36-71 81 13 11				Land Use Planning Information				
36-71 81 13 13				Zoning Information				
36-71 81 15			Existing Environmental Information					
36-71 81 15 11				Site Atmospheric and Meteorological Characteristics				
36-71 81 15 11 11				Site Sunlight				
36-71 81 15 11 13				Site Temperature				
36-71 81 15 11 15				Site Precipitation				
36-71 81 15 11 17				Site Humidity				
36-71 81 15 11 19				Site Wind				
36-71 81 15 11 21				Site Lightning				
36-71 81 15 11 23				Site Air Pollution				
36-71 81 15 13				Geological Site Characteristics				
36-71 81 15 13 11				Site Sismic Activity				
36-71 81 15 13 13				Site Volcanic Activity				
36-71 81 15 15			Existing Site Information					
36-71 81 15 15 11				Site Legal Information				
36-71 81 15 15 11 11				Legal Description: Meets and Bounds				
36-71 81 15 15 13				Existing Site Images				
36-71 81 15 15 13 11				Site Photographs				
36-71 81 15 15 15				Archaeological Surveys				
36-71 81 15 15 17				Geophysical Site Data				
36-71 81 15 15 17 11				Land Survey / Site Measurements				
36-71 81 15 15 17 13				Site Topographic Data				
36-71 81 15 15 17 15				Site Physiographic Data				
36-71 81 15 15 17 17				Existing Site Improvements				
36-71 81 15 15 17 19				Site Utility Data				
36-71 81 15 21				Geotechnical Site Data				
36-71 81 15 21 11				Soils Report				
36-71 81 15 23				Environmental Assessment Information				
36-71 81 15 23 11				Existing Material Information				
36-71 81 15 23 13				Existing Hazardous Material Information				
36-71 81 15 25				Human-generated Environmental Information				
36-71 81 15 27				Biological-general (non-human) Impact Information				
36-71 81 15 29				Existing Conditions Reports				
36-71 81 17			Existing Facility Information					
36-71 81 17 11				Existing Facility Images				
36-71 81 17 11 11				Photographs of existing conditions				
36-71 81 17 13				Existing Facility Documentation				
36-71 81 17 13 11				Drawings of Existing Conditions				
36-71 81 17 13 13				Specifications for Existing Improvements				
36-71 81 17 15				Existing Facility Surveys				
36-71 81 17 15 11				Facility Measurement Documents				
36-71 81 17 15 13				Evaluation Reports				
36-71 81 17 15 15				Existing Elements Surveys				
36-71 81 17 15 17				Existing Materials Surveys				
36-71 81 17 15 17 11				Existing Hazardous Material Surveys				
36-71 81 17 17				Historical Facility Data				
36-71 87 00		Project Information Models						Graphical/data Models combined with integrated processes.
36-71 87 11			Composite Models					Multiple model files linked or "rolled-up" into a single Model.
36-71 87 11 11				Native File Modeling/Models				
36-71 87 11 13				Non-native File Modeling/Models				
36-71 87 13			Analytical Models/Worksets					Models that create analytical data and document computations.
36-71 87 13 11				Performance-based Models				
36-71 87 13 11 11				Site Utilization Models				Yield Studies
36-71 87 13 11 13				Solar Impact Models				
36-71 87 13 13				Cost-based Models				
36-71 87 13 13 11				Financial Models				Cost to develop Entity: Proforma analysis
36-71 87 13 13 13				Cost Models				Cost to build Entity/Elements = Scope/Quantity x Quality
36-71 87 13 13 15				Energy Models				Energy: Cost to operate Element = Energy used per unit of Time
36-71 87 13 13 17				Life Cycle Models				Cost to build, operate and maintain Element/s
36-71 87 13 15				Time-based Models				
36-71 87 13 15 11				Construction Sequence Models				
36-71 87 13 15 13				Temporary Construction Models				

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Synonym	Definitions
36-71 87 13 17			Computer-Aided Design					
36-71 87 13 17 11				Composite Drawing Sets				
36-71 87 13 17 13				Discipline Drawing Sets				
36-71 91 00		Project Documentation						Knowledge of project workings organized in chronological groups.
36-71 91 11			Predesign Information					
36-71 91 11 11				Feasibility Studies				
36-71 91 11 13				Design Standards				
36-71 91 11 13 11					Sustainable Design Standards			
36-71 91 11 15				Programmatic Data				
36-71 91 11 15 11					Owner Guidelines / Requirements			
36-71 91 11 15 13					Project Goals			
36-71 91 11 15 15					Program Requirements Matrix			
36-71 91 11 15 17					Pre-design Notes			
36-71 91 11 15 19					Program Plan			
36-71 91 11 17				Photographic Images				
36-71 91 11 19				Pre-design Reviews				
36-71 91 11 19 11					Zoning Review			
36-71 91 11 21				Element/Assembly/Systems Criteria				e.g. Performance Criteria
36-71 91 11 21 11					Element/Assembly/Systems Considered			
36-71 91 11 21 13					Element/Assembly/Systems Selected			
36-71 91 11 23				Product/Material Criteria				e.g. Performance Criteria
36-71 91 11 23 11					Materials Considered			
36-71 91 11 23 13					Materials Selected			
36-71 91 11 25				Reports / Studies				
36-71 91 11 25 11					Accessibility Studies			
36-71 91 11 27			Design Documentation					
36-71 91 11 27 11				Program Plan				
36-71 91 11 27 13				Design Sketches				
36-71 91 11 27 13 11					Composite Sketches			
36-71 91 11 27 13 13					3D Sketches			
36-71 91 11 27 13 15					Plan Sketches			
36-71 91 11 27 13 17					Elevation / Section Sketches			
36-71 91 11 29				Renderings and Animations				
36-71 91 11 29 11					Hand-drawn Renderings			
36-71 91 11 29 13					Software-generated Renderings			
36-71 91 11 29 13 11						Animations		
36-71 91 11 31				Models				
36-71 91 11 31 11					Hand-fabricated Models			
36-71 91 11 31 13					3D printer produced Models			
36-71 91 11 33				Design Drawings				
36-71 91 11 33 11					Composite Drawings			
36-71 91 11 33 13					3D Drawings			
36-71 91 11 33 15					Plan Drawings			
36-71 91 11 33 17					Elevation / Section Drawings			
36-71 91 11 35				Design Drawing Document Sets				
36-71 91 11 35 11					Phase Milestone Sets			
36-71 91 11 35 13					Presentations			
36-71 91 11 35 15					Design Competition Submittals			
36-71 91 11 37				Outline Specifications				
36-71 91 11 37 11					Preliminary Project Descriptions			
36-71 91 11 37 13					Work-results Summary			
36-71 91 11 39				Design Reviews				
36-71 91 11 39 11					Entitlement Documents			
36-71 91 11 39 13					Code Analyses			
36-71 91 11 41				Scans				
36-71 91 13			Contract Documents					
36-71 91 13 10				Agreements				
36-71 91 13 10 11					Stipulated Sum Agreement (Single-Prime Contract)			
36-71 91 13 10 15					Stipulated Sum Agreement (Multiple-Prime Contract)			
36-71 91 13 10 19					Construction Management Agreement (Single-Prime Contract)			
36-71 91 13 10 23					Construction Management Agreement (Multiple-Prime Contract)			
36-71 91 13 10 27					Cost Plus-Fee Agreement (Single-Prime Contract)			
36-71 91 13 10 31					Cost-Plus-Fee Agreement (Multiple-Prime Contract)			
36-71 91 13 10 35					Unit Price Agreement (Single-Prime Contract)			
36-71 91 13 10 39					Unit Price Agreement (Multiple-Prime Contract)			
36-71 91 13 10 43					Design/Build Agreement (Single-Prime Contract)			
36-71 91 13 10 47					Design/Build Agreement (Multiple-Prime Contract)			
36-71 91 13 10 51					Purchase Agreement			
36-71 91 13 10 55					Performance Contract			
36-71 91 13 10 59					Integrated Project Delivery Agreement			
36-71 91 13 11				Drawing Files / Views				
36-71 91 13 11 11					3D Views			
36-71 91 13 11 11 11						Diagrams		
36-71 91 13 11 11 13						Axonometrics		
36-71 91 13 11 11 15						Perspectives		
36-71 91 13 11 13					2D Horizontal Views			
36-71 91 13 11 13 11						Site Plans		
36-71 91 13 11 13 13						Floor Plans		
36-71 91 13 11 13 15						Large-scale Plan Views		
36-71 91 13 11 13 17						Plan Details/s		
36-71 91 13 11 15					2D Vertical Views:			
36-71 91 13 11 15 11						Site-Building Section/Elevations		
36-71 91 13 11 15 13						Element Section/Elevations		
36-71 91 13 11 15 15						Vertical Details		
36-71 91 13 13				Sheets				
36-71 91 13 13 11					Sheet Index			

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Synonym	Definitions
36-71 91 13 13 13					Finish Sheets			
36-71 91 13 13 15					Worksheets			
36-71 91 13 15				Contract Drawing Document Sets			Deliverables	
36-71 91 13 15 11					Cartoon Set			
36-71 91 13 15 13					Drawing Sets			
36-71 91 13 15 13 11						Photographic Documentation		
36-71 91 13 17				Project Manuals				
36-71 91 13 17 11					Bidding and Contract Requirements			
36-71 91 13 17 13					Technical Specifications			
36-71 91 13 17 15					Material / Element Schedules			
36-71 91 13 17 17					Detail Manual			
36-71 91 13 19				Modifications				
36-71 91 13 19 11					Addenda			
36-71 91 13 19 11 11						Clarifications		
36-71 91 13 19 11 13						Minor Changes in the Work		
36-71 91 13 19 13					Change Orders			
36-71 91 13 19 13 11						Changes in Contract Sum		
36-71 91 13 19 13 13						Changes in Contract Time		
36-71 91 13 19 15					Construction Change Directives			
36-71 91 13 19 17					Supplemental Drawings (SK)			
36-71 91 13 19 17 11						Supplemental Drawing Log		
36-71 91 15				Procurement Information				
36-71 91 15 11					Request for Qualifications			
36-71 91 15 13					Requests for Bid Proposals			
36-71 91 15 13 11					Advertisement for Bids			
36-71 91 15 13 13					Instructions to Bidders or Proposers			
36-71 91 15 13 15					Bid Specifications			
36-71 91 15 13 17					Bidder's Log			
36-71 91 15 13 19					Bid Drawing Index			
36-71 91 15 13 21					Alternates / Options			
36-71 91 15 15					Requests for Clarification (RFC)			
36-71 91 15 15 11					RFC Log			
36-71 91 15 17					Requests for Prior Approval			
36-71 91 15 17 11					Prior Approval Procedures			
36-71 91 15 19					Addenda			
36-71 91 15 21					Pre-Bid Conferences			
36-71 91 15 23					Bid Proposals			
36-71 91 15 23 11						Bid Tabulation		
36-71 91 15 25					Warranties			
36-71 91 17				Construction Information				
36-71 91 17 11					Notice to Proceed			
36-71 91 17 13					Construction Schedules			
36-71 91 17 13 11						Submittal Schedules		
36-71 91 17 15					Requests for Substitution			
36-71 91 17 17					Requests for Information (RFI)			
36-71 91 17 17 11						RFI Log		
36-71 91 17 19					Submittals			
36-71 91 17 19 11						Submittal Log		
36-71 91 17 19 13						Material Safety Data Sheets (MSDS)		
36-71 91 17 21					Requests for Change (RFC)			
36-71 91 17 21 11						RFC Log		
36-71 91 17 23					Change Directives			
36-71 91 17 23 11						Change Directive Log		
36-71 91 17 25					Change Authorizations			
36-71 91 17 27					Requests for Change Order			
36-71 91 17 29					Changes to Contract Sum / Contract Time			
36-71 91 17 29 11						Change Order Log		
36-71 91 17 31					Allowance Payment Authorizations			
36-71 91 17 33					Payment Authorizations			
36-71 91 17 33 11						Schedule of Values		
36-71 91 17 33 13						Payment Log		
36-71 91 17 33 15						Draft Payment Authorizations		
36-71 91 17 33 17						Approved Payment Authorizations		
36-71 91 17 35					Field Reports			
36-71 91 17 35 11						Special Inspection Reports		
36-71 91 17 37					Test Reports			
36-71 91 17 39					Photographic Construction Record			
36-71 91 17 39 11						Web-cam Images		
36-71 91 17 41					As-Built Measurements			
36-71 91 17 43					Construction Techniques Information			
36-71 91 17 45					Bonds			
36-71 91 17 47					Permits			
36-71 91 19				Closeout Information				
36-71 91 19 11					Closeout Requirement Lists			
36-71 91 19 11 11						Closeout Submittals		
36-71 91 19 13					Certificate of Substantial Completion			
36-71 91 19 13 11						List of Corrective Work (Punch List)		
36-71 91 19 15					Certificates of Occupancy			
36-71 91 19 15 11						Temporary Certificates of Occupancy		
36-71 91 19 17					Notice of Final Completion			
36-71 91 19 19					Record Documents			
36-71 91 19 19 11						Record Drawings		
36-71 91 19 19 13						Record Project Manual		
36-71 91 19 19 15						Record Modification Documents		
36-71 91 19 23					Completed Project Photographs			
36-71 91 19 25					Post-Construction Reviews			

OmniClass Number	Level 1 Title	Level 2 Title	Level 3 Title	Level 4 Title	Level 5 Title	Level 6 Title	Synonym	Definitions
36-71 91 21			Move Information					
36-71 91 21 11				Move Schedule				
36-71 91 21 13				Move Coordination Plan				
36-71 91 23			Construction Claims					
36-71 91 23 11				Insurance Company Communications				
36-71 91 23 13				Issues				
36-71 91 23 15				Claims				
36-71 91 23 15 11					Claims Log			
36-71 91 23 17				Claims Consultant				
36-71 91 25			Facility Operation Information					
36-71 91 25 11				Facility Management Database				
36-71 91 25 11 11					Graphical Backgrounds			
36-71 91 25 11 13					Data Attributes			
36-71 91 25 13				Operation & Maintenance (O&M) Manuals				
36-71 91 25 15				Instructional and Training Materials				
36-71 91 25 17				Maintenance Records				



National BIM Standard - United States™ Version 2

2 REFERENCE STANDARD

Chapter 2.10 International Framework for Dictionaries Library/ buildingSMART Data Dictionary – December 07, Revised May 2012

Introduction

The construction industry is increasingly applying building information modeling methods to the process of design, procurement, construction, operation and maintenance of facilities. In order for building information models to share data, they employ schemas that define the structure for the information that they process.

A schema requires a consistent set of 'names' of the entities it is organizing, in order to work. Names could refer to a particular construction (e.g. wall type 1), system (e.g. low voltage electrical supply), material, property set or individual property, for example. Each of these names should have a controlled definition that describes what it means and the units in which it may be expressed. Having a controlled vocabulary of construction terminology is essential to support interpretable data exchange.

Perhaps even more importantly, 'names' of things may be used more widely to support knowledge application and management in connection with BIM. For instance, building codes also refer to items by name (both in terms of a concept, and attributes or properties that a concept may possess). Specifications, product data sheets, costing schedules, and reference standards are all examples of data which could be better integrated with a common vocabulary.

A 'Dictionary' is used to define names. A *Dictionary* of construction terminology defines the use of a particular 'name' (type, property etc.) in a consistent manner, regardless of who is using the schema and where it may be used. Since construction is a global industry, terminology dictionaries need to accommodate different languages; that is, different names for the same things. Within a language, there are also often regional differences in the names of things within the same language. A primary role of the buildingSMART Data Dictionary is to address this need.

Background

At ISO meetings in Vancouver in 1999, a variety of organizations developing IT standards for the building industry (leading to what we are today calling BIM) agreed that some sort of standardized global

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terminology was necessary and that its structure must be useful for computers to reliably exchange data irrespective of language. As a result, the ISO committee TC59/SC13/WG6 was formed to develop the standard now known as *ISO 12006-3 – Framework for Object-oriented Information Exchange*.

Once ISO 12006-3 was published, *STABU LexiCon* in Holland and *BARBi* in Norway, two independent efforts to develop dictionaries (more precisely called "terminology libraries") underway at the time, each focused their development of terminology databases to be compatible with the standard. In January 2006, the organizations signed an agreement that they would combine their separate efforts into the ***IFD Library***, to produce a single terminology database that they would share between themselves for mutual benefit.

Following the IAI buildingSMART conference held September 2006 in Lisbon, Portugal that included a two day workshop on *IFD*, the Construction Specifications Institute, Construction Specifications Canada, buildingSMART Norway, and the STABU Foundation (the Netherlands) established a partnership to share unified terminology libraries, developed under ISO 12006-3, as a structure for a multi-national, controlled *Dictionary* of construction terminology.

In 2009, the Partners approached buildingSMART International (bSI) and requested that the *IFD Library* become a part of the bSI organization. At the bSI meeting in London, the Executive Committee (EC) accepted the request and recognized the *IFD Library* Group as a Group within the bSI reporting to the EC. Since this time, integration of *IFD Library* into bSI has progressed with plans underway to transfer the *IFD Library* Intellectual Property to bSI and establish bSI as the principal in agreements to embed *IFD* in applications. At its September 2010 meeting the bSI EC proposed the renaming of *IFD Library* to *buildingSMART Data Dictionary* to fit in with the renaming of the *IFC* standard to *buildingSMART Data Model*, and the *IDM* standard to *buildingSMART Processes*. Integration of *IFD* financials, websites, IP and Agreements to bSI is scheduled to be completed by the end of 2011.

Establishing bSI as a home for the *Data Dictionary* is seen as a critical step by the founding Partners and one that will encourage widespread adoption and use of the *Dictionary* both as a result of its integration with the other buildingSMART standards and through the stability its inclusion within buildingSMART International represents to firms that would commit to its use in applications and databases.

(Readers note: Throughout this document, IFD, IFD Library, buildingSMART Data Dictionary and Data Dictionary are used interchangeably.)

Relevance to Users

In order for a real free flow of information to occur, three factors need to be in place:

1. The format for information exchange (Digital Storage Model),
2. A specification of which information to exchange and when to exchange the information (Process Model), and

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3. A standardized understanding of what the information you exchange actually is (Terminology Library).

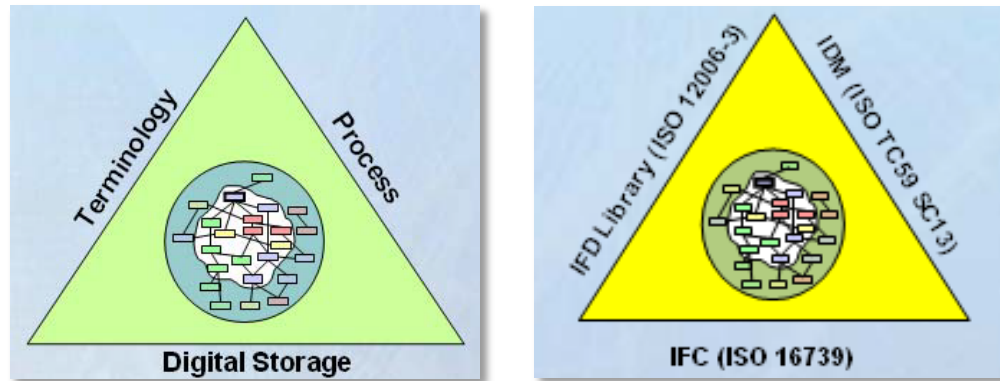


Figure 2.10-1 – Interoperability through Standards, courtesy Jotne EPM Technology AS

Having these three fundamental components in place allows for a true computerized interoperability between two or more information exchanging parties. This approach has been used with success in other industries, most notably the oil and gas industry, to support application and data interoperability.

Relationship between IFC, IFD, IDM and MVD

The open international *IFC (buildingSMART Data Model)* standard defines an exchange format for information related to a building and its surroundings. The up-coming release of version 2x4 of the *IFC* standard will include facilities to exchange GIS (Geographic Information System) data, (e.g. where the building is located and information about surrounding buildings) and facilities to tag all information with a globally unique identifier (GUID). With this added functionality the *IFC* will provide a computer understandable format in which all relevant building information can be exchanged between two parties. The *IFC* allows various data to be exchanged in various ways. If a receiver of information wants to be sure they can utilize the information received, the sender and receiver need to agree on exactly which information to exchange, and using the *IFC* model to structure exchanges provides a common platform for establishing this agreement.

The aim of the Information Delivery Manual (IDM) (*buildingSMART Processes*) and Model View Definition (MVD) is to specify exactly which information is to be exchanged in each exchange scenario and how to relate it to the *IFC* model. For example an architect designing a building needs to be sure that they receive information from the structural engineer about which walls and columns are load bearing and which are not. At the same time the structural engineer needs to know the function of each of the spaces in the building in order to calculate the right design loads for the structure. IDM along with MVD explains the exchange scenario in plain text for human readability, as well as in a computer interpretable way to enable implementation of automatic checks and validations in computer applications. Continuing the example, the engineer can run a quick test through a computer based on

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the requirements established in the *IDM/MVD* to verify that the architect has sent enough information to get started on the work.

In order to automatically verify the information in an exchange process (as described above) the information often needs to be detailed further than the general level of detail available in the *IFC* model. For example, if an architect wanted to supply information about the type of materials in the beams and columns this would be done in *IFC* using a plain text string. Even if all of words are spelled correctly there is no guarantee that the receiving application will understand exactly what this text string means. And if a different language, dialect or form of the word is used there is no reliable way to achieve verification. Ideally the computer should be able to understand even this type of information in the *IFC* formatted information received. This is typically the scenario addressed in semantic searches on the web but in order to automatically interpret the semantics, the semantic needs to be described first. The International Framework for Dictionaries (*IFD*) (ISO 12006-3) buildingSMART *Data Dictionary*) together with the upcoming version of the *IFC* standard, 2x4, provides a means to make this possible. In this way *IFD* is a supplement to *IFC*.

IFD is an open terminology standard, where concepts and terms are semantically described and given a unique identification number. This allows all the information contained in an *IFC* exchange format to be tagged with a Globally Unique ID (GUID). The architect can then input the materials in any language supported by *IFD*, while the receiver can view the data in the same or any other language supported by *IFD*. Both the creator and the viewer have confidence that the name is accurate and appropriate to their language. Likewise, a synonym or plural form of a name of a material can be correctly understood by the receiving application, as long as the correct GUID is given. While strings like names and descriptions are exchanged in textual form and used by humans, the underlying GUID is used by the computers.

IFD Library and International Standards

IFD Library, (*IFD* is an acronym for the International Framework for Dictionaries), is, in simple terms, a standard for a terminology database. The concept for the *IFD Library* is derived from internationally-accepted standards that have been developed by the International Organization for Standardization (ISO) and the International Construction Information Society (ICIS) subcommittees and workgroups from the early-1990s to the present. The ISO committee TC59/SC13/WG6 developed the standard now known as *ISO 12006-3 – Framework for Object oriented Information Exchange* upon which *IFD Library* is based.

ISO 12006-2 and OmniClass™

The related standard was set out in International Organization for Standardization (ISO) Technical Report 14177 - Classification of information in the construction industry, July 1994. This document was later established as a standard in ISO 12006-2: Organization of Information about Construction Works - Part 2: Framework for Classification of Information. This standard is the basis for OmniClass, the comprehensive classification system being developed in North America by CSI/CSC and industry working

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groups. *OmniClass* consists of 15 tables classifying the built environment and processes used to create it. *OmniClass* is being balloted as a part of the U.S. National BIM Standard.

In the building industry, material suppliers, specification writers, cost engineers and many others recognize the formats, terminology, and concepts included within *OmniClass*. As a result, these names and the corresponding numbering from these tables are already being used in many cases to organize the systems and databases that store, retrieve, and analyze all manner of facility related information. Use of all of the *OmniClass* tables is anticipated to grow with the demand for structured access to and reports containing BIM information. But classification has some limitations when it is used exclusively as a system to organize (store) data. Classification is hierarchical, and as a result is difficult to extend in a consistent way that is discoverable by others. In addition, classification also has no explicit rules for implementation, so that systems and users can implement it in different ways. Reliance on matching the name or numbers can be problematic if any errors are introduced through input or by differences in use.

IFD Library working with classification systems (such as *OmniClass*) can address these limitations by assigning each concept a unique GUID, and defining which classifications apply to the concepts. Because each term has a GUID in *IFD*, it can be referenced and understood unambiguously by computer applications. *IFD* exists as a web service and has classification included as part of the definition of terms, as a result, the terms, relationships and corresponding GUIDs can be accessed in a consistent way by all users. Thus, *IFD* along with a 12006-2 based classification system like *OmniClass*, enables users to continue accessing and viewing data using familiar classifications, while ensuring that the data can be reliably associated with processes and documents commonly used and understood in practice.

ISO 12006-3 and ICIS

ICIS (International Construction Information Society) members are organizations that specialize in the delivery of 'data' for the construction industry around the world.

Early in the 1990s, ICIS members attempted to standardize on classifications that could become a world standard. These discussions led to the formation of the ISO 12006-2 standard, upon which Uniclass (UK) and *OmniClass* (North America) classifications are based.

ICIS members later realized that classification in itself did not sufficiently guarantee that data could be reliably exchanged, especially for things which could be classified in two or more ways. Solving this problem led to a focus on the 'names' of things and on the ability to store and retrieve those names in computers without dependence on classification. This realization occurred shortly before the landmark 1999 ISO meeting with other organizations that were also realizing the importance of terminology to the reliable exchange of information.

ICIS members with experience developing their own terminology databases, and experience in the depth of detail required to store and organize construction data, participated in the working group that developed the ISO 12006-3 standard.

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ISO 12006-3 and ISO 15926 (EPISTLE)

EPISTLE is a *Dictionary* development used in the oil and gas industry that has a similar top level structure to ISO 12006-3. While *IFD* and EPISTLE share much of the same concepts and have the same core structure, the initiatives are different. Where *IFD* only defines types of things, EPISTLE also stores instances or individuals of things. Entries in *IFD* would be types of doors, while an instance of a door in a particular building project would be established using *IFC*. *IFD* does not aim to hold such individual records. *IFD* will hold all *classes* or *types of concepts* that in turn can be used to identify individuals. In other words *IFD* holds the templates while *IFC* (or other standards and compliant databases) are used to fill them.

Relevance to the National BIM Standard

The National Building Information Model Standard (NBIMS) will require terminology and classification agreement to support model interoperation. *OmniClass* is the recommended classification system for use in identifying information types in exchanges standardized in NBIMS. *IFD Library* complements *OmniClass* by providing definitions and relationships for the items classified and a mechanism to make them explicit and persistent through the application of a GUID for all terms. Entries in the *OmniClass* tables can be explicitly defined in the *IFD Library* once, and reused widely enabling reliable automated communications between applications – a primary goal of NBIMS.

To provide this potential benefit, the *IFD Library* will need to become an integral part of exchange standards within NBIMS. To demonstrate the potential, a pilot project in conjunction with one of the previously developed or developing exchange standards needs to be conducted. The search is underway for a candidate project. The cumulative effect of using *IFD Library* will be a comprehensive shared and openly available *Data Dictionary* to support semantic interoperability in North America and other regions, as the *Dictionary* is adopted by other buildingSMART chapters around the world. The NBIMS Terminology committee will work with the North American *Data Dictionary* members, CSI and CSC, to achieve this vision over subsequent versions of NBIMS.

Data Dictionary Development

Development of the *IFD Library* is in two primary areas - content and technology. With the recent release of the *IFD API 3.0*, the technology platform is solid and the efforts of the *IFD Library* Group are shifting to Content development.

Data Dictionary Status - Content

Content within *the Data Dictionary* are of two basic types of Concepts:

1. Subjects (Terms) – something that can be distinguished from other things and that can be recognized as such, and is represented by a name. In the *bSDD*, a subject is distinguished as an object (tangible or intangible), where objects are defined by formal characteristics.

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2. Characteristics (Properties) - concepts that cannot be defined using other concepts; their meaning is provided through a description. Characteristics are distinguished into the following types (in alphabetic order): Behavior, Environmental influence, Function, Measure, Property and Unit.

Concepts are related to other concepts through objectified relationships. Relationships are collected into contexts based on how they came into the library and where they came from. Concepts can relate to other concepts in multiple contexts. For example, the concept Door might have the following relationships to other concepts depending on the context in which it is being viewed.

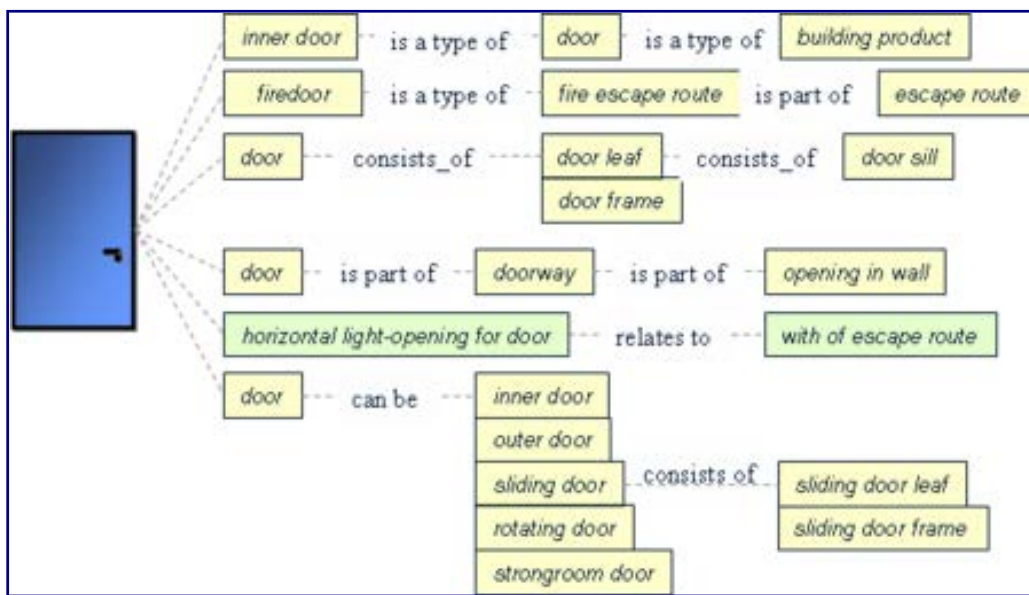


Figure 2.10-2 – Concepts and Relationships, courtesy Lars Bjørkhaug and Håvard Bell, *IFD in a Nutshell*, IFD Developers wiki, www.IFD-library.org

All concepts are assigned a Global Unique Identifier (GUID) by the *Data Dictionary* to allow them to be readily identified and reused by applications. One goal of the *Data Dictionary* is to resolve duplicates so that multiple entries with the same or similar meaning are not created. Processes and procedures for achieving the common use of terms across multiple contexts are in place and continually being refined to help those using the *bSDD* to efficiently search for similar terms already in the library.

The following graphic illustrates how a subject (window) can be described by a set of characteristics in *bSDD*. The relationship between a concept and its characteristic can also be captured in a context allowing the relationship between the particular use of a subject and its properties in that use to be captured.

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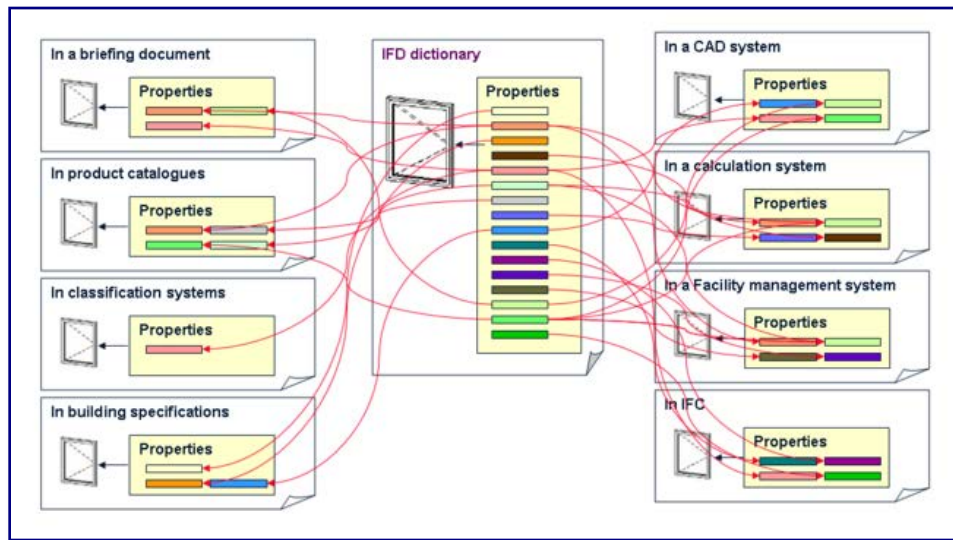


Figure 2.10-3 – *IFD as a Mapping Mechanism*: courtesy Lars Bjørkhaug and Håvard Bell, *IFD in a Nutshell*, *IFD Developers wiki*, www.IFD-library.org

As stated earlier, it is important to note that the *Data Dictionary* is a database of names, and not a database of individual items. The *Data Dictionary* defines the names for types of objects and the properties that describe them. It does not hold data about those objects like a product database might. This is illustrated by Figure 2.10-4.

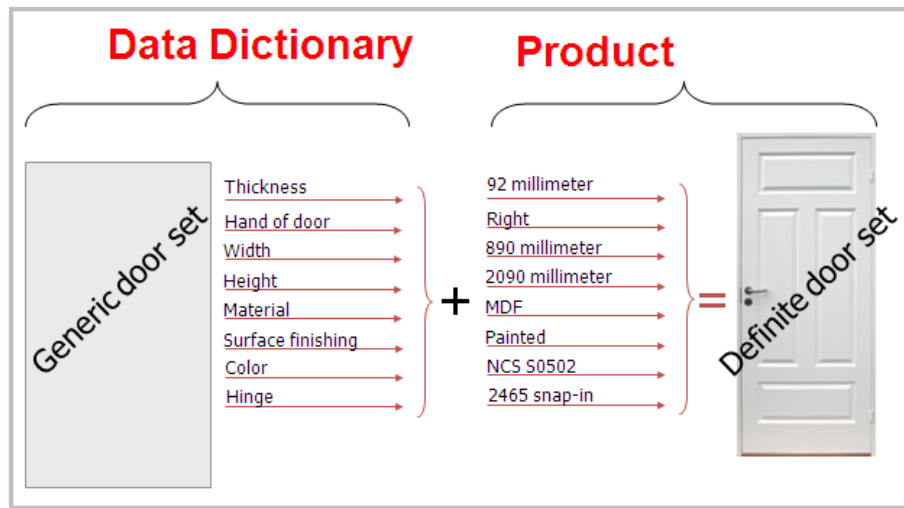


Figure 2.10-4 – *IFD as a Type Library*: courtesy Lars Bjørkhaug and Håvard Bell, *IFD in a Nutshell*, *IFD Developers wiki*, www.IFD-library.org

In application, *Data Dictionary* would be used to establish the term *door set* and what it means once, through a description and a set of relationships to properties that describe its characteristics. To utilize

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the *Dictionary*, a product manufacturer or application developer looking to provide or use information about a door could reference the GUID for door set. This reference would give that user access to the associated properties defined in the *Data Dictionary*. By both parties referencing this agreed metadata (the data provider and the user), the application and the product database could locate and exchange information with semantic agreement in place.

Currently both the Norwegians and Dutch have created terminology in the *Data Dictionary*. The Dutch are leading a project to harmonize the existing terms in the Dutch and Norwegian contexts. As new projects are initiated the goal is to expand the content available while at the same time making use of terms already in the *Data Dictionary* to the greatest extent possible so that a shared global and multilingual *Dictionary* can be created. The Group members have agreed that any terms entered into the *Data Dictionary* must be accompanied by an international English translation to facilitate connection to equivalent concepts in other languages.

Norwegian content development is focused on what is required to exchange building product information between manufacturers, product data providers and applications. Thus far they have prepared product type and property data for 6 domains and are working on another 10. CSC is beginning a project to adapt these to fit construction practices in North America and make them available for use here. The domains that Norway is working on that will eventually be adapted for use in North America are:

In North America, plans are to assign classification to all entries being added to or used from the *Data Dictionary* using *OmniClass*. This will identify and relate concepts that have been assigned a persistent definition, to the classification systems commonly used to structure documents and applications.

Product	Status
Timber	Completed
Insulation	Completed
Sheeting	Completed
Flooring/Floor covering	Completed
Windows	Completed
Doors	Completed
Roofing and cladding	In Process
Steel	In Process
Aluminum	In Process
Masonry	In Process
Roofing membrane	In Process
Foil	In Process
Concrete	In Process
Stairs	In Process
Fireplace	In Process
Cupboards, closets etc.	In Process
Equipment and hardware accessories	In Process
Others	In Process

Data Dictionary Status - Technology

The core of the *Data Dictionary* system is an object oriented database, written in the EXPRESS data modeling language and hosted on EPM Technology’s EDM Server™. Although the EDM Server is a proprietary product and thus requires payment of licensing fees for its use to EPM, all data are stored and manipulated using the ISO originated EXPRESS standard (ISO STEP 10303-11). The database currently resides on one physical server in a well-guarded and maintained datacenter. The *IFD* MG has agreements in place with EPM that include payment for use of EDM Server. As *Data Dictionary* is used,

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these costs will be passed on to licensees through a licensing fee for applications that embed use of *Data Dictionary* in their processes. More information about this is available in the *IFD Library* business plan available through <http://buildingsmart.com/standards/ifd/>.

A standard web service based approach is utilized to communicate with the library independent of the actual technology chosen for the database in a way more suited for application developers. A set of software objects and methods that use the objects enabling software to pass information to and from the database are defined. These objects and methods fit into a normal object oriented programming setting and can thus be easily utilized from within an application. The Application Programming Interface (API) is clearly versioned through its access point, so newer versions of the API can be provided in parallel with the old.

An offline option will also be available where the entire library will be located on the local disk of the application. The data will be accessible through the same objects and methods as for the Web Service. In addition, it will be possible for the application, when online, to download the latest version of the library, and thus stay up to date as often as needed.

The web service API and offline API will enable any application to access the library. The set of objects and methods defined in the API, greatly simplify accessibility to the database. The web service API is in its third release and is accessible at www.buildingsmart.com/standards/ifd. Applications that use the API, input tools (Batch Input Manager and PropertyLizer) and a browser (Browsalizer, Figure 2.10-5), have been developed and are available from the *Data Dictionary* website. The tools have been developed in the .Net framework and a .Net toolkit that encapsulates many of the common functions needed to access and implement queries on the Library is also available. More information and access to the tools is available on the *Data Dictionary* website. In addition, Catenda, a Norwegian technology consulting firm and STABU the Dutch MG member have also developed tools that access the API for their own uses.

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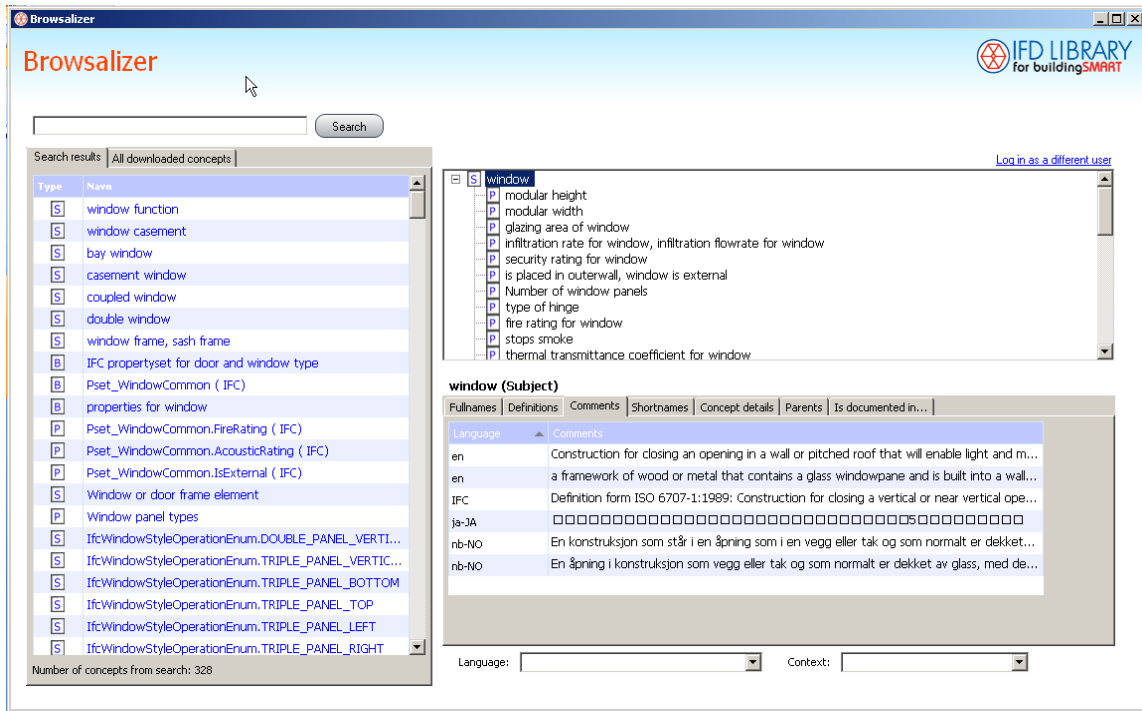


Figure 2.10-5 – IFD Library Content Browser – Browsalizer, available at www.buildingsmart.com/standards/IFD

Data Dictionary Status - Projects

The *Data Dictionary* MG members and Affiliate organizations have a number of projects underway that are starting to address working with the *buildingSMART Data Dictionary* and integrating it with the *IFC* model to support interoperability. Projects are underway in North America, Netherlands and Norway that are focused on expanding content and implementing the *bsDD*.

Content expansion projects are focused on:

- Identifying building products and their properties (Norway)
- Introducing a comprehensive construction ontology (Netherlands)
- Developing controlled *Dictionary* of terms used in designs and specifications (North America)
- *Adapting* terms developed in another country (North America)

Implementation projects currently underway are focused on:

- Searching for products to match design model requirements (Norway)
- Searching reference data (Norway)
- Mapping BIM objects to cost data (Norway)
- Mapping BIM objects to specifications (Norway and Canada).

More information about projects and the organizations pursuing them can be found on the *Dictionary* web site. Information about initiating a project using the *Dictionary* is also available there.

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References and Links

Additional information about the *IFDLibrary/buildingSMART Data Dictionary* and access to the developer's wiki can be found at www.buildingsmart.com/ifd or by contacting Roger Grant, *IFD* Group Secretary (rogerigrant@gmail.com or rgrant@csinet.org).

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National BIM Standard - United States™ Version 2

3 TERMS AND DEFINITIONS

Chapter 3.1 Introduction to Terms and Definitions

The terms and definitions provides the National Building Information Modeling Standard-United States (NBIMS-US) Version 2 core vocabulary extracted and defined by almost all authors in various BIM subject matter areas.

BIM is an evolving process and will continue to mature. The core vocabulary is not exhaustive, and associative terms may require the reader to explore related topics and their definitions outside of NBIMS-US. Common industry terms may vary slightly in definition. Specialized terms intended for machine interpretation should not vary to encourage and facilitate data definition standards.

NBIMS-US terms and definitions are a “living document” that will continue to evolve as BIM becomes more ubiquitous in the Architecture, Engineering, Construction, Owners and Operators (AECOO) domain. Suggestions for the inclusion of future terms are strongly encouraged.

Term	Acronym	Definition
Accuracy		How close to the truth the information is: is the accuracy of the information known and does it meet requirements? It is important to determine both the level of detail and the level of precision expected at various points in the project process. Clearly the “build it first digitally” approach requires a very complete and very precise model for all systems included before the project enters physical construction. However, this is not the level of accuracy required in conceptual design. Some organizations, such as the U.S. Coast Guard, have defined levels of model detail required at project milestones based on the UniFormat levels.

Administrative metadata		Metadata used to manage the information and includes such fields as: intellectual property status, file format, file size, creating system, archiving date, archiving expiration date, and archiving refresh interval.
Associated General Contractors of America	AGC	Associated General Contractors is a trade organization.
AGCxml	AGCxml	A suite of XML schemas for exchanging construction project information between software applications used by facility owners and AEC firms.
Application program interface	API	API defines the proper way for a developer to request services from that program.
Association		Used to tie information and processes with data objects. An arrowhead on the association indicates a direction of flow, when appropriate.
Avoidance costs		Costs incurred to prevent or minimize the impact of technical interoperability problems.
Best practices		Techniques, methods and processes that provide consistent results superior to those achieved by other means.
BIM deliverables		Information (in numerous formats) that may be required by contract or agreement to be submitted or passed to another party.
BIM goals		Objectives used to define the potential value of BIM for a project and for project team members. BIM goals help to define how and why BIM will be used on a project or in an organization.
BIM process		A generic name for the practice of performing BIM. This process can be planned or unplanned. The BIM process may also be referred to as the BIM execution process or the BIM project execution process. The BIM project execution planning process suggests diagramming the BIM process using process maps.

BIM process maps		A diagram of how BIM will be applied on a project. The BIM project execution plan proposes two levels of process maps: BIM overview map and detailed BIM use process maps.
BIM project execution plan (BIM PxP) or (PxP)	PxP	A plan for the results from the BIM project execution planning process. This document lays out how BIM will be implemented on the project as a result of the decision of the group.
BIM project execution procedure		A process for planning the execution of BIM on a project. It consists of four primary steps: 1) identify BIM goals and BIM uses, 2) design BIM project execution process, 3) develop information exchanges, 4) define supporting infrastructure for BIM implementation.
BIM use		A method of applying building information modeling during a facility's life-cycle to achieve one or more specific objectives.
Bit preservation		Process by which one can ensure that a file is not changed or corrupted and can be handled by techniques such as checksum or digital signatures.
Building information model	BIM	A digital representation of physical and functional characteristics of a facility.
buildingSMART International	bSI	An initiative of the International Alliance for Interoperability to accelerate achieving the dynamic and seamless exchange of accurate, useful information on the built environment among all members of the building community throughout the life-cycle of a facility.
Business process mapping notation	BPMN	An industry standard for modeling business processes as sequences of activity flows, data flows, and message flows within organizational lanes. These symbols are used in information delivery manual (IDM) representations.

Capability maturity model	CMM	A framework of 11 dimensions used to score a project or an organization's ability to produce a minimum BIM.
Certification testing		Certification testing is a process for testing software's conformance with a given IFC release specification and its subsets, defined as so-called views. The aim of the certification testing is to promote quality in IFC implementations and demonstrate to end-users that the software passing the certification implements the IFC specification in a consistent way, hence being able to exchange IFC product data with other certified software unambiguously.
Characteristic (property)		Concepts that cannot be defined using other concepts; their meaning is provided through a description. Characteristics are distinguished into the following types (in alphabetic order): behavior, environmental influence, function, measure, property, and unit.
Clarity or Consistency		Clarity or Consistency represents clear and shared definitions: do creators and users of information use the same codes and terms with the same meaning? Is information received from different sources consistent in terms of naming, units and relationships? Be thorough about developing and enforcing standard terminology.
Classification		Hierarchical organization of related information.

Completeness		How much of the required information is available: is the full content of each information package supplied? Is all the required information routinely created by the project team in their normal course of activities, or do they need to do something special? Another issue here is that an information package may be generated by multiple organizations and/or in multiple phases. Thus the handover is not a single deliverable, but two or more deliverables that must be merged in some fashion to create the required information package.
Component		List of all scheduled and required building assets located within space.
Concept		As defined in IFD, a concept is described both by a set of names and definitions in multiple languages and also by relating a concept to other concepts.
Configuration control		Information that moves through a project as its status changes. For example, a drawing may start as “Issued for comment” change to “Issued for construction” and be updated to “As built.”
Connection		Logical connections between components.
Constraint		In BIM planning, one or more owner performance requirements that must be met.
Construction Operations Building information exchange	COBie	COBie is an information exchange specification for the life-cycle capture and delivery of information needed by facility managers. COBie can be viewed in design, construction, and maintenance software as well as in simple spreadsheets. This versatility allows COBie to be used on all projects regardless of size and technological sophistication.
Context		A context, in IFD, is a grouping of relationships that exists between concepts.
Coordinate		Bounding boxes for spaces, lines, or points.

Cost of organizing information		The cost incurred to obtain the information and make it available for use: Is the information supplied in a form and format that means the cost of maintaining it throughout the life of the asset has been minimized? What about the costs to manage and assure the quality of the information handovers during the project process? Information management may be a new cost item for many organizations. It is important that business managers understand that there is a cost to this activity when they determine project staffing and fees.
Cost schedule		A time frame for the tracking of a project cost elements following standard project specifications.
Data exchange		The process of taking data structured under a source schema to transform and restructure into a target schema, so the target data are an accurate representation of the source data within specified requirements and minimal loss of content.
Data object		A mechanism to show how data is required or produced by activities. They are connected to activities through associations.
Data richness		The data must be of the level of detail to support the intended use of the BIM. The level of data for a concept BIM will be different from that of a design BIM or construction BIM.
de facto standards		Formats that may have originated with a single vendor but have been made publicly available and are supported by multiple vendors and products.
de jure standards		Standards maintained by an official standards organization, such as International Organization for Standardization (ISO) or International Telecommunications Union (ITU).
Delay costs		Costs incurred when interoperability problems delay completion of a project or the length of time a facility is not in normal operation.

Deliverables		The physical information in an information handover.
Descriptive metadata		Metadata that identify and describe the information with fields such as creator, title, subject matter, responsible organization.
Design-Bid-Build		A project delivery method where the owner procures a design and bid package from an AE professional, then utilizes competitive bidding to obtain a price from contractors for all required work to build the project per the project's drawings and specifications. The owner then selects the contractor, typically based on the lowest responsible bid.
Design-Build projects (See also, Integrated project delivery)		A project delivery method where one firm, typically the Contractor, is responsible for the quality of design and construction. This includes fast-track means and methods and promotes an integrated project delivery (IPD) approach from the project's inception until final completion.
Detailed BIM use process maps		A comprehensive BIM process map that defines the various sequences to perform a specific application of BIM or BIM uses. These maps also identify the responsible parties for each process, reference information content, and the information exchanges, which will be created and shared with other processes.
Dictionary (Data Dictionary)		A dictionary is used to define names. A dictionary of construction terminology defines the use of a particular name (such as, type or property) in a consistent manner.
Electronic business extensible markup language	ebXML	Electronic business using extensible markup language is a modular suite of specifications that enables enterprises to conduct business over the Internet.
Element		A major component, assembly, or construction entity part which, in itself or in combination with other parts, fulfills a predominating function of the construction entity.

Event		An occurrence in the course of a business process. Three types of events exist, based on when they affect the flow: start, intermediate, and end.
Exchange requirement	ER	A non-technical description of the information needed by a business process to be executed, as well as the information produced by that business process.
EXPRESS		A data modeling language standardized as ISO 10303-11.
Extensible markup language	XML	Extensible markup language (XML) is a set of rules for encoding information in machine readable form that emphasizes simplicity, generality, and usability over the Internet.
Facility		Compression of IFC representation for project, site, and facility.
Facility management	FM	Facilities operations and maintenance encompasses all that broad spectrum of services required to assure the built environment will perform the functions for which a facility was designed and constructed.
Floor		Vertical levels including foundation and roof; exterior site areas.
FM handover model view definitions		The basic FM handover view defines the general requirements for design applications to enable the handover of facility management information.
Format registry		Identifies all file formats stored in the archive and their properties, and automates the assignment of preservation strategies
Functional part	FP	An information handover in sufficient technical detail for software implementation
Gateway		Used to control the divergence and convergence of sequence flow, a gateway can also be seen as equivalent to a decision in conventional flowcharting.
General Services Administration	GSA	United States General Services Administration

Global unique identifier	GUID	Unique identification number generated and assigned by a computer
Green Building XML	bXML	An XML schema developed by Green Building Studio, Inc. to facilitate the transfer of building information stored in CAD building information models, enabling integrated interoperability between building design models and a wide variety of energy analysis tools.
Group		A group represents a category of information. This type of grouping does not affect the sequence flow of the activities within the group. The category name appears on the diagram as the group label. Groups can be used for documentation or analysis purposes.
Handover plan		A documented process that results in providing an information quality management framework that describes the information handover in terms of scope, contents, constraints, coding, timing, and procedures.
ifcXML	ifcXML	An XML representation of the IFC EXPRESS model developed by the International Alliance for Interoperability.
Implementation plan		Implementation requires the alignment of work processes and software tools to produce and deliver the required handover information. The greatest efficiency will be achieved when the handover process is integrated with the information creation process. This will provide a streamlined flow of information.
Industry foundation class	IFC	IFC is a neutral and open specification that is not controlled by a single vendor or group of vendors. It is an object-based file format with a data model developed by buildingSMART to facilitate interoperability in the building industry, commonly used format for BIM.

Industry Foundation Class	IFC	Data elements that represent the parts of buildings or elements of the process and contain the relevant information about those parts. IFCs are used by computer applications to assemble a computer readable model of the facility that contains all the information of the parts and their relationships to be shared among project participants.
Information		Data referenced and utilized during the process of creating and sustaining the built environment
Information delivery manual	IDM	A standard for processes specified when certain types of information are required during the construction of a project or the operation of a built asset. It also provides detailed specification of the information that a particular user (such as, architect or building services engineer) needs to provide at a point in time and groups together information that is needed in associated activities: cost estimating, volume of materials, and job scheduling are natural partners.
Information exchange	IE	Information passed from one party to another in the BIM process. The parties involved should agree upon and understand what information will be exchanged. These are often in the form of deliverables from a process that will be required as a resource for future processes.
Information packages		Facility information required by each step in the information strategy process
Information quality		An information quality management framework describes the information handover in terms of scope, contents, constraints, coding, timing, and procedures.

Information strategy		In the general buildings sector there appear to be at least four different and effective information strategies: 1) owner strategy to optimize facility life-cycle value; 2) owner strategy to improve project delivery; 3) consultant or contractor strategy to improve project delivery; 4) supply chain strategy.
Information Technology Infrastructure Library	ITIL	Program that provides a set of best practice approaches to information management
Integrated project delivery	IPD	A collaborative approach to a project's execution that brings AEC professionals, trade workers, suppliers and fabricators together early in the project to facilitate informed decision making for project design and delivery optimization that may utilize a federated BIM model for clash detection.
International Framework for Dictionaries	IFD	A library that is, in simple terms, a standard for a terminology database. The concept for the IFD library is derived from internationally accepted standards that have been developed by the International Organization for Standardization (ISO) and the International Construction Information Society (ICIS) subcommittees and workgroups from the early 1990s to the present.

International Organization for Standardization	ISO	World's largest developer and publisher of international standards. ISO is a network of the national standards institutes of 162 countries, one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system. ISO is a non-governmental organization that forms a bridge between the public and private sectors. Many of its member institutes are part of the governmental structure of their countries, or are mandated by their government. Other members have their roots uniquely in the private sector, having been set up by national partnerships of industry associations. Therefore, ISO enables a consensus to be reached on solutions that meet both the requirements of business and the broader needs of society.
Internet protocols		Methods by which data are sent from one computer to another on the Internet.
Interoperability		Ability to manage and communicate electronic product and project data between collaborating firms and within individual companies' design, construction, maintenance, and business process systems.
Job		Project management, safety, and other job plans, with associated resources
Lane		A sub-partition within a pool and will extend the entire length of the pool, either vertically or horizontally. Lanes are used to organize and categorize activities.
Lean construction		An initiative that identifies and attempts to eliminate the seven forms of waste: correction, over-production, motion, material movement, waiting, inventory, and processing.
Leadership in Energy and Environmental Design	LEED	Standard American-accepted benchmark for the design, construction, and operation of high performance green buildings

Life-cycle views		A complete life-cycle does not need to be implemented at this point. NBIMS recommends the data should be maintained in interoperable formats that allow for future life-cycle use.
Metadata		Metadata is a component of data which describes the data. It is data about data.
Mitigation cost		Costs of activities responding to interoperability problems, including scrapped materials costs
Model view definition	MVD	MVD is the standard methodology and format for documenting the software implementation requirements for standard IFC based data exchanges. MVD is structured to into two main divisions: 1) non-technical division to model exchange requirements for end-users and 2) a technical division for software developers.
OmniClass™		OmniClass™ is a comprehensive system consisting of 15 tables for classifying the entire built environment throughout the full project life-cycle.
Open Standards Consortium for Real Estate	OSCRE	A not-for-profit, membership funded, neutral consortium that exists to facilitate collaboration on standardised data exchange.
Overview map		A high level BIM process map that illustrates the relationship between BIM uses, which will be employed on the project.
Pool		acts as a graphical container for partitioning a set of activities from other pools
Practice guidelines		Practice guidelines are content that aids a project team or organization in the implementation of the information exchange standards.
Process		A generic term for work or activity an entity performs and is represented by a rectangle.
Process map	PM	An overview of the handover process, describing its objects and the phases in a project at which the business process is expected to be relevant and identifies all the sub-processes.

Product		Component or assembly of components intended for permanent incorporation into a facility or construction entity.
Proprietary format		The format created by specific software applications such as CAD, word processing, or BIM programs.
Reference information		Structured information resources (enterprise and external) that assist or are required to accomplish a BIM use.
Reference standards		Existing industry standards that are developed, managed, and accepted by other organizations. They are included in NBIMS-US V2 so that they can be easily referenced in BIM information exchanges.
Resource		Required materials, tools, and training
Roles or Disciplines		Minimum BIM includes the sharing of information between disciplines and documentation of the BIM's intended uses.
Schema		Structure of information. XML schemas express shared vocabularies and allow machines to carry out rules made by people. They provide a means for defining the structure, content, and semantics of XML documents in more detail.
Semantic interoperability		The ability of computer systems to communicate information and have that information properly interpreted by the receiving system in the same sense as intended by the transmitting system.
Sequence flow		Used to show the order (predecessors and successors) in which activities will be performed in a process.
Service life		The statistical mean time between target mechanism failure as reported by appropriate authority and confirmed with appropriate confidence intervals.
Space		Slab to slab volumes within the perimeter; designated site volumes
Spaces by function		Basic units of the built environment delineated by physical or abstract boundaries characterized by their function or primary use

Spatial capability		The facility need not yet be spatially located, as this is a higher-level goal to be considered a minimum BIM.
Spatial program validation	SPV	SPV is an open, IFC-based BIM information exchange that enables designers and building owners to assess the performance of a building design in satisfying spatial program requirements defined by the owner of the building.
Specification		A formal description of what software and hardware should do, but not necessarily how the tasks should be accomplished. Specifications typically include verification techniques and conformance testing to ensure candidates are technically correct, or able to be iteratively modified to solve new or expanding problems in the architecture, engineering, contractor, owner, operator (AECOO) domain.
Standard practice		Practice guidelines are content that aids a project team or organization in the implementation of the information exchange standards.
Structural metadata		Metadata that describe the internal structure of the information and relationships between its components
Structured information form		Data in a structured form that are machine-interpretable without human intervention
Subject		Something that can be distinguished from other things and that can be recognized as such, and is represented by a name. In the bSDD, a subject is distinguished as an object (tangible or intangible), where objects are defined by formal characteristics.
Syntax validation		A process to define and verify the arrangement, parameters, and values in a data set conform to specified requirements
System		Sets of components providing a service
Type		Types of equipment, products, and materials
Unstructured information form		Data that cannot be machine interpreted

Usability		Can the information be organized and presented differently for different users? For example, a cost estimator or specification writer views facility information much differently than the design engineer who created it. Are there multiple copies or versions of this information? If so, is there a master copy from which the others are derived? With BIM, there is frequently a considerable difference in the way the design team models the building compared to how the construction team models it. For example, the designers may model a large slab as a single object. The contractor may model it as a number of smaller slabs, defined by his pours. One way to handle these differences is to have the contractor, assuming he is involved during design, provide his objects for the design team to incorporate into the model. The second approach is to create a second construction model. This would then require some way of referencing the design model to ensure maintenance of design intent.
United States Green Building Council	USGBC	A non-profit U.S. based organization dedicated to sustainable building design and construction that are the developers of the LEED building rating system.
Validation		The process of ensuring an NBIMS work product or a process conforms to defined user needs, industry requirements, and specifications, by following a system of quality assurance or testing a statistically relevant set of samples.
Validator		A computer program or web service to check the syntactical correctness of code, documents, or specifications. For example, ensuring there are no broken links.
World Wide Web Consortium	W3C	The central international standards organization for the World Wide Web, also abbreviated WWW or W3.
W3C requirements		Mandatory or necessary conditions and prerequisites to ensure compliance with W3C exchange rules and protocols.

Work result		Construction result achieved in the production stage or by subsequent alteration, maintenance, or demolition processes, and identified by one or more of the following: 1) the particular skill or trade involved; 2) the construction resources used; 3) the part of the construction entity which results; 4) the temporary work or other preparatory or completion work which results.
XML schema		The structure of an XML encoding that defines the elements, attributes, hierarchy, namespaces, data types, and default or fixed values. XML schemas are written in XML and created to be extensible in future iterations.
Zone		Sets of spaces sharing a specific attribute



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4 INFORMATION EXCHANGE STANDARDS

Chapter 4.1 Introduction to Information Exchange Standards

This section includes documents that outline information exchange standards through process modeling, information delivery manuals (IDM), and their correlating model view definitions (MVD) developed to guide information exchange protocols which have been tested and documented for the following applications:

- Construction Operations Building Information Exchange (COBie)
- Design to Spatial Program Validation
- Design to Building Energy Analysis
- Design to Quantity Takeoff for Cost Estimating

Information exchange occurs at many different levels and stages from building design through to construction. Projects utilizing BIM enabled applications are particularly in demand of an integrated information exchange because of the need for centralization of information, which are in various formats both in modeling and team coordination practices, and interoperability of the applications for efficient exchanges. This section of NBIMS-US will grow as more portions of the building process are outlined in formats of IDM and MVD to form coordinated standard methods and guides for better information exchanges.



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4 INFORMATION EXCHANGE STANDARD

Chapter 4.2 Construction Operations Building Information Exchange – Version 2.26

General Information

Introduction

The Construction Operations Building information exchange (COBie) is a life-cycle information exchange format describing the spaces and equipment within a facility. The primary COBie exchange occurs at construction handover; however, efficiencies will be gained by using COBie throughout the life-cycle whenever information about spaces and equipment need to be exchanged. Owner’s criteria management tools can export space and equipment program data in COBie Format as part of requests for proposals. Building Information Modeling software exports COBie data during design. During construction, web- and pen-based software captures the progress of the project in real-time providing real-time as-built progress information. At project handover the information can be automatically consumed by software used by facility managers. When kept updated, such information provides as maintained models of building information.

Technically speaking, COBie is the U.S. implementation of the internationally recognized Facility Management Handover Model View Definition (MVD). The FM Handover MVD is the first internationally recognized MVD for the exchange of non-geometric building information. Additional information about COBie may be found on the Whole Building Design Guide. A complete description of the COBie project is provided as file attached to this ballot.

COBie is not a specific product or software solution. COBie is implemented in commercial software to allow the users of that software to transfer the information from one phase of a project to another without having to repeatedly recapture that same information, as is the case in the capital facilities industry today. As a buildingSMART alliance project, COBie is based upon the Industry Foundation Class (IFC) model. COBie information may be found in one of three formats, the IFC STEP Physical File Format (IFC SPFF), ifcXML, and SpreadsheetML. Readers of this ballot may already be familiar with a common software program using SpreadsheetML, Microsoft Excel™. Although COBie data can be viewed in commonly used spreadsheet software, the focus of COBie is not a software product or program, but a

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common method for moving building information through the project life-cycle. The use of the COBie spreadsheet is but one of many different programs that can be used to process COBie data.

The objective of the international project upon which COBie is based is “to improve the life-cycle building information interoperability using commercially available releases of Building Information Modeling (BIM) planning, design, construction, and commissioning software and the Computer Aided Facility Management (CAFM) and Computerized Maintenance Management System (CMMS) applications used in facilities management” [1]. COBie implements the buildingSMART international Facility Management Handover MVD and includes the business rules required in the United States. A general description of the United States COBie project may be found on the Whole Building Design Guide’s COBie website [2].

Since COBie's first release at the National Academies of Science in Washington, DC in July 2008 [3], there have been six (6) public demonstrations of COBie's implementation in commercial software produced in the United States and internationally. A May 2011 presentation entitled "COBie Fact or Fiction" provides an overview of what is contained in the proposed COBie standard and how this information may streamline contracted information exchange processes throughout the project life-cycle [4].

An essential element of this life-cycle concept is that rather than create a new electronic process to reproduce the existing, failed, process to deliver boxes of paper documents, the job of creating a COBie deliverable falls to the party contractually responsible for originally creating that information. Information about building spaces and equipment is required at many different stages of the project. The delivery of COBie information during the project simply requires changing the format of existing contracted deliverables. Depending on the nature of the exchange a full, or partial, the COBie file can be delivered in lieu of previously required paper documents. COBie implementation does not require the creation of new legal theories related to design collaboration. COBie simply replaces current exchange in paper-document forms with exchanges of electronic documents.

Business Case

COBie eliminates duplication of information about facility spaces and equipment throughout the facility life-cycle. A fully populated COBie data set contains the minimum requirements for the transfer of construction project information at beneficial occupancy to the facility manager. From the design-team’s point of view COBie is simply a report of room data sheets and scheduled products and equipment from the design BIM. Subsets of the COBie model capture COBie data during planning, design, construction, and commissioning stages to streamline the delivery of spatial and equipment-related building information. The overall description of the business case may be found on the Whole Building Design Guide’s COBie website [2].

A precise description of the business case may be found in technical reports, related websites, and professional and academic publications used to document the development effort. The first report

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describes the development of COBie in 2006 [5]. The second report validates COBie's potential application at U.S. Army installations [6]. The next set of information, the Life-Cycle information exchange (LCie) model, demonstrates the use of appropriate COBie sub-sets throughout the entire facility life cycle [7][8]. A model of the expected cost and benefit that can be obtained from the use of COBie during the project life-cycle (according to the LCie specification) is currently under development at the Pennsylvania State University under a contract from the National Institute of Building Sciences [9]. The resulting “COBie Calculator” will evaluate the estimated savings of a COBie-based vs. document-centric process against individual projects or entire building programs.

Information Exchange Development Process Description

COBie was developed utilizing a spiral software engineering process. In such an approach, an iterative process is used that begins with requirement definition and proceeds through development and testing. Each spiral gathers additional information that needs to be considered in future requirements. Such projects are able to asymptotically approach an accurate solution more rapidly than trying to achieve a complete solution in a single long-duration development step. The spiral approach also assists those developing the project to clearly identify what should be reasonably included, and not included, in each spiral development round.

The first round of this spiral began in 2006 when the National Aeronautics and Space Administration and the White House Office of Science and Technology Policy provided funding to the U.S. Army, Corps of Engineers, Engineer Research and Development Center, Construction Engineering Research Laboratory, to evaluate the requirements for electronic (in lieu of paper) facility handover documents. These requirements were translated into software specifications for COBie 1.0. COBie 1.0 was demonstrated by commercial software vendors in July 2008 [3]. An essential part of this demonstration was the use of an automated tool to assess compliance of submitted files against formatting requirements and compliance with North American business rules. During the meeting contract specifications clearly identifying how COBie could be implemented in current design and construction contracts were presented. A key result of this meeting, coming from participating software vendors, was that the COBie requirements should be reviewed and approved by the international buildingSMART alliance (then International Alliance for Interoperability) community.

Following this first round, feedback from those participating in several public “COBie Challenge” events helped to refine the COBie specification. These events lead to the completion of the second round of spiral development, in Dec 2009, with the simultaneous Challenge and buildingSMART international pre-certification event [10]. The public release of the Facility Management Handover Model View Definition reviewed by the buildingSMART chapters in the United Kingdom, German-speaking, and North America published the proposed international MVD [1]. The production of this internationally recognized format, the first internationally recognized format for the open standard exchange of non-geometric building

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information, was accomplished to directly respond to software companies' recommendation that COBie, as a potential solution to an international problem, be recognized internationally.

In addition to widening COBie to an international audience, the second round of the spiral development process focused on the use of COBie in practice. In this round, pilot projects began to identify specific users' and software-companies' feedback. Based on these improved requirements, COBie version 2.26 was produced. Version 2.26 was a major simplification and consolidation of the spreadsheet transformations required to produce the FM Handover MVD. While the underlying standard, the FM Handover MVD, did not change, the COBie spreadsheet format for version 2.26 was a more streamlined and easy to use presentation with SpreadsheetML (the XML spreadsheet specification for MS Excel).

One of the changes presented in COBie 2.26 supports the use of COBie in situations where team members need to include project- or customer-specific extensions to COBie. Specifically, three methods to extend COBie were included in the specification. First, the generic classification method used in COBie, noted in the "Referenced Standard" section of this ballot, could be replaced with any proprietary taxonomy. Second, attributes required for specific COBie objects could easily be extended through the creation of generic property sets for all of those types of objects. Finally, the delivery of required property sets (held in the COBie. Attributes worksheet) could be defined and enforced. These customizations go beyond out-of-the-box commercial software supporting COBie; however, with these extensions users of COBie may extend taxonomy, object properties, and specific attributes to reflect the requirements of specific types of buildings, owners, or other needs.

An essential step in the development process was the concurrent development of a light-weight model server toolkit used for transforming, merging, reporting, and checking on IFC SPFF, ifcXML, and SpreadsheetML versions of COBie data [11]. This toolkit is provided free of charge through AEC3 UK [12]. An essential innovation in bimServices was the use of ifcXML as an intermediate transformation format. To go from IFC to COBie formats, an IFC SPFF file is translated to ifcXML, and then the ifcXML is transformed to SpreadsheetML. Through the intermediate step, XML Cascading Style Sheet transformations can be utilized to deliver model subsets, reports, schedules, forms, and web pages directly from the building information contained in the COBie ifcXML file. Reports provided with bimServices include the tools needed to assess format compliance and compliance with data quality requirements contained in the COBie specification. The pattern is reversed to translate a COBie file into an IFC SPFF file.

The Extensible Style Sheet Language Transformations (XLST) used to map COBie to ifcXML are provided free of charge with the bimServices toolkit. This is important since this transformation may be directly implemented in software that does not inherently support IFC SPFF, but still meet the requirements for the IFC FM Handover MVD. While the bimServices toolkit is not part of the COBie standard, without this type of toolkit, it would not be possible to translate between lightweight BIM formats such as spreadsheets and the underlying open international IFC-based standards upon which COBie is now

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based. Other toolkits under development include the open source bimServer.org effort, the XBIM program, EcoDomus, and Onuma Systems COBie checking program.

It should be noted that the SpreadsheetML format is the proprietary XML representation of Microsoft Excel Spreadsheets. Tests in 2011 have demonstrated the potential of this toolkit to produce a single spreadsheet XML acceptable to both Microsoft Excel and Open Office applications. Open Office spreadsheet XML documents are expected to be essential to the adoption of COBie outside North America. One example of a non-US standardization effort is the review of COBie by the British Standards Institute underway at the time of the drafting of this document.

An additional reference is being developed at the time of the submission of this ballot that will assist users to adapt COBie to their specific project process. This reference file is called the COBie Responsibility Matrix. This matrix will allow project teams to determine (1) the specific company and Point of Contact necessary for the delivery of each cell in the worksheet, (2) the specific requirement for the delivery of COBie data at each phase of the project, and (3) the customized data specification for each COBie cell to document cases where limitations between software might truncate data. As an amendment to this matrix the mapping between COBie worksheet cells and IFC objects will be extracted from the XSLT file contained in the bimServices toolkit

Stakeholder Representation

User representatives

As the project began in 2006 it was determined that all COBie meetings would have an open attendance policy and were to be held on “neutral ground” at the National Institute of Building Sciences. These policies were adopted to ensure that any interested party could participate. The preface of the 2007 project report acknowledges those persons who in 2006 directly contributed to the initial requirements of COBie and participated in a review of the initial exchange requirement discussions [5]. These individuals are listed below in alphabetical order.

- Robert Bank, U.S. Army, Headquarters, Corps of Engineers
- Lynn Blair, LY Blair & Associates
- Robert Bradford, Burns and McDonnell
- William Brodt, U.S. National Aeronautics and Space Administration
- Beth Brucker, U.S. Army, Corps of Engineers, Engineer R&D Center
- Robert Clarke, U.S. Department of State, Overseas Buildings Operations
- Phillip Columbus, U.S. Army, Asst. Chief of Staff for Installation Management
- William Dunn, U.S. Navy, Naval Facilities Engineering Command
- Bill East, U.S. Army, Corps of Engineers, Engineer R&D Center
- Alan Edgar, Graphic Systems
- Lyle Fogg, U.S. Army, Department of Public Works, Fort Lewis, WA

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- Andy Fuhman, Open Standards Consortium for Real Estate
- Jerry Harbison, U.S. Army, IMCOM, West Region
- Glenn Hunt, Peripheral Systems, Inc.
- Tom Hinshaw, U.S. National Aeronautics and Space Administration
- Steve Hutsell, U.S. Army, Corps of Engineers, Fort Worth District
- Julie Jones, U.S. Dep. of Defense, Washington Headquarters Services
- George Korte, Total Resource Management
- James Lovo, U.S. Army, Headquarters, Corps of Engineers
- Jim Sims, Instep Software
- Ned Shepherd, U.S. Army, Corps of Engineers, Rock Island District
- Jene Swalley, U.S. Depart of State, Overseas Buildings Operations
- Toby Wilson, U.S. Army, Corps of Engineers, Engineer R&D Center

Since 2006 it is likely that over one hundred United States and international project stakeholders could be identified as having participated in the discussion and identification of user requirements for COBie. Recent featured presentations at Construction Industry Institute [13] and the Construction Owners Association of America [14] demonstrate the breadth of outreach on this effort and level of interest in the user community for the results of the work published to date. Stakeholders have even begun to create social media to support COBie implementation via websites such as LinkedIn and various blog postings.

Conversation records and electronic mail from all open meetings and non-deliberative internal communication may be made available under a one-time-request from the Chair, National Building Information Modeling Standard - US.

Technical Team

The broad technical team developing COBie includes members of both the core technical team and representatives of software companies who have made suggestions for improvement in the logical and physical organization of the COBie data requirements since 2006. The core Technical Team is listed below.

- Bill East, U.S. Army, Corps of Engineers, Engineer R&D Center
- Nick Nisbet, AEC3-UK
- Thomas Liebich, AEC3-DE
- Jeff Wix, AEC3, AEC3-UK

Implementing software companies

Twenty (20) commercial software firms have participated in developing the requirements for and implementations of COBie. All public information about these companies and their implementation of COBie is published under the COBie Means and Methods webpage [15]. The selection of the specific life-cycle sub-set of COBie data applicable to each software system, based on that product's target market,

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is also provided on the COBie Means and Methods website. The list is provided below in alphabetical order:

- ARCHIBUS
- AssetWORKS
- Autodesk
- Bentley
- Design Data Systems
- EagleCMMS
- FaME
- Granlund
- Graphisoft
- Instep
- LATISTA
- MicroMain
- Nemetcheck
- Onuma System
- Project BluePrint
- SMB
- EcoDomus (tested under the name TOKMO)
- TMA
- VELA
- Vizelia

Companies are only listed above if their claims of COBie Compliance have been publically verified in accordance with the established procedures, described later in this ballot. There are, however, other firms that may be COBie compliant but cannot be listed as having passed a “COBie Challenge.” There are two types of such firms. The first are those who have announced their use of COBie without having followed the established procedure including external scrutiny and open public presentation. The second are those firms who have stated that consultants are able to provide customized add-on interfaces to produce or consume COBie-compliant data.

Since COBie Challenges are inherently open, public events, all software companies are welcome to participate in future COBie Challenge events such as those regularly scheduled at the National Institute of Building Sciences Annual Conference (in Washington, DC December/January) or the National Facilities Maintenance and Technologies meeting (in Baltimore, MD March).

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Reference Standards

A variety of potential standards were reviewed for best match against the COBie business case needs starting in 2006. These are listed below, in alphabetical order. The analysis of each of these standards and their ability to meet the required business requirements may be found in the COBie technical report published in 2007 [5].

- aecXML
- Construction Specifications Institute
- International Alliance for Interoperability (now buildingSMART international)
- MIMOSA
- National Institute of Building Sciences
- National Institute of Standards and Technology
- OSCRE

Following the review of these standards, it was determined that the COBie format would be based upon the Industry Foundation Class (IFC) Model - ISO/PAS 16739:2005. The internationally recognized "FM Handover MVD" is the further sub-specification of the overall ISO standard required to represent COBie [1].

Two other standards are suggested defaults within the COBie specification. The first is the Construction Specification Institute's OmniClass taxonomy [16]. Since there will be variation in the classification required on a owner or regional basis, contracts requiring COBie should be explicit about the classification scheme required.

The second is the harmonized ASTM/ANSI space measurement standard. If something other than this default is utilized, the measurement algorithm used must be explicitly stated as required in the COBie specification.

Information Delivery Manual

Process Maps and Exchange Requirements were posted on the Norwegian IDM website [17] in accordance with IAI expected practice in 2006. Rather than reproduce these documents, or their updates, in this ballot submission the COBie information originally posted in 2006 from the IDM Wiki is referenced [18] or repackaged and referenced below from the buildingSMART alliance portal site.

Process Maps

COBie process maps from 2006 derived from the original study are reproduced as one set on the buildingSMART portal [19]. The list of these initial process maps is shown below:

- (PM-1) Identify Submittal Requirements
- (PM-2) Define Submittal Schedule

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(PM-3) Transmit Submittal (PM-4) Approve Submittal
 (PM-5) Install Equipment (PM-6.A) Commission Equipment (PM-6.B) Commission Equipment (PM-7)
 Provide Warranty (PM-8) Provide Spare Parts Sources
 (PM-9) Transmit Handover Information

These maps were developed using the MS Visio tool and saved as PDF files. The current best practice for buildingSMART international indicates that such maps are better created through using a tool that supports Business Process Modeling Notation (BMPN) [20]. The ultimate intention is that IDM processes described using the open standard BPMN may be used as form of “process management clip art” where later users could take snippets of existing process models (and associated exchange requirements) to streamline development of IFC standards.

Since the initial development of COBie process maps, a complete set of life-cycle deliverables have been created based on the exchange of COBie data at points during the project life-cycle where traditional projects would exchange paper documents. These contracted information exchange processes show how the use of COBie data throughout the life of the project streamlines the collection of facility handover information. Taken together these specifications are called the Life-Cycle information exchange (LCie) model [8].

Exchange Requirements

Exchange requirements were documented on the international IDM Wiki in April of 2006 [21]. The list of exchange requirement found under “Regional Developments > North America” is provided below.

(COBIE-ER-01) Exchange Project Handover – Project Wrapper
 (COBIE-ER-02) Exchange Project Handover – Floor Layout
 (COBIE-ER-03) Exchange Project Handover – Space Layout
 (COBIE-ER-04) Exchange Project Handover – Asset Catalog
 (COBIE-ER-05) Exchange Project Handover – Asset Location
 (COBIE-ER-06) Exchange Project Handover – Facility Service
 (COBIE-ER-08) Exchange Project Handover – Asset Transmittal
 (COBIE-ER-07) *intentionally left blank*
 (COBIE-ER-09) Exchange Project Handover – Asset Documentation
 (COBIE-ER-10) Exchange Project Handover – Asset Installation
 (COBIE-ER-11) Exchange Project Handover – Asset Parts
 (COBIE-ER-12) Exchange Project Handover – Warranty
 (COBIE-ER-13) Exchange Project Handover – Job Plan Constraints
 (COBIE-ER-14) Exchange Project Handover – Job Plan

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Functional Parts

Per the ISO standard for IDM, the components of the IFC model that are required to meet the exchange requirements are referred to as “functional parts.” The specification of Functional Parts for COBie is available through the buildingSMART portal [22] for the items listed below. The portal file also contains graphical representations of these relationships and the original COBie data dictionary and mappings to IFC that would eventually find their way into later MVD documents.

fp-set-warranty
 fp-set-project-context
 fp-set-person-and-organization
 fp-set-person
 fp-set-organization
 fp-set-address
 fp-select-date-time
 fp-represent-polyline
 fp-represent-cartesian-point
 fp-represent-bounding-box
 fp-relate-currency
 fp-nests
 fp-model-system
 fp-model-inventory
 fp-model-cost-schedule
 fp-model-cost-item
 fp-model-asset
 fp-model-actor
 fp-define-quantity
 fp-define-by-type
 fp-define-by-properties
 fp-control-service-life
 fp-control-maintenance-work-order
 fp-control-maintenance-schedule
 fp-control-maintenance-plan
 fp-contains-in-spatial-structure
 fp-associate-material
 fp-associate-document
 fp-associate-cost
 fp-associate-constraint
 fp-associate-classification
 fp-assigns-to-product

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fp-assigns-to-group
 fp-assigns-to-control
 fp-assigns-to-actor
 fp-assign-construction-resource-to-task
 fp-apply-owner-history
 fp-annotate-geometry
 fp-aggregates

Model View Definition (MVD)

MVD Description

The Model View Definition for COBie was originally documented in 2008 [23]. Based on the contribution of the international community, including buildingSMART chapters in the UK and Germany-German Speaking the Model View was updated in 2009 as part of the international pre-certification event for the FM Handover MVD. Information from the buildingSMART international Model Support Group/Implementers Support Group may be found here [1].

MVD Diagrams

- MVD Graphic Form, with Binding Concepts [24]
- MVD Tabular Form, with constraining business rules [25]

MVD Concepts

At the time of the development of COBie the description of IDM Functional Parts was thought to be equivalent to MVD Concepts. For the purposes of this ballot, please refer to section B.3 IDM Functional Parts for the information required in this section.

Conformance Testing

Testing Procedures

Testing against objective standards has been the hallmark of the COBie effort from the first demonstration in 2006 until today. As part of the process for each public presentation of COBie software implementation, objective standards for the evaluation of results were provided to participants and freely available objective testing software was utilized. The testing procedure has evolved from an initial effort to provide software quality control for participating vendors to now being a quality assurance process based on established models and file checking software. The current testing procedure takes one of two forms, depending on the need to produce or consume COBie files. Some software consumes COBie data and allows users to update that information, then produces downstream COBie files. These tools are required to undergo both COBie consumption and production testing.

Software consuming COBie information is checked to ensure that the set of information appropriate for the consuming software is actually imported and that the information relevant to that imported set of

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information has been correctly imported. The COBie files imported are the Duplex Apartment models found on the Whole Building Design Guide page for that testing event. The March 2010 example is the current standard for these testing files [26]. A checklist guides this quality assurance procedure, first accomplished by the vendor, and then re-checked by the designated analyst. The checklist for COBie consuming software is provided through the buildingSMART alliance portal [27].

In the current context of COBie, all software used prior to the facility management phase, first consume and then produce COBie data. Before December 2010 the testing of the production of COBie data was required to be accomplished and tested live before a national audience. Since December 2010 production of COBie files is accomplished as a quality assurance, and not quality control process. This means that the producer of the COBie file is required to:

- (1) Import the previous project phase information using one of three equivalent forms: STEP-Part21, ifcXML, or SpreadsheetML. For example, construction-oriented software would import the design phase COBie deliverable.
- (2) Update the information noted in the later project phase file using the commercial tool. For example, construction-oriented software, would update (among other things) product manufactures information and equipment installation dates.
- (3) Export COBie data using one of three equivalent forms: STEP-Part21, ifcXML, or SpreadsheetML.
- (4) Run the free bimServices COBie checking tool to determine compliance with the logical and business rules required by both the FM Handover MVD and the COBie specification.
- (5) Prepare materials for publication on the Whole Building Design Guide based on the requirements from the March 2010 COBie Challenge event. These materials include: the file that was imported, the file that was exported (in native and COBie format), the results of bimServices testing, software configuration guides, technical support points of contact, and a 15 minute presentation.
- (5) The designated COBie Challenge analyst reviews these materials for correctness. If the information is correct a recommendation is made to NIBS that the information on the new or updated software be added to the COBie Means and Methods page [15].

Repository of Vendor Results

All vendors' results are provided through the COBie Means and Methods [15] pages. The results are provided in a common format so that the results from different vendors may be compared.

Vendor results include files produced by programming, design BIM software, construction, and commissioning software. Vendor results include the native file, SPFF File, COBie File, and analysis results. For consumers of COBie data, files containing self-tests and review of COBie import data, as described above, are also provided. Configuration and/or setup documentation is also provided by the vendor.

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Repository of Proof of Vendor Conformance

All vendors' results are provided through the COBie Means and Methods [15] pages. The results are provided in a common format so that the results from different vendors may be compared.

Ultimately the proof of vendor conformance is the ability of good software (that which meets COBie requirements) to be used well. Testing under a "COBie Challenge" provides only a simulation of the use of software to import or export COBie on a real project. As information becomes available regarding differences between "COBie Challenge" compliant software and the versions or configurations of software commercially available, the Means and Methods page [15] is updated to reflect the latest results.

Implementation Resources

Repository of Sample Models

The buildingSMART international's COBie event in 2009 required the use of a small reference file [28], however, for that first meeting all vendors were free to use a building model of their own choosing. The resulting submissions yielded files in three COBie data formats (STEP-Part 21, ifcXML, and SpreadsheetML). An additional rail yard maintenance facility was also provided for reference [29]. Authorization for the public release of the rail yard project was obtained in 2006.

COBie used several sets of models during its development. Public models may be found on the Whole Building Design Guide's COBie website [2]. As of March 2011 the examples provided on the COBie website are of a duplex apartment building. Authorization to publically release this model was received by its author in 2009. The duplex apartment building example is sufficiently small to allow users to see a single complete example. Another reason for the selection of the duplex apartment building project is that this model was used as part of the buildingSMART international pre-certification event (as described in a later in this document).

Example COBie files for different stages of the delivery of COBie information are provided as examples. These examples show the exchange of COBie information between major project phase changes: planning-design, design-construction, construction-commissioning, commissioning-operations. In addition, a blank COBie template is provided. An important aspect of this COBie template, as expressed by individuals looking to implement COBie, is that the complete set of classification and object identifiers required in the COBie specification are listed in the "pick-lists" worksheet.

As useful as the spreadsheet version of COBie is for users, information exchange standards are ultimately meant to be implemented by computer systems. From this point of view model repositories must have all needed physical models that implement the required data specification. For COBie, these physical models include not only SpreadsheetML, but also ifcXML and STEP-Part 21. The COBie submission to the NBIMS-US will be based on the combination of the STEP-Part 21 specification of the

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FM Handover MVD with business rules established by the COBie specification to allow use of FM Handover MVD within the context of US business practices.

Another public website associated with COBie is the Life-Cycle information exchange (LCie) project [7]. On this site a complete set of COBie-based information exchanges are provided for both the Duplex Apartment building and a 52,000SF Medical Clinic. Authorization to publically release redacted versions of this model was received by its owner in 2010. The information exchanges listed on this page demonstrate all three formats of COBie data (STEP-Part 21, ifcXML, and SpreadsheetML)

The ultimate international repository that should be used by all buildingSMART efforts, to ensure the widest possible collaborative effort, is an international repository for open standard models [30][31]. The intention of this repository is to provide the entire community with a rich set of models upon which to conduct tests and experiments. This repository follows several custom-purpose information exchange platforms used for specific certification events or to support specific project efforts.

Repository of Vendor Samples

Prior to the creation of the buildingSMART portal, a commercial forum tool was used. For the last four years the buildingSMART alliance portal [32] has been used to exchange these files. In the lead-up to testing events, the information contained in these folders is kept private. Following the testing event, the set of tested files and information is made public. Publically available information is provided through the COBie Means and Methods page [15].

The COBie Means and Methods pages [15], including the vendor repositories, provide details about the specific data each system has presented for testing under a COBie Challenge event. This information may be used by COBie users to evaluate various tools for compliance with contracted information exchange requirements.

Repository of Vendor Configuration Documents

Vendor configuration documents are a mandatory requirement of all COBie testing events, starting with the first event in 2008. All documents are posted on the buildingSMART portal under a folder for each vendor. Following a successful test these configuration documents are released with vendors sample files through a standard format through the COBie Means and Methods [15] pages.

Repository of User Implementation Tools

There are multiple types of user implementation guides serving different purposes. The guides required to effectively configure and use compliant software are provided under the vendor-specific pages of the COBie Means and Methods pages [15].

There are also a number of different types of resources required to support the implementation of COBie. The essential consideration to user implementation of information exchange standards is that such standards must be included as contract requirements. Even with the explicit specification of such

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requirements it is probable that without management supervision such requirements will initially be resisted or ignored. As a result a suite of user implementation materials must be provided to reduce the time required to learn about and implement COBie. All user implementation guides and materials, aside from those directly provided from software manufacturers may be found on the Whole Building Design Guide COBie website [2] and the international FM Handover MVD project page [1]. A list of implementation resources on these websites is provided below.

- sample design contract specifications
- sample construction contract specifications
- sample commissioning contract specifications
- sample building operator contract specifications
- templates and example models
- training - overview presentations
- training - detailed file descriptions
- frequently asked questions
- free model checking and reporting tools
- social networking site for peer-to-peer support

Two of the most important resources that can be used by project teams to implement COBie is the sample specification [33] and the COBie Responsibility Matrix [34].

COBie Sample Contract Specification [33]

The COBie sample contract specification describes the required delivery of specific COBie data at specific design, construction, commissioning, handover, and facility operations. The exchanges identified in the specification mirror standard deliverables found in existing design-bid-build, and design-build contracts used in typical United States federal government Unified Facilities Guide Specifications. For each of these typical deliverables the responsibility for the completion of specific COBie worksheets and columns are provided. The choice to continue simultaneous paper deliverables along with the COBie file is left to the specifier and owner to determine.

At the beginning of the project, the delivery of COBie information is limited to room data sheets. As the project progresses the delivery of product and equipment schedules is added. During construction documents, installation, and commissioning information are delivered.

The COBie specification is the first performance-based specification for open-standard building information exchange in the United States. As such this specification is a significant departure from proprietary, technology-based Building Information Modeling specification used throughout the United States today. If this performance-based approach replaces today's proprietary, technology-based specification it is likely that the complete set of information technology systems used in the future will

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contain a common set of schema and structure, based on COBie, streamlining the capital-facility industry's global supply chain.

COBie Responsibility Matrix [34]

The COBie matrix currently focuses the first of three types of information needed to practically apply COBie to specific project teams, processes, and software platforms.

The first set of information provided as of July 2011 deals only with project team assignments. Typically COBie information is created in a process starting with the design and completing at handover. Since different parties will be responsible for different parts of the COBie file, the team needs to clearly assign the responsibility for each part. To assist in this task the "COBie Responsibility Matrix" was provided. The Matrix lists the names of the columns in each of the COBie worksheets. Assignments are made by color coding each column to identify who is responsible for that COBie data. If certain COBie columns or worksheets are not used, these can also be colored in to indicate that those worksheets are not required for that specific project. Ideally the team could meet through a webinar and, starting with the owner, proceed through the life-cycle of the project with each party taking responsibility for the portion of the COBie data that they will deliver. Saving the file in a PDF and distributing it at the end of the webinar will let the team refer back to the required assignments at any later time.

The second of the three parts of the COBie responsibility matrix, not yet completed as of the time of this second update to the COBie ballot, will help the team specifically define which worksheets are required for each type of COBie deliverable throughout the life-cycle. The default requirements for each of these exchanges may be updated based on specific contractual requirements for a specific project.

The third of the three parts of the COBie responsibility matrix, not yet completed as of the time of this second update to the COBie ballot, will help the project team translate data model information found in the COBie technical reports, published documents, and free bimServices transformations into a single location. This third worksheet will provide the COBie spreadsheet data dictionary, IFC 2.4 model mappings, and model mapping programming notes.

Repository of Cost/Benefit Analysis

The first COBie implementation report from 2008 [6] provided the first validated business case with strong endorsements from the Deputy Commander, Department of Public Works, Fort Lewis, WA and his staff. It was determined based on this study that COBie could save Ft. Lewis Department of Public Works one full-time data entry clerk and reduce by half the need for a full-time CADD operator.

Most recently, public meetings at the 2010 NIBS Annual Conference provided specific examples of benefits achieved through the use of COBie. In one dramatic statement from a hospital facility manager given a COBie case study presentation stated that what previously took 3 man-years to do they could now do in under 3 minutes.

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In order to support anecdotal evidence of the efficacy of COBie, Penn State University has been commissioned to complete an economic benefit calculator for COBie that was begun by the Engineer Research and Development Center. At the Dec 2010 NIBS Annual Convention and in March 2011 representatives of the Pennsylvania State University presented their efforts to develop the COBie Calculator [9]. The objective of this calculator will be to allow a company to assess the impact of transforming one or more of their existing business process from the current document-centric process to an information-centric process as defined by the information exchanges identified in the LCie specification. The COBie calculator will be provided free of charge following its release through a new buildingSMART alliance page. The COBie calculator represents a predicted effect of implementing COBie but the authors of this tool cannot be certain of its accuracy without testing. An upcoming COBie pilot effort jointly supported by NIBS, ERDC, and COAA will benchmark several existing processes and compare the results of their projects to the predicted results of the COBie calculator.

Revision Plans

Discussion of Ongoing Extensions

COBie began with the requirement to capture spatial and equipment information for the purpose of construction handover. Deployments of COBie to date encompass the entire solution space of the information included in the FM Handover MVD. An example of an area not currently covered by COBie extensions are the re-use of facility operations information to provide the complete set of as-operated facility information from one Operations and Maintenance service provider to another one. While this use case is very important and is the predominate requirement for the development of the FM Handover MVD in Germany, this case is not covered under the current COBie specifications, test sets, or software implanterers.

Another extension that is currently under discussion is a worksheet to identify “impacts” of building projects on owner’s and occupant’s health, safety, sustainability and/or environmental concerns. Another type of impact is economic impacts. Researchers have, for example, augmented COBie data files to evaluate the total cost of ownership of products and systems based on expected resource utilization, equipment efficiencies, and cost of operation. The identification of these impacts in a COBie “issue” worksheet is currently under consideration as a mandatory addition of COBie to support European Union countries requirements.

There are two uses of COBie that should be addressed in this sample ballot submission. The first is the extension to COBie that allows the support of product assemblies. This extension is directly part of the original COBie use case but was not implemented until a firm platform for off-the-shelf products had been defined and implemented in commercial off-the-shelf software. While the end-user result is clearly specified in existing contract documents, the software implementation of this extension has been the subject of debate among software vendors currently implementing COBie. The extension that planned

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for release in Dec 2011 will support the logical representation of components into assemblies such as electrical panel boards and air handling units.

The second use of COBie is to further specify the precise set of information needed for each of the exchanges leading up to the handover of the FM information. A project that defines each of these exchanges is called the Life-Cycle information exchange (LCie) [7]. LCie has defined a mini-model view definition for exchanges starting prior to the inception of a new project to the recycling of the facility [35]. Within this LCie framework there are several additional exchanges that bear noting.

Early in the project life-cycle, the required space functional requirements of a facility and the implementation of those requirements through design, construction, and project renovations can be captured within the COBie data format as a mini-MVD. This specification was originally described in 2007 as the Spatial Compliance information exchange (SCie) buildingSMART alliance project [36]. This information is now more clearly specified through the LCie project's Space Program deliverable specification [37].

As manufactured data becomes available during the design, specification and construction submittal process, LCie specifications demonstrate how such information may be directly used and merged within a COBie-compliant building model. The LCie specification for as-designed product requirements, manufacturer product submissions during the submittal process, and products approved through submittals have all been defined in the LCie project as mini-COBie specifications. These "mini-COBie" specifications provide both a light-weight, human-readable format and a mapping that defines the open, IFC-based standard for such exchanges. For more information on this project please consult the Specifiers Properties information exchange (SPie) project page [38].

It would be expected that additional uses of COBie to implement specific transactional exchanges, as opposed to the phase-change exchanges, that have been the focus of prior public COBie events, will be explored. An example of such an exchange would be the use of a mini-COBie view to update specific building elements to add equipment installation information or space condition. The LCie project has demonstrated that "survey-type" information may be exported from a building model to create worksheets that allow the simplified submission of updates applied directly to the building model. The modeling of these exchanges results in an as-built BIM simply by workers completing the jobs they complete today with one crucial difference. The difference is that rather than providing paper or web-form information the information the worker provides directly merges back into the owner's building information model.

Revision Cycle Planning

Following the inclusion of the logical and physical representation for assemblies such as electrical panel boards and air handling units there are no major revisions planned to the COBie format.

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There is an additional use planned that may require some future modification to the nature of COBie implementations. At this point, it is too early to determine if additional changes will be needed. COBie also contains the required logical and physical model needed to implement building information model checking routines. Several current research projects are utilizing the “issues” worksheet in COBie (that maps to ifcConstraint objects in IFC) to contain the definition of model checking rules. Through this self-referential device rule humans needing to check a specific COBie file, or mini-COBie file, will simply import the COBie file that contains the checking rules for that required COBie file subset. In the future checking engines may implement these rules to test the consistency of model checking algorithms.

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Change Log

2011-06-01 Original version submitted to NBIMS

2011-06-15 Updated based on responses from NBIMS Technical Committee

1. Verify all URL’s identified in the” G. REFERENCE” section
 - 1.1. All URL’s cited on dates updated to confirm each link was tested
 - 1.2. All URL’s reference information left in MS Word file to assist with transformation to PDF format prior to ballot updating.
 - 1.3. Reference [1] link updated to point to new URL
 - 1.4. Reference [9] bSa portal document number corrected
 - 1.5. References [10] [12] [14] word processing formatting kept URL from connecting, link recopied
 - 1.6. References [17] [18] the original international IDM web site is periodically down a note was added stating that all referenced documents have been copied to the bSa portal.
 - 1.7. References [21] [22] updated citations to clarify that these references point to documents on the bSa portal originally posted on the original international IDM website.
 - 1.8. Reference [24] [25] [28] documents copied from buidlingSMART-tech.org to bSa portal to enable use in NBIMS-US ballot without free login to buidlingSMART-tech.org. Provided references to original international website for those on the IFC Model Support or Implementers Support Groups.
 - 1.9. Reference [29] reference corrected and supplemental also reference provided

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2. Updated Content of Section B.1 to list the required Process Maps.
3. Updated Content of Section B.2 to list posted names of exchange requirements and new link to original content as posted on bSa portal.
4. Updated Content of Section B.3 to list all functional parts, rather than simply referencing the file.
5. Updated content of section C to list all three required sections and provide reference for section C.3 back to Functional Parts per NBIMS Technical Committee recommendation.

2011-07-26 Updated based on responses from NBIMS Working Group

1. In response to the (paraphrased) comment “add a section about providing COBie data from BIM”:

An improved description of the life-cycle delivery of COBie data from appropriate sources, including from design BIM software, have been provided in the following sections: Section A.4 Description, Section A.5 Business Case, and D.2 Repository of Vendor Results.

2. In response to the (paraphrased) comment “include a section on the COBie specification in three or four paragraphs”:

A description of the draft COBie specification is provided in some level of detail under section E.4 Repository of User Implementation Tools along with a description of the COBie responsibility matrix. New footnotes 33 and 34 were added to highlight those sections.

3. In response to the (paraphrased) comment “it would help to know what data is provided by what system”:

An additional paragraph indicating that the COBie Means and Methods pages provide detail examples of the worksheets and data fields provided under section E.2 Repository of Vendor Samples. Including that information directly would extend this ballot document unnecessarily when the information is available on the referenced location.

The COBie Responsibility Matrix will also provide a full mapping between the spreadsheet and IFC formats of the FM Handover MVD as noted in Section A.6.

4. In response to the (paraphrased) comment “please update the name of TOKMO to EcoDomus,” There also was concern that software not tested as part of a COBie Challenge result, i.e. the Onuma System Checker.

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The agreement made with the working group was to add an appropriate parenthetical statement citing EcoDomus when referring to the former TOKMO product. The checking software listed was highlighted as innovations resulting from existence of an open-standard building information exchange format. As a result the software listed there will remain as the software needs not be part of a COBie Challenge to be identified as demonstrating innovation. EcoDomus was added to the innovators utilizing their own checking tools per comment from Igor Starkov.

5. In response to the (paraphrased) comment “please proof-read the document again”:

The document will be reviewed one more time; however, limitations in time prohibit the application of experienced technical editors as is normally the case for published technical reports. It is recommended that NIBS technical editing staff be assigned to this ballot, if finally approved, prior to final publication.

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National BIM Standard - United States™ Version 2

4 INFORMATION EXCHANGE STANDARD

Chapter 4.3 Design to Spatial Program Validation

Introduction

Design to Spatial Program Validation (SPV) is an open, IFC-based BIM information exchange that enables designers and building owners to assess the performance of a building design in satisfying spatial program requirements defined by the owner of the building. An SPV analysis application loads the Building information Model (BIM) and the spatial program requirements and assesses the performance of the building model in satisfying the owner's requirements.

Several building owner organizations support and are beginning to use BIM exchange for SPV in their projects. These include: GSA, Statsbygg, and Senate Properties. Several software organizations have already implemented, or are now implementing support for the BIM information exchange in their products. These include: Autodesk, Beck Technologies, Bentley, Gehry Technologies, Graphisoft, Nemetschek, Onuma, and Solibri.

More information about this program can be found on the GSA BIM/4D/3D Program web site and in the GSA BIM Guide for Series 02 of their BIM program. More detail, including the Information Delivery Manual (IDM) and Model View Definition (MVD) can be found on the IFC Solutions Factory Website.

Information Exchange

As part of the NBIMS standard, this open, IFC-based information exchange and the products supporting it will improve the quality of design using BIM, but providing quantitative feedback to designers and owners about how a proposed design will satisfy the owner's needs. Buildings will be better because they fulfill their intended use more completely -- if this IFC BIM exchange is made a US standard.

IDM Submission Requirements

1. Process Maps - http://www.blis-project.org/IAI-MVD/IDM/GSA-001/PM_GSA-001.pdf
2. Exchange Requirements - http://www.blis-project.org/IAI-MVD/IDM/GSA-001/ER_GSA-001.pdf
3. Exchange Requirements Model Description - <http://www.blis-project.org/IAI-MVD/MVDs/GSA-001/Overview.pdf>

Chapter 4.3 – Design to Spatial Program Validation

4. Exchange Requirements Model - <http://www.blis-project.org/IAI-MVD/reporting/browseMVD.php?MVD=GSA-001&BND=Generic&LAYOUT=H>

For convenience, the ERM can be downloaded in PDF format from: [http://www.blis-project.org/IAI-MVD/Snapshots/GSA-001_ERM_\(SPV\)_Design_to_SpatialProgramValidation.pdf](http://www.blis-project.org/IAI-MVD/Snapshots/GSA-001_ERM_(SPV)_Design_to_SpatialProgramValidation.pdf)

MVD Submission Requirements

1. Model View Definition Overview - <http://www.blis-project.org/IAI-MVD/MVDs/GSA-001/IFC2x3.pdf>
2. Model View Diagrams - <http://www.blis-project.org/IAI-MVD/reporting/browseMVD.php?MVD=GSA-001&BND=IFC2x3&LAYOUT=H>

For convenience, the MVD can be downloaded in PDF format from: [http://www.blis-project.org/IAI-MVD/Snapshots/GSA-001_MVD_IFC2x3_\(SPV\)_Design_to_SpatialProgramValidation.pdf](http://www.blis-project.org/IAI-MVD/Snapshots/GSA-001_MVD_IFC2x3_(SPV)_Design_to_SpatialProgramValidation.pdf)

Implementation Specifications:

Each MVD concept in the MVD diagrams is hyperlinked to the Implementation Guidance for that concept. Simply click on the MVD Concept box in the diagrams (either online web pages or the PDF download) to link to the implementation specifications web page in your browser.

Software Implementation Requirements

Implementation Support

As described above, four vendors have already implemented support for SPV in 5 products, as part of their implementations supporting the Concept Design BIM 2010 (CDB-2010). CDB-2010 rolls together the requirements of four IDMs into a single composite MVD. Implementations began in September 2009. Vendors have been supported through the implementation process through a bi-weekly meeting in which questions are addressed, results are reviewed, and issues resolved. Implementing vendors and products include:

Exporting Applications:

- Autodesk – Revit 2012 and AutoCAD Architecture 2012
- Beck Technologies – Dprofiler
- Bentley Systems – Bentley Architecture (early version of IE)
- Gehry Technologies – Digital Project (early version of IE)
- Graphisoft – ArchiCAD 15
- Nemetschek – Vectorworks (early version of IE)
- Onuma – Onuma Planning System (early version of IE)

Chapter 4.3 – Design to Spatial Program Validation

Importing Applications:

- Solibri Model Checker + Spatial Program Validation Plug-in

Certification Test Program

Certification testing began in October 2009. We expect that all of these applications will be certified for correct support of SPV in 2011 (as currently defined). Certification testing is MVD concept-based, and takes the unit testing approach. This means that there are tests for each and every bit of data required by the MVD. These tests are specific enough to ensure that the IFC BIMs being exported by certified applications are absolutely consistent and can be predictably loaded and analyzed by any certified SPV analysis application.

Sample Certification Test Results Package – http://www.blis-project.org/IAI-MVD/testing/GSA-005/DProfiler_CDB-2010_TestResults_02-Jun-11_3.zip

This package includes:

- Submitted IFC BIM file
- Certification Test Results Summary Report
- Certification Test Results Detailed Reports – 37 of these – one for each high-level MVD Concept (e.g. wall, door, window)

Use of this Information Exchange in Industry Projects

Pilot Projects using SPV

- Van Buren Land Port of Entry - Use of SPV exchange in this project began in late 2010 and is expected to conclude successfully by end of summer 2011. The BIM authoring application is ArchiCAD 14 and 15. The SPV analysis application is the SPV plug-in for the Solibri Model Checker.
- O'Mahoney Federal Courthouse -- Use of SPV exchange in this project began in late 2010 and is expected to conclude successfully by end of summer 2011. The BIM Authoring application is Beck Technologies' dProfiler. The SPV analysis application is the SPV plug-in for the Solibri Model Checker.

SPV BIM Validation for end users

An online BIM Validation service is being developed and will be made public by end of 2011. This online service will enable end users to upload their IFC BIM to be checked for conformance to exchange standards defined by IDMs and MVDs. Checking IFC BIMs for conformance to the SPV information exchange will be supported by this service. Testing with Vendors has already begun.

Reference Standards

- Industry Foundation Classes (IFC) standard – see <http://www.buildingsmart.com/>

Chapter 4.3 – Design to Spatial Program Validation

- IFC Solutions Factory – tools for developing IDMs/MVDs – see <http://www.blis-project.org/IAI-MVD/>
- OmniClass Classification – see <http://www.omniclass.org/>

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4 INFORMATION EXCHANGE STANDARD

Chapter 4.4 Design to Building Energy Analysis

Introduction

Design to Building Energy Analysis (BEA) is an open, IFC-based BIM information exchange that enables designers and building owners to assess the projected energy use performance of a building design defined in a BIM. A BEA analysis application loads the Building information Model (BIM) and adds some additional Building Energy Modeling data, and runs a full building simulation of the energy that will be used by the building design.

In 2008, buildingSMART and the Open Geospatial Consortium led a large project in which an early version of this Information Exchange was used. Dozens of industry leading companies participated in the AECOO Testbed project, which demonstrated successful exchange of a BIM and Energy Analysis of that building design in an Energy Analysis application.

The primary drivers for the Testbed and subsequent development for this Information Exchange were several building owner organizations. These building owners supported this development because of the real need to improve energy efficiency in their buildings. These organizations are beginning to use BIM exchange for BEA in their projects. These organizations include: GSA, Statsbygg, Senate Properties. Driven by these organizations' BIM programs, several software organizations have already implemented, or are now implementing support for this BIM information exchange in their products. These include: Autodesk (Revit and AutoCAD Architecture), Bentley (during AECOO), DDS (DDS-CAD), Graphisoft (ArchiCAD), Beck (dProfiler), US Dept of Energy and Lawrence Berkeley National Lab (EnergyPlus), Granlund (RIUSKA), and Equa Simulations (IDA ICE).

More information about this program can be found on the GSA BIM/4D/3D Program web site and in the GSA BIM Guide for Series 05 of their BIM program. More detail, including the Information Delivery Manual (IDM) and Model View Definition (MVD) can be found on the IFC Solutions Factory Website.

Information Exchange

As part of the NBIMS standard, this open, IFC-based information exchange and the products supporting it will improve the quality of building design using BIM, by providing quantitative feedback to designers

Chapter 4.4 – Design to Building Energy Analysis

and owners about the energy a proposed building will use. Driven by this feedback and government incentives to improve energy efficiency, future buildings will be more energy efficient if this IFC BIM exchange is made a standard.

IDM Submission Requirements

1. Process Maps - http://www.blis-project.org/IAI-MVD/IDM/GSA-003/PM_GSA-003.pdf
2. Exchange Requirements - http://www.blis-project.org/IAI-MVD/IDM/GSA-003/ER_GSA-003.pdf
3. Exchange Requirements Model Description - <http://www.blis-project.org/IAI-MVD/MVDs/GSA-003/Overview.pdf>
4. Exchange Requirements Model - <http://www.blis-project.org/IAI-MVD/reporting/browseMVD.php?MVD=GSA-003&BND=Generic&LAYOUT=H>

For convenience, the ERM can be downloaded in PDF format from: [http://www.blis-project.org/IAI-MVD/Snapshots/GSA-003_ERM_\(BEA\)_Design_to_BuildingEnergyAnalysis.pdf](http://www.blis-project.org/IAI-MVD/Snapshots/GSA-003_ERM_(BEA)_Design_to_BuildingEnergyAnalysis.pdf)

MVD Submission Requirements

1. Model View Definition Overview - <http://www.blis-project.org/IAI-MVD/MVDs/GSA-003/IFC2x3.pdf>
2. Model View Diagrams - <http://www.blis-project.org/IAI-MVD/reporting/browseMVD.php?MVD=GSA-003&BND=IFC2x3&LAYOUT=H>

For convenience, the MVD can be downloaded in PDF format from: [http://www.blis-project.org/IAI-MVD/Snapshots/GSA-003_MVD_IFC2x3_\(BEA\)_Design_to_BuildingEnergyAnalysis.pdf](http://www.blis-project.org/IAI-MVD/Snapshots/GSA-003_MVD_IFC2x3_(BEA)_Design_to_BuildingEnergyAnalysis.pdf)

Implementation Specifications

Each MVD concept in the MVD diagrams is hyperlinked to the Implementation Guidance for that concept. Simply click on the MVD Concept box in the diagrams (either online web pages or the PDF download) to link to the implementation specifications web page in your browser.

Software Implementation Requirements:

Implementation Support

As described above, several vendors have already implemented support for BEA in their products, as part of their implementations supporting the Concept Design BIM 2010 (CDB-2010). CDB-2010 rolls together the requirements of four IDMs into a single composite MVD. Implementations began in September 2009. Vendors have been supported through the implementation process through a bi-weekly meeting in which questions are addressed, results are reviewed, and issues resolved. Implementing vendors and products include:

Chapter 4.4 – Design to Building Energy Analysis

Exporting Applications:

- Autodesk – Revit 2012 and AutoCAD Architecture 2012
- Beck Technologies – Dprofiler
- Graphisoft – ArchiCAD 15
- Data Design Systems – DDS-CAD

Importing Application:

- DOE/National Labs (LBNL, NREL, PNNL) – EnergyPlus
- Granlund Oy – RIUSKA
- Equa Simulations – IDA ICE

Certification Test Program

Certification testing began in October 2009. We expect that most of these applications will be certified for correct support of BEA in 2011 (as currently defined). Certification testing is MVD concept-based, and takes the unit testing approach. This means that there are tests for each and every bit of data required by the MVD. These tests are specific enough to ensure that the IFC BIMs being exported by certified applications are absolutely consistent and can be predictably loaded and analyzed by any certified BEA analysis application.

Sample Certification Test Results Package – http://www.blis-project.org/IAI-MVD/testing/GSA-005/DProfiler_CDB-2010_TestResults_02-Jun-11_3.zip

This package includes:

- Submitted IFC BIM file
- Certification Test Results Summary Report
- Certification Test Results Detailed Reports – 37 of these – one for each high-level MVD Concept (e.g. wall, door, window)

Use of this Information Exchange in Industry Projects

Pilot Projects using BEA

- AECOO Testbed Project – Use of BEA exchange in this project began in late 2008 and was completed in early 2009. The BIM authoring application was ArchiCAD 13. The BEA analysis Application was EnergyPlus. Results of the project were widely publicized by buildingSMART and the Open Geospatial Consortium.

Chapter 4.4 – Design to Building Energy Analysis

- Van Buren Land Port of Entry - Use of BEA exchange in this project began in late 2010 and is expected to conclude successfully by end of summer 2011. The BIM authoring application is ArchiCAD 14 and 15. The BEA analysis application is EnergyPlus.
- O'Mahoney Federal Courthouse -- Use of BEA exchange in this project began in late 2010 and is expected to conclude successfully by end of summer 2011. The BIM Authoring application is Beck Technologies' dProfiler. The BEA analysis application is EnergyPlus.

BEA BIM Validation for end users

An online BIM Validation service is being developed and will be made public by end of 2011. This online service will enable end users to upload their IFC BIM to be checked for conformance to exchange standards defined by IDMs and MVDs. Checking IFC BIMs for conformance to the BEA information exchange will be supported by this service. Testing with Vendors has already begun.

Reference Standards

- Industry Foundation Classes (IFC) standard – see <http://www.buildingsmart.com/>
- IFC Solutions Factory – tools for developing IDMs/MVDs – see <http://www.blis-project.org/IAI-MVD/>
- OmniClass Classification – see <http://www.omniclass.org/>

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4 INFORMATION EXCHANGE STANDARD

Chapter 4.5 Design to Quantity Takeoff for Cost Estimating

Introduction

Design to Quantity Takeoff for Cost Estimating (QTO) is an open, IFC-based BIM information exchange that enables designers and building owners to assess the quantities of materials and manufactured products in a building design, and by extension, to project the construction cost of that building design. A QTO analysis application loads the Building information Model (BIM) and a database of construction recipes. By taking measured quantities of the BIM objects, the application can project the construction cost.

In 2008, buildingSMART and the Open Geospatial Consortium led a large project in which an early version of this Information Exchange was used. Dozens of industry leading companies participated in the AECOO Testbed project, which demonstrated successful exchange of a BIM, followed by quantity takeoff and cost estimating in an analysis application.

The primary drivers for the Testbed and subsequent development for this Information Exchange were several building owner organizations. These building owners supported this development because of the real need to better assess projected construction costs during the design phase of their building projects. These organizations are beginning to use BIM exchange for QTO in their projects. These organizations include: GSA, Statsbygg, Senate Properties. Driven by these organizations BIM programs, several software organizations have already implemented, or are now implementing support for this BIM information exchange in their products. These include: Autodesk (Revit and AutoCAD Architecture), Bentley (during AECOO), DDS (DDS-CAD), Graphisoft (ArchiCAD), Beck (dProfiler), Tocoman (TCM QTO), Tokmo (during AECOO), and Digital Alchemy (IFC QTO).

More information about this program can be found on the GSA BIM/4D/3D Program web site and in the GSA BIM Guide for Series 07 of their BIM program. More detail, including the Information Delivery Manual (IDM) and Model View Definition (MVD) can be found on the IFC Solutions Factory Website.

Information Exchange

Chapter 4.5– Design to Quantity Takeoff for Cost Estimating

As part of the NBIMS standard, this open, IFC-based information exchange and the products supporting it will improve the quality of building design using BIM, by providing quantitative feedback to designers and owners about the energy a proposed building will use. Building design and construction in the US will be improved if this exchange is made a standard because building designs will become more efficient beginning in early stages of design

IDM Submission Requirements

1. Process Maps - http://www.blis-project.org/IAI-MVD/IDM/GSA-004/PM_GSA-004.pdf
2. Exchange Requirements - http://www.blis-project.org/IAI-MVD/IDM/GSA-004/ER_GSA-004.pdf
3. Exchange Requirements Model Description - <http://www.blis-project.org/IAI-MVD/MVDs/GSA-004/Overview.pdf>
4. Exchange Requirements Model - <http://www.blis-project.org/IAI-MVD/reporting/browseMVD.php?MVD=GSA-004&BND=Generic&LAYOUT=H>

For convenience, the ERM can be downloaded in PDF format from: [http://www.blis-project.org/IAI-MVD/Snapshots/GSA-004_ERM_\(QTO\)_Design_to_QuantityTakeoff.pdf](http://www.blis-project.org/IAI-MVD/Snapshots/GSA-004_ERM_(QTO)_Design_to_QuantityTakeoff.pdf)

MVD Submission Requirements

1. Model View Definition Overview - <http://www.blis-project.org/IAI-MVD/MVDs/GSA-004/IFC2x3.pdf>
2. Model View Diagrams - <http://www.blis-project.org/IAI-MVD/reporting/browseMVD.php?MVD=GSA-004&BND=IFC2x3&LAYOUT=H>

For convenience, the MVD can be downloaded in PDF format from: [http://www.blis-project.org/IAI-MVD/Snapshots/GSA-004_MVD_IFC2x3_\(QTO\)_Design_to_QuantityTakeoff.pdf](http://www.blis-project.org/IAI-MVD/Snapshots/GSA-004_MVD_IFC2x3_(QTO)_Design_to_QuantityTakeoff.pdf)

Implementation Specifications:

Each MVD concept in the MVD diagrams is hyperlinked to the Implementation Guidance for that concept. Simply click on the MVD Concept box in the diagrams (either online web pages or the PDF download) to link to the implementation specifications web page in your browser.

Software Implementation Requirements

Implementation Support

As described above, several vendors have already implemented support for QTO in their products, as part of their implementations supporting the Concept Design BIM 2010 (CDB-2010). CDB-2010 rolls together the requirements of four IDMs into a single composite MVD. Implementations began in

Chapter 4.5– Design to Quantity Takeoff for Cost Estimating

September 2009. Vendors have been supported through the implementation process through a bi-weekly meeting in which questions are addressed, results are reviewed, and issues resolved.

Implementing vendors and products include:

Exporting Applications:

- Autodesk – Revit 2012 and AutoCAD Architecture 2012
- Beck Technologies – Dprofiler
- Bentley Systems – Bentley Architecture (during AECO)O)
- Graphisoft – ArchiCAD 15
- Data Design Systems – DDS-CAD

Importing Applications:

- Tocoman – TCM QTO
- Tokmo – Cost Estimating
- Digital Alchemy – IFC QTO

Certification Test Program

Certification testing began in October 2009. We expect that most of these applications will be certified for correct support of QTO in 2011 (as currently defined). Certification testing is MVD concept-based, and takes the unit testing approach. This means that there are tests for each and every bit of data required by the MVD. These tests are specific enough to ensure that the IFC BIMs being exported by certified applications are absolutely consistent and can be predictably loaded and analyzed by any certified QTO analysis application.

Sample Certification Test Results Package – http://www.blis-project.org/IAI-MVD/testing/GSA-005/DProfiler_CDB-2010_TestResults_02-Jun-11_3.zip

This package includes:

- Submitted IFC BIM file
- Certification Test Results Summary Report
- Certification Test Results Detailed Reports – 37 of these – one for each high-level MVD Concept (e.g. wall, door, window)

Use of this Information Exchange in Industry Projects

Pilot Projects using QTO

- GSA - has stated their intent to use the QTO exchange in a pilot project before the end of 2011.

Chapter 4.5– Design to Quantity Takeoff for Cost Estimating

- Statsbygg – has stated their intent to use the QTO exchange in a pilot project before the end of 2011.

QTO BIM Validation for end users

An online BIM Validation service is being developed and will be made public by end of 2011. This online service will enable end users to upload their IFC BIM to be checked for conformance to exchange standards defined by IDMs and MVDs. Checking IFC BIMs for conformance to the QTO information exchange will be supported by this service. Testing with Vendors has already begun.

Reference Standards

- Industry Foundation Classes (IFC) standard – see <http://www.buildingsmart.com/>
- IFC Solutions Factory – tools for developing IDMs/MVDs – see <http://www.blis-project.org/IAI-MVD/>
- OmniClass Classification – see <http://www.omniclass.org/>

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5 PRACTICE DOCUMENTS

Chapter 5.1 Introduction to Practice Documents

The Practice Documents section of NBIMS-US V2 is a compilation of various resources that practicing professionals can use to guide their businesses and that owners can use to describe their BIM wants and needs. Documents in this section include practices that have been used successfully in various BIM projects. The list of documents is small, but this is an area of the NBIMS-US that it is anticipated will grow rapidly over time.

The documents in this section are valuable at a conceptual level for all BIM project team members. The project experiences in these documents should be used as guidance for future projects, but not without those practitioners committing to help the effort by feeding back to this effort lessons learned.

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5 PRACTICE DOCUMENT

Chapter 5.2 Minimum BIM – December 07, Revised May 2012

Introduction

The National Building Information Model Standard (NBIMS) is, by design, a standard of standards. Those who require specific information associated with the exchange of information at any time during a project's lifecycle may select those NBIMS standards that contain the information of interest. Formal or informal agreements between parties to provide standard information exchanges are used to implement these exchanges.

In this standard, the group of stakeholders in the BIM discussion is referred to as the Architect/Engineer/Constructor/Operator/ Owner/FM (AECOO/FM) community.

From the point of view of traditional vertical construction (e.g. office buildings), NBIMS Version 1 - Part 1 defines a minimum standard providing a baseline against which additional, developing information exchange requirements may be layered. For the purposes of defining a Minimum BIM, there are different use types and data complexity of a Minimum BIM, and different levels of technical capability and organizational maturity with BIM tools and processes. Use Types and Data Complexity can be viewed as:

- Conceptual
- Project
- Integrated Project Delivery
- Enterprise (Lifecycle) Integration

Many so called BIMs in existence do not meet the NBIMS definition of a BIM, since they are really only intelligent drawings, visualization tools, or production aides. The *NBIMS Version 1 - Part 1* defined minimum BIM and used a Capability Maturity Model to give the capital facilities industry a spectrum of tangible capabilities by which to determine the current maturity of a BIM. The Capability Maturity Model provided industry with higher levels on the spectrum as developmental goals.

The NBIMS vision is that stakeholders will use the CMM as a tool to plot their current location, while looking to more robust parts of the spectrum as goals for their future operations, and improve the performance of facilities over their full lifecycle by fostering a common, standard, and integrated

Chapter 5.2 – Minimum BIM – December 07, Revised May 2012

lifecycle information model for the capital facilities industry. Readers should recognize that the issue of capability maturity models requires additional work as described in the ‘Next Steps’ section below.

To meet the future needs of a more streamlined AECOO/FM community and build on existing best business practices, a Capability Maturity Model (CMM) has been developed for users to evaluate their business practices along a continuum or spectrum of desired technical level functionality. The concept of a CMM may be familiar to software developers who create, test, field, and update their software¹, but the CMM included here is not currently targeted at software designers. The CMM as currently constituted is targeted at the AECO industry for immediate use and application on current processes or BIM projects.

Using the Capability Maturity Model to Define a Minimum BIM

It is important to note that the NBIMS Capability Maturity Model (CMM) described provides a range of opportunities for BIM; however, in this section we are looking at what constitutes the minimum BIM. Because of the information in this section, we are saying that if you are not taking into account this minimum BIM level, then you should not call what you are doing a building information model. Visualization or some level of improved document production may be one output from a BIM; however neither is in and of itself BIM. We, therefore, define the minimum BIM as having the following characteristics through the associated areas of maturity in the complete CMM:

- **Spatial Capability** - The facility need not yet be spatially located as this is a higher-level goal to be considered a minimum BIM.
- **Roles or Disciplines** - Minimum BIM includes the sharing of information between disciplines and documentation of the BIM's intended uses.
- **Data Richness** - The data must be of the level of detail to support the intended use of the BIM. The level of data for a concept BIM will be different from that of a design BIM or construction BIM.
- **Delivery Method** - BIM must be implemented in a way that allows discipline information to be shared.
- **Change Management or ITIL Maturity Assessment** -
- **Business Process** -
- **Information Accuracy** - The BIM must be used to compute space and volume and to identify what areas have been quantified.
- **Lifecycle Views** - A complete lifecycle does not need to be implemented at this point. NBIMS recommends the data should be maintained in interoperable formats that allow for future lifecycle use.

¹ For specific information, see <http://www.sei.cmu.edu/cmm/> or read *Capability Maturity Model: Guidelines for Improving the Software Process*, Software Engineering Institute, Carnegie Mellon University, ISBN: 0-201-54664-7, 1995. Hardcover, 464 pages, 2006.

Chapter 5.2 – Minimum BIM – December 07, Revised May 2012

- **Graphical Information** - Since all drawing output should at this point be National CAD Standard compliant, we are making this a requirement for a minimum BIM. This demonstrates that standards are being considered, when possible.
- **Timeliness and Response** - BIM is not yet expected as the trusted authoritative source for information about the facility for first responders.
- **Interoperability and Industry Foundation Class Support** - The BIM must be capable of creating IFC data; exporting IFC data; importing IFC data; and operating IFC, interoperable data.

Change Management, or Information Technology Infrastructure Library (ITIL), Maturity Assessment, Business Process, Graphical Information and Spatial Capability are other characteristics of Minimum Building Information Models that will be required as the industry matures and requirements develop

There are two versions of the BIM CMM included in NBIMS:

- Tabular CMM
- Interactive CMM

The first is called the tabular CMM because it is a static Microsoft Excel® workbook consisting of three worksheets with information that lists the information in a table that demonstrates the spectrum. The second is the interactive CMM which consists of a multi-tab Excel workbook that is based on the tabular version, but is different because it dynamically interacts with the user as information is entered into the user interface. It is envisioned that the CMM will be web-enabled and served off the NIBS-FIC website, but the Excel file is a low-tech, user friendly way to deliver the same functionality. Both of these two versions of the CMM will be explained here in order of their worksheet tabs in their respective workbooks in Microsoft® Excel.

NOTE: [The Capability Maturity Model workbook may be downloaded here.](#)

Tabular CMM

CMM Chart

As seen in the screen capture, Figure 5.2-1, the CMM is a matrix with an x-axis and a y-axis. On the x-axis, you see 11 areas of interest, in no particular order. On the y-axis, you see maturity levels from 1 to 10 with 1 being the least mature and 10 being the most mature. The body of the matrix puts into words varying levels of maturity describing the areas of interest in an organization or on an individual project.

Chapter 5.2 – Minimum BIM – December 07, Revised May 2012

Tabular BIM Capability Maturity Model											5/4/2012
Maturity Level	A Data Richness	B Life-cycle Views	C Roles Or Disciplines	G Change Management	D Business process	F Timeliness/ Response	E Delivery Method	H Graphical Information	I Spatial Capability	J Information Accuracy	K Interoperability / IFC Support
1	Basic Core Data	No Complete Project Phase	No Single Role Fully Supported	No CM Capability	Separate Processes Not	Most Response Info manually re-	Single Point Access No IA	Primarily Text No Technical Graphics	Not Spatially Located	No Ground Truth	No Interoperability
2	Expanded Data Set	Planning & Design	Only One Role Supported	Aware of CM	Few Bus Processes Collect Info	Most Response Info manually re-	Single Point Access w/ Limited IA	2D Non-Intelligent As Designed	Basic Spatial Location	Initial Ground Truth	Forced Interoperability
3	Enhanced Data Set	Add Construction/ Supply	Two Roles Partially Supported	Aware of CM and Root Cause Analysis	Some Bus Process Collect Info	Data Calls Not In BIM But Most Other Data Is	Network Access w/ Basic IA	NCS 2D Non-Intelligent As Designed	Spatially Located	Limited Ground Truth - Int Spaces	Limited Interoperability
4	Data Plus Some Information	Includes Construction/ Supply	Two Roles Fully Supported	Aware CM, RCA and Feedback	Most Bus Processes Collect Info	Limited Response Info Available In	Network Access w/ Full IA	NCS 2D Intelligent As Designed	Located w/ Limited Info Sharing	Full Ground Truth - Int Spaces	Limited Info Transfers Between COTS
5	Data Plus Expanded Information	Includes Constr/Supply & Fabrication	Partial Plan, Design&Constr Supported	Implementing CM	All Business Process(BP) Collect Info	Most Response Info Available In	Limited Web Enabled Services	NCS 2D Intelligent As-Built's	Spatially located w/ Metadata	Limited Ground Truth - Int & Ext	Most Info Transfers Between COTS
6	Data w/Limited Authoritative Information	Add Limited Operations & Warranty	Plan, Design & Construction Supported	Initial CM process implemented	Few BP Collect & Maintain Info	All Response Info Available In BIM	Full Web Enabled Services	NCS 2D Intelligent And Current	Spatially located w/Full Info Share	Full Ground Truth - Int And Ext	Full Info Transfers Between COTS
7	Data w/ Mostly Authoritative Information	Includes Operations & Warranty	Partial Ops & Sustainment Supported	CM process in place and early implementation	Some BP Collect & Maintain Info	All Response Info From BIM & Timely	Full Web Enabled Services	3D - Intelligent Graphics	Part of a limited GIS	Limited Comp Areas & Ground	Limited Info Uses IFC's For Interoperability
8	Completely Authoritative Information	Add Financial	Operations & Sustainment Supported	CM and RCA capability implemented	All BP Collect & Maintain Info	Limited Real Time Access From BIM	Web Enabled Services - Secure	3D - Current And Intelligent	Part of a more complete GIS	Full Computed Areas &	Expanded Info Uses IFC's For Interoperability
9	Limited Knowledge Management	Full Facility Life-cycle Collection	All Facility Life-cycle Roles Supported	Business processes are sustained by CM using RCA and Feedback	Some BP Collect&Maint In Real Time	Full Real Time Access From BIM	Netocentric SOA Based CAC Access	4D - Add Time	Integrated into a complete GIS	Comp GT w/Limited Metrics	Most Info Uses IFC's For Interoperability
10	Full Knowledge Management	Supports External Efforts	Internal and External Roles Supported	Business processes are routinely sustained by CM, RCA and Feedback loops	All BP Collect&Maint In Real Time	Real Time Access w/ Live Feeds	Netocentric SOA Role Based CAC	nD - Time & Cost	Integrated into GIS w/ Full Info Flow	Computed Ground Truth w/Full Metrics	All Info Uses IFC's For Interoperability

Figure 5.2-1 – CMM Chart, courtesy NIBS

Since the words are subjective and open to interpretation, it is possible that people will not always agree on all the possible divisions or descriptions of the varying levels of maturity, but they represent a simplified consensus-based approach. In 2007 the NBIMS Testing Team demonstrated this approach with its initial application of the CMM in the evaluation of the 2007 AIA Technology in Architecture Practice BIM award winners. Final score of the BIM was determined using a multiple step process, the first being an independent review of the BIM by each team member. Despite having no communication or feedback between team members during the first step in the evaluation, the team discovered minor differences in scores of 1-5% across reviewers. The minor differences in initial scores were discussed and a consensus reached on the final score. Furthermore, the minor variance in scores from independent reviewers validated the utility of the CMM as a scientific approach to evaluate the capabilities and maturity of a BIM².

The CMM provides an evaluation tool in which a large number of items are structured in a format that people can use as a launching point for classifying themselves on a somewhat standardized continuum. Finally, it is understood that these descriptions will be updated as the community progresses and greater levels of BIM adoption dictate.

² McCuen, Tammy, and Suermann, Major Patrick, P.E., *The Interactive Capability Maturity Model and 2007 AIA TAP BIM Award Winners*, Viewpoint #33, AECbytes, December 6, 2007. Retrieved from http://www.aecbytes.com/viewpoint/2007/issue_33.html

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Descriptions

As the screen capture, Figure 5.2-2, shows, the descriptions tab lists and describes all the areas of interest in weighted order in a tabular format. In the Description column, the text is primarily focused on the philosophy of the area of interest as well as setting the stage for what conditions are usually more preferable. For example, under the Information Technology Infrastructure Library ITIL Maturity Assessment, it alludes to best business practices or processes for storing and finding information.

Capability Maturity Model Category Descriptions		
Weight	Title	Description
1.1	Data Richness	Identifies the completeness of the building Information Model from initially very few pieces of unrelated data to the point of it becoming valuable information and ultimately corporate knowledge about a facility.
1.1	Life-cycle Views	Views refer to the phases of the project and identifying how many phases are to be covered by the BIM. One would start as individual stove pipes of information and then begin linking those together and taking advantage of information gathered by the authoritative source of the information. This category has high cost reduction, high value implications based on the elimination of duplicative data gathering. The goal would be to support functions outside the traditional facility management roles, such as first responders.
1.2	Roles Or Disciplines	Roles refer to the players involved in the business process and how the information flows. This is also critical to reducing the cost of data re-collection. Disciplines are often involved in more than one view as either a provider or consumer of information. Our goal is to involve both internal and external roles as both providers and consumers of the same information so that data does not have to be re-created and that the authoritative source is the true provider of the information.
1.2	Change Management	Change Management identifies a methodology used to change business processes that have been developed by an organization. If a business process is found to be flawed on in need of improvement, one institutes a "root cause analysis" of the problem and then adjusts the business process based on that analysis. Since this is related to the following item, business processes it should come after it.
1.3	Business process	The business process defines how business is accomplished. If the data and information is gathered as part of the business process then data gathering is a no cost requirement. If data is gathered as a separate process then the data will likely not be accurate. The goal is to have data both collected and maintained in a real time environment, so as physical changes are made they are reflected for others to access in their portion of the business process.
1.3	Timeliness/ Response	While some information is more static than other information it all changes and up to the minute accuracy may be critical in emergency situations. The closer to accurate real time information you can be the better quality the decisions that are made. Some of those decisions may be life saving in nature.
1.4	Delivery Method	Data delivery is also critical to success. If data is only available on one machine then sharing can not occur other than by email or hard copy. In a structured networked environment if information is centrally stored or accessible then some sharing will occur. If the model is a systems oriented architecture (SOA) in a web enabled environment the nentcentricity will occur and information will be available in a controlled environment to the appropriate players. Information assurance must be engineered into all phases.
1.5	Graphical Information	Often the starting point is a non-graphical environment. The advent of graphics helps paint a clearer picture for all involved. As standards are applied then information can begin to flow as the provider and receiver must have the same standards in place. As 3D images come into play more consumers of the information will have a common view and a higher level of understanding will occur. As time and cost are added then the interfaces can be expanded significantly.
1.6	Spatial Capability	Understanding where something is in space is significant to many information interfaces and the richness of the information. Energy calculations must know where the heat gains will come from, first responders need to know where water supplies and utility cutoffs are located in relation to the facility.
1.7	Information Accuracy	Having a way to ensure that information remains accurate is only possible through some mathematical ground truth capability. Having a mathematical product will also allow for better management by supporting difficult to game metrics. These numbers can be used for occupancy, information collection completeness and over all inventory calculations.
1.8	Interoperability/ IFC Support	Our ultimate goal is to ensure interoperability of information. Getting accurate information to the party requiring the information. There are many ways to achieve this, however the most effective is to use a standards based approach to ensure that information is a form that it can be shared and products are available that can read that standard for of information.

Figure 5.2-2 – Descriptions, courtesy of NIBS

Complying with this area of interest will first require ITIL awareness, followed by varying levels of excellence along the continuum of control, integration, or optimization. As was said earlier, this will need to be updated as times and terms dictate.

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Interactive CMM (I-CMM)

As described above, the interactive CMM is based off the tabular CMM and, as such, it contains all the same information as the tabular CMM, but it centers on a graphical user interface that makes the static information come to life, in a way that may be more easy to digest and understand for some users. Just as the descriptions of the tabular CMM were listed according to their tab number and title in their workbook, so will the tabs of the interactive CMM be described here.

Interactive Maturity Model

The first, and primary, tab of interest (Figure 5.2-3) in the interactive maturity model workbook is the tab, “Interactive Maturity Model.” This interface’s mission is to turn the tabular chart, which is successful in showing all the information at once in a matrix format, into an interface that users can interact with to self-evaluate their own processes or BIMs. The areas of interest are listed in the first column, in increasing order of perceived importance. Hovering over each area of interest will elicit a comment with the full description of that area of interest.

Area of Interest	Weighted Importance	Choose your perceived maturity level	Credit
Data Richness	84%	Data Plus Expanded Information	4.2
Life-cycle Views	84%	Add Construction/ Supply	2.5
Change Management	90%	Limited Awareness	2.7
Roles or Disciplines	90%	Partial Plan, Design&Constr Supported	4.5
Business Process	91%	Some Bus Process Collect Info	2.7
Timeliness/ Response	91%	Data Calls Not in BIM But Most Other Data Is	2.7
Delivery Method	92%	Limited Web Enabled Services	4.6
Graphical Information	93%	3D - Intelligent Graphics	6.5
Spatial Capability	94%	Basic Spatial Location	1.9
Information Accuracy	95%	Limited Ground Truth - Int Spaces	2.9
Interoperability/ IFC Support	96%	Most Info Transfers Between COTS	4.8
Credit Sum			40.0
Maturity Level			Minimum BIM

Figure 5.2-3 – Interactive Maturity Model, diagram courtesy of NIBS

The next column shows the relative percentage out of 100% that each area of interest garners, see Figure 5.2-4. After that, users will choose their own perceived maturity levels by employing the drop-down menus aligned with each area of interest. When clicking on this cell, the dropdown text reminds you of the definition of the area of interest, so that you may make an informed choice among ten levels of maturity. After choosing the correct level of maturity in the desired area of interest, the amount of credits automatically appears in the next column. Together, these credits are summed in the TOTAL box, which in turn determines the level of certification achieved.

Points Required for Certification Levels		
Low	High	
40	49.9	Minimum BIM
50	59.9	Minimum BIM
60	69.9	Certified
70	79.9	Silver
80	89.9	Gold
90	100	Platinum

Figure 5.2-4 – Highlighted, Date-Sensitive Minimum BIM levels, courtesy of NIBS

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The varying levels of certification from simply ‘Minimum BIM’ to ‘Platinum,’ and they are listed below in the ADMINISTRATION section. Figure 5.2-4 displays the points required for a Minimum BIM in 2008 and is included for reference only as the minimum score required for a Minimum BIM changes on an annual basis. The minimum score required for a Minimum BIM is dependent on the date that the interface is used, which automatically is known as soon as the user opens the interface. In 2010, the minimum score was 50 points and in 2011, the minimum score required for the distinction of ‘Minimum BIM’ is 60 points. The annual increase in points required is included to allow for future education and BIM improvements industry-wide.

All Certified scores, see Figure 5.2-5, currently stay the same regardless of date. The certification scores are similar to most academic grades, with a maximum possible, weighted score of 100 points. Some added user-friendly features include the area that shows the remaining points required to reach the next level of certification, as well as hyperlinks to other tabs of functionality within the workbook.

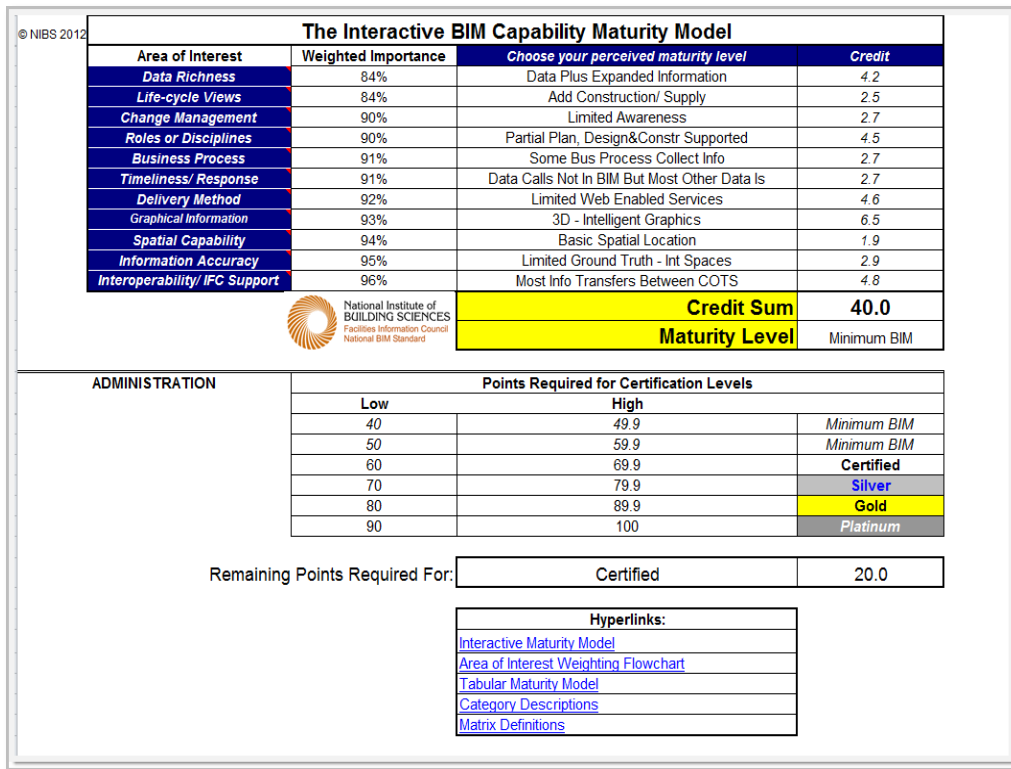


Figure 5.2-5 – Completed View (Certification Level = Minimum BIM), courtesy of NIBS

Area of Interest Chart

The Area of Interest Chart, see Figure 5.2-6, is tied to the credits column on the first tab of the application. Therefore, every time a perceived maturity level is selected, its credits are listed on the first

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tab but graphed on this tab. In this way, users can easily see where their operations are the most mature.

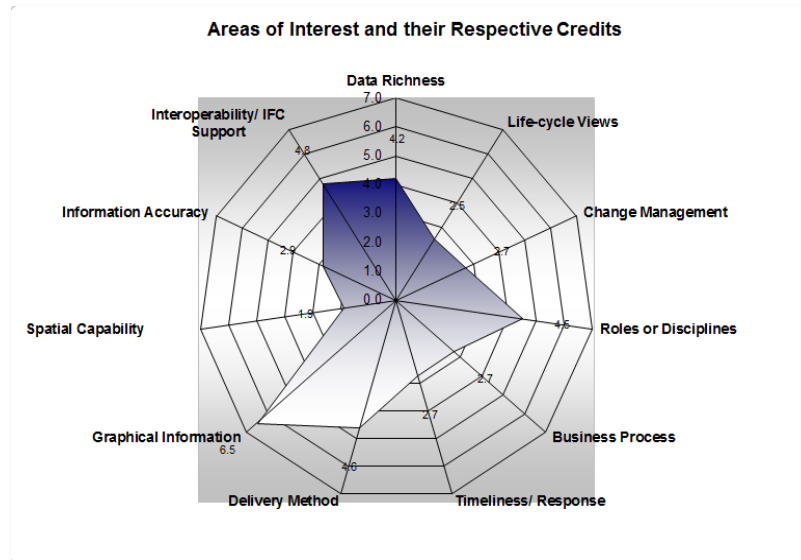


Figure 5.2-6 – Areas of Interest and their Respective Credit Chart, courtesy of NIBS

Area of Interest Weighting

The next tab, see Figure 5.2-7, the Area of Interest Weighting tab shows a hierarchical decision tree of the weighting of the different areas of interest. Were your organization to disagree with the existing weighting scheme, you could use this as a launching point for creating your own weighting scheme and edit the application to reflect your own preferences. However, as the community grows and best business practices are achieved, the hope is for a national consensus on the appropriate level of weighting for the 11 areas of interest.

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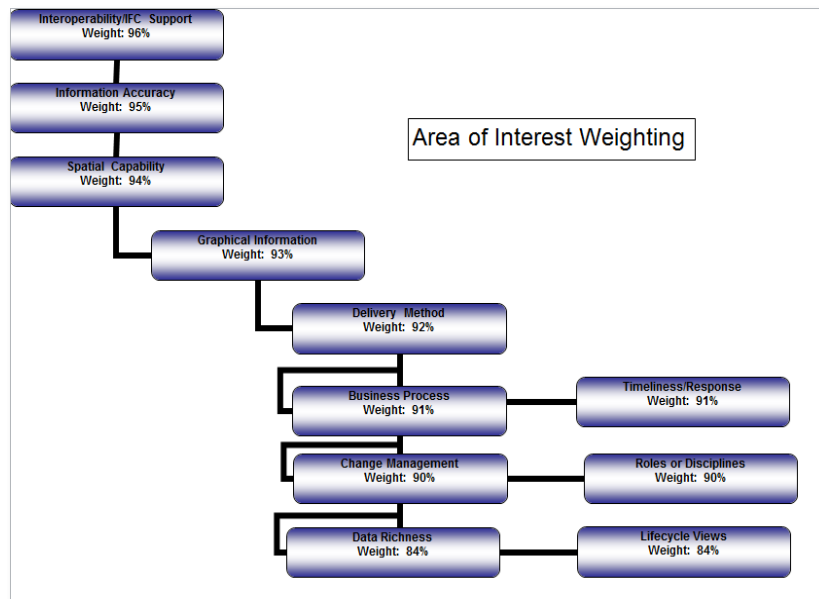


Figure 5.2-7 – Area of Interest Weighting Hierarchy, courtesy of NIBS

Tabular Maturity Model/Category Descriptions

The Tabular Maturity Model and Category Descriptions tabs are the same information as described above in the Tabular CMM portion of this section. The same information is also included in this application so that users may see their information in multiple ways to help them establish a metric for establishing and evaluating their own maturity level.

I-CMM Testing and Evaluation

As previously mentioned, to ensure that the I-CMM could be used to successfully convert subjective case-by-case ratings into an objective quantitative score, the NBIMS Testing Team undertook a test bed validation of the NBIMS I-CMM in the summer of 2007. With the approval of the American Institute of Architects, Technology in Architectural Practice (AIA-TAP) Community of Practice, the winning 2007 BIM Award submissions were evaluated using the I-CMM. Six NBIMS Testing Team Members evaluated the nine winning submissions. Because the test was focused on validating the I-CMM and not on the already proven superior quality of the BIM models themselves, special attention was focused on the ability of the individual evaluators to replicate similar scores without any influences from the other evaluators.

The results yielded no more than a 5% difference in the various scores of the evaluators on the same BIM, and normally resulted in a 1% (or only 1 point out of 100) difference when the evaluators used the I-CMM to analyze the different BIM submissions.

http://www.aecbytes.com/viewpoint/2007/issue_33.html

The team noted that the I-CMM is primarily focused on leveraging information management, rather than architectural, engineering, construction, or management metrics. Accordingly, the BIMs scored

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received a wide range of scores commensurate with their project requirements. Logically, the highest scoring BIM submission was a test bed BIM pushing the edge of current interoperability, while the lowest scoring BIM (which received a 'Minimum BIM' rating) was for a custom-designed residential home. Therefore, it is important to note that the I-CMM is very effective at measuring BIM information management, but it should not be used as a benchmark for any other metrics. In other words, just as owners' needs do not require that every building be built to LEED-Platinum standards, neither should any BIM be perceived as less successful if it does not achieve an I-CMM Platinum score.

Existing Implementations

Currently, the NBIMS Interactive Capability Maturity Model (I-CMM), AIA Model Progression Specification, and the Indiana University BIM Proficiency Matrix have been used within the AECOO/FM community as a Minimum BIM.

Since *NBIMS Version 1 - Part 1* was published, a number of alternative Maturity Models have been developed that may offer additional features or elements for a future Minimum BIM:

- COBIT, Control Objects for Information and related Technology - Information Systems Audit and Control Association (ISACA) and the IT Governance Institute (ITGI).
- CMMI, Capability Maturity Model Integration – Software Engineering Institute/ Carnegie Melon. CSCMM, Construction Supply Chain Maturity Model – Vaidyanathan & Howell (2007)
- I-CMM, Interactive Capability Maturity Model developed as part of the National BIM Standard (NBIMS).
- Indiana University BIM Proficiency Matrix.
- Knowledge Retention Maturity Levels – Arif, Egbu, Alom and Khalfan (2009)
- LESAT, Lean Enterprise Self-Assessment Tool – Lean Aerospace Initiative (LAI) at the Massachusetts Institute of Technology (MIT).
- P3M3, Portfolio, Programme and Project Management Maturity Model - Office of Government Commerce (UK).
- P-CMM®, People Capability Maturity Model v2 - Software Engineering Institute / Carnegie Melon.
- (PM), Project Management Process Maturity Model – Kwak & Ibbs (2002).
- SPICE, Standardised Process Improvement for Construction Enterprises - Research Centre for the Built and Human Environment, University of Salford - Hutchinson & Finnemore (1999)

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- Supply Chain Management Process Maturity Model and Business Process Orientation (BPO) maturity model – Lockamy III & McCormack (2004)

Conclusion

The purpose of the National BIM Standard Committee is to knit together the broadest and deepest constituency ever assembled to address the losses and limitations associated with errors and inefficiencies in the building supply chain. A BIM should access all pertinent graphic and non-graphic information about a facility as an integrated resource, but there are varying levels of maturity when pursuing this goal. The goals of the two Capability Maturity Models, both tabular and interactive, are to help users gauge their current maturity level, as well as plan for future maturity attainment goals through a commonly accepted, standardized approach. As industry evolves and more rapidly adopts greater levels of maturity, this model will change to accurately reflect best industry practices.

Next Steps

We are still in the early stage of BIM implementation in our industry. We are certainly seeking more than minimums in order to realize the true potential of BIM. One thing is certain: the BIM Capability Maturity Model is incomplete and much work remains to be done in order to mature it to be a fully integrated product. We see the following as the next steps in achieving improved capabilities.

1. Identify a baseline in the industry and create a system for actively measuring and maintaining the baseline as the industry progresses. What is the typical level of BIM in use?
2. Continue developing a vision for more mature BIMs and develop a roadmap for raising the level of BIM robustness. Identify deadlines for achieving higher level and more mature implementation over the next 20 or more years.
3. The following steps are required to take the CMM to the next level:
 - Research is required to evaluate the current level of capability of BIMs in use in the industry today and to ensure that the rankings proposed herein are valid. There is concern that we may have set the bar too high and that most current BIMs will not be certified.
 - The current Capability Maturity Model gives the AECOO/FM community a spectrum of tangible capabilities where they can determine their current maturity and use higher levels on the spectrum as developmental goals. Future work needs to be done to improve the Maturity Model as it needs to be bettered to mirror the burgeoning BIM community.
 - BIM data structures provided by authoring software should be capable of supporting a broad range of model views across the lifecycle to allow the model to gather more data as the building moves from concept to detailed design to construction to operations and

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maintenance. However, there remains much work to be done to define the information and capabilities required to accommodate this vision.

- It is the hope of the NBIMS Committee that a change management process such as the Information Technology Infrastructure Library (ITIL) program that provides a set of best practice approaches to information management would be required at some future point. Using these business processes will help ensure the convergence of everyone's efforts and will help information flow. If it does not, there will also be procedures to rectify the problems.
- The governing body will need to certify BIMs and testing processes in order to build a database of best practices and isolate areas of opportunity for improvements in the BIM community. It also needs to provide a means and motivation for users to create reliable information that is stored in open and interoperable formats.
- The Operate Workgroup has proposed that the organization actively consider the use of BIM Maturity Index (BMMI) concepts and the development of systems for certifying building information models and accrediting BIM individuals and organizations. CMM and BMMI are two factors of an organizations overall BIM Performance evaluation.

There are industry groups interested in providing web-enabled publication support of the interactive maturity model. This currently notional web-based interface should provide a means for both certifying BIM products (such as specific models) and accrediting individual professionals for demonstrating knowledge in the information and processes outlined in NBIMS. A diagram of the proposed, added functionality of this notional web interface looks like Figure 5.2-8.

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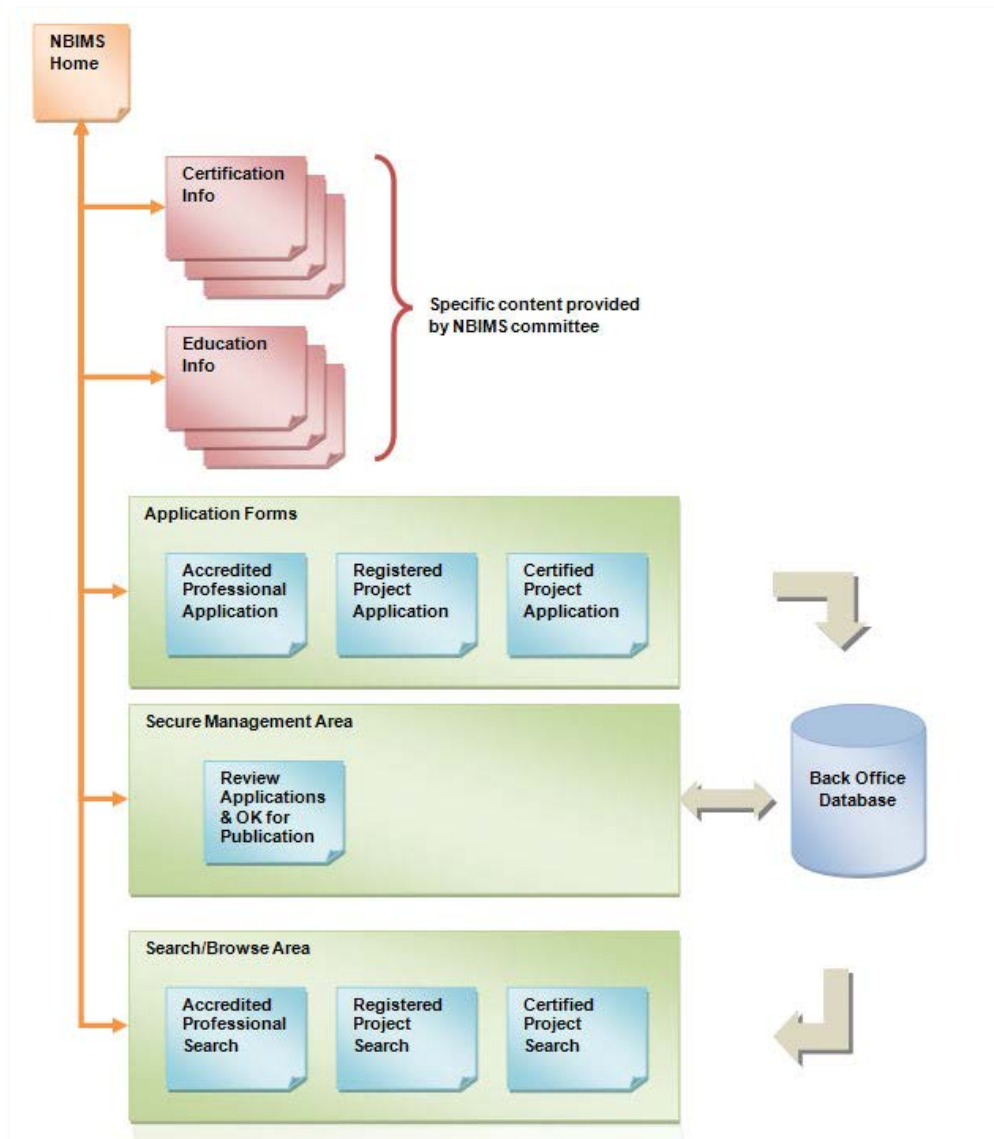


Figure 5.2-8 – Proposed Web-Based Application for Certifying BIMs and Accrediting BIM Professionals, graphic created and provided by Donald F. Sanborn, Unique Solutions

In this way, people would be motivated to learn the information in NBIMS because they could enjoy the recognition that accreditation would provide. The NBIMS Committee would benefit from having followers who could accurately relay correct information about proper BIM/IDM methodology. Furthermore, projects receiving certification would provide discriminators for forward-looking companies to demonstrate their ability to comply with proper NBIMS operations for the AECOO/FM community, which could help companies, win jobs or build respect in their fields. The corollary benefit would be that every certified BIM would go to a repository of information that could be mined for data

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regarding maturity or best business practices. This empirical data would provide trends that could easily be converted to lessons learned to leverage in recommending or shaping future business practices.

References

<http://www.nationalcadstandard.org/>

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National BIM Standard - United States™ Version 2

5 PRACTICE DOCUMENT

Chapter 5.3 BIM Project Execution Planning Guide – Version 2.1

Introduction

BIM Project Execution Planning Guide defines a four step structured procedure for creating a BIM Project Execution Plan. The Guide was developed through a multistep research procedure that included a detailed literature review; industry expert interviews; focus group meetings; quasi-experiments; surveys; and fundamental process and information mapping tasks. After the Guide was developed, it was implemented on case study projects to evaluate the ease of implementation and identify areas for improving the core planning procedure documented in the Guide. Since the Guide was originally released in October 2009, it has received broad adoption throughout the industry by numerous public and private organizations.

BIM Project Execution Planning Guide Background

A project team must perform detailed and comprehensive planning to successfully implement BIM. A well-documented BIM Project Execution Plan helps to ensure that all parties are clearly aware of the opportunities and responsibilities associated with the incorporation of BIM into the project workflow. A completed BIM Project Execution Plan should define the appropriate uses for BIM on a project (e.g., design authoring, cost estimating, or design coordination), along with a detailed design and documentation of the process for executing BIM throughout a project's lifecycle. Once the plan is created, the team can follow and monitor their progress against this plan to gain the maximum benefits from BIM implementation.

The BIM Project Execution Planning Guide provides a structured procedure, as displayed in Figure 5.3-1, for creating and implementing a BIM Project Execution Plan. The four steps within the procedure include:

1. Identify goals and high value BIM uses during each project phase
2. Design the BIM execution process through the creation of process maps
3. Define the BIM deliverables in the form of information exchanges

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4. Develop the infrastructure to support the implementation such as contracts, communication procedures, technology and quality control.

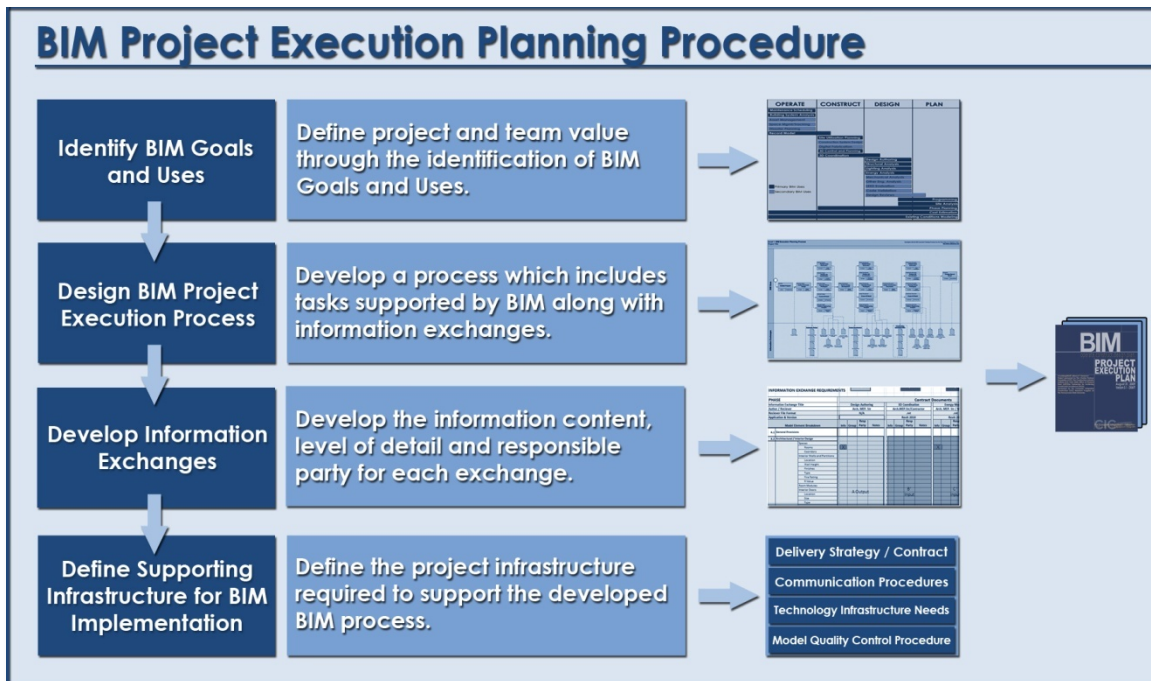


Figure 5.3-1 – The BIM Project Execution Planning Procedure

The goal for developing this structured procedure is to stimulate planning and direct communication by the project team during the early phases of a project. The team leading the planning process should include members from all the organizations with a significant role in the project. Since there is no single best method for BIM implementation on every project, each team must effectively design a tailored execution strategy by understanding the project goals, the project characteristics, and the capabilities of the team members.

The BIM Project Execution Planning Guide is a product of the BIM Project Execution Planning buildingSMART alliance™ (bSa) Project. The Guide was developed to provide a practical manual that can be used by project teams to design their BIM strategy and develop a BIM Project Execution Plan. The core modeling and information exchange concepts have been designed to complement the long-term goals of NBIMS-US that can be implemented throughout the AECOO Industry to improve the efficiency and effectiveness of BIM implementation on projects. As new information exchanges are approved within the NBIMS-US standards effort, they can be incorporated into the defined BIM Project Execution Planning Procedure.

The Building Information Modeling (BIM) Project Execution Planning Guide is directed toward readers with a fundamental understanding of BIM concepts.

The eight chapters in this Guide provide:

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- An overview of the BIM Project Execution Planning Procedure (Chapter One)
- A method to identify BIM Uses (Chapter Two)
- A procedure for designing the BIM Process for the project (Chapter Three)
- A method for defining the Information Exchange Requirements (Chapter Four)
- A method to define the infrastructure necessary to support the BIM Process (Chapter Five)
- A structured method for team implementation of the procedure through a series of meetings and intermediate tasks (Chapter Six)
- A structured method for individual organizational development of typical methods for BIM implementation (Chapter Seven)
- Conclusions and Recommendations for projects and organizations implemented BIM based on lessons learned through the creation of the Guide (Chapter Eight)

Appendices provide additional resources for implementing the BIM Project Execution Planning Procedure on a project. These resources include blank template forms for completing each step within the process (this template is also submitted as a separate ballot). There are also example process maps and information exchange examples for a sample project.

Electronic resources are available at the project website (bim.psu.edu). These resources include Microsoft Excel spreadsheets for various template files, a Microsoft Visio file with template process models, and an Adobe PDF template form for completing an execution plan. Project teams can use these documents to develop their BIM Project Execution Plan, or copy appropriate content to any customized organizational documents.

Guide Development

The Guide was developed as part of a research project sponsored by the Charles Pankow Foundation, the Construction Industry Institute, the Penn State Office of Physical Plant, and the Partnership for Achieving Construction Excellence (PACE). The following sections describe the research steps that were taken to create the guide.

Conduct Detailed Literature Review

This research began with a review of available literature to identify and document the core BIM definition used throughout the research along with identifying the different tasks that were being performed through the use of BIM. This literature review included peer reviewed journal articles; industry publications; books; BIM Guides from companies and associations; and online resources.

Industry Interviews to Define Primary BIM Uses

Semi-structured interviews were conducted with over 40 BIM experts in the industry to discuss their current use of BIM along with gaining additional information regarding each BIM use. After the initial interviews were performed, a detailed content analysis of the interview data was conducted to identify the unique BIM uses on projects. Through these interviews, 25 BIM Uses were identified along with some initial information regarding each use. Through a course project in an exploratory graduate course

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at Penn State, groups of students then performed a detailed study for the primary BIM uses identified through the interviews. The result of the more detailed study is a one page description for each of the 25 BIM uses. The BIM uses were also organized by project phase within the lifecycle of a project (plan, design, construct, and operate), with some of the uses spanning multiple phases. Additionally, the BIM Uses definitions were improved and updated by the following year's graduate course.

The research team created a BIM Uses analysis worksheet to assist teams when selecting which BIM Uses to implement on a project. The worksheet guides the team through considerations of each BIM Use such as the value to the project, the responsible parties, the value to the responsible party, the resources required, competencies required, and the experience required.

Develop the Draft BIM Project Execution Planning Procedure

As the BIM use definitions were being finalized, a structure procedure for planning the execution of BIM on a project was being developed. This procedure development was conducted through the customization of business process engineering techniques and lean principles for information management with a specific focus on designing a process for the efficient flow of information throughout the project lifecycle.

The final BIM Project Execution Planning Procedure, which is the foundation of the BIM Project Execution Planning Guide, is a four step procedure for developing an execution plan for a project. The steps include:

1. Identify BIM Uses
2. Design the BIM Process
3. Develop the BIM Plan
4. Define supporting infrastructure

For each step, a detailed evaluation of effective and efficient methods for teams to conduct the process was performed. The methods selected were documented in the guide, and templates were developed to allow teams to easily implement the procedure.

The team also considered the final structure of the future National Building Information Modeling Standards (NBIMS). The procedure allows a team to implement the process and information exchanges on a project today with their defined information exchanges. It is also designed to allow the flexibility to easily infuse future standard information exchange definitions into the procedure as they become available.

After the research team created the process mapping procedure which is closely aligned with the mapping procedure for information delivery manual development, the team developed template process maps. The level one process map template is a diagram of an extensive implementation BIM on a during a projects lifecycle. The research team also developed template diagrams a more detailed (level 2) process maps for each primary BIM Use. Detailed Level Two maps were created using case studies and focus group meetings, and were reviewed by project teams and industry professionals.

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BIM Planning Procedure Validation and Feedback

The BIM Project Execution Planning Procedure was validated through three primary methods. The first was a quasi-experiment with students at Penn State. The second was to analyze the implementation of the procedure on 7 project case studies, 3 organizational case studies, and 3 academic case studies. The third method was to conduct surveys of practitioners who downloaded the guide to solicit their feedback. Each validation step is discussed in the following sections.

Quasi-experiment

To ensure that the Procedure steps and the Business Process Modeling Notation (BPMN) representation of the Process Mapping Procedure was self-explanatory, quasi-experiments were conducted with eleven graduate students from the Department of Architecture and Architectural Engineering at The Penn State University. Before conducting the quasi-experiments, a pilot study was performed with two undergraduate students. Using the Process Mapping Procedure and the BPMN representation of the framework, these two students created template process maps for 3D MEP Coordination and 4D Modeling BIM use. During the quasi-experiments, all the participants were made familiar with the process modeling notation adopted to create process maps. A post experiment survey was conducted to obtain feedback on the Process Mapping Procedure. The quasi-experiment was performed to ensure that the Process Mapping Procedure could be followed and understood to create a process map. The deviations in the process maps produced were documented as part of the content analysis and relevant changes were made to the Procedure to address the challenges.

Case Study Validation

The following Case Studies were performed:

1. Project Level Case Studies
 - a. Springfield Data Center
 - b. Moore Building
 - c. Henderson Building
 - d. Richard H. Poff U.S. Courthouse
 - e. UHS San Antonio
 - f. Millennium Science Complex
 - g. Hospital Project
2. Organizational Level Case Studies
 - a. The United States Army Corps of Engineers (USACE)
 - b. The Pennsylvania State University (PSU)
 - c. Los Angeles Community College District (LACCD)

The team evaluated the value of the BIM Execution Planning Procedure according to the following steps:

1. Performed Case Study observations of the development of a BIM Plan. A standard procedure for implementation on a project includes:
 - a. Meeting 1 – Identify BIM Uses to be implemented on a project (Step #1)

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- b. Meeting 2 – Review Project Specific Process Maps (Step #2)
 - c. Meeting 3 – Review Developed Information Exchanges (Step #3)
 - d. Meeting 4 – Review Draft BIM Plan with Team
 - e. BIM Plan – Version 1.0 – revisited on a periodic basis
2. Surveyed Project Team Participants regarding the value of the Procedure documented in the Guide and the final product (BIM Project Execution Plan)
 3. Documented Case Study Content including project descriptions, process followed by the team, lessons learned, and human and project factors which influenced the success or failure of the implementation
 4. Analyzed case study and survey results through detailed content analysis. The result of this task identified potential revisions to BIM Project Execution Planning Procedure.
 5. Performed BIM Project Execution Planning Guide revisions based on the analysis of the collected data.

The summary level results from these case studies are documented in a report titled ‘Building Information Modeling Project Execution Planning: Second Interim Report to the Charles Pankow Foundation’. This report is referenced in the additional information category at the end of this document.

Of particular note within the case study implementation is the organizational implementation in the US Army Corp of Engineers (USACE). During this case study, members of the research team participated in a series of detailed meetings over six months in which a group of leading BIM implementers on USACE projects from industry performed a very detailed analysis of the entire BIM Project Execution Planning template. Though this process, there were many very valuable suggestions and revisions to the BIM Project Execution Planning Template and Guide.

Survey BIM Guide Readers and Users

The research team developed a survey in December 2009 to validate the BIM Project Execution Planning Procedure and BIM Uses. The survey consisted of sixteen questions focused in four primary areas: demographic information, BIM Uses, Project Execution Planning Procedure, and Comments. On a 5-point Likert scale, most survey participants responded either positive or very positive about each step of the procedure. However, the more telling result may be that only 2.6% of respondents are not likely to implement the procedure, while 14.6% of respondents were already implementing it.

Revise BIM Project Execution Planning Guide and Templates

Once the feedback from the case studies, surveys, and industry review was collected and analyzed, the Guide was updated and released as Draft Version 2.0 for industry review in May of 2010. This version of the Guide incorporated a new chapter on BIM Project Execution Planning for Organizations. The purpose of this chapter is to define how organizations can use the BIM Project Execution Planning procedure to develop their typical methods for BIM project implementation. In addition, the lessons learned from the case studies were incorporated into a conclusion chapter for the Guide. Examples of

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the lessons learned from the case study implementation include the need for a BIM champion, for owner involvement, and for an open environment of sharing and collaboration. In addition to the chapter additions, the appendix was revised to include updated BIM Project Execution Planning Templates. A glossary of definitions used throughout the Guide was also added, as well as other improvements throughout the document to address comments received from Version 1.0 and areas for improvement identified throughout the case study projects.

Industry Acceptance of the Guide

The use of the BIM Project Execution Planning Guide has quickly become common practice for multiple organizations and is rapidly gaining acceptance as an industry standard within the building industry. To assist with documenting the Guide's acceptance, a survey was distributed in May 2011 to those who have downloaded the guide – 550 responses were received. The following statistics, which are gathered from that survey and various other sources, document the current level of acceptance across the industry.

Traffic to Website and downloads

Over the past month (May 2011) there have been about 1,100 unique visitors to the project website. Since it was activated the download page has had over 65,000 page views, and about 19,000 Unique Visitors. People from over 134 countries have visited the website with most (67%) of the visits from the United States.

A more telling statistic is the number of downloads of the Guide and resources. Since the Guide has been made available for download in October of 2009 over 6,500 individuals have completed the form necessary to download the guide.

Categories of Users Implementing the Guide

Based on the results of the recent survey, the guide has been used by multiple stakeholders within the building industry. Figure 5.3-2 shows the various roles of those organizations (note that an organization may be a member of multiple categories):

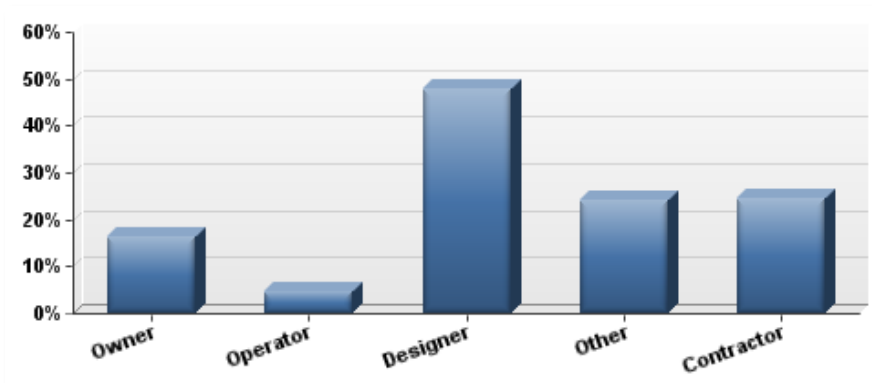


Figure 5.3-2 – Role of Survey Participant Organizations

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Satisfaction with Guide

Overall the survey respondents were satisfied with the BIM Project Execution Planning Guide. Based on a 7- point Likert Scale over 85% of respondents were above neutral, with only a minimal number somewhat dissatisfied or dissatisfied (see Figure 5.3-3).

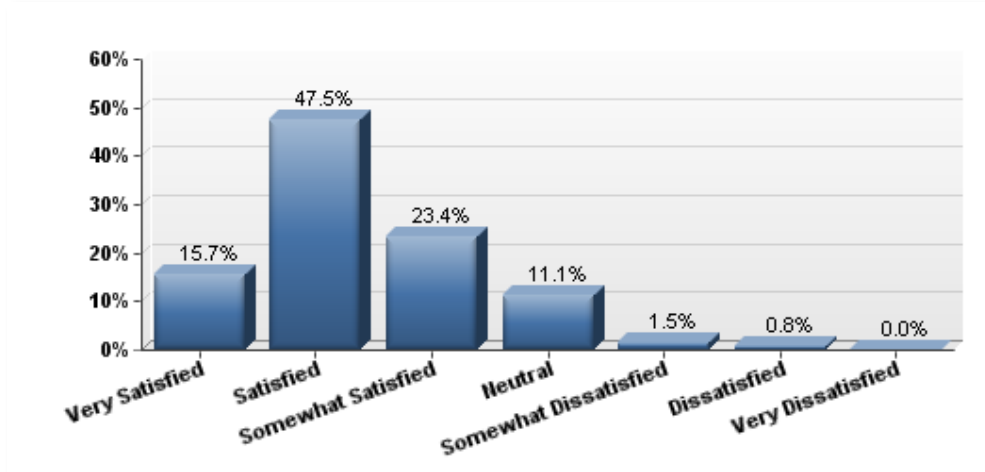


Figure 5.3-3 – Level of Satisfaction with the BIM Project Execution Planning Guide

Project and/or Organizational Planning

The following are organizations that responded to our recent survey who have implemented the BIM Project Execution Planning Guide for developing an execution plan on at least one project or who have used the BIM Project Execution Planning Guide to plan the implementation of BIM in their organization.

- A3D
- AC Corporation
- ACAI Associates, Inc.
- ACCO Engineered Systems
- Acuna & Asociados
- AEC Factory
- AEC Infosystems, Inc
- AECOM
- Air Force Center for Engineering and the Environment
- Antaeus Properties Inc.
- Arcop
- Array Healthcare Facilities Solutions
- Array HFS
- Atkins NA
- Atlas Industries
- BBIX, LLC
- Berger Devine Yaeger
- Bescon Consulting Engineers PTE
- BMW Constructors, Inc.
- BNIM
- Burgess & Niple
- Buro Innen BV
- cadnet Limited
- CAD-Q
- Cannon Design
- Cell Signaling Technology, Inc.
- ChangeAgents AEC
- Clayco Inc
- CO Architects
- Cody Anderson Wasney Architects, Inc.
- COINS
- Connolly Architects, Inc.
- COORDENAR
- DCAM - Commonwealth of MA
- Department of Health and Human Services
- Department of National Defense (Canada)
- Department of Public Works, State of CT
- Design Inc Sydney
- DIALOG
- Dunaway Associates
- Durotech Inc.
- E. O: Ospedali Galliera
- Eigen Technical services Pvt Ltd
- EllisDon
- EV Studio
- EYPMCF
- Federal Aviation Administration

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- Fentress Architects
- Flintco, LLC
- GA Studio
- Gannett Fleming
- GH Phipps Construction Companies
- Gilbane Building Co.
- Greer-Stafford Architecture
- Group2 Architecture Engineering
- Grunley Construction Co., Inc.
- Habtoor Leighton Group
- HAI PHU CONSTRUCTION & INVESTMENT JSC
- Halmar International
- Harvard Business School
- HC Yu and Associates
- HDR
- Hensel Phelps Construction Co
- Hewlett Packard
- Hill International, Inc.
- HKS, Inc.
- HNTB
- HOK
- Holder Construction Company
- Hunt Construction Group
- HuntonBrady Architects
- Hurtado, S. C.
- IES Commercial, Inc.
- iM STUDIOS, LLC - BIM Consultants
- ima design
- Ingenieursbureau Wassenaar
- Integrate Project Management Solutions SDN BHD
- iTech
- Johnson, Mirmiran & Thompson
- Jordani Consulting Group
- JY Cost Plan Consultants
- Kal-Blue
- Kasian Architecture Interior Design and Planning Ltd.
- KPFF Consulting Engineers
- KTD Engineering
- L&T
- Lark Group
- Lend Lease
- Lim Consultants, Inc.
- Lucrosol, Inc
- M&E Contractors
- M.Arch Architects
- Matt Construction Corporation
- Meinhardt Australia Pty Ltd
- Merriman Associates/Architects
- Messer Construction Company
- MOA Architecture
- Mortenson Construction
- MR1 Consulting Ltd
- Murray & Roberts
- Naval Facilities Engineering Command
- ONPA Architects
- Penta Building Group
- Perkins Eastman Architects
- Perkins+Will
- PJ Dick
- Plano-Coudon, LLC
- Princeton University
- Proactive Controls Group
- Raleigh Mechanical and Metals
- RATIO Architects, Inc.
- Rice Daubney
- RMF Engineering Inc
- RP aec
- RTKL Associates Inc
- Samara State Architectural and Civil Engineering University
- Satterfield & Pontikes Construction, Inc.
- Saudi Oger Limited
- schmidt hammer lassen architects
- Siena Construction Corp
- Skanska USA Building
- Skidmore, Owings & Merrill LLP
- Slaterpaul Architects
- Smithgroup Architecture
- SMMA
- Southland Industries
- Stor-Con Co., Inc.
- Straub Construction
- STV Incorporated
- Sulpher Consulting Ltd.
- Sundt Construction, Inc.
- SWBR Architects
- Swinerton Builders
- Tarlton Corporation
- TDIndustries
- Thalden Boyd Emery Architects
- The Christman Company
- The Hartman + Majewski Design Group
- The Neenan Company
- The Renschler Company
- The Weitz Company
- TLC Engineering for Architecture
- Tocci Building Corporation
- Torti Gallas and Partners, Inc.
- TRO Jung | Brannene
- Turner Construction Company
- University of Nebraska-Lincoln
- US Air Force
- US Army - Corps of Engineers, Omaha District
- Vanir Construction Management
- Venkataramanan Associates
- Vircop building systems
- VOA ASSOCIATES
- W.E. O'Neil
- Walbridge
- Walmart Stores, Inc.
- Weston Solutions Inc
- Wiley | Wilson
- Winstone Consulting
- WSBP

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- WSP Sweden
- Zachry Construction / ZVL

Owners Requiring Submission

Since the start of this project a number of large organizations have been using the Guide. Some organizations have adopted the concepts embedded in the Guide as part of their standard project requirements. While additional owner organization may be requiring the use of the Guide, the following is a list of four owner organization that have confirmed this requirement:

- US Army Corps of Engineers (embedded into Attachment F);
- US Air Force;
- Penn State Office of Physical Plant; and
- Division of Capital Asset Management Commonwealth of Massachusetts.

Opinions of Guide and Resources

As part of the survey to study the degree of implementation, the survey participants were asked to respond to an open-ended question regarding their opinion of the Guide and the corresponding BIM Project Execution Planning Templates. The following are quotes from the responses:

- *It is a great tool in educating people unfamiliar with BIM on the vast amount of information needed at the beginning of the job, proving its benefits by clear direction and information that makes the BIM process more efficient.*
- *Just like every building needs a strong foundation, so too do your BIM Plans. The BIM Project Execution Guide is the foundation we needed to build our unique project plans. A valuable resource and a fundamental piece of our BIM / VCD programs.*
- *The BIM Planning guide with the templates is a very informative document that will aid any company with the implementation of a BIM Project*
- *It provided a framework through which the client could better understand the various stages that implementation of BIM would impact on, allowing them to see the potential benefits up front and provide a relevant budget to allow for implementation.*
- *The work done at Penn State on the BIM Execution Plan has provided a valuable framework for the implementation of BIM.*
- *The BIM planning guide has given us useful information necessary to execute the modeling of one of our premier projects. Very easy to use and understand.*
- *I have used project execution plans on a number of major projects. It is necessary to produce and get buy in from all stakeholders if you are going to stand any chance of completing a successful project. The move to a BIM execution plans performs the same purpose of getting everybody understanding what is required of them and also to set the level of achievable targets for the project success.*

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- *The BIM Execution planning guide helped provide the road map for all team members and help communicate the process and end results we want to achieve.*
- *The Template BIM PxP and Project BIM Execution Planning Guide have been great resources for our company to promote having an early conversation about project BIM implementation on our project.*
- *The BIM Execution Planning guide is a critical step in the maturity of the facilities industry and must be promulgated to as many entities in the facilities industry as is possible.*

Concluding Remarks

The BIM Project Execution Planning Guide provides a method for project teams and organizations to plan the execution of BIM using formal, standard processes. Based on the level of industry acceptance, the value of the defined procedure, and the rigorous methodology used to develop the Guide, we request that the BIM Project Execution Planning Guide be accepted as a practice standard within NBIMS-US.

Acknowledgements

We wish to thank the sponsors for the Guide development which include:

- The Charles Pankow Foundation;
- The Construction Industry Institute;
- The Pennsylvania State University, Office of Physical Plant; and
- The Partnership for Achieving Construction Excellence at Penn State.

We would also like to thank the Advisory Board Members which include:

- Deke Smith, Executive Director of buildingSMART alliance™ (Industry Champion)
- Victor Sanvido, Ph.D., Senior Vice President, Southland Industries (Industry Champion)
- Mark Butler, Chair, US National CAD Standard Project Committee, Systems Integration Manager, and Senior Professional Associate, HDR, Inc.
- Derek Cunz, Director of Project Development, Mortenson Construction
- Mark Falzarano, CAD Coordinator, Barton Malow Company
- Ed Gannon, Manager of Design Services, Penn State Office of Physical Plant
- Greg Gidez, Corporate Design Manager, Hensel Phelps Construction Co.
- Francois Grobler, Ph.D., US Army CERL and IAI - North America
- Steve Hagan, Project Knowledge Center, U.S. General Services Administration
- Steve Hutsell, Chief, Geospatial Section, Seattle District, US Army Corps of Engineers
- Mark Konchar, Vice President, Balfour Beatty Construction
- Soad Kousheshi, President, AEC Strategy
- Robert Leicht, Ph.D., BIM Project Manager, DPR Constructors
- Kurt Maldovan, Balfour Beatty Construction

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- Alexander Zolotov, Skanska

And we would like to recognize the primary authors of the BIM Project Execution Planning Guide which include:

- John Messner (Principle Investigator), Director, CIC Research Program and Associate Professor of Architectural Engineering, Penn State
- Chimay Anumba (Co-Principle Investigator), Professor and Head, Department of Architectural Engineering, Penn State
- Craig Dubler, Graduate Research Assistant, Penn State
- Shane Goodman, former MAE/BAE student, Penn State
- Colleen Kasprzak, Graduate Research Assistant, Penn State
- Ralph Kreider, Graduate Research Assistant, Penn State
- Robert Leicht, Assistant Professor of Architectural Engineering, Penn State
- Chitwan Saluja, former Graduate Research Assistant, Penn State
- Nevena Zikic, former Graduate Research Assistant, Penn State

Sources for Additional Information

For more information and resources, please see the project website at: bim.psu.edu

Additional information on the creation of the guide can be located in the following publications:

- Computer Integrated Construction Research Program. (2010). *BIM Project Execution Planning Guide: Final Research Methods Report, The Charles Pankow Foundation, Claremont CA (available at <http://www.pankowfoundation.org/grants.cfm> and in the supplemental documents folder)*
- Computer Integrated Construction Research Program. (2010). *BIM Project Execution Planning Guide: Second Interim Research Report, The Charles Pankow Foundation, Claremont CA (available in the supplemental documents folder)*
- Computer Integrated Construction Research Program. (Submitted for Review). *Project Execution Planning for Building Information Modeling: Research Report*. The Construction Industry Institute, Austin, TX, USA.
- Computer Integrated Construction Research Program. (2010). *Project Execution Planning for Building Information Modeling*. The Construction Industry Institute, Austin, TX, USA, 21 Pages.

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National BIM Standard - United States™ Version 2

5 PRACTICE DOCUMENT

Chapter 5.4 BIM Project Execution Plan Content – Version 2.1

Introduction

BIM Project Execution Plan Content was developed through a multistep research procedure that included a detailed literature review; industry expert interviews; focus group meeting; and surveys. After the Content was developed, it was implemented on several case study projects to evaluate the ease of implementation and identify areas for improving the Content. The Content was developed as a complement to the BIM Project Execution Planning Guide which is submitted via a separate ballot submission to the NBIMS-US.

BIM Project Execution Planning Guide and Content Background

A project team must perform detailed and comprehensive planning to successfully implement BIM. A well-documented BIM Project Execution Plan helps to ensure that all parties are clearly aware of the opportunities and responsibilities associated with the incorporation of BIM into the project workflow. A completed BIM Project Execution Plan should define the appropriate uses for BIM on a project (e.g., design authoring, cost estimating, or design coordination), along with a detailed design and documentation of the process for executing BIM throughout a project's lifecycle. Once the plan is created, the team can follow and monitor their progress against this plan to gain the maximum benefits from BIM implementation.

The Content is based upon the BIM Project Execution Planning Guide which provides a structured procedure, as displayed in Figure 5.4-1, for creating and implementing a BIM Project Execution Plan. The four steps within the procedure include:

1. Identify goals and high value BIM uses during each project phase
2. Design the BIM execution process through the creation of process maps
3. Define the BIM deliverables in the form of information exchanges
4. Develop the infrastructure to support the implementation such as contracts, communication procedures, technology and quality control.

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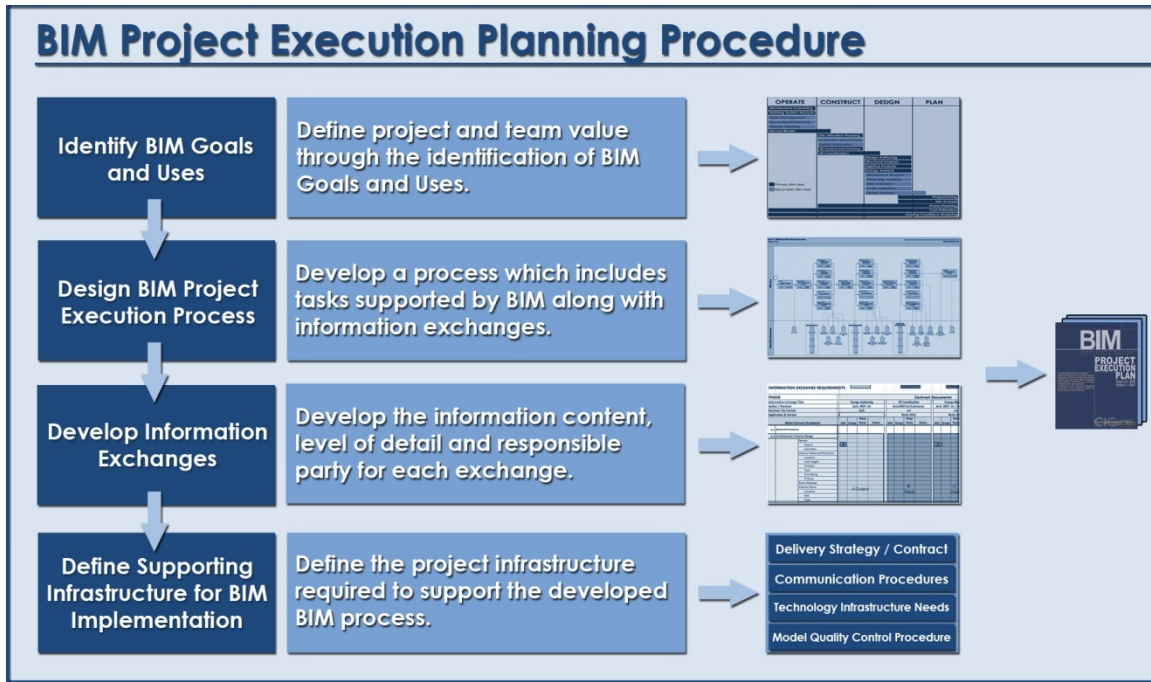


Figure 5.4-1 – The BIM Project Execution Planning Procedure

The goal for developing this structured procedure is to stimulate planning and direct communication by the project team during the early phases of a project. The team leading the planning process should include members from all the organizations with a significant role in the project. Since there is no single best method for BIM implementation on every project, each team must effectively design a tailored execution strategy by understanding the project goals, the project characteristics, and the capabilities of the team members.

The BIM Project Execution Plan Content is a product of the BIM Project Execution Planning buildingSMART alliance™ (bSa) Project. The Content was developed to provide a practical template that can be used by project teams to document their BIM Project Execution Plan.

The Building Information Modeling (BIM) Project Execution Plan Content includes the following sections:

- SECTION A: BIM PROJECT EXECUTION PLAN OVERVIEW
- SECTION B: PROJECT INFORMATION
- SECTION C: KEY PROJECT CONTACTS
- SECTION D: PROJECT GOALS / BIM USES
- SECTION E: ORGANIZATIONAL ROLES / STAFFING
- SECTION F: BIM PROCESS DESIGN
- SECTION G: BIM INFORMATION EXCHANGES
- SECTION H: BIM AND FACILITY DATA REQUIREMENTS
- SECTION I: COLLABORATION PROCEDURES
- SECTION J: QUALITY CONTROL

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- SECTION K: TECHNOLOGICAL INFRASTRUCTURE NEEDS
- SECTION L: MODEL STRUCTURE
- SECTION M: PROJECT DELIVERABLES
- SECTION N: DELIVERY STRATEGY / CONTRACT
- SECTION O: ATTACHMENTS

Additionally the Content references a number of items from the BIM Project Execution Planning Guide. The guide has been submitted as separate ballot item and can be downloaded at the project website (bim.psu.edu) or in the supplemental material for this ballot submission.

Content Development

The Content was developed to supplement the BIM Project Execution Planning Guide. The Guide was developed as part of a research project sponsored by the Charles Pankow Foundation, the Construction Industry Institute, the Penn State Office of Physical Plant, and the Partnership for Achieving Construction Excellence (PACE).

The following research steps were conducted. Overall the research team developed the initial draft planning Content. The steps that were employed to create the BIM Project Execution Plan Content include:

Collect BIM Execution/Implementation Plan Data

The first step of the process to develop the defining supporting infrastructure procedure and Contents was to collect data about the current execution plans and what should be put into the creating of new execution plans

Literature Review the elements of a BIM Execution/Implementation Plan

Several documents have been published that explain the necessary elements that should be contained in BIM Implementation/Execution Plan. Some examples of these are:

1. AIA BIM Protocol (E202)
2. Autodesk Communication Specification
3. Consensus Docs BIM Addendum
4. US Army Corp of Engineers BIM Roadmap
5. Capital Facilities Information Handover Guide, Part 1. By Fallon, K., and Palmer, M.

Reviewed BIM Implementation Plans and Templates

In addition to the published documents, the team had the opportunity to review proprietary BIM implementation plans provided by companies that were collaborating with the research team. At least six industry partners contributed examples for this purpose.

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Interviews and Focus Group

The team conducted focus group meetings and interviews to help determine the necessary elements of an implementation plan.

Development Procedure and Content

After all the data was collected, the team located common elements from all the various resources. Table 5.4-1 shows a category breakdown of all of the elements contained in the published documents. Additional information from the proprietary BIM implementation plans was also considered. These common elements were compiled and documented in the initial version of the BIM Project Execution Plan Content (termed the BIM Project Execution Plan Template upon initial release).

Table 5.4-1 – BIM Execution Planning Category Guide

BIM Execution Planning Guide	AIA BIM Protocol Ex.	Autodesk Comm. Spec.	Consensus Docs BIM Add.	US ACE BIM Roadmaps
Project Reference Information				
Project Overview Information		X		
BIM Contractual Requirements			X	
Key Project Contacts		X	X	X
Project Goals/BIM Objectives				
Purpose of BIM Implementation		X		X
Why Key BIM Use Decisions		X		X
BIM Process Design				
Process Maps for BIM Project Activities		X		
Define Information Exchanges		X		X
Delivery Strategy/Contract				
Definition of Delivery Structure		X	X	
Definition of Selection				
Definition of Contracting			X	
BIM Scope Definitions				
Model Elements by Discipline	X			
Level of Detail	X	X	X	X
Specific Model Attributes	X	X	X	X
Organizational Roles and Responsibilities				
Roles and Responsibilities of Each Organization	X	X		X
Define Contracting Strategies for Organizations			X	
Communication Procedures				
Electronic Communication Procedures		X		
Meeting Communication Procedure				
Technology Infrastructure Needs				
Hardware		X		X
Software		X	X	X
Space			X	
Networking Requirements		X		X

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BIM Execution Planning Guide	AIA BIM Protocol Ex.	Autodesk Comm. Spec.	Consensus Docs BIM Add.	US ACE BIM Roadmaps
Model Quality Control Procedures				
Methods to ensure model accuracy	X	X	X	X
Glossary of Terms	X	X	X	X

After the common elements were identified, the team began to develop a series of documents that that project teams could use to assist them when developing a BIM Project Execution Plan. In order to develop the Content, a rough draft was created and then reviewed by the research team in small focus group meetings. Suggests for improvement were made and the Content was updated. Figures 5.4-2 and 5.4-3 show examples of the BIM Project Execution Plan Content.

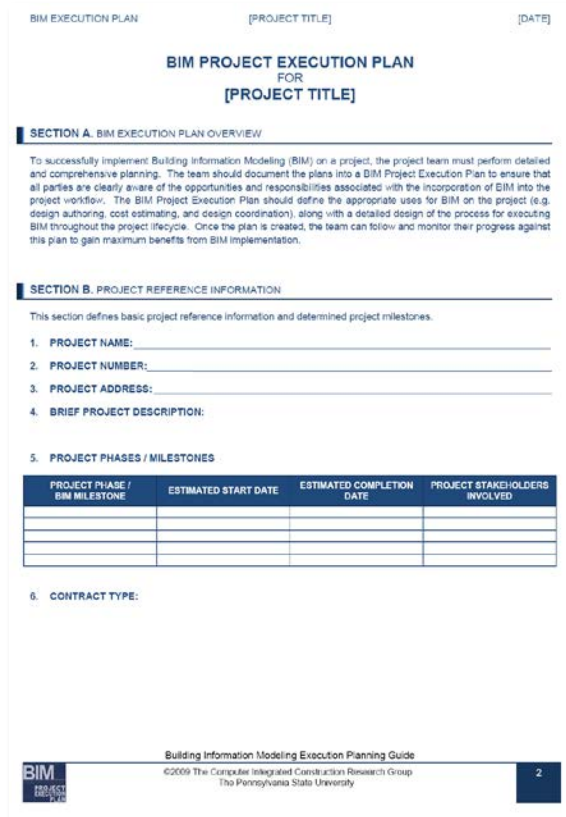


Figure 5.4-2 – BIM Project Execution Plan Content



Figure 5.4-3 – Image of Version 1.0 of the BIM Project Execution Plan Content

Once Version 1.0 of the Content was completed in late October 2009, it was released for review and use on the research project website.

Validate Procedure and Content

After the Content was released it was reviewed by industry members on a general level as well as making minor modifications. More importantly the Content was reviewed at length through a line by

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line analysis by the US Army Corps of Engineers BIM industry advisory group when they were adapting the document for adoption within the USACE contract requirements.

Unsolicited Industry Review

The research team made an announcement to those who had downloaded the BIM Project Execution Planning Guide that the Content was available for download. As soon as this occurred, the Content received numerous downloads, and the Content was published and referenced on several other industry websites. Thereafter, the research team started to receive comments on the Content. These comments were then used to update the Content.

Reviewed By USACE BIM Contract Language Team

After the Content was released, the project team worked with Steve Hutsell, lead of the US Army Corps of Engineers (USACE) BIM Contract Language Workgroup to modify the Content with some minor customization for the USACE. To accomplish this, the USACE BIM Contract Language Workgroup conducted three 2-day workshops to review and update the Content. Each workshop was about one month apart. At the workshops,

the workgroup went through each line of the Content and discussed whether or not it should be contained in the USACE Specific Project Execution Plan (PxP) Template. To accomplish this task, about an hour was spent on each section of the Content during each workshop. Between workshops additional revisions were made to the USACE Specific PxP Template which is directly based upon the Content. At the next workshop, all revisions were reviewed in detail. Figure 5.4-4 shows a section from the USACE Specific PxP template that was created by the workgroup. This template is directly structured from the Content, with only very minor modification to make some sections optional and to appropriately provide descriptions that are consistent with USACE contract requirements.

SECTION C: PROJECT GOALS / BIM OBJECTIVES

Describe how the BIM Model and Facility Data are utilized to maximize project value (e.g. design alternatives, life-cycle analysis, energy analysis, sustainability analysis scheduling, estimating, material selection, pre-fabrication opportunities, site placement, etc.) Reference www.engr.psu.edu/bim/download for BIM Goal & Use Analysis Worksheet.

1. **MAJOR BIM GOALS / OBJECTIVES:**
State BIM Goals / Objectives

BIM GOAL	DESCRIPTION

2. **BIM USES:**
The BIM Uses currently highlighted/shaded/checked(x) are required by USACE RFP Section 01 33 16, Design after Award, Attachment F to be developed by use of the BIM Model. Highlight in yellow and place an X next to the additional BIM Uses as selected by the project team. See BIM Project Execution Planning Guide at www.engr.psu.edu/BIM/BIM_Uses for Use descriptions. Include additional BIM Uses as applicable in empty cells.

X	PLAN	X	DESIGN	X	CONSTRUCT	X	OPERATE
	PROGRAMMING	X	DESIGN AUTHORIZING		SITE UTILIZATION PLANNING		BUILDING SYSTEM ANALYSIS
	SITE ANALYSIS	X	PROGRESS REVIEWS		CONSTRUCTION SYSTEM DESIGN		ASSET MANAGEMENT
		X	INTERFERENCE MANAGEMENT (3D COORDINATION)	X	INTERFERENCE MANAGEMENT (3D COORDINATION)		SPACE MANAGEMENT / TRACKING
			STRUCTURAL ANALYSIS		DIGITAL FABRICATION		DISASTER PLANNING
			LIGHTING ANALYSIS		3D CONTROL AND PLANNING		
		X	ENERGY ANALYSIS	X	RECORD MODELING		OPERATION & MAINTENANCE RECORD MODELING
			PROGRAM VALIDATION		FIELD / MATERIAL TRACKING		
			MECHANICAL ANALYSIS		DIGITAL LAYOUT		
			OTHER ENG. ANALYSIS				
			SUSTAINABILITY (LEED) EVALUATION				
			CODE VALIDATION				
			PRELIMINARY CONSTRUCTION SCHEDULING (4D)		CONSTRUCTION SCHEDULING (4D)		BUILDING MAINTENANCE SCHEDULING (4D)
	COST ESTIMATION (5D)		COST ESTIMATION (5D)		COST ESTIMATION (5D)		COST ESTIMATION (5D)
	EXISTING CONDITIONS MODELING		EXISTING CONDITIONS MODELING		EXISTING CONDITIONS MODELING		EXISTING CONDITIONS MODELING

Figure 5.4-4 – Section of the USACE Project Execution Plan Template

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Updated Procedure and Content

The unsolicited review and the review by USACE were then used to update the Content. Figure 5.4-5 shows the current version of the Content.

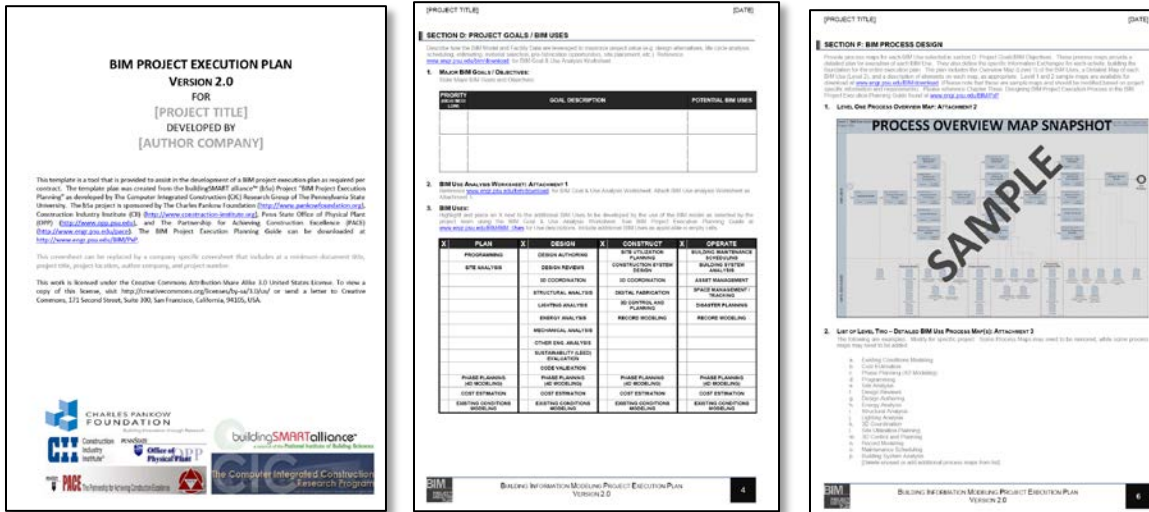


Figure 5.4-5 – Portions of Current BIM Project Execution Plan Content

Industry Acceptance of the Guide

The use of the BIM Project Execution Plan Content has quickly become common practice for multiple organizations and is rapidly gaining acceptance as an industry standard within the building industry. To assist with documenting the Content’s acceptance, a survey was distributed to those who have downloaded the BIM Project Execution Planning Guide and its related resources. The following statistics, which are gathered from that survey and various other sources, support the claim of wide acceptance across the industry.

Owners Requiring Submission

Since the start of this project a number of large organizations have been using the Content. Some organizations have adopted a requirement to submit BIM Project Execution Plans through the use of the Content. The following is a list of three owner organization that have confirmed this requirement:

- US Army Corps of Engineers (embedded into Attachment F);
- US Air Force; and
- Penn State Office of Physical Plant.

Conclusions

The BIM Project Execution Plan Content provides a structure to the information that should be included in a BIM Project Execution Plan. Based on the level of industry acceptance and the rigorous

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methodology used to develop the Content, we request that the BIM Project Execution Plan Content be accepted as a practice standard within NBIMS-US.

Acknowledgements

We wish to thank the sponsors for the Guide development which include:

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- The Construction Industry Institute;
- The Pennsylvania State University, Office of Physical Plant; and
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We would also like to thank the Advisory Board Members which include:

- Deke Smith, Executive Director of buildingSMART alliance™ (Industry Champion)
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Chapter 5.4 – BIM Project Execution Plan Content – Version 2.1

- Nevena Zikic, former Graduate Research Assistant, Penn State

Sources for Additional Information

For more information and resources, please see the project website at: bim.psu.edu

Additional information on the creation of the guide can be located in the following publications:

- Computer Integrated Construction Research Program. (2010). *BIM Project Execution Planning Guide: Final Research Methods Report, The Charles Pankow Foundation, Claremont CA (available at <http://www.pankowfoundation.org/grants.cfm> and in the supplemental documents folder)*
- Computer Integrated Construction Research Program. (2010). *BIM Project Execution Planning Guide: Second Interim Research Report, The Charles Pankow Foundation, Claremont CA (available in the supplemental documents folder)*
- Computer Integrated Construction Research Program. (Submitted for Review). *Project Execution Planning for Building Information Modeling: Research Report*. The Construction Industry Institute, Austin, TX, USA.
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Chapter 5.5 **Mechanical, Electrical, Plumbing, and Fire Protection Systems Spatial Coordination Requirements for Construction Installation Models and Deliverables – November 2009, Revised May 2012**

Acknowledgements

This *Mechanical, Electrical, Plumbing, and Fire Protection Systems (MEP) Spatial Coordination Requirements for Construction Installation Models and Deliverables* is a derivative work of a best practice guideline written by David Morris in 2003 and modified for the AGC BIMForum in 2009. It is the result of capturing ten years of practical methods on real world construction projects and reflects continual feedback and improvement gained from that process.

Many individuals have provided critical input and their observations incorporated in the document.

David Morris is the Director of Virtual Construction for EMCOR Construction Services and the current Chair of the National BIM Standard

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Executive Summary

The recent widespread adoption of Building Information Modeling (BIM) and 3D modeling in the construction industry has necessitated the development of a well-defined, organized, consistent, and repeatable framework for installation level spatial coordination of Mechanical, Electrical, Plumbing, and Fire Protection Systems (MEP).

This document, *“MEP Spatial Coordination Requirements for Construction Installation Models and Deliverables,”* will provide guidance to construction companies and individuals involved in 3D MEP (Mechanical, Electrical, Plumbing, and Fire Protection) spatial coordination of systems and components for fabrication and installation. It does not delve into Design Coordination or interfaces between Designers and Installing Contractors. It is not a replacement for the ConsensusDOCS 301: BIM Addendum, a BIM Implementation Plan, or any other more project specific scope of work or contract. No single document can convey every aspect required to complete a Building Information Model (BIM); therefore, the primary focus of this document is to outline the MEP spatial coordination process using 3D and BIM technology for the installing contractors and trades people. When used as intended, this document will provide assistance with team structure, definition of roles and responsibilities, recommendations for technical and IT considerations, social structure, and accountability.

While focused on traditional Design/Bid/Build delivery methods, this document (with minor additions) should work equally well on Design-Assist, and Design-Build projects. Projects using an “Integrated Form of Agreement” or other less traditional contracting method may find the document useful, but lacking in detail for interfaces between contractors and designers.

MEP trades have been spatially coordinating work between themselves for purposes of constructability, fabrication, and installation for over 20 years. Working relationships and team structures that work have evolved over time. Those traditional methods of spatial coordination for the creation of fabrication and installation documents are the guideline for this document. Clarification of roles and responsibilities for stakeholders reflect the use of newer technologies (i.e., digital overlay and simulation software in place of light tables). Maintaining current 2D deliverable roles and team framework, and adding the 3D technical aspects are the objective. If a question of “who should do what” arises, the team member with the highest risk and most to gain should perform the task. In most cases, the contractor responsible for installing the work (i.e. Mechanical, Electrical, Plumbing, Fire Protection, Framing etc) should also be responsible for accurately depicting it in the 3D model.

When adopting this methodology the focus should be on maintaining as many of the traditional spatial coordination social relationships as possible. Doing so will reduce learning curve and avoid disruption in established, well functioning stakeholder relationships.

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Minimum Qualifications – MEP Spatial Coordination Team

Participating companies should have adequate infrastructure and qualified competent personnel before onset of coordination.

Individual participants (persons not companies) in the MEP Spatial Coordination Team should have verifiable experience in at least two fully coordinated 3D projects where the MEP team spatially coordinated a 3D construction model.

Project Coordination Manager – *General Contractor's Representative*

The Project Coordination Manager (PCM) will administrate the MEP Spatial Coordination Team and ensure subcontractor participation and performance in all coordination efforts. The PCM will also create the mutually agreed upon construction and BIM coordination schedules and ensure the two are kept up to date and reconciled with each other. The PCM will maintain meeting minutes, monitor Subcontractor performance against the spatial coordination and construction schedules, and resolve issues of noncompliance.

The PCM will obtain and convey to the MEP Spatial Coordinator (see following section for definition of role) all structural and architectural features¹ that are required to complete the MEP spatial coordination. Specifically, the PCM will manage the timely distribution of architectural, structural, and MEP electronic data and hard copy drawings between the Design Team (Project Architect, Mechanical Engineer, Plumbing Engineer, Electrical Engineer, etc.) and the MEP Spatial Coordination Team and maintain current logs².

The PCM will act as liaison between the MEP Spatial Coordination Team, the owner, and designers to ensure that all parties are aware of design changes or spatial issues requiring design input for resolution.

Design changes that affect the MEP systems or spatial issues requiring resolution by the Design Team but not conveyed to the MEP Spatial Coordination Team in a timely fashion may adversely affect the coordination and construction schedules and impact cost.

In the event a spatial coordination issue cannot be resolved between the MEP Spatial Coordinator and MEP subcontractors, the PCM will act as final arbitrator.

MEP Spatial Coordinator – *MEP Lead Subcontractor*

The MEP Spatial Coordinator (MSC) will lead the MEP Spatial Coordination Team under the administration of the PCM and in partnership with the Mechanical, Electrical, Plumbing, Fire Protection, and all other MEP coordination participants. The MSC will be responsible for the daily MEP spatial

¹ Appendix A, Note 5.

² Appendix A, Note 4.

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coordination, including but not limited to, conducting the spatial coordination meetings, facilitating the federated model updates, maintaining the collaborative workspace, and facilitating meeting participation for local and remote participants.

Project Coordination Schedule

The General Contractor will prepare and maintain a mutually agreed upon spatial coordination schedule with coordination drawing submittal milestones that meet the overall project construction schedule. A realistic and mutually agreed upon preconstruction coordination schedule created by the General Contractor with input from all subcontractors participating in the coordination is imperative to success. Coordination drawing development, coordination submittal drawing submission and review by the Engineer of Record, fabrication duration, and delivery lead times will be included to support the project construction schedule.

Coordination Set-Up and Participation

The Design Team will provide electronic Models and applicable existing CAD files of the current contract drawings to the MEP Spatial Coordination Team at no cost, in the format specified in Appendix A. The MSC will use the electronic files provided by the Design Team to create backgrounds, a key plan, title block files with defined views in a scale that coincides with the architectural sheet set, and other support files necessary to complete project coordination. All MEP trades must fully participate in the coordination process. Success requires that the MSC, PCM, and all of the MEP subcontractors are fully committed throughout the entire process. Any contractor who fails to comply with the agreed upon coordination schedule will bear the costs incurred by others. *(This clause should be added to the contract in the division 1 requirements, in the absence thereof; a contract addendum including this entire document is acceptable).*

Human Resource Requirement

Each participating company must adequately staff their coordination department with qualified trade knowledgeable personnel. Participants must have **proficiency and authority** for spatial coordination of their work. The ability to collaborate in a team environment is imperative.

File Transfer and Collaboration Workspace

The MSC will establish and host a web-based electronic workspace or File Transfer Protocol (FTP) for the purpose of efficient and timely transfer of coordination files. The workspace will provide a collaborative location where the current contract CAD drawings, coordination CAD Models, and fully coordinated submittal drawing files will reside. Each BIM coordination team member obtains data from this location. MEP Spatial Coordination Team members are to upload updated copies of their coordination files, provide notification, and make collaboration comments/annotations as often as necessary to maintain the coordination schedule. The Construction Manager or General Contractor may use the MEP spatial

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collaboration workspace as an interface for collaboration between the Owner, Design Team, and other trades not actively involved in the MEP spatial coordination process.

File Format, Compatibility, and Completeness

All team members must produce coordination drawings in the format specified in Appendix A 3.4 to ensure compatibility with the other coordination team members. Each MEP Coordination Team member is to model **all** of the **major components**³ of their work to scale, at elevation, and free from interference with the structure, their own components, and other MEP trades' work. Supports, hangers, seismic restraints, insulation, structural zones of influence, serviceability access, and maintenance clearances shall be included.

After all coordinated components are in place, installation of items not included in the coordinated installation drawing may begin. Any items not in the coordinated model will be installed after coordinated items are in place. Accessibility to install non-coordinated work is not an exclusion or exception to this requirement. Each participant is required to consider sequence of work when determining the degree of detail required.

Coordination Meetings

The MSC will host regular weekly (or more frequent) coordination meetings, administrated by the PCM. Attendance is mandatory by all MEP Spatial Coordination Team members to maintain the coordination and construction schedules.

MEP Spatial Coordination

Before the onset of 3D modeling, the MSC will host a spatial planning meeting for conceptual routing of MEP components within the architectural space. The primary goal is to properly pre-plan the initial routing of major systems to increase efficiency of the MEP coordination process by reducing the number of “first pass” spatial interferences.

Electronic MEP spatial interference reconciliation by the MSC occurs during mandatory coordination meetings. Using collaboration software⁴, the MSC provides “real time” rendered views of the structure and MEP components, documentation of spatial interferences, and identification of the party responsible for making changes. After every spatial coordination meeting a report of required changes is distributed to the MEP Spatial Coordination Team members by the MSC. The Design Team shall participate in the coordination meetings as necessary to resolve spatial issues that may require design consideration. The Design Team must document and transfer to the PCM for distribution to the MEP Spatial Coordination team any design changes that occur during the MEP spatial coordination process.

³ Appendix A, Note 1.

⁴ Appendix A, Note 3.6.

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Submittal and Coordination Sign-off Drawings

When all spatial interferences and coordination issues have been resolved, each MEP coordination team member will produce complete and fully annotated installation drawings⁵ of their respective systems, including title blocks appropriate for installation by their field team. One hard copy and one PDF data file are required for submission to the Design Team for review of compliance with design intent. Upon approval by the Design Team, a copy of the fully coordinated coordination submittal drawings, signed by each participant, will become the official “Coordination Sign-off Drawings.” The “Coordination Sign-off Drawings” (stored by the General Contractor on the project site) form the basis for resolution of any field installation conflicts or disagreements.

Persons installing components not shown on, or not installed in accordance with, the “Coordination Sign-off Drawings” will relocate those components at their expense.

Non-compliant parties bear all cost for rework, re-coordination, or schedule impact required to accommodate components not shown on, or not installed in accordance with, the “Coordination Sign-off Drawings,” including impacts to other parties affected by their lack of compliance.

Record and As-Built Deliverables

At project completion, each MEP participant shall:

- Incorporate “As-Built” conditions affecting their work into the electronic CAD files and provide a record set of drawings in PDF format.
- Provide printed copies of the PDF files in quantities required by project specification.
- Export electronic CAD files in 3D to IFC format and transfer via electronic media (CD, DVD, FTP site) and other means as required by project specification.
- Provide rendered models for inclusion in a comprehensive “Project Master Model” assembled by the PCM or other designated party.

Hardware and Software Requirements

All MEP Spatial Coordination Team members are responsible to have, or obtain at their cost, the hardware and software required to participate efficiently in this critical phase of the project. See Appendix A for minimum hardware and software recommendations⁶. Personnel participating in the coordination efforts of this project must be proficient in the use of this technology.

⁵ Appendix A, Note 6.

⁶ Appendix A, Note 3.

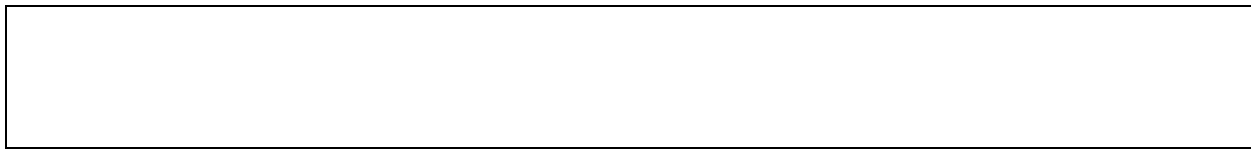
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Appendix A

1. Major Components

1.1. HVAC Duct

- 1.1.1. All ductwork, grilles, registers, diffusers, dampers, access panels, air moving equipment, maintenance clearances, and any item that may impact coordination with other disciplines.



1.2. HVAC Piping

- 1.2.1. All overhead piping, vertical piping in shafts, connections to equipment, scheduled equipment, maintenance clearances, hangers, supports, and any item that may affect coordination with other disciplines.



1.3. Plumbing

- 1.3.1. All overhead piping, vertical piping between floors, connections to equipment and fixtures, maintenance clearances, hangers, supports, and any item that may affect coordination with other disciplines.



1.4. Fire Protection Piping

- 1.4.1. All overhead piping, branch connections, drops and heads, access panels, maintenance clearances, hangers, supports, and any item that may impact coordination with other disciplines.

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1.5. Electrical

- 1.5.1. All conduits 2” and larger, any rack of two or more conduits regardless of size, lights and fixtures, electrical pull and circuit boxes, access clearances, all cable trays, hangers, supports, raceways, and any item that may impact coordination with other disciplines.
-

1.6. Framing

- 1.6.1. All king studs, headers, and any item that may affect coordination with other disciplines.
-

2. Minimum Hardware Requirements *(update on every project)*

2.1. Computer:

3. Minimum Software Requirements *(Modify and update specifically for each project)*⁷

⁷ Hardware and software requirements are meant as a general guideline and should be reviewed and modified as project requirements dictate.

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4. Logs

- 4.1. RFI
- 4.2. Submittal
- 4.3. Contract Drawings
- 4.4. ASI
- 4.5. Change Proposals
- 4.6. Specifications

5. Structural/Architectural Features Required for MEP Coordination

- 5.1. Spatially accurate and dimensionally scalable building elements including but not limited to soffits, fixture locations, ceiling/floor tile locations, ADA clearances, interior wall framing, moment frame side plates, cross bracing, gusset plates, beam stiffeners, miscellaneous steel framing, and other similar entities within the modeling space requiring coordination with the MEP trades.

6. Fully Annotated Installation Drawings

- 6.1. Fully annotated installation drawings shall include all text, dimensions, and annotations required for physical location of all elements shown on the drawings in the physical space at the time of installation.

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Chapter 5.6 Planning, Executing and Managing Information Handover – 2007, Revised June 2011

The following is an excerpt from the 2007 National Institute of Standards and Technology publication, NISTIR 7417, *General Buildings Information Handover Guide: Principles, Methodology and Case Studies (An Industry Sector Guide of the Information Handover Guide Series)* by Kristine K. Fallon and Mark E. Palmer. Chapter 5: Planning, Executing and Managing Information Handovers was updated in June 2011, specifically for inclusion in the best practices guidance of NBIMS-US V2.

Overview

The following is a summary description of each step.

- **Information Strategy:** Every organization involved in the design, procurement, construction or operation of capital facilities should develop an information strategy. The strategy will be driven by business purpose. The information strategy should prioritize information and assign a business value to various information packages. The strategy should also be consistent with the organization's data security policies.
- **Information Handover Requirements:** The organization must define the contents as well as the appropriate information form and format for each information package required and also consider the associated metadata. This step will inform the Project Information Handover Plan.
- **Project Information Handover Plan:** This plan not only covers the information handover

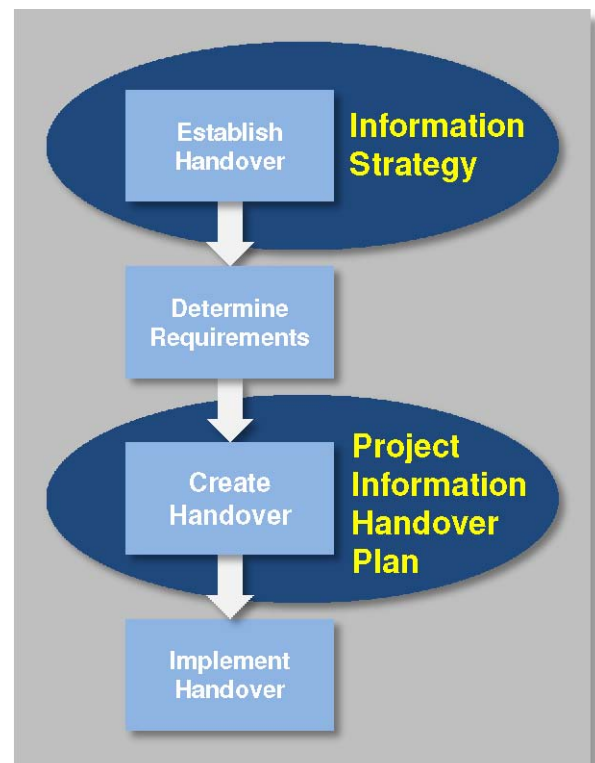


Figure 5.6 -1 – Successful Information Handover Step

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requirements, but also covers responsibilities and implementation methods. In particular, the originator of each information package must be identified. Conflicting handover requirements of the various team members, particularly format preferences, must be resolved.

- **Implementation:** This step includes technical implementation as well as establishment of project procedures, contractual responsibilities and training programs.

Information Strategies

The organization's information strategy should cover the following topics:

1. What facility information is important
2. When this information is created and by whom
3. Contractual, legal and regulatory issues related to this information
4. Who within the organization will be responsible for capturing, checking and maintaining the information
5. How the organization's data management and security policies will be applied to this information

Information Strategies for the General Buildings Sector

The *Capital Facilities Information Handover Guide (CFIHG) Part 1* suggests that an information handover approach must derive from a facility life cycle information strategy defined by the owner. In the general buildings sector, however, there appear to be at least four different and effective information strategies:

1. **Owner Strategy to Optimize Facility Life Cycle Value:** The first is the strategy envisioned by the CFIHG *Part 1*. Owners endeavor to improve facility life cycle operations and reduce total life cycle costs by first identifying the information packages critical to both project and long-term facility management and then defining information handover requirements. In the general buildings sector, major owners taking this approach include U.S. federal government agencies, particularly the U.S. National Aeronautics and Space Administration (NASA) and the Department of Defense (DoD). The Construction Operations Building Information Exchange (COBIE) project, which is funded by NASA and executed by the Engineer Research and Development Center at the Construction Engineering Research Laboratory (CERL), is an example.
2. **Owner Strategy to Improve Project Delivery:** Another owner-initiated strategy focuses on improving construction project delivery. In 2004, the Construction Users Roundtable (CURT) released a white paper (**WP-1202**), *Collaboration, Integrated Information and the Project Lifecycle in Building Design, Construction and Operation*. This paper was produced by CURT's Architectural/Engineering (AE) Productivity Committee, which was convened to address the perception of inadequate, poorly coordinated AE drawings that result in difficulties in the field, leading to cost and

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schedule overruns. CURT directed this committee to evaluate how alternative processes, particularly the use of information technology combined with changes in project structure and delivery methods, might address these issues. Starting in 2004, General Motors (GM) Corporation, a CURT member, undertook a series of capital projects that have moved progressively toward full virtual design and construction before any activity begins on-site. They progressively eliminated 2D drawing submissions in favor of direct electronic data exchanges and 3D reviews. GM's goal was to reduce waste, non value-added work and rework on the construction site, thereby achieving lower cost, higher quality, improved schedule and greater safety.

3. **Consultant or Contractor Strategy to Improve Project Delivery:** A very different strategy, often with similar results, is a designer- or contractor-led effort to optimize building design and/or construction in one or more performance dimensions (building performance, systems coordination, cost, schedule, quality) and thus create a competitive advantage for the company or team. Many design firms have embarked on path toward increased building performance simulation and design validation in areas such as lighting, thermal performance and sustainability. In addition, some firms now develop design models that can be handed over to contractors for purposes such as cost estimating, interference checking, constructability reviews and 4D simulations. Also, construction companies seek to work with design firms to achieve bidirectional transfers of building and systems geometry and assemblies.
4. **Supply Chain Strategy:** Perhaps the most well-developed information strategy in the general building segment is a supply chain strategy. Supply chain strategies seek to streamline information flow from design through analysis, detailing, fabrication and erection to eliminate lag time and redundancies. The goal is to deliver product better, faster and at a lower cost, creating competitive advantage for the entire supply chain. The American Institute of Steel Construction (AISC) began an Electronic Data Interchange (EDI) initiative in 1999. Very quickly, users of the CIMSteel Integration Standards Release 2 (CIS/2) data exchange standard were able to reduce the time it takes to design, procure and erect a steel structure, at the same time reducing field interferences and waste, and thus cost. In an early case study, structural engineers engaged in bidirectional data exchange with steel detailers and fabricators for the Soldiers Field project and succeeded in shortening the construction schedule by 4 months. The steel supply chain initiative was quickly followed by a precast concrete effort led by an ad hoc organization, the Precast Concrete Software Consortium.

In establishing an information strategy, each organization examines its facility-related business regulations, decisions and processes and defines the information required by each, known as an "information package." It prioritizes information packages based on business value. For example, a comprehensive inventory of light fixtures might be helpful, but that information may have lower business value than knowing the rentable area of the building. If a certain information package is used in many business processes, its value increases. Another way to identify high-priority information packages is by looking at businesses processes that are inefficient and/or costly due to lack of information.

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Once the organization has identified its high-priority information packages, it then determines when in the facility life cycle those information packages are created and by whom. Some information packages may be created across multiple life cycle phases and by several different organizations. This is typically the case with commissioning information, for example.

Information developed in one project phase may not be used at all in the next sequential phase, but may have great value in downstream processes. For example, although it may not be important for the contractor to know the reserve capacity of a facility's cooling system, that information will be important if the facility is ever expanded or converted to another use. Therefore, that information should be required at the handover point from design to construction. It will be critical to identify the next user of each information package as well as the party responsible for receiving each information package, ensuring its completeness and maintaining its integrity until its next use.

By defining the contents of high-value information packages, as well as when, how and by whom those packages are utilized, and when and by whom the information is created, the strategy provides guidance to all participants in capital facility projects on appropriate information handover requirements and also informs the issue of appropriate data forms and formats

Contents of the Information Strategy

It is critical that those making day-to-day decisions on capital projects understand the high-level purpose of information handover. By communicating the ultimate use and relative importance of various information packages, the information strategy permits designers, project managers and contractors to make appropriate decisions about handovers on their projects. In addition, the information strategy serves as the source document for detailed handover requirements and project-specific handover plans and for integration with enterprise applications.

The major sections of the facility life cycle information strategy should include, at a minimum:

- Management policy statement, stressing the business importance of successful information handover
- Identification of major information packages with:
 - Explanation of their business purpose and importance
 - Life cycle phases in which they are created
 - Who creates each information package, in terms of project or facility role? Is this an internal or external role? The precise individual and external organization will be identified in the project information handover plan.
 - Business processes in which they are used
- Conformance of information handovers with company policies regarding:

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- Contracts and procurement policies
- Legal and regulatory compliance
- Security
- Allocation and management of information technology resources
- Assigning responsibilities for:
 - Establishing appropriate contractual and procurement terms to ensure that required information packages are handed over
 - Ensuring that security policies are enforced during information handovers
 - Seeing that information handovers occur on a specific project
 - Establishing the system infrastructure for receiving information handovers
 - Assuring the quality of information handed over
 - Maintaining and managing handover information over time

Information Handover Requirements

The purpose of an information strategy is to communicate the ultimate use and relative importance of key information packages from the perspective of the organization creating the strategy. The next step is to define the contents of those key information packages, select an appropriate form and format for their handover and determine metadata requirements.

Applying an Existing Standard

Most organizations are able to describe the information they need at a summary level. Defining the exact contents of each information package is more challenging. The best approach is to apply a model view or use case that has already been defined, if one exists. Examples are the U.S. General Services Administration's (GSA) Spatial Program view of the Industry Foundation Classes (IFC) model (www.gsa.gov/bim) and the use cases defined for CIS/2 information exchanges in the steel supply chain. In these cases, multiple software vendors have already developed implementations. The COBIE specification discussed earlier and the Early Design Information Exchange specification originally initiated under the International Alliance for Interoperability (IAI) and now continuing under the U.S. National BIM Standard (NBIMS) both detail the contents and format for certain information packages. Both are included in the NBIMS (www.nbims.org).

There is no single standard that currently addresses all of the general building industry's handover requirements. In fact, there are gaps where no standards exist and other solutions must be used. However, not every information package has the same level of interoperability requirements. It is important to focus on the highest priority packages and those for which a standard format is most critical. Begin by understanding the uses of each prioritized information package.

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Uses of Information Packages

Information packages have different uses. Understanding the uses of your organization's prioritized information packages allows you to maximize the utility of the information while minimizing the complexity and cost of its capture and management.

Questions that should be answered include:

- Who and what system(s) will use the information and where will it need to be accessed? Which users and systems will view only and which, if any, will update? Obviously, the information package needs to be in a consumable format for its intended downstream users.
- Will this information be updated? Some percentage of the information packages will be static; i.e., they will be “frozen” at a specific point in time. An example would be an occupancy permit or a test report. Static information can be captured in a standard archival format such as PDF/A (ISO 19005-1:2005, *Document management - Electronic document file format for long-term preservation - Part 1: Use of PDF 1.4*) and should be protected from alteration. Good metadata will be required to permit the searching and retrieval of static information in unstructured form.
- Which and how many versions of the information package need to be handed over? For example, does the owner need both the as-designed and the as-constructed information? A common owner mistake is requesting so many handovers of evolving information that it is unclear, after the project is complete, which information package is the final, accurate one. If multiple versions are to be handed over, then data management and configuration control (i.e., tracking which analysis run produced which handover package and which changes within the model) will be critical.
- Is this information handover iterative? An example would be information handed over for design review and coordination. This type of handover must be executed quickly and efficiently. Often it is preferable to use proprietary formats for this type of handover.
- Is this information handover two-way? In other words, will the recipient be revising or adding to the information package and sending it back? A two-way information exchange is technically more difficult and also requires the ability to distinguish what has changed and to maintain an audit trail of which party created and/or changed which information when. Some proprietary solutions work better for this.
- How long will the information be retained? There are multiple factors that contribute to this assessment, including:
 - Regulatory and legal requirements
 - Importance of the information to business functions
 - When in the facility life cycle the information will be needed

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- Intended life span of the facility
- How frequently will the information be accessed or updated? Data that are in constant use can be expected to be converted to new formats as the organization’s IT environment evolves. Data that are seldom used, however, risk being forgotten. Monitoring should be put in place to flag any data in proprietary formats threatened with obsolescence. These are the information packages for which a standard format is most desirable.

There are four major categories of information forms and formats. Figure 5.6-2 identifies their comparative longevity and reusability. The terms structured, unstructured, standard and proprietary are defined and discussed in detail in Section 3.

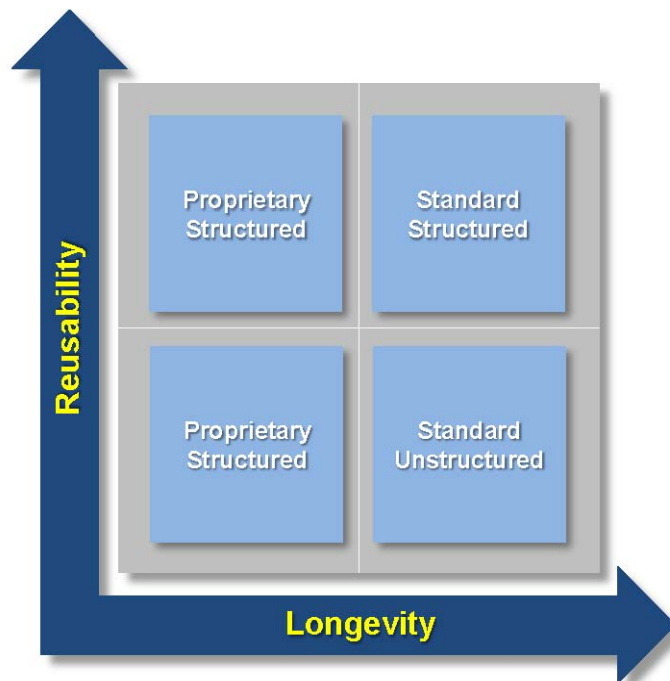


Figure 5.6-2 – Longevity and Reusability of Information Forms and Formats

In deciding on a standard format one must assess the level of adoption, the availability of reliable implementations and the cost of using the standard. Also, who will be the downstream users of the data? Will these users have access at a reasonable cost to software that supports the standard? It is also critical to consider the level of technological expertise of the potential information providers. Assuming that a standard format is available and well-supported by commercial application software, are the potential consultants, contractors and suppliers capable of creating a complete and accurate information package in that format? If it is unlikely that the level of technological

expertise in the marketplace will support the

optimal information handover approach, the facility owner must either provide training or modify the information strategy. Careful thought should be given to whether the short-term cost of providing training outweighs the long-term benefits of having the facility information in structured form and standard format.

Project Information Handover Plan

The information strategy:

- Specifies information required for decision-making, work processes and regulatory compliance (information packages)

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- Prioritizes these information packages
- Identifies by whom and when in the facility life cycle these information packages are created, and
- Identifies by whom or what process and when in the facility life cycle these information packages are used.

The handover requirements define, for each information package:

- Content
- Uses
- Preferred form and format
- Metadata requirements, and
- Retention.

The project information handover plan brings together the information handover content, format and metadata requirements and the project-specific conditions to ensure that the required information handovers can be executed.

Developing the Project Information Handover Plan

The information strategy and the handover requirements are generalized for any number of locations, facility types, project scopes and delivery methods. The challenge of the project information handover plan is to apply these general requirements to the specific project so that high-priority, correct and properly formatted information packages are dependably, timely and cost-effectively handed over by the originating members of the project team.

From General to Specific

Important considerations in tailoring the general guidance to the specific project include:

- Jurisdiction-specific requirements. Since the built environment is typically regulated at the local level, pay attention to requirements that vary based on locale, including:
 - Retention
 - Hard copy
 - Wet signatures or physical stamps
 - Digital signatures/ transmission, and
 - Information handover(s) to the jurisdiction.
- Each team member's responsibility for work processes that create priority information packages.

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This is an area of great variability, since many companies play multiple roles on some projects and entirely different roles on others. For example, some owners may self-perform some construction work and a firm that is the design engineer on one project may be the construction manager on another. Whether key information handovers are occurring within a single organization or across multiple companies affects the legal complexity and the need for data management at the overall project level. Typically, a firm will manage its own data and data exchanges until that data is released to outside companies.

- Specific software products in use by team members. Until the general building industry achieves much better software interoperability, this will be a constant question, exacerbated by the increasing prevalence of the use of multiple analysis programs for design optimization. What capabilities do the software packages have for reading/writing data in formats compatible with applications used by other project team members? These data exchanges will require testing and documentation of required user practices to ensure that non-exchangeable data types are not used.
- Requirements for information sharing among team members within the project, as well as for handoff to downstream processes. The concept of information handover seems to imply relinquishing ownership and management of that data, similar to the handing over of as-built drawings at project closeout. However, many data handovers during project planning, design and construction are iterative, with information added, reviewed, updated and then further developed. Iterative exchanges are perhaps the most difficult to manage inasmuch as they require tracking versions of data sets. They are particularly challenging when a model developed by one team member is handed off to an analysis application that modifies the model and the modified model is then returned to the original author. In this circumstance, tracking who is responsible for each change is critical.
- Each organization's experience and capacity to work with data standards and structured data forms. The teams most successfully using BIM consider BIM expertise in selecting project team members. Many organizations launching a BIM project are frustrated by a key team member's inability or refusal to participate in the electronic process.

Balancing Costs and Benefits

There will be some cost associated with both the project information planning process and the project team members' compliance with the plan. Based on the case studies documented in this guide, these costs are more than offset by benefits. Benefits do not accrue evenly to all stakeholders, however, and are not necessarily proportionate to costs incurred. The compensation model for the project participants should recognize this fact and create appropriate incentives for all team members.

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Handover Plan Contents

The project information handover plan should define a comprehensive approach to the consistent creation, management, use and exchange of all information related to both the execution of the project and the priority information packages identified as deliverables at project closeout. The plan should document:

- Project-specific information package sources and when produced
- All uses of priority information packages generated during the project in subsequent life cycle phases
- Format for each information package
- Required metadata
- Handover method, and
- Clear assignment of responsibility for all information creation, handover, quality and compliance monitoring activities

The following topics should be considered when developing the project information handover plan.

Information Quality Considerations

Processes must be agreed upon and put in place at project startup to ensure the quality of the information to be handed over. These should be part of the project's overall quality plan.

Properties of information for which quality requirements should be assessed include:

- **Clarity/ Consistency:** Clear and shared definitions: do creators and users of information use the same codes and terms with the same meaning? Is information received from different sources consistent in terms of naming, units and relationships? Be thorough about developing and enforcing standard terminology.
- **Accessibility:** Where, how and to whom the information is or is not available: is the information easily accessible? Adequately secured? This will, at a minimum, require the designation of a team member to be responsible for managing information handovers. Hopefully, automated systems can be used to assist team members in delivering and logging their handovers and accessing the information they require.
- **Usability:** Can the information be organized and presented differently for different users? For example, a cost estimator or specification writer views facility information much differently than the design engineer who created it. Are there multiple copies or versions of this information? If so, is there a master copy from which the others are derived? With BIM, there is frequently a

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considerable difference in the way the design team models the building compared to how the construction team models it. For example, the designers may model a large slab as a single object. The contractor may model it as a number of smaller slabs, defined by his pours. One way to handle these differences is to have the contractor, assuming he is involved during design, provide his objects for the design team to incorporate into the model. The second approach is to create a second construction model. This would then require some way of referencing the design model to ensure maintenance of design intent.

- **Completeness:** How much of the required information is available: is the full content of each information package supplied? Is all the required information routinely created by the project team in their normal course of activities, or do they need to do something special? Another issue here is that an information package may be generated by multiple organizations and/or in multiple phases. Thus the handover is not a single deliverable, but two or more deliverables that must be merged in some fashion to create the required information package.
- **Timeliness:** The availability of the information at the time required: is the current version of the information team members require available, and is it available when they need it? The project schedule should accurately reflect when information handovers are required. However, the transfer of data, particularly if it must be translated or checked, may add time that is not reflected in the schedule. A second issue is when in-progress information should be communicated to other team members. Sharing in-progress work too transparently may result in other team members' scrambling to accommodate a change that really is not a change; it is just a "what-if" study.
- **Accuracy:** How close to the truth the information is: is the accuracy of the information known and does it meet requirements? It is important to determine both the level of detail and the level of precision expected at various points in the project process. Clearly the "build it first digitally" approach requires a very complete and very precise model for all systems included before the project enters physical construction. However, this is not the level of accuracy required in conceptual design. Some organizations, such as the U.S. Coast Guard, have defined levels of model detail required at project milestones based on the UniFormat levels.
- **Cost:** The cost incurred in obtaining the information and making it available for use: is the information supplied in a form and format that means the cost of maintaining it throughout the life of the asset has been minimized? What about the costs of managing and quality assuring the information handovers during the project process? Information management may be a new cost item for many organizations. It is important that business managers understand that there is a cost to this activity when they determine project staffing and fees.

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Information Quality Management

The project information handover plan should provide an information quality management framework that describes the information handover in terms of scope, contents, constraints, coding, timing and procedures.

The information quality management framework should address:

- What is to be handed over and in what format
- Required metadata
- How the information is to be handed over and receipt acknowledged
- Time period allowed for verification of transfer and checking
- Quality metrics for the information and the process to ensure that the information is of the required quality, and
- The procedure to be followed if and when incorrect or incomplete data is found.

Logistics

The project information handover plan should make clear:

- Who will produce each required information package
- When they will deliver the information package
- How they will deliver the information package
- Who will receive the information handover
- Where the handover information be stored, and
- Who will be responsible for its management and integrity.

New Project Roles

Managing data exchanges during the project process is typically the responsibility of the project team. As the AISC suggested in the *2005 Code of Standard Practice*, the responsibility for managing the model and the data exchanges should be assigned to a specific organization on the team. The owner should also designate responsibility within its IT group for receiving the appropriate information handovers at project closeout, archiving and maintaining the data and making it accessible to downstream users.

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Handover Methods

The method of handover will depend to a certain extent on the form of the information to be handed over. Owners may continue to require information to be handed over as paper records, most often in conjunction with digital surrogates. Where this is required, it should be clearly noted in the project information handover plan.

For electronic handover, there are a number of approaches that can be adopted. Efforts should be made to provide the entire project team controlled access to a shared repository of accurate project information and to minimize redundancy, data re-entry and the effort required to conform multiple versions of the same information. There are a number of possible approaches to doing this and these are somewhat dependent on the information strategy:

- **Owner System:** The owner implements an information system and provides controlled access to all project participants, internal and external. Based on project role, the various participants upload deliverables to the information system at the required handover points and/or retrieve the information required for their activities. This approach is designed for an owner-driven strategy of optimizing facility life cycle costs and operations. The challenge with this type of system is that it may not support all information exchanges necessary between project team members.
- **Third Party System Based on Owner Requirements:** A consultant, construction manager or contractor establishes a system to capture the information packages required by the owner and then hands over the populated system to the owner at the end of the project. This approach can be used where the outside organization already has a well-established infrastructure, but the owner does not. It is useful in providing a framework within which the owner will be able to manage key information packages over the long term. It is consistent with an owner-driven strategy to optimize facility life cycle costs and operations but, again, may not support information handovers between team members during design and construction.
- **Cross-Organizational System:** A consultant, application service provider, construction manager or contractor implements and manages a shared information system that is populated with information throughout the project by all participants. This approach is consistent with a supply chain or project delivery optimization strategy and is the approach recommended by AISC. In this approach, the information to be handed over to the owner will likely be a subset of all information accumulated. The current lack of robust data management tools means that the selection and transfer of the owner-required handover data to the owner's system may require additional effort.
- **Information Handover as Discrete Project Closeout Task:** Each organization participating in the project uses its own in-house systems to assemble the information and then exchanges information periodically on a one-to-one basis with other team members or the owner. At project closeout, some team member is designated to go back and assemble the owner-required information

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packages. Experience with Operations and Maintenance Support Information (OMSI), which is an example of this approach, indicates that the information gathering and formatting (not in structured form) effort to produce a modest group of information packages costs US \$40,000 for a typical Naval Facilities Engineering Command (NAVFAC) facility. In addition, this approach fails to support a high level of project collaboration and integration. This unmanaged type of data exchange with an add-on task of assembling information packages after the fact is undesirable under any strategy.

Data Transfer Methods

In the past, data were usually transferred on magnetic or optical media, such as 3.5-inch floppy disks, magnetic tapes or CD-ROMs. Today, such transfers are usually accomplished by electronic transfer across a public or private data network.

The method of data transfer should be agreed by the parties prior to the exchange of any information. Security issues must be addressed. It may be necessary to hand over certain design or contractual information on paper to meet with legal requirements. The requirements for paper documents need to be carefully considered in relation to the ability to create verifiable copies of information from electronic storage and the legal admissibility of such information.

Timing

The frequency and timing of information handovers must be settled. Issues to be covered include:

- Will there be a specific milestone at which various players deliver information packages, or will the information be built up throughout the project?
- Will trial handovers be required? It is advisable to test the handover technique and participants' understanding of the requirements early on to avoid reworking large quantities of data.
- If data conversion is required, how long will that take?

Responsibilities

Once the required handover information has been specified and documented, the participants in the project need to agree responsibilities for:

- Creation of information
- Security of information
- Quality assurance of information
- Gathering third party information (e.g., equipment vendor documentation)
- Getting information into the right format

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- Assigning metadata
- Implementation of the information management systems
- Managing the information through the project duration, and
- Assuming responsibility for the information upon project closeout.

Storing and Preserving Handover Information

Data preservation is a highly complex issue. Paper-based preservation focuses on preserving the physical entity. With digital data, preserving the physical media on which the data is stored solves only part of the problem. Digital preservation requires not only refreshing the physical media and ensuring that it can be read, but also ensuring that the digital data is not changed or corrupted and that programmatic access to the data is maintained.

Media refreshing ensures that data will not be lost due to deterioration of the media on which it is stored. An example of this would be copying data archived on one storage media to new storage media on a scheduled basis. Ensuring that the file is not changed or corrupted can be handled by techniques such as a checksum or digital signatures. This is called “bit preservation.” With the rapid turnover of devices, processes and software, the more difficult issues are the availability of hardware that can read the media and of software that can display the content.

Archiving the data in active, online storage rather than on external media best solves the media problem. Requiring information to be handed over in formats that are defined by *de jure* standards organizations such as the International Organization for Standardization (ISO) is the best protection against format obsolescence.

Implementation of the Project Information Handover

Implementation requires the alignment of work processes and software tools to produce and deliver the required handover information. The greatest efficiency will be achieved if the handover process is integrated with the information creation process. This will provide a streamlined flow of information.

Handover requirements (content, format and metadata) should be defined in the contract between parties. Unless the information is originally created in the desired form, it may be difficult and expensive to convert. Therefore, it is essential that the information strategy and the handover requirements be established before project initiation so that contractual requirements for information handover can be defined. It is also advisable to clarify the minimum hardware, software and communications requirements for each team member.

Business Considerations

Over the last ten years, many businesses in the design and construction industry have developed two separate IT groups. The first is more traditionally focused, addressing issues of system capacity planning,

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uptime and performance, communications infrastructure, data security and internal systems management. The second group merges domain expertise with IT savvy to assist the firm in evaluating and deploying client-facing systems such as Building Information Modelling (BIM), project management and collaboration. This second group typically has at least two tiers: project-focused individuals who provide front-line expertise, technology training and support to the teams working on projects and the more strategically focused technology visionaries responsible for proposing, evaluating and deploying new technologies and products. Large firms may have an additional tier of experts in specific products or technologies. This tier is typically involved in customizing solutions for specific markets, clients or projects to create competitive advantage. Many businesses are finding it valuable to include this second, domain-focused IT group in proposal/ bid preparation to help business managers assess the staffing, training and hard cost impacts of client electronic collaboration and information handover requirements.

Project Information Manager

Although each company participating in the project is responsible for the content, timely delivery and management of the information it creates, there is a need to integrate, check, coordinate and manage the information received from all parties. Beyond understanding the issues of coordinating building systems, this model management activity requires expertise in data structures, configuration control and information management. A single entity should be designated to serve this function. This entity can be dedicated exclusively to this activity or be a team member that is providing other services. The following is a commentary from the AISC's 2005 *Code of Standard Practice for Steel Buildings and Bridges, Appendix A: Digital Building Product Models*:

When a project is designed and constructed using EDI, it is imperative that an individual entity on the team be responsible for maintaining the LPM [Logical Product Model]. This is to assure protection of data through proper backup, storage and security and to provide coordination of the flow of information to all team members when information is added to the model. Team members exchange information to revise the model with this Administrator. The Administrator will validate all changes to the LPM. This is to assure proper tracking and control of revisions. This Administrator can be one of the design team members such as an Architect, Structural Engineer or a separate entity on the design team serving this purpose. The Administrator can also be the Fabricator's detailer or a separate entity on the construction team serving this purpose.

As an example, for the Hamilton Building of the Denver Art Museum, the contractor, Mortensen Construction, acted as the project information manager. Mortensen executed model sharing agreements with other team members. In addition to the 3D architectural model, all major shop drawings were submitted in 3D form. Throughout the pre-construction period, many different software products were used to create system-specific models that were shared through a project website.

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Mortensen staff linked the design model and the manufacturing (shop drawing) models used to build the project. The BIM models became the catalyst for collaboration. They conducted interference checks and 4D construction sequence simulations. They used the model data to ensure proper placement and tolerance during construction.

Contractual Terms

Integrated practice and the replacement of physical documents by information handovers raise questions about standard contracts, liability, risk management and insurability. Although there is little litigation case history, the emerging consensus is that these changes in when and how information is communicated do not alter the basic roles and responsibilities of the team. The AE is responsible for the design; the contractor is responsible for constructability issues, construction means and methods and shop drawings. What is important is that all parties understand, at each handover, the accuracy of the model and its intended uses.

Commonly used standard contracts do present an obstacle to a collaborative information sharing environment. These contracts are based on a legal differentiation between design, a professional service, and construction, a contractual and warranty obligation. Design information is conveyed via “instruments of professional service” to be used by the contractor. Even when information is exchanged electronically, most contracts denote the hard copy as the controlling design information. When the project delivery approach eliminates drawings and requires the development and use of a shared model, such contractual terms must be changed. Organizations such as the American Institute of Architects (AIA) and the Associated General Contractors of America (AGC) are currently working on revised language for standard contracts, but these updated standard contracts are not yet available. Businesses must therefore work with legal counsel to develop and negotiate special contract clauses that include:

- Allocation of responsibility for creating information
- Appropriate access to, reliance on and use of electronic information handed over
- Responsibility for the updating and security of the data
- Ownership and downstream uses of the information, and
- Compensation for team members that recognize the costs and risks they incur and the value they deliver.

The presence of a proposed project information handover plan will greatly facilitate the negotiation of these terms.

Liability and Insurance

Although the AE’s professional liability coverage does not extend to technology-based risks such as lost data, virus corruption, or software malfunctions, it does cover broadly defined design services,

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regardless of the means of communication or the form of the instruments of service. A new development may be the incorporation of elements designed by team members other than the AE. These team members will be legally responsible for their own design negligence and should consider insuring themselves appropriately. The model manager plays a critical role in tracking the source of each design element and incurs some special liability for data mismanagement, corruption or loss.

Technical Implementation

The technical implementation must align the hardware, software, data communications and IT operations to ensure timely creation and delivery of quality information in the proper form and format. It must also establish the proper access controls, data backup and security provisions.

Configuration Management

For all dynamic information, both standard and proprietary formats, configuration management will be very important. The information content of a given model or document will evolve over the course of the project, and many will continue to evolve through operations and maintenance. However, there may be a need to preserve and access “snapshots” at key points along the facility life cycle timeline and know who was responsible for each change. During design and construction, configuration management will be the responsibility of the model manager.

Testing

Initial testing should be performed to ensure that all software selected correctly reads and writes the preferred format. Time required for translations and data transfers should be measured. Additional testing is required for the software or technique that will be used to maintain an audit trail of changes to the model.

Documentation of Best Practices and Project Procedures

Following the testing, it is important to document any specific user practices necessary to achieve the desired outcome. A good example for BIMs is to advise users not to delete a model element and add a new one, which will also delete that element’s unique ID, but rather modify the element. This will permit the maintenance of the element’s unique ID and allow the tracking of changes to that element.

Documenting project procedures related to information handovers will help clarify new roles and responsibilities. The best approach is to write step-by-step work instructions specific to the software products(s) in use. The *GSA BIM Guide for Spatial Validation*, available at www.gsa.gov/bim, provides an excellent example of such documentation.

Staffing and Training

It is advisable to request a contact person on each company’s project team responsible for communications concerning information handovers, changes to the system or procedures and user training and support. This individual should also be responsible for initiating new users.

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Whether or not all project team members have experience with the software to be used, they all require training in the project information handover plan, associated procedures and best practices. All persons involved in information generation and handover should understand the following:

- Purpose and use of the information involved
- Life cycle aspect of information (in particular, the need for information to satisfy future life cycle requirements as well as its immediate use)
- Quality assurance issues (how to verify information)
- How to create and use the information, and
- Security issues such as confidentiality, virus checking and backup.

Project staffing is never static; people will come and go. Provide mechanisms for identifying and training new users.

Compliance Checking

There is a natural reluctance to change the way one works. In order to ensure the stated project procedures are followed, compliance checks should be performed periodically.

Continuous Improvement Program

A Lessons Learned or other continuous improvement program that periodically solicits feedback from users will be very effective both in encouraging compliance with project procedures as well as in identifying better ways to work.

Handover Lessons Learned By Early Adopters

The advisory panel for this guide contributed a number of insights concerning the potential pitfalls and keys to success.

Challenges

There were challenges encountered in a number of areas, including: commercial issues, entrenched expectations, resistance to change, immature technology and inadequate technology infrastructure.

Commercial Issues

Commercial issues encountered included conflicting business models of different project team members. This led to an individual company's attempting to optimize its own outcome rather than the project outcome.

Another issue that arose was model ownership. A related issue was the expectation on the part of some clients that, because a model existed, it could be readily reused for other, not necessarily intended, purposes. This raises the need for clarification of the specific information packages to be handed over.

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Expectations

Aligning expectations in general was an issue. Persistence of a 2D mentality and insistence on traditional project process, phasing and deliverables reduced the effectiveness of streamlined computer-based workflows and electronic information handovers. There were problems defining deliverables appropriate for the new project approach.

Change Management

There was also active resistance within project teams to change. A number of advisors reported that key project team members promised but failed to work in 3D or simply refused to believe the information handed over. In one case, the construction manager insisted on doing a manual quantity take-off even though they were supplied with a detailed take-off from the structural model by the engineers. Even where there was no active resistance, it was still challenging to find staff who could work and problem-solve in new ways. Project team members had different levels of IT capability and understanding. There was often a need for continuous training that was not always budgeted for or met. The consensus was that these issues are best resolved when the client assumes a leadership role and project team members are selected partially based on their 3D/ BIM capability.

Immature Technology

Early adopters encountered a number of challenges that were related to the immaturity of the technology. These included:

- Lack of standard model views
- Software incompatibility
- Limited data re-usability and machine interpretability, and
- High level of effort required to make the electronic information usable by others. This was particularly pronounced in two-way exchanges of information (e.g., the results of the analysis update the model).

The root causes of these issues are discussed in Section 3. There is still much work needed to develop use cases and model views and develop standard terminology so that advanced software systems can fully interoperate. There is also the need for test cases that will permit both software vendors and end users to know whether specific products can interoperate effectively. This is the area that is being investigated by the IAI buildingSMART initiative internationally and the NBIMS project committee in the United States.

Inadequate Technology Infrastructure

In addition, advisors cited inadequate technology infrastructure in several areas:

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- Wireless access and speed (processing time, bandwidth)
- Appropriate viewing devices
- Collaborative tools, and
- Model repository/model management software.

Keys to Success

Advisors were also able to identify common factors that led to success. These focused more on human factors and the quality of collaboration.

Human Factors

Perhaps the greatest success factor was strong leadership, either by the client or executive leadership within their own company. Also important were grassroots leadership and buy-in by the team. The availability of personnel with process flexibility and skills with the technology tools was also a factor.

Quality of Collaboration

The greater the number of team members who can share project information with confidence, the greater the level of efficiency and automation and the more successful the approach. Thus, key success factors also included:

- Transparency and accessibility of electronic information for more people
- Ability to use the information across the design/ construction team
- Appropriate quality assurance methods and procedures
- Collaboration that includes the trades
- Mutual trust, and
- Recognition of new project roles, such as information manager.

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