

# MasterFormat® 2010 Update Numbers & Titles

May 21, 2010

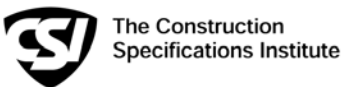
The numbers and titles presented here are identical to the numbers and titles contained in the MasterFormat® 2010 Update publication available for purchase from the Construction Specifications Institute (CSI) and Construction Specifications Canada (CSC). *May 2010 – Minor formatting change inserted in Division 12, no change in content.*

Contents reflect MasterFormat titles and numbers as of April 2010. Consult <http://masterformat.com> for the most current additions and changes to MasterFormat.

MasterFormat numbers and titles are intentionally structured for anticipated growth and expansion in the future. CSI and CSC encourage all interested parties to provide input using the “Propose a Revision” links on <http://masterformat.com> so that as the built environment evolves so can MasterFormat. Updates to MasterFormat are made annually.

MasterFormat is the specifications-writing standard for most commercial building design and construction projects in North America. It lists titles and section numbers for organizing data about construction requirements, products, and activities. By standardizing such information, MasterFormat facilitates communication among architects, specifiers, contractors and suppliers, which helps them meet building owners’ requirements, timelines and budgets.

To learn more about MasterFormat training, certification and local chapter information from CSI go to <http://www.csinet.org/> or from CSC go to <http://www.csc-dcc.ca/>. **For information about licensing use of MasterFormat for commercial or educational purposes, contact CSI at <http://www.csinet.org/>, [csi@csinet.org](mailto:csi@csinet.org) or by calling 800-689-2900.**



**All contents copyright ©2010, The Construction Specifications Institute and Construction Specifications Canada. All rights reserved.**

## 00 00 00 Procurement and Contracting Requirements

- 00 01 01 Project Title Page
- 00 01 05 Certifications Page
- 00 01 07 Seals Page
- 00 01 10 Table of Contents
- 00 01 15 List of Drawing Sheets
- 00 01 20 List of Schedules

### 00 10 00 Solicitation

#### 00 11 00 Advertisements and Invitations

- 00 11 13 Advertisement for Bids
- 00 11 16 Invitation to Bid
- 00 11 19 Request for Proposal
- 00 11 53 Request for Qualifications

### 00 20 00 Instructions for Procurement

#### 00 21 00 Instructions

- 00 21 13 Instructions to Bidders
- 00 21 16 Instructions to Proposers

#### 00 22 00 Supplementary Instructions

- 00 22 13 Supplementary Instructions to Bidders
- 00 22 16 Supplementary Instructions to Proposers

#### 00 23 00 Procurement Definitions

#### 00 24 00 Procurement Scopes

- 00 24 13 Scopes of Bids
  - 00 24 13.13 Scopes of Bids (Multiple Contracts)
  - 00 24 13.16 Scopes of Bids (Multiple-Prime Contract)
- 00 24 16 Scopes of Proposals
  - 00 24 16.13 Scopes of Proposals (Multiple Contracts)
  - 00 24 16.16 Scopes of Proposals (Multiple-Prime Contract)

#### 00 25 00 Procurement Meetings

- 00 25 13 Pre-Bid Meetings
- 00 25 16 Pre-Proposal Meetings

#### 00 26 00 Procurement Substitution Procedures

### 00 30 00 Available Information

#### 00 31 00 Available Project Information

- 00 31 13 Preliminary Schedules
  - 00 31 13.13 Preliminary Project Schedule
  - 00 31 13.16 Preliminary Construction Schedule

- 00 31 13.23 Preliminary Project Phases
- 00 31 13.26 Preliminary Project Sequencing
- 00 31 13.33 Preliminary Project Milestones
- 00 31 16 Project Budget Information**
- 00 31 19 Existing Condition Information**
  - 00 31 19.13 Movement and Vibration Information
  - 00 31 19.16 Acoustic Information
  - 00 31 19.19 Traffic Information
- 00 31 21 Survey Information**
  - 00 31 21.13 Site Survey Information
  - 00 31 21.16 Measured Drawing Information
  - 00 31 21.19 Photographic Information
- 00 31 24 Environmental Assessment Information**
  - 00 31 24.13 Soil Contamination Report
  - 00 31 24.23 Environmental Impact Study Report
  - 00 31 24.26 Environmental Impact Report Evaluation
  - 00 31 24.29 Record of Environmental Impact Decision
  - 00 31 24.33 Environmental Impact Mitigation Report
- 00 31 25 Existing Material Information**
  - 00 31 25.16 Existing Concrete Information
  - 00 31 25.19 Existing Masonry Information
  - 00 31 25.23 Existing Metals Information
  - 00 31 25.26 Existing Wood, Plastics, and Composites Information
  - 00 31 25.29 Existing Thermal and Moisture Protection Information
- 00 31 26 Existing Hazardous Material Information**
  - 00 31 26.23 Existing Asbestos Information
  - 00 31 26.26 Existing Lead Information
  - 00 31 26.29 Existing Polychlorinate Biphenyl Information
  - 00 31 26.33 Existing Mold Information
  - 00 31 26.36 Existing Hazardous Waste Drum Information
- 00 31 31 Geophysical Data**
  - 00 31 31.13 Seismic Investigations Information
  - 00 31 31.16 Gravity Investigations Information
  - 00 31 31.19 Magnetic Investigations Information
  - 00 31 31.23 Electromagnetic Investigations Information
  - 00 31 31.26 Electrical Resistivity Investigations Information
  - 00 31 31.29 Magnetotelluric Investigations Information
- 00 31 32 Geotechnical Data**
  - 00 31 32.13 Subsurface Drilling and Sampling Information
  - 00 31 32.16 Material Testing Information
  - 00 31 32.19 Exploratory Excavation Information
  - 00 31 32.23 Geotechnical Monitoring Information
- 00 31 43 Permit Application**

00 31 46 Permits

## 00 40 00 Procurement Forms and Supplements

### 00 41 00 Bid Forms

00 41 13 Bid Form - Stipulated Sum (Single-Prime Contract)  
 00 41 16 Bid Form - Stipulated Sum (Multiple-Prime Contract)  
 00 41 23 Bid Form - Construction Management (Single-Prime Contract)  
 00 41 26 Bid Form - Construction Management (Multiple-Prime Contract)  
 00 41 33 Bid Form - Cost-Plus-Fee (Single-Prime Contract)  
 00 41 36 Bid Form - Cost-Plus-Fee (Multiple-Prime Contract)  
 00 41 43 Bid Form - Unit Price (Single-Prime Contract)  
 00 41 46 Bid Form - Unit Price (Multiple-Prime Contract)  
 00 41 53 Bid Form - Design/Build (Single-Prime Contract)  
 00 41 56 Bid Form - Design/Build (Multiple-Prime Contract)  
 00 41 63 Bid Form - Purchase Contract

### 00 42 00 Proposal Forms

00 42 13 Proposal Form - Stipulated Sum (Single-Prime Contract)  
 00 42 16 Proposal Form - Stipulated Sum (Multiple-Prime Contract)  
 00 42 23 Proposal Form - Construction Management (Single-Prime Contract)  
 00 42 26 Proposal Form - Construction Management (Multiple-Prime Contract)  
 00 42 33 Proposal Form - Cost-Plus-Fee (Single-Prime Contract)  
 00 42 36 Proposal Form - Cost-Plus-Fee (Multiple-Prime Contract)  
 00 42 43 Proposal Form - Unit Price (Single-Prime Contract)  
 00 42 46 Proposal Form - Unit Price (Multiple-Prime Contract)  
 00 42 53 Proposal Form - Design/Build (Single-Prime Contract)  
 00 42 56 Proposal Form - Design/Build (Multiple-Prime Contract)  
 00 42 63 Proposal Form - Purchase Contract  
 00 42 73 Proposal Form - Performance Contract

### 00 43 00 Procurement Form Supplements

00 43 13 Bid Security Form  
 00 43 21 Allowance Form  
 00 43 22 Unit Prices Form  
 00 43 23 Alternates Form  
 00 43 25 Substitution Request Form (During Procurement)  
 00 43 26 Estimated Quantities Form  
 00 43 27 Separate Prices Break-Out Form  
 00 43 28 Tax Rebate Form  
 00 43 33 Proposed Products Form  
 00 43 36 Proposed Subcontractors Form  
 00 43 39 Minority Business Enterprise Statement of Intent Form  
 00 43 43 Wage Rates Form

	00 43 73	Proposed Schedule of Values Form
	00 43 83	Proposed Construction Schedule Form
	00 43 86	Proposed Work Plan Schedule Form
	00 43 93	Bid Submittal Checklist
<b>00 45 00</b>		<b>Representations and Certifications</b>
	00 45 13	Bidder's Qualifications
	00 45 16	Proposer's Qualifications
	00 45 19	Non-Collusion Affidavit
	00 45 23	Statement of Disposal Facility
	00 45 26	Worker's Compensation Certificate Schedule
	00 45 33	Non-Segregated Facilities Affidavit
	00 45 36	Equal Employment Opportunity Affidavit
	00 45 39	Minority Business Enterprise Affidavit
	00 45 43	Corporate Resolutions
	00 45 46	Governmental Certifications
<b>00 50 00</b>		<b>Contracting Forms and Supplements</b>
	<b>00 51 00</b>	<b>Notice of Award</b>
	<b>00 52 00</b>	<b>Agreement Forms</b>
	00 52 13	Agreement Form - Stipulated Sum (Single-Prime Contract)
	00 52 16	Agreement Form - Stipulated Sum (Multiple-Prime Contract)
	00 52 23	Agreement Form - Construction Management (Single-Prime Contract)
	00 52 26	Agreement Form - Construction Management (Multiple-Prime Contract)
	00 52 33	Agreement Form - Cost Plus-Fee (Single-Prime Contract)
	00 52 36	Agreement Form - Cost-Plus-Fee (Multiple-Prime Contract)
	00 52 43	Agreement Form - Unit Price (Single-Prime Contract)
	00 52 46	Agreement Form - Unit Price (Multiple-Prime Contract)
	00 52 53	Agreement Form - Design/Build (Single-Prime Contract)
	00 52 56	Agreement Form - Design/Build (Multiple-Prime Contract)
	00 52 63	Agreement Form - Purchase
	00 52 73	Agreement Form - Performance Contract
	00 52 95	Agreement Form - Integrated Project Delivery
	<b>00 54 00</b>	<b>Agreement Form Supplements</b>
	00 54 13	Supplementary Scope Statement
	00 54 21	Allowances Schedule
	00 54 22	Unit Prices Schedule
	<b>00 55 00</b>	<b>Notice to Proceed</b>
<b>00 60 00</b>		<b>Project Forms</b>

- 00 61 00 Bond Forms**
  - 00 61 13 Performance and Payment Bond Form
    - 00 61 13.13 Performance Bond Form
    - 00 61 13.16 Payment Bond Form
  - 00 61 16 Lien Bond Form
  - 00 61 19 Maintenance Bond Form
  - 00 61 23 Retainage Bond Form
  - 00 61 26 Special Bond Form
- 00 62 00 Certificates and Other Forms**
  - 00 62 11 Submittal Transmittal Form
  - 00 62 16 Certificate of Insurance Form
  - 00 62 19 Infection Control Form
  - 00 62 23 Construction Waste Diversion Form
  - 00 62 33 Products Form
  - 00 62 34 Recycled Content of Materials Form
  - 00 62 39 Minority Business Enterprise Certification Form
  - 00 62 73 Schedule of Values Form
  - 00 62 76 Application for Payment Form
    - 00 62 76.13 Sales Tax Form
    - 00 62 76.16 Consent of Surety to Reduction of Retainage Form
  - 00 62 79 Stored Material Form
  - 00 62 83 Construction Schedule Form
  - 00 62 86 Work Plan Schedule Form
  - 00 62 89 Construction Equipment Form
- 00 63 00 Clarification and Modification Forms**
  - 00 63 13 Request for Interpretation Form
  - 00 63 19 Clarification Form
  - 00 63 25 Substitution Request Form (During Construction)
  - 00 63 33 Supplemental Instruction Form
  - 00 63 36 Field Order Form
  - 00 63 43 Written Amendment Form
  - 00 63 46 Construction Change Directive Form
  - 00 63 49 Work Change Directive Form
  - 00 63 53 Request for Proposal Form
  - 00 63 54 Proposal Worksheet Summary Form
  - 00 63 55 Proposal Worksheet Detail Form
  - 00 63 57 Change Order Request Form
  - 00 63 63 Change Order Form
- 00 65 00 Closeout Forms**
  - 00 65 13 Certificate of Compliance Form
  - 00 65 16 Certificate of Substantial Completion Form
  - 00 65 19 Certificate of Completion Form
    - 00 65 19.13 Affidavit of Payment of Debts and Claims Form

00 65 19.16 Affidavit of Release of Liens Form  
 00 65 19.19 Consent of Surety to Final Payment Form  
 00 65 19.23 Acceptance Certificate Form  
 00 65 19.26 Final Settlement Certificate Form

00 65 36 Warranty Form  
 00 65 73 Statutory Declaration Form

## **00 70 00 Conditions of the Contract**

### **00 71 00 Contracting Definitions**

### **00 72 00 General Conditions**

00 72 13 General Conditions - Stipulated Sum (Single-Prime Contract)  
 00 72 16 General Conditions - Stipulated Sum (Multiple-Prime Contract)  
 00 72 23 General Conditions - Construction Management (Single-Prime Contract)  
 00 72 26 General Conditions - Construction Management (Multiple-Prime Contract)  
 00 72 33 General Conditions - Cost Plus-Fee (Single-Prime Contract)  
 00 72 36 General Conditions - Cost-Plus-Fee (Multiple-Prime Contract)  
 00 72 43 General Conditions - Unit Price (Single-Prime Contract)  
 00 72 46 General Conditions - Unit Price (Multiple-Prime Contract)  
 00 72 53 General Conditions - Design/Build (Single-Prime Contract)  
 00 72 56 General Conditions - Design/Build (Multiple-Prime Contract)  
 00 72 73 General Conditions - Performance Contract  
 00 72 95 General Conditions - Integrated Project Delivery

### **00 73 00 Supplementary Conditions**

00 73 16 Insurance Requirements  
 00 73 19 Health and Safety Requirements  
 00 73 23 Purchase Contracts  
 00 73 26 Assigned Contracts  
 00 73 33 Non-Segregated Facilities Requirements  
 00 73 36 Equal Employment Opportunity Requirements  
 00 73 39 Minority Business Enterprise Requirements  
 00 73 43 Wage Rate Requirements  
 00 73 46 Wage Determination Schedule  
 00 73 49 Labor Stabilization Agreement  
 00 73 53 Anti-Pollution Measures  
 00 73 63 Security Requirements  
 00 73 73 Statutory Requirements

## **00 90 00 Revisions, Clarifications, and Modifications**

**00 91 00 Precontract Revisions**

- 00 91 13 Addenda
- 00 91 16 Bid Revisions
- 00 91 19 Proposal Revisions

**00 93 00 Record Clarifications and Proposals**

- 00 93 13 Record Requests for Interpretation
- 00 93 19 Record Clarification Notices
- 00 93 53 Record Proposal Requests
- 00 93 54 Record Proposal Worksheet Summaries
- 00 93 57 Record Change Order Requests

**00 94 00 Record Modifications**

- 00 94 33 Record Minor Changes in the Work
- 00 94 36 Record Supplemental Instructions
- 00 94 39 Record Field Orders
- 00 94 43 Record Amendments
- 00 94 46 Record Construction Change Directives
- 00 94 49 Record Work Change Directives
- 00 94 63 Record Change Orders

## **01 00 00 General Requirements**

### **01 10 00 Summary**

#### **01 11 00 Summary of Work**

- 01 11 13 Work Covered by Contract Documents
- 01 11 16 Work by Owner
- 01 11 19 Purchase Contracts

#### **01 12 00 Multiple Contract Summary**

- 01 12 13 Summary of Contracts
- 01 12 16 Work Sequence
- 01 12 19 Contract Interface

#### **01 14 00 Work Restrictions**

- 01 14 13 Access to Site
- 01 14 16 Coordination with Occupants
- 01 14 19 Use of Site

#### **01 18 00 Project Utility Sources**

- 01 18 13 Utility Service Connections

### **01 20 00 Price and Payment Procedures**

#### **01 21 00 Allowances**

- 01 21 13 Cash Allowances
- 01 21 16 Contingency Allowances
- 01 21 19 Testing and Inspecting Allowances
- 01 21 23 Installation Allowances
- 01 21 26 Product Allowances
- 01 21 29 Quantity Allowances
- 01 21 43 Time Allowances

#### **01 22 00 Unit Prices**

- 01 22 13 Unit Price Measurement
- 01 22 16 Unit Price Payment

#### **01 23 00 Alternates**

#### **01 24 00 Value Analysis**

- 01 24 13 Value Engineering

#### **01 25 00 Substitution Procedures**

- 01 25 13 Product Substitution Procedures
- 01 25 16 Execution Substitution Procedures

#### **01 26 00 Contract Modification Procedures**

- 01 26 13 Requests for Interpretation
- 01 26 19 Clarification Notices

- 01 26 33 Minor Changes in the Work
- 01 26 36 Supplemental Instructions
- 01 26 39 Field Orders
- 01 26 43 Amendments
- 01 26 46 Construction Change Directives
- 01 26 49 Work Change Directives
- 01 26 53 Proposal Requests
- 01 26 54 Proposal Worksheet Summaries
- 01 26 57 Change Order Requests
- 01 26 63 Change Orders
- 01 29 00 Payment Procedures**
  - 01 29 73 Schedule of Values
  - 01 29 76 Progress Payment Procedures
  - 01 29 83 Payment Procedures for Testing Laboratory Services
- 01 30 00 Administrative Requirements**
  - 01 31 00 Project Management and Coordination**
    - 01 31 13 Project Coordination
    - 01 31 14 Facility Services Coordination
    - 01 31 16 Multiple Contract Coordination
    - 01 31 19 Project Meetings
      - 01 31 19.13 Preconstruction Meetings
      - 01 31 19.16 Site Mobilization Meetings
      - 01 31 19.23 Progress Meetings
      - 01 31 19.33 Preinstallation Meetings
    - 01 31 23 Project Web Site
    - 01 31 26 Electronic Communication Protocols
  - 01 32 00 Construction Progress Documentation**
    - 01 32 13 Scheduling of Work
    - 01 32 16 Construction Progress Schedule
      - 01 32 16.13 Network Analysis Schedules
    - 01 32 19 Submittals Schedule
    - 01 32 23 Survey and Layout Data
    - 01 32 26 Construction Progress Reporting
    - 01 32 29 Periodic Work Observation
    - 01 32 33 Photographic Documentation
    - 01 32 36 Video Monitoring and Documentation
    - 01 32 43 Purchase Order Tracking
  - 01 33 00 Submittal Procedures**
    - 01 33 13 Certificates
    - 01 33 16 Design Data
    - 01 33 19 Field Test Reporting
    - 01 33 23 Shop Drawings, Product Data, and Samples

- 01 33 26 Source Quality Control Reporting**
- 01 33 29 Sustainable Design Reporting**
  - 01 33 29.01 Material Cost Summary Form
  - 01 33 29.02 Wood-Containing Product List
  - 01 33 29.03 Metal-Containing Product List
  - 01 33 29.04 Material Content Form
  - 01 33 29.05 New Product Source Form
  - 01 33 29.06 Reused Product Form
  - 01 33 29.07 Prohibited Content Installer Certification

## **01 35 00 Special Procedures**

- 01 35 13 Special Project Procedures**
  - 01 35 13.13 Special Project Procedures for Airport Facilities
  - 01 35 13.16 Special Project Procedures for Detention Facilities
  - 01 35 13.19 Special Project Procedures for Healthcare Facilities
  - 01 35 13.26 Special Project Procedures for Clean Rooms
  - 01 35 13.43 Special Project Procedures for Contaminated Sites
- 01 35 16 Alteration Project Procedures**
- 01 35 23 Owner Safety Requirements**
- 01 35 26 Governmental Safety Requirements**
- 01 35 29 Health, Safety, and Emergency Response Procedures**
  - 01 35 29.13 Health, Safety, and Emergency Response Procedures for Contaminated Sites
- 01 35 33 Infection Control Procedures**
- 01 35 43 Environmental Procedures**
  - 01 35 43.13 Environmental Procedures for Hazardous Materials
  - 01 35 43.16 Environmental Procedures for Toxic Materials
- 01 35 46 Indoor Air Quality Procedures**
- 01 35 53 Security Procedures**
- 01 35 63 Sustainability Certification Project Requirements**
- 01 35 66 Sustainability Certification Project Procedures**
- 01 35 91 Historic Treatment Procedures**

## **01 40 00 Quality Requirements**

### **01 41 00 Regulatory Requirements**

- 01 41 13 Codes
- 01 41 16 Laws
- 01 41 19 Rules
- 01 41 23 Fees
- 01 41 26 Permit Requirements

### **01 42 00 References**

- 01 42 13 Abbreviations and Acronyms
- 01 42 16 Definitions
- 01 42 19 Reference Standards

**01 43 00 Quality Assurance**

- 01 43 13 Manufacturer Qualifications
- 01 43 16 Supplier Qualifications
- 01 43 19 Fabricator Qualifications
- 01 43 23 Installer Qualifications
- 01 43 26 Testing and Inspecting Agency Qualifications
- 01 43 29 Code-Required Special Inspector Qualifications
- 01 43 33 Manufacturer's Field Services
- 01 43 36 Field Samples
- 01 43 39 Mockups

**01 45 00 Quality Control**

- 01 45 13 Source Quality Control Procedures
- 01 45 16 Field Quality Control Procedures
  - 01 45 16.13 Contractor Quality Control
- 01 45 23 Testing and Inspecting Services
- 01 45 26 Plant Inspection Procedures
- 01 45 29 Testing Laboratory Services
- 01 45 33 Code-Required Special Inspections and Procedures

**01 50 00 Temporary Facilities and Controls****01 51 00 Temporary Utilities**

- 01 51 13 Temporary Electricity
- 01 51 16 Temporary Fire Protection
- 01 51 19 Temporary Fuel Oil
- 01 51 23 Temporary Heating, Cooling, and Ventilating
- 01 51 26 Temporary Lighting
- 01 51 29 Temporary Natural-Gas
- 01 51 33 Temporary Telecommunications
- 01 51 36 Temporary Water

**01 52 00 Construction Facilities**

- 01 52 13 Field Offices and Sheds
- 01 52 16 First Aid Facilities
- 01 52 19 Sanitary Facilities

**01 53 00 Temporary Construction**

- 01 53 13 Temporary Bridges
- 01 53 16 Temporary Decking
- 01 53 19 Temporary Overpasses
- 01 53 23 Temporary Ramps
- 01 53 26 Temporary Runarounds

**01 54 00 Construction Aids**

- 01 54 13 Temporary Elevators
- 01 54 16 Temporary Hoists

- 01 54 19 Temporary Cranes
- 01 54 23 Temporary Scaffolding and Platforms
- 01 54 26 Temporary Swing Staging
- 01 55 00 Vehicular Access and Parking**
  - 01 55 13 Temporary Access Roads
  - 01 55 16 Haul Routes
  - 01 55 19 Temporary Parking Areas
  - 01 55 23 Temporary Roads
  - 01 55 26 Traffic Control
  - 01 55 29 Staging Areas
- 01 56 00 Temporary Barriers and Enclosures**
  - 01 56 13 Temporary Air Barriers
  - 01 56 16 Temporary Dust Barriers
  - 01 56 19 Temporary Noise Barriers
  - 01 56 23 Temporary Barricades
  - 01 56 26 Temporary Fencing
  - 01 56 29 Temporary Protective Walkways
  - 01 56 33 Temporary Security Barriers
  - 01 56 36 Temporary Security Enclosures
  - 01 56 39 Temporary Tree and Plant Protection
- 01 57 00 Temporary Controls**
  - 01 57 13 Temporary Erosion and Sediment Control
  - 01 57 16 Temporary Pest Control
  - 01 57 19 Temporary Environmental Controls
  - 01 57 23 Temporary Storm Water Pollution Control
- 01 58 00 Project Identification**
  - 01 58 13 Temporary Project Signage
  - 01 58 16 Temporary Interior Signage
- 01 60 00 Product Requirements**
  - 01 61 00 Common Product Requirements**
    - 01 61 13 Software Licensing Requirements
  - 01 62 00 Product Options**
  - 01 64 00 Owner-Furnished Products**
  - 01 65 00 Product Delivery Requirements**
  - 01 66 00 Product Storage and Handling Requirements**
    - 01 66 13 Product Storage and Handling Requirements for Hazardous Materials
    - 01 66 16 Product Storage and Handling Requirements for Toxic Materials

**01 70 00 Execution and Closeout Requirements****01 71 00 Examination and Preparation**

- 01 71 13 Mobilization
- 01 71 16 Acceptance of Conditions
- 01 71 23 Field Engineering
  - 01 71 23.13 Construction Layout
  - 01 71 23.16 Construction Surveying
- 01 71 33 Protection of Adjacent Construction

**01 73 00 Execution**

- 01 73 13 Application
- 01 73 16 Erection
- 01 73 19 Installation
- 01 73 23 Bracing and Anchoring
- 01 73 26 Existing Products
- 01 73 29 Cutting and Patching

**01 74 00 Cleaning and Waste Management**

- 01 74 13 Progress Cleaning
- 01 74 16 Site Maintenance
- 01 74 19 Construction Waste Management and Disposal
- 01 74 23 Final Cleaning

**01 75 00 Starting and Adjusting**

- 01 75 13 Checkout Procedures
- 01 75 16 Startup Procedures

**01 76 00 Protecting Installed Construction****01 77 00 Closeout Procedures**

- 01 77 13 Preliminary Closeout Reviews
- 01 77 16 Final Closeout Review
- 01 77 19 Closeout Requirements

**01 78 00 Closeout Submittals**

- 01 78 13 Completion and Correction List
- 01 78 19 Maintenance Contracts
- 01 78 23 Operation and Maintenance Data
  - 01 78 23.13 Operation Data
  - 01 78 23.16 Maintenance Data
  - 01 78 23.19 Preventative Maintenance Instructions
- 01 78 29 Final Site Survey
- 01 78 33 Bonds
- 01 78 36 Warranties
- 01 78 39 Project Record Documents
- 01 78 43 Spare Parts

- 01 78 46 Extra Stock Materials
- 01 78 53 Sustainable Design Closeout Documentation
- 01 79 00 **Demonstration and Training**
- 01 80 00 **Performance Requirements**
  - 01 81 00 **Facility Performance Requirements**
    - 01 81 13 Sustainable Design Requirements
    - 01 81 16 Facility Environmental Requirements
    - 01 81 19 Indoor Air Quality Requirements
  - 01 82 00 **Facility Substructure Performance Requirements**
    - 01 82 13 Foundation Performance Requirements
    - 01 82 16 Basement Construction Performance Requirements
  - 01 83 00 **Facility Shell Performance Requirements**
    - 01 83 13 Superstructure Performance Requirements
    - 01 83 16 Exterior Enclosure Performance Requirements
    - 01 83 19 Roofing Performance Requirements
  - 01 84 00 **Interiors Performance Requirements**
    - 01 84 13 Interior Construction Performance Requirements
    - 01 84 16 Stairways Performance Requirements
    - 01 84 19 Interior Finishes Performance Requirements
  - 01 85 00 **Conveying Equipment Performance Requirements**
  - 01 86 00 **Facility Services Performance Requirements**
    - 01 86 13 Fire Suppression Performance Requirements
    - 01 86 16 Plumbing Performance Requirements
    - 01 86 19 HVAC Performance Requirements
    - 01 86 23 Integrated Automation Performance Requirements
    - 01 86 26 Electrical Performance Requirements
    - 01 86 29 Communications Performance Requirements
    - 01 86 33 Electronic Safety and Security Performance Requirements
  - 01 87 00 **Equipment and Furnishings Performance Requirements**
    - 01 87 13 Equipment Performance Requirements
    - 01 87 16 Furnishings Performance Requirements
  - 01 88 00 **Other Facility Construction Performance Requirements**
    - 01 88 13 Special Construction Performance Requirements
    - 01 88 16 Selective Construction Performance Requirements
  - 01 89 00 **Site Construction Performance Requirements**
    - 01 89 13 Site Preparation Performance Requirements

- 01 89 16 Site Improvements Performance Requirements
- 01 89 19 Site Plumbing Utilities Performance Requirements
- 01 89 23 Site HVAC Utilities Performance Requirements
- 01 89 26 Site Electrical Utilities Performance Requirements
- 01 89 29 Other Site Construction Performance Requirements

## **01 90 00 Life Cycle Activities**

### **01 91 00 Commissioning**

- 01 91 13 General Commissioning Requirements
- 01 91 16 Facility Substructure Commissioning
  - 01 91 16.13 Foundation Commissioning
  - 01 91 16.53 Basement Construction Commissioning
- 01 91 19 Facility Shell Commissioning
  - 01 91 19.13 Superstructure Commissioning
  - 01 91 19.43 Exterior Enclosure Commissioning
  - 01 91 19.73 Roofing Commissioning
- 01 91 23 Interiors Commissioning
  - 01 91 23.13 Interior Construction Commissioning
  - 01 91 23.43 Stairways Commissioning
  - 01 91 23.73 Interior Finishes Commissioning

### **01 92 00 Facility Operation**

- 01 92 13 Facility Operation Procedures

### **01 93 00 Facility Maintenance**

- 01 93 13 Facility Maintenance Procedures
- 01 93 16 Recycling Programs

### **01 94 00 Facility Decommissioning**

- 01 94 13 Facility Decommissioning Procedures

**02 00 00 Existing Conditions****02 01 00 Maintenance of Existing Conditions**

- 02 01 50 Maintenance of Site Remediation
- 02 01 65 Maintenance of Underground Storage Tank Removal
- 02 01 80 Maintenance of Facility Remediation
- 02 01 86 Maintenance of Hazardous Waste Drum Handling

**02 05 00 Common Work Results for Existing Conditions**

- 02 05 19 Geosynthetics for Existing Conditions
  - 02 05 19.13 Geotextiles for Existing Conditions
  - 02 05 19.16 Geomembranes for Existing Conditions
  - 02 05 19.19 Geogrids for Existing Conditions

**02 06 00 Schedules for Existing Conditions**

- 02 06 30 Schedules for Subsurface Investigations
  - 02 06 30.13 Boring or Test Pit Log Schedule
- 02 06 50 Schedules for Site Remediation
- 02 06 65 Schedules for Underground Storage Tank Removal
- 02 06 80 Schedules for Facility Remediation
- 02 06 86 Schedules for Hazardous Waste Drum Handling

**02 08 00 Commissioning of Existing Conditions****02 20 00 Assessment****02 21 00 Surveys**

- 02 21 13 Site Surveys
  - 02 21 13.13 Boundary and Survey Markers
  - 02 21 13.23 Archeological and Historic Surveys
- 02 21 16 Measured Drawings

**02 22 00 Existing Conditions Assessment**

- 02 22 13 Movement and Vibration Assessment
- 02 22 16 Acoustic Assessment
- 02 22 19 Traffic Assessment
- 02 22 23 Accessibility Assessment

**02 24 00 Environmental Assessment**

- 02 24 13 Natural Environment Assessment
  - 02 24 13.13 Air Assessment
  - 02 24 13.43 Water Assessment
  - 02 24 13.73 Land Assessment
- 02 24 23 Chemical Sampling and Analysis of Soils
- 02 24 43 Transboundary and Global Environmental Aspects Assessment

**02 25 00 Existing Material Assessment****02 25 16 Existing Concrete Assessment**

02 25 16.13 Concrete Assessment Drilling

**02 25 19 Existing Masonry Assessment**

02 25 19.13 Masonry Assessment Drilling

**02 25 23 Existing Metals Assessment**

02 25 23.13 Welding Investigations

**02 25 26 Existing Wood, Plastics, and Composites Assessment****02 25 29 Existing Thermal and Moisture Protection Assessment**

02 25 29.13 Waterproofing Investigations

02 25 29.23 Roofing Investigations

**02 26 00 Hazardous Material Assessment****02 26 23 Asbestos Assessment****02 26 26 Lead Assessment****02 26 29 Polychlorinate Biphenyl Assessment****02 26 33 Biological Assessment**

02 26 33.13 Mold Assessment

**02 26 36 Hazardous Waste Drum Assessment****02 30 00 Subsurface Investigation****02 31 00 Geophysical Investigations****02 31 13 Seismic Investigations****02 31 16 Gravity Investigations****02 31 19 Magnetic Investigations****02 31 23 Electromagnetic Investigations****02 31 26 Electrical Resistivity Investigations****02 31 29 Magnetotelluric Investigations****02 32 00 Geotechnical Investigations****02 32 13 Subsurface Drilling and Sampling****02 32 16 Material Testing****02 32 19 Exploratory Excavations****02 32 23 Geotechnical Monitoring Before Construction**

02 32 23.13 Groundwater Monitoring Before Construction

**02 40 00 Demolition and Structure Moving****02 41 00 Demolition****02 41 13 Selective Site Demolition**

02 41 13.13 Paving Removal

02 41 13.23 Utility Line Removal

02 41 13.33 Railtrack Removal

**02 41 16 Structure Demolition**

- 02 41 16.13 Building Demolition
- 02 41 16.23 Tower Demolition
- 02 41 16.33 Bridge Demolition
- 02 41 16.43 Dam Demolition
- 02 41 19 Selective Demolition**
  - 02 41 19.13 Selective Building Demolition
  - 02 41 19.16 Selective Interior Demolition
  - 02 41 19.33 Selective Bridge Demolition
- 02 41 91 Selective Historic Demolition**
- 02 42 00 Removal and Salvage of Construction Materials**
  - 02 42 13 Deconstruction of Structures**
    - 02 42 13.13 Deconstruction of Buildings
  - 02 42 91 Removal and Salvage of Historic Construction Materials**
- 02 43 00 Structure Moving**
  - 02 43 13 Structure Relocation**
    - 02 43 13.13 Building Relocation
  - 02 43 16 Structure Raising**
    - 02 43 16.13 Building Raising
- 02 50 00 Site Remediation**
  - 02 51 00 Physical Decontamination**
    - 02 51 13 Coagulation and Flocculation Decontamination
    - 02 51 16 Reverse-Osmosis Decontamination
    - 02 51 19 Solidification and Stabilization Decontamination
    - 02 51 23 Mechanical Filtration Decontamination
    - 02 51 26 Radioactive Decontamination
    - 02 51 29 Surface Cleaning Decontamination
      - 02 51 29.13 High-Pressure Water Cleaning Decontamination
      - 02 51 29.16 Vacuum Sweeping Cleaning Decontamination
    - 02 51 33 Surface Removal Decontamination
      - 02 51 33.13 Surface Removal Decontamination by Grinding
      - 02 51 33.16 Surface Removal Decontamination by Sand Blasting
      - 02 51 33.19 Surface Removal Decontamination by Ultrasound
  - 02 52 00 Chemical Decontamination**
    - 02 52 13 Chemical Precipitation Decontamination
    - 02 52 16 Ion Change Decontamination
    - 02 52 19 Neutralization Decontamination
  - 02 53 00 Thermal Decontamination**
    - 02 53 13 Incineration Decontamination**
      - 02 53 13.13 Remediation of Contaminated Soils and Sludges by Incineration

- 02 53 16 Thermal Desorption Decontamination
  - 02 53 16.13 Remediation of Contaminated Soils by Thermal Desorption
- 02 53 19 Vitrification Decontamination
- 02 54 00 Biological Decontamination**
  - 02 54 13 Aerobic Processes Decontamination
  - 02 54 16 Anaerobic Processes Decontamination
  - 02 54 19 Bioremediation Decontamination
    - 02 54 19.13 Bioremediation Using Landfarming
    - 02 54 19.16 Bioremediation of Soils Using Windrow Composting
    - 02 54 19.19 Bioremediation Using Bacteria Injection
  - 02 54 23 Soil Washing through Separation/Solubilization
  - 02 54 26 Organic Decontamination
- 02 55 00 Remediation Soil Stabilization**
- 02 56 00 Site Containment**
  - 02 56 13 Waste Containment
    - 02 56 13.13 Geomembrane Waste Containment
  - 02 56 19 Gas Containment
    - 02 56 19.13 Fluid-Applied Gas Barrier
- 02 57 00 Sinkhole Remediation**
  - 02 57 13 Sinkhole Remediation by Grouting
    - 02 57 13.13 Sinkhole Remediation by Compaction Grouting
    - 02 57 13.16 Sinkhole Remediation by Cap Grouting
  - 02 57 16 Sinkhole Remediation by Backfilling
- 02 58 00 Snow Control**
  - 02 58 13 Snow Fencing
  - 02 58 16 Snow Avalanche Control
- 02 60 00 Contaminated Site Material Removal**
  - 02 61 00 Removal and Disposal of Contaminated Soils**
    - 02 61 13 Excavation and Handling of Contaminated Material
    - 02 61 23 Removal and Disposal of Polychlorinate Biphenyl Contaminated Soils
    - 02 61 26 Removal and Disposal of Asbestos Contaminated Soils
    - 02 61 29 Removal and Disposal of Organically Contaminated Soils
  - 02 62 00 Hazardous Waste Recovery Processes**
    - 02 62 13 Air and Steam Stripping
    - 02 62 16 Soil Vapor Extraction
    - 02 62 19 Soil Washing and Flushing

- 02 65 00    **Underground Storage Tank Removal**
- 02 66 00    **Landfill Construction and Storage**
- 02 70 00    Water Remediation**
  - 02 71 00    **Groundwater Treatment**
  - 02 72 00    **Water Decontamination**
    - 02 72 13    Chemical Water Decontamination
    - 02 72 16    Biological Water Decontamination
    - 02 72 19    Electrolysis Water Decontamination
- 02 80 00    Facility Remediation**
  - 02 81 00    **Transportation and Disposal of Hazardous Materials**
  - 02 82 00    **Asbestos Remediation**
    - 02 82 13    **Asbestos Abatement**
      - 02 82 13.13    Glovebag Asbestos Abatement
      - 02 82 13.16    Precautions for Asbestos Abatement
      - 02 82 13.19    Asbestos Floor Tile and Mastic Abatement
    - 02 82 16    Engineering Control of Asbestos Containing Materials
    - 02 82 33    Removal and Disposal of Asbestos Containing Materials
  - 02 83 00    **Lead Remediation**
    - 02 83 13    Lead Hazard Control Activities
    - 02 83 19    **Lead-Based Paint Remediation**
      - 02 83 19.13    Lead-Based Paint Abatement
    - 02 83 33    **Removal and Disposal of Material Containing Lead**
      - 02 83 33.13    Lead-Based Paint Removal and Disposal
  - 02 84 00    **Polychlorinate Biphenyl Remediation**
    - 02 84 16    Handling of Lighting Ballasts and Lamps Containing PCBs and Mercury
    - 02 84 33    Removal and Disposal of Polychlorinate Biphenyls
  - 02 85 00    **Mold Remediation**
    - 02 85 13    Precautions for Mold Remediation
    - 02 85 16    Mold Remediation Preparation and Containment
    - 02 85 19    Mold Remediation Clearance Air Sampling
    - 02 85 33    Removal and Disposal of Materials with Mold
  - 02 86 00    **Hazardous Waste Drum Handling**

## **03 00 00 Concrete**

### **03 01 00 Maintenance of Concrete**

**03 01 10 Maintenance of Concrete Forming and Accessories**

**03 01 20 Maintenance of Concrete Reinforcing**

**03 01 23 Maintenance of Stressing Tendons**

**03 01 30 Maintenance of Cast-in-Place Concrete**

03 01 30.51 Cleaning of Cast-in-Place Concrete

03 01 30.61 Resurfacing of Cast-in-Place Concrete

03 01 30.71 Rehabilitation of Cast-in-Place Concrete

03 01 30.72 Strengthening of Cast-in-Place Concrete

**03 01 40 Maintenance of Precast Concrete**

03 01 40.51 Cleaning of Precast Concrete

03 01 40.61 Resurfacing of Precast Concrete

03 01 40.71 Rehabilitation of Precast Concrete

03 01 40.72 Strengthening of Precast Concrete

**03 01 50 Maintenance of Cast Decks and Underlayment**

03 01 50.51 Cleaning Cast Decks and Underlayment

03 01 50.61 Resurfacing of Cast Decks and Underlayment

03 01 50.71 Rehabilitation of Cast Decks and Underlayment

03 01 50.72 Strengthening of Cast Decks and Underlayment

**03 01 60 Maintenance of Grouting**

**03 01 70 Maintenance of Mass Concrete**

**03 01 80 Maintenance of Concrete Cutting and Boring**

### **03 05 00 Common Work Results for Concrete**

### **03 06 00 Schedules for Concrete**

**03 06 10 Schedules for Concrete Forming and Accessories**

**03 06 20 Schedules for Concrete Reinforcing**

03 06 20.13 Concrete Beam Reinforcing Schedule

03 06 20.16 Concrete Slab Reinforcing Schedule

**03 06 30 Schedules for Cast-in-Place Concrete**

03 06 30.13 Concrete Footing Schedule

03 06 30.16 Concrete Column Schedule

03 06 30.19 Concrete Slab Schedule

03 06 30.23 Concrete Shaft Schedule

03 06 30.26 Concrete Beam Schedule

**03 06 40 Schedules for Precast Concrete**

03 06 40.13 Precast Concrete Panel Schedule

**03 06 50 Schedules for Cast Decks and Underlayment**

**03 06 60 Schedules for Grouting**

**03 06 70 Schedules for Mass Concrete**

**03 06 80 Schedules for Concrete Cutting and Boring**

- 03 08 00 Commissioning of Concrete
- 03 10 00 Concrete Forming and Accessories
  - 03 11 00 Concrete Forming
    - 03 11 13 Structural Cast-in-Place Concrete Forming
      - 03 11 13.13 Concrete Slip Forming
      - 03 11 13.16 Concrete Shoring
      - 03 11 13.19 Falsework
    - 03 11 16 Architectural Cast-in Place Concrete Forming
      - 03 11 16.13 Concrete Form Liners
    - 03 11 19 Insulating Concrete Forming
    - 03 11 23 Permanent Stair Forming
  - 03 15 00 Concrete Accessories
    - 03 15 13 Waterstops
- 03 20 00 Concrete Reinforcing
  - 03 21 00 Reinforcing Steel
    - 03 21 11 Black Steel Reinforcing
    - 03 21 13 Galvanized Reinforcing Steel
    - 03 21 16 Epoxy-Coated Reinforcing Steel
    - 03 21 19 Stainless Steel Reinforcing
  - 03 22 00 Welded Wire Fabric Reinforcing
    - 03 22 13 Galvanized Welded Wire Fabric Reinforcing
    - 03 22 16 Epoxy-Coated Welded Wire Fabric Reinforcing
  - 03 23 00 Stressing Tendons
  - 03 24 00 Fibrous Reinforcing
  - 03 25 00 Composite Reinforcing
    - 03 25 13 Glass Fiber-Reinforced Polymer Reinforcing
    - 03 25 16 Organic Fiber-Reinforced Polymer Reinforcing
    - 03 25 19 Carbon Fiber-Reinforced Polymer Reinforcing
- 03 30 00 Cast-in-Place Concrete
  - 03 30 53 Miscellaneous Cast-in-Place Concrete
  - 03 31 00 Structural Concrete
    - 03 31 13 Heavyweight Structural Concrete
    - 03 31 16 Lightweight Structural Concrete
    - 03 31 19 Shrinkage-Compensating Structural Concrete
    - 03 31 23 High-Performance Structural Concrete
    - 03 31 24 Ultra High-Performance Structural Concrete
    - 03 31 26 Self-Compacting Concrete

- 03 33 00 Architectural Concrete**
  - 03 33 13 Heavyweight Architectural Concrete
  - 03 33 16 Lightweight Architectural Concrete
- 03 34 00 Low Density Concrete**
- 03 35 00 Concrete Finishing**
  - 03 35 13 High-Tolerance Concrete Floor Finishing
  - 03 35 16 Heavy-Duty Concrete Floor Finishing
  - 03 35 19 Colored Concrete Finishing
  - 03 35 23 Exposed Aggregate Concrete Finishing
  - 03 35 26 Grooved Concrete Surface Finishing
  - 03 35 29 Tooled Concrete Finishing
  - 03 35 33 Stamped Concrete Finishing
  - 03 35 43 Polished Concrete Finishing
- 03 37 00 Specialty Placed Concrete**
  - 03 37 13 Shotcrete
  - 03 37 16 Pumped Concrete
  - 03 37 19 Pneumatically Placed Concrete
  - 03 37 23 Roller-Compacted Concrete
  - 03 37 26 Underwater Placed Concrete
- 03 38 00 Post-Tensioned Concrete**
  - 03 38 13 Post-Tensioned Concrete Preparation
  - 03 38 16 Unbonded Post-Tensioned Concrete
  - 03 38 19 Bonded Post-Tensioned Concrete
- 03 39 00 Concrete Curing**
  - 03 39 13 Water Concrete Curing
  - 03 39 16 Sand Concrete Curing
  - 03 39 23 Membrane Concrete Curing
    - 03 39 23.13 Chemical Compound Membrane Concrete Curing
    - 03 39 23.23 Sheet Membrane Concrete Curing
- 03 40 00 Precast Concrete**
  - 03 41 00 Precast Structural Concrete**
    - 03 41 13 Precast Concrete Hollow Core Planks
    - 03 41 16 Precast Concrete Slabs
    - 03 41 23 Precast Concrete Stairs
    - 03 41 33 Precast Structural Pretensioned Concrete
    - 03 41 36 Precast Structural Post-Tensioned Concrete
  - 03 45 00 Precast Architectural Concrete**
    - 03 45 13 Faced Architectural Precast Concrete
    - 03 45 33 Precast Architectural Pretensioned Concrete
    - 03 45 36 Precast Architectural Post-Tensioned Concrete

- 03 47 00 Site-Cast Concrete**
  - 03 47 13 Tilt-Up Concrete
  - 03 47 16 Lift-Slab Concrete
- 03 48 00 Precast Concrete Specialties**
  - 03 48 13 Precast Concrete Bollards
  - 03 48 16 Precast Concrete Splash Blocks
  - 03 48 19 Precast Concrete Stair Treads
  - 03 48 33 Precast Pre-Framed Concrete Panels
  - 03 48 43 Precast Concrete Trim
- 03 49 00 Glass-Fiber-Reinforced Concrete**
  - 03 49 13 Glass-Fiber-Reinforced Concrete Column Covers
  - 03 49 16 Glass-Fiber-Reinforced Concrete Spandrels
  - 03 49 43 Glass-Fiber-Reinforced Concrete Trim
- 03 50 00 Cast Decks and Underlayment**
  - 03 51 00 Cast Roof Decks**
    - 03 51 13 Cementitious Wood Fiber Decks
    - 03 51 16 Gypsum Concrete Roof Decks
  - 03 52 00 Lightweight Concrete Roof Insulation**
    - 03 52 13 Composite Concrete Roof Insulation
    - 03 52 16 Lightweight Insulating Concrete
      - 03 52 16.13 Lightweight Cellular Insulating Concrete
      - 03 52 16.16 Lightweight Aggregate Insulating Concrete
  - 03 53 00 Concrete Topping**
    - 03 53 13 Emery-Aggregate Concrete Topping
    - 03 53 16 Iron-Aggregate Concrete Topping
  - 03 54 00 Cast Underlayment**
    - 03 54 13 Gypsum Cement Underlayment
    - 03 54 16 Hydraulic Cement Underlayment
- 03 60 00 Grouting**
  - 03 61 00 Cementitious Grouting**
    - 03 61 13 Dry-Pack Grouting
  - 03 62 00 Non-Shrink Grouting**
    - 03 62 13 Non-Metallic Non-Shrink Grouting
    - 03 62 16 Metallic Non-Shrink Grouting
  - 03 63 00 Epoxy Grouting**
  - 03 64 00 Injection Grouting**
    - 03 64 23 Epoxy Injection Grouting

**03 70 00 Mass Concrete**

03 71 00 Mass Concrete for Raft Foundations

03 72 00 Mass Concrete for Dams

**03 80 00 Concrete Cutting and Boring**

**03 81 00 Concrete Cutting**

03 81 13 Flat Concrete Sawing

03 81 16 Track Mounted Concrete Wall Sawing

03 81 19 Wire Concrete Wall Sawing

03 81 23 Hand Concrete Wall Sawing

03 81 26 Chain Concrete Wall Sawing

**03 82 00 Concrete Boring**

03 82 13 Concrete Core Drilling

## **04 00 00 Masonry**

### **04 01 00 Maintenance of Masonry**

#### **04 01 20 Maintenance of Unit Masonry**

- 04 01 20.41 Unit Masonry Stabilization
- 04 01 20.51 Unit Masonry Maintenance
- 04 01 20.52 Unit Masonry Cleaning
- 04 01 20.91 Unit Masonry Restoration
- 04 01 20.93 Testing and Sampling Brick Units for Restoration

#### **04 01 40 Maintenance of Stone Assemblies**

- 04 01 40.51 Stone Maintenance
- 04 01 40.52 Stone Cleaning
- 04 01 40.91 Stone Restoration

#### **04 01 50 Maintenance of Refractory Masonry**

#### **04 01 60 Maintenance of Corrosion-Resistant Masonry**

#### **04 01 70 Maintenance of Manufactured Masonry**

### **04 05 00 Common Work Results for Masonry**

#### **04 05 13 Masonry Mortaring**

- 04 05 13.16 Chemical-Resistant Masonry Mortaring
- 04 05 13.19 Epoxy Masonry Mortaring
- 04 05 13.23 Surface Bonding Masonry Mortaring
- 04 05 13.26 Engineered Masonry Mortaring
- 04 05 13.29 Refractory Masonry Mortaring
- 04 05 13.91 Masonry Restoration Mortaring

#### **04 05 16 Masonry Grouting**

- 04 05 16.16 Chemical-Resistant Masonry Grouting
- 04 05 16.26 Engineered Masonry Grouting

#### **04 05 19 Masonry Anchorage and Reinforcing**

- 04 05 19.13 Continuous Joint Reinforcing
- 04 05 19.16 Masonry Anchors
- 04 05 19.26 Masonry Reinforcing Bars
- 04 05 19.29 Stone Anchors

#### **04 05 23 Masonry Accessories**

- 04 05 23.13 Masonry Control and Expansion Joints
- 04 05 23.16 Masonry Embedded Flashing
- 04 05 23.19 Masonry Cavity Drainage, Weepholes, and Vents

### **04 06 00 Schedules for Masonry**

#### **04 06 20 Schedules for Unit Masonry**

- 04 06 20.13 Masonry Unit Schedule

#### **04 06 40 Schedules for Stone Assemblies**

#### **04 06 50 Schedules for Refractory Masonry**

04 06 60 Schedules for Corrosion-Resistant Masonry

04 06 70 Schedules for Manufactured Masonry

## 04 08 00 Commissioning of Masonry

## 04 20 00 Unit Masonry

### 04 21 00 Clay Unit Masonry

04 21 13 Brick Masonry

04 21 13.13 Brick Veneer Masonry

04 21 13.23 Surface-Bonded Brick Masonry

04 21 16 Ceramic Glazed Clay Masonry

04 21 19 Clay Tile Masonry

04 21 23 Structural Clay Tile Masonry

04 21 26 Glazed Structural Clay Tile Masonry

04 21 29 Terra Cotta Masonry

### 04 22 00 Concrete Unit Masonry

04 22 00.13 Concrete Unit Veneer Masonry

04 22 00.16 Surface-Bonded Concrete Unit Masonry

04 22 19 Insulated Concrete Unit Masonry

04 22 23 Architectural Concrete Unit Masonry

04 22 23.13 Exposed Aggregate Concrete Unit Masonry

04 22 23.16 Fluted Concrete Unit Masonry

04 22 23.19 Molded-Face Concrete Unit Masonry

04 22 23.23 Prefaced Concrete Unit Masonry

04 22 23.26 Sound-Absorbing Concrete Unit Masonry

04 22 23.29 Split-Face Concrete Unit Masonry

04 22 26 Autoclaved Aerated Concrete Unit Masonry

04 22 33 Interlocking Concrete Unit Masonry

### 04 23 00 Glass Unit Masonry

04 23 13 Vertical Glass Unit Masonry

04 23 16 Glass Unit Masonry Floors

04 23 19 Glass Unit Masonry Skylights

### 04 24 00 Adobe Unit Masonry

04 24 13 Site-Cast Adobe Unit Masonry

04 24 16 Manufactured Adobe Unit Masonry

### 04 25 00 Unit Masonry Panels

04 25 13 Metal-Supported Unit Masonry Panels

### 04 26 00 Single-Wythe Unit Masonry

04 26 13 Masonry Veneer

### 04 27 00 Multiple-Wythe Unit Masonry

04 27 13 Composite Unit Masonry

- 04 27 23 Cavity Wall Unit Masonry
- 04 28 00 **Concrete Form Masonry Units**
  - 04 28 13 Dry-Stacked, Concrete-Filled Masonry Units
  - 04 28 23 Mortar-Set, Concrete-Filled Masonry Units
- 04 29 00 **Engineered Unit Masonry**
- 04 40 00 **Stone Assemblies**
  - 04 41 00 **Dry-Placed Stone**
  - 04 42 00 **Exterior Stone Cladding**
    - 04 42 13 Masonry-Supported Stone Cladding
    - 04 42 16 Steel-Stud-Supported Stone Cladding
    - 04 42 19 Strongback-Frame-Supported Stone Cladding
    - 04 42 23 Truss-Supported Stone Cladding
    - 04 42 26 Grid-System-Supported Stone Cladding
    - 04 42 43 Stone Panels for Curtain Walls
  - 04 43 00 **Stone Masonry**
    - 04 43 13 Stone Masonry Veneer
- 04 50 00 **Refractory Masonry**
  - 04 51 00 **Flue Liner Masonry**
  - 04 52 00 **Combustion Chamber Masonry**
  - 04 53 00 **Castable Refractory Masonry**
  - 04 54 00 **Refractory Brick Masonry**
  - 04 57 00 **Masonry Fireplaces**
    - 04 57 33 Modular Masonry Fireplaces
- 04 60 00 **Corrosion-Resistant Masonry**
  - 04 61 00 **Chemical-Resistant Brick Masonry**
  - 04 62 00 **Vitrified Clay Liner Plate**
- 04 70 00 **Manufactured Masonry**
  - 04 71 00 **Manufactured Brick Masonry**
    - 04 71 13 Calcium Silicate Manufactured Brick Masonry
  - 04 72 00 **Cast Stone Masonry**
  - 04 73 00 **Manufactured Stone Masonry**
    - 04 73 13 Calcium Silicate Manufactured Stone Masonry

## **05 00 00 Metals**

### **05 01 00 Maintenance of Metals**

- 05 01 10 Maintenance of Structural Metal Framing**
- 05 01 20 Maintenance of Metal Joists**
- 05 01 30 Maintenance of Metal Decking**
- 05 01 40 Maintenance of Cold-Formed Metal Framing**
- 05 01 50 Maintenance of Metal Fabrications**
- 05 01 70 Maintenance of Decorative Metal**

05 01 70.91 Historic Treatment of Decorative Metal

### **05 05 00 Common Work Results for Metals**

- 05 05 13 Shop-Applied Coatings for Metal**
- 05 05 23 Metal Fastenings**
- 05 05 53 Security Metal Fastenings**

### **05 06 00 Schedules for Metals**

- 05 06 10 Schedules for Structural Metal Framing**
  - 05 06 10.13 Steel Column Schedule
  - 05 06 10.16 Steel Beam Schedule
- 05 06 20 Schedules for Metal Joists**
  - 05 06 20.13 Steel Joist Schedule
- 05 06 30 Schedules for Metal Decking**
- 05 06 40 Schedules for Cold-Formed Metal Framing**
- 05 06 50 Schedules for Metal Fabrications**
- 05 06 70 Schedules for Decorative Metal**

### **05 08 00 Commissioning of Metals**

### **05 10 00 Structural Metal Framing**

- 05 12 00 Structural Steel Framing**
  - 05 12 13 Architecturally-Exposed Structural Steel Framing**
  - 05 12 16 Fabricated Fireproofed Steel Columns**
  - 05 12 19 Buckling Restrained Braces**
  - 05 12 23 Structural Steel for Buildings**
  - 05 12 33 Structural Steel for Bridges**
- 05 13 00 Structural Stainless-Steel Framing**
- 05 14 00 Structural Aluminum Framing**

- 05 14 13 Architecturally-Exposed Structural Aluminum Framing
- 05 15 00 Wire Rope Assemblies**
  - 05 15 13 Aluminum Wire Rope Assemblies
  - 05 15 16 Steel Wire Rope Assemblies
  - 05 15 19 Stainless-Steel Wire Rope Assemblies
- 05 16 00 Structural Cabling**
  - 05 16 33 Bridge Cabling
- 05 19 00 Tension Rod and Cable Truss Assemblies**
  - 05 19 13 Façade Support Truss Assemblies
  - 05 19 19 Canopy Support Truss Assemblies
- 05 20 00 Metal Joists**
  - 05 21 00 Steel Joist Framing**
    - 05 21 13 Deep Longspan Steel Joist Framing
    - 05 21 16 Longspan Steel Joist Framing
    - 05 21 19 Open Web Steel Joist Framing
    - 05 21 23 Steel Joist Girder Framing
  - 05 25 00 Aluminum Joist Framing**
- 05 30 00 Metal Decking**
  - 05 31 00 Steel Decking**
    - 05 31 13 Steel Floor Decking
    - 05 31 23 Steel Roof Decking
    - 05 31 33 Steel Form Decking
  - 05 33 00 Aluminum Decking**
    - 05 33 13 Aluminum Floor Decking
    - 05 33 23 Aluminum Roof Decking
  - 05 34 00 Acoustical Metal Decking**
  - 05 35 00 Raceway Decking Assemblies**
  - 05 36 00 Composite Metal Decking**
    - 05 36 13 Composite Steel Plate and Elastomer Decking
- 05 40 00 Cold-Formed Metal Framing**
  - 05 41 00 Structural Metal Stud Framing**
  - 05 42 00 Cold-Formed Metal Joist Framing**
    - 05 42 13 Cold-Formed Metal Floor Joist Framing
    - 05 42 23 Cold-Formed Metal Roof Joist Framing
  - 05 43 00 Slotted Channel Framing**

- 05 44 00 Cold-Formed Metal Trusses**
  - 05 44 13 Cold-Formed Metal Roof Trusses
- 05 45 00 Metal Support Assemblies**
  - 05 45 13 Mechanical Metal Supports
  - 05 45 16 Electrical Metal Supports
  - 05 45 19 Communications Metal Supports
  - 05 45 23 Healthcare Metal Supports
- 05 50 00 Metal Fabrications**
  - 05 51 00 Metal Stairs**
    - 05 51 13 Metal Pan Stairs
    - 05 51 16 Metal Floor Plate Stairs
    - 05 51 19 Metal Grating Stairs
    - 05 51 23 Metal Fire Escapes
    - 05 51 33 Metal Ladders
      - 05 51 33.13 Vertical Metal Ladders
      - 05 51 33.16 Inclined Metal Ladders
      - 05 51 33.23 Alternating Tread Ladders
    - 05 51 36 Metal Walkways
      - 05 51 36.13 Metal Catwalks
      - 05 51 36.16 Metal Ramps
  - 05 52 00 Metal Railings**
    - 05 52 13 Pipe and Tube Railings
  - 05 53 00 Metal Gratings**
    - 05 53 13 Bar Gratings
    - 05 53 16 Plank Gratings
  - 05 54 00 Metal Floor Plates**
  - 05 55 00 Metal Stair Treads and Nosings**
    - 05 55 13 Metal Stair Treads
    - 05 55 16 Metal Stair Nosings
  - 05 56 00 Metal Castings**
  - 05 58 00 Formed Metal Fabrications**
    - 05 58 13 Column Covers
    - 05 58 16 Formed Metal Enclosures
    - 05 58 19 Heating/Cooling Unit Covers
    - 05 58 23 Formed Metal Guards
  - 05 59 00 Metal Specialties**
    - 05 59 13 Metal Balconies
    - 05 59 63 Detention Enclosures

**05 70 00 Decorative Metal**

**05 71 00 Decorative Metal Stairs**

05 71 13 Fabricated Metal Spiral Stairs

**05 73 00 Decorative Metal Railings**

05 73 13 Glazed Decorative Metal Railings

05 73 16 Wire Rope Decorative Metal Railings

**05 74 00 Decorative Metal Castings**

**05 75 00 Decorative Formed Metal**

**05 76 00 Decorative Forged Metal**

## **06 00 00 Wood, Plastics, and Composites**

### **06 01 00 Maintenance of Wood, Plastics, and Composites**

#### **06 01 10 Maintenance of Rough Carpentry**

06 01 10.71 Rough Carpentry Rehabilitation

06 01 10.91 Rough Carpentry Restoration

06 01 10.92 Rough Carpentry Preservation

#### **06 01 20 Maintenance of Finish Carpentry**

06 01 20.71 Finish Carpentry Rehabilitation

06 01 20.91 Finish Carpentry Restoration

06 01 20.92 Finish Carpentry Preservation

#### **06 01 40 Maintenance of Architectural Woodwork**

06 01 40.51 Architectural Woodwork Cleaning

06 01 40.61 Architectural Woodwork Refinishing

06 01 40.91 Architectural Woodwork Restoration

#### **06 01 50 Maintenance of Structural Plastics**

#### **06 01 60 Maintenance of Plastic Fabrications**

06 01 60.51 Plastic Cleaning

06 01 60.71 Plastic Rehabilitation

06 01 60.91 Plastic Restoration

06 01 60.92 Plastic Preservation

#### **06 01 70 Maintenance of Structural Composites**

#### **06 01 80 Maintenance of Composite Assemblies**

06 01 80.51 Composite Cleaning

06 01 80.71 Composite Rehabilitation

06 01 80.91 Composite Restoration

06 01 80.92 Composite Preservation

### **06 05 00 Common Work Results for Wood, Plastics, and Composites**

#### **06 05 23 Wood, Plastic, and Composite Fastenings**

#### **06 05 73 Wood Treatment**

06 05 73.13 Fire-Retardant Wood Treatment

06 05 73.33 Preservative Wood Treatment

06 05 73.91 Long-Term Wood Treatment

06 05 73.93 Eradication of Insects in Wood

06 05 73.96 Antiseptic Treatment of Wood

#### **06 05 83 Shop-Applied Wood Coatings**

### **06 06 00 Schedules for Wood, Plastics, and Composites**

#### **06 06 10 Schedules for Rough Carpentry**

06 06 10.13 Nailing Schedule

06 06 10.16 Wood Beam Schedule

06 06 10.19 Plywood Shear Wall Schedule  
 06 06 10.23 Plywood Web Joist Schedule  
 06 06 10.26 Wood Truss Schedule

06 06 20 Schedules for Finish Carpentry  
 06 06 40 Schedules for Architectural Woodwork  
 06 06 50 Schedules for Structural Plastics  
 06 06 60 Schedules for Plastic Fabrications  
 06 06 70 Schedules for Structural Composites  
 06 06 80 Schedules for Composite Assemblies

## 06 08 00 Commissioning of Wood, Plastics, and Composites

### 06 10 00 Rough Carpentry

06 10 53 Miscellaneous Rough Carpentry  
 06 10 63 Exterior Rough Carpentry

### 06 11 00 Wood Framing

06 11 13 Engineered Wood Products  
 06 11 16 Mechanically Graded Lumber

### 06 12 00 Structural Panels

06 12 13 Cementitious Reinforced Panels  
 06 12 16 Stressed Skin Panels

### 06 13 00 Heavy Timber Construction

06 13 13 Log Construction  
     06 13 13.91 Period Horizontal Log Work  
 06 13 16 Pole Construction  
 06 13 23 Heavy Timber Framing  
 06 13 26 Heavy Timber Trusses  
 06 13 33 Heavy Timber Pier Construction

### 06 14 00 Treated Wood Foundations

### 06 15 00 Wood Decking

06 15 13 Wood Floor Decking  
     06 15 13.91 Carvel Planking  
 06 15 16 Wood Roof Decking  
 06 15 19 Timber Decking  
 06 15 23 Laminated Wood Decking  
 06 15 33 Wood Patio Decking

### 06 16 00 Sheathing

06 16 13 Insulating Sheathing  
 06 16 23 Subflooring  
 06 16 26 Underlayment

- 06 16 33 Wood Board Sheathing
- 06 16 36 Wood Panel Product Sheathing
- 06 16 43 Gypsum Sheathing
- 06 16 53 Moisture-Resistant Sheathing Board
- 06 16 63 Cementitious Sheathing
- 06 17 00 Shop-Fabricated Structural Wood**
  - 06 17 13 Laminated Veneer Lumber
  - 06 17 23 Parallel Strand Lumber
  - 06 17 33 Wood I-Joists
  - 06 17 36 Metal-Web Wood Joists
  - 06 17 43 Rim Boards
  - 06 17 53 Shop-Fabricated Wood Trusses
- 06 18 00 Glued-Laminated Construction**
  - 06 18 13 Glued-Laminated Beams
  - 06 18 16 Glued-Laminated Columns
- 06 20 00 Finish Carpentry**
  - 06 20 13 Exterior Finish Carpentry
  - 06 20 23 Interior Finish Carpentry
- 06 22 00 Millwork**
  - 06 22 13 Standard Pattern Wood Trim
- 06 25 00 Prefinished Paneling**
  - 06 25 13 Prefinished Hardboard Paneling
  - 06 25 16 Prefinished Plywood Paneling
- 06 26 00 Board Paneling**
  - 06 26 13 Profile Board Paneling
- 06 40 00 Architectural Woodwork**
  - 06 40 13 Exterior Architectural Woodwork
  - 06 40 23 Interior Architectural Woodwork
- 06 41 00 Architectural Wood Casework**
  - 06 41 13 Wood-Veneer-Faced Architectural Cabinets
  - 06 41 16 Plastic-Laminate-Clad Architectural Cabinets
  - 06 41 93 Cabinet and Drawer Hardware
- 06 42 00 Wood Paneling**
  - 06 42 13 Solid Lumber Paneling
  - 06 42 16 Wood-Veneer Paneling
  - 06 42 19 Plastic-Laminate-Faced Wood Paneling
- 06 43 00 Wood Stairs and Railings**
  - 06 43 13 Wood Stairs
  - 06 43 16 Wood Railings

**06 44 00 Ornamental Woodwork**

- 06 44 13 Wood Turnings
- 06 44 16 Wood Pilasters
- 06 44 19 Wood Grilles
- 06 44 23 Wood Corbels
- 06 44 26 Wood Cupolas
- 06 44 29 Wood Finials
- 06 44 33 Wood Mantels
- 06 44 36 Wood Pediment Heads
- 06 44 39 Wood Posts and Columns

**06 46 00 Wood Trim**

- 06 46 13 Wood Door and Window Casings
- 06 46 16 Wood Aprons
- 06 46 19 Wood Base and Shoe Moldings
- 06 46 23 Wood Chair Rails
- 06 46 26 Wood Cornices
- 06 46 29 Wood Fascia and Soffits
- 06 46 33 Wood Stops, Stools, and Sills
- 06 46 91 Splicing of Wooden Components

**06 48 00 Wood Frames**

- 06 48 13 Exterior Wood Door Frames
- 06 48 16 Interior Wood Door Frames
- 06 48 19 Ornamental Wood Frames
- 06 48 23 Stick-Built Wood Windows
- 06 48 26 Wood-Veneer Frames

**06 49 00 Wood Screens and Exterior Wood Shutters**

- 06 49 13 Wood Screens
- 06 49 16 Exterior Wood Blinds
- 06 49 19 Exterior Wood Shutters

**06 50 00 Structural Plastics****06 51 00 Structural Plastic Shapes and Plates**

- 06 51 13 Plastic Lumber

**06 52 00 Plastic Structural Assemblies****06 53 00 Plastic Decking**

- 06 53 13 Solid Plastic Decking

**06 60 00 Plastic Fabrications****06 61 00 Simulated Stone Fabrications**

- 06 61 13 Cultured Marble Fabrications
- 06 61 16 Solid Surfacing Fabrications

	06 61 19	Quartz Surfacing Fabrications
06 63 00		Plastic Railings
06 64 00		Plastic Paneling
	06 64 13	Plastic Lattice Paneling
06 65 00		Plastic Simulated Wood Trim
06 66 00		Custom Ornamental Simulated Woodwork
06 70 00		Structural Composites
	06 71 00	Structural Composite Shapes and Plates
		06 71 13 Composite Lumber
06 72 00		Composite Structural Assemblies
		06 72 13 Composite Joist Assemblies
06 73 00		Composite Decking
		06 73 13 Composite Structural Decking
06 74 00		Composite Gratings
		06 74 13 Fiberglass Reinforced Gratings
06 80 00		Composite Fabrications
	06 81 00	Composite Railings
		06 81 13 Glass-Fiber-Reinforced Plastic Railings
06 83 00		Composite Paneling
		06 83 13 Resin Composite Paneling
		06 83 16 Fiberglass Reinforced Paneling

## **07 00 00 Thermal and Moisture Protection**

### **07 01 00 Operation and Maintenance of Thermal and Moisture Protection**

#### **07 01 10 Maintenance of Dampproofing and Waterproofing**

07 01 10.81 Waterproofing Replacement

#### **07 01 20 Maintenance of Thermal Protection**

#### **07 01 30 Maintenance of Steep Slope Roofing**

#### **07 01 40 Maintenance of Roofing and Siding Panels**

#### **07 01 50 Maintenance of Membrane Roofing**

07 01 50.13 Roof Moisture Survey

07 01 50.16 Roof Maintenance Program

07 01 50.19 Preparation for Re-Roofing

07 01 50.23 Roof Removal

07 01 50.61 Roof Re-Coating

07 01 50.81 Roof Replacement

07 01 50.91 Roofing Restoration

#### **07 01 60 Maintenance of Flashing and Sheet Metal**

07 01 60.71 Flashing and Sheet Metal Rehabilitation

07 01 60.91 Flashing and Sheet Metal Restoration

07 01 60.92 Flashing and Sheet Metal Preservation

#### **07 01 70 Operation and Maintenance of Roof Specialties and Accessories**

#### **07 01 80 Maintenance of Fire and Smoke Protection**

#### **07 01 90 Maintenance of Joint Protection**

07 01 90.71 Joint Sealant Rehabilitation

07 01 90.81 Joint Sealant Replacement

### **07 05 00 Common Work Results for Thermal and Moisture Protection**

### **07 06 00 Schedules for Thermal and Moisture Protection**

#### **07 06 10 Schedules for Dampproofing and Waterproofing**

#### **07 06 20 Schedules for Thermal Protection**

#### **07 06 30 Schedules for Steep Slope Roofing**

#### **07 06 40 Schedules for Roofing and Siding Panels**

#### **07 06 50 Schedules for Membrane Roofing**

#### **07 06 60 Schedules for Flashing and Sheet Metal**

#### **07 06 70 Schedules for Roof Specialties and Accessories**

#### **07 06 80 Schedules for Fire and Smoke Protection**

07 06 80.13 Fireproofing Schedule

07 06 80.16 Firestopping Schedule

#### **07 06 90 Schedules for Joint Protection**

07 06 90.13 Joint Sealant Schedule

**07 08 00 Commissioning of Thermal and Moisture Protection****07 10 00 Dampproofing and Waterproofing****07 11 00 Dampproofing**

- 07 11 13 Bituminous Dampproofing
- 07 11 16 Cementitious Dampproofing
- 07 11 19 Sheet Dampproofing

**07 12 00 Built-Up Bituminous Waterproofing**

- 07 12 13 Built-Up Asphalt Waterproofing
- 07 12 16 Built-Up Coal Tar Waterproofing

**07 13 00 Sheet Waterproofing**

- 07 13 13 Bituminous Sheet Waterproofing
- 07 13 26 Self-Adhering Sheet Waterproofing
- 07 13 52 Modified Bituminous Sheet Waterproofing
- 07 13 53 Elastomeric Sheet Waterproofing
- 07 13 54 Thermoplastic Sheet Waterproofing

**07 14 00 Fluid-Applied Waterproofing**

- 07 14 13 Hot Fluid-Applied Rubberized Asphalt Waterproofing
- 07 14 16 Cold Fluid-Applied Waterproofing

**07 15 00 Sheet Metal Waterproofing**

- 07 15 13 Sheet Lead Waterproofing

**07 16 00 Cementitious and Reactive Waterproofing**

- 07 16 13 Polymer Modified Cement Waterproofing
- 07 16 16 Crystalline Waterproofing
- 07 16 19 Metal Oxide Waterproofing

**07 17 00 Bentonite Waterproofing**

- 07 17 13 Bentonite Panel Waterproofing
- 07 17 16 Bentonite Composite Sheet Waterproofing

**07 18 00 Traffic Coatings**

- 07 18 13 Pedestrian Traffic Coatings
- 07 18 16 Vehicular Traffic Coatings

**07 19 00 Water Repellents**

- 07 19 13 Acrylic Water Repellents
- 07 19 16 Silane Water Repellents
- 07 19 19 Silicone Water Repellents
- 07 19 23 Siloxane Water Repellents
- 07 19 26 Stearate Water Repellents

**07 20 00 Thermal Protection****07 21 00 Thermal Insulation****07 21 13 Board Insulation**

07 21 13.13 Foam Board Insulation

07 21 13.16 Fibrous Board Insulation

07 21 13.19 Mineral Board Insulation

**07 21 16 Blanket Insulation****07 21 19 Foamed-In-Place Insulation****07 21 23 Loose-Fill Insulation****07 21 26 Blown Insulation****07 21 29 Sprayed Insulation****07 21 53 Reflective Insulation****07 22 00 Roof and Deck Insulation****07 22 13 Asphaltic Perlite Concrete Deck****07 22 16 Roof Board Insulation****07 24 00 Exterior Insulation and Finish Systems****07 24 13 Polymer-Based Exterior Insulation and Finish System****07 24 16 Polymer-Modified Exterior Insulation and Finish System****07 24 19 Water-Drainage Exterior Insulation and Finish System****07 24 23 Direct-Applied Finish Systems****07 25 00 Weather Barriers****07 26 00 Vapor Retarders****07 26 13 Above-Grade Vapor Retarders****07 26 16 Below-Grade Vapor Retarders****07 26 23 Below-Grade Gas Retarders****07 27 00 Air Barriers****07 27 13 Modified Bituminous Sheet Air Barriers****07 27 16 Sheet Metal Membrane Air Barriers****07 27 19 Plastic Sheet Air Barriers****07 27 23 Board Product Air Barriers****07 27 26 Fluid-Applied Membrane Air Barriers****07 30 00 Steep Slope Roofing****07 30 91 Canvas Roofing****07 31 00 Shingles and Shakes****07 31 13 Asphalt Shingles**

07 31 13.13 Fiberglass-Reinforced Asphalt Shingles

**07 31 16 Metal Shingles****07 31 19 Mineral-Fiber Cement Shingles****07 31 23 Porcelain Enamel Shingles**

- 07 31 26 Slate Shingles
- 07 31 29 Wood Shingles and Shakes
  - 07 31 29.13 Wood Shingles
  - 07 31 29.16 Wood Shakes
- 07 31 33 Composite Rubber Shingles
- 07 31 53 Plastic Shakes
- 07 32 00 Roof Tiles**
  - 07 32 13 Clay Roof Tiles
  - 07 32 16 Concrete Roof Tiles
  - 07 32 19 Metal Roof Tiles
  - 07 32 23 Mineral-Fiber Cement Roof Tiles
  - 07 32 26 Plastic Roof Tiles
  - 07 32 29 Rubber Tiles/Panels
- 07 33 00 Natural Roof Coverings**
  - 07 33 13 Sod Roofing
  - 07 33 16 Thatched Roofing
  - 07 33 63 Vegetated Roofing
- 07 40 00 Roofing and Siding Panels**
  - 07 41 00 Roof Panels**
    - 07 41 13 Metal Roof Panels
    - 07 41 23 Wood Roof Panels
    - 07 41 33 Plastic Roof Panels
    - 07 41 43 Composite Roof Panels
    - 07 41 63 Fabricated Roof Panel Assemblies
  - 07 42 00 Wall Panels**
    - 07 42 13 Metal Wall Panels
      - 07 42 13.13 Formed Metal Wall Panels
      - 07 42 13.16 Metal Plate Wall Panels
      - 07 42 13.19 Insulated Metal Wall Panels
      - 07 42 13.23 Metal Composite Material Wall Panels
    - 07 42 23 Wood Wall Panels
    - 07 42 29 Terracotta Wall Panels
    - 07 42 33 Plastic Wall Panels
    - 07 42 43 Composite Wall Panels
    - 07 42 63 Fabricated Wall Panel Assemblies
    - 07 42 93 Soffit Panels
  - 07 44 00 Faced Panels**
    - 07 44 13 Aggregate Coated Panels
    - 07 44 16 Porcelain Enameled Faced Panels
    - 07 44 19 Tile-Faced Panels
    - 07 44 23 Ceramic-Tile-Faced Panels

- 07 44 33 Metal Faced Panels
- 07 44 53 Glass-Fiber-Reinforced Cementitious Panels
- 07 44 56 Mineral-Fiber-Reinforced Cementitious Panels
- 07 44 63 Fabricated Faced Panel Assemblies

## 07 46 00 Siding

- 07 46 16 Aluminum Siding
- 07 46 19 Steel Siding
- 07 46 23 Wood Siding
- 07 46 26 Hardboard Siding
- 07 46 29 Plywood Siding
- 07 46 33 Plastic Siding
- 07 46 43 Composition Siding
- 07 46 46 Fiber-Cement Siding
- 07 46 63 Fabricated Panel Assemblies with Siding

## 07 50 00 Membrane Roofing

### 07 51 00 Built-Up Bituminous Roofing

- 07 51 13 Built-Up Asphalt Roofing
  - 07 51 13.13 Cold-Applied Built-Up Asphalt Roofing
- 07 51 16 Built-Up Coal Tar Roofing
- 07 51 23 Glass-Fiber-Reinforced Asphalt Emulsion Roofing

### 07 52 00 Modified Bituminous Membrane Roofing

- 07 52 13 Atactic-Polypropylene-Modified Bituminous Membrane Roofing
  - 07 52 13.11 Cold Adhesive Applied Atactic-Polypropylene-Modified Bituminous Membrane Roofing
  - 07 52 13.13 Torch-Applied Atactic-Polypropylene-Modified Bituminous Membrane Roofing
  - 07 52 13.14 Mechanically Fastened Atactic-Polypropylene-Modified Bituminous Membrane Roofing
- 07 52 16 Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing
  - 07 52 16.11 Cold Adhesive Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing
  - 07 52 16.12 Hot-Mopped Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing
  - 07 52 16.13 Torch-Applied Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing
  - 07 52 16.14 Mechanically Fastened Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing

### 07 53 00 Elastomeric Membrane Roofing

- 07 53 13 Chlorinated-Polyethylene Roofing
- 07 53 16 Chlorosulfonate-Polyethylene Roofing

- 07 53 23 Ethylene-Propylene-Diene-Monomer Roofing
- 07 53 29 Polyisobutylene Roofing
- 07 54 00 Thermoplastic Membrane Roofing**
  - 07 54 13 Copolymer-Alloy Roofing
  - 07 54 16 Ethylene-Interpolymer Roofing
  - 07 54 19 Polyvinyl-Chloride Roofing
  - 07 54 23 Thermoplastic-Polyolefin Roofing
  - 07 54 26 Nitrile-Butadiene-Polymer Roofing
- 07 55 00 Protected Membrane Roofing**
  - 07 55 51 Built-Up Bituminous Protected Membrane Roofing
  - 07 55 52 Modified Bituminous Protected Membrane Roofing
  - 07 55 53 Elastomeric Protected Membrane Roofing
  - 07 55 54 Thermoplastic Protected Membrane Roofing
  - 07 55 56 Fluid-Applied Protected Membrane Roofing
    - 07 55 56.13 Hot-Applied Rubberized Asphalt Protected Membrane Roofing
  - 07 55 63 Vegetated Protected Membrane Roofing
- 07 56 00 Fluid-Applied Roofing**
- 07 57 00 Coated Foamed Roofing**
  - 07 57 13 Sprayed Polyurethane Foam Roofing
- 07 58 00 Roll Roofing**
- 07 60 00 Flashing and Sheet Metal**
  - 07 61 00 Sheet Metal Roofing**
    - 07 61 13 Standing Seam Sheet Metal Roofing
    - 07 61 16 Batten Seam Sheet Metal Roofing
    - 07 61 19 Flat Seam Sheet Metal Roofing
    - 07 61 91 Tinplate and Ternplate Roofing
  - 07 62 00 Sheet Metal Flashing and Trim**
  - 07 63 00 Sheet Metal Roofing Specialties**
  - 07 65 00 Flexible Flashing**
    - 07 65 13 Laminated Sheet Flashing
    - 07 65 16 Modified Bituminous Sheet Flashing
    - 07 65 19 Plastic Sheet Flashing
    - 07 65 23 Rubber Sheet Flashing
    - 07 65 26 Self-Adhering Sheet Flashing
- 07 70 00 Roof and Wall Specialties and Accessories**
  - 07 71 00 Roof Specialties**
    - 07 71 13 Manufactured Copings

- 07 71 16 Manufactured Counterflashing Systems
- 07 71 19 Manufactured Gravel Stops and Facias
- 07 71 23 Manufactured Gutters and Downspouts
  - 07 71 23.13 Gutter Debris Guards
- 07 71 26 Reglets
- 07 71 29 Manufactured Roof Expansion Joints
- 07 71 33 Manufactured Scuppers
- 07 72 00 Roof Accessories**
  - 07 72 13 Manufactured Curbs
  - 07 72 23 Relief Vents
  - 07 72 26 Ridge Vents
  - 07 72 33 Roof Hatches
  - 07 72 36 Smoke Vents
  - 07 72 43 Roof Walk Boards
  - 07 72 46 Roof Walkways
  - 07 72 53 Snow Guards
  - 07 72 63 Waste Containment Assemblies
- 07 76 00 Roof Pavers**
  - 07 76 13 Roof Ballast Pavers
  - 07 76 16 Roof Decking Pavers
- 07 77 00 Wall Specialties**
- 07 80 00 Fire and Smoke Protection**
  - 07 81 00 Applied Fireproofing**
    - 07 81 13 Cement Aggregate Fireproofing
    - 07 81 16 Cementitious Fireproofing
    - 07 81 19 Foamed Magnesium-Oxychloride Fireproofing
    - 07 81 23 Intumescent Fireproofing
    - 07 81 26 Magnesium Cement Fireproofing
    - 07 81 29 Mineral-Fiber Cementitious Fireproofing
    - 07 81 33 Mineral-Fiber Fireproofing
  - 07 82 00 Board Fireproofing**
    - 07 82 13 Calcium-Silicate Board Fireproofing
    - 07 82 16 Slag-Fiber Board Fireproofing
  - 07 84 00 Firestopping**
    - 07 84 13 Penetration Firestopping
      - 07 84 13.13 Penetration Firestopping Mortars
      - 07 84 13.16 Penetration Firestopping Devices
    - 07 84 43 Joint Firestopping
    - 07 84 53 Building Perimeter Firestopping
  - 07 86 00 Smoke Seals**

**07 87 00 Smoke Containment Barriers**

**07 90 00 Joint Protection**

**07 91 00 Preformed Joint Seals**

07 91 13 Compression Seals

07 91 16 Joint Gaskets

07 91 23 Backer Rods

07 91 26 Joint Fillers

**07 92 00 Joint Sealants**

07 92 13 Elastomeric Joint Sealants

07 92 16 Rigid Joint Sealants

07 92 19 Acoustical Joint Sealants

**07 95 00 Expansion Control**

07 95 13 Expansion Joint Cover Assemblies

07 95 53 Joint Slide Bearings

07 95 63 Bridge Expansion Joint Cover Assemblies

## 08 00 00 Openings

### 08 01 00 Operation and Maintenance of Openings

- 08 01 10 Operation and Maintenance of Doors and Frames
- 08 01 11 Operation and Maintenance of Metal Doors and Frames
- 08 01 14 Operation and Maintenance of Wood Doors
- 08 01 15 Operation and Maintenance of Plastic Doors
- 08 01 16 Operation and Maintenance of Composite Doors
- 08 01 17 Operation and Maintenance of Integrated Door Opening Assemblies
- 08 01 30 Operation and Maintenance of Specialty Doors and Frames
- 08 01 32 Operation and Maintenance of Sliding Glass Doors
- 08 01 33 Operation and Maintenance of Coiling Doors and Grilles
- 08 01 34 Operation and Maintenance of Special Function Doors
- 08 01 35 Operation and Maintenance of Folding Doors and Grilles
- 08 01 36 Operation and Maintenance of Panel Doors
- 08 01 39 Operation and Maintenance of Traffic Doors
- 08 01 40 Operation and Maintenance of Entrances, Storefronts, and Curtain Walls
- 08 01 41 Operation and Maintenance of Entrances
- 08 01 42 Operation and Maintenance of Storefronts
- 08 01 44 Operation and Maintenance of Curtain Walls
- 08 01 50 Operation and Maintenance of Windows
- 08 01 51 Operation and Maintenance of Metal Windows
- 08 01 52 Operation and Maintenance of Wood Windows
  - 08 01 52.61 Wood Window Repairs
  - 08 01 52.71 Wood Window Rehabilitation
  - 08 01 52.81 Wood Window Replacement
  - 08 01 52.91 Wood Window Restoration
  - 08 01 52.93 Historic Treatment of Wood Windows
- 08 01 53 Operation and Maintenance of Plastic Windows
- 08 01 54 Operation and Maintenance of Composite Windows
- 08 01 56 Operation and Maintenance of Special Function Windows
- 08 01 60 Operation and Maintenance of Skylights and Roof Windows
- 08 01 61 Operation and Maintenance of Roof Windows
- 08 01 62 Operation and Maintenance of Unit Skylights
- 08 01 63 Operation and Maintenance of Metal-Framed Skylights
- 08 01 64 Operation and Maintenance of Plastic-Framed Skylights
- 08 01 70 Operation and Maintenance of Hardware
- 08 01 71 Operation and Maintenance of Door Hardware
- 08 01 74 Operation and Maintenance of Access Control Hardware
- 08 01 75 Operation and Maintenance of Window Hardware
- 08 01 80 Maintenance of Glazing
- 08 01 81 Maintenance of Glass Glazing

- 08 01 84 Maintenance of Plastic Glazing
- 08 01 88 Maintenance of Special Function Glazing
- 08 01 90 Operation and Maintenance of Louvers and Vents
- 08 01 91 Operation and Maintenance of Louvers
- 08 01 92 Operation and Maintenance of Louvered Equipment Enclosures
- 08 01 95 Operation and Maintenance of Vents
- 08 05 00 Common Work Results for Openings**
- 08 06 00 Schedules for Openings**
  - 08 06 10 Door Schedule
    - 08 06 10.13 Door Type Schedule
    - 08 06 10.16 Frame Type Schedule
  - 08 06 40 Schedules for Entrances, Storefronts, and Curtain Walls
  - 08 06 41 Entrance Schedule
  - 08 06 42 Storefront Schedule
  - 08 06 50 Window Schedule
  - 08 06 60 Skylight Schedule
  - 08 06 70 Hardware Schedule
  - 08 06 71 Door Hardware Schedule
  - 08 06 80 Glazing Schedule
  - 08 06 90 Louver and Vent Schedule
- 08 08 00 Commissioning of Openings**
- 08 10 00 Doors and Frames**
  - 08 11 00 Metal Doors and Frames**
    - 08 11 13 Hollow Metal Doors and Frames
      - 08 11 13.13 Standard Hollow Metal Doors and Frames
      - 08 11 13.16 Custom Hollow Metal Doors and Frames
    - 08 11 16 Aluminum Doors and Frames
    - 08 11 19 Stainless-Steel Doors and Frames
    - 08 11 23 Bronze Doors and Frames
    - 08 11 63 Metal Screen and Storm Doors and Frames
      - 08 11 63.13 Steel Screen and Storm Doors and Frames
      - 08 11 63.23 Aluminum Screen and Storm Doors and Frames
    - 08 11 66 Metal Screen Doors and Frames
      - 08 11 66.13 Steel Screen Doors and Frames
      - 08 11 66.23 Aluminum Screen Doors and Frames
    - 08 11 69 Metal Storm Doors and Frames
      - 08 11 69.13 Steel Storm Doors and Frames
      - 08 11 69.23 Aluminum Storm Doors and Frames
    - 08 11 73 Sliding Metal Fire Doors
    - 08 11 74 Sliding Metal Grilles

- 08 12 00 Metal Frames**
  - 08 12 13 Hollow Metal Frames
    - 08 12 13.13 Standard Hollow Metal Frames
    - 08 12 13.53 Custom Hollow Metal Frames
  - 08 12 16 Aluminum Frames
  - 08 12 19 Stainless-Steel Frames
  - 08 12 23 Bronze Frames
- 08 13 00 Metal Doors**
  - 08 13 13 Hollow Metal Doors
    - 08 13 13.13 Standard Hollow Metal Doors
    - 08 13 13.53 Custom Hollow Metal Doors
  - 08 13 16 Aluminum Doors
  - 08 13 19 Stainless-Steel Doors
  - 08 13 23 Bronze Doors
  - 08 13 73 Sliding Metal Doors
  - 08 13 76 Bifolding Metal Doors
- 08 14 00 Wood Doors**
  - 08 14 13 Carved Wood Doors
  - 08 14 16 Flush Wood Doors
  - 08 14 23 Clad Wood Doors
    - 08 14 23.13 Metal-Faced Wood Doors
    - 08 14 23.16 Plastic-Laminate-Faced Wood Doors
    - 08 14 23.19 Molded-Hardboard-Faced Wood Doors
  - 08 14 29 Prefinished Wood Doors
  - 08 14 33 Stile and Rail Wood Doors
  - 08 14 66 Wood Screen Doors
  - 08 14 69 Wood Storm Doors
  - 08 14 73 Sliding Wood Doors
  - 08 14 76 Bifolding Wood Doors
- 08 15 00 Plastic Doors**
  - 08 15 13 Laminated Plastic Doors
  - 08 15 16 Solid Plastic Doors
  - 08 15 66 Plastic Screen Doors
  - 08 15 69 Plastic Storm Doors
  - 08 15 73 Sliding Plastic Doors
  - 08 15 76 Bifolding Plastic Doors
- 08 16 00 Composite Doors**
  - 08 16 13 Fiberglass Doors
  - 08 16 73 Sliding Composite Doors
  - 08 16 76 Bifolding Composite Doors
- 08 17 00 Integrated Door Opening Assemblies**

- 08 17 13 Integrated Metal Door Opening Assemblies
- 08 17 23 Integrated Wood Door Opening Assemblies
- 08 17 33 Integrated Plastic Door Opening Assemblies
- 08 17 43 Integrated Composite Door Opening Assemblies

## **08 30 00 Specialty Doors and Frames**

### **08 31 00 Access Doors and Panels**

- 08 31 13 Access Doors and Frames
  - 08 31 13.53 Security Access Doors and Frames
- 08 31 16 Access Panels and Frames

### **08 32 00 Sliding Glass Doors**

- 08 32 13 Sliding Aluminum-Framed Glass Doors
- 08 32 16 Sliding Plastic-Framed Glass Doors
- 08 32 19 Sliding Wood-Framed Glass Doors

### **08 33 00 Coiling Doors and Grilles**

- 08 33 13 Coiling Counter Doors
- 08 33 16 Coiling Counter Grilles
- 08 33 23 Overhead Coiling Doors
  - 08 33 23.13 Overhead Rapid Coiling Doors
- 08 33 26 Overhead Coiling Grilles
- 08 33 33 Side Coiling Doors
- 08 33 36 Side Coiling Grilles
- 08 33 43 Overhead Coiling Smoke Curtains

### **08 34 00 Special Function Doors**

- 08 34 13 Cold Storage Doors
- 08 34 16 Hangar Doors
- 08 34 19 Industrial Doors
- 08 34 33 Lightproof Doors
- 08 34 36 Darkroom Doors
- 08 34 46 Radio-Frequency-Interference Shielding Doors
- 08 34 49 Radiation Shielding Doors and Frames
  - 08 34 49.13 Neutron Shielding Doors and Frames
- 08 34 53 Security Doors and Frames
- 08 34 56 Security Gates
- 08 34 58 File Room Doors and Frames
- 08 34 59 Vault Doors and Day Gates
- 08 34 63 Detention Doors and Frames
  - 08 34 63.13 Steel Detention Doors and Frames
  - 08 34 63.16 Steel Plate Detention Doors and Frames
  - 08 34 63.33 Detention Door Frame Protection
- 08 34 73 Sound Control Door Assemblies

- 08 35 00 Folding Doors and Grilles**
  - 08 35 13 Folding Doors**
    - 08 35 13.13 Accordion Folding Doors
    - 08 35 13.23 Accordion Folding Fire Doors
    - 08 35 13.33 Panel Folding Doors
  - 08 35 16 Folding Grilles**
    - 08 35 16.13 Accordion Folding Grilles
- 08 36 00 Panel Doors**
  - 08 36 13 Sectional Doors
  - 08 36 16 Single-Panel Doors
  - 08 36 19 Multi-Leaf Vertical Lift Doors
  - 08 36 23 Telescoping Vertical Lift Doors
- 08 38 00 Traffic Doors**
  - 08 38 13 Flexible Strip Doors
  - 08 38 16 Flexible Traffic Doors
  - 08 38 19 Rigid Traffic Doors
- 08 39 00 Pressure-Resistant Doors**
  - 08 39 13 Airtight Doors
  - 08 39 19 Watertight Doors
  - 08 39 53 Blast-Resistant Doors
- 08 40 00 Entrances, Storefronts, and Curtain Walls**
  - 08 41 00 Entrances and Storefronts**
    - 08 41 13 Aluminum-Framed Entrances and Storefronts
    - 08 41 16 Bronze-Framed Entrances and Storefronts
    - 08 41 19 Stainless-Steel-Framed Entrances and Storefronts
    - 08 41 23 Steel-Framed Entrances and Storefronts
    - 08 41 26 All-Glass Entrances and Storefronts
  - 08 42 00 Entrances**
    - 08 42 26 All-Glass Entrances
    - 08 42 29 Automatic Entrances
      - 08 42 29.13 Folding Automatic Entrances
      - 08 42 29.23 Sliding Automatic Entrances
      - 08 42 29.33 Swinging Automatic Entrances
    - 08 42 33 Revolving Door Entrances
      - 08 42 33.13 Security Revolving Door Entrances
    - 08 42 36 Balanced Door Entrances
    - 08 42 39 Pressure-Resistant Entrances
    - 08 42 43 Intensive Care Unit/Critical Care Unit Entrances
  - 08 43 00 Storefronts**

- 08 43 11 Timber-Framed Storefronts
- 08 43 13 Aluminum-Framed Storefronts
- 08 43 16 Bronze-Framed Storefronts
- 08 43 19 Stainless-Steel-Framed Storefronts
- 08 43 23 Steel-Framed Storefronts
- 08 43 26 All-Glass Storefronts
- 08 43 27 Channel Glass Storefronts
- 08 43 29 Sliding Storefronts
- 08 44 00 Curtain Wall and Glazed Assemblies**
  - 08 44 11 Glazed Timber Curtain Walls
  - 08 44 13 Glazed Aluminum Curtain Walls
  - 08 44 16 Glazed Bronze Curtain Walls
  - 08 44 19 Glazed Stainless-Steel Curtain Walls
  - 08 44 23 Structural Sealant Glazed Curtain Walls
  - 08 44 26 Structural Glass Curtain Walls
    - 08 44 26.19 Point Supported Structural Glass
  - 08 44 33 Sloped Glazing Assemblies
- 08 45 00 Translucent Wall and Roof Assemblies**
  - 08 45 13 Structured-Polycarbonate-Panel Assemblies
  - 08 45 23 Fiberglass-Sandwich-Panel Assemblies
- 08 50 00 Windows**
  - 08 51 00 Metal Windows**
    - 08 51 13 Aluminum Windows
    - 08 51 16 Bronze Windows
    - 08 51 19 Stainless-Steel Windows
    - 08 51 23 Steel Windows
    - 08 51 66 Metal Window Screens
    - 08 51 69 Metal Storm Windows
  - 08 52 00 Wood Windows**
    - 08 52 13 Metal-Clad Wood Windows
    - 08 52 16 Plastic-Clad Wood Windows
    - 08 52 66 Wood Window Screens
    - 08 52 69 Wood Storm Windows
  - 08 53 00 Plastic Windows**
    - 08 53 13 Vinyl Windows
    - 08 53 66 Vinyl Window Screens
    - 08 53 69 Vinyl Storm Windows
  - 08 54 00 Composite Windows**
    - 08 54 13 Fiberglass Windows
    - 08 54 66 Fiberglass Window Screens
    - 08 54 69 Fiberglass Storm Windows

- 08 55 00 Pressure-Resistant Windows**
- 08 56 00 Special Function Windows**
  - 08 56 19 Pass Windows
  - 08 56 46 Radio-Frequency-Interference Shielding Windows
  - 08 56 49 Radiation Shielding Windows
  - 08 56 53 Security Windows
  - 08 56 56 Security Window Screens
  - 08 56 59 Service and Teller Window Units
  - 08 56 63 Detention Windows
  - 08 56 66 Detention Window Screens
  - 08 56 73 Sound Control Windows
  - 08 56 88 Interior Insulating Windows
- 08 60 00 Roof Windows and Skylights**
  - 08 61 00 Roof Windows**
    - 08 61 13 Metal Roof Windows
    - 08 61 16 Wood Roof Windows
  - 08 62 00 Unit Skylights**
    - 08 62 13 Domed Unit Skylights
    - 08 62 16 Pyramidal Unit Skylights
    - 08 62 19 Vaulted Unit Skylights
    - 08 62 23 Tubular Skylights
  - 08 63 00 Metal-Framed Skylights**
    - 08 63 13 Domed Metal-Framed Skylights
    - 08 63 16 Pyramidal Metal-Framed Skylights
    - 08 63 19 Vaulted Metal-Framed Skylights
    - 08 63 23 Ridge Metal-Framed Skylights
    - 08 63 53 Motorized Metal-Framed Skylights
  - 08 64 00 Plastic-Framed Skylights**
  - 08 67 00 Skylight Protection and Screens**
- 08 70 00 Hardware**
  - 08 71 00 Door Hardware**
    - 08 71 13 Automatic Door Operators
    - 08 71 53 Security Door Hardware
    - 08 71 63 Detention Door Hardware
  - 08 74 00 Access Control Hardware**
    - 08 74 13 Card Key Access Control Hardware
    - 08 74 16 Keypad Access Control Hardware
    - 08 74 19 Biometric Identity Access Control Hardware
  - 08 75 00 Window Hardware**

- 08 75 13 Automatic Window Equipment
- 08 75 16 Window Operators
- 08 78 00 **Special Function Hardware**
- 08 79 00 **Hardware Accessories**
  - 08 79 13 Key Storage Equipment
- 08 80 00 **Glazing**
  - 08 81 00 **Glass Glazing**
    - 08 81 13 Decorative Glass Glazing
  - 08 83 00 **Mirrors**
    - 08 83 13 Mirrored Glass Glazing
    - 08 83 16 Mirrored Plastic Glazing
  - 08 84 00 **Plastic Glazing**
    - 08 84 13 Decorative Plastic Glazing
  - 08 85 00 **Glazing Accessories**
  - 08 87 00 **Glazing Surface Films**
    - 08 87 13 Solar Control Films
    - 08 87 23 Safety and Security Films
      - 08 87 23.13 Safety Films
      - 08 87 23.16 Security Films
    - 08 87 33 Decorative Films
  - 08 88 00 **Special Function Glazing**
    - 08 88 13 Fire-Resistant Glazing
    - 08 88 19 Hurricane-Resistant Glazing
    - 08 88 23 Cable Suspended Glazing
    - 08 88 33 Transparent Mirrored Glazing
    - 08 88 36 Switchable Glass
      - 08 88 36.16 Electronically Controlled Switchable Glass
    - 08 88 39 Pressure-Resistant Glazing
    - 08 88 49 Radiation-Resistant Glazing
    - 08 88 53 Security Glazing
    - 08 88 56 Ballistics-Resistant Glazing
- 08 90 00 **Louvers and Vents**
  - 08 91 00 **Louvers**
    - 08 91 13 Motorized Wall Louvers
    - 08 91 16 Operable Wall Louvers
    - 08 91 19 Fixed Louvers
    - 08 91 26 Door Louvers

**08 92 00 Louvered Equipment Enclosures**

**08 95 00 Vents**

08 95 13 Soffit Vents

08 95 16 Wall Vents

08 95 33 Explosion Vents

08 95 43 Flood Vents

**09 00 00 Finishes****09 01 00 Maintenance of Finishes****09 01 20 Maintenance of Plaster and Gypsum Board**

09 01 20.91 Plaster Restoration

**09 01 30 Maintenance of Tiling**

09 01 30.91 Tile Restoration

**09 01 50 Maintenance of Ceilings**

09 01 50.91 Ceiling Restoration

**09 01 60 Maintenance of Flooring**

09 01 60.91 Flooring Restoration

**09 01 70 Maintenance of Wall Finishes**

09 01 70.91 Wall Finish Restoration

**09 01 80 Maintenance of Acoustic Treatment****09 01 90 Maintenance of Painting and Coating**

09 01 90.51 Paint Cleaning

09 01 90.52 Maintenance Repainting

09 01 90.53 Maintenance Coatings

09 01 90.61 Repainting

09 01 90.91 Paint Restoration

09 01 90.92 Coating Restoration

09 01 90.93 Paint Preservation

**09 05 00 Common Work Results for Finishes**

09 05 13 Common Finishes

09 05 61 Common Work Results for Flooring Preparation

**09 06 00 Schedules for Finishes**

09 06 00.13 Room Finish Schedule

09 06 20 Schedules for Plaster and Gypsum Board

09 06 30 Schedules for Tiling

09 06 50 Schedules for Ceilings

09 06 60 Schedules for Flooring

09 06 70 Schedules for Wall Finishes

09 06 80 Schedules for Acoustical Treatment

09 06 90 Schedules for Painting and Coating

09 06 90.13 Paint Schedule

**09 08 00 Commissioning of Finishes****09 20 00 Plaster and Gypsum Board****09 21 00 Plaster and Gypsum Board Assemblies**

09 21 13 Plaster Assemblies

- 09 21 16 Gypsum Board Assemblies**
  - 09 21 16.23 Gypsum Board Shaft Wall Assemblies
  - 09 21 16.33 Gypsum Board Area Separation Wall Assemblies
- 09 22 00 Supports for Plaster and Gypsum Board**
  - 09 22 13 Metal Furring**
    - 09 22 13.13 Metal Channel Furring
    - 09 22 13.23 Resilient Channel Furring
  - 09 22 16 Non-Structural Metal Framing**
    - 09 22 16.13 Non-Structural Metal Stud Framing
  - 09 22 26 Suspension Systems**
    - 09 22 26.23 Metal Suspension Systems
    - 09 22 26.33 Plastic Suspension Systems
  - 09 22 36 Lath**
    - 09 22 36.13 Gypsum Lath
    - 09 22 36.23 Metal Lath
  - 09 22 39 Veneer Plaster Base
- 09 23 00 Gypsum Plastering**
  - 09 23 13 Acoustical Gypsum Plastering
  - 09 23 82 Fireproof Gypsum Plastering
- 09 24 00 Cement Plastering**
  - 09 24 13 Adobe Finish
  - 09 24 23 Cement Stucco
  - 09 24 33 Cement Parging
- 09 25 00 Other Plastering**
  - 09 25 13 Acrylic Plastering
    - 09 25 13.13 Acrylic Plaster Finish
  - 09 25 23 Lime Based Plastering
  - 09 25 26 Natural Clay Plastering
- 09 26 00 Veneer Plastering**
  - 09 26 13 Gypsum Veneer Plastering
- 09 27 00 Plaster Fabrications**
  - 09 27 13 Glass-Fiber-Reinforced Plaster Fabrications
  - 09 27 23 Simulated Plaster Fabrications
- 09 28 00 Backing Boards and Underlayments**
  - 09 28 13 Cementitious Backing Boards
  - 09 28 16 Glass-Mat Faced Gypsum Backing Boards
  - 09 28 19 Fibered Gypsum Backing Boards
- 09 29 00 Gypsum Board**

09 29 82 Gypsum Board Fireproofing

## 09 30 00 Tiling

09 30 13 Ceramic Tiling  
09 30 16 Quarry Tiling  
09 30 19 Paver Tiling  
09 30 23 Glass Mosaic Tiling  
09 30 26 Plastic Tiling  
09 30 29 Metal Tiling  
09 30 33 Stone Tiling  
09 30 36 Concrete Tiling  
09 30 39 Brick Tiling

### 09 31 00 Thin-Set Tiling

09 31 13 Thin-Set Ceramic Tiling  
09 31 16 Thin-Set Quarry Tiling  
09 31 19 Thin-Set Paver Tiling  
09 31 23 Thin-Set Glass Mosaic Tiling  
09 31 26 Thin-Set Plastic Tiling  
09 31 29 Thin-Set Metal Tiling  
09 31 33 Thin-Set Stone Tiling  
09 31 36 Thin-Set Concrete Tiling

### 09 32 00 Mortar-Bed Tiling

09 32 13 Mortar-Bed Ceramic Tiling  
09 32 16 Mortar-Bed Quarry Tiling  
09 32 19 Mortar-Bed Paver Tiling  
09 32 23 Mortar-Bed Glass Mosaic Tiling  
09 32 26 Mortar-Bed Plastic Tiling  
09 32 29 Mortar-Bed Metal Tiling  
09 32 33 Mortar-Bed Stone Tiling  
09 32 36 Mortar-Bed Concrete Tiling

### 09 33 00 Conductive Tiling

09 33 13 Conductive Ceramic Tiling  
09 33 16 Conductive Quarry Tiling  
09 33 19 Conductive Paver Tiling  
09 33 23 Conductive Glass Mosaic Tiling  
09 33 26 Conductive Plastic Tiling  
09 33 29 Conductive Metal Tiling  
09 33 33 Conductive Stone Tiling  
09 33 36 Conductive Concrete Tiling

### 09 34 00 Waterproofing-Membrane Tiling

09 34 13 Waterproofing-Membrane Ceramic Tiling  
09 34 16 Waterproofing-Membrane Quarry Tiling  
09 34 19 Waterproofing-Membrane Paver Tiling  
09 34 23 Waterproofing-Membrane Glass Mosaic Tiling

- 09 34 26 Waterproofing-Membrane Plastic Tiling
- 09 34 29 Waterproofing-Membrane Metal Tiling
- 09 34 33 Waterproofing-Membrane Stone Tiling
- 09 34 36 Waterproofing-Membrane Concrete Tiling
- 09 35 00 Chemical-Resistant Tiling**
  - 09 35 13 Chemical-Resistant Ceramic Tiling
  - 09 35 16 Chemical-Resistant Quarry Tiling
  - 09 35 19 Chemical-Resistant Paver Tiling
  - 09 35 23 Chemical-Resistant Glass Mosaic Tiling
  - 09 35 26 Chemical-Resistant Plastic Tiling
  - 09 35 29 Chemical-Resistant Metal Tiling
  - 09 35 33 Chemical-Resistant Stone Tiling
  - 09 35 36 Chemical-Resistant Concrete Tiling
- 09 50 00 Ceilings**
  - 09 51 00 Acoustical Ceilings**
    - 09 51 13 Acoustical Panel Ceilings
    - 09 51 14 Acoustical Fabric-Faced Panel Ceilings
    - 09 51 23 Acoustical Tile Ceilings
    - 09 51 26 Acoustical Wood Ceilings
    - 09 51 33 Acoustical Metal Pan Ceilings
      - 09 51 33.13 Acoustical Snap-in Metal Pan Ceilings
    - 09 51 53 Direct-Applied Acoustical Ceilings
  - 09 53 00 Acoustical Ceiling Suspension Assemblies**
    - 09 53 13 Curved Profile Ceiling Suspension Assemblies
    - 09 53 23 Metal Acoustical Ceiling Suspension Assemblies
    - 09 53 33 Plastic Acoustical Ceiling Suspension Assemblies
  - 09 54 00 Specialty Ceilings**
    - 09 54 13 Open Metal Mesh Ceilings
    - 09 54 16 Luminous Ceilings
    - 09 54 19 Mirror Panel Ceilings
    - 09 54 23 Linear Metal Ceilings
    - 09 54 26 Linear Wood Ceilings
    - 09 54 33 Decorative Panel Ceilings
    - 09 54 36 Suspended Decorative Grids
    - 09 54 43 Stretched-Fabric Ceiling Systems
    - 09 54 46 Fabric-Wrapped Ceiling Panels
    - 09 54 53 Fiberglass Reinforced Panel Ceilings
  - 09 56 00 Textured Ceilings**
    - 09 56 13 Gypsum-Panel Textured Ceilings
    - 09 56 16 Metal-Panel Textured Ceilings
  - 09 57 00 Special Function Ceilings**

- 09 57 53 Security Ceiling Assemblies
- 09 58 00 Integrated Ceiling Assemblies
- 09 60 00 Flooring
  - 09 60 13 Acoustic Underlayment
- 09 61 00 Flooring Treatment
  - 09 61 13 Slip-Resistant Flooring Treatment
  - 09 61 36 Static-Resistant Flooring Treatment
- 09 62 00 Specialty Flooring
  - 09 62 13 Asphaltic Plank Flooring
  - 09 62 19 Laminate Flooring
  - 09 62 23 Bamboo Flooring
  - 09 62 26 Leather Flooring
  - 09 62 29 Cork Flooring
  - 09 62 35 Acid-Resistant Flooring
  - 09 62 48 Acoustic Flooring
  - 09 62 53 Synthetic Turf Flooring
  - 09 62 63 Metal Flooring
    - 09 62 63.13 Aluminum Flooring
    - 09 62 63.16 Stainless Steel Flooring
  - 09 62 83 Structural Glass Flooring
- 09 63 00 Masonry Flooring
  - 09 63 13 Brick Flooring
    - 09 63 13.35 Chemical-Resistant Brick Flooring
  - 09 63 40 Stone Flooring
  - 09 63 43 Composition Stone Flooring
- 09 64 00 Wood Flooring
  - 09 64 16 Wood Block Flooring
  - 09 64 19 Wood Composition Flooring
  - 09 64 23 Wood Parquet Flooring
    - 09 64 23.13 Acrylic-Impregnated Wood Parquet Flooring
  - 09 64 29 Wood Strip and Plank Flooring
  - 09 64 33 Laminated Wood Flooring
  - 09 64 53 Resilient Wood Flooring Assemblies
  - 09 64 66 Wood Athletic Flooring
- 09 65 00 Resilient Flooring
  - 09 65 13 Resilient Base and Accessories
    - 09 65 13.13 Resilient Base
    - 09 65 13.23 Resilient Stair Treads and Risers
    - 09 65 13.26 Resilient Stair Nosings
    - 09 65 13.33 Resilient Accessories

- 09 65 13.36 Resilient Carpet Transitions
- 09 65 16 Resilient Sheet Flooring**
  - 09 65 16.23 Vinyl Sheet Flooring
  - 09 65 16.33 Rubber Sheet Flooring
  - 09 65 16.43 PVC-Free Sheet Flooring
- 09 65 19 Resilient Tile Flooring**
- 09 65 33 Conductive Resilient Flooring**
- 09 65 36 Static-Control Resilient Flooring**
  - 09 65 36.13 Static-Dissipative Resilient Flooring
  - 09 65 36.16 Static-Resistant Resilient Flooring
- 09 65 43 Linoleum Flooring**
- 09 65 66 Resilient Athletic Flooring**
- 09 66 00 Terrazzo Flooring**
  - 09 66 13 Portland Cement Terrazzo Flooring**
    - 09 66 13.13 Sand Cushion Terrazzo Flooring
    - 09 66 13.16 Monolithic Terrazzo Flooring
    - 09 66 13.19 Bonded Terrazzo Flooring
    - 09 66 13.23 Palladina Terrazzo Flooring
    - 09 66 13.26 Rustic Terrazzo Flooring
    - 09 66 13.33 Structural Terrazzo Flooring
  - 09 66 16 Terrazzo Floor Tile**
    - 09 66 16.13 Portland Cement Terrazzo Floor Tile
    - 09 66 16.16 Plastic-Matrix Terrazzo Floor Tile
  - 09 66 23 Resinous Matrix Terrazzo Flooring**
    - 09 66 23.13 Polyacrylate Modified Cementitious Terrazzo Flooring
    - 09 66 23.16 Epoxy-Resin Terrazzo Flooring
    - 09 66 23.19 Polyester-Resin Terrazzo Flooring
  - 09 66 33 Conductive Terrazzo Flooring**
    - 09 66 33.13 Conductive Epoxy-Resin Terrazzo
    - 09 66 33.16 Conductive Polyester-Resin Terrazzo Flooring
    - 09 66 33.19 Conductive Plastic-Matrix Terrazzo Flooring
- 09 67 00 Fluid-Applied Flooring**
  - 09 67 13 Elastomeric Liquid Flooring**
    - 09 67 13.33 Conductive Elastomeric Liquid Flooring
  - 09 67 16 Epoxy-Marble Chip Flooring**
  - 09 67 19 Magnesium-Oxychloride Flooring**
  - 09 67 23 Resinous Flooring**
  - 09 67 26 Quartz Flooring**
  - 09 67 66 Fluid-Applied Athletic Flooring**
- 09 68 00 Carpeting**
  - 09 68 13 Tile Carpeting**

- 09 68 16 Sheet Carpeting
- 09 69 00 Access Flooring**
  - 09 69 13 Rigid-Grid Access Flooring
  - 09 69 16 Snap-on Stringer Access Flooring
  - 09 69 19 Stringerless Access Flooring
  - 09 69 33 Low-Profile Fixed Height Access Flooring
  - 09 69 53 Access Flooring Accessories
  - 09 69 56 Access Flooring Stairs and Stringers
- 09 70 00 Wall Finishes**
  - 09 72 00 Wall Coverings**
    - 09 72 13 Cork Wall Coverings
    - 09 72 16 Vinyl-Coated Fabric Wall Coverings
      - 09 72 16.13 Flexible Vinyl Wall Coverings
      - 09 72 16.16 Rigid-Sheet Vinyl Wall Coverings
    - 09 72 19 Textile Wall Coverings
    - 09 72 23 Wallpapering
  - 09 73 00 Wall Carpeting**
  - 09 74 00 Flexible Wood Sheets**
    - 09 74 13 Wood Wall Coverings
    - 09 74 16 Flexible Wood Veneers
  - 09 75 00 Stone Facing**
  - 09 76 00 Plastic Blocks**
  - 09 77 00 Special Wall Surfacing**
    - 09 77 13 Stretched-Fabric Wall Systems
    - 09 77 23 Fabric-Wrapped Panels
- 09 80 00 Acoustic Treatment**
  - 09 81 00 Acoustic Insulation**
    - 09 81 13 Acoustic Board Insulation
    - 09 81 16 Acoustic Blanket Insulation
    - 09 81 29 Sprayed Acoustic Insulation
  - 09 83 00 Acoustic Finishes**
    - 09 83 13 Acoustic Wall Coating
    - 09 83 16 Acoustic Ceiling Coating
    - 09 83 22 Acoustic Drapery
  - 09 84 00 Acoustic Room Components**
    - 09 84 13 Fixed Sound-Absorptive Panels
    - 09 84 14 Acoustic Stretched-Fabric Wall Systems
    - 09 84 16 Fixed Sound-Reflective Panels

- 09 84 23 Moveable Sound-Absorptive Panels
- 09 84 26 Moveable Sound-Reflective Panels
- 09 84 33 Sound-Absorbing Wall Units
- 09 84 36 Sound-Absorbing Ceiling Units

## **09 90 00 Painting and Coating**

### **09 91 00 Painting**

- 09 91 13 Exterior Painting
- 09 91 23 Interior Painting

### **09 93 00 Staining and Transparent Finishing**

- 09 93 13 Exterior Staining and Finishing
  - 09 93 13.13 Exterior Staining
  - 09 93 13.53 Exterior Finishing
- 09 93 23 Interior Staining and Finishing
  - 09 93 23.13 Interior Staining
  - 09 93 23.53 Interior Finishing

### **09 94 00 Decorative Finishing**

- 09 94 13 Textured Finishing
- 09 94 16 Faux Finishing
- 09 94 19 Multicolor Interior Finishing

### **09 96 00 High-Performance Coatings**

- 09 96 13 Abrasion-Resistant Coatings
- 09 96 23 Graffiti-Resistant Coatings
- 09 96 26 Marine Coatings
- 09 96 33 High-Temperature-Resistant Coatings
- 09 96 35 Chemical-Resistant Coatings
- 09 96 43 Fire-Retardant Coatings
- 09 96 46 Intumescent Painting
- 09 96 53 Elastomeric Coatings
- 09 96 56 Epoxy Coatings
- 09 96 59 High-Build Glazed Coatings
- 09 96 63 Textured Plastic Coatings
- 09 96 66 Aggregate Wall Coatings

### **09 97 00 Special Coatings**

- 09 97 13 Steel Coatings
  - 09 97 13.13 Interior Steel Coatings
  - 09 97 13.23 Exterior Steel Coatings
- 09 97 23 Concrete and Masonry Coatings
- 09 97 26 Cementitious Coatings
  - 09 97 26.13 Interior Cementitious Coatings
  - 09 97 26.23 Exterior Cementitious Coatings

## **10 00 00 Specialties**

### **10 01 00 Operation and Maintenance of Specialties**

- 10 01 10 Operation and Maintenance of Information Specialties
- 10 01 20 Operation and Maintenance of Interior Specialties
- 10 01 30 Operation and Maintenance of Fireplaces and Stoves
- 10 01 40 Operation and Maintenance of Safety Specialties
- 10 01 50 Operation and Maintenance of Storage Specialties
- 10 01 70 Operation and Maintenance of Exterior Specialties
- 10 01 80 Operation and Maintenance of Other Specialties

### **10 05 00 Common Work Results for Specialties**

### **10 06 00 Schedules for Specialties**

- 10 06 10 Schedules for Information Specialties
  - 10 06 10.13 Exterior Signage Schedule
  - 10 06 10.16 Interior Signage Schedule
- 10 06 20 Schedules for Interior Specialties
  - 10 06 20.13 Toilet, Bath, and Laundry Accessory Schedule
- 10 06 30 Schedules for Fireplaces and Stoves
- 10 06 40 Schedules for Safety Specialties
- 10 06 50 Schedules for Storage Specialties
- 10 06 70 Schedules for Exterior Specialties
- 10 06 80 Schedules for Other Specialties

### **10 08 00 Commissioning of Specialties**

### **10 10 00 Information Specialties**

#### **10 11 00 Visual Display Units**

- 10 11 13 Chalkboards
  - 10 11 13.13 Fixed Chalkboards
  - 10 11 13.23 Modular-Support-Mounted Chalkboards
  - 10 11 13.33 Rail-Mounted Chalkboards
  - 10 11 13.43 Portable Chalkboards
- 10 11 16 Markerboards
  - 10 11 16.13 Fixed Markerboards
  - 10 11 16.23 Modular-Support-Mounted Markerboards
  - 10 11 16.33 Rail-Mounted Markerboards
  - 10 11 16.43 Portable Markerboards
  - 10 11 16.53 Electronic Markerboards
- 10 11 23 Tackboards
  - 10 11 23.13 Fixed Tackboards
  - 10 11 23.23 Modular-Support-Mounted Tackboards
  - 10 11 23.33 Rail-Mounted Tackboards

- 10 11 23.43 Portable Tackboards
- 10 11 33 Sliding Visual Display Units**
  - 10 11 33.13 Horizontal-Sliding Visual Display Units
  - 10 11 33.23 Vertical-Sliding Visual Display Units
- 10 11 36 Visual Display Conference Units**
- 10 11 39 Visual Display Rails**
- 10 11 43 Visual Display Wall Panels**
- 10 11 46 Visual Display Fabrics**
- 10 12 00 Display Cases**
- 10 13 00 Directories**
  - 10 13 13 Electronic Directories
  - 10 13 23 Illuminated Directories
- 10 14 00 Signage**
  - 10 14 16 Plaques
  - 10 14 19 Dimensional Letter Signage
  - 10 14 23 Panel Signage
    - 10 14 23.13 Engraved Panel Signage
  - 10 14 26 Post and Panel/Pylon Signage
  - 10 14 33 Illuminated Panel Signage
  - 10 14 43 Photoluminescent Signage
  - 10 14 53 Traffic Signage
    - 10 14 53.13 Transportation Reference Markers
  - 10 14 63 Electronic Message Signage
  - 10 14 64 Audible Signage
  - 10 14 66 Floating Signage
- 10 17 00 Telephone Specialties**
  - 10 17 13 Telephone Directory Units
  - 10 17 16 Telephone Enclosures
    - 10 17 16.13 Telephone Stalls
    - 10 17 16.16 Telephone Alcoves
  - 10 17 19 Telephone Shelving
- 10 18 00 Informational Kiosks**
- 10 20 00 Interior Specialties**
- 10 21 00 Compartments and Cubicles**
  - 10 21 13 Toilet Compartments
    - 10 21 13.13 Metal Toilet Compartments
    - 10 21 13.16 Plastic-Laminate-Clad Toilet Compartments
    - 10 21 13.19 Plastic Toilet Compartments
    - 10 21 13.23 Particleboard Toilet Compartments

- 10 21 13.40 Stone Toilet Compartments
- 10 21 16 Shower and Dressing Compartments**
  - 10 21 16.13 Metal Shower and Dressing Compartments
  - 10 21 16.16 Plastic-Laminate-Clad Shower and Dressing Compartments
  - 10 21 16.19 Plastic Shower and Dressing Compartments
  - 10 21 16.23 Particleboard Shower and Dressing Compartments
  - 10 21 16.40 Stone Shower and Dressing Compartments
- 10 21 23 Cubicle Curtains and Track**
  - 10 21 23.13 Cubicle Curtains
  - 10 21 23.16 Cubicle Track and Hardware
- 10 22 00 Partitions**
  - 10 22 13 Wire Mesh Partitions**
  - 10 22 16 Folding Gates**
  - 10 22 19 Demountable Partitions**
    - 10 22 19.13 Demountable Metal Partitions
    - 10 22 19.23 Demountable Wood Partitions
    - 10 22 19.33 Demountable Plastic Partitions
    - 10 22 19.43 Demountable Composite Partitions
    - 10 22 19.53 Demountable Gypsum Partitions
  - 10 22 23 Portable Partitions, Screens, and Panels**
    - 10 22 23.13 Wall Screens
    - 10 22 23.23 Movable Panel Systems
  - 10 22 33 Accordion Folding Partitions**
  - 10 22 36 Coiling Partitions**
  - 10 22 39 Folding Panel Partitions**
  - 10 22 43 Sliding Partitions**
- 10 25 00 Service Walls**
  - 10 25 13 Patient Bed Service Walls
  - 10 25 16 Modular Service Walls
- 10 26 00 Wall and Door Protection**
  - 10 26 13 Corner Guards**
  - 10 26 16 Bumper Guards**
    - 10 26 16.13 Bumper Rails
    - 10 26 16.16 Protective Corridor Handrails
  - 10 26 23 Protective Wall Covering**
    - 10 26 23.13 Impact Resistant Wall Protection
  - 10 26 33 Door and Frame Protection**
- 10 28 00 Toilet, Bath, and Laundry Accessories**
  - 10 28 13 Toilet Accessories**
    - 10 28 13.13 Commercial Toilet Accessories

- 10 28 13.19 Healthcare Toilet Accessories
- 10 28 13.53 Security Toilet Accessories
- 10 28 13.63 Detention Toilet Accessories

#### **10 28 16 Bath Accessories**

- 10 28 16.13 Residential Bath Accessories

#### **10 28 19 Tub and Shower Doors**

- 10 28 19.16 Shower Doors
- 10 28 19.19 Tub Doors

#### **10 28 23 Laundry Accessories**

- 10 28 23.13 Built-In Ironing Boards
- 10 28 23.16 Clothes Drying Racks

### **10 30 00 Fireplaces and Stoves**

#### **10 31 00 Manufactured Fireplaces**

- 10 31 13 Manufactured Fireplace Chimneys
- 10 31 16 Manufactured Fireplace Forms

#### **10 32 00 Fireplace Specialties**

- 10 32 13 Fireplace Dampers
- 10 32 16 Fireplace Inserts
- 10 32 19 Fireplace Screens
- 10 32 23 Fireplace Doors
- 10 32 26 Fireplace Water Heaters

#### **10 35 00 Stoves**

- 10 35 13 Heating Stoves
- 10 35 23 Cooking Stoves

### **10 40 00 Safety Specialties**

#### **10 41 00 Emergency Access and Information Cabinets**

- 10 41 13 Fire Department Plan Cabinets
- 10 41 16 Emergency Key Cabinets

#### **10 43 00 Emergency Aid Specialties**

- 10 43 13 Defibrillator Cabinets
- 10 43 16 First Aid Cabinets
- 10 43 21 Accessibility Evacuation Chairs
- 10 43 33 Breathing Air Replenishment Systems

#### **10 44 00 Fire Protection Specialties**

- 10 44 13 Fire Protection Cabinets
  - 10 44 13.53 Security Fire Extinguisher Cabinets
- 10 44 16 Fire Extinguishers
  - 10 44 16.13 Portable Fire Extinguishers
  - 10 44 16.16 Wheeled Fire Extinguisher Units

- 10 44 33 Breathing Air Replenishment Systems
- 10 44 43 Fire Extinguisher Accessories

## **10 50 00 Storage Specialties**

### **10 51 00 Lockers**

- 10 51 13 Metal Lockers
- 10 51 16 Wood Lockers
- 10 51 23 Plastic-Laminate-Clad Lockers
- 10 51 26 Plastic Lockers
  - 10 51 26.13 Recycled Plastic Lockers
- 10 51 33 Glass Lockers
- 10 51 43 Wire Mesh Storage Lockers
- 10 51 53 Locker Room Benches

### **10 55 00 Postal Specialties**

- 10 55 13 Central Mail Delivery Boxes
  - 10 55 13.13 Cluster Box Units
- 10 55 16 Mail Collection Boxes
- 10 55 19 Receiving Boxes
- 10 55 23 Mail Boxes
  - 10 55 23.13 Apartment Mail Boxes
  - 10 55 23.16 Mail Box Directories
  - 10 55 23.19 Mail Box Key Keepers
- 10 55 26 Parcel Lockers
- 10 55 33 Data Distribution Boxes
- 10 55 36 Package Depositories
- 10 55 91 Mail Chutes

### **10 56 00 Storage Assemblies**

- 10 56 13 Metal Storage Shelving
  - 10 56 13.13 End-Panel-Support Metal Storage Shelving
  - 10 56 13.16 Post-and-Shelf Metal Storage Shelving
  - 10 56 13.19 Post-and-Beam Metal Storage Shelving
  - 10 56 13.23 Cantilever Metal Storage Shelving
- 10 56 16 Fabricated Wood Storage Shelving
- 10 56 17 Wall-Mounted Standards and Shelving
- 10 56 19 Plastic Storage Shelving
  - 10 56 19.13 Recycled Plastic Storage Shelving
- 10 56 23 Wire Storage Shelving
- 10 56 26 Mobile Storage Shelving
  - 10 56 26.13 Manual Mobile Storage Shelving
  - 10 56 26.23 Motorized Mobile Storage Shelving
- 10 56 29 Storage Racks
  - 10 56 29.13 Flow Storage Racks

- 10 56 29.16 Pallet Storage Racks
- 10 56 29.19 Movable-Shelf Storage Racks
- 10 56 29.23 Stacker Storage Racks
- 10 56 29.26 Cantilever Storage Racks
- 10 56 29.29 Drive-In Storage Racks
- 10 56 29.33 Drive-Through Storage Racks
- 10 56 29.43 Wine Storage Racks

**10 56 33 Mercantile Storage Assemblies**

**10 57 00 Wardrobe and Closet Specialties**

- 10 57 13 Hat and Coat Racks
- 10 57 16 Boot Racks
- 10 57 23 Closet and Utility Shelving
  - 10 57 23.13 Wire Closet and Utility Shelving
  - 10 57 23.16 Plastic-Laminate-Clad Closet and Utility Shelving
  - 10 57 23.19 Wood Closet and Utility Shelving
- 10 57 33 Closet and Utility Shelving Hardware

**10 70 00 Exterior Specialties**

**10 71 00 Exterior Protection**

- 10 71 13 Exterior Sun Control Devices
  - 10 71 13.13 Exterior Shutters
  - 10 71 13.19 Rolling Exterior Shutters
  - 10 71 13.23 Coiling Exterior Shutters
  - 10 71 13.26 Decorative Exterior Shutters
  - 10 71 13.29 Side-Hinged Exterior Shutters
  - 10 71 13.43 Fixed Sun Screens
- 10 71 16 Storm Panels
  - 10 71 16.13 Demountable Storm Panels
  - 10 71 16.16 Movable Storm Panels

**10 73 00 Protective Covers**

- 10 73 13 Awnings
- 10 73 16 Canopies
- 10 73 23 Car Shelters
- 10 73 26 Walkway Coverings
- 10 73 33 Marquees
- 10 73 43 Transportation Stop Shelters

**10 74 00 Manufactured Exterior Specialties**

- 10 74 13 Exterior Clocks
- 10 74 23 Cupolas
- 10 74 26 Spires
- 10 74 29 Steeples
- 10 74 33 Weathervanes

10 74 43 Below-Grade Egress Assemblies

10 74 46 Window Wells

**10 75 00 Flagpoles**

10 75 13 Automatic Flagpoles

10 75 16 Ground-Set Flagpoles

10 75 19 Nautical Flagpoles

10 75 23 Wall-Mounted Flagpoles

**10 80 00 Other Specialties**

**10 81 00 Pest Control Devices**

10 81 13 Bird Control Devices

10 81 16 Insect Control Devices

10 81 19 Rodent Control Devices

**10 82 00 Grilles and Screens**

10 82 13 Exterior Grilles and Screens

10 82 19 Exterior Sound Screens

10 82 23 Interior Grilles and Screens

**10 83 00 Flags and Banners**

10 83 13 Flags

10 83 16 Banners

**10 84 00 Gas Lighting**

10 84 13 Exterior Gas Lighting

10 84 16 Interior Gas Lighting

**10 86 00 Security Mirrors and Domes**

**10 88 00 Scales**

## **11 00 00 Equipment**

### **11 01 00 Operation and Maintenance of Equipment**

- 11 01 10 Operation and Maintenance of Vehicle and Pedestrian Equipment
- 11 01 15 Operation and Maintenance of Security, Bank, and Detention Equipment
- 11 01 20 Operation and Maintenance of Commercial Equipment
- 11 01 30 Operation and Maintenance of Residential Equipment
- 11 01 40 Operation and Maintenance of Foodservice Equipment
- 11 01 50 Operation and Maintenance of Educational and Scientific Equipment
- 11 01 56 Operation and Maintenance of Observatory Equipment
- 11 01 60 Operation and Maintenance of Entertainment Equipment
- 11 01 65 Operation and Maintenance of Athletic and Recreational Equipment
- 11 01 70 Operation and Maintenance of Healthcare Equipment
- 11 01 80 Operation and Maintenance of Collection and Disposal Equipment
- 11 01 90 Operation and Maintenance of Other Equipment

### **11 05 00 Common Work Results for Equipment**

- 11 05 13 Common Motor Requirements for Equipment

### **11 06 00 Schedules for Equipment**

- 11 06 10 Schedules for Vehicle and Pedestrian Equipment
- 11 06 15 Schedules for Security, Bank, and Detention Equipment
  - 11 06 15.13 Teller and Service Equipment Schedule
- 11 06 20 Schedules for Commercial Equipment
- 11 06 30 Schedules for Residential Equipment
- 11 06 40 Schedules for Foodservice Equipment
  - 11 06 40.13 Foodservice Equipment Schedule
- 11 06 50 Schedules for Educational and Scientific Equipment
- 11 06 60 Schedules for Entertainment Equipment
- 11 06 65 Schedules for Athletic and Recreational Equipment
- 11 06 70 Schedules for Healthcare Equipment
  - 11 06 70.13 Healthcare Equipment Schedule
- 11 06 80 Schedules for Collection and Disposal Equipment
- 11 06 90 Schedules for Other Equipment

### **11 08 00 Commissioning of Equipment**

### **11 10 00 Vehicle and Pedestrian Equipment**

#### **11 11 00 Vehicle Service Equipment**

- 11 11 13 Compressed-Air Vehicle Service Equipment

- 11 11 19 Vehicle Lubrication Equipment
- 11 11 23 Tire-Changing Equipment
- 11 11 26 Vehicle-Washing Equipment
- 11 12 00 Parking Control Equipment**
  - 11 12 13 Parking Key and Card Control Units
  - 11 12 16 Parking Ticket Dispensers
  - 11 12 23 Parking Meters
  - 11 12 26 Parking Fee Collection Equipment
    - 11 12 26.13 Parking Fee Coin Collection Equipment
  - 11 12 33 Parking Gates
- 11 13 00 Loading Dock Equipment**
  - 11 13 13 Loading Dock Bumpers
  - 11 13 16 Loading Dock Seals and Shelters
    - 11 13 16.13 Loading Dock Seals
    - 11 13 16.23 Loading Dock Shelters
    - 11 13 16.33 Loading Dock Rail Shelters
  - 11 13 19 Stationary Loading Dock Equipment
    - 11 13 19.13 Loading Dock Levelers
    - 11 13 19.23 Stationary Loading Dock Lifts
    - 11 13 19.26 Loading Dock Truck Lifts
    - 11 13 19.33 Loading Dock Truck Restraints
  - 11 13 23 Portable Dock Equipment
    - 11 13 23.13 Portable Dock Lifts
    - 11 13 23.16 Portable Dock Ramps
    - 11 13 23.19 Portable Dock Bridges
    - 11 13 23.23 Portable Dock Platforms
  - 11 13 26 Loading Dock Lights
- 11 14 00 Pedestrian Control Equipment**
  - 11 14 13 Pedestrian Gates
    - 11 14 13.13 Portable Posts and Railings
    - 11 14 13.16 Rotary Gates
    - 11 14 13.19 Turnstiles
  - 11 14 16 Money-Changing Equipment
    - 11 14 16.19 Money-Changing Machines
  - 11 14 26 Pedestrian Fare Collection Equipment
    - 11 14 26.13 Pedestrian Coin Fare Collection Equipment
  - 11 14 43 Pedestrian Detection Equipment
    - 11 14 43.13 Electronic Detection and Counting Systems
  - 11 14 53 Pedestrian Security Equipment
- 11 15 00 Security, Detention, and Banking Equipment**

- 11 16 00 Vault Equipment**
  - 11 16 13 Safe Deposit Boxes
  - 11 16 16 Safes
  - 11 16 23 Vault Ventilators
- 11 17 00 Teller and Service Equipment**
  - 11 17 13 Teller Equipment Systems
  - 11 17 16 Automatic Banking Systems
  - 11 17 23 Money Handling Equipment
  - 11 17 33 Money Cart Pass-Through
  - 11 17 36 Package Transfer Units
- 11 18 00 Security Equipment**
  - 11 18 13 Deal Drawers
  - 11 18 16 Gun Ports
  - 11 18 23 Valuable Material Storage
- 11 19 00 Detention Equipment**
  - 11 19 13 Detention Pass-Through Doors
  - 11 19 16 Detention Gun Lockers
- 11 20 00 Commercial Equipment**
  - 11 21 00 Mercantile and Service Equipment**
    - 11 21 13 Cash Registers and Checking Equipment
    - 11 21 23 Vending Equipment
      - 11 21 23.13 Vending Machines
    - 11 21 33 Checkroom Equipment
    - 11 21 43 Weighing and Wrapping Equipment
    - 11 21 53 Barber and Beauty Shop Equipment
  - 11 22 00 Refrigerated Display Equipment**
  - 11 23 00 Commercial Laundry and Dry Cleaning Equipment**
    - 11 23 13 Dry Cleaning Equipment
    - 11 23 16 Drying and Conditioning Equipment
    - 11 23 19 Finishing Equipment
    - 11 23 23 Commercial Ironing Equipment
    - 11 23 26 Commercial Washers and Extractors
    - 11 23 33 Coin-Operated Laundry Equipment
    - 11 23 43 Hanging Garment Conveyors
  - 11 24 00 Maintenance Equipment**
    - 11 24 13 Floor and Wall Cleaning Equipment
    - 11 24 16 Housekeeping Carts
    - 11 24 19 Vacuum Cleaning Systems
    - 11 24 23 Façade Access Equipment

- 11 24 23.13 Window Washing Systems
- 11 24 29 Facility Fall Protection
- 11 25 00 Hospitality Equipment**
  - 11 25 13 Registration Equipment
- 11 26 00 Unit Kitchens**
  - 11 26 13 Metal Unit Kitchens
  - 11 26 16 Wood Unit Kitchens
  - 11 26 19 Plastic-Laminate-Clad Unit Kitchens
- 11 27 00 Photographic Processing Equipment**
  - 11 27 13 Darkroom Processing Equipment
  - 11 27 16 Film Transfer Cabinets
- 11 28 00 Office Equipment**
  - 11 28 13 Computers
  - 11 28 16 Printers
  - 11 28 19 Self-Contained Facsimile Machines
  - 11 28 23 Copiers
- 11 29 00 Postal, Packaging, and Shipping Equipment**
  - 11 29 23 Packaging Equipment
  - 11 29 33 Shipping Equipment
  - 11 29 55 Postal Equipment
- 11 30 00 Residential Equipment**
  - 11 31 00 Residential Appliances**
    - 11 31 13 Residential Kitchen Appliances
    - 11 31 23 Residential Laundry Appliances
  - 11 33 00 Retractable Stairs**
  - 11 34 00 Residential Ceiling Fans**
- 11 40 00 Foodservice Equipment**
  - 11 41 00 Foodservice Storage Equipment**
    - 11 41 13 Refrigerated Food Storage Cases
    - 11 41 23 Walk-In Coolers
    - 11 41 26 Walk-In Freezers
    - 11 41 33 Foodservice Shelving
  - 11 42 00 Food Preparation Equipment**
    - 11 42 13 Food Preparation Appliances
    - 11 42 16 Food Preparation Surfaces
  - 11 43 00 Food Delivery Carts and Conveyors**
    - 11 43 13 Food Delivery Carts

- 11 43 16 Food Delivery Conveyors
- 11 44 00 Food Cooking Equipment**
  - 11 44 13 Commercial Ranges
  - 11 44 16 Commercial Ovens
- 11 46 00 Food Dispensing Equipment**
  - 11 46 13 Bar Equipment
  - 11 46 16 Service Line Equipment
  - 11 46 19 Soda Fountain Equipment
- 11 47 00 Ice Machines**
- 11 48 00 Cleaning and Disposal Equipment**
  - 11 48 13 Commercial Dishwashers
- 11 50 00 Educational and Scientific Equipment**
  - 11 51 00 Library Equipment**
    - 11 51 13 Automated Book Storage and Retrieval Systems
    - 11 51 16 Book Depositories
    - 11 51 19 Book Theft Protection Equipment
    - 11 51 23 Library Stack Systems
      - 11 51 23.13 Metal Library Shelving
  - 11 52 00 Audio-Visual Equipment**
    - 11 52 13 Projection Screens
      - 11 52 13.13 Fixed Projection Screens
      - 11 52 13.16 Portable Projection Screens
      - 11 52 13.19 Rear Projection Screens
    - 11 52 16 Projectors
      - 11 52 16.13 Movie Projectors
      - 11 52 16.16 Slide Projectors
      - 11 52 16.19 Overhead Projectors
      - 11 52 16.23 Opaque Projectors
      - 11 52 16.26 Video Projectors
    - 11 52 19 Players and Recorders
  - 11 53 00 Laboratory Equipment**
    - 11 53 13 Laboratory Fume Hoods
      - 11 53 13.13 Recirculating Laboratory Fume Hoods
    - 11 53 16 Laboratory Incubators
    - 11 53 17 Laboratory Equipment Washers
    - 11 53 19 Laboratory Sterilizers
    - 11 53 23 Laboratory Refrigerators
    - 11 53 33 Emergency Safety Appliances
    - 11 53 43 Service Fittings and Accessories

- 11 53 53 Biological Safety Cabinets
- 11 55 00 Planetarium Equipment**
  - 11 55 13 Planetarium Projectors
  - 11 55 16 Planetarium Pendulums
- 11 56 00 Observatory Equipment**
  - 11 56 13 Telescopes
  - 11 56 16 Telescope Mounts
  - 11 56 19 Telescope Drive Mechanisms
  - 11 56 23 Telescope Domes
- 11 57 00 Vocational Shop Equipment**
- 11 59 00 Exhibit Equipment**
- 11 60 00 Entertainment Equipment**
  - 11 61 00 Theater and Stage Equipment**
    - 11 61 13 Acoustical Shells
    - 11 61 23 Folding and Portable Stages
    - 11 61 33 Rigging Systems and Controls
    - 11 61 43 Stage Curtains
  - 11 62 00 Musical Equipment**
    - 11 62 13 Bells
    - 11 62 16 Carillons
    - 11 62 19 Organs
  - 11 65 00 Athletic and Recreational Equipment**
  - 11 66 00 Athletic Equipment**
    - 11 66 13 Exercise Equipment
    - 11 66 23 Gymnasium Equipment
      - 11 66 23.13 Basketball Equipment
      - 11 66 23.23 Volleyball Equipment
      - 11 66 23.33 Interior Tennis Equipment
      - 11 66 23.43 Interior Track and Field Equipment
      - 11 66 23.53 Wall Padding
      - 11 66 23.56 Mat Storage
    - 11 66 43 Interior Scoreboards
    - 11 66 53 Gymnasium Dividers
      - 11 66 53.13 Batting/Golf Cages
  - 11 67 00 Recreational Equipment**
    - 11 67 13 Bowling Alley Equipment
    - 11 67 23 Shooting Range Equipment
    - 11 67 33 Climbing Walls
    - 11 67 43 Table Games Equipment

- 11 67 43.13 Pool Tables
- 11 67 43.23 Ping-Pong Tables
- 11 67 53 Game Room Equipment**
  - 11 67 53.13 Video Games
  - 11 67 53.23 Pinball Machines
- 11 68 00 Play Field Equipment and Structures**
  - 11 68 13 Playground Equipment**
  - 11 68 16 Play Structures**
  - 11 68 23 Exterior Court Athletic Equipment**
    - 11 68 23.13 Exterior Basketball Equipment
    - 11 68 23.23 Exterior Volleyball Equipment
    - 11 68 23.33 Tennis Equipment
  - 11 68 33 Athletic Field Equipment**
    - 11 68 33.13 Football Field Equipment
    - 11 68 33.23 Soccer and Field Hockey Equipment
    - 11 68 33.33 Baseball Field Equipment
    - 11 68 33.43 Track and Field Equipment
  - 11 68 43 Exterior Scoreboards
- 11 70 00 Healthcare Equipment**
  - 11 71 00 Medical Sterilizing Equipment**
  - 11 72 00 Examination and Treatment Equipment**
    - 11 72 13 Examination Equipment
    - 11 72 53 Treatment Equipment
  - 11 73 00 Patient Care Equipment**
  - 11 74 00 Dental Equipment**
  - 11 75 00 Optical Equipment**
  - 11 76 00 Operating Room Equipment**
  - 11 77 00 Radiology Equipment**
  - 11 78 00 Mortuary Equipment**
    - 11 78 13 Mortuary Refrigerators
    - 11 78 16 Crematorium Equipment
    - 11 78 19 Mortuary Lifts
  - 11 79 00 Therapy Equipment**
- 11 80 00 Collection and Disposal Equipment**
  - 11 82 00 Solid Waste Handling Equipment**
    - 11 82 13 Solid Waste Bins
    - 11 82 19 Packaged Incinerators

- 11 82 23 Recycling Equipment
- 11 82 26 Facility Waste Compactors
- 11 82 29 Composting Equipment
- 11 82 33 Facility Waste Shredders
- 11 82 36 Facility Waste Balers

## **11 90 00 Other Equipment**

### **11 91 00 Religious Equipment**

- 11 91 13 Baptisteries

### **11 92 00 Agricultural Equipment**

- 11 92 13 Milkers
- 11 92 16 Stock Feeders
- 11 92 19 Stock Waterers
- 11 92 23 Agricultural Waste Clean-Up Equipment

### **11 93 00 Horticultural Equipment**

- 11 93 13 Hydroponic Growing Systems
- 11 93 16 Seeders
- 11 93 19 Transplanters
- 11 93 23 Potting Machines
- 11 93 26 Flat Fillers
- 11 93 29 Baggers
- 11 93 33 Soil Mixers

### **11 95 00 Arts and Crafts Equipment**

- 11 95 13 Kilns

**12 00 00 Furnishings****12 01 00 Operation and Maintenance of Furnishings**

- 12 01 10 Operation and Maintenance of Art
- 12 01 20 Operation and Maintenance of Window Treatments
- 12 01 30 Operation and Maintenance of Casework
- 12 01 40 Operation and Maintenance of Furnishings and Accessories
- 12 01 50 Operation and Maintenance of Furniture
- 12 01 60 Operation and Maintenance of Multiple Seating
- 12 01 90 Operation and Maintenance of Other Furnishings

**12 05 00 Common Work Results for Furnishings**

- 12 05 13 Fabrics

**12 06 00 Schedules for Furnishings**

- 12 06 10 Schedules for Art
- 12 06 20 Schedules for Window Treatments
  - 12 06 20.13 Window Treatment Schedule
- 12 06 30 Schedules for Casework
  - 12 06 30.13 Manufactured Casework Schedule
- 12 06 40 Schedules for Furnishings and Accessories
  - 12 06 40.13 Furnishings Schedule
- 12 06 50 Schedules for Furniture
- 12 06 60 Schedules for Multiple Seating
- 12 06 90 Schedules for Other Furnishings

**12 08 00 Commissioning of Furnishings****12 10 00 Art****12 11 00 Murals**

- 12 11 13 Photo Murals
- 12 11 16 Sculptured Brick Panels
- 12 11 23 Brick Murals
- 12 11 26 Ceramic Tile Murals
- 12 11 33 Trompe l'oeil

**12 12 00 Wall Decorations**

- 12 12 13 Commissioned Paintings
- 12 12 16 Framed Paintings
- 12 12 19 Framed Prints
- 12 12 23 Tapestries
- 12 12 26 Wall Hangings

**12 14 00 Sculptures**

- 12 14 13 Carved Sculpture
- 12 14 16 Cast Sculpture
- 12 14 19 Constructed Sculpture
- 12 14 23 Relief Art
- 12 17 00 **Art Glass**
  - 12 17 13 Etched Glass
  - 12 17 16 Stained Glass
- 12 19 00 **Religious Art**
- 12 20 00 **Window Treatments**
  - 12 21 00 **Window Blinds**
    - 12 21 13 **Horizontal Louver Blinds**
      - 12 21 13.13 Metal Horizontal Louver Blinds
      - 12 21 13.23 Wood Horizontal Louver Blinds
      - 12 21 13.33 Plastic Horizontal Louver Blinds
    - 12 21 16 **Vertical Louver Blinds**
      - 12 21 16.13 Metal Vertical Louver Blinds
      - 12 21 16.23 Wood Vertical Louver Blinds
      - 12 21 16.33 Plastic Vertical Louver Blinds
    - 12 21 23 Roll-Down Blinds
    - 12 21 26 Black-Out Blinds
  - 12 22 00 **Curtains and Drapes**
    - 12 22 13 Draperies
    - 12 22 16 Drapery Track and Accessories
  - 12 23 00 **Interior Shutters**
    - 12 23 13 Wood Interior Shutters
  - 12 24 00 **Window Shades**
    - 12 24 13 Roller Window Shades
    - 12 24 16 Pleated Window Shades
      - 12 24 16.13 Z-Pleated Window Shades
      - 12 24 16.16 Cellular Shades
      - 12 24 16.19 Roman Shades
  - 12 25 00 **Window Treatment Operating Hardware**
    - 12 25 13 Motorized Drapery Rods
- 12 30 00 **Casework**
  - 12 31 00 **Manufactured Metal Casework**
    - 12 31 16 Manufactured Metal Sandwich Panel Casework
  - 12 32 00 **Manufactured Wood Casework**

- 12 32 13 Manufactured Wood-Veneer-Faced Casework
- 12 32 16 Manufactured Plastic-Laminate-Clad Casework
- 12 34 00 Manufactured Plastic Casework**
- 12 34 16 Manufactured Solid-Plastic Casework
- 12 35 00 Specialty Casework**
- 12 35 17 Bank Casework
- 12 35 25 Hospitality Casework
- 12 35 30 Residential Casework
  - 12 35 30.13 Kitchen Casework
  - 12 35 30.23 Bathroom Casework
  - 12 35 30.43 Dormitory Casework
- 12 35 33 Utility Room Casework
- 12 35 36 Mailroom Casework
- 12 35 39 Commercial Kitchen Casework
- 12 35 50 Educational/Library Casework
  - 12 35 50.13 Educational Casework
  - 12 35 50.53 Library Casework
  - 12 35 50.56 Built-In Study Carrels
- 12 35 53 Laboratory Casework
  - 12 35 53.13 Metal Laboratory Casework
  - 12 35 53.16 Plastic-Laminate-Clad Laboratory Casework
  - 12 35 53.19 Wood Laboratory Casework
  - 12 35 53.23 Solid-Plastic Laboratory Casework
- 12 35 59 Display Casework
- 12 35 70 Healthcare Casework
  - 12 35 70.13 Hospital Casework
  - 12 35 70.16 Nurse Station Casework
  - 12 35 70.19 Exam Room Casework
  - 12 35 70.74 Dental Casework
- 12 35 83 Performing Arts Casework
- 12 35 91 Religious Casework
- 12 36 00 Countertops**
- 12 36 13 Concrete Countertops
- 12 36 16 Metal Countertops
- 12 36 19 Wood Countertops
- 12 36 23 Plastic Countertops
  - 12 36 23.13 Plastic-Laminate-Clad Countertops
- 12 36 40 Stone Countertops
- 12 36 53 Laboratory Countertops
- 12 36 61 Simulated Stone Countertops
  - 12 36 61.13 Cultured Marble Countertops
  - 12 36 61.16 Solid Surfacing Countertops

12 36 61.19 Quartz Surfacing Countertops

## **12 40 00 Furnishings and Accessories**

### **12 41 00 Office Accessories**

12 41 13 Desk Accessories

### **12 42 00 Table Accessories**

12 42 13 Ceramics

12 42 16 Flatware

12 42 16.13 Silverware

12 42 19 Hollowware

12 42 23 Glassware

12 42 26 Table Linens

12 42 26.13 Napery

### **12 43 00 Portable Lamps**

12 43 13 Lamps

12 43 13.13 Desk Lamps

12 43 13.16 Table Lamps

12 43 13.19 Floor Lamps

### **12 44 00 Bath Furnishings**

12 44 13 Bath Linens

12 44 13.13 Bath Mats

12 44 13.16 Bath Towels

12 44 16 Shower Curtains

### **12 45 00 Bedroom Furnishings**

12 45 13 Bed Linens

12 45 13.13 Blankets

12 45 13.16 Comforters

12 45 16 Pillows

### **12 46 00 Furnishing Accessories**

12 46 13 Ash Receptacles

12 46 16 Bowls

12 46 19 Clocks

12 46 23 Decorative Crafts

12 46 26 Decorative Screens

12 46 29 Vases

12 46 33 Waste Receptacles

### **12 48 00 Rugs and Mats**

12 48 13 Entrance Floor Mats and Frames

12 48 13.13 Entrance Floor Mats

12 48 13.16 Entrance Floor Mat Frames

12 48 16 Entrance Floor Grilles

12 48 19 Entrance Floor Gratings

12 48 23 Entrance Floor Grids

12 48 26 Entrance Tile

12 48 43 Floor Mats

12 48 43.13 Chair Mats

12 48 53 Rugs

12 48 53.13 Runners

12 48 53.16 Oriental Rugs

## 12 50 00 Furniture

### 12 51 00 Office Furniture

12 51 16 Case Goods

12 51 16.13 Metal Case Goods

12 51 16.16 Wood Case Goods

12 51 16.19 Plastic-Laminate-Clad Case Goods

12 51 19 Filing Cabinets

12 51 19.13 Lateral Filing Cabinets

12 51 19.16 Vertical Filing Cabinets

12 51 23 Office Tables

12 51 83 Custom Office Furniture

### 12 52 00 Seating

12 52 13 Chairs

12 52 19 Upholstered Seating

12 52 23 Office Seating

12 52 70 Healthcare Seating

12 52 83 Custom Seating

### 12 53 00 Retail Furniture

12 53 83 Custom Retail Furniture

### 12 54 00 Hospitality Furniture

12 54 13 Hotel and Motel Furniture

12 54 16 Restaurant Furniture

12 54 83 Custom Hospitality Furniture

### 12 55 00 Detention Furniture

12 55 13 Detention Bunks

12 55 16 Detention Desks

12 55 19 Detention Stools

12 55 23 Detention Tables

12 55 26 Detention Safety Clothes Hooks

12 55 83 Custom Detention Furniture

**12 56 00 Institutional Furniture**

- 12 56 23 Religious Furniture
- 12 56 33 Classroom Furniture
- 12 56 39 Lecterns
- 12 56 43 Dormitory Furniture
- 12 56 51 Library Furniture
  - 12 56 51.13 Book Shelves
  - 12 56 51.16 Study Carrels
  - 12 56 51.19 Index Card File Cabinets
- 12 56 52 Audio-Visual Furniture
- 12 56 53 Laboratory Furniture
- 12 56 70 Healthcare Furniture
- 12 56 83 Custom Institutional Furniture

**12 57 00 Industrial Furniture**

- 12 57 13 Welding Benches
- 12 57 16 Welding Screens
- 12 57 19 Laser Containment Screens
- 12 57 83 Custom Industrial Furniture

**12 58 00 Residential Furniture**

- 12 58 13 Couches and Loveseats
  - 12 58 13.13 Futons
- 12 58 16 Residential Chairs
  - 12 58 16.13 Reclining Chairs
- 12 58 19 Dining Tables and Chairs
- 12 58 23 Coffee Tables
- 12 58 26 Entertainment Centers
- 12 58 29 Beds
  - 12 58 29.13 Daybeds
- 12 58 33 Dressers
  - 12 58 33.13 Armoires
- 12 58 36 Nightstands
- 12 58 83 Custom Residential Furniture

**12 59 00 Systems Furniture**

- 12 59 13 Panel-Hung Component System Furniture
- 12 59 16 Free-Standing Component System Furniture
- 12 59 19 Beam System Furniture
- 12 59 23 Desk System Furniture
- 12 59 83 Custom Systems Furniture

**12 60 00 Multiple Seating****12 61 00 Fixed Audience Seating**

- 12 61 13 Upholstered Audience Seating
- 12 61 16 Molded-Plastic Audience Seating
- 12 62 00 Portable Audience Seating**
  - 12 62 13 Folding Chairs
  - 12 62 16 Interlocking Chairs
  - 12 62 19 Stacking Chairs
- 12 63 00 Stadium and Arena Seating**
  - 12 63 13 Stadium and Arena Bench Seating
  - 12 63 23 Stadium and Arena Seats
- 12 64 00 Booths and Tables**
- 12 65 00 Multiple-Use Fixed Seating**
- 12 66 00 Telescoping Stands**
  - 12 66 13 Telescoping Bleachers
  - 12 66 23 Telescoping Chair Platforms
- 12 67 00 Pews and Benches**
  - 12 67 13 Pews
  - 12 67 23 Benches
- 12 68 00 Seat and Table Assemblies**
  - 12 68 13 Pedestal Tablet Arm Chairs
- 12 90 00 Other Furnishings**
  - 12 92 00 Interior Planters and Artificial Plants**
    - 12 92 13 Interior Artificial Plants
    - 12 92 33 Interior Planters
    - 12 92 43 Interior Landscaping Accessories
  - 12 93 00 Site Furnishings**
    - 12 93 13 Bicycle Racks
    - 12 93 14 Bicycle Lockers
    - 12 93 23 Trash and Litter Receptors
    - 12 93 33 Manufactured Planters
    - 12 93 43 Site Seating and Tables
      - 12 93 43.13 Site Seating
      - 12 93 43.53 Site Tables

**13 00 00 Special Construction****13 01 00 Operation and Maintenance of Special Construction**

- 13 01 10 Operation and Maintenance of Special Facility Components
- 13 01 11 Operation and Maintenance of Swimming Pools
- 13 01 12 Operation and Maintenance of Fountains
- 13 01 13 Operation and Maintenance of Aquariums
- 13 01 14 Operation and Maintenance of Amusement Park Structures and Equipment
- 13 01 18 Operation and Maintenance of Ice Rinks
- 13 01 20 Operation and Maintenance of Special Purpose Rooms
- 13 01 21 Operation and Maintenance of Controlled Environment Rooms
- 13 01 23 Operation and Maintenance of Planetariums
- 13 01 30 Operation and Maintenance of Special Structures
- 13 01 40 Operation and Maintenance of Integrated Construction
- 13 01 49 Operation and Maintenance of Radiation Protection
- 13 01 50 Operation and Maintenance of Special Instrumentation
- 13 01 51 Operation and Maintenance of Stress Instrumentation
- 13 01 52 Operation and Maintenance of Seismic Instrumentation
- 13 01 53 Operation and Maintenance of Meteorological Instrumentation

**13 05 00 Common Work Results for Special Construction****13 06 00 Schedules for Special Construction**

- 13 06 10 Schedules for Special Facility Components
- 13 06 20 Schedules for Special Purpose Rooms
- 13 06 30 Schedules for Special Structures
- 13 06 40 Schedules for Integrated Construction
- 13 06 50 Schedules for Special Instrumentation

**13 08 00 Commissioning of Special Construction**

- 13 08 10 Commissioning of Special Facility Components
- 13 08 11 Commissioning of Swimming Pools
- 13 08 12 Commissioning of Fountains
- 13 08 13 Commissioning of Aquariums
- 13 08 14 Commissioning of Amusement Park Structures and Equipment
- 13 08 18 Commissioning of Ice Rinks
- 13 08 20 Commissioning of Special Purpose Rooms
- 13 08 21 Commissioning of Controlled Environment Rooms
- 13 08 23 Commissioning of Planetariums
- 13 08 30 Commissioning of Special Structures

- 13 08 40 Commissioning of Integrated Construction
- 13 08 50 Commissioning of Special Instrumentation
- 13 10 00 Special Facility Components**
  - 13 11 00 Swimming Pools**
    - 13 11 13 Below-Grade Swimming Pools
    - 13 11 23 On-Grade Swimming Pools
    - 13 11 33 Elevated Swimming Pools
    - 13 11 43 Recirculating Gutter Systems
    - 13 11 46 Swimming Pool Accessories
    - 13 11 49 Swimming Pool Cleaning Equipment
    - 13 11 53 Movable Pool Bulkheads
    - 13 11 56 Movable Pool Floors
  - 13 12 00 Fountains**
    - 13 12 13 Exterior Fountains
    - 13 12 23 Interior Fountains
  - 13 13 00 Aquariums**
  - 13 14 00 Amusement Park Structures and Equipment**
    - 13 14 13 Water Slides
    - 13 14 16 Wave Generating Equipment
    - 13 14 23 Amusement Park Rides
  - 13 17 00 Tubs and Pools**
    - 13 17 13 Hot Tubs
    - 13 17 23 Therapeutic Pools
    - 13 17 33 Whirlpool Tubs
  - 13 18 00 Ice Rinks**
    - 13 18 13 Ice Rink Floor Systems
    - 13 18 16 Ice Rink Dasher Boards
  - 13 19 00 Kennels and Animal Shelters**
    - 13 19 13 Kennel Enclosures and Gates
    - 13 19 16 Kennel Feeding Devices
- 13 20 00 Special Purpose Rooms**
  - 13 21 00 Controlled Environment Rooms**
    - 13 21 13 Clean Rooms
    - 13 21 16 Hyperbaric Rooms
    - 13 21 23 Insulated Rooms
    - 13 21 26 Cold Storage Rooms
    - 13 21 29 Constant Temperature Rooms
    - 13 21 48 Sound-Conditioned Rooms
  - 13 22 00 Office Shelters and Booths**

- 13 23 00 Planetariums**
- 13 24 00 Special Activity Rooms**
  - 13 24 16 Saunas
  - 13 24 26 Steam Baths
  - 13 24 66 Athletic Rooms
- 13 26 00 Fabricated Rooms**
  - 13 26 13 Storm Shelter Rooms
- 13 27 00 Vaults**
  - 13 27 16 Modular Fire Vaults
  - 13 27 53 Security Vaults
    - 13 27 53.13 Modular Concrete Security Vaults
    - 13 27 53.16 Modular Metal-Clad Laminated Security Vaults
- 13 28 00 Athletic and Recreational Special Construction**
  - 13 28 13 Indoor Soccer Boards
  - 13 28 16 Safety Netting
  - 13 28 19 Arena Football Boards
  - 13 28 26 Floor Sockets
  - 13 28 33 Athletic and Recreational Court Walls
  - 13 28 66 Demountable Athletic Surfaces
- 13 30 00 Special Structures**
  - 13 31 00 Fabric Structures**
    - 13 31 13 Air-Supported Fabric Structures
      - 13 31 13.13 Single-Walled Air-Supported Structures
      - 13 31 13.16 Multiple-Walled Air-Supported Structures
    - 13 31 23 Tensioned Fabric Structures
    - 13 31 33 Framed Fabric Structures
  - 13 32 00 Space Frames**
    - 13 32 13 Metal Space Frames
    - 13 32 23 Wood Space Frames
  - 13 33 00 Geodesic Structures**
    - 13 33 13 Geodesic Domes
  - 13 34 00 Fabricated Engineered Structures**
    - 13 34 13 Glazed Structures
      - 13 34 13.13 Greenhouses
      - 13 34 13.16 Solariums
      - 13 34 13.19 Swimming Pool Enclosures
      - 13 34 13.23 Sunrooms
      - 13 34 13.26 Conservatories

- 13 34 16 **Grandstands and Bleachers**
  - 13 34 16.13 Grandstands
  - 13 34 16.53 Bleachers
- 13 34 18 **Post Frame Building Systems**
- 13 34 19 **Metal Building Systems**
- 13 34 23 **Fabricated Structures**
  - 13 34 23.13 Portable and Mobile Buildings
  - 13 34 23.14 Fabricated Classroom Buildings
  - 13 34 23.16 Fabricated Control Booths
  - 13 34 23.19 Fabricated Dome Structures
  - 13 34 23.23 Fabricated Substation Control Rooms
- 13 34 56 **Observatories**
- 13 35 00 **Rammed Earth Construction**
  - 13 35 13 **Rammed Earth Walls**
    - 13 35 13.13 Traditional Rammed Earth Walls
    - 13 35 13.23 Stabilized Insulated Rammed Earth Walls
- 13 36 00 **Towers**
  - 13 36 13 **Metal Towers**
    - 13 36 13.13 Steel Towers
  - 13 36 23 **Wood Towers**
- 13 40 00 **Integrated Construction**
  - 13 42 00 **Building Modules**
    - 13 42 25 Hospitality Unit Modules
    - 13 42 33 Apartment Unit Modules
    - 13 42 43 Dormitory Unit Modules
    - 13 42 63 Detention Cell Modules
      - 13 42 63.13 Precast-Concrete Detention Cell Modules
      - 13 42 63.16 Steel Detention Cell Modules
  - 13 44 00 **Modular Mezzanines**
  - 13 48 00 **Sound, Vibration, and Seismic Control**
    - 13 48 13 Manufactured Sound and Vibration Control Components
    - 13 48 23 Fabricated Sound and Vibration Control Assemblies
    - 13 48 53 Manufactured Seismic Control Components
    - 13 48 63 Fabricated Seismic Control Assemblies
  - 13 49 00 **Radiation Protection**
    - 13 49 13 Integrated X-Ray Shielding Assemblies
    - 13 49 16 Modular X-Ray Shielding Rooms
    - 13 49 23 Integrated RFI/EMI Shielding Assemblies
    - 13 49 26 Modular RFI/EMI Shielding Rooms

**13 50 00 Special Instrumentation**

13 51 00 Stress Instrumentation

13 52 00 Seismic Instrumentation

13 53 00 Meteorological Instrumentation

13 53 13 Solar Instrumentation

13 53 23 Wind Instrumentation

## **14 00 00 Conveying Equipment**

### **14 01 00 Operation and Maintenance of Conveying Equipment**

14 01 10 Operation and Maintenance of Dumbwaiters

14 01 10.71 Dumbwaiter Rehabilitation

14 01 20 Operation and Maintenance of Elevators

14 01 20.71 Elevator Rehabilitation

14 01 30 Operation and Maintenance of Escalators and Moving Walks

14 01 30.71 Escalators and Moving Walks Rehabilitation

14 01 40 Operation and Maintenance of Lifts

14 01 40.71 Lift Rehabilitation

14 01 70 Operation and Maintenance of Turntables

14 01 80 Operation and Maintenance of Scaffolding

14 01 90 Operation and Maintenance of Other Conveying Equipment

### **14 05 00 Common Work Results for Conveying Equipment**

### **14 06 00 Schedules for Conveying Equipment**

14 06 10 Schedules for Dumbwaiters

14 06 20 Schedules for Elevators

14 06 20.13 Elevator Equipment Schedule

14 06 30 Schedules for Escalators and Moving Walks

14 06 40 Schedules for Lifts

14 06 40.13 Lift Schedule

14 06 70 Schedules for Turntables

14 06 80 Schedules for Scaffolding

14 06 90 Schedules for Other Conveying Equipment

### **14 08 00 Commissioning of Conveying Equipment**

14 08 10 Commissioning of Dumbwaiters

14 08 20 Commissioning of Elevators

14 08 30 Commissioning of Escalators and Moving Walks

14 08 40 Commissioning of Lifts

14 08 70 Commissioning of Turntables

14 08 80 Commissioning of Scaffolding

### **14 10 00 Dumbwaiters**

14 11 00 Manual Dumbwaiters

14 12 00 Electric Dumbwaiters

- 14 14 00 Hydraulic Dumbwaiters**
- 14 20 00 Elevators**
  - 14 21 00 Electric Traction Elevators**
    - 14 21 13 Electric Traction Freight Elevators
    - 14 21 23 Electric Traction Passenger Elevators
      - 14 21 23.13 Machine Room Electric Traction Passenger Elevators
      - 14 21 23.16 Machine Room-Less Electric Traction Passenger Elevators
    - 14 21 33 Electric Traction Residential Elevators
    - 14 21 43 Electric Traction Service Elevators
  - 14 24 00 Hydraulic Elevators**
    - 14 24 13 Hydraulic Freight Elevators
    - 14 24 23 Hydraulic Passenger Elevators
    - 14 24 33 Hydraulic Residential Elevators
    - 14 24 43 Hydraulic Service Elevators
  - 14 26 00 Limited-Use/Limited-Application Elevators**
  - 14 27 00 Custom Elevator Cabs and Doors**
    - 14 27 13 Custom Elevator Cab Finishes
    - 14 27 16 Custom Elevator Doors
  - 14 28 00 Elevator Equipment and Controls**
    - 14 28 16 Elevator Controls
    - 14 28 19 Elevator Equipment
      - 14 28 19.13 Elevator Safety Equipment
      - 14 28 19.16 Elevator Hoistway Equipment
- 14 30 00 Escalators and Moving Walks**
  - 14 31 00 Escalators**
  - 14 32 00 Moving Walks**
  - 14 33 00 Moving Ramps**
    - 14 33 13 Motorized Ramps
    - 14 33 16 Powered Ramps
- 14 40 00 Lifts**
  - 14 41 00 People Lifts**
    - 14 41 13 Counterbalanced People Lifts
    - 14 41 16 Endless-Belt People Lifts
  - 14 42 00 Wheelchair Lifts**
    - 14 42 13 Inclined Wheelchair Lifts

- 14 42 16 Vertical Wheelchair Lifts
- 14 43 00 Platform Lifts**
  - 14 43 13 Orchestra Lifts
  - 14 43 16 Stage Lifts
- 14 44 00 Sidewalk Lifts**
- 14 45 00 Vehicle Lifts**
- 14 70 00 Turntables**
  - 14 71 00 Industrial Turntables**
    - 14 71 11 Vehicle Turntables
  - 14 72 00 Hospitality Turntables**
    - 14 72 25 Restaurant Turntables
  - 14 73 00 Exhibit Turntables**
    - 14 73 59 Display Turntables
  - 14 74 00 Entertainment Turntables**
    - 14 74 61 Stage Turntables
- 14 80 00 Scaffolding**
  - 14 81 00 Suspended Scaffolding**
    - 14 81 13 Beam Scaffolding
    - 14 81 16 Carriage Scaffolding
    - 14 81 19 Hook Scaffolding
  - 14 82 00 Rope Climbers**
    - 14 82 13 Manual Rope Climbers
    - 14 82 16 Powered Rope Climbers
  - 14 83 00 Elevating Platforms**
    - 14 83 13 Telescoping Platform Lifts**
      - 14 83 13.13 Electric and Battery Telescoping Platform Lifts
      - 14 83 13.16 Pneumatic Telescoping Platform Lifts
    - 14 83 16 Scissor Lift Platforms
    - 14 83 19 Multi-Axis Platform Lifts
  - 14 84 00 Powered Scaffolding**
    - 14 84 13 Window Washing Scaffolding
    - 14 84 23 Window Washing Hoists
- 14 90 00 Other Conveying Equipment**
  - 14 91 00 Facility Chutes**
    - 14 91 13 Coal Chutes

14 91 23 Escape Chutes  
14 91 33 Laundry and Linen Chutes  
14 91 82 Trash Chutes

**14 92 00 Pneumatic Tube Systems**

**21 00 00 Fire Suppression****21 01 00 Operation and Maintenance of Fire Suppression**

- 21 01 10 Operation and Maintenance of Water-Based Fire-Suppression Systems
- 21 01 20 Operation and Maintenance of Fire-Extinguishing Systems
- 21 01 30 Operation and Maintenance of Fire-Suppression Equipment

**21 05 00 Common Work Results for Fire Suppression**

- 21 05 13 Common Motor Requirements for Fire-Suppression Equipment
- 21 05 16 Expansion Fittings and Loops for Fire-Suppression Piping
- 21 05 19 Meters and Gages for Fire-Suppression Systems
- 21 05 23 General-Duty Valves for Water-Based Fire-Suppression Piping
- 21 05 29 Hangers and Supports for Fire-Suppression Piping and Equipment
- 21 05 33 Heat Tracing for Fire-Suppression Piping
- 21 05 48 Vibration and Seismic Controls for Fire-Suppression Piping and Equipment
- 21 05 53 Identification for Fire-Suppression Piping and Equipment

**21 06 00 Schedules for Fire Suppression**

- 21 06 10 Schedules for Water-Based Fire-Suppression Systems
- 21 06 20 Schedules for Fire-Extinguishing Systems
- 21 06 30 Schedules for Fire-Suppression Equipment

**21 07 00 Fire Suppression Systems Insulation**

- 21 07 16 Fire-Suppression Equipment Insulation
- 21 07 19 Fire-Suppression Piping Insulation

**21 08 00 Commissioning of Fire Suppression****21 09 00 Instrumentation and Control for Fire-Suppression Systems****21 10 00 Water-Based Fire-Suppression Systems****21 11 00 Facility Fire-Suppression Water-Service Piping**

- 21 11 16 Facility Fire Hydrants
- 21 11 19 Fire-Department Connections

**21 12 00 Fire-Suppression Standpipes**

- 21 12 13 Fire-Suppression Hoses and Nozzles
- 21 12 16 Fire-Suppression Hose Reels
- 21 12 19 Fire-Suppression Hose Racks

- 21 12 23 Fire-Suppression Hose Valves
- 21 13 00 Fire-Suppression Sprinkler Systems**
  - 21 13 13 Wet-Pipe Sprinkler Systems
  - 21 13 16 Dry-Pipe Sprinkler Systems
  - 21 13 19 Preaction Sprinkler Systems
  - 21 13 23 Combined Dry-Pipe and Preaction Sprinkler Systems
  - 21 13 26 Deluge Fire-Suppression Sprinkler Systems
  - 21 13 29 Water Spray Fixed Systems
  - 21 13 36 Antifreeze Sprinkler Systems
  - 21 13 39 Foam-Water Systems
- 21 16 00 Fire-Suppression Pressure Maintenance Pumps**
- 21 20 00 Fire-Extinguishing Systems**
  - 21 21 00 Carbon-Dioxide Fire-Extinguishing Systems**
    - 21 21 13 Carbon-Dioxide Fire-Extinguishing Piping
    - 21 21 16 Carbon-Dioxide Fire-Extinguishing Equipment
  - 21 22 00 Clean-Agent Fire-Extinguishing Systems**
    - 21 22 13 Clean-Agent Fire-Extinguishing Piping
    - 21 22 16 Clean-Agent Fire-Extinguishing Equipment
  - 21 23 00 Wet-Chemical Fire-Extinguishing Systems**
    - 21 23 13 Wet-Chemical Fire-Extinguishing Piping
    - 21 23 16 Wet-Chemical Fire-Extinguishing Equipment
  - 21 24 00 Dry-Chemical Fire-Extinguishing Systems**
    - 21 24 13 Dry-Chemical Fire-Extinguishing Piping
    - 21 24 16 Dry-Chemical Fire-Extinguishing Equipment
- 21 30 00 Fire Pumps**
  - 21 31 00 Centrifugal Fire Pumps**
    - 21 31 13 Electric-Drive, Centrifugal Fire Pumps
    - 21 31 16 Diesel-Drive, Centrifugal Fire Pumps
  - 21 32 00 Vertical-Turbine Fire Pumps**
    - 21 32 13 Electric-Drive, Vertical-Turbine Fire Pumps
    - 21 32 16 Diesel-Drive, Vertical-Turbine Fire Pumps
  - 21 33 00 Positive-Displacement Fire Pumps**
    - 21 33 13 Electric-Drive, Positive-Displacement Fire Pumps
    - 21 33 16 Diesel-Drive, Positive-Displacement Fire Pumps
- 21 40 00 Fire-Suppression Water Storage**
  - 21 41 00 Storage Tanks for Fire-Suppression Water**
    - 21 41 13 Pressurized Storage Tanks for Fire-Suppression Water

- 21 41 16 Elevated Storage Tanks for Fire-Suppression Water
- 21 41 19 Roof-Mounted Storage Tanks for Fire-Suppression Water
- 21 41 23 Ground Suction Storage Tanks for Fire-Suppression  
Water
- 21 41 26 Underground Storage Tanks for Fire-Suppression Water
- 21 41 29 Storage Tanks for Fire-Suppression Water Additives

## 22 00 00 Plumbing

### 22 01 00 Operation and Maintenance of Plumbing

- 22 01 10 Operation and Maintenance of Plumbing Piping and Pumps
- 22 01 30 Operation and Maintenance of Plumbing Equipment
- 22 01 40 Operation and Maintenance of Plumbing Fixtures
- 22 01 50 Operation and Maintenance of Pool and Fountain Plumbing Systems
- 22 01 60 Operation and Maintenance of Laboratory and Healthcare Systems

### 22 05 00 Common Work Results for Plumbing

- 22 05 13 Common Motor Requirements for Plumbing Equipment
- 22 05 16 Expansion Fittings and Loops for Plumbing Piping
- 22 05 19 Meters and Gages for Plumbing Piping
- 22 05 23 General-Duty Valves for Plumbing Piping
- 22 05 29 Hangers and Supports for Plumbing Piping and Equipment
- 22 05 33 Heat Tracing for Plumbing Piping
- 22 05 48 Vibration and Seismic Controls for Plumbing Piping and Equipment
- 22 05 53 Identification for Plumbing Piping and Equipment
- 22 05 73 Facility Drainage Manholes
- 22 05 76 Facility Drainage Piping Cleanouts

### 22 06 00 Schedules for Plumbing

- 22 06 10 Schedules for Plumbing Piping and Pumps
  - 22 06 10.13 Plumbing Pump Schedule
- 22 06 12 Schedules for Facility Potable Water Storage
- 22 06 15 Schedules for General Service Compressed-Air Equipment
- 22 06 30 Schedules for Plumbing Equipment
  - 22 06 30.13 Domestic Water Heater Schedule
- 22 06 40 Schedules for Plumbing Fixtures
  - 22 06 40.13 Plumbing Fixture Schedule
- 22 06 50 Schedules for Pool and Fountain Plumbing Systems
- 22 06 60 Schedules for Laboratory and Healthcare Systems

### 22 07 00 Plumbing Insulation

- 22 07 16 Plumbing Equipment Insulation
- 22 07 19 Plumbing Piping Insulation

### 22 08 00 Commissioning of Plumbing

### 22 09 00 Instrumentation and Control for Plumbing

**22 10 00 Plumbing Piping****22 11 00 Facility Water Distribution**

- 22 11 13 Facility Water Distribution Piping
- 22 11 16 Domestic Water Piping
- 22 11 19 Domestic Water Piping Specialties
- 22 11 23 Domestic Water Pumps
  - 22 11 23.13 Domestic-Water Packaged Booster Pumps
  - 22 11 23.23 Close-Coupled, In-Line, Sealless Centrifugal Domestic-Water Pumps
  - 22 11 23.26 Close-Coupled, Horizontally Mounted, In-Line Centrifugal Domestic-Water Pumps
  - 22 11 23.29 Close-Coupled, Vertically Mounted, In-Line Centrifugal Domestic-Water Pumps
  - 22 11 23.33 Separately Coupled, In-Line Centrifugal Domestic-Water Pumps
  - 22 11 23.36 Separately Coupled, Horizontally Mounted, In-Line Centrifugal Domestic-Water Pumps

**22 12 00 Facility Potable-Water Storage Tanks**

- 22 12 13 Facility Roof-Mounted, Potable-Water Storage Tanks
- 22 12 16 Facility Elevated, Potable-Water Storage Tanks
- 22 12 19 Facility Ground-Mounted, Potable-Water Storage Tanks
- 22 12 23 Facility Indoor Potable-Water Storage Tanks
  - 22 12 23.13 Facility Steel, Indoor Potable-Water Storage Pressure Tanks
  - 22 12 23.16 Facility Steel, Indoor Potable-Water Storage Non-Pressure Tanks
  - 22 12 23.23 Facility Plastic, Indoor Potable-Water Storage Pressure Tanks
  - 22 12 23.26 Facility Plastic, Indoor Potable-Water Storage Non-Pressure Tanks

**22 13 00 Facility Sanitary Sewerage**

- 22 13 13 Facility Sanitary Sewers
- 22 13 16 Sanitary Waste and Vent Piping
- 22 13 19 Sanitary Waste Piping Specialties
  - 22 13 19.13 Sanitary Drains
  - 22 13 19.23 Fats, Oils, and Grease Disposal Systems
  - 22 13 19.26 Grease Removal Devices
  - 22 13 19.33 Backwater Valves
  - 22 13 19.36 Air-Admittance Valves
- 22 13 23 Sanitary Waste Interceptors
- 22 13 26 Sanitary Waste Separators
- 22 13 29 Sanitary Sewerage Pumps
  - 22 13 29.13 Wet-Pit-Mounted, Vertical Sewerage Pumps

- 22 13 29.16 Submersible Sewerage Pumps
- 22 13 29.23 Sewerage Pump Reverse-Flow Assemblies
- 22 13 29.33 Sewerage Pump Basins and Pits
- 22 13 33 Packaged, Submersible Sewerage Pump Units**
- 22 13 36 Packaged, Wastewater Pump Units**
- 22 13 43 Facility Packaged Sewage Pumping Stations**
  - 22 13 43.13 Facility Dry-Well Packaged Sewage Pumping Stations
  - 22 13 43.16 Facility Wet-Well Packaged Sewage Pumping Stations
- 22 13 53 Facility Septic Tanks**
- 22 13 63 Facility Gray Water Tanks**
- 22 14 00 Facility Storm Drainage**
  - 22 14 13 Facility Storm Drainage Piping**
  - 22 14 16 Rainwater Leaders**
  - 22 14 19 Sump Pump Discharge Piping**
  - 22 14 23 Storm Drainage Piping Specialties**
  - 22 14 26 Facility Storm Drains**
    - 22 14 26.13 Roof Drains
    - 22 14 26.16 Facility Area Drains
    - 22 14 26.19 Facility Trench Drains
  - 22 14 29 Sump Pumps**
    - 22 14 29.13 Wet-Pit-Mounted, Vertical Sump Pumps
    - 22 14 29.16 Submersible Sump Pumps
    - 22 14 29.19 Sump-Pump Basins and Pits
  - 22 14 33 Packaged, Pedestal Drainage Pump Units**
  - 22 14 36 Packaged, Submersible, Drainage Pump Units**
  - 22 14 53 Rainwater Storage Tanks**
- 22 15 00 General Service Compressed-Air Systems**
  - 22 15 13 General Service Compressed-Air Piping**
  - 22 15 16 General Service Compressed-Air Valves**
  - 22 15 19 General Service Packaged Air Compressors and Receivers**
    - 22 15 19.13 General Service Packaged Reciprocating Air Compressors
    - 22 15 19.16 General Service Packaged Liquid-Ring Air Compressors
    - 22 15 19.19 General Service Packaged Rotary-Screw Air Compressors
    - 22 15 19.23 General Service Packaged Sliding-Vane Air Compressors
- 22 30 00 Plumbing Equipment**
  - 22 31 00 Domestic Water Softeners**
    - 22 31 13 Residential Domestic Water Softeners
    - 22 31 16 Commercial Domestic Water Softeners

**22 32 00 Domestic Water Filtration Equipment**

- 22 32 13 Domestic-Water Bag-Type Filters
- 22 32 16 Domestic-Water Freestanding Cartridge Filters
- 22 32 19 Domestic-Water Off-Floor Cartridge Filters
- 22 32 23 Domestic-Water Carbon Filters
- 22 32 26 Domestic-Water Sand Filters
  - 22 32 26.13 Domestic-Water Circulating Sand Filters
  - 22 32 26.16 Domestic-Water Multimedia Sand Filters
  - 22 32 26.19 Domestic-Water Greensand Filters

**22 33 00 Electric Domestic Water Heaters**

- 22 33 13 Instantaneous Electric Domestic Water Heaters
  - 22 33 13.13 Flow-Control, Instantaneous Electric Domestic Water Heaters
  - 22 33 13.16 Thermostat-Control, Instantaneous Electric Domestic Water Heaters
- 22 33 30 Residential, Electric Domestic Water Heaters
  - 22 33 30.13 Residential, Small-Capacity Electric Domestic Water Heaters
  - 22 33 30.16 Residential, Storage Electric Domestic Water Heaters
  - 22 33 30.23 Residential, Collector-to-Tank, Solar-Electric Domestic Water Heaters
  - 22 33 30.26 Residential, Collector-to-Tank, Heat-Exchanger-Coil, Solar-Electric Domestic Water Heaters
- 22 33 33 Light-Commercial Electric Domestic Water Heaters
- 22 33 36 Commercial Domestic Water Electric Booster Heaters
  - 22 33 36.13 Commercial Domestic Water Electric Booster Heaters
  - 22 33 36.16 Commercial Storage Electric Domestic Water Heaters

**22 34 00 Fuel-Fired Domestic Water Heaters**

- 22 34 13 Instantaneous, Tankless, Gas Domestic Water Heaters
- 22 34 30 Residential Gas Domestic Water Heaters
  - 22 34 30.13 Residential, Atmospheric, Gas Domestic Water Heaters
  - 22 34 30.16 Residential, Direct-Vent, Gas Domestic Water Heaters
  - 22 34 30.19 Residential, Power-Vent, Gas Domestic Water Heaters
- 22 34 36 Commercial Gas Domestic Water Heaters
  - 22 34 36.13 Commercial, Atmospheric, Gas Domestic Water Heaters
  - 22 34 36.16 Commercial, Power-Burner, Gas Domestic Water Heaters
  - 22 34 36.19 Commercial, Power-Vent, Gas Domestic Water Heaters
  - 22 34 36.23 Commercial, High-Efficiency, Gas Domestic Water Heaters
  - 22 34 36.26 Commercial, Coil-Type, Finned-Tube, Gas Domestic Water Heaters

22 34 36.29 Commercial, Grid-Type, Finned-Tube, Gas Domestic Water Heaters

**22 34 46 Oil-Fired Domestic Water Heaters**

22 34 46.13 Large-Capacity, Oil-Fired Domestic Water Heaters

**22 34 56 Dual-Fuel-Fired Domestic Water Heaters**

**22 35 00 Domestic Water Heat Exchangers**

**22 35 13 Instantaneous Domestic Water Heat Exchangers**

22 35 13.13 Heating-Fluid-in-Coil, Instantaneous Domestic Water Heat Exchangers

22 35 13.16 Domestic-Water-in-Coil, Instantaneous Domestic Water Heat Exchangers

22 35 13.19 Heating-Fluid-in-U-Tube-Coil, Instantaneous Domestic Water Heat Exchangers

**22 35 23 Circulating, Domestic Water Heat Exchangers**

22 35 23.13 Circulating, Compact Domestic Water Heat Exchangers

22 35 23.16 Circulating, Storage Domestic Water Heat Exchangers

**22 35 29 Noncirculating, Domestic Water Heat Exchangers**

22 35 29.13 Noncirculating, Compact Domestic Water Heat Exchangers

22 35 29.16 Noncirculating, Storage Domestic Water Heat Exchangers

**22 35 36 Domestic Water Brazed-Plate Heat Exchangers**

**22 35 39 Domestic Water Frame-and-Plate Heat Exchangers**

**22 35 43 Domestic Water Heat Reclaimers**

**22 40 00 Plumbing Fixtures**

**22 41 00 Residential Plumbing Fixtures**

**22 41 13 Residential Water Closets, Urinals, and Bidets**

22 41 13.13 Residential Water Closets

22 41 13.16 Residential Urinals

22 41 13.19 Residential Bidets

**22 41 16 Residential Lavatories and Sinks**

22 41 16.13 Residential Lavatories

22 41 16.16 Residential Sinks

**22 41 19 Residential Bathtubs**

**22 41 23 Residential Showers**

**22 41 26 Residential Disposers**

**22 41 36 Residential Laundry Trays**

**22 41 39 Residential Faucets, Supplies, and Trim**

**22 42 00 Commercial Plumbing Fixtures**

**22 42 13 Commercial Water Closets, Urinals, and Bidets**

- 22 42 13.13 Commercial Water Closets
- 22 42 13.16 Commercial Urinals
- 22 42 16 Commercial Lavatories and Sinks**
  - 22 42 16.13 Commercial Lavatories
  - 22 42 16.16 Commercial Sinks
- 22 42 19 Commercial Bathtubs**
- 22 42 23 Commercial Showers**
- 22 42 26 Commercial Disposers**
- 22 42 29 Shampoo Bowls**
- 22 42 33 Wash Fountains**
- 22 42 36 Commercial Laundry Trays**
  - 22 42 39 Commercial Faucets, Supplies, and Trim
  - 22 42 43 Flushometers
- 22 43 00 Healthcare Plumbing Fixtures**
  - 22 43 13 Healthcare Water Closets
  - 22 43 16 Healthcare Sinks
  - 22 43 19 Healthcare Bathtubs
  - 22 43 23 Healthcare Showers
  - 22 43 39 Healthcare Faucets
  - 22 43 43 Healthcare Plumbing Fixture Flushometers
- 22 45 00 Emergency Plumbing Fixtures**
  - 22 45 13 Emergency Showers
  - 22 45 16 Eyewash Equipment
  - 22 45 19 Self-Contained Eyewash Equipment
  - 22 45 23 Personal Eyewash Equipment
  - 22 45 26 Eye/Face Wash Equipment
  - 22 45 29 Hand-Held Emergency Drench Hoses
  - 22 45 33 Combination Emergency Fixture Units
  - 22 45 36 Emergency Fixture Water-Tempering Equipment
- 22 46 00 Security Plumbing Fixtures**
  - 22 46 13 Security Water Closets and Urinals**
    - 22 46 13.13 Security Water Closets
    - 22 46 13.16 Security Urinals
  - 22 46 16 Security Lavatories and Sinks**
    - 22 46 16.13 Security Lavatories
    - 22 46 16.16 Security Sinks
  - 22 46 19 Security Showers**
  - 22 46 39 Security Faucets, Supplies, and Trim**
  - 22 46 43 Security Plumbing Fixture Flushometers**
  - 22 46 53 Security Plumbing Fixture Supports**
- 22 47 00 Drinking Fountains and Water Coolers**
  - 22 47 13 Drinking Fountains

- 22 47 16 Pressure Water Coolers
- 22 47 19 Water-Station Water Coolers
- 22 47 23 Remote Water Coolers
- 22 50 00 Pool and Fountain Plumbing Systems**
  - 22 51 00 Swimming Pool Plumbing Systems**
    - 22 51 13 Swimming Pool Piping
    - 22 51 16 Swimming Pool Pumps
    - 22 51 19 Swimming Pool Water Treatment Equipment
    - 22 51 23 Swimming Pool Equipment Controls
  - 22 52 00 Fountain Plumbing Systems**
    - 22 52 13 Fountain Piping
    - 22 52 16 Fountain Pumps
    - 22 52 19 Fountain Water Treatment Equipment
    - 22 52 23 Fountain Equipment Controls
- 22 60 00 Gas and Vacuum Systems for Laboratory and Healthcare Facilities**
  - 22 61 00 Compressed-Air Systems for Laboratory and Healthcare Facilities**
    - 22 61 13 Compressed-Air Piping for Laboratory and Healthcare Facilities
      - 22 61 13.53 Laboratory Compressed-Air Piping
      - 22 61 13.70 Healthcare Compressed-Air Piping
      - 22 61 13.74 Dental Compressed-Air Piping
    - 22 61 19 Compressed-Air Equipment for Laboratory and Healthcare Facilities
      - 22 61 19.53 Laboratory Compressed-Air Equipment
      - 22 61 19.70 Healthcare Compressed-Air Equipment
      - 22 61 19.74 Dental Compressed-Air Equipment
  - 22 62 00 Vacuum Systems for Laboratory and Healthcare Facilities**
    - 22 62 13 Vacuum Piping for Laboratory and Healthcare Facilities
      - 22 62 13.53 Laboratory Vacuum Piping
      - 22 62 13.70 Healthcare, Surgical Vacuum Piping
      - 22 62 13.74 Dental Vacuum Piping
    - 22 62 19 Vacuum Equipment for Laboratory and Healthcare Facilities
      - 22 62 19.53 Laboratory Vacuum Equipment
      - 22 62 19.70 Healthcare Vacuum Equipment
      - 22 62 19.74 Dental Vacuum and Evacuation Equipment

- 22 62 23 Waste Anesthesia-Gas Piping
- 22 63 00 Gas Systems for Laboratory and Healthcare Facilities**
  - 22 63 13 Gas Piping for Laboratory and Healthcare Facilities
    - 22 63 13.53 Laboratory Gas Piping
    - 22 63 13.70 Healthcare Gas Piping
  - 22 63 19 Gas Storage Tanks for Laboratory and Healthcare Facilities
    - 22 63 19.53 Laboratory Gas Storage Tanks
    - 22 63 19.70 Healthcare Gas Storage Tanks
- 22 66 00 Chemical-Waste Systems for Laboratory and Healthcare Facilities**
  - 22 66 53 Laboratory Chemical-Waste and Vent Piping
  - 22 66 70 Healthcare Chemical-Waste and Vent Piping
  - 22 66 83 Chemical-Waste Tanks
    - 22 66 83.13 Chemical-Waste Dilution Tanks
    - 22 66 83.16 Chemical-Waste Neutralization Tanks
- 22 67 00 Processed Water Systems for Laboratory and Healthcare Facilities**
  - 22 67 13 Processed Water Piping for Laboratory and Healthcare Facilities
    - 22 67 13.13 Distilled-Water Piping
    - 22 67 13.16 Reverse-Osmosis Water Piping
    - 22 67 13.19 Deionized-Water Piping
  - 22 67 19 Processed Water Equipment for Laboratory and Healthcare Facilities
    - 22 67 19.13 Distilled-Water Equipment
    - 22 67 19.16 Reverse-Osmosis Water Equipment
    - 22 67 19.19 Deionized-Water Equipment

## **23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)**

### **23 01 00 Operation and Maintenance of HVAC Systems**

- 23 01 10 Operation and Maintenance of Facility Fuel Systems
- 23 01 20 Operation and Maintenance of HVAC Piping and Pumps
- 23 01 30 Operation and Maintenance of HVAC Air Distribution
  - 23 01 30.51 HVAC Air-Distribution System Cleaning
- 23 01 50 Operation and Maintenance of Central Heating Equipment
- 23 01 60 Operation and Maintenance of Central Cooling Equipment
  - 23 01 60.71 Refrigerant Recovery/Recycling
- 23 01 70 Operation and Maintenance of Central HVAC Equipment
- 23 01 80 Operation and Maintenance of Decentralized HVAC Equipment
- 23 01 90 Diagnostic Systems for HVAC

### **23 05 00 Common Work Results for HVAC**

- 23 05 13 Common Motor Requirements for HVAC Equipment
- 23 05 16 Expansion Fittings and Loops for HVAC Piping
- 23 05 19 Meters and Gages for HVAC Piping
- 23 05 23 General-Duty Valves for HVAC Piping
- 23 05 29 Hangers and Supports for HVAC Piping and Equipment
- 23 05 33 Heat Tracing for HVAC Piping
- 23 05 48 Vibration and Seismic Controls for HVAC
- 23 05 53 Identification for HVAC Piping and Equipment
- 23 05 63 Anti-Microbial Coatings for HVAC Ducts and Equipment
- 23 05 66 Anti-Microbial Ultraviolet Emitters for HVAC Ducts and Equipment
- 23 05 93 Testing, Adjusting, and Balancing for HVAC

### **23 06 00 Schedules for HVAC**

- 23 06 10 Schedules for Facility Fuel Service Systems
- 23 06 20 Schedules for HVAC Piping and Pumps
  - 23 06 20.13 Hydronic Pump Schedule
- 23 06 30 Schedules for HVAC Air Distribution
  - 23 06 30.13 HVAC Fan Schedule
  - 23 06 30.16 Air Terminal Unit Schedule
  - 23 06 30.19 Air Outlet and Inlet Schedule
  - 23 06 30.23 HVAC Air Cleaning Device Schedule
- 23 06 50 Schedules for Central Heating Equipment
  - 23 06 50.13 Heating Boiler Schedule
- 23 06 60 Schedules for Central Cooling Equipment
  - 23 06 60.13 Refrigerant Condenser Schedule

23 06 60.16 Packaged Water Chiller Schedule

**23 06 70 Schedules for Central HVAC Equipment**

23 06 70.13 Indoor, Central-Station Air-Handling Unit Schedule

23 06 70.16 Packaged Outdoor HVAC Equipment Schedule

**23 06 80 Schedules for Decentralized HVAC Equipment**

23 06 80.13 Decentralized Unitary HVAC Equipment Schedule

23 06 80.16 Convection Heating and Cooling Unit Schedule

23 06 80.19 Radiant Heating Unit Schedule

**23 07 00 HVAC Insulation**

23 07 13 Duct Insulation

23 07 16 HVAC Equipment Insulation

23 07 19 HVAC Piping Insulation

**23 08 00 Commissioning of HVAC**

**23 09 00 Instrumentation and Control for HVAC**

23 09 13 Instrumentation and Control Devices for HVAC

23 09 13.13 Actuators and Operators

23 09 13.23 Sensors and Transmitters

23 09 13.33 Control Valves

23 09 13.43 Control Dampers

23 09 23 Direct-Digital Control System for HVAC

23 09 33 Electric and Electronic Control System for HVAC

23 09 43 Pneumatic Control System for HVAC

23 09 53 Pneumatic and Electric Control System for HVAC

23 09 93 Sequence of Operations for HVAC Controls

**23 10 00 Facility Fuel Systems**

**23 11 00 Facility Fuel Piping**

23 11 13 Facility Fuel-Oil Piping

23 11 16 Facility Gasoline Piping

23 11 23 Facility Natural-Gas Piping

23 11 26 Facility Liquefied-Petroleum Gas Piping

**23 12 00 Facility Fuel Pumps**

23 12 13 Facility Fuel-Oil Pumps

23 12 16 Facility Gasoline Dispensing Pumps

**23 13 00 Facility Fuel-Storage Tanks**

23 13 13 Facility Underground Fuel-Oil, Storage Tanks

23 13 13.13 Double-Wall Steel, Underground Fuel-Oil, Storage Tanks

23 13 13.16 Composite, Steel, Underground Fuel-Oil, Storage Tanks

23 13 13.19 Jacketed, Steel, Underground Fuel-Oil, Storage Tanks

23 13 13.23 Glass-Fiber-Reinforced-Plastic, Underground Fuel-Oil, Storage Tanks

23 13 13.33 Fuel-Oil Storage Tank Pumps

**23 13 23 Facility Aboveground Fuel-Oil, Storage Tanks**

23 13 23.13 Vertical, Steel, Aboveground Fuel-Oil, Storage Tanks

23 13 23.16 Horizontal, Steel, Aboveground Fuel-Oil, Storage Tanks

23 13 23.19 Containment-Dike, Steel, Aboveground Fuel-Oil, Storage Tanks

23 13 23.23 Insulated, Steel, Aboveground Fuel-Oil, Storage Tanks

23 13 23.26 Concrete-Vaulted, Steel, Aboveground Fuel-Oil, Storage Tanks

**23 20 00 HVAC Piping and Pumps**

**23 21 00 Hydronic Piping and Pumps**

**23 21 13 Hydronic Piping**

23 21 13.13 Underground Hydronic Piping

23 21 13.23 Aboveground Hydronic Piping

23 21 13.33 Ground-Loop Heat-Pump Piping

**23 21 16 Hydronic Piping Specialties**

**23 21 23 Hydronic Pumps**

23 21 23.13 In-Line Centrifugal Hydronic Pumps

23 21 23.16 Base-Mounted, Centrifugal Hydronic Pumps

23 21 23.19 Vertical-Mounted, Double-Suction Centrifugal Hydronic Pumps

23 21 23.23 Vertical-Turbine Hydronic Pumps

**23 21 29 Automatic Condensate Pump Units**

**23 22 00 Steam and Condensate Piping and Pumps**

**23 22 13 Steam and Condensate Heating Piping**

23 22 13.13 Underground Steam and Condensate Heating Piping

23 22 13.23 Aboveground Steam and Condensate Heating Piping

**23 22 16 Steam and Condensate Heating Piping Specialties**

**23 22 23 Steam Condensate Pumps**

23 22 23.13 Electric-Driven Steam Condensate Pumps

23 22 23.23 Pressure-Powered Steam Condensate Pumps

**23 23 00 Refrigerant Piping**

23 23 13 Refrigerant Piping Valves

23 23 16 Refrigerant Piping Specialties

23 23 19 Refrigerant Safety Relief Valve Discharge Piping

23 23 23 Refrigerants

**23 24 00 Internal-Combustion Engine Piping**

23 24 13 Internal-Combustion Engine Remote-Radiator Coolant Piping

- 23 24 16 Internal-Combustion Engine Exhaust Piping
- 23 25 00 HVAC Water Treatment**
  - 23 25 13 Water Treatment for Closed-Loop Hydronic Systems
  - 23 25 16 Water Treatment for Open Hydronic Systems
  - 23 25 19 Water Treatment for Steam System Feedwater
  - 23 25 23 Water Treatment for Humidification Steam System Feedwater
- 23 30 00 HVAC Air Distribution**
  - 23 31 00 HVAC Ducts and Casings**
    - 23 31 13 Metal Ducts
      - 23 31 13.13 Rectangular Metal Ducts
      - 23 31 13.16 Round and Flat-Oval Spiral Ducts
      - 23 31 13.19 Metal Duct Fittings
    - 23 31 16 Nonmetal Ducts
      - 23 31 16.13 Fibrous-Glass Ducts
      - 23 31 16.16 Thermoset Fiberglass-Reinforced Plastic Ducts
      - 23 31 16.19 PVC Ducts
      - 23 31 16.26 Concrete Ducts
    - 23 31 19 HVAC Casings
  - 23 32 00 Air Plenums and Chases**
    - 23 32 13 Fabricated, Metal Air Plenums
    - 23 32 33 Air-Distribution Ceiling Plenums
    - 23 32 36 Air-Distribution Floor Plenums
    - 23 32 39 Air-Distribution Wall Plenums
    - 23 32 43 Air-Distribution Chases Formed by General Construction
    - 23 32 48 Acoustical Air Plenums
  - 23 33 00 Air Duct Accessories**
    - 23 33 13 Dampers
      - 23 33 13.13 Volume-Control Dampers
      - 23 33 13.16 Fire Dampers
      - 23 33 13.19 Smoke-Control Dampers
      - 23 33 13.23 Backdraft Dampers
    - 23 33 19 Duct Silencers
    - 23 33 23 Turning Vanes
    - 23 33 33 Duct-Mounting Access Doors
    - 23 33 43 Flexible Connectors
    - 23 33 46 Flexible Ducts
    - 23 33 53 Duct Liners
  - 23 34 00 HVAC Fans**
    - 23 34 13 Axial HVAC Fans
    - 23 34 16 Centrifugal HVAC Fans

- 23 34 23 HVAC Power Ventilators
- 23 34 33 Air Curtains
- 23 35 00 Special Exhaust Systems**
  - 23 35 13 Dust Collection Systems
    - 23 35 13.13 Sawdust Collection Systems
  - 23 35 16 Engine Exhaust Systems
    - 23 35 16.13 Positive-Pressure Engine Exhaust Systems
    - 23 35 16.16 Mechanical Engine Exhaust Systems
- 23 36 00 Air Terminal Units**
  - 23 36 13 Constant-Air-Volume Units
  - 23 36 16 Variable-Air-Volume Units
- 23 37 00 Air Outlets and Inlets**
  - 23 37 13 Diffusers, Registers, and Grilles
  - 23 37 16 Fabric Air Distribution Devices
  - 23 37 23 HVAC Gravity Ventilators
    - 23 37 23.13 HVAC Gravity Dome Ventilators
    - 23 37 23.16 HVAC Gravity Louvered-Penthouse Ventilators
    - 23 37 23.19 HVAC Gravity Upblast Ventilators
- 23 38 00 Ventilation Hoods**
  - 23 38 13 Commercial-Kitchen Hoods
    - 23 38 13.13 Listed Commercial-Kitchen Hoods
    - 23 38 13.16 Standard Commercial-Kitchen Hoods
  - 23 38 16 Fume Hoods
- 23 40 00 HVAC Air Cleaning Devices**
  - 23 41 00 Particulate Air Filtration**
    - 23 41 13 Panel Air Filters
    - 23 41 16 Renewable-Media Air Filters
    - 23 41 19 Washable Air Filters
    - 23 41 23 Extended Surface Filters
    - 23 41 33 High-Efficiency Particulate Filtration
    - 23 41 43 Ultra-Low Penetration Filtration
    - 23 41 46 Super Ultra-Low Penetration Filtration
  - 23 42 00 Gas-Phase Air Filtration**
    - 23 42 13 Activated-Carbon Air Filtration
    - 23 42 16 Chemically-Impregnated Adsorption Air Filtration
    - 23 42 19 Catalytic-Adsorption Air Filtration
  - 23 43 00 Electronic Air Cleaners**
    - 23 43 13 Washable Electronic Air Cleaners
    - 23 43 16 Agglomerator Electronic Air Cleaners

23 43 23 Self-Contained Electronic Air Cleaners

## 23 50 00 Central Heating Equipment

### 23 51 00 Breechings, Chimneys, and Stacks

23 51 13 Draft Control Devices

23 51 13.13 Draft-Induction Fans

23 51 13.16 Vent Dampers

23 51 13.19 Barometric Dampers

23 51 16 Fabricated Breechings and Accessories

23 51 19 Fabricated Stacks

23 51 23 Gas Vents

23 51 33 Insulated Sectional Chimneys

23 51 43 Flue-Gas Filtration Equipment

23 51 43.13 Gaseous Filtration

23 51 43.16 Particulate Filtration

### 23 52 00 Heating Boilers

23 52 13 Electric Boilers

23 52 16 Condensing Boilers

23 52 16.13 Stainless-Steel Condensing Boilers

23 52 16.16 Aluminum Condensing Boilers

23 52 17 Low Mass Boilers

23 52 19 Pulse Combustion Boilers

23 52 23 Cast-Iron Boilers

23 52 33 Water-Tube Boilers

23 52 33.13 Finned Water-Tube Boilers

23 52 33.16 Steel Water-Tube Boilers

23 52 33.19 Copper Water-Tube Boilers

23 52 39 Fire-Tube Boilers

23 52 39.13 Scotch Marine Boilers

23 52 39.16 Steel Fire-Tube Boilers

23 52 83 Boiler Blowdown Systems

### 23 53 00 Heating Boiler Feedwater Equipment

23 53 13 Boiler Feedwater Pumps

23 53 16 Deaerators

### 23 54 00 Furnaces

23 54 13 Electric-Resistance Furnaces

23 54 16 Fuel-Fired Furnaces

23 54 16.13 Gas-Fired Furnaces

23 54 16.16 Oil-Fired Furnaces

### 23 55 00 Fuel-Fired Heaters

23 55 13 Fuel-Fired Duct Heaters

- 23 55 13.13 Oil-Fired Duct Heaters
- 23 55 13.16 Gas-Fired Duct Heaters
- 23 55 23 Gas-Fired Radiant Heaters**
- 23 55 33 Fuel-Fired Unit Heaters**
  - 23 55 33.13 Oil-Fired Unit Heaters
  - 23 55 33.16 Gas-Fired Unit Heaters
- 23 56 00 Solar Energy Heating Equipment**
  - 23 56 13 Heating Solar Collectors**
    - 23 56 13.13 Heating Solar Flat-Plate Collectors
    - 23 56 13.16 Heating Solar Concentrating Collectors
    - 23 56 13.19 Heating Solar Vacuum-Tube Collectors
  - 23 56 16 Packaged Solar Heating Equipment**
- 23 57 00 Heat Exchangers for HVAC**
  - 23 57 13 Steam-to-Steam Heat Exchangers**
  - 23 57 16 Steam-to-Water Heat Exchangers**
  - 23 57 19 Liquid-to-Liquid Heat Exchangers**
    - 23 57 19.13 Plate-Type, Liquid-to-Liquid Heat Exchangers
    - 23 57 19.16 Shell-Type, Liquid-to-Liquid Heat Exchangers
  - 23 57 33 Direct Geexchange Heat Exchangers**
- 23 60 00 Central Cooling Equipment**
  - 23 61 00 Refrigerant Compressors**
    - 23 61 13 Centrifugal Refrigerant Compressors**
      - 23 61 13.13 Non-Condensable Gas Purge Equipment
    - 23 61 16 Reciprocating Refrigerant Compressors**
    - 23 61 19 Scroll Refrigerant Compressors**
    - 23 61 23 Rotary-Screw Refrigerant Compressors**
  - 23 62 00 Packaged Compressor and Condenser Units**
    - 23 62 13 Packaged Air-Cooled Refrigerant Compressor and Condenser Units**
    - 23 62 23 Packaged Water-Cooled Refrigerant Compressor and Condenser Units**
  - 23 63 00 Refrigerant Condensers**
    - 23 63 13 Air-Cooled Refrigerant Condensers**
    - 23 63 23 Water-Cooled Refrigerant Condensers**
    - 23 63 33 Evaporative Refrigerant Condensers**
  - 23 64 00 Packaged Water Chillers**
    - 23 64 13 Absorption Water Chillers**
      - 23 64 13.13 Direct-Fired Absorption Water Chillers
      - 23 64 13.16 Indirect-Fired Absorption Water Chillers

- 23 64 16 **Centrifugal Water Chillers**
  - 23 64 16.13 Air-Cooled Centrifugal Water Chillers
  - 23 64 16.16 Water-Cooled Centrifugal Water Chillers
- 23 64 19 **Reciprocating Water Chillers**
- 23 64 23 **Scroll Water Chillers**
- 23 64 26 **Rotary-Screw Water Chillers**
- 23 65 00 **Cooling Towers**
  - 23 65 13 **Forced-Draft Cooling Towers**
    - 23 65 13.13 Open-Circuit, Forced-Draft Cooling Towers
    - 23 65 13.16 Closed-Circuit, Forced-Draft Cooling Towers
  - 23 65 16 **Natural-Draft Cooling Towers**
  - 23 65 23 **Field-Erected Cooling Towers**
  - 23 65 33 **Liquid Coolers**
- 23 70 00 **Central HVAC Equipment**
  - 23 71 00 **Thermal Storage**
    - 23 71 13 **Thermal Heat Storage**
      - 23 71 13.13 Room Storage Heaters for Thermal Storage
      - 23 71 13.16 Heat-Pump Boosters for Thermal Storage
      - 23 71 13.19 Central Furnace Heat-Storage Units
      - 23 71 13.23 Pressurized-Water Thermal Storage Tanks
    - 23 71 16 **Chilled-Water Thermal Storage**
    - 23 71 19 **Ice Storage**
      - 23 71 19.13 Internal Ice-on-Coil Thermal Storage
      - 23 71 19.16 External Ice-on-Coil Thermal Storage
      - 23 71 19.19 Encapsulated-Ice Thermal Storage
      - 23 71 19.23 Ice-Harvesting Thermal Storage
      - 23 71 19.26 Ice-Slurry Thermal Storage
  - 23 72 00 **Air-to-Air Energy Recovery Equipment**
    - 23 72 13 **Heat-Wheel Air-to-Air Energy-Recovery Equipment**
    - 23 72 16 **Heat-Pipe Air-to-Air Energy-Recovery Equipment**
    - 23 72 19 **Fixed-Plate Air-to-Air Energy-Recovery Equipment**
    - 23 72 23 **Packaged Air-to-Air Energy-Recovery Units**
  - 23 73 00 **Indoor Central-Station Air-Handling Units**
    - 23 73 13 **Modular Indoor Central-Station Air-Handling Units**
    - 23 73 23 **Custom Indoor Central-Station Air-Handling Units**
    - 23 73 33 **Indoor Indirect Fuel-Fired Heating and Ventilating Units**
      - 23 73 33.13 Indoor Indirect Oil-Fired Heating and Ventilating Units
      - 23 73 33.16 Indoor Indirect Gas-Fired Heating and Ventilating Units
    - 23 73 39 **Indoor, Direct Gas-Fired Heating and Ventilating Units**
  - 23 74 00 **Packaged Outdoor HVAC Equipment**

- 23 74 13 Packaged, Outdoor, Central-Station Air-Handling Units
- 23 74 23 Packaged, Outdoor, Heating-Only Makeup-Air Units
  - 23 74 23.13 Packaged, Direct-Fired, Outdoor, Heating-Only Makeup-Air Units
  - 23 74 23.16 Packaged, Indirect-Fired, Outdoor, Heating-Only Makeup-Air Units
- 23 74 33 Dedicated Outdoor-Air Units
- 23 75 00 Custom-Packaged Outdoor HVAC Equipment**
  - 23 75 13 Custom-Packaged, Outdoor, Central-Station Air-Handling Units
  - 23 75 23 Custom-Packaged, Outdoor, Heating and Ventilating Makeup-Air Units
  - 23 75 33 Custom-Packaged, Outdoor, Heating and Cooling Makeup Air-Conditioners
- 23 76 00 Evaporative Air-Cooling Equipment**
  - 23 76 13 Direct Evaporative Air Coolers
  - 23 76 16 Indirect Evaporative Air Coolers
  - 23 76 19 Combined Direct and Indirect Evaporative Air Coolers
- 23 80 00 Decentralized HVAC Equipment**
  - 23 81 00 Decentralized Unitary HVAC Equipment**
    - 23 81 13 Packaged Terminal Air-Conditioners
    - 23 81 16 Room Air-Conditioners
    - 23 81 19 Self-Contained Air-Conditioners
      - 23 81 19.13 Small-Capacity Self-Contained Air-Conditioners
      - 23 81 19.16 Large-Capacity Self-Contained Air-Conditioners
    - 23 81 23 Computer-Room Air-Conditioners
    - 23 81 26 Split-System Air-Conditioners
      - 23 81 26.13 Small-Capacity Split-System Air-Conditioners
      - 23 81 26.16 Large-Capacity Split-System Air-Conditioners
    - 23 81 43 Air-Source Unitary Heat Pumps
    - 23 81 46 Water-Source Unitary Heat Pumps
  - 23 82 00 Convection Heating and Cooling Units**
    - 23 82 13 Valance Heating and Cooling Units
    - 23 82 14 Chilled Beams
    - 23 82 16 Air Coils
    - 23 82 19 Fan Coil Units
    - 23 82 23 Unit Ventilators
    - 23 82 26 Induction Units
    - 23 82 29 Radiators
    - 23 82 33 Convectors
    - 23 82 36 Finned-Tube Radiation Heaters

**23 82 39 Unit Heaters**

- 23 82 39.13 Cabinet Unit Heaters
- 23 82 39.16 Propeller Unit Heaters
- 23 82 39.19 Wall and Ceiling Unit Heaters

**23 83 00 Radiant Heating Units****23 83 13 Radiant-Heating Electric Cables**

- 23 83 13.16 Radiant-Heating Electric Mats

**23 83 16 Radiant-Heating Hydronic Piping****23 83 23 Radiant-Heating Electric Panels****23 83 26 Gas-Fired Radiant Heaters****23 83 33 Electric Radiant Heaters****23 84 00 Humidity Control Equipment****23 84 13 Humidifiers**

- 23 84 13.13 Heated-Pan Humidifiers
- 23 84 13.16 Wetted-Element Humidifiers
- 23 84 13.19 Atomizing Humidifiers
- 23 84 13.23 Direct-Steam-Injection Humidifiers
- 23 84 13.26 Jacketed, Steam Humidifiers
- 23 84 13.29 Self-Contained Steam Humidifiers
- 23 84 13.33 Portable Humidifiers

**23 84 16 Mechanical Dehumidification Units**

- 23 84 16.13 Outdoor, Mechanical Dehumidification Units
- 23 84 16.16 Indoor, Mechanical Dehumidification Units
- 23 84 16.33 Portable Dehumidifiers

**23 84 19 Desiccant Dehumidification Units**

## **25 00 00 Integrated Automation**

### **25 01 00 Operation and Maintenance of Integrated Automation**

- 25 01 10 Operation and Maintenance of Integrated Automation Network Equipment
- 25 01 20 Operation and Maintenance of Integrated Equipment
- 25 01 30 Operation and Maintenance of Integrated Automation Instrumentation and Terminal Devices
- 25 01 90 Diagnostic Systems for Integrated Automation

### **25 05 00 Common Work Results for Integrated Automation**

- 25 05 13 Conductors and Cables for Integrated Automation
- 25 05 26 Grounding and Bonding for Integrated Automation
- 25 05 28 Pathways for Integrated Automation
  - 25 05 28.29 Hangers and Supports for Integrated Automation
  - 25 05 28.33 Conduits and Backboxes for Integrated Automation
  - 25 05 28.36 Cable Trays for Integrated Automation
  - 25 05 28.39 Surface Raceways for Integrated Automation
- 25 05 48 Vibration and Seismic Controls for Integrated Automation
- 25 05 53 Identification for Integrated Automation

### **25 06 00 Schedules for Integrated Automation**

- 25 06 11 Schedules for Integrated Automation Network
- 25 06 12 Schedules for Integrated Automation Network Gateways
- 25 06 13 Schedules for Integrated Automation Control and Monitoring Network
- 25 06 14 Schedules for Integrated Automation Local Control Units
- 25 06 30 Schedules for Integrated Automation Instrumentation and Terminal Devices

### **25 08 00 Commissioning of Integrated Automation**

### **25 10 00 Integrated Automation Network Equipment**

#### **25 11 00 Integrated Automation Network Devices**

- 25 11 13 Integrated Automation Network Servers
- 25 11 16 Integrated Automation Network Routers, Bridges, Switches, Hubs, and Modems
- 25 11 19 Integrated Automation Network Operator Workstations

#### **25 12 00 Integrated Automation Network Gateways**

- 25 12 13 Hardwired Integration Network Gateways
- 25 12 16 Direct-Protocol Integration Network Gateways
- 25 12 19 Neutral-Protocol Integration Network Gateways

- 25 12 23 Client-Server Information/Database Integration Network Gateways
- 25 13 00 Integrated Automation Control and Monitoring Network**
  - 25 13 13 Integrated Automation Control and Monitoring Network Supervisory Control
  - 25 13 16 Integrated Automation Control and Monitoring Network Integration Panels
  - 25 13 19 Integrated Automation Control and Monitoring Network Interoperability
- 25 14 00 Integrated Automation Local Control Units**
  - 25 14 13 Integrated Automation Remote Control Panels
  - 25 14 16 Integrated Automation Application-Specific Control Panels
  - 25 14 19 Integrated Automation Terminal Control Units
  - 25 14 23 Integrated Automation Field Equipment Panels
- 25 15 00 Integrated Automation Software**
  - 25 15 13 Integrated Automation Software for Network Gateways
  - 25 15 16 Integrated Automation Software for Control and Monitoring Networks
  - 25 15 19 Integrated Automation Software for Local Control Units
- 25 30 00 Integrated Automation Instrumentation and Terminal Devices**
  - 25 31 00 Integrated Automation Instrumentation and Terminal Devices for Facility Equipment**
  - 25 32 00 Integrated Automation Instrumentation and Terminal Devices for Conveying Equipment**
  - 25 33 00 Integrated Automation Instrumentation and Terminal Devices for Fire-Suppression Systems**
  - 25 34 00 Integrated Automation Instrumentation and Terminal Devices for Plumbing**
  - 25 35 00 Integrated Automation Instrumentation and Terminal Devices for HVAC**
    - 25 35 13 Integrated Automation Actuators and Operators
    - 25 35 16 Integrated Automation Sensors and Transmitters
    - 25 35 19 Integrated Automation Control Valves
    - 25 35 23 Integrated Automation Control Dampers
    - 25 35 26 Integrated Automation Compressed Air Supply

- 25 36 00 Integrated Automation Instrumentation and Terminal Devices for Electrical Systems
  - 25 36 13 Integrated Automation Power Meters
  - 25 36 16 Integrated Automation KW Transducers
  - 25 36 19 Integrated Automation Current Sensors
  - 25 36 23 Integrated Automation Battery Monitors
  - 25 36 26 Integrated Automation Lighting Relays
  - 25 36 29 Integrated Automation UPS Monitors
- 25 37 00 Integrated Automation Instrumentation and Terminal Devices for Communications Systems
- 25 38 00 Integrated Automation Instrumentation and Terminal Devices for Electronic Safety and Security Systems
- 25 50 00 Integrated Automation Facility Controls
  - 25 51 00 Integrated Automation Control of Facility Equipment
  - 25 52 00 Integrated Automation Control of Conveying Equipment
  - 25 53 00 Integrated Automation Control of Fire-Suppression Systems
  - 25 54 00 Integrated Automation Control of Plumbing
  - 25 55 00 Integrated Automation Control of HVAC
  - 25 56 00 Integrated Automation Control of Electrical Systems
  - 25 57 00 Integrated Automation Control of Communications Systems
  - 25 58 00 Integrated Automation Control of Electronic Safety and Security Systems
- 25 90 00 Integrated Automation Control Sequences
  - 25 91 00 Integrated Automation Control Sequences for Facility Equipment
  - 25 92 00 Integrated Automation Control Sequences for Conveying Equipment

- 25 93 00 Integrated Automation Control Sequences for Fire-Suppression Systems
- 25 94 00 Integrated Automation Control Sequences for Plumbing
- 25 95 00 Integrated Automation Control Sequences for HVAC
- 25 96 00 Integrated Automation Control Sequences for Electrical Systems
- 25 97 00 Integrated Automation Control Sequences for Communications Systems
- 25 98 00 Integrated Automation Control Sequences for Electronic Safety and Security Systems

## **26 00 00 Electrical**

### **26 01 00 Operation and Maintenance of Electrical Systems**

- 26 01 10 Operation and Maintenance of Medium-Voltage Electrical Distribution
- 26 01 20 Operation and Maintenance of Low-Voltage Electrical Distribution
- 26 01 26 Maintenance Testing of Electrical Systems
- 26 01 30 Operation and Maintenance of Facility Electrical Power Generating and Storing Equipment
- 26 01 40 Operation and Maintenance of Electrical and Cathodic Protection Systems
- 26 01 50 Operation and Maintenance of Lighting
  - 26 01 50.51 Luminaire Relamping
  - 26 01 50.81 Luminaire Replacement

### **26 05 00 Common Work Results for Electrical**

- 26 05 13 Medium-Voltage Cables
  - 26 05 13.13 Medium-Voltage Open Conductors
  - 26 05 13.16 Medium-Voltage, Single- and Multi-Conductor Cables
- 26 05 19 Low-Voltage Electrical Power Conductors and Cables
  - 26 05 19.13 Undercarpet Electrical Power Cables
  - 26 05 19.23 Manufactured Wiring Assemblies
- 26 05 23 Control-Voltage Electrical Power Cables
- 26 05 26 Grounding and Bonding for Electrical Systems
- 26 05 29 Hangers and Supports for Electrical Systems
- 26 05 33 Raceway and Boxes for Electrical Systems
  - 26 05 33.13 Conduit for Electrical Systems
  - 26 05 33.16 Boxes for Electrical Systems
  - 26 05 33.23 Surface raceways for Electrical Systems
- 26 05 36 Cable Trays for Electrical Systems
- 26 05 39 Underfloor Raceways for Electrical Systems
- 26 05 43 Underground Ducts and Raceways for Electrical Systems
- 26 05 46 Utility Poles for Electrical Systems
- 26 05 48 Vibration and Seismic Controls for Electrical Systems
- 26 05 53 Identification for Electrical Systems
- 26 05 73 Overcurrent Protective Device Coordination Study
- 26 05 83 Wiring Connections

### **26 06 00 Schedules for Electrical**

- 26 06 10 Schedules for Medium-Voltage Electrical Distribution
- 26 06 20 Schedules for Low-Voltage Electrical Distribution

- 26 06 20.13 Electrical Switchboard Schedule
- 26 06 20.16 Electrical Panelboard Schedule
- 26 06 20.19 Electrical Motor-Control Center Schedule
- 26 06 20.23 Electrical Circuit Schedule
- 26 06 20.26 Wiring Device Schedule
- 26 06 30 Schedules for Facility Electrical Power Generating and Storing Equipment**
- 26 06 40 Schedules for Electrical and Cathodic Protection Systems**
- 26 06 50 Schedules for Lighting**
  - 26 06 50.13 Lighting Panelboard Schedule
  - 26 06 50.16 Lighting Fixture Schedule
- 26 08 00 Commissioning of Electrical Systems**
- 26 09 00 Instrumentation and Control for Electrical Systems**
  - 26 09 13 Electrical Power Monitoring
  - 26 09 15 Peak Load Controllers
  - 26 09 16 Electrical Controls and Relays
  - 26 09 17 Programmable Controllers
  - 26 09 19 Enclosed Contactors
  - 26 09 23 Lighting Control Devices
  - 26 09 26 Lighting Control Panelboards
  - 26 09 33 Central Dimming Controls
    - 26 09 33.13 Multichannel Remote-Controlled Dimmers
    - 26 09 33.16 Remote-Controlled Dimming Stations
  - 26 09 36 Modular Dimming Controls
    - 26 09 36.13 Manual Modular Dimming Controls
    - 26 09 36.16 Integrated Multipreset Modular Dimming Controls
  - 26 09 43 Network Lighting Controls
    - 26 09 43.13 Digital-Network Lighting Controls
    - 26 09 43.16 Addressable Fixture Lighting Control
  - 26 09 61 Theatrical Lighting Controls
- 26 10 00 Medium-Voltage Electrical Distribution**
  - 26 11 00 Substations**
    - 26 11 13 Primary Unit Substations
    - 26 11 16 Secondary Unit Substations
  - 26 12 00 Medium-Voltage Transformers**
    - 26 12 13 Liquid-Filled, Medium-Voltage Transformers
    - 26 12 16 Dry-Type, Medium-Voltage Transformers
    - 26 12 19 Pad-Mounted, Liquid-Filled, Medium-Voltage Transformers
  - 26 13 00 Medium-Voltage Switchgear**

	26 13 13	Medium-Voltage Circuit Breaker Switchgear
	26 13 16	Medium-Voltage Fusible Interrupter Switchgear
	26 13 19	Medium-Voltage Vacuum Interrupter Switchgear
	26 13 23	Medium-Voltage Metal-Enclosed Switchgear
	26 13 26	Medium-Voltage Metal-Clad Switchgear
	26 13 29	Medium-Voltage Compartmentalized Switchgear
<b>26 16 00</b>		<b>Medium-Voltage Metering</b>
<b>26 18 00</b>		<b>Medium-Voltage Circuit Protection Devices</b>
	26 18 13	Medium-Voltage Cutouts
	26 18 16	Medium-Voltage Fuses
	26 18 19	Medium-Voltage Lightning Arresters
	26 18 23	Medium-Voltage Surge Arresters
	26 18 26	Medium-Voltage Reclosers
	26 18 29	Medium-Voltage Enclosed Bus
	26 18 33	Medium-Voltage Enclosed Fuse Cutouts
	26 18 36	Medium-Voltage Enclosed Fuses
	26 18 39	Medium-Voltage Motor Controllers
<b>26 20 00</b>		<b>Low-Voltage Electrical Transmission</b>
<b>26 21 00</b>		<b>Low-Voltage Electrical Service Entrance</b>
	26 21 13	Low-Voltage Overhead Electrical Service Entrance
	26 21 16	Low-Voltage Underground Electrical Service Entrance
<b>26 22 00</b>		<b>Low-Voltage Transformers</b>
	26 22 13	Low-Voltage Distribution Transformers
	26 22 16	Low-Voltage Buck-Boost Transformers
	26 22 19	Control and Signal Transformers
<b>26 23 00</b>		<b>Low-Voltage Switchgear</b>
	26 23 13	Paralleling Low-Voltage Switchgear
<b>26 24 00</b>		<b>Switchboards and Panelboards</b>
	26 24 13	Switchboards
	26 24 16	Panelboards
	26 24 19	Motor-Control Centers
<b>26 25 00</b>		<b>Enclosed Bus Assemblies</b>
<b>26 26 00</b>		<b>Power Distribution Units</b>
<b>26 27 00</b>		<b>Low-Voltage Distribution Equipment</b>
	26 27 13	Electricity Metering
	26 27 16	Electrical Cabinets and Enclosures
	26 27 19	Multi-Outlet Assemblies
	26 27 23	Indoor Service Poles
	26 27 26	Wiring Devices
	26 27 73	Door Chimes

- 26 28 00 Low-Voltage Circuit Protective Devices**
  - 26 28 13 Fuses
  - 26 28 16 Enclosed Switches and Circuit Breakers
    - 26 28 16.13 Enclosed Circuit Breakers
    - 26 28 16.16 Enclosed Switches
- 26 29 00 Low-Voltage Controllers**
  - 26 29 13 Enclosed Controllers
    - 26 29 13.13 Across-the-Line Motor Controllers
    - 26 29 13.16 Reduced-Voltage Motor Controllers
  - 26 29 23 Variable-Frequency Motor Controllers
  - 26 29 33 Controllers for Fire Pump Drivers
    - 26 29 33.13 Full-Service Controllers for Fire Pump Electric-Motor Drivers
    - 26 29 33.16 Limited-Service Controllers for Fire Pump Electric-Motor Drivers
    - 26 29 33.19 Controllers for Fire Pump Diesel Engine Drivers
- 26 30 00 Facility Electrical Power Generating and Storing Equipment**
  - 26 31 00 Photovoltaic Collectors
  - 26 32 00 Packaged Generator Assemblies
    - 26 32 13 Engine Generators
      - 26 32 13.13 Diesel-Engine-Driven Generator Sets
      - 26 32 13.16 Gas-Engine-Driven Generator Sets
      - 26 32 13.26 Gas-Turbine Engine-Driven Generators
    - 26 32 16 Steam-Turbine Generators
    - 26 32 19 Hydro-Turbine Generators
    - 26 32 23 Wind Energy Equipment
    - 26 32 26 Frequency Changers
    - 26 32 29 Rotary Converters
    - 26 32 33 Rotary Uninterruptible Power Units
  - 26 33 00 Battery Equipment
    - 26 33 13 Batteries
    - 26 33 16 Battery Racks
    - 26 33 19 Battery Units
    - 26 33 23 Central Battery Equipment
    - 26 33 33 Static Power Converters
    - 26 33 43 Battery Chargers
    - 26 33 46 Battery Monitoring
    - 26 33 53 Static Uninterruptible Power Supply
  - 26 35 00 Power Filters and Conditioners

- 26 35 13 Capacitors
- 26 35 16 Chokes and Inductors
- 26 35 23 Electromagnetic-Interference Filters
- 26 35 26 Harmonic Filters
- 26 35 33 Power Factor Correction Equipment
- 26 35 36 Slip Controllers
- 26 35 43 Static-Frequency Converters
- 26 35 46 Radio-Frequency-Interference Filters
- 26 35 53 Voltage Regulators
- 26 36 00 Transfer Switches**
  - 26 36 13 Manual Transfer Switches
  - 26 36 23 Automatic Transfer Switches
- 26 40 00 Electrical and Cathodic Protection**
  - 26 41 00 Facility Lightning Protection**
    - 26 41 13 Lightning Protection for Structures
      - 26 41 13.13 Lightning Protection for Buildings
    - 26 41 16 Lightning Prevention and Dissipation
    - 26 41 19 Early Streamer Emission Lightning Protection
    - 26 41 23 Lightning Protection Surge Arresters and Suppressors
  - 26 42 00 Cathodic Protection**
    - 26 42 13 Passive Cathodic Protection for Underground and Submerged Piping
    - 26 42 16 Passive Cathodic Protection for Underground Storage Tank
  - 26 43 00 Transient Voltage Suppression**
    - 26 43 13 Transient-Voltage Suppression for Low-Voltage Electrical Power Circuits
- 26 50 00 Lighting**
  - 26 51 00 Interior Lighting**
    - 26 51 13 Interior Lighting Fixtures, Lamps, And Ballasts
  - 26 52 00 Emergency Lighting**
  - 26 53 00 Exit Signs**
  - 26 54 00 Classified Location Lighting**
  - 26 55 00 Special Purpose Lighting**
    - 26 55 23 Outline Lighting
    - 26 55 29 Underwater Lighting
    - 26 55 33 Hazard Warning Lighting
    - 26 55 36 Obstruction Lighting

	26 55 39	Helipad Lighting
	26 55 53	Security Lighting
	26 55 59	Display Lighting
	26 55 61	Theatrical Lighting
	26 55 63	Detention Lighting
	26 55 70	Healthcare Lighting
<b>26 56 00</b>		<b>Exterior Lighting</b>
	26 56 13	Lighting Poles and Standards
	26 56 16	Parking Lighting
	26 56 19	Roadway Lighting
	26 56 23	Area Lighting
	26 56 26	Landscape Lighting
	26 56 29	Site Lighting
	26 56 33	Walkway Lighting
	26 56 36	Flood Lighting
	26 56 68	Exterior Athletic Lighting

## **27 00 00 Communications**

### **27 01 00 Operation and Maintenance of Communications Systems**

- 27 01 10 Operation and Maintenance of Structured Cabling and Enclosures
- 27 01 20 Operation and Maintenance of Data Communications
- 27 01 30 Operation and Maintenance of Voice Communications
- 27 01 40 Operation and Maintenance of Audio-Video Communications
- 27 01 50 Operation and Maintenance of Distributed Communications and Monitoring

### **27 05 00 Common Work Results for Communications**

- 27 05 13 Communications Services
  - 27 05 13.13 Dialtone Services
  - 27 05 13.23 T1 Services
  - 27 05 13.33 DSL Services
  - 27 05 13.43 Cable Services
  - 27 05 13.53 Satellite Services
- 27 05 26 Grounding and Bonding for Communications Systems
- 27 05 29 Hangers and Supports for Communications Systems
- 27 05 33 Conduits and Backboxes for Communications Systems
- 27 05 36 Cable Trays for Communications Systems
- 27 05 39 Surface Raceways for Communications Systems
- 27 05 43 Underground Ducts and Raceways for Communications Systems
- 27 05 46 Utility Poles for Communications Systems
- 27 05 48 Vibration and Seismic Controls for Communications Systems
- 27 05 53 Identification for Communications Systems

### **27 06 00 Schedules for Communications**

- 27 06 10 Schedules for Structured Cabling and Enclosures
- 27 06 20 Schedules for Data Communications
- 27 06 30 Schedules for Voice Communications
- 27 06 40 Schedules for Audio-Video Communications
- 27 06 50 Schedules for Distributed Communications and Monitoring

### **27 08 00 Commissioning of Communications**

### **27 10 00 Structured Cabling**

#### **27 11 00 Communications Equipment Room Fittings**

- 27 11 13 Communications Entrance Protection

- 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
- 27 11 19 Communications Termination Blocks and Patch Panels
- 27 11 23 Communications Cable Management and Ladder Rack
- 27 11 26 Communications Rack Mounted Power Protection and Power Strips
- 27 13 00 Communications Backbone Cabling**
  - 27 13 13 Communications Copper Backbone Cabling
    - 27 13 13.13 Communications Copper Cable Splicing and Terminations
  - 27 13 23 Communications Optical Fiber Backbone Cabling
    - 27 13 23.13 Communications Optical Fiber Splicing and Terminations
  - 27 13 33 Communications Coaxial Backbone Cabling
    - 27 13 33.13 Communications Coaxial Splicing and Terminations
  - 27 13 43 Communications Services Cabling
    - 27 13 43.13 Dialtone Services Cabling
    - 27 13 43.23 T1 Services Cabling
    - 27 13 43.33 DSL Services Cabling
    - 27 13 43.43 Cable Services Cabling
    - 27 13 43.53 Satellite Services Cabling
- 27 15 00 Communications Horizontal Cabling**
  - 27 15 00.16 Voice Communications Horizontal Cabling
  - 27 15 00.19 Data Communications Horizontal Cabling
  - 27 15 00.23 Audio-Video Communications Horizontal Cabling
  - 27 15 00.39 Patient Monitoring and Telemetry Communications Horizontal Cabling
  - 27 15 00.43 Nurse Call and Intercom Communications Horizontal Cabling
  - 27 15 00.46 Paging Communications Horizontal Cabling
  - 27 15 00.49 Intermediate Frequency/Radio Frequency Communications Horizontal Cabling
  - 27 15 00.53 Antennas Communications Horizontal Cabling
  - 27 15 13 Communications Copper Horizontal Cabling
  - 27 15 23 Communications Optical Fiber Horizontal Cabling
  - 27 15 33 Communications Coaxial Horizontal Cabling
  - 27 15 43 Communications Faceplates and Connectors
- 27 16 00 Communications Connecting Cords, Devices, and Adapters**
  - 27 16 13 Communications Custom Cable Assemblies
  - 27 16 16 Communications Media Converters, Adapters, and Transceivers

27 16 19 Communications Patch Cords, Station Cords, and Cross Connect Wire

## **27 20 00 Data Communications**

### **27 21 00 Data Communications Network Equipment**

27 21 13 Data Communications Firewalls

27 21 16 Data Communications Routers, CSU/DSU, Multiplexers, Codecs, and Modems

27 21 26 Data Communications Network Management

27 21 29 Data Communications Switches and Hubs

27 21 33 Data Communications Wireless Access Points

### **27 22 00 Data Communications Hardware**

27 22 13 Data Communications Mainframes

27 22 16 Data Communications Storage and Backup

27 22 19 Data Communications Servers

27 22 23 Data Communications Desktops

27 22 26 Data Communications Laptops

27 22 29 Data Communications Handhelds

### **27 24 00 Data Communications Peripheral Data Equipment**

27 24 13 Printers

27 24 16 Scanners

27 24 19 External Drives

27 24 23 Audio-Video Devices

27 24 26 Virtual Reality Equipment

27 24 29 Disaster Recovery Equipment

### **27 25 00 Data Communications Software**

27 25 13 Virus Protection Software

27 25 16 Application Suites

27 25 19 Email Software

27 25 23 Graphics/Multimedia Software

27 25 26 Customer Relationship Management Software

27 25 29 Operating System Software

27 25 33 Database Software

27 25 37 Virtual Private Network Software

27 25 39 Internet Conferencing Software

### **27 26 00 Data Communications Programming and Integration Services**

27 26 13 Web Development

27 26 16 Database Development

27 26 19 Application Development

27 26 23 Network Integration Requirements

27 26 26 Data Communications Integration Requirements

**27 30 00 Voice Communications****27 31 00 Voice Communications Switching and Routing Equipment**

- 27 31 13 PBX/ Key Systems
- 27 31 23 Internet Protocol Voice Switches

**27 32 00 Voice Communications Terminal Equipment**

- 27 32 13 Telephone Sets
- 27 32 16 Wireless Transceivers
- 27 32 23 Elevator Telephones
- 27 32 26 Ring-Down Emergency Telephones
- 27 32 29 Facsimiles and Modems
- 27 32 36 TTY Equipment
- 27 32 43 Radio Communications Equipment

**27 33 00 Voice Communications Messaging**

- 27 33 16 Voice Mail and Auto Attendant
- 27 33 23 Interactive Voice Response
- 27 33 26 Facsimile Servers

**27 34 00 Call Accounting**

- 27 34 13 Toll Fraud Equipment and Software
- 27 34 16 Telemanagement Software

**27 35 00 Call Management**

- 27 35 13 Digital Voice Announcers
- 27 35 16 Automatic Call Distributors
- 27 35 19 Call Status and Management Displays
- 27 35 23 Dedicated 911 Systems

**27 40 00 Audio-Video Communications****27 41 00 Audio-Video Systems**

- 27 41 13 Architecturally Integrated Audio-Video Equipment
- 27 41 16 Integrated Audio-Video Systems and Equipment
  - 27 41 16.25 Integrated Audio-Video Systems and Equipment for Restaurants and Bars
  - 27 41 16.28 Integrated Audio-Video Systems and Equipment for Conference Rooms
  - 27 41 16.29 Integrated Audio-Video Systems and Equipment for Board Rooms
  - 27 41 16.51 Integrated Audio-Video Systems and Equipment for Classrooms
  - 27 41 16.52 Integrated Audio-Video Systems and Equipment for Religious Facilities

- 27 41 16.61 Integrated Audio-Video Systems and Equipment for Theaters
- 27 41 16.62 Integrated Audio-Video Systems and Equipment for Auditoriums
- 27 41 16.63 Integrated Audio-Video Systems and Equipment for Stadiums and Arenas
- 27 41 19 Portable Audio-Video Equipment
- 27 41 23 Audio-Video Accessories
- 27 41 33 Master Antenna Television Systems
- 27 41 43 Audio-Video Conferencing
- 27 42 00 Electronic Digital Systems**
  - 27 42 13 Point of Sale Systems
  - 27 42 16 Transportation Information Display Systems
  - 27 42 19 Public Information Systems
- 27 50 00 Distributed Communications and Monitoring Systems**
  - 27 51 00 Distributed Audio-Video Communications Systems**
    - 27 51 13 Paging Systems
      - 27 51 13.13 Overhead Paging Systems
    - 27 51 16 Public Address and Mass Notification Systems
    - 27 51 19 Sound Masking Systems
    - 27 51 23 Intercommunications and Program Systems
      - 27 51 23.20 Commercial Intercommunications and Program Systems
      - 27 51 23.30 Residential Intercommunications and Program Systems
      - 27 51 23.50 Educational Intercommunications and Program Systems
      - 27 51 23.63 Detention Intercommunications and Program Systems
      - 27 51 23.70 Healthcare Intercommunications and Program Systems
    - 27 51 26 Assistive Listening Systems
  - 27 52 00 Healthcare Communications and Monitoring Systems**
    - 27 52 13 Patient Monitoring and Telemetry Systems
    - 27 52 16 Telemedicine Systems
    - 27 52 19 Healthcare Imaging Systems
    - 27 52 23 Nurse Call/Code Blue Systems
  - 27 53 00 Distributed Systems**
    - 27 53 13 Clock Systems
      - 27 53 13.13 Wireless Clock Systems
    - 27 53 16 Infrared and Radio Frequency Tracking Systems
    - 27 53 19 Internal Cellular, Paging, and Antenna Systems
  - 27 60 00 Wireless Transceivers**

## **28 00 00 Electronic Safety and Security**

### **28 01 00 Operation and Maintenance of Electronic Safety and Security**

#### **28 01 10 Operation and Maintenance of Electronic Access Control and Intrusion Detection**

28 01 10.51 Maintenance and Administration of Electronic Access Control and Intrusion Detection

28 01 10.71 Revisions and Upgrades of Electronic Access Control and Intrusion Detection

#### **28 01 20 Operation and Maintenance of Electronic Surveillance**

#### **28 01 30 Operation and Maintenance of Electronic Detection and Alarm**

28 01 30.51 Maintenance and Administration of Electronic Detection and Alarm

28 01 30.71 Revisions and Upgrades of Electronic Detection and Alarm

#### **28 01 40 Operation and Maintenance of Electronic Monitoring and Control**

28 01 40.51 Maintenance and Administration of Electronic Monitoring and Control

28 01 40.71 Revisions and Upgrades of Electronic Monitoring and Control

### **28 05 00 Common Work Results for Electronic Safety and Security**

#### **28 05 13 Conductors and Cables for Electronic Safety and Security**

28 05 13.13 CCTV Communications Conductors and Cables

28 05 13.16 Access Control Communications Conductors and Cables

28 05 13.19 Intrusion Detection Communications Conductors and Cables

28 05 13.23 Fire Alarm Communications Conductors and Cables

#### **28 05 26 Grounding and Bonding for Electronic Safety and Security**

#### **28 05 28 Pathways for Electronic Safety and Security**

28 05 28.29 Hangers and Supports for Electronic Safety and Security

28 05 28.33 Conduits and Backboxes for Electronic Safety and Security

28 05 28.36 Cable Trays for Electronic Safety and Security

28 05 28.39 Surface Raceways for Electronic Safety and Security

#### **28 05 48 Vibration and Seismic Controls for Electronic Safety and Security**

#### **28 05 53 Identification for Electronic Safety and Security**

**28 06 00 Schedules for Electronic Safety and Security**

- 28 06 10 Schedules for Electronic Access Control and Intrusion Detection
- 28 06 20 Schedules for Electronic Surveillance
- 28 06 30 Schedules for Electronic Detection and Alarm
- 28 06 40 Schedules for Electronic Monitoring and Control

**28 08 00 Commissioning of Electronic Safety and Security****28 10 00 Electronic Access Control and Intrusion Detection****28 13 00 Access Control**

- 28 13 13 Access Control Global Applications
- 28 13 16 Access Control Systems and Database Management
- 28 13 19 Access Control Systems Infrastructure
- 28 13 26 Access Control Remote Devices
- 28 13 33 Access Control Interfaces
  - 28 13 33.16 Access Control Interfaces to Access Control Hardware
  - 28 13 33.26 Access Control Interfaces to Intrusion Detection
  - 28 13 33.33 Access Control Interfaces to Video Surveillance
  - 28 13 33.36 Access Control Interfaces to Fire Alarm
- 28 13 43 Access Control Identification Management Systems
- 28 13 53 Security Access Detection
  - 28 13 53.13 Security Access Metal Detectors
  - 28 13 53.16 Security Access X-Ray Equipment
  - 28 13 53.23 Security Access Explosive Detection Equipment
  - 28 13 53.29 Security Access Sniffing Equipment
- 28 13 63 Access Control Vehicle Identification System

**28 16 00 Intrusion Detection**

- 28 16 13 Intrusion Detection Control, GUI, and Logic Systems
- 28 16 16 Intrusion Detection Systems Infrastructure
- 28 16 19 Intrusion Detection Remote Devices and Sensors
- 28 16 33 Intrusion Detection Interfaces
  - 28 16 33.13 Intrusion Detection Interfaces to Remote Monitoring
  - 28 16 33.16 Intrusion Detection Interfaces to Access Control Hardware
  - 28 16 33.23 Intrusion Detection Interfaces to Access Control System
  - 28 16 33.33 Intrusion Detection Interfaces to Video Surveillance
  - 28 16 33.36 Intrusion Detection Interfaces to Fire Alarm
- 28 16 43 Perimeter Security Systems

**28 20 00 Electronic Surveillance****28 23 00 Video Surveillance**

- 28 23 13 Video Surveillance Control and Management Systems

- 28 23 16 Video Surveillance Monitoring and Supervisory Interfaces
- 28 23 19 Digital Video Recorders and Analog Recording Devices
- 28 23 23 Video Surveillance Systems Infrastructure
- 28 23 26 Video Surveillance Remote Positioning Equipment
- 28 23 29 Video Surveillance Remote Devices and Sensors
- 28 26 00 Electronic Personal Protection Systems**
  - 28 26 13 Electronic Personal Safety Detection Systems
  - 28 26 16 Electronic Personal Safety Alarm Annunciation and Control Systems
  - 28 26 19 Electronic Personal Safety Interfaces to Remote Monitoring
  - 28 26 23 Electronic Personal Safety Emergency Aid Devices
- 28 30 00 Electronic Detection and Alarm**
  - 28 31 00 Fire Detection and Alarm**
    - 28 31 11 Digital, Addressable Fire-Alarm Systems
    - 28 31 12 Zoned (DC Loop) Fire-Alarm Systems
    - 28 31 13 Fire Detection and Alarm Control, GUI, and Logic Systems
    - 28 31 23 Fire Detection and Alarm Annunciation Panels and Fire Stations
    - 28 31 33 Fire Detection and Alarm Interfaces
      - 28 31 33.13 Fire Detection and Alarm Interfaces to Remote Monitoring
      - 28 31 33.16 Fire Detection and Alarm Interfaces to Access Control Hardware
      - 28 31 33.23 Fire Detection and Alarm Interfaces to Access Control System
      - 28 31 33.26 Fire Detection and Alarm Interfaces to Intrusion Detection
      - 28 31 33.33 Fire Detection and Alarm Interfaces to Video Surveillance
      - 28 31 33.43 Fire Detection and Alarm Interfaces to Elevator Control
    - 28 31 43 Fire Detection Sensors
    - 28 31 46 Smoke Detection Sensors
    - 28 31 49 Carbon-Monoxide Detection Sensors
    - 28 31 53 Fire Alarm Initiating Devices
      - 28 31 53.13 Fire Alarm Pull Stations
      - 28 31 53.23 Fire Alarm Level Detectors Switches
      - 28 31 53.33 Fire Alarm Flow Switches
      - 28 31 53.43 Fire Alarm Pressure Sensors
    - 28 31 63 Fire Alarm Integrated Audio Visual Evacuation Systems
      - 28 31 63.13 Fire Alarm Horns and Strobes
  - 28 32 00 Radiation Detection and Alarm**

- 28 32 13 Radiation Detection and Alarm Control, GUI, and Logic Systems
- 28 32 23 Radiation Detection and Alarm Integrated Audio Evacuation Systems
- 28 32 33 Radiation Detection Sensors
- 28 32 43 Radiation Dosimeters
- 28 33 00 Fuel-Gas Detection and Alarm**
  - 28 33 13 Fuel-Gas Detection and Alarm Control, GUI, and Logic Systems
  - 28 33 23 Fuel-Gas Detection and Alarm Integrated Audio Evacuation Systems
  - 28 33 33 Fuel-Gas Detection Sensors
- 28 34 00 Fuel-Oil Detection and Alarm**
  - 28 34 13 Fuel-Oil Detection and Alarm Control, GUI, and Logic Systems
  - 28 34 23 Fuel-Oil Detection and Alarm Integrated Audio Evacuation Systems
  - 28 34 33 Fuel-Oil Detection Sensors
- 28 35 00 Refrigerant Detection and Alarm**
  - 28 35 13 Refrigerant Detection and Alarm Control, GUI, and Logic Systems
  - 28 35 23 Refrigerant Detection and Alarm Integrated Audio Evacuation Systems
  - 28 35 33 Refrigerant Detection Sensors
- 28 36 00 Water Detection and Alarm**
  - 28 36 13 Water Detection and Alarm Control, GUI, and Logic Systems
  - 28 36 33 Water Detection Sensors
- 28 39 00 Mass Notification Systems**
- 28 40 00 Electronic Monitoring and Control**
- 28 46 00 Electronic Detention Monitoring and Control Systems**
  - 28 46 13 Hard-Wired Detention Monitoring and Control Systems
  - 28 46 16 Relay-Logic Detention Monitoring and Control Systems
  - 28 46 19 PLC Electronic Detention Monitoring and Control Systems
  - 28 46 23 Computer-Based Detention Monitoring and Control Systems
  - 28 46 26 Discreet-Logic Detention Monitoring and Control Systems
  - 28 46 29 Discreet-Distributed Intelligence Detention Monitoring and Control Systems

## **31 00 00 Earthwork**

### **31 01 00 Maintenance of Earthwork**

- 31 01 10 Maintenance of Clearing
- 31 01 20 Maintenance of Earth Moving
- 31 01 40 Maintenance of Shoring and Underpinning
- 31 01 50 Maintenance of Excavation Support and Protection
- 31 01 60 Maintenance of Special Foundations and Load Bearing Elements
- 31 01 62 Maintenance of Driven Piles
  - 31 01 62.61 Driven Pile Repairs
- 31 01 63 Maintenance of Bored and Augered Piles
  - 31 01 63.61 Bored and Augered Pile Repairs
- 31 01 70 Maintenance of Tunneling and Mining
  - 31 01 70.61 Tunnel Leak Repairs

### **31 05 00 Common Work Results for Earthwork**

- 31 05 13 Soils for Earthwork
- 31 05 16 Aggregates for Earthwork
- 31 05 19 Geosynthetics for Earthwork
  - 31 05 19.13 Geotextiles for Earthwork
  - 31 05 19.16 Geomembranes for Earthwork
  - 31 05 19.19 Geogrids for Earthwork
- 31 05 23 Cement and Concrete for Earthwork

### **31 06 00 Schedules for Earthwork**

- 31 06 10 Schedules for Clearing
- 31 06 20 Schedules for Earth Moving
  - 31 06 20.13 Trench Dimension Schedule
  - 31 06 20.16 Backfill Material Schedule
- 31 06 40 Schedules for Shoring and Underpinning
- 31 06 50 Schedules for Excavation Support and Protection
- 31 06 60 Schedules for Special Foundations and Load Bearing Elements
  - 31 06 60.13 Driven Pile Schedule
  - 31 06 60.16 Caisson Schedule
- 31 06 70 Schedules for Tunneling and Mining

### **31 08 00 Commissioning of Earthwork**

- 31 08 13 Pile Load Testing
  - 31 08 13.13 Dynamic Pile Load Testing
  - 31 08 13.16 Static Pile Load Testing

**31 09 00 Geotechnical Instrumentation and Monitoring of Earthwork**

- 31 09 13 Geotechnical Instrumentation and Monitoring
  - 31 09 13.13 Groundwater Monitoring During Construction
- 31 09 16 Foundation Performance Instrumentation

**31 10 00 Site Clearing**

- 31 11 00 Clearing and Grubbing
- 31 12 00 Selective Clearing
- 31 13 00 Selective Tree and Shrub Removal and Trimming
  - 31 13 13 Selective Tree and Shrub Removal
  - 31 13 16 Selective Tree and Shrub Trimming
- 31 14 00 Earth Stripping and Stockpiling
  - 31 14 13 Soil Stripping and Stockpiling
    - 31 14 13.13 Soil Stripping
    - 31 14 13.16 Soil Stockpiling
    - 31 14 13.23 Topsoil Stripping and Stockpiling
  - 31 14 16 Sod Stripping and Stockpiling
    - 31 14 16.13 Sod Stripping
    - 31 14 16.16 Sod Stockpiling

**31 20 00 Earth Moving**

- 31 21 00 Off-Gassing Mitigation
  - 31 21 13 Radon Mitigation
    - 31 21 13.13 Radon Venting
  - 31 21 16 Methane Mitigation
    - 31 21 16.13 Methane Venting
- 31 22 00 Grading
  - 31 22 13 Rough Grading
  - 31 22 16 Fine Grading
    - 31 22 16.13 Roadway Subgrade Reshaping
  - 31 22 19 Finish Grading
    - 31 22 19.13 Spreading and Grading Topsoil
- 31 23 00 Excavation and Fill
  - 31 23 13 Subgrade Preparation
  - 31 23 16 Excavation
    - 31 23 16.13 Trenching
    - 31 23 16.16 Structural Excavation for Minor Structures

- 31 23 16.26 Rock Removal
- 31 23 19 Dewatering**
- 31 23 23 Fill**
  - 31 23 23.13 Backfill
  - 31 23 23.23 Compaction
  - 31 23 23.33 Flowable Fill
  - 31 23 23.43 Geofoam
- 31 23 33 Trenching and Backfilling**
- 31 24 00 Embankments**
  - 31 24 13 Roadway Embankments
  - 31 24 16 Railway Embankments
- 31 25 00 Erosion and Sedimentation Controls**
  - 31 25 14 Stabilization Measures for Erosion and Sedimentation Control**
    - 31 25 14.13 Hydraulically-Applied Erosion Control
    - 31 25 14.16 Rolled Erosion Control Mats and Blankets
  - 31 25 24 Structural Measures for Erosion and Sedimentation Control**
    - 31 25 24.13 Rock Barriers
  - 31 25 34 Retention Measures for Erosion and Sedimentation Controls**
    - 31 25 34.13 Rock Basins
- 31 30 00 Earthwork Methods**
  - 31 31 00 Soil Treatment**
    - 31 31 13 Rodent Control**
      - 31 31 13.16 Rodent Control Bait Systems
      - 31 31 13.19 Rodent Control Traps
      - 31 31 13.23 Rodent Control Electronic Systems
      - 31 31 13.26 Rodent Control Repellants
    - 31 31 16 Termite Control**
      - 31 31 16.13 Chemical Termite Control
      - 31 31 16.16 Termite Control Bait Systems
      - 31 31 16.19 Termite Control Barriers
    - 31 31 19 Vegetation Control**
      - 31 31 19.13 Chemical Vegetation Control
  - 31 32 00 Soil Stabilization**
    - 31 32 13 Soil Mixing Stabilization**
      - 31 32 13.13 Asphalt Soil Stabilization
      - 31 32 13.16 Cement Soil Stabilization
      - 31 32 13.19 Lime Soil Stabilization

- 31 32 13.23 Fly-Ash Soil Stabilization
- 31 32 13.26 Lime-Fly-Ash Soil Stabilization
- 31 32 16 Chemical Treatment Soil Stabilization**
  - 31 32 16.13 Polymer Emulsion Soil Stabilization
- 31 32 19 Geosynthetic Soil Stabilization and Layer Separation**
  - 31 32 19.13 Geogrid Soil Stabilization
  - 31 32 19.16 Geotextile Soil Stabilization
  - 31 32 19.19 Geogrid Layer Separation
  - 31 32 19.23 Geotextile Layer Separation
- 31 32 23 Pressure Grouting Soil Stabilization**
  - 31 32 23.13 Cementitious Pressure Grouting Soil Stabilization
  - 31 32 23.16 Chemical Pressure Grouting Soil Stabilization
- 31 32 33 Shotcrete Soil Slope Stabilization**
- 31 32 36 Soil Nailing**
  - 31 32 36.13 Driven Soil Nailing
  - 31 32 36.16 Grouted Soil Nailing
  - 31 32 36.19 Corrosion-Protected Soil Nailing
  - 31 32 36.23 Jet-Grouted Soil Nailing
  - 31 32 36.26 Launched Soil Nailing
- 31 33 00 Rock Stabilization**
  - 31 33 13 Rock Bolting and Grouting
  - 31 33 23 Rock Slope Netting
  - 31 33 26 Rock Slope Wire Mesh
  - 31 33 33 Shotcrete Rock Slope Stabilization
  - 31 33 43 Vegetated Rock Slope Stabilization
- 31 34 00 Soil Reinforcement**
  - 31 34 19 Geosynthetic Soil Reinforcement
    - 31 34 19.13 Geogrid Soil Reinforcement
    - 31 34 19.16 Geotextile Soil Reinforcement
  - 31 34 23 Fiber Soil Reinforcement
    - 31 34 23.13 Geosynthetic Fiber Soil Reinforcement
- 31 35 00 Slope Protection**
  - 31 35 19 Geosynthetic Slope Protection
    - 31 35 19.13 Geogrid Slope Protection
    - 31 35 19.16 Geotextile Slope Protection
    - 31 35 19.19 Slope Protection with Mulch Control Netting
  - 31 35 23 Slope Protection with Slope Paving
    - 31 35 23.13 Cast-In-Place Concrete Slope Paving
    - 31 35 23.16 Precast Concrete Slope Paving
    - 31 35 23.19 Concrete Unit Masonry Slope Paving
  - 31 35 26 Containment Barriers

- 31 35 26.13 Clay Containment Barriers
- 31 35 26.16 Geomembrane Containment Barriers
- 31 35 26.23 Bentonite Slurry Trench

### **31 36 00 Gabions**

- 31 36 13 Gabion Boxes
- 31 36 19 Gabion Mattresses
  - 31 36 19.13 Vegetated Gabion Mattresses

### **31 37 00 Riprap**

- 31 37 13 Machined Riprap
- 31 37 16 Non-Machined Riprap
  - 31 37 16.13 Rubble-Stone Riprap
  - 31 37 16.16 Concrete Unit Masonry Riprap
  - 31 37 16.19 Sacked Sand-Cement Riprap

## **31 40 00 Shoring and Underpinning**

### **31 41 00 Shoring**

- 31 41 13 Timber Shoring
- 31 41 16 Sheet Piling
  - 31 41 16.13 Steel Sheet Piling
  - 31 41 16.16 Plastic Sheet Piling
- 31 41 19 Metal Hydraulic Shoring
  - 31 41 19.13 Aluminum Hydraulic Shoring
- 31 41 23 Pneumatic Shoring
- 31 41 33 Trench Shielding

### **31 43 00 Concrete Raising**

- 31 43 13 Pressure Grouting
  - 31 43 13.13 Concrete Pressure Grouting
  - 31 43 13.16 Polyurethane Pressure Grouting
- 31 43 16 Compaction Grouting
- 31 43 19 Mechanical Jacking

### **31 45 00 Vibroflotation and Densification**

- 31 45 13 Vibroflotation
- 31 45 16 Densification

### **31 46 00 Needle Beams**

- 31 46 13 Cantilever Needle Beams

### **31 48 00 Underpinning**

- 31 48 13 Underpinning Piers
- 31 48 19 Bracket Piers
- 31 48 23 Jacked Piers
- 31 48 33 Micropile Underpinning

**31 50 00 Excavation Support and Protection****31 51 00 Anchor Tiebacks**

- 31 51 13 Excavation Soil Anchors
- 31 51 16 Excavation Rock Anchors

**31 52 00 Cofferdams**

- 31 52 13 Sheet Piling Cofferdams
- 31 52 16 Timber Cofferdams
- 31 52 19 Precast Concrete Cofferdams

**31 53 00 Cribbing and Walers**

- 31 53 13 Timber Cribwork

**31 54 00 Ground Freezing****31 56 00 Slurry Walls**

- 31 56 13 Bentonite Slurry Walls
  - 31 56 13.13 Soil-Bentonite Slurry Walls
  - 31 56 13.16 Cement-Bentonite Slurry Walls
  - 31 56 13.19 Slag-Cement-Bentonite Slurry Walls
  - 31 56 13.23 Soil-Cement-Bentonite Slurry Walls
  - 31 56 13.26 Pozzolan-Bentonite Slurry Walls
  - 31 56 13.29 Organically-Modified Bentonite Slurry Walls
- 31 56 16 Attipulgite Slurry Walls
  - 31 56 16.13 Soil-Attipulgite Slurry Walls
- 31 56 19 Slurry-Geomembrane Composite Slurry Walls
- 31 56 23 Lean Concrete Slurry Walls
- 31 56 26 Bio-Polymer Trench Drain

**31 60 00 Special Foundations and Load-Bearing Elements****31 62 00 Driven Piles**

- 31 62 13 Concrete Piles
  - 31 62 13.13 Cast-in-Place Concrete Piles
  - 31 62 13.16 Concrete Displacement Piles
  - 31 62 13.19 Precast Concrete Piles
  - 31 62 13.23 Prestressed Concrete Piles
  - 31 62 13.26 Pressure-Injected Footings
- 31 62 16 Steel Piles
  - 31 62 16.13 Sheet Steel Piles
  - 31 62 16.16 Steel H Piles
  - 31 62 16.19 Unfilled Tubular Steel Piles
- 31 62 19 Timber Piles
- 31 62 23 Composite Piles
  - 31 62 23.13 Concrete-Filled Steel Piles

- 31 62 23.16 Wood and Cast-In-Place Concrete Piles
- 31 63 00 Bored Piles**
  - 31 63 13 Bored and Augered Test Piles
  - 31 63 16 Auger Cast Grout Piles
  - 31 63 19 Bored and Socketed Piles
    - 31 63 19.13 Rock Sockets for Piles
  - 31 63 23 Bored Concrete Piles
    - 31 63 23.13 Bored and Belled Concrete Piles
    - 31 63 23.16 Bored Friction Concrete Piles
  - 31 63 26 Drilled Caissons
    - 31 63 26.13 Fixed End Caisson Piles
    - 31 63 26.16 Concrete Caissons for Marine Construction
  - 31 63 29 Drilled Concrete Piers and Shafts
    - 31 63 29.13 Uncased Drilled Concrete Piers
    - 31 63 29.16 Cased Drilled Concrete Piers
  - 31 63 33 Drilled Micropiles
- 31 64 00 Caissons**
  - 31 64 13 Box Caissons
  - 31 64 16 Excavated Caissons
  - 31 64 19 Floating Caissons
  - 31 64 23 Open Caissons
  - 31 64 26 Pneumatic Caissons
  - 31 64 29 Sheeted Caissons
- 31 66 00 Special Foundations**
  - 31 66 13 Special Piles
    - 31 66 13.13 Rammed Aggregate Piles
  - 31 66 16 Special Foundation Walls
    - 31 66 16.13 Anchored Foundation Walls
    - 31 66 16.23 Concrete Cribbing Foundation Walls
    - 31 66 16.26 Metal Cribbing Foundation Walls
    - 31 66 16.33 Manufactured Modular Foundation Walls
    - 31 66 16.43 Mechanically Stabilized Earth Foundation Walls
    - 31 66 16.46 Slurry Diaphragm Foundation Walls
    - 31 66 16.53 Soldier-Beam Foundation Walls
    - 31 66 16.56 Permanently-Anchored Soldier-Beam Foundation Walls
  - 31 66 19 Refrigerated Foundations
- 31 68 00 Foundation Anchors**
  - 31 68 13 Rock Foundation Anchors
- 31 70 00 Tunneling and Mining**
- 31 71 00 Tunnel Excavation**

- 31 71 13 Shield Driving Tunnel Excavation
- 31 71 16 Tunnel Excavation by Drilling and Blasting
- 31 71 19 Tunnel Excavation by Tunnel Boring Machine
- 31 71 23 Tunneling by Cut and Cover
- 31 72 00 Tunnel Support Systems**
  - 31 72 13 Rock Reinforcement and Initial Support
  - 31 72 16 Steel Ribs and Lagging
- 31 73 00 Tunnel Grouting**
  - 31 73 13 Cement Tunnel Grouting
  - 31 73 16 Chemical Tunnel Grouting
- 31 74 00 Tunnel Construction**
  - 31 74 13 Cast-in-Place Concrete Tunnel Lining
  - 31 74 16 Precast Concrete Tunnel Lining
  - 31 74 19 Shotcrete Tunnel Lining
- 31 75 00 Shaft Construction**
  - 31 75 13 Cast-in-Place Concrete Shaft Lining
  - 31 75 16 Precast Concrete Shaft Lining
- 31 77 00 Submersible Tube Tunnels**
  - 31 77 13 Trench Excavation for Submerged Tunnels
  - 31 77 16 Tube Construction (Outfitting Tunnel Tubes)
  - 31 77 19 Floating and Laying Submerged Tunnels

## **32 00 00 Exterior Improvements**

### **32 01 00 Operation and Maintenance of Exterior Improvements**

#### **32 01 11 Paving Cleaning**

32 01 11.51 Rubber and Paint Removal from Paving

32 01 11.52 Rubber Removal from Paving

32 01 11.53 Paint Removal from Paving

#### **32 01 13 Flexible Paving Surface Treatment**

32 01 13.61 Slurry Seal (Latex Modified)

32 01 13.62 Asphalt Surface Treatment

#### **32 01 16 Flexible Paving Rehabilitation**

32 01 16.71 Cold Milling Asphalt Paving

32 01 16.72 Asphalt Paving Reuse

32 01 16.73 In Place Cold Reused Asphalt Paving

32 01 16.74 In Place Hot Reused Asphalt Paving

32 01 16.75 Heater Scarifying of Asphalt Paving

#### **32 01 17 Flexible Paving Repair**

32 01 17.61 Sealing Cracks in Asphalt Paving

32 01 17.62 Stress-Absorbing Membrane Interlayer

#### **32 01 19 Rigid Paving Surface Treatment**

32 01 19.61 Sealing of Joints in Rigid Paving

32 01 19.62 Patching of Rigid Paving

#### **32 01 23 Base Course Reconditioning**

#### **32 01 26 Rigid Paving Rehabilitation**

32 01 26.71 Grooving of Concrete Paving

32 01 26.72 Grinding of Concrete Paving

32 01 26.73 Milling of Concrete Paving

32 01 26.74 Concrete Overlays

32 01 26.75 Concrete Paving Reuse

#### **32 01 29 Rigid Paving Repair**

32 01 29.61 Partial Depth Patching of Rigid Paving

32 01 29.62 Concrete Paving Raising

32 01 29.63 Subsealing and Stabilization

#### **32 01 30 Operation and Maintenance of Site Improvements**

32 01 30.13 Snow Removal

#### **32 01 80 Operation and Maintenance of Irrigation**

#### **32 01 90 Operation and Maintenance of Planting**

32 01 90.13 Fertilizing

32 01 90.16 Amending Soils

32 01 90.19 Mowing

32 01 90.23 Pruning

- 32 01 90.26 Watering
- 32 01 90.29 Topsoil Preservation
- 32 01 90.33 Tree and Shrub Preservation

## **32 05 00 Common Work Results for Exterior Improvements**

- 32 05 13 Soils for Exterior Improvements**
- 32 05 16 Aggregates for Exterior Improvements**
- 32 05 19 Geosynthetics for Exterior Improvements**
  - 32 05 19.13 Geotextiles for Exterior Improvements
  - 32 05 19.16 Geomembranes for Exterior Improvements
  - 32 05 19.19 Geogrids for Exterior Improvements
- 32 05 23 Cement and Concrete for Exterior Improvements**
- 32 05 33 Common Work Results for Planting**

## **32 06 00 Schedules for Exterior Improvements**

- 32 06 10 Schedules for Bases, Ballasts, and Paving**
  - 32 06 10.13 Pedestrian Walkway Schedule**
- 32 06 30 Schedules for Site Improvements**
  - 32 06 30.13 Retaining Wall Schedule
- 32 06 80 Schedules for Irrigation**
  - 32 06 80.13 Irrigation Piping Schedule
- 32 06 90 Schedules for Planting**
  - 32 06 90.13 Planting Schedule

## **32 08 00 Commissioning of Exterior Improvements**

## **32 10 00 Bases, Ballasts, and Paving**

### **32 11 00 Base Courses**

- 32 11 13 Subgrade Modifications**
  - 32 11 13.13 Lime-Treated Subgrades
  - 32 11 13.16 Bituminous-Treated Subgrades
- 32 11 16 Subbase Courses**
  - 32 11 16.13 Sand-Clay Subbase Courses
  - 32 11 16.16 Aggregate Subbase Courses
- 32 11 23 Aggregate Base Courses**
  - 32 11 23.13 Sand-Clay Base Courses
  - 32 11 23.23 Base Course Drainage Layers
- 32 11 26 Asphaltic Base Courses**
  - 32 11 26.13 Plant Mix Asphaltic Base Courses
  - 32 11 26.16 Road Mix Asphaltic Base Courses
  - 32 11 26.19 Bituminous-Stabilized Base Courses
- 32 11 29 Lime Treated Base Courses**
  - 32 11 29.13 Lime-Fly Ash-Treated Base Courses

- 32 11 33 Cement-Treated Base Courses**
  - 32 11 33.13 Portland Cement-Stabilized Base Courses
- 32 11 36 Concrete Base Courses**
  - 32 11 36.13 Lean Concrete Base Courses
  - 32 11 36.16 Plain Cement Concrete Base Courses
  - 32 11 36.19 Hydraulic Cement Concrete Base Courses
- 32 12 00 Flexible Paving**
  - 32 12 13 Preparatory Coats**
    - 32 12 13.13 Tack Coats
    - 32 12 13.16 Asphaltic Tack Coats
    - 32 12 13.19 Prime Coats
    - 32 12 13.23 Asphaltic Prime Coats
  - 32 12 16 Asphalt Paving**
    - 32 12 16.13 Plant-Mix Asphalt Paving
    - 32 12 16.16 Road-Mix Asphalt Paving
    - 32 12 16.19 Cold-Mix Asphalt Paving
    - 32 12 16.23 Reinforced Asphalt Paving
    - 32 12 16.26 Fiber-Modified Asphalt Paving
    - 32 12 16.29 Polymer-Modified Asphalt Paving
    - 32 12 16.33 Granulated Rubber-Modified Asphalt Paving
    - 32 12 16.36 Athletic Asphalt Paving
  - 32 12 19 Asphalt Paving Wearing Courses**
    - 32 12 19.13 Road-Mix Asphalt Paving Wearing Courses
    - 32 12 19.16 Resin-Modified Asphalt Paving Wearing Courses
    - 32 12 19.19 Porous Friction Asphalt Paving Wearing Courses
  - 32 12 33 Flexible Paving Surface Treatments**
  - 32 12 36 Seal Coats**
    - 32 12 36.13 Asphaltic Seal and Fog Coats
    - 32 12 36.16 Coal Tar Seal Coats
    - 32 12 36.19 Coal Tar Seal Coats with Unvulcanized Rubber
    - 32 12 36.23 Fuel-Resistant Sealers
  - 32 12 43 Porous Flexible Paving**
  - 32 12 73 Asphalt Paving Joint Sealants**
- 32 13 00 Rigid Paving**
  - 32 13 13 Concrete Paving**
    - 32 13 13.13 Exposed Aggregate Concrete Paving
    - 32 13 13.16 Power-Compacted Concrete Paving
    - 32 13 13.19 Prestressed Concrete Paving
    - 32 13 13.23 Concrete Paving Surface Treatment
    - 32 13 13.33 Plain Concrete Paving
  - 32 13 16 Decorative Concrete Paving**
    - 32 13 16.13 Patterned Concrete Paving

- 32 13 16.16 Roller-Compacted Concrete Paving
- 32 13 16.19 Imprinted Concrete Paving
- 32 13 16.23 Stamped Concrete Paving

**32 13 43 Pervious Concrete Paving**

**32 13 73 Concrete Paving Joint Sealants**

- 32 13 73.13 Fuel-Resistant Concrete Paving Joint Sealants
- 32 13 73.16 Field-Molded Concrete Paving Joint Sealants
- 32 13 73.19 Compression Concrete Paving Joint Sealants

**32 14 00 Unit Paving**

**32 14 13 Precast Concrete Unit Paving**

- 32 14 13.13 Interlocking Precast Concrete Unit Paving
- 32 14 13.16 Precast Concrete Unit Paving Slabs
- 32 14 13.19 Porous Precast Concrete Unit Paving

**32 14 16 Brick Unit Paving**

**32 14 23 Asphalt Unit Paving**

**32 14 26 Wood Paving**

**32 14 29 Recycled-Rubber Paving**

**32 14 40 Stone Paving**

**32 14 43 Porous Unit Paving**

**32 15 00 Aggregate Surfacing**

**32 15 13 Cinder Surfacing**

**32 15 40 Crushed Stone Surfacing**

**32 16 00 Curbs, Gutters, Sidewalks, and Driveways**

**32 16 13 Curbs and Gutters**

- 32 16 13.13 Cast-In-Place Concrete Curbs and Gutters
- 32 16 13.23 Precast Concrete Curbs and Gutters
- 32 16 13.33 Asphalt Curbs
- 32 16 13.43 Stone Curbs

**32 16 23 Sidewalks**

**32 16 33 Driveways**

**32 17 00 Paving Specialties**

**32 17 13 Parking Bumpers**

- 32 17 13.13 Metal Parking Bumpers
- 32 17 13.16 Plastic Parking Bumpers
- 32 17 13.19 Precast Concrete Parking Bumpers
- 32 17 13.23 Rubber Parking Bumpers
- 32 17 13.26 Wood Parking Bumpers

**32 17 16 Speed Bumps**

**32 17 23 Pavement Markings**

- 32 17 23.13 Painted Pavement Markings
- 32 17 23.23 Raised Pavement Markings
- 32 17 23.33 Plastic Pavement Markings

- 32 17 26 Tactile Warning Surfacing
- 32 17 43 Pavement Snow Melting Systems
- 32 18 00 Athletic and Recreational Surfacing**
  - 32 18 13 Synthetic Grass Surfacing
  - 32 18 16 Synthetic Resilient Surfacing
    - 32 18 16.13 Playground Protective Surfacing
  - 32 18 23 Athletic Surfacing**
    - 32 18 23.13 Baseball Field Surfacing
    - 32 18 23.16 Natural Baseball Field Surfacing
    - 32 18 23.19 Synthetic Baseball Field Surfacing
    - 32 18 23.23 Field Sport Surfacing
    - 32 18 23.26 Natural Field Sport Surfacing
    - 32 18 23.29 Synthetic Field Sport Surfacing
    - 32 18 23.33 Running Track Surfacing
    - 32 18 23.36 Natural Running Track Surfacing
    - 32 18 23.39 Synthetic Running Track Surfacing
    - 32 18 23.43 Recreational Court Surfacing
    - 32 18 23.53 Tennis Court Surfacing
    - 32 18 23.56 Natural Tennis Court Surfacing
    - 32 18 23.59 Synthetic Tennis Court Surfacing
- 32 30 00 Site Improvements**
  - 32 31 00 Fences and Gates**
    - 32 31 11 Gate Operators
    - 32 31 13 Chain Link Fences and Gates
      - 32 31 13.23 Recreational Court Fences and Gates
      - 32 31 13.26 Tennis Court Fences and Gates
      - 32 31 13.29 Tennis Court Wind Breaker
      - 32 31 13.33 Chain Link Backstops
      - 32 31 13.53 High-Security Chain Link Fences and Gates
    - 32 31 16 Welded Wire Fences and Gates
    - 32 31 19 Decorative Metal Fences and Gates
    - 32 31 23 Plastic Fences and Gates
    - 32 31 26 Wire Fences and Gates
    - 32 31 29 Wood Fences and Gates
    - 32 31 53 Cattle Guards
  - 32 32 00 Retaining Walls**
    - 32 32 13 Cast-in-Place Concrete Retaining Walls
    - 32 32 16 Precast Concrete Retaining Walls
    - 32 32 19 Unit Masonry Retaining Walls
    - 32 32 23 Segmental Retaining Walls
      - 32 32 23.13 Segmental Concrete Unit Masonry Retaining Walls
      - 32 32 23.16 Manufactured Modular Walls

- 32 32 26 Metal Crib Retaining Walls
- 32 32 29 Timber Retaining Walls
- 32 32 34 Reinforced Soil Retaining Walls
- 32 32 36 Gabion Retaining Walls
- 32 32 43 Soldier-Beam Retaining Walls
- 32 32 53 Stone Retaining Walls
- 32 34 00 Fabricated Bridges**
  - 32 34 13 Fabricated Pedestrian Bridges
  - 32 34 23 Fabricated Roadway Bridges
  - 32 34 33 Fabricated Railway Bridges
- 32 35 00 Screening Devices**
  - 32 35 13 Screens and Louvers
  - 32 35 16 Sound Barriers
- 32 39 00 Manufactured Site Specialties**
  - 32 39 13 Manufactured Metal Bollards
- 32 70 00 Wetlands**
  - 32 71 00 Constructed Wetlands
  - 32 72 00 Wetlands Restoration
- 32 80 00 Irrigation**
  - 32 82 00 Irrigation Pumps
  - 32 84 00 Planting Irrigation
    - 32 84 13 Drip Irrigation
    - 32 84 23 Underground Sprinklers
  - 32 86 00 Agricultural Irrigation
- 32 90 00 Planting**
  - 32 91 00 Planting Preparation
    - 32 91 13 Soil Preparation
      - 32 91 13.13 Hydro-Punching
      - 32 91 13.16 Mulching
      - 32 91 13.19 Planting Soil Mixing
      - 32 91 13.23 Structural Soil Mixing
      - 32 91 13.26 Planting Beds
    - 32 91 16 Planting Soil Stabilization
      - 32 91 16.13 Blanket Planting Soil Stabilization
      - 32 91 16.16 Mat Planting Soil Stabilization
      - 32 91 16.19 Netting Planting Soil Stabilization
    - 32 91 19 Landscape Grading

- 32 91 19.13 Topsoil Placement and Grading
- 32 92 00 Turf and Grasses**
  - 32 92 13 Hydro-Mulching
  - 32 92 16 Plugging
  - 32 92 19 Seeding
    - 32 92 19.13 Mechanical Seeding
    - 32 92 19.16 Hydraulic Seeding
  - 32 92 23 Sodding
  - 32 92 26 Sprigging
    - 32 92 26.13 Stolonizing
- 32 93 00 Plants**
  - 32 93 13 Ground Covers
  - 32 93 23 Plants and Bulbs
  - 32 93 33 Shrubs
  - 32 93 43 Trees
- 32 94 00 Planting Accessories**
  - 32 94 13 Landscape Edging
  - 32 94 16 Landscape Timbers
  - 32 94 33 Planters
  - 32 94 43 Tree Grates
  - 32 94 46 Tree Grids
- 32 96 00 Transplanting**
  - 32 96 13 Ground Cover Transplanting
  - 32 96 23 Plant and Bulb Transplanting
  - 32 96 33 Shrub Transplanting
  - 32 96 43 Tree Transplanting

## **33 00 00 Utilities**

### **33 01 00 Operation and Maintenance of Utilities**

- 33 01 10 Operation and Maintenance of Water Utilities**
- 33 01 20 Operation and Maintenance of Wells**
- 33 01 30 Operation and Maintenance of Sewer Utilities**
  - 33 01 30.13 Sewer and Manhole Testing
  - 33 01 30.16 TV Inspection of Sewer Pipelines
  - 33 01 30.51 Maintenance of Sewer Utilities
  - 33 01 30.52 Pond and Reservoir Maintenance
  - 33 01 30.61 Sewer and Pipe Joint Sealing
  - 33 01 30.62 Manhole Grout Sealing
  - 33 01 30.71 Rehabilitation of Sewer Utilities
  - 33 01 30.72 Relining Sewers
- 33 01 50 Operation and Maintenance of Fuel Distribution Lines**
  - 33 01 50.51 Cleaning Fuel-Storage Tanks
  - 33 01 50.71 Lining of Steel Fuel-Storage Tanks
- 33 01 60 Operation and Maintenance of Hydronic and Steam Energy Utilities**
- 33 01 70 Operation and Maintenance of Electrical Utilities**
- 33 01 80 Operation and Maintenance of Communications Utilities**

### **33 05 00 Common Work Results for Utilities**

- 33 05 13 Manholes and Structures**
  - 33 05 13.13 Manhole Grade Adjustment
- 33 05 16 Utility Structures**
  - 33 05 16.13 Precast Concrete Utility Structures
  - 33 05 16.53 Rebuilding Utility Structures
- 33 05 19 Pressure Piping Tied Joint Restraint System**
- 33 05 23 Trenchless Utility Installation**
  - 33 05 23.13 Utility Horizontal Directional Drilling
  - 33 05 23.16 Utility Pipe Jacking
  - 33 05 23.19 Microtunneling
  - 33 05 23.23 Utility Pipe Ramming
  - 33 05 23.26 Utility Impact Molding
  - 33 05 23.29 Cable Trenching and Plowing
- 33 05 26 Utility Identification**
  - 33 05 26.13 Utility Identification Signs
  - 33 05 26.16 Utility Identification Markers
  - 33 05 26.19 Utility Identification Flags
  - 33 05 26.23 Utility Identification Trace Wires

### **33 06 00 Schedules for Utilities**

- 33 06 10 Schedules for Water Utilities**

- 33 06 20 Schedules for Wells
- 33 06 30 Schedules for Sanitary Sewerage Utilities
- 33 06 40 Schedules for Storm Drainage Utilities
  - 33 06 40.13 Storm Drainage Schedule
- 33 06 50 Schedules for Fuel Distribution Utilities
- 33 06 60 Schedules for Hydronic and Steam Energy Utilities
- 33 06 70 Schedules for Electrical Utilities
- 33 06 80 Schedules for Communications Utilities

## **33 08 00 Commissioning of Utilities**

- 33 08 10 Commissioning of Water Utilities
- 33 08 20 Commissioning of Wells
- 33 08 30 Commissioning of Sanitary Sewerage Utilities
- 33 08 40 Commissioning of Storm Drainage Utilities
- 33 08 50 Commissioning of Fuel Distribution Utilities
- 33 08 60 Commissioning of Hydronic and Steam Energy Utilities
- 33 08 70 Commissioning of Electrical Utilities
- 33 08 80 Commissioning of Communications Utilities

## **33 09 00 Instrumentation and Control for Utilities**

- 33 09 10 Instrumentation and Control for Water Utilities
- 33 09 20 Instrumentation and Control for Wells
- 33 09 30 Instrumentation and Control for Sanitary Sewerage Utilities
- 33 09 40 Instrumentation and Control for Storm Drainage Utilities
- 33 09 50 Instrumentation and Control for Fuel Distribution Utilities
- 33 09 60 Instrumentation and Control for Hydronic and Steam Energy Utilities
- 33 09 70 Instrumentation and Control for Electrical Utilities
- 33 09 80 Instrumentation and Control for Communications Utilities

## **33 10 00 Water Utilities**

### **33 11 00 Water Utility Distribution Piping**

- 33 11 13 Public Water Utility Distribution Piping
  - 33 11 13.13 Ductile Iron Public Water Utility Distribution Piping
  - 33 11 13.16 Cast Iron Public Water Utility Distribution Piping
  - 33 11 13.23 Plastic Public Water Utility Distribution Piping
  - 33 11 13.26 Galvanized Steel Public Water Utility Distribution Piping
  - 33 11 13.33 Concrete Public Water Utility Distribution Piping
- 33 11 16 Site Water Utility Distribution Piping
- 33 11 19 Fire Suppression Utility Water Distribution Piping

### **33 12 00 Water Utility Distribution Equipment**

- 33 12 13 Water Service Connections
  - 33 12 13.13 Water Supply Backflow Preventer Assemblies

- 33 12 16 Water Utility Distribution Valves
- 33 12 19 Water Utility Distribution Fire Hydrants
- 33 12 23 Water Utility Pumping Stations
- 33 12 33 Water Utility Metering
- 33 13 00 Disinfecting of Water Utility Distribution**
- 33 16 00 Water Utility Storage Tanks**
  - 33 16 13 Aboveground Water Utility Storage Tanks
    - 33 16 13.13 Steel Aboveground Water Utility Storage Tanks
    - 33 16 13.16 Prestressed Concrete Aboveground Water Utility Storage Tanks
    - 33 16 13.19 Plastic Aboveground Water Utility Storage Tanks
  - 33 16 16 Underground Water Utility Storage Tanks
  - 33 16 19 Elevated Water Utility Storage Tanks
- 33 20 00 Wells**
  - 33 21 00 Water Supply Wells**
    - 33 21 13 Public Water Supply Wells
    - 33 21 16 Irrigation Water Wells
  - 33 22 00 Test Wells**
  - 33 23 00 Extraction Wells**
  - 33 24 00 Monitoring Wells**
    - 33 24 13 Groundwater Monitoring Wells
  - 33 25 00 Recharge Wells**
  - 33 26 00 Relief Wells**
  - 33 29 00 Well Abandonment**
- 33 30 00 Sanitary Sewerage Utilities**
  - 33 31 00 Sanitary Utility Sewerage Piping**
    - 33 31 13 Public Sanitary Utility Sewerage Piping
    - 33 31 16 Industrial Waste Utility Sewerage Piping
  - 33 32 00 Wastewater Utility Pumping Stations**
    - 33 32 13 Packaged Utility Lift Stations
      - 33 32 13.13 Packaged Sewage Lift Stations, Wet Well Type
    - 33 32 16 Packaged Utility Wastewater Pumping Stations
      - 33 32 16.13 Packaged Sewage Grinder Pumping Units
    - 33 32 19 Public Utility Wastewater Pumping Stations
  - 33 33 00 Low Pressure Utility Sewerage**
    - 33 33 13 Sanitary Utility Sewerage

- 33 33 16 Combined Utility Sewerage
- 33 34 00 Sanitary Utility Sewerage Force Mains**
  - 33 34 13 Sanitary Utility Sewerage Inverted Siphons
- 33 36 00 Utility Septic Tanks**
  - 33 36 13 Utility Septic Tank and Effluent Wet Wells
  - 33 36 16 Utility Septic Tank Effluent Pumps
  - 33 36 33 Utility Drainage Field
- 33 39 00 Sanitary Utility Sewerage Structures**
  - 33 39 13 Sanitary Utility Sewerage Manholes, Frames, and Covers
  - 33 39 23 Sanitary Utility Sewerage Cleanouts
- 33 40 00 Storm Drainage Utilities**
  - 33 41 00 Storm Utility Drainage Piping**
    - 33 41 13 Public Storm Utility Drainage Piping
  - 33 42 00 Culverts**
    - 33 42 13 Pipe Culverts
      - 33 42 13.13 Public Pipe Culverts
    - 33 42 16 Concrete Culverts
      - 33 42 16.13 Precast Concrete Culverts
      - 33 42 16.16 Cast-in-Place Concrete Culverts
  - 33 44 00 Storm Utility Water Drains**
    - 33 44 13 Utility Area Drains
      - 33 44 13.13 Catchbasins
    - 33 44 16 Utility Trench Drains
    - 33 44 19 Utility Storm Water Treatment
      - 33 44 19.13 In-Line Utility Storm Water Filters
      - 33 44 19.16 Catch Basin Insert Utility Storm Water Filters
      - 33 44 19.19 Utility Oil and Gas Separators
  - 33 45 00 Storm Utility Drainage Pumps**
  - 33 46 00 Subdrainage**
    - 33 46 13 Foundation Drainage
      - 33 46 13.13 Foundation Drainage Piping
      - 33 46 13.16 Geocomposite Foundation Drainage
    - 33 46 16 Subdrainage Piping
      - 33 46 16.13 Subdrainage Piping
      - 33 46 16.16 Geocomposite Subdrainage
      - 33 46 16.19 Pipe Underdrains
    - 33 46 19 Underslab Drainage
      - 33 46 19.13 Underslab Drainage Piping

- 33 46 19.16 Geocomposite Underslab Drainage
- 33 46 23 Drainage Layers**
  - 33 46 23.16 Gravel Drainage Layers
  - 33 46 23.19 Geosynthetic Drainage Layers
- 33 46 26 Geotextile Subsurface Drainage Filtration**
- 33 46 33 Retaining Wall Drainage**
- 33 47 00 Ponds and Reservoirs**
  - 33 47 13 Pond and Reservoir Liners**
    - 33 47 13.13 Pond Liners
    - 33 47 13.53 Reservoir Liners
  - 33 47 16 Pond and Reservoir Covers**
    - 33 47 16.13 Pond Covers
    - 33 47 16.53 Reservoir Covers
  - 33 47 19 Water Ponds and Reservoirs**
    - 33 47 19.13 Water Distribution Ponds
    - 33 47 19.16 Water Retainage Reservoirs
    - 33 47 19.23 Cooling Water Ponds
    - 33 47 19.33 Fire-Protection Water Ponds
  - 33 47 23 Sanitary Sewerage Lagoons**
  - 33 47 26 Storm Drainage Ponds and Reservoirs**
    - 33 47 26.13 Stabilization Ponds
    - 33 47 26.16 Retention Basins
    - 33 47 26.19 Leaching Pits
- 33 49 00 Storm Drainage Structures**
  - 33 49 13 Storm Drainage Manholes, Frames, and Covers
  - 33 49 23 Storm Drainage Water Retention Structures
- 33 50 00 Fuel Distribution Utilities**
  - 33 51 00 Natural-Gas Distribution**
    - 33 51 13 Natural-Gas Piping
    - 33 51 33 Natural-Gas Metering
  - 33 52 00 Liquid Fuel Distribution**
    - 33 52 13 Fuel-Oil Distribution**
      - 33 52 13.13 Fuel-Oil Piping
      - 33 52 13.23 Fuel-Oil Pumps
    - 33 52 16 Gasoline Distribution**
      - 33 52 16.13 Gasoline Piping
      - 33 52 16.23 Gasoline Pumps
    - 33 52 19 Diesel Fuel Distribution**
      - 33 52 19.13 Diesel Fuel Piping

- 33 52 19.23 Diesel Fuel Pumps
- 33 52 43 Aviation Fuel Distribution**
  - 33 52 43.13 Aviation Fuel Piping
  - 33 52 43.16 Aviation Fuel Connections
  - 33 52 43.19 Aviation Fuel Grounding
  - 33 52 43.23 Aviation Fuel Pumps
- 33 56 00 Fuel-Storage Tanks**
  - 33 56 13 Aboveground Fuel-Storage Tanks**
  - 33 56 16 Underground Fuel-Storage Tanks**
  - 33 56 43 Aviation Fuel-Storage Tanks**
    - 33 56 43.13 Aboveground Aviation Fuel-Storage Tanks
    - 33 56 43.16 Underground Aviation Fuel-Storage Tanks
  - 33 56 53 Compressed Gases Storage Tanks**
- 33 60 00 Hydronic and Steam Energy Utilities**
  - 33 61 00 Hydronic Energy Distribution**
    - 33 61 13 Underground Hydronic Energy Distribution
    - 33 61 23 Aboveground Hydronic Energy Distribution
    - 33 61 33 Hydronic Energy Distribution Metering
  - 33 63 00 Steam Energy Distribution**
    - 33 63 13 Underground Steam and Condensate Distribution Piping
    - 33 63 23 Aboveground Steam and Condensate Distribution Piping
    - 33 63 33 Steam Energy Distribution Metering
- 33 70 00 Electrical Utilities**
  - 33 71 00 Electrical Utility Transmission and Distribution**
    - 33 71 13 Electrical Utility Towers**
      - 33 71 13.13 Precast Concrete Electrical Utility Towers
      - 33 71 13.23 Steel Electrical Utility Towers
      - 33 71 13.33 Wood Electrical Utility Towers
    - 33 71 16 Electrical Utility Poles**
      - 33 71 16.13 Precast Concrete Electrical Utility Poles
      - 33 71 16.23 Steel Electrical Utility Poles
      - 33 71 16.33 Wood Electrical Utility Poles
    - 33 71 19 Electrical Underground Ducts and Manholes**
      - 33 71 19.13 Electrical Manholes and Handholes
    - 33 71 23 Insulators and Fittings**
      - 33 71 23.13 Suspension Insulators
      - 33 71 23.16 Post Insulators
      - 33 71 23.23 Potheads
    - 33 71 26 Transmission and Distribution Equipment**

- 33 71 26.13 Capacitor Banks
- 33 71 26.16 Coupling Capacitors
- 33 71 26.23 Current Transformers
- 33 71 26.26 Potential Transformers
- 33 71 36 Extra-High-Voltage Wiring**
  - 33 71 36.13 Overhead Extra-High-Voltage Wiring
- 33 71 39 High-Voltage Wiring**
  - 33 71 39.13 Overhead High-Voltage Wiring
  - 33 71 39.23 Underground High-Voltage Wiring
  - 33 71 39.33 Underwater High-Voltage Wiring
- 33 71 49 Medium-Voltage Wiring**
  - 33 71 49.13 Overhead Medium-Voltage Wiring
  - 33 71 49.23 Underground Medium-Voltage Wiring
  - 33 71 49.33 Underwater Medium-Voltage Wiring
- 33 71 53 Direct-Current Transmission**
- 33 71 73 Electrical Utility Services**
  - 33 71 73.33 Electric Meters
- 33 71 83 Transmission and Distribution Specialties**
- 33 72 00 Utility Substations**
  - 33 72 13 Deadend Structures**
  - 33 72 23 Structural Bus Supports**
    - 33 72 23.13 Bus Support Insulators
  - 33 72 26 Substation Bus Assemblies**
    - 33 72 26.13 Aluminum Substation Bus Assemblies
    - 33 72 26.16 Copper Substation Bus Assemblies
  - 33 72 33 Control House Equipment**
    - 33 72 33.13 Relays
    - 33 72 33.16 Substation Control Panels
    - 33 72 33.23 Power-Line Carriers
    - 33 72 33.26 Substation Metering
    - 33 72 33.33 Raceway and Boxes for Utility Substations
    - 33 72 33.36 Cable Trays for Utility Substations
    - 33 72 33.43 Substation Backup Batteries
    - 33 72 33.46 Substation Converter Stations
  - 33 72 43 Substation Control Wiring**
- 33 73 00 Utility Transformers**
  - 33 73 13 Liquid-Filled Utility Transformers**
  - 33 73 23 Dry-Type Utility Transformers**
- 33 75 00 High-Voltage Switchgear and Protection Devices**
  - 33 75 13 Air High-Voltage Circuit Breaker**
  - 33 75 16 Oil High-Voltage Circuit Breaker**

- 33 75 19 Gas High-Voltage Circuit Breaker
- 33 75 23 Vacuum High-Voltage Circuit Breaker
- 33 75 36 High-Voltage Utility Fuses
- 33 75 39 High-Voltage Surge Arresters
- 33 75 43 Shunt Reactors

### **33 77 00 Medium-Voltage Utility Switchgear and Protection Devices**

- 33 77 13 Air Medium-Voltage Circuit Breaker
- 33 77 16 Oil Medium-Voltage Circuit Breaker
- 33 77 19 Gas Medium-Voltage Circuit Breaker
- 33 77 23 Vacuum Medium-Voltage Circuit Breaker
- 33 77 26 Medium-Voltage Utility Fusible Interrupter Switchgear
- 33 77 33 Medium-Voltage Utility Cutouts
- 33 77 36 Medium-Voltage Utility Fuses
- 33 77 39 Medium-Voltage Utility Surge Arresters
- 33 77 53 Medium-Voltage Utility Reclosers

### **33 79 00 Site Grounding**

- 33 79 13 Site Improvements Grounding
  - 33 79 13.13 Electric Fence Grounding
- 33 79 16 Tower Grounding
  - 33 79 16.13 Communications Tower Grounding
  - 33 79 16.16 Antenna Tower Grounding
- 33 79 19 Utilities Grounding
  - 33 79 19.13 Electrical Utilities Grounding
  - 33 79 19.16 Communications Utilities Grounding
- 33 79 23 Utility Substation Grounding
- 33 79 83 Site Grounding Conductors
  - 33 79 83.13 Grounding Wire, Bar, and Rod
  - 33 79 83.16 Chemical Rod
  - 33 79 83.23 Conductive Concrete
  - 33 79 83.33 Earth Grounding Enhancement
  - 33 79 83.43 Deep Earth Grounding
- 33 79 93 Site Lightning Protection
  - 33 79 93.13 Lightning Strike Counters
  - 33 79 93.16 Lightning Strike Warning Devices

## **33 80 00 Communications Utilities**

### **33 81 00 Communications Structures**

- 33 81 13 Communications Transmission Towers
- 33 81 16 Antenna Towers
- 33 81 19 Communications Utility Poles
- 33 81 23 Aerial Cable Installation Hardware

- 33 81 26 Communications Underground Ducts, Manholes, and Handholes
- 33 81 29 Communications Vaults, Pedestals, and Enclosures
- 33 81 33 Communications Blowers, Fans, and Ventilation
- 33 82 00 Communications Distribution**
  - 33 82 13 Copper Communications Distribution Cabling
    - 33 82 13.13 Copper Splicing and Terminations
  - 33 82 23 Optical Fiber Communications Distribution Cabling
    - 33 82 23.13 Optical Fiber Splicing and Terminations
  - 33 82 33 Coaxial Communications Distribution Cabling
    - 33 82 33.13 Coaxial Splicing and Terminations
  - 33 82 43 Grounding and Bonding for Communications Distribution
  - 33 82 46 Cable Pressurization Equipment
  - 33 82 53 Cleaning, Lubrication, and Restoration Chemicals
- 33 83 00 Wireless Communications Distribution**
  - 33 83 13 Laser Transmitters and Receivers
  - 33 83 16 Microwave Transmitters and Receivers
  - 33 83 19 Infrared Transmitters and Receivers
  - 33 83 23 UHF/VHF Transmitters and Antennas

## **34 00 00 Transportation**

### **34 01 00 Operation and Maintenance of Transportation**

34 01 13 Operation and Maintenance of Roadways

34 01 23 Operation and Maintenance of Railways

34 01 23.13 Track Removal and Salvage

34 01 23.81 Track Crosstie Replacement

34 01 33 Operation and Maintenance of Airfields

34 01 43 Operation and Maintenance of Bridges

### **34 05 00 Common Work Results for Transportation**

34 05 13 Common Work Results for Roadways

34 05 23 Common Work Results for Railways

34 05 33 Common Work Results for Airports

34 05 43 Common Work Results for Bridges

### **34 06 00 Schedules for Transportation**

34 06 13 Schedules for Roadways

34 06 23 Schedules for Railways

34 06 33 Schedules for Airfields

34 06 43 Schedules for Bridges

### **34 08 00 Commissioning of Transportation**

34 08 13 Commissioning of Roadways

34 08 23 Commissioning of Railways

34 08 33 Commissioning of Airfields

34 08 43 Commissioning of Bridges

### **34 10 00 Guideways/Railways**

#### **34 11 00 Rail Tracks**

34 11 13 Track Rails

34 11 13.13 Light Rail Track

34 11 13.23 Heavy Rail Track

34 11 16 Welded Track Rails

34 11 16.13 In-Track Butt-Welded Track Rail

34 11 16.16 Pressure-Welded Track Rail

34 11 16.19 Thermite-Welded Track Rail

34 11 19 Track Rail Joints

34 11 23 Special Trackwork

34 11 23.13 Ballasted Special Track Rail

34 11 23.16 Direct-Fixation Track

34 11 23.23 Running Rail

34 11 23.26 Precurved Running Rail

34 11 26 Ballasted Track Rail

- 34 11 26.13 Track Rail Ballast
- 34 11 26.16 Track Rail Subballast
- 34 11 29 Embedded Track Rail**
- 34 11 33 Track Cross Ties**
  - 34 11 33.13 Concrete Track Cross Ties
  - 34 11 33.16 Timber Track Cross Ties
  - 34 11 33.19 Resilient Track Cross Ties
- 34 11 36 Track Rail Fasteners**
  - 34 11 36.13 Direct-Fixation Fasteners
- 34 11 39 Track Collector Pans**
  - 34 11 39.13 Fiberglass Track Collector Pans
- 34 11 93 Track Appurtenances and Accessories**
- 34 12 00 Monorails**
  - 34 12 13 Elevated Monorails
  - 34 12 16 On-Grade Monorails
  - 34 12 19 Below-Grade Monorails
  - 34 12 23 Maglev Monorail
  - 34 12 63 Monorail Track
- 34 13 00 Funiculars**
  - 34 13 13 Inclined Railway
- 34 14 00 Cable Transportation**
  - 34 14 13 Aerial Tramways
  - 34 14 19 Gondolas
  - 34 14 26 Funitels
  - 34 14 33 Chairlifts
  - 34 14 39 Surface Lifts
  - 34 14 46 Ropeway Tows
  - 34 14 53 Cable Car Systems
- 34 20 00 Traction Power**
  - 34 21 00 Traction Power Distribution**
    - 34 21 13 High Power Static Frequency Converters
    - 34 21 16 Traction Power Substations
      - 34 21 16.13 AC Traction Power Substations
      - 34 21 16.16 DC Traction Power Substations
    - 34 21 19 Traction Power Switchgear
      - 34 21 19.13 AC Traction Power Switchgear
      - 34 21 19.16 DC Traction Power Switchgear
      - 34 21 19.23 Frequency Changer
    - 34 21 23 Traction Power Transformer-Rectifier Units
  - 34 23 00 Overhead Traction Power**

- 34 23 13 Traction Power Poles
- 34 23 16 Overhead Cable Suspension
- 34 23 23 Overhead Traction Power Cables
- 34 24 00 Third Rail Traction Power**
  - 34 24 13 Bottom-Contact Third Rail
  - 34 24 16 Side-Contact Third Rail
  - 34 24 19 Top-Contact Third Rail
- 34 40 00 Transportation Signaling and Control Equipment**
  - 34 41 00 Roadway Signaling and Control Equipment**
    - 34 41 13 Traffic Signals
    - 34 41 16 Traffic Control Equipment
    - 34 41 23 Roadway Monitoring Equipment
  - 34 42 00 Railway Signaling and Control Equipment**
    - 34 42 13 Railway Signals
      - 34 42 13.13 General Railway Signal Requirements
      - 34 42 13.16 Signal Solid State Coded Track Circuits
    - 34 42 16 Train Control Wires and Cables
    - 34 42 19 Vital Interlocking Logic Controllers
    - 34 42 23 Railway Control Equipment
      - 34 42 23.13 Mainline Train Control Room Equipment
      - 34 42 23.16 Yard Train Control Room Equipment
      - 34 42 23.19 Integrated Control Equipment
      - 34 42 23.23 Interlocking Railway Control Equipment
    - 34 42 26 Rail Network Equipment
    - 34 42 29 Station Agent Equipment
    - 34 42 33 Yard Management Equipment
    - 34 42 36 Supervisory Control and Data Acquisition
  - 34 43 00 Airfield Signaling and Control Equipment**
    - 34 43 13 Airfield Signals
      - 34 43 13.13 Airfield Runway Identification Lights
      - 34 43 13.16 Airfield Runway and Taxiway Inset Lighting
    - 34 43 16 Airfield Landing Equipment
      - 34 43 16.13 Microwave Airfield Landing Equipment
      - 34 43 16.16 Instrument Airfield Landing Equipment
      - 34 43 16.19 Airfield Visual-Approach Slope Indicator Equipment
      - 34 43 16.23 Airfield Short-Approach Lighting Equipment
      - 34 43 16.26 Airfield Omni-Directional-Approach Lighting Equipment
      - 34 43 16.29 Airfield Low-Intensity-Approach Lighting Equipment
      - 34 43 16.33 Airfield High-Intensity-Approach Lighting Equipment
      - 34 43 16.36 Airfield Precision-Approach Path Indicator Equipment
    - 34 43 19 Airfield Traffic Control Tower Equipment

- 34 43 23 Weather Observation Equipment**
  - 34 43 23.13 Automatic Weather Observation Equipment
  - 34 43 23.16 Airfield Wind Cones
- 34 43 26 Airfield Control Equipment**
  - 34 43 26.13 Airfield Lighting Control Equipment
  - 34 43 26.16 Airfield Lighting PLC Control Equipment
  - 34 43 26.19 Airfield Lighting Regulator Assembly
- 34 48 00 Bridge Signaling and Control Equipment**
  - 34 48 13 Operating Bridge Signals
  - 34 48 16 Operating Bridge Control Equipment
- 34 50 00 Transportation Fare Collection Equipment**
  - 34 52 00 Vehicle Fare Collection**
    - 34 52 16 Vehicle Ticketing Equipment
      - 34 52 16.13 Vehicle Ticket Vending Machines
    - 34 52 26 Vehicle Fare Collection Equipment
      - 34 52 26.13 Vehicle Coin Fare Collection Equipment
      - 34 52 26.16 Vehicle Electronic Fare Collection Equipment
    - 34 52 33 Vehicle Fare Gates
  - 34 54 00 Passenger Fare Collection**
    - 34 54 16 Passenger Ticketing Equipment
      - 34 54 16.13 Passenger Ticket Vending Machines
      - 34 54 16.16 Passenger Addfare Machines
      - 34 54 16.23 Passenger Intermodal Transfer Machines
    - 34 54 26 Passenger Fare Collection Equipment
      - 34 54 26.13 Passenger Coin Fare Collection Equipment
      - 34 54 26.16 Passenger Electronic Fare Collection Equipment
    - 34 54 33 Passenger Fare Gates
- 34 70 00 Transportation Construction and Equipment**
  - 34 71 00 Roadway Construction**
    - 34 71 13 Vehicle Barriers
      - 34 71 13.13 Vehicle Median Barriers
      - 34 71 13.16 Vehicle Crash Barriers
      - 34 71 13.19 Vehicle Traffic Barriers
      - 34 71 13.26 Vehicle Guide Rails
      - 34 71 13.29 Vehicle Barrier Fenders
    - 34 71 16 Impact Attenuating Devices
    - 34 71 19 Vehicle Delineators
      - 34 71 19.13 Fixed Vehicle Delineators
      - 34 71 19.16 Flexible Vehicle Delineators

- 34 72 00 Railway Construction**
  - 34 72 13 Railway Line
  - 34 72 16 Railway Siding
- 34 73 00 Airfield Construction**
  - 34 73 13 Aircraft Tiedowns
  - 34 73 16 Airfield Grounding
    - 34 73 16.13 Aircraft Static Grounding
  - 34 73 19 Jet Blast Barriers
  - 34 73 23 Manufactured Airfield Control Towers
  - 34 73 26 Manufactured Helipads
- 34 75 00 Roadway Equipment**
  - 34 75 13 Operable Roadway Equipment
    - 34 75 13.13 Active Vehicle Barriers
- 34 76 00 Railway Equipment**
  - 34 76 13 Roadway Crossing Control Equipment
- 34 77 00 Transportation Equipment**
  - 34 77 13 Passenger Loading Bridges
    - 34 77 13.13 Fixed Aircraft Passenger Loading Bridges
    - 34 77 13.16 Movable Aircraft Passenger Loading Bridges
    - 34 77 13.23 Ship Passenger Loading Bridges
  - 34 77 16 Baggage Handling Equipment
    - 34 77 16.13 Baggage Scanning Equipment
    - 34 77 16.16 Baggage Scales
    - 34 77 16.19 Baggage Conveying Equipment
- 34 80 00 Bridges**
  - 34 81 00 Bridge Machinery**
    - 34 81 13 Single-Swing Bridge Machinery
    - 34 81 16 Double-Swing Bridge Machinery
    - 34 81 19 Cantilever Bridge Machinery
    - 34 81 23 Lift Bridge Machinery
    - 34 81 26 Sliding Bridge Machinery
  - 34 82 00 Bridge Specialties**
    - 34 82 13 Bridge Vibration Dampers
      - 34 82 13.13 Visco Elastic Bridge Vibration Dampers
      - 34 82 13.16 Tuned-Mass Bridge Vibration Dampers
    - 34 82 19 Bridge Pier Protection
      - 34 82 19.13 Bridge Pier Ice Shields

- 35 00 00 Waterway and Marine Construction**
- 35 01 00 Operation and Maintenance of Waterway and Marine Construction**
  - 35 01 30 Operation and Maintenance of Coastal Construction
  - 35 01 40 Operation and Maintenance of Waterway Construction
    - 35 01 40.92 Preservation of Water Courses
  - 35 01 50 Operation and Maintenance of Marine Construction
    - 35 01 50.71 Channel Excavation, Cleaning and Deepening
  - 35 01 70 Operation and Maintenance of Dams
- 35 05 00 Common Work Results for Waterway and Marine Construction**
  - 35 05 30 Common Work Results for Coastal Construction
  - 35 05 40 Common Work Results for Waterway Construction
  - 35 05 50 Common Work Results for Marine Construction
  - 35 05 70 Common Work Results for Dams
- 35 06 00 Schedules for Waterway and Marine Construction**
  - 35 06 30 Schedules for Coastal Construction
  - 35 06 40 Schedules for Waterway Construction
  - 35 06 50 Schedules for Marine Construction
  - 35 06 70 Schedules for Dams
- 35 08 00 Commissioning of Waterway and Marine Construction**
  - 35 08 30 Commissioning of Coastal Construction
  - 35 08 40 Commissioning of Waterway Construction
  - 35 08 50 Commissioning of Marine Construction
  - 35 08 70 Commissioning of Dams
- 35 10 00 Waterway and Marine Signaling and Control Equipment**
  - 35 11 00 Signaling and Control Equipment for Waterways**
    - 35 11 13 Signaling Equipment for Waterways
    - 35 11 53 Control Equipment for Waterways
  - 35 12 00 Marine Signaling and Control Equipment**
    - 35 12 13 Marine Signaling Equipment
      - 35 12 13.13 Lighthouse Equipment
    - 35 12 33 Marine Navigation Equipment
    - 35 12 53 Marine Control Equipment

**35 13 00 Signaling and Control Equipment for Dams**

35 13 13 Signaling Equipment for Dams

35 13 53 Control Equipment for Dams

**35 20 00 Waterway and Marine Construction and Equipment****35 20 13 Hydraulic Fabrications**

35 20 13.13 Hydraulic Bifurcation Panels

35 20 13.16 Hydraulic Bulkheads

35 20 13.19 Hydraulic Manifolds

35 20 13.23 Hydraulic Penstocks

35 20 13.26 Hydraulic Trashracks

**35 20 16 Hydraulic Gates**

35 20 16.13 Hydraulic Spillway Crest Gates

35 20 16.19 Hydraulic Head Gates

35 20 16.26 Hydraulic Sluice Gates

35 20 16.33 Hydraulic Miter Gates

35 20 16.39 Hydraulic Sector Gates

35 20 16.46 Hydraulic Tainter Gates and Anchorages

35 20 16.53 Hydraulic Vertical Lift Gates

35 20 16.59 Hydraulic Closure Gates

**35 20 19 Hydraulic Valves**

35 20 19.13 Hydraulic Butterfly Valves

35 20 19.23 Hydraulic Regulating Valves

**35 20 23 Dredging**

35 20 23.13 Mechanical Dredging

35 20 23.23 Hydraulic Dredging

35 20 23.33 Integrated Dredging and Dewatering

**35 30 00 Coastal Construction****35 31 00 Shoreline Protection****35 31 16 Seawalls**

35 31 16.13 Concrete Seawalls

35 31 16.16 Segmental Seawalls

35 31 16.19 Steel Sheet Piling Seawalls

35 31 16.23 Timber Seawalls

35 31 16.40 Stone Seawalls

**35 31 19 Revetments**

35 31 19.13 Sacked Cement-Sand Revetments

35 31 19.16 Concrete Unit Masonry Revetments

35 31 19.36 Gabion Revetments

35 31 19.40 Stone Revetments

**35 31 23 Breakwaters**

35 31 23.13 Rubble Mound Breakwaters

35 31 23.16 Precast Breakwater Modules

**35 31 26 Jetties**

35 31 26.13 Concrete Jetties

35 31 26.16 Concrete Unit Masonry Jetties

35 31 26.36 Gabion Jetties

35 31 26.40 Stone Jetties

**35 31 29 Groins**

35 31 29.13 Concrete Groins

35 31 29.16 Concrete Unit Masonry Groins

35 31 29.26 Steel Groins

35 31 29.36 Gabion Groins

35 31 29.40 Stone Groins

**35 32 00 Artificial Reefs**

**35 32 13 Scrap Material Artificial Reefs**

35 32 13.13 Scrap Concrete Artificial Reefs

35 32 13.19 Scrap Steel Artificial Reefs

35 32 13.33 Sunken Ship Artificial Reefs

**35 32 16 Constructed Artificial Reefs**

35 32 16.13 Constructed Concrete Artificial Reefs

35 32 16.19 Constructed Steel Artificial Reefs

**35 40 00 Waterway Construction and Equipment**

**35 41 00 Levees**

**35 41 13 Landside Levee Berms**

35 41 13.13 Stability Landside Levee Berms

35 41 13.16 Seepage Landside Levee Berms

**35 41 16 Levee Cutoff Trenches**

**35 41 19 Levee Relief Wells**

**35 42 00 Waterway Bank Protection**

**35 42 13 Piling Bank Protection**

35 42 13.19 Steel Sheet Piling Bank Protection

35 42 13.23 Timber Piling Bank Protection

35 42 13.26 Plastic Piling Bank Protection

**35 42 29 Grout-Bag Bank Protection**

**35 42 34 Soil Reinforcement Bank Protection**

**35 42 35 Slope Protection Bank Protection**

**35 42 36 Gabion Bank Protection**

**35 42 37 Riprap Bank Protection**

**35 42 53 Wall Bank Protection**

35 42 53.16 Concrete Unit Masonry Wall Bank Protection

35 42 53.19 Segmental Wall Bank Protection

35 42 53.40 Stone Wall Bank Protection

**35 43 00 Waterway Scour Protection**

35 43 29 Grout-Bag Scour Protection

35 43 34 Soil Reinforcement Scour Protection

35 43 35 Slope Protection Scour Protection

35 43 36 Gabion Scour Protection

35 43 37 Riprap Scour Protection

35 43 53 Wall Scour Protection

35 43 53.13 Concrete Unit Masonry Wall Scour Protection

35 43 53.16 Segmental Wall Scour Protection

35 43 53.40 Stone Wall Scour Protection

**35 49 00 Waterway Structures**

35 49 13 Floodwalls

35 49 13.13 Concrete Floodwalls

35 49 13.16 Masonry Floodwalls

35 49 23 Waterway Locks

35 49 23.13 Concrete Waterway Locks

35 49 23.23 Piling Waterway Locks

**35 50 00 Marine Construction and Equipment****35 51 00 Floating Construction**

35 51 13 Floating Piers

35 51 13.23 Floating Wood Piers

35 51 13.26 Floating Plastic Piers

35 51 23 Pontoons

**35 52 00 Offshore Platform Construction**

35 52 13 Fixed Offshore Platform Construction

35 52 23 Semi-Submersible Offshore Platform Construction

35 52 33 Floating Offshore Platform Construction

**35 53 00 Underwater Construction**

35 53 23 Underwater Harbor Deepening

35 53 33 Underwater Pipeline Construction

35 53 43 Underwater Foundation Construction

35 53 53 Underwater Structures Construction

35 53 63 Underwater Waterproofing

**35 59 00 Marine Specialties**

35 59 13 Marine Fenders

35 59 13.13 Prestressed Concrete Marine Fender Piling

35 59 13.16 Resilient Foam-Filled Marine Fenders

35 59 13.19 Rubber Marine Fenders

35 59 23 Buoys

- 35 59 23.13 Mooring Buoys
- 35 59 23.16 Anchor Pendant Buoys
- 35 59 23.19 Navigation Buoys

**35 59 29 Mooring Devices**

- 35 59 29.13 Quick-Release Mooring Hooks
- 35 59 29.16 Laser Docking Systems
- 35 59 29.19 Capstans

**35 59 33 Marine Bollards and Cleats**

- 35 59 33.13 Cast-Steel Marine Bollards and Cleats
- 35 59 33.16 Cast-Iron Marine Bollards and Cleats
- 35 59 33.19 Stainless-Steel Marine Bollards and Cleats
- 35 59 33.23 Plastic Marine Bollards and Cleats

**35 59 93 Marine Chain and Accessories**

- 35 59 93.13 Marine Chain
- 35 59 93.16 Marine Shackles
- 35 59 93.19 Marine Chain Tensioners

**35 70 00 Dam Construction and Equipment**

**35 71 00 Gravity Dams**

- 35 71 13 Concrete Gravity Dams
- 35 71 16 Masonry Gravity Dams
- 35 71 19 Rockfill Gravity Dams

**35 72 00 Arch Dams**

- 35 72 13 Concrete Arch Dams

**35 73 00 Embankment Dams**

- 35 73 13 Earth Embankment Dam
- 35 73 16 Rock Embankment Dams

**35 74 00 Buttress Dams**

- 35 74 13 Concrete Buttress Dams

**35 79 00 Auxiliary Dam Structures**

- 35 79 13 Fish Ladders
  - 35 79 13.13 Concrete Fish Ladders

## **40 00 00 Process Integration**

### **40 01 00 Operation and Maintenance of Process Integration**

- 40 01 10 Operation and Maintenance of Gas and Vapor Process Piping
- 40 01 20 Operation and Maintenance of Liquids Process Piping
- 40 01 30 Operation and Maintenance of Solid and Mixed Materials Piping and Chutes
- 40 01 40 Operation and Maintenance of Process Piping and Equipment Protection

### **40 05 00 Common Work Results for Process Integration**

- 40 05 13 Common Work Results for Process Piping
  - 40 05 13.13 Steel Process Piping
  - 40 05 13.16 Lined or Internally-Coated Steel Process Piping
  - 40 05 13.19 Stainless-Steel Process Piping
  - 40 05 13.23 Aluminum Alloys Process Piping
  - 40 05 13.33 Brass, Bronze, Copper, and Copper Alloys Process Piping
  - 40 05 13.43 Nickel and Nickel Alloys Process Piping
  - 40 05 13.53 Ductile, Malleable, and Cast Iron Alloys Process Piping
  - 40 05 13.63 Titanium and Titanium Alloys Process Piping
  - 40 05 13.73 Plastic Process Piping
  - 40 05 13.76 Fiberglass-Reinforced Plastic and Resins Process Piping
  - 40 05 13.93 Other Metals Process Piping
- 40 05 23 Common Work Results for Process Valves
  - 40 05 23.13 Carbon Steel Process Valves
  - 40 05 23.16 Low and Intermediate Alloy Steel Process Valves
  - 40 05 23.19 Stainless-Steel Process Valves
  - 40 05 23.33 Brass and Iron Process Valves
  - 40 05 23.43 Nickel and Nickel Alloys Steel Process Valves
  - 40 05 23.73 Plastic and Plastic Lined Process Valves
  - 40 05 23.93 Other Metals Process Valves

### **40 06 00 Schedules for Process Integration**

- 40 06 10 Schedules for Gas and Vapor Process Piping
- 40 06 20 Schedules for Liquids Process Piping
- 40 06 30 Schedules for Solid and Mixed Materials Piping and Chutes
- 40 06 40 Schedules for Process Piping and Equipment Protection

### **40 10 00 Gas and Vapor Process Piping**

#### **40 11 00 Steam Process Piping**

- 40 11 13 Low-Pressure Steam Process Piping
- 40 11 16 Intermediate-Pressure Steam Process Piping

- 40 11 19 High-Pressure Steam Process Piping
- 40 11 23 Condensate Process Piping
- 40 12 00 Compressed Air Process Piping**
  - 40 12 13 Breathing Compressed Air Process Piping
  - 40 12 16 Non-Breathing Compressed Air Process Piping
- 40 13 00 Inert Gases Process Piping**
  - 40 13 13 Argon Process Piping
  - 40 13 16 Carbon-Dioxide Process Piping
  - 40 13 19 Helium Process Piping
  - 40 13 23 Krypton Process Piping
  - 40 13 26 Neon Process Piping
  - 40 13 29 Nitrogen Process Piping
  - 40 13 33 Xenon Process Piping
  - 40 13 93 Mixed Inert Gases Process Piping
- 40 14 00 Fuel Gases Process Piping**
  - 40 14 13 Blast Furnace Piping
  - 40 14 16 Blue (Water) Fuel Gas Piping
  - 40 14 19 Butane Piping
  - 40 14 23 Carbon-Monoxide Piping
  - 40 14 26 Chlorine Fuel Gas Piping
  - 40 14 29 Coke Oven Gas Piping
  - 40 14 33 Ethane-Gas Piping
  - 40 14 36 Hydrogen Fuel Gas Piping
  - 40 14 39 Liquid Natural-Gas Process Piping
  - 40 14 43 Methylacetylene-Propadiene Fuel Gas Piping
  - 40 14 49 Natural-Gas Process Piping
    - 40 14 49.13 Synthetic Natural-Gas Piping
    - 40 14 49.23 Propane-Air Mixes Fuel Gas Piping
  - 40 14 53 Octane Fuel Gas Piping
  - 40 14 59 Propane Fuel Gas Process Piping
  - 40 14 63 Sewage Fuel Gas Piping
  - 40 14 93 Mixed Fuel Gases Piping
- 40 15 00 Combustion System Gas Piping**
  - 40 15 13 Combustion Air Piping
  - 40 15 16 Oxygen Combustion System Gas Piping
  - 40 15 19 Flue-Gas Combustion System Piping
  - 40 15 23 Exothermic-Gas Combustion System Piping
  - 40 15 26 Endothermic-Gas Combustion System Piping
  - 40 15 29 Disassociated-Ammonia-Gas Combustion System Piping
- 40 16 00 Specialty and High-Purity Gases Piping**
  - 40 16 13 Ammonia Gas Piping
  - 40 16 16 Boron Gas Piping

- 40 16 26 Diborane Gas Piping
- 40 16 29 Flourine Gas Piping
- 40 16 33 Hydrogen Sulfide Gas Piping
- 40 16 36 Nitrous-Oxide Gas Process Piping
- 40 16 39 Ozone Gas Piping
- 40 16 43 Phosphine Gas Piping
- 40 16 46 Silane Gas Piping
- 40 16 49 Sulphur-Dioxide Gas Piping
- 40 16 53 Specialty Gas Mixtures Piping
- 40 16 56 High-Purity Gas Piping Components
- 40 17 00 Welding and Cutting Gases Piping**
  - 40 17 13 Acetylene Welding and Cutting Piping
  - 40 17 16 Acetylene-Hydrogen Mix Welding and Cutting Piping
  - 40 17 19 Methylacetylene-Propadiene Welding and Cutting Piping
  - 40 17 23 Oxygen Welding and Cutting Piping
  - 40 17 26 Inert Gas Welding and Cutting Piping
- 40 18 00 Vacuum Systems Process Piping**
  - 40 18 13 Low-Vacuum Systems Process Piping
  - 40 18 16 High-Vacuum Systems Process Piping
- 40 20 00 Liquids Process Piping**
  - 40 21 00 Liquid Fuel Process Piping**
    - 40 21 13 Bio Fuels Process Piping
    - 40 21 16 Gasoline Process Piping
    - 40 21 19 Diesel Process Piping
    - 40 21 23 Fuel-Oils Process Piping
      - 40 21 23.13 No. 2 Fuel-Oil Process Piping
      - 40 21 23.16 No. 4 Fuel-Oil Process Piping
      - 40 21 23.19 No. 5 Fuel-Oil Process Piping
      - 40 21 23.23 No. 6 Fuel-Oil Process Piping
      - 40 21 23.26 Kerosene Process Piping
      - 40 21 23.29 Tar Process Piping
  - 40 22 00 Petroleum Products Piping**
    - 40 22 13 Heavy-Fractions Petroleum Products Piping
    - 40 22 16 Light-Fractions Petroleum Products Piping
  - 40 23 00 Water Process Piping**
    - 40 23 13 Deionized Water Process Piping
    - 40 23 16 Distilled-Water Process Piping
    - 40 23 19 Process Plant Water Piping
    - 40 23 23 Potable Water Process Piping
    - 40 23 29 Recirculated Water Process Piping
    - 40 23 33 Reverse-Osmosis Water Process Piping
    - 40 23 36 Sanitary Water Process Piping

- 40 24 00 Specialty Liquid Chemicals Piping**
  - 40 24 13 Alcohol Piping
  - 40 24 16 Gel Piping
  - 40 24 19 Slurries Process Piping
  - 40 24 23 Thixotropic Liquid Piping
- 40 25 00 Liquid Acids and Bases Piping**
  - 40 25 13 Liquid Acids Piping
  - 40 25 16 Liquid Bases Piping
- 40 26 00 Liquid Polymer Piping**
- 40 30 00 Solid and Mixed Materials Piping and Chutes**
- 40 32 00 Bulk Materials Piping and Chutes**
  - 40 32 13 Abrasive Materials Piping and Chutes
  - 40 32 16 Nonabrasive Materials Piping and Chutes
- 40 33 00 Bulk Materials Valves**
  - 40 33 13 Airlock Bulk Materials Valves
  - 40 33 16 Blind Bulk Materials Valves
  - 40 33 19 Butterfly Bulk Materials Valves
  - 40 33 23 Cone Bulk Materials Valves
  - 40 33 26 Diverter Bulk Materials Valves
  - 40 33 29 Double or Single Dump Bulk Materials Valves
  - 40 33 33 Knife and Slide Gate Bulk Materials Valves
  - 40 33 36 Pinch Bulk Materials Valves
  - 40 33 39 Swing Bulk Materials Valves
  - 40 33 43 Specialty Bulk Materials Valves
- 40 34 00 Pneumatic Conveying Lines**
  - 40 34 13 Dense Phase Pneumatic Conveying Lines
  - 40 34 16 Dilute Phase Pneumatic Conveying Lines
- 40 40 00 Process Piping and Equipment Protection**
- 40 41 00 Process Piping and Equipment Heat Tracing**
  - 40 41 13 Process Piping Heat Tracing**
    - 40 41 13.13 Process Piping Electrical Resistance Heat Tracing
    - 40 41 13.16 Process Piping Electrical Conductance Heat Tracing
    - 40 41 13.19 Process Piping Gas Heat Tracing
    - 40 41 13.23 Process Piping Steam Heat Tracing
    - 40 41 13.26 Process Piping Thermal Fluids Heat Tracing
  - 40 41 23 Process Equipment Heat Tracing**
    - 40 41 23.13 Process Equipment Electrical Resistance Heat Tracing
    - 40 41 23.16 Process Equipment Electrical Conductance Heat Tracing
    - 40 41 23.19 Process Equipment Gas Heat Tracing
    - 40 41 23.23 Process Equipment Steam Heat Tracing

- 40 41 23.26 Process Equipment Thermal Fluids Heat Tracing
- 40 42 00 Process Piping and Equipment Insulation**
  - 40 42 13 Process Piping Insulation**
    - 40 42 13.13 Cryogenic Temperature Process Piping Insulation
    - 40 42 13.16 Low Temperature Process Piping Insulation
    - 40 42 13.19 Intermediate Temperature Process Piping Insulation
    - 40 42 13.23 High Temperature Process Piping Insulation
    - 40 42 13.26 Process Piping Insulation for Specialty Applications
  - 40 42 23 Process Equipment Insulation**
    - 40 42 23.13 Cryogenic Temperature Process Equipment Insulation
    - 40 42 23.16 Low Temperature Process Equipment Insulation
    - 40 42 23.19 Intermediate Temperature Process Equipment Insulation
    - 40 42 23.23 High Temperature Process Equipment Insulation
    - 40 42 23.26 Process Equipment Insulation for Specialty Applications
- 40 46 00 Process Corrosion Protection**
  - 40 46 16 Coatings and Wrappings for Process Corrosion Protection
  - 40 46 42 Cathodic Process Corrosion Protection
- 40 47 00 Refractories**
  - 40 47 13 Silica Refractories
  - 40 47 16 Alumina Refractories
  - 40 47 19 Carbon and Graphite Refractories
  - 40 47 23 Castable Refractories
  - 40 47 26 Rammed Refractories
  - 40 47 29 Refractory Concrete
- 40 80 00 Commissioning of Process Systems**
- 40 90 00 Instrumentation and Control for Process Systems**
  - 40 91 00 Primary Process Measurement Devices**
    - 40 91 13 Chemical Properties Process Measurement Devices**
      - 40 91 13.13 Ammonia Process Measurement Devices
      - 40 91 13.16 Chlorine Process Measurement Devices
      - 40 91 13.19 Fluoride Process Measurement Devices
      - 40 91 13.23 Gas Analysis Process Measurement Devices
      - 40 91 13.26 Gas Chromatograph Process Measurement Devices
      - 40 91 13.29 pH Level Process Measurement Devices
    - 40 91 16 Electromagnetic Process Measurement Devices**
      - 40 91 16.13 Amperes Process Measurement Devices
      - 40 91 16.16 Capacitance Process Measurement Devices
      - 40 91 16.19 Conductivity Process Measurement Devices
      - 40 91 16.23 Inductance Process Measurement Devices
      - 40 91 16.26 Lumens Process Measurement Devices

- 40 91 16.29 Magnetic Field Process Measurement Devices
- 40 91 16.33 Electrical Power Process Measurement Devices
- 40 91 16.36 Radiation Process Measurement Devices
- 40 91 16.39 Electrical Resistance Process Measurement Devices
- 40 91 16.43 Ultraviolet Sensors
- 40 91 16.46 Voltage Process Measurement Devices

#### **40 91 19 Physical Properties Process Measurement Devices**

- 40 91 19.13 Density Process Measurement Devices
- 40 91 19.16 Humidity Process Measurement Devices
- 40 91 19.19 Mass Process Measurement Devices
- 40 91 19.23 Particle Counters Process Measurement Devices
- 40 91 19.26 Gas Pressure Process Measurement Devices
- 40 91 19.29 Liquid Pressure Process Measurement Devices
- 40 91 19.33 Stress/Strain Process Measurement Devices
- 40 91 19.36 Temperature Process Measurement Devices
- 40 91 19.39 Vapor Pressure Process Measurement Devices
- 40 91 19.43 Weight Process Measurement Devices

#### **40 91 23 Miscellaneous Properties Measurement Devices**

- 40 91 23.13 Acceleration Process Measurement Devices
- 40 91 23.16 Angle Process Measurement Devices
- 40 91 23.19 Color Process Measurement Devices
- 40 91 23.23 Count Process Measurement Devices
- 40 91 23.26 Distance Process Measurement Devices
- 40 91 23.29 Energy Process Measurement Devices
- 40 91 23.33 Flow Process Measurement Devices
- 40 91 23.36 Level Process Measurement Devices
- 40 91 23.39 Physical Resistance Process Measurement Devices
- 40 91 23.43 RPM Process Measurement Devices
- 40 91 23.46 Time Process Measurement Devices
- 40 91 23.49 Turbidity Process Measurement Devices
- 40 91 23.53 Velocity Process Measurement Devices

### **40 92 00 Primary Control Devices**

#### **40 92 13 Primary Control Valves**

- 40 92 13.13 Electrically-Operated Primary Control Valves
- 40 92 13.16 Hydraulically-Operated Primary Control Valves
- 40 92 13.19 Pneumatically-Operated Primary Control Valves
- 40 92 13.23 Pressure-Relief Primary Control Valves
- 40 92 13.26 Solenoid Primary Control Valves
- 40 92 13.29 Specialty Primary Control Valves

#### **40 92 29 Current-To-Pressure Converters**

#### **40 92 33 Self-Contained Flow Controllers**

#### **40 92 36 Linear Actuators and Positioners**

#### **40 92 39 Self-Contained Pressure Regulators**

#### **40 92 43 Rotary Actuators**

- 40 92 46 Saturable Core Reactors
- 40 92 49 Variable Frequency Drives
- 40 92 53 Voltage-To-Pressure Converters
- 40 93 00 Analog Controllers/Recorders**
  - 40 93 13 Analog Controllers
    - 40 93 13.13 Electronic Analog Controllers
    - 40 93 13.16 Electro-Hydraulic Analog Controllers
    - 40 93 13.19 Electro-Pneumatic Analog Controllers
    - 40 93 13.23 Hydraulic Analog Controllers
    - 40 93 13.26 Pneumatic Analog Controllers
  - 40 93 23 Chart Recorders
- 40 94 00 Digital Process Controllers**
  - 40 94 13 Digital Process Control Computers
    - 40 94 13.13 Host Digital Process Control Computers
    - 40 94 13.16 Personal Digital Process Control Computers
    - 40 94 13.19 Personal Digital Assistant Digital Process Control Computers
  - 40 94 23 Distributed Process Control Systems
  - 40 94 33 Human - Machine Interfaces
  - 40 94 43 Programmable Logic Process Controllers
- 40 95 00 Process Control Hardware**
  - 40 95 13 Process Control Panels and Hardware
    - 40 95 13.13 Local Process Control Panels and Hardware
    - 40 95 13.23 Main Process Control Panels and Hardware
  - 40 95 20 Process Control Display Devices
  - 40 95 23 Process Control Input/Output Modules
  - 40 95 26 Process Control Instrument Air Piping and Devices
  - 40 95 33 Process Control Networks
    - 40 95 33.13 Cabled Process Control Networks
    - 40 95 33.23 Fiber Optic Process Control Networks
    - 40 95 33.33 Wireless Process Control Networks
  - 40 95 43 Process Control Hardware Interfaces
  - 40 95 46 Process Control Mounting Racks and Supports
  - 40 95 49 Process Control Routers
  - 40 95 53 Process Control Switches
  - 40 95 56 Process Control Transformers
  - 40 95 63 Process Control Wireless Equipment
    - 40 95 63.13 Process Control Wireless Transmitters
    - 40 95 63.16 Process Control Wireless Receivers
    - 40 95 63.19 Process Control Wireless Repeaters
  - 40 95 73 Process Control Wiring
    - 40 95 73.23 Process Control Cable

40 95 73.33 Process Control Conduit, Raceway and Supports

40 95 73.43 Process Control Junction Boxes

**40 96 00 Process Control Software**

40 96 10 Process Control Software Architecture

40 96 15 Process Control Software Input/Output Lists

40 96 20 Process Control Software Instrument Lists

40 96 25 Process Control Software Logic Diagrams

40 96 30 Process Control Software Loop Diagrams

40 96 35 Process Control Software Programming

40 96 40 Process Control Software Reports

**40 97 00 Process Control Auxiliary Devices**

40 97 10 Process Control Annunciators

40 97 15 Process Control Gages

40 97 20 Process Control Rotameters

40 97 25 Process Control Potentiometers

40 97 30 Process Control Test Equipment

**41 00 00 Material Processing and Handling Equipment****41 01 00 Operation and Maintenance of Material Processing and Handling Equipment**

- 41 01 10 Operation and Maintenance of Bulk Material Processing Equipment
- 41 01 20 Operation and Maintenance of Piece Material Handling Equipment
- 41 01 30 Operation and Maintenance of Manufacturing Equipment
- 41 01 40 Operation and Maintenance of Container Processing and Packaging
- 41 01 50 Operation and Maintenance of Material Storage
- 41 01 60 Operation and Maintenance of Mobile Plant Equipment

**41 06 00 Schedules for Material Processing and Handling Equipment**

- 41 06 10 Schedules for Bulk Material Processing Equipment
- 41 06 20 Schedules for Piece Material Handling Equipment
- 41 06 30 Schedules for Manufacturing Equipment
- 41 06 40 Schedules for Container Processing and Packaging
- 41 06 50 Schedules for Material Storage
- 41 06 60 Schedules for Mobile Plant Equipment

**41 08 00 Commissioning of Material Processing and Handling Equipment**

- 41 08 10 Commissioning of Bulk Material Processing Equipment
- 41 08 20 Commissioning of Piece Material Handling Equipment
- 41 08 30 Commissioning of Manufacturing Equipment
- 41 08 40 Commissioning of Container Processing and Packaging
- 41 08 50 Commissioning of Material Storage
- 41 08 60 Commissioning of Mobile Plant Equipment

**41 10 00 Bulk Material Processing Equipment****41 11 00 Bulk Material Sizing Equipment**

- 41 11 13 Bulk Material Agglomerators
- 41 11 16 Bulk Material Air Mill Classifiers
- 41 11 19 Bulk Material Centrifuges
- 41 11 23 Bulk Material Crushers
- 41 11 26 Bulk Material Cyclones
- 41 11 29 Bulk Material Fluid Bed Separators
- 41 11 33 Bulk Material Grinders
- 41 11 36 Bulk Material Homogenizers
- 41 11 39 Bulk Material Lump Breakers
- 41 11 43 Bulk Material Mills

41 11 46 Bulk Material Pulverizers

41 11 49 Bulk Material Screens

41 11 53 Bulk Material Shredders

41 11 56 Bulk Material Sieves

## 41 12 00 Bulk Material Conveying Equipment

41 12 13 Bulk Material Conveyors

41 12 13.13 Airslide Bulk Material Conveyors

41 12 13.16 Auger Bulk Material Conveyors

41 12 13.19 Belt Bulk Material Conveyors

41 12 13.23 Container Bulk Material Conveyors

41 12 13.26 Drag Chain Bulk Material Conveyors

41 12 13.29 Hopper Bulk Material Conveyors

41 12 13.33 Reciprocating Bulk Material Conveyors

41 12 13.36 Screw Bulk Material Conveyors

41 12 13.39 Stacking and Reclaim Bulk Material Conveyors

41 12 13.43 Trough Bulk Material Conveyors

41 12 13.46 Tube Bulk Material Conveyors

41 12 13.49 Vibratory Bulk Material Conveyors

41 12 13.53 Weigh-Belt Bulk Material Conveyors

41 12 16 Bucket Elevators

41 12 19 Pneumatic Conveyors

41 12 19.13 Dense Phase Pneumatic Conveyors

41 12 19.16 Dilute Phase Pneumatic Conveyors

## 41 13 00 Bulk Material Feeders

41 13 13 Bin Activators/Live Bin Bottoms

41 13 23 Feeders

41 13 23.13 Airlock Bulk Material Feeders

41 13 23.16 Apron Bulk Material Feeders

41 13 23.19 Rotary-Valve Bulk Material Feeders

41 13 23.23 Screw Bulk Material Feeders

41 13 23.26 Vibratory Bulk Material Feeders

41 13 23.29 Volumetric Bulk Material Feeders

41 13 23.33 Weigh Bulk Material Feeders

## 41 14 00 Batching Equipment

41 14 13 Bag-Handling Batching Equipment

41 14 16 Batch Cars/Transports

41 14 19 Batch Hoppers

41 14 23 Bulk Bag-Handling Batching Equipment

41 14 26 Blenders

41 14 29 Drum-Handling Batching Equipment

41 14 33 Mixers

41 14 36 Weigh Scales

## 41 20 00 Piece Material Handling Equipment

**41 21 00 Conveyors****41 21 13 Automatic Guided Vehicle Systems****41 21 23 Piece Material Conveyors**

- 41 21 23.13 Belt Piece Material Conveyors
- 41 21 23.16 Container Piece Material Conveyors
- 41 21 23.19 Drag-Chain Piece Material Conveyors
- 41 21 23.23 Hopper Piece Material Conveyors
- 41 21 23.26 Monorail Piece Material Conveyors
- 41 21 23.29 Power and Free Piece Material Conveyors
- 41 21 23.33 Reciprocating Piece Material Conveyors
- 41 21 23.36 Roller Piece Material Conveyors
- 41 21 23.39 Vibratory Piece Material Conveyors
- 41 21 23.43 Walking-Beam Piece Material Conveyors
- 41 21 23.46 Weigh-Belt Piece Material Conveyors
- 41 21 23.53 Postal Conveyors

**41 21 26 Piece Material Diverter Gates****41 21 29 Piece Material Gravity Slides****41 21 33 Piece Material Transfer Cars****41 21 36 Piece Material Turntables****41 21 39 Piece Material Feeders**

- 41 21 39.13 Piece Material Vibratory Feeders

**41 22 00 Cranes and Hoists****41 22 13 Cranes**

- 41 22 13.13 Bridge Cranes
- 41 22 13.16 Gantry Cranes
- 41 22 13.19 Jib Cranes
- 41 22 13.23 Mobile Cranes
- 41 22 13.26 Tower Cranes
- 41 22 13.29 Specialty Cranes

**41 22 23 Hoists**

- 41 22 23.13 Fixed Hoists
- 41 22 23.16 Portable Hoists
- 41 22 23.19 Monorail Hoists
- 41 22 23.23 Specialty Hoists

**41 22 33 Derricks****41 23 00 Lifting Devices****41 23 13 Clamps****41 23 16 Grabs****41 23 19 Hooks****41 23 23 Lifts****41 23 26 Slings****41 23 29 Spreader Bars/Beams****41 23 33 Tongs**

**41 24 00 Specialty Material Handling Equipment**

- 41 24 13 Aeration Devices
- 41 24 16 Bin Vibrators
- 41 24 19 Dehydrators
- 41 24 23 Hydrators
- 41 24 26 Hydraulic Power Systems
- 41 24 29 Lubrication Systems
- 41 24 33 Magnetic Separators
- 41 24 36 Metal Detectors
- 41 24 39 Railcar Movers
- 41 24 43 Turnheads/Distributors
- 41 24 46 Sorting Machines
  - 41 24 46.13 Postal Sorting Machines

**41 30 00 Manufacturing Equipment****41 31 00 Manufacturing Lines and Equipment**

- 41 31 13 Manufacturing Lines
  - 41 31 13.13 Assembly Lines
  - 41 31 13.16 Casting Lines
  - 41 31 13.19 Coating Lines
  - 41 31 13.23 Converting Lines
  - 41 31 13.26 Disassembly Lines
  - 41 31 13.29 Extrusion Lines
  - 41 31 13.33 Machining Lines
  - 41 31 13.36 Molding Lines
  - 41 31 13.39 Finishing/Painting Lines
  - 41 31 13.43 Painting Lines
  - 41 31 13.46 Pickling Lines
  - 41 31 13.49 Plating Lines
  - 41 31 13.53 Polishing Lines
  - 41 31 13.56 Press Lines
  - 41 31 13.59 Rolling/Calendaring Lines
  - 41 31 13.63 Web Processing Lines
- 41 31 16 Pick and Place Systems
- 41 31 19 Manufacturing-Line Robots
- 41 31 23 Specialty Assembly Machines

**41 32 00 Forming Equipment**

- 41 32 13 Bending Equipment
- 41 32 16 Blow-Molding Equipment
- 41 32 19 Brake-Forming Equipment
- 41 32 23 Cold-Forming Equipment
- 41 32 26 Die-Casting Equipment
- 41 32 29 Drawing Equipment
- 41 32 33 Electroforming Equipment

- 41 32 36 Forging Equipment
- 41 32 39 Extruding Equipment
- 41 32 43 Metal-Spinning Equipment
- 41 32 46 Piercing Equipment
- 41 32 49 Powder Metal-Forming Equipment
- 41 32 53 Pressing Equipment
- 41 32 56 Roll-Forming Equipment
- 41 32 59 Shearing Equipment
- 41 32 63 Spinning Equipment
- 41 32 66 Stretching/Leveling Equipment
- 41 32 69 Swaging Equipment

## 41 33 00 Machining Equipment

- 41 33 13 Automatic Screw Machining Equipment
- 41 33 16 Boring Equipment
- 41 33 19 Broaching Equipment
- 41 33 23 Drilling Equipment
- 41 33 26 Electro-Discharge Machining Equipment
- 41 33 29 Grinding Equipment
- 41 33 33 Hobbing Equipment
- 41 33 36 Lapping Equipment
- 41 33 39 Lathe Equipment
- 41 33 43 Leveling Equipment
- 41 33 46 Machining Center Equipment
- 41 33 53 Milling Equipment
  - 41 33 53.13 Horizontal Milling Equipment
  - 41 33 53.16 Vertical Milling Equipment
- 41 33 60 Multi-Axis Machine Equipment
- 41 33 63 Planing Equipment
- 41 33 66 Reaming Equipment
- 41 33 69 Routing Equipment
- 41 33 73 Sawing Equipment
- 41 33 76 Shaping Equipment
- 41 33 79 Threading Equipment

## 41 34 00 Finishing Equipment

- 41 34 13 Anodizing Equipment
- 41 34 16 Barrel Tumbling Equipment
- 41 34 23 Coating Equipment
  - 41 34 23.13 Diffusion Coating Equipment
  - 41 34 23.16 Dipping Coating Equipment
  - 41 34 23.19 Film Coating Equipment
  - 41 34 23.23 Phosphatizing Coating Equipment
  - 41 34 23.26 Plasma Coating Equipment
  - 41 34 23.29 Hardface Welding Coating Equipment
  - 41 34 23.33 Spray Painting Booth

- 41 34 26 Deburring Equipment
- 41 34 36 Electroplating Equipment
- 41 34 46 Grinding Equipment
- 41 34 49 Honing Equipment
- 41 34 53 Lapping Equipment
- 41 34 56 Shot Peening Equipment
- 41 34 59 Superfinishing/Polishing Equipment
- 41 35 00 Dies and Molds**
  - 41 35 13 Dies
    - 41 35 13.13 Drawing Dies
    - 41 35 13.16 Extrusion Dies
    - 41 35 13.19 Press Dies
    - 41 35 13.23 Rotary Dies
    - 41 35 13.26 Rule Dies
  - 41 35 33 Molds
- 41 36 00 Assembly and Testing Equipment**
  - 41 36 13 Applicators
    - 41 36 13.13 Adhesive Applicators
    - 41 36 13.16 Lubricant Applicators
    - 41 36 13.19 Sealer Applicators
  - 41 36 16 Fixtures and Jigs
  - 41 36 19 Joining Equipment
    - 41 36 19.13 Adhesive Joining Equipment
    - 41 36 19.16 Arc-Welding Equipment
    - 41 36 19.19 Brazing Equipment
    - 41 36 19.23 Resistance-Welding Equipment
    - 41 36 19.26 Riveting Equipment
    - 41 36 19.29 Sintering Equipment
    - 41 36 19.33 Soldering Equipment
  - 41 36 23 Cutting Equipment
    - 41 36 23.13 Cutting Torches
    - 41 36 23.16 High-Pressure Water Cutting Equipment
    - 41 36 23.19 Laser Cutting Equipment
    - 41 36 23.23 Plasma Cutting Equipment
  - 41 36 26 Process Tools
    - 41 36 26.13 Air Process Tools
    - 41 36 26.16 Electric Process Tools
    - 41 36 26.19 Hydraulic Process Tools
    - 41 36 26.23 Manual Process Tools
  - 41 36 29 Manufacturing Measurement and Testing Equipment
    - 41 36 29.13 Gages, Rules, and Blocks
    - 41 36 29.16 Penetrant Measurement and Testing Equipment
    - 41 36 29.19 Laser Measurement and Testing Equipment

- 41 36 29.23 Magnaflux Measurement and Testing Equipment
- 41 36 29.26 Optical Comparators
- 41 36 29.29 Profilometers
- 41 36 29.33 Radiograph Measurement and Testing Equipment
- 41 36 29.36 Surface Tables
- 41 36 29.39 Ultrasonic Measurement and Testing Equipment
- 41 36 29.43 Test Weigh Scales

## **41 40 00 Container Processing and Packaging**

### **41 41 00 Container Filling and Sealing**

- 41 41 13 Bulk Container Fillers/Packers
- 41 41 16 Container Cappers
- 41 41 19 Container Fillers
  - 41 41 19.13 Bag Fillers
  - 41 41 19.16 Box Fillers
  - 41 41 19.19 Bottle Fillers
- 41 41 23 Container Sealers

### **41 42 00 Container Packing Equipment**

- 41 42 13 Box Packing Equipment
  - 41 42 13.13 Box Makers
  - 41 42 13.16 Box Packers
- 41 42 16 Bulk Material Loaders
  - 41 42 16.13 Container Bulk Material Loaders
  - 41 42 16.23 Truck Bulk Material Loaders
  - 41 42 16.26 Railcar Bulk Material Loaders
  - 41 42 16.29 Ship Bulk Material Loaders
  - 41 42 16.33 Barge Bulk Material Loaders
- 41 42 19 Carton Packers
- 41 42 23 Carton Sealers
- 41 42 26 Carton Shrink Wrappers
- 41 42 29 Carton Stackers

### **41 43 00 Shipping Packaging**

- 41 43 13 Banding/Strapping Equipment
- 41 43 16 Barcode Equipment
  - 41 43 16.13 Barcode Readers
  - 41 43 16.16 Barcode Printers
- 41 43 19 Labeling Equipment
- 41 43 23 Pallet Stacking/Wrapping Equipment

## **41 50 00 Material Storage**

### **41 51 00 Automatic Material Storage**

- 41 51 13 Automatic Storage/Automatic Retrieval Systems

**41 52 00 Bulk Material Storage****41 52 13 Bins and Hoppers**

- 41 52 13.13 Fixed Bins and Hoppers
- 41 52 13.23 Portable Bins and Hoppers
- 41 52 13.33 Bulk Material Containers
- 41 52 13.43 Returnable Bins and Hoppers
- 41 52 13.53 Throwaway Bins and Hoppers

**41 52 16 Silos**

- 41 52 16.13 Concrete Silos
- 41 52 16.16 Concrete Masonry Unit Silos
- 41 52 16.19 Steel Silos

**41 52 19 Material Storage Tanks**

- 41 52 19.13 Horizontal Material Storage Tanks
- 41 52 19.23 Vertical Material Storage Tanks
- 41 52 19.33 Portable Material Storage Tanks

**41 53 00 Storage Equipment and Systems**

- 41 53 13 Storage Cabinets
- 41 53 16 Container Storage Systems
- 41 53 19 Flat Files
- 41 53 23 Storage Racks
- 41 53 26 Mezzanine Storage Systems

**41 60 00 Mobile Plant Equipment****41 61 00 Mobile Earth Moving Equipment**

- 41 61 13 Backhoes
- 41 61 16 Bulldozers
- 41 61 19 Compactors
- 41 61 23 Excavators
- 41 61 26 Graders
- 41 61 29 Payloaders
- 41 61 33 Trenchers

**41 62 00 Trucks**

- 41 62 13 Cement Mixer Trucks
- 41 62 16 Dump Trucks
- 41 62 19 Flatbed Trucks
- 41 62 23 Forklift Trucks
- 41 62 26 Pickup Trucks
- 41 62 29 Tank Trucks

**41 63 00 General Vehicles**

- 41 63 13 Bicycles
- 41 63 16 Carts
- 41 63 19 Maintenance Vehicles

- 41 63 23 Utility Vehicles
- 41 63 26 Vans
- 41 63 29 Wagons
- 41 64 00 Rail Vehicles**
  - 41 64 13 Locomotives
    - 41 64 13.13 Diesel Locomotives
    - 41 64 13.23 Electric Locomotives
  - 41 64 16 Mobile Railcar Movers
- 41 65 00 Mobile Support Equipment**
  - 41 65 13 Mobile Air Compressors
  - 41 65 16 Mobile Generators
  - 41 65 19 Mobile Welders
- 41 66 00 Miscellaneous Mobile Equipment**
  - 41 66 13 Mobile Boring and Drilling Rigs
  - 41 66 16 Mobile Lifts and Cherrypickers
  - 41 66 19 Mobile Paving Equipment
  - 41 66 23 Mobile Sweepers/Vacuums
- 41 67 00 Plant Maintenance Equipment**
  - 41 67 13 Plant Lube Oil System
  - 41 67 16 Plant Fall Protection Equipment
  - 41 67 19 Plant Safety Equipment
  - 41 67 23 Plant Maintenance Tools
  - 41 67 26 Plant Maintenance Washing Equipment

- 42 00 00 Process Heating, Cooling, and Drying Equipment**
- 42 01 00 Operation and Maintenance of Process Heating, Cooling, and Drying Equipment**
  - 42 01 10 Operation and Maintenance of Process Heating Equipment
  - 42 01 20 Operation and Maintenance of Process Cooling Equipment
  - 42 01 30 Operation and Maintenance of Process Drying Equipment
- 42 06 00 Schedules for Process Heating, Cooling, and Drying Equipment**
  - 42 06 10 Schedules for Process Heating Equipment
  - 42 06 20 Schedules for Process Cooling Equipment
  - 42 06 30 Schedules for Process Drying Equipment
- 42 08 00 Commissioning of Process Heating, Cooling, and Drying Equipment**
  - 42 08 10 Commissioning of Heating Equipment
  - 42 08 20 Commissioning of Cooling Equipment
  - 42 08 30 Commissioning of Drying Equipment
- 42 10 00 Process Heating Equipment**
  - 42 11 00 Process Boilers**
    - 42 11 13 Low-Pressure Process Boilers
    - 42 11 16 Intermediate-Pressure Process Boilers
    - 42 11 19 High-Pressure Process Boilers
    - 42 11 23 Specialty Process Boilers
  - 42 12 00 Process Heaters**
    - 42 12 13 Electric Process Heaters
    - 42 12 16 Fuel-Fired Process Heaters
    - 42 12 19 Thermoelectric Process Heaters
    - 42 12 23 Solar Process Heaters
    - 42 12 26 Specialty Process Heaters
  - 42 13 00 Industrial Heat Exchangers and Recuperators**
    - 42 13 13 Industrial Gas-to-Gas Heat Exchangers
    - 42 13 16 Industrial Liquid-to-Gas/Gas-to-Liquid Heat Exchangers
    - 42 13 19 Industrial Liquid-to-Liquid Heat Exchangers
    - 42 13 23 Industrial Gas Radiation Heat Exchangers
    - 42 13 26 Industrial Solar Radiation Heat Exchangers

**42 14 00 Industrial Furnaces**

- 42 14 13 Annealing Furnaces
- 42 14 16 Atmosphere Generators
- 42 14 19 Industrial Baking Furnaces
- 42 14 23 Industrial Brazing Furnaces
- 42 14 26 Industrial Calcining Furnaces
- 42 14 29 Industrial Heat-Treating Furnaces
- 42 14 33 Industrial Melting Furnaces
  - 42 14 33.13 Ceramics and Glass Melting Furnaces
  - 42 14 33.16 Ferrous Melting Furnaces
  - 42 14 33.19 Non-Ferrous Melting Furnaces
- 42 14 36 Primary Refining Furnaces
- 42 14 43 Reactor Furnaces
- 42 14 46 Industrial Reheat Furnaces
- 42 14 53 Industrial Sintering Furnaces
- 42 14 56 Industrial Vacuum Furnaces

**42 15 00 Industrial Ovens**

- 42 15 13 Industrial Drying Ovens
- 42 15 16 Industrial Curing Ovens
- 42 15 19 Industrial Specialty Ovens

**42 20 00 Process Cooling Equipment****42 21 00 Process Cooling Towers**

- 42 21 13 Open-Circuit Process Cooling Towers
- 42 21 16 Closed-Circuit Process Cooling Towers

**42 22 00 Process Chillers and Coolers**

- 42 22 13 Centrifugal Process Chillers and Coolers
- 42 22 16 Reciprocating Process Chillers and Coolers
- 42 22 19 Refrigerant Process Chillers and Coolers
- 42 22 23 Rotary Process Chillers and Coolers
- 42 22 26 Thermoelectric Process Chillers and Coolers

**42 23 00 Process Condensers and Evaporators**

- 42 23 13 Process Condensers
- 42 23 16 Process Cooling Evaporators
- 42 23 19 Process Humidifiers

**42 30 00 Process Drying Equipment****42 31 00 Gas Dryers and Dehumidifiers**

- 42 31 13 Drying Evaporators
- 42 31 16 Desiccant Equipment
- 42 31 19 Regenerative Dryers
- 42 31 23 Refrigerant Dryers

**42 32 00    Material Dryers**

- 42 32 13    Centrifugal Material Dryers
- 42 32 16    Conveyor Material Dryers
- 42 32 19    Flash Material Dryers
- 42 32 23    Fluid-Bed Material Dryers
- 42 32 26    Material Roasters
- 42 32 29    Rotary-Kiln Material Dryers
- 42 32 33    Spray Material Dryers
- 42 32 36    Tower Material Dryers
- 42 32 39    Vacuum Material Dryers
- 42 32 43    Specialty Material Dryers

- 43 00 00 Process Gas and Liquid Handling, Purification, and Storage Equipment**
- 43 01 00 Operation and Maintenance of Process Gas and Liquid Handling, Purification, and Storage Equipment**
  - 43 01 10 Operation and Maintenance of Gas Handling Equipment
  - 43 01 20 Operation and Maintenance of Liquid Handling Equipment
  - 43 01 30 Operation and Maintenance of Gas and Liquid Hi-Purification Equipment
  - 43 01 40 Operation and Maintenance of Gas and Liquid Storage
- 43 06 00 Schedules for Process Gas and Liquid Handling, Purification, and Storage Equipment**
  - 43 06 10 Schedules for Gas Handling Equipment
  - 43 06 20 Schedules for Liquid Handling Equipment
  - 43 06 30 Schedules for Gas and Liquid Hi-Purification Equipment
  - 43 06 40 Schedules for Gas and Liquid Storage
- 43 08 00 Commissioning of Process Gas and Liquid Handling, Purification, and Storage Equipment**
  - 43 08 10 Commissioning of Gas Handling Equipment
  - 43 08 20 Commissioning of Liquid Handling Equipment
  - 43 08 30 Commissioning of Gas and Liquid Purification Equipment
  - 43 08 40 Commissioning of Gas and Liquid Storage
- 43 10 00 Gas Handling Equipment**
  - 43 11 00 Gas Fans, Blowers and Pumps**
    - 43 11 13 Gas Handling Fans
      - 43 11 13.13 Axial Gas Handling Fans
      - 43 11 13.16 Centrifugal Gas Handling Fans
    - 43 11 23 Gas Handling Blowers
    - 43 11 26 Gas Handling Jet Pumps
    - 43 11 29 Gas Handling Vacuum Pumps
  - 43 12 00 Gas Compressors**
    - 43 12 13 Centrifugal Gas Compressors
    - 43 12 16 Piston Gas Compressors
    - 43 12 19 Positive Displacement Gas Compressors
    - 43 12 23 Rotary-Screw Gas Compressors
    - 43 12 26 Vane Gas Compressors
  - 43 13 00 Gas Process Equipment**

- 43 13 13 Process Gas Blenders
- 43 13 16 Process Gas Meters
- 43 13 19 Process Gas Mixers
- 43 13 23 Process Gas Pressure Regulators

## 43 20 00 Liquid Handling Equipment

### 43 21 00 Liquid Pumps

- 43 21 13 Centrifugal Liquid Pumps
- 43 21 16 Diaphragm Liquid Pumps
- 43 21 19 Dispensing Liquid Pumps
- 43 21 23 Drum Liquid Pumps
- 43 21 26 Gear Liquid Pumps
- 43 21 29 Metering Liquid Pumps
- 43 21 33 Piston/Plunger Liquid Pumps
- 43 21 36 Positive Displacement Liquid Pumps
- 43 21 39 Submersible Liquid Pumps
- 43 21 43 Sump Liquid Pumps
- 43 21 46 Vane Liquid Pumps

### 43 22 00 Liquid Process Equipment

- 43 22 13 Liquid Aeration Devices
- 43 22 16 Liquid Agitators
- 43 22 19 Liquid Blenders
- 43 22 23 Liquid Centrifuges
- 43 22 26 Liquid Deaerators
- 43 22 29 Drum Handling Liquid Process Equipment
- 43 22 33 Liquid Emulsifiers
- 43 22 36 Liquid Evaporators
- 43 22 39 Liquid Feeders
- 43 22 43 Liquid Filters
  - 43 22 43.13 Cyclonic Liquid Filters
  - 43 22 43.16 Media Liquid Filters
  - 43 22 43.19 Press Liquid Filters
- 43 22 53 Liquid Process Meters
- 43 22 56 Liquid Process Mixers
- 43 22 59 Liquid Process Pressure Regulators
- 43 22 63 Liquid Separation Towers
- 43 22 66 Liquid Weigh Systems

## 43 30 00 Gas and Liquid Purification Equipment

### 43 31 00 Gas and Liquid Purification Filtration Equipment

- 43 31 13 Gas and Liquid Purification Filters
  - 43 31 13.13 Activated Carbon-Gas and Liquid Purification Filters
  - 43 31 13.16 Gas and Liquid Purification Filter Presses
  - 43 31 13.19 High-Purity Cartridge Gas and Liquid Purification Filters

- 43 31 13.23 Membrane Diaphragm Gas and Liquid Purification Filters
- 43 31 13.26 Multimedia Gas and Liquid Purification Filters
- 43 31 13.29 Pretreatment Cartridge Gas and Liquid Purification Filters
- 43 31 13.33 Ultrafilter Units

## **43 32 00 Gas and Liquid Purification Process Equipment**

- 43 32 13 Gas and Liquid Purification Process Beds**
  - 43 32 13.13 Anion-Gas and Liquid Purification Process Beds
  - 43 32 13.16 Cation-Gas and Liquid Purification Process Beds
- 43 32 23 Gas and Liquid Purification Process Clarifier Systems**
- 43 32 26 Gas and Liquid Purification Decarbonators**
- 43 32 29 Electronic Deionization Purification Units**
- 43 32 33 External Regeneration Systems**
- 43 32 36 Mixed-Bed Ion-Exchange Vessels**
- 43 32 39 Gas and Liquid Purification Mixed Beds**
  - 43 32 39.13 Externally Regenerable Gas and Liquid Purification Mixed Beds
  - 43 32 39.16 In-Situ Regenerable Gas and Liquid Purification Mixed Beds
- 43 32 53 Packed-Bed Ion-Exchange Vessels**
- 43 32 56 Reverse-Osmosis Purification Units**
- 43 32 59 Gas and Liquid Purification Scrubbers**
- 43 32 63 Ultraviolet Sterilizers**
- 43 32 66 Vacuum Degasifiers**
- 43 32 69 Chemical Feed Systems**
- 43 32 73 Ozonation Equipment**
- 43 32 76 Chlorination Equipment**

## **43 40 00 Gas and Liquid Storage**

### **43 41 00 Gas and Liquid Storage Equipment**

- 43 41 13 Gas and Liquid Pressure Vessels**
  - 43 41 13.13 Ferrous Gas and Liquid Pressure Vessels
  - 43 41 13.16 Nonferrous Gas and Liquid Pressure Vessels
  - 43 41 13.19 Fiberglass Gas and Liquid Pressure Vessels
- 43 41 16 Atmospheric Tanks and Vessels**
  - 43 41 16.13 Horizontal Atmospheric Tanks and Vessels
  - 43 41 16.16 Vertical Atmospheric Tanks and Vessels

- 44 00 00 Pollution and Waste Control Equipment**
- 44 01 00 Operation and Maintenance of Pollution and Waste Control Equipment**
  - 44 01 10 Operation and Maintenance of Air Pollution Control
  - 44 01 20 Operation and Maintenance of Noise Pollution Control
  - 44 01 30 Operation and Maintenance of Odor Control Equipment
  - 44 01 40 Operation and Maintenance of Water Pollution Control Equipment
  - 44 01 50 Operation and Maintenance of Solid Waste Control and Reuse
  - 44 01 60 Operation and Maintenance of Waste Thermal Processing Equipment
- 44 05 00 Common Work Results for Pollution and Waste Control Equipment**
- 44 06 00 Schedules for Pollution and Waste Control Equipment**
  - 44 06 10 Schedules for Air Pollution Control
  - 44 06 20 Schedules for Noise Pollution Control
  - 44 06 30 Schedules for Odor Control Equipment
  - 44 06 40 Schedules for Water Pollution Control Equipment
  - 44 06 50 Schedules for Solid Waste Control and Reuse
  - 44 06 60 Schedules for Waste Thermal Processing Equipment
- 44 08 00 Commissioning of Pollution and Waste Control Equipment**
  - 44 08 10 Commissioning of Air Pollution Control
  - 44 08 20 Commissioning of Noise Pollution Control
  - 44 08 30 Commissioning of Odor Control Equipment
  - 44 08 40 Commissioning Water Pollution Control Equipment
  - 44 08 50 Commissioning Solid Waste Control and Reuse
  - 44 08 60 Commissioning of Waste Thermal Processing Equipment
- 44 10 00 Air Pollution Control**
  - 44 11 00 Particulate Control Equipment**
    - 44 11 13 Fugitive Dust Control
    - 44 11 16 Fugitive Dust Barrier Systems
    - 44 11 19 Atmospheric Air Quality Monitoring Equipment
    - 44 11 20 Gravitational Separators
    - 44 11 23 Fugitive Dust Control
    - 44 11 26 Air Pollution Control Precipitators
    - 44 11 31 Venturi Scrubbing Equipment

- 44 11 33 Spray Tower/Chamber Scrubbing Equipment
- 44 11 36 Cyclone Scrubbing Equipment
- 44 11 51 Pulse Jet Fabric Filtration Equipment
- 44 11 53 Reverse Flow Fabric Filtration Equipment
- 44 11 54 Shake/Deflate Fabric Filtration Equipment
- 44 11 56 Cartridge Filtration Equipment
- 44 11 59 Disposable Dry Filtration Equipment
- 44 11 71 Cyclone Dust Collection Equipment
- 44 11 73 Multicyclone Dust Collection Equipment
- 44 11 76 Mist Elimination Equipment
- 44 11 93 Wet Electrostatic Precipitator Equipment
- 44 11 96 Dry Plate Electrostatic Precipitator Equipment

#### **44 13 00 Gaseous Air Pollution Control Equipment**

- 44 13 11 Spray Tower/Chamber Absorption Equipment
- 44 13 13 Packed Tower/Chamber Absorption Equipment
- 44 13 14 Tray Tower Absorption Equipment
- 44 13 16 Jet Bubbling Reactor Equipment
- 44 13 17 Venturi Absorption Equipment
- 44 13 20 Vacuum Extraction Systems
- 44 13 31 Powdered Injection Adsorption Equipment
- 44 13 33 Fluidized Bed Adsorption Equipment
- 44 13 34 Fixed Bed Adsorption Equipment
- 44 13 36 Rotary Bed Adsorption Equipment
- 44 13 39 Radial Bed Adsorption Equipment
- 44 13 51 Thermal Oxidation Equipment
- 44 13 53 Catalytic Oxidation Equipment
- 44 13 56 Flare Oxidation Equipment
- 44 13 59 Claus Sulfur Recovery Equipment
- 44 13 71 Thermal Reduction Equipment
- 44 13 73 Catalytic Reduction Equipment
- 44 13 76 Non-catalytic Reduction Equipment
- 44 13 77 Selective Non-catalytic Reduction Equipment
- 44 13 81 Condensation Systems
- 44 13 83 Contact Condensing Equipment
- 44 13 86 Solvent Recovery Equipment
- 44 13 91 Biofilter Media
- 44 13 93 Fixed Bed Biofilter Equipment
- 44 13 96 Fixed Bed Biotrickling Filter Equipment
- 44 13 97 Fixed Bed Bioscrubbing Equipment

#### **44 20 00 Noise Pollution Control**

##### **44 21 00 Noise Pollution Control Equipment**

- 44 21 13 Fixed Noise Abatement Barriers
- 44 21 16 Flexible Noise Abatement Barriers
- 44 21 19 Portable Noise Abatement Barriers

44 21 23 Noise Pollution Silencers

44 21 26 Frequency Cancellers

## **44 30 00 Odor Control**

### **44 31 00 Odor Treatment Equipment**

44 31 11 Wet Chemical Packed Tower Odor Control Equipment

44 31 13 Chemical Mist System Odor Control Equipment

44 31 16 Activated Carbon Adsorption Odor Control Equipment

44 31 19 Packaged Odor Control Systems

44 31 21 Odor Control Biofilters

44 31 28 Odor Control Biofilter Aeration Floor

44 31 29 Odor Control Biofilter Media

44 31 31 Odor Control Biotrickling Filter Equipment

44 31 33 Odor Control Bioscrubbing Equipment

44 31 41 Odor Control Vapor Combustion Equipment

44 31 83 Adjusting and Balancing Odor Control Systems

### **44 32 00 Odor Dispersing and Masking/Counteracting Equipment**

44 32 13 Odor Dispersing Exhaust Stacks

44 32 13.13 Fan-equipped Odor Dispersing Exhaust Stacks

44 32 23 Odor Masking/Counteracting Equipment

## **44 40 00 Water Pollution Control Equipment**

### **44 41 00 Water Pollution Containment and Cleanup Equipment**

44 41 13 Spill Cleanup

44 41 21 Containment Booms

44 41 23 Marine Spill Accessories

44 41 31 Spill Decks

44 41 32 Drum Containment Units

44 41 33 Containment Pallets

44 41 34 Prefabricated Spill Containment Curbing

44 41 36 Prefabricated Spill Containment Berms

44 41 37 Prefabricated Berms for Tank Containment

44 41 41 Collapsible Storage Tanks

## **44 50 00 Solid Waste Control and Reuse**

### **44 51 00 Solid Waste Collection, Transfer, and Hauling Equipment**

44 51 13 Solid Waste Portable Containers

44 51 16 Solid Waste Stationary Containers

44 51 23 Solid Waste Transfer Trailers

**44 53 00 Solid Waste Processing Equipment**

- 44 53 11 Live-floor Storage Bins
- 44 53 13 Refuse Cranes and Accessories
- 44 53 16 Solid Waste Screens
- 44 53 21 Car Crushers
- 44 53 23 Shears and Guillotines
- 44 53 26 Shredders and Grinders
- 44 53 27 Perforators
- 44 53 31 Bag Breakers
- 44 53 33 Granulators
- 44 53 36 Crumb Rubber Systems
- 44 53 39 Briquetters
- 44 53 41 Vibratory Table Separation Equipment
- 44 53 43 Ferrous Metals Separation Equipment
- 44 53 44 Eddy Current Separators
- 44 53 46 Single-stream Materials Separation Equipment
- 44 53 49 Ballistic Separators
- 44 53 51 Air Classifying Equipment
- 44 53 52 Air Knives
- 44 53 53 Optical Sorting Equipment
- 44 53 56 Packaged Sorting Stations
- 44 53 59 Packaged Reclaimer Stations
- 44 53 61 Solid Waste Compactors
- 44 53 63 Solid Waste Baling Equipment
- 44 53 64 Bagging Equipment
- 44 53 66 Wrappers
- 44 53 73 Solid Waste Liquid Extraction Equipment

**44 55 00 Composting Equipment**

- 44 55 11 Electromechanical Composters
- 44 55 13 Compost Screening Equipment
- 44 55 16 Compost Shredding Equipment
- 44 55 23 Compost Pile Turning Equipment
- 44 55 26 Compost Mixing and Blending Equipment
- 44 55 33 In-vessel Composting Equipment
- 44 55 43 Compost Pad System
- 44 55 73 Compost Liquid Extraction Equipment

**44 60 00 Waste Thermal Processing Equipment****44 61 00 Waste-to-Energy Plants**

- 44 61 13 Waste Receiving, Management, and Feed Equipment
- 44 61 16 Mass Burn Combustion Equipment
- 44 61 23 Refuse-derived Fuel Feed Equipment
- 44 61 26 Refuse-derived Fuel Combustion Equipment
- 44 61 29 Modular Combustion System Equipment
- 44 61 31 Ash Handling Equipment

- 44 61 33 Post-combustion Ferrous Metals Recovery Equipment
- 44 61 36 Post-combustion Non-ferrous Metals Recovery Equipment
- 44 62 00 Fluidized Bed Combustion Equipment**
- 44 63 00 Rotary Kiln Incinerators**
- 44 64 00 Gasification Equipment**
  - 44 64 13 Counter-current Fixed Bed Gasification Equipment
  - 44 64 23 Co-current Fixed Bed Gasification Equipment
  - 44 64 33 Fluidized Bed Gasification Equipment
  - 44 64 43 Entrained Flow Gasification Equipment
  - 44 64 53 Plasma Arc Gasification Equipment
- 44 65 00 Pyrolysis Equipment**
- 44 66 00 Hazardous Waste and Medical Waste Incinerators**
- 44 67 00 Heat Recovery Equipment for Waste Thermal Processing**
- 44 68 00 Synthesis Gas Cleanup and Handling Equipment**

- 45 00 00 Industry-Specific Manufacturing Equipment**
- 45 08 00 Commissioning of Industry-Specific Manufacturing Equipment**
- 45 11 00 Oil and Gas Extraction Equipment**
  - 45 11 01 Operation and Maintenance of Oil and Gas Extraction Equipment
  - 45 11 06 Schedules for Oil and Gas Extraction Equipment
  - 45 11 10 thru
  - 45 12 99 User-Defined Oil and Gas Extraction Equipment
- 45 13 00 Mining Machinery and Equipment**
  - 45 13 01 Operation and Maintenance of Mining Machinery and Equipment
  - 45 13 06 Schedules for Mining Machinery and Equipment
  - 45 13 10 thru
  - 45 14 99 User-Defined Mining Machinery and Equipment
- 45 15 00 Food Manufacturing Equipment**
  - 45 15 01 Operation and Maintenance of Food Manufacturing Equipment
  - 45 15 06 Schedules for Food Manufacturing Equipment
  - 45 15 10 thru
  - 45 16 99 User-Defined Food Manufacturing Equipment
- 45 17 00 Beverage and Tobacco Manufacturing Equipment**
  - 45 17 01 Operation and Maintenance of Beverage and Tobacco Manufacturing Equipment
  - 45 17 06 Schedules for Beverage and Tobacco Manufacturing Equipment
  - 45 17 10 thru
  - 45 18 99 User-Defined Beverage and Tobacco Manufacturing Equipment
- 45 19 00 Textiles and Apparel Manufacturing Equipment**
  - 45 19 01 Operation and Maintenance of Textiles and Apparel Manufacturing Equipment
  - 45 19 06 Schedules for Textiles and Apparel Manufacturing Equipment
  - 45 19 10 thru
  - 45 20 99 User-Defined Textiles and Apparel Manufacturing Equipment
- 45 21 00 Leather and Allied Product Manufacturing Equipment**

- 45 21 01 Operation and Maintenance of Leather and Allied Product Manufacturing Equipment
- 45 21 06 Schedules for Leather and Allied Product Manufacturing Equipment
- 45 21 10 thru
- 45 22 99 User-Defined Leather and Allied Product Manufacturing Equipment
- 45 23 00 Wood Product Manufacturing Equipment**
  - 45 23 01 Operation and Maintenance of Wood Product Manufacturing Equipment
  - 45 23 06 Schedules for Wood Product Manufacturing Equipment
  - 45 23 10 thru
  - 45 24 99 User-Defined Wood Product Manufacturing Equipment
- 45 25 00 Paper Manufacturing Equipment**
  - 45 25 01 Operation and Maintenance of Paper Manufacturing Equipment
  - 45 25 06 Schedules for Paper Manufacturing Equipment
  - 45 25 10 thru
  - 45 26 99 User-Defined Paper Manufacturing Equipment
- 45 27 00 Printing and Related Manufacturing Equipment**
  - 45 27 01 Operation and Maintenance of Printing and Related Manufacturing Equipment
  - 45 27 06 Schedules for Printing and Related Manufacturing Equipment
  - 45 27 10 thru
  - 45 28 99 User-Defined Printing and Related Manufacturing Equipment
- 45 29 00 Petroleum and Coal Products Manufacturing Equipment**
  - 45 29 01 Operation and Maintenance of Petroleum and Coal Products Manufacturing Equipment
  - 45 29 06 Schedules for Petroleum and Coal Products Manufacturing Equipment
  - 45 29 10 thru
  - 45 30 99 User-Defined Petroleum and Coal Products Manufacturing Equipment
- 45 31 00 Chemical Manufacturing Equipment**
  - 45 31 01 Operation and Maintenance of Chemical Manufacturing Equipment
  - 45 31 06 Schedules for Chemical Manufacturing Equipment
  - 45 31 10 thru

- 45 32 99 User-Defined Chemical Manufacturing Equipment
- 45 33 00 Plastics and Rubber Manufacturing Equipment**
  - 45 33 01 Operation and Maintenance of Plastics and Rubber Manufacturing Equipment
  - 45 33 06 Schedules for Plastics and Rubber Manufacturing Equipment
  - 45 33 10 thru
  - 45 34 99 User-Defined Plastics and Rubber Manufacturing Equipment
- 45 35 00 Nonmetallic Mineral Product Manufacturing Equipment**
  - 45 35 01 Operation and Maintenance of Nonmetallic Mineral Product Manufacturing Equipment
  - 45 35 06 Schedules for Nonmetallic Mineral Product Manufacturing Equipment
  - 45 35 10 thru
  - 45 36 99 User-Defined Nonmetallic Mineral Product Manufacturing Equipment
- 45 37 00 Primary Metal Manufacturing Equipment**
  - 45 37 01 Operation and Maintenance of Primary Metal Manufacturing Equipment
  - 45 37 06 Schedules for Primary Metal Manufacturing Equipment
  - 45 37 10 thru
  - 45 38 99 User-Defined Primary Metal Manufacturing Equipment
- 45 39 00 Fabricated Metal Product Manufacturing Equipment**
  - 45 39 01 Operation and Maintenance of Fabricated Metal Product Manufacturing Equipment
  - 45 39 06 Schedules for Fabricated Metal Product Manufacturing Equipment
  - 45 39 10 thru
  - 45 40 99 User-Defined Fabricated Metal Product Manufacturing Equipment
- 45 41 00 Machinery Manufacturing Equipment**
  - 45 41 01 Operation and Maintenance of Machinery Manufacturing Equipment
  - 45 41 06 Schedules for Machinery Manufacturing Equipment
  - 45 41 10 thru
  - 45 42 99 User-Defined Machinery Manufacturing Equipment

- 45 43 00 Computer and Electronic Product Manufacturing Equipment**
  - 45 43 01 Operation and Maintenance of Computer and Electronic Product Manufacturing Equipment
  - 45 43 06 Schedules for Computer and Electronic Product Manufacturing Equipment
  - 45 43 10 thru
  - 45 44 99 User-Defined Computer and Electronic Product Manufacturing Equipment
  
- 45 45 00 Electrical Equipment, Appliance, and Component Manufacturing Equipment**
  - 45 45 01 Operation and Maintenance of Electrical Equipment, Appliance, and Component Manufacturing Equipment
  - 45 45 06 Schedules for Electrical Equipment, Appliance, and Component Manufacturing Equipment
  - 45 45 10 thru
  - 45 46 99 User-Defined Electrical Equipment, Appliance, and Component Manufacturing Equipment
  
- 45 47 00 Transportation Manufacturing Equipment**
  - 45 47 01 Operation and Maintenance of Transportation Manufacturing Equipment
  - 45 47 06 Schedules for Transportation Manufacturing Equipment
  - 45 47 10 thru
  - 45 48 99 User-Defined Transportation Manufacturing Equipment
  
- 45 49 00 Furniture and Related Product Manufacturing Equipment**
  - 45 49 01 Operation and Maintenance of Furniture and Related Product Manufacturing Equipment
  - 45 49 06 Schedules for Furniture and Related Product Manufacturing Equipment
  - 45 49 10 thru
  - 45 50 99 User-Defined Furniture and Related Product Manufacturing Equipment
  
- 45 51 00 Other Manufacturing Equipment**
  - 45 51 01 Operation and Maintenance of Other Manufacturing Equipment
  - 45 51 06 Schedules for Other Manufacturing Equipment
  - 45 51 10 thru
  - 45 52 99 User-Defined Other Manufacturing Equipment

- 46 00 00 Water and Wastewater Equipment**
- 46 01 00 Operation and Maintenance of Water and Wastewater Equipment**
  - 46 01 07 Operation and Maintenance of Packaged Treatment Equipment
  - 46 01 20 Operation and Maintenance of Preliminary Treatment Equipment
  - 46 01 30 Operation and Maintenance of Chemical Feed Equipment
  - 46 01 40 Operation and Maintenance of Clarification and Mixing Equipment
  - 46 01 50 Operation and Maintenance of Secondary Treatment Equipment
  - 46 01 60 Operation and Maintenance of Advanced Treatment Equipment
  - 46 01 70 Operation and Maintenance of Residuals Handling and Treatment
- 46 05 00 Common Work Results for Water and Wastewater Equipment**
- 46 06 00 Schedules for Water and Wastewater Equipment**
  - 46 06 07 Schedules for Packaged Treatment Equipment
  - 46 06 20 Schedules for Preliminary Treatment Equipment
  - 46 06 30 Schedules for Chemical Feed Equipment
  - 46 06 40 Schedules for Clarification and Mixing Equipment
  - 46 06 50 Schedules for Secondary Treatment Equipment
  - 46 06 60 Schedules for Advanced Treatment Equipment
  - 46 06 70 Schedules for Residuals Handling and Treatment
- 46 07 00 Packaged Water and Wastewater Treatment Equipment**
  - 46 07 13 Packaged Water Treatment Equipment
  - 46 07 53 Packaged Wastewater Treatment Equipment
- 46 08 00 Commissioning of Water and Wastewater Equipment**
  - 46 08 07 Commissioning of Packaged Treatment Equipment
  - 46 08 20 Commissioning of Preliminary Treatment Equipment
  - 46 08 30 Commissioning of Chemical Feed Equipment
  - 46 08 40 Commissioning of Clarification and Mixing Equipment
  - 46 08 50 Commissioning of Secondary Treatment Equipment
  - 46 08 60 Commissioning of Advanced Treatment Equipment
  - 46 08 70 Commissioning of Residuals Handling and Treatment

## 46 20 00 Water and Wastewater Preliminary Treatment Equipment

### 46 21 00 Screening Equipment

- 46 21 11 Climber-type Bar Screens
- 46 21 13 Chain-and-Rake Bar Screens
- 46 21 16 Flexible Rake Bar Screens
- 46 21 17 Catenary Bar Screens
- 46 21 19 Continuous Belt Screens
- 46 21 23 Cylindrical Bar Screens
- 46 21 26 Step Screens
- 46 21 33 Rotary Drum Screens
- 46 21 39 Spiral Screens
- 46 21 43 Band Screens
- 46 21 46 Disc Screens
- 46 21 51 Traveling Water Screens
- 46 21 53 Perforated Plate Screens
- 46 21 56 Wedge Wire Screens
- 46 21 57 Element Screens
- 46 21 71 Trash Raking Equipment
- 46 21 73 Screenings Washing and Compacting Equipment
- 46 21 76 Vacuum Screenings Conveying Equipment
- 46 21 79 Screenings Storage Containers
- 46 21 83 Septage Receiving Equipment

### 46 23 00 Grit Removal and Handling Equipment

- 46 23 13 Chain-and-Bucket Grit Removal Equipment
- 46 23 16 Chain-and-Flight Grit Removal Equipment
- 46 23 23 Vortex Grit Removal Equipment
- 46 23 27 Cyclone Degritters
- 46 23 33 Aerated Grit Removal Equipment
- 46 23 43 Inline Baffled Grit Removal Equipment
- 46 23 53 Traveling Bridge Grit Removal Equipment
- 46 23 63 Grit Classifying and Washing Equipment
- 46 23 66 Grit Storage Containers

### 46 24 00 Grinding and Shredding Equipment

- 46 24 13 Macerators
- 46 24 16 Comminutors
- 46 24 23 Inline Grinders
- 46 24 33 Open-channel Grinders
- 46 24 36 Modular Grinding-Screening-Compacting Equipment

### 46 25 00 Oil and Grease Separation and Removal Equipment

- 46 25 13 Coalescing Oil-Water Separators
- 46 25 16 API Oil-Water Separators

- 46 25 23 Grease Traps
- 46 25 33 Dissolved Air Flotation Grease and Oil Separation Equipment
- 46 25 41 Helical Scum Skimming and Removal Equipment
- 46 25 43 Tipping Trough Scum Skimming and Removal Equipment
- 46 25 46 Chain and Flight Scum Collection and Removal Equipment
- 46 25 47 Floating Scum Skimming and Removal Equipment

## **46 30 00 Water and Wastewater Chemical Feed Equipment**

### **46 31 00 Gas Chemical Feed Equipment**

- 46 31 11 Chlorine Gas Feed Equipment
- 46 31 13 Sulfur Dioxide Gas Feed Equipment
- 46 31 16 Ammonia Gas Feed Equipment
- 46 31 23 Gas Storage, Weighing, and Leak Detection Equipment
- 46 31 26 Emergency Gas Treatment Systems
- 46 31 33 Chlorine Dioxide Reactors
- 46 31 43 Carbon Dioxide Gas Feed Equipment
- 46 31 53 Ozone Generating and Feed Equipment
- 46 31 56 Liquid Oxygen Storage and Feed Equipment
- 46 31 59 Cleaning Requirements for Oxygen Service
- 46 31 83 Gas Chemical Feed Accessories and Safety Equipment

### **46 33 00 Liquid Chemical Feed Equipment**

- 46 33 13 Sodium Hypochlorite Generating Equipment
- 46 33 23 Liquid Chemical Weighing Equipment
- 46 33 33 Polymer Blending and Feed Equipment
- 46 33 41 Liquid Chemical Feed System Coordination and Integration
- 46 33 42 Diaphragm-type Metering Pumps
- 46 33 44 Peristaltic Metering Pumps
- 46 33 46 Progressing Cavity Metering Pumps
- 46 33 48 Lobe Metering Pumps
- 46 33 53 Drum Pumps
- 46 33 66 Liquid Chemical Transfer Pumps
- 46 33 73 Liquid Chemical Diffusers
- 46 33 83 Liquid Chemical Feed Accessories and Safety Equipment

### **46 36 00 Dry Chemical Feed Equipment**

- 46 36 11 Dry Chemical Feed System Coordination and Integration
- 46 36 13 Storage Silos
- 46 36 23 Dry Chemical Weighing Equipment
- 46 36 33 Volumetric Feed Equipment
- 46 36 36 Gravimetric Feed Equipment
- 46 36 43 Lime Slaking Equipment
- 46 36 53 Chemical Tablet Feeding Equipment
- 46 36 83 Dry Chemical Feed Accessories and Safety Equipment

## 46 40 00 Water and Wastewater Clarification and Mixing Equipment

### 46 41 00 Mixing Equipment

- 46 41 11 Rapid Mixers
- 46 41 13 Inline Blender-type Rapid Mixers
- 46 41 16 Induction-type Rapid Mixing Equipment
- 46 41 17 Inline Static Mixers
- 46 41 21 Jet Mixing Equipment
- 46 41 23 Submersible Mixers
- 46 41 26 Floating Mechanical Mixers
- 46 41 27 Paddle Mixers
- 46 41 29 Pin Mixers
- 46 41 31 Vertical Reel Flocculation Equipment
- 46 41 33 Horizontal Reel Flocculation Equipment
- 46 41 34 Vertical Turbine Flocculation Equipment
- 46 41 36 Walking-beam Flocculation Equipment
- 46 41 38 Horizontal Oscillating Flocculation Equipment
- 46 41 41 Top-entering Tank Mixers
- 46 41 43 Side-entry Tank Mixers
- 46 41 46 Portable Tank Mixers

### 46 43 00 Clarifier Equipment

- 46 43 11 Chain-and-Flight Clarifier Equipment
- 46 43 14 Traveling Bridge Clarifier Equipment
- 46 43 16 Differential Head Clarifier Equipment
- 46 43 18 Oscillating Scraper-type Clarifier Equipment
- 46 43 21 Circular Clarifier Equipment
- 46 43 53 Solids Contact Clarifier Equipment
- 46 43 61 Flocculating Clarifier, Pulsating Sludge Blanket Type
- 46 43 63 Dissolved Air Flotation Equipment for Water Treatment
- 46 43 66 Ballasted High-rate Clarifier Equipment
- 46 43 67 High rate Clarification/Thickening Equipment
- 46 43 73 Tube Settlers
- 46 43 76 Inclined Plate Settlers

### 46 46 00 Sediment Removal Equipment

- 46 46 13 Tipping Sediment Flushing Tanks
- 46 46 16 Flushing Gates
- 46 46 23 Water Cannon
- 46 46 26 Nozzle Systems

## 46 50 00 Water and Wastewater Secondary Treatment Equipment

### 46 51 00 Air and Gas Diffusion Equipment

- 46 51 11 Fixed Mechanical Aerators
- 46 51 13 Floating Mechanical Aerators
- 46 51 16 Submersible Aspirating Aerator Equipment
- 46 51 17 Jet Aeration Equipment
- 46 51 21 Coarse Bubble Diffusers
- 46 51 23 Swing-type Channel Aeration Equipment
- 46 51 26 Shear Box Diffusers
- 46 51 31 Flexible Membrane Tube Diffusers
- 46 51 33 Flexible Membrane Disc Diffusers
- 46 51 36 Ceramic Disc Fine Bubble Diffusers
- 46 51 43 Floating Membrane Diffusers
- 46 51 46 Membrane Diffusers
- 46 51 53 Cascading Aerators
- 46 51 63 Pure-oxygen Generating Equipment

#### **46 53 00 Biological Treatment Systems**

- 46 53 13 Rotating Biological Contactors
- 46 53 23 Trickling Filter Rotary Distributor Equipment
- 46 53 24 Trickling Filter Media
- 46 53 26 Bio-towers
- 46 53 33 Moving-bed Biological Reactors
- 46 53 36 Integrated Fixed-film Activated Sludge Equipment
- 46 53 41 Intermittent Sand Filters for Wastewater Treatment
- 46 53 43 Deep-bed Denitrification Filters
- 46 53 46 Biologically Activated Filters
- 46 53 49 Membrane Biological Reactors
- 46 53 53 Sequencing Batch Reactors
- 46 53 61 Oxidation Ditch Equipment
- 46 53 63 Vertical Loop Reactors

### **46 60 00 Water and Wastewater Advanced Treatment Equipment**

#### **46 61 00 Filtration Equipment**

- 46 61 13 Filter Media
- 46 61 16 Filter Surface Wash Agitators
- 46 61 17 Filter Air Scour Equipment
- 46 61 19 Wash Water Troughs
- 46 61 21 Pressure Filters
- 46 61 23 Gravity Filters
- 46 61 26 High-rate Sand Filters
- 46 61 29 Traveling Bridge Filters
- 46 61 33 Microfiltration and Ultrafiltration Membrane Equipment
- 46 61 41 Disc Cloth Filters
- 46 61 43 Rotary Drum Cloth Filters
- 46 61 46 Automatic Backwash Cloth Filter Equipment
- 46 61 53 Cartridge Filters

- 46 61 63 Bag Filters
- 46 61 73 Automatic Straining Equipment

## 46 63 00 Demineralization Equipment

- 46 63 11 Ion-exchange Vessel Media
- 46 63 13 Mixed Bed Ion-exchange Vessel Systems
- 46 63 16 Packed Bed Ion-exchange Vessel Systems
- 46 63 17 Electrodialysis Reversal Equipment
- 46 63 23 Reverse Osmosis and Nanofiltration Membrane Equipment
- 46 63 31 Multiple-effect Distillation Equipment
- 46 63 33 Desalination Mechanical Vapor Compression Equipment
- 46 63 34 Desalination Thermal Vapor Compression Equipment
- 46 63 36 Desalination Multi-stage Flash Equipment
- 46 63 41 Desalination Falling Film Evaporators
- 46 63 43 Desalination Rising Film Evaporators
- 46 63 53 Desalination Forced-circulation Crystallizing Equipment
- 46 63 63 Desalination Spray Dry Evaporation Equipment
- 46 63 73 Demineralization Energy Recovery Equipment
- 46 66 00 Ultraviolet Equipment
- 46 66 13 Closed-vessel Low-pressure/Low-intensity Ultraviolet Treatment Equipment
- 46 66 16 Closed-vessel Low-pressure/High-intensity Ultraviolet Treatment Equipment
- 46 66 23 Closed-vessel Medium-pressure Ultraviolet Treatment Equipment
- 46 66 53 Open-channel Low-pressure/Low-intensity Ultraviolet Treatment Equipment
- 46 66 56 Open-channel Low-pressure/High-intensity Ultraviolet Treatment Equipment
- 46 66 63 Open-channel Medium-pressure Ultraviolet Treatment Equipment

## 46 70 00 Water and Wastewater Residuals Handling and Treatment

### 46 71 00 Residuals Thickening Equipment

- 46 71 13 Circular Gravity Thickeners
- 46 71 16 Gravity Belt Thickeners
- 46 71 23 Dissolved Air Flotation Thickening Equipment
- 46 71 33 Rotary Drum Thickening Equipment
- 46 71 36 Centrifuge Thickening Equipment
- 46 71 43 Disc Thickeners
- 46 71 46 Thickening Screw Press
- 46 71 53 Scum Concentrator Equipment

### 46 73 00 Residuals Stabilization

- 46 73 11 Radial Beam Fixed Digester Covers
- 46 73 12 Dual Deck Truss-type Fixed Digester Covers
- 46 73 14 Radial Beam Floating Digester Covers
- 46 73 16 Dual Deck Truss-type Floating Digester Covers
- 46 73 17 Radial Beam Floating Gas-holding Digester Covers
- 46 73 18 Dual Deck Truss-type Floating Gas-holding Digester Covers
- 46 73 19 Digester Appurtenances
- 46 73 21 Aerobic Digester Aeration Equipment
- 46 73 24 Autothermal Thermophilic Aerobic Digestion Equipment
- 46 73 26 Egg-shaped Digesters
- 46 73 31 External Draft Tube Digester Mixing System
- 46 73 32 Internal Draft Tube Digester Mixing System
- 46 73 33 Confined Gas Mixing System
- 46 73 34 Unconfined Gas Mixing System
- 46 73 41 Digester Heating Equipment
- 46 73 63 Residuals Pasteurization Equipment
- 46 76 00 Residuals Dewatering Equipment**
  - 46 76 13 Vacuum Filters
  - 46 76 21 Belt Filter Presses
  - 46 76 23 Plate-and-Frame Filter Presses
  - 46 76 26 Rotary Presses
  - 46 76 27 Screw Presses
  - 46 76 33 Dewatering Centrifuges
  - 46 76 53 Belt Dryers
  - 46 76 60 Direct-heat Residuals Drying Equipment
  - 46 76 70 Indirect-heat Residuals Drying Equipment
- 46 78 00 Thermal Treatment of Residuals**
  - 46 78 13 Multiple-hearth Sludge Incinerators
  - 46 78 23 Fluidized-bed Sludge Incinerators
  - 46 78 33 Ash Handling Equipment
  - 46 78 41 Recuperative Air Preheating Equipment
  - 46 78 46 Regenerative Thermal Oxidizers
  - 46 78 47 Waste Heat Recovery Boilers
  - 46 78 49 Waste Heat Recovery Heat Exchangers
  - 46 78 73 Thermal Oxidation Equipment

- 48 00 00 Electrical Power Generation**
- 48 01 00 Operation and Maintenance for Electrical Power Generation**
  - 48 01 10 Operation and Maintenance of Electrical Power Generation Equipment
  - 48 01 70 Operation and Maintenance of Electrical Power Generation Testing
- 48 05 00 Common Work Results for Electrical Power Generation**
- 48 06 00 Schedules for Electrical Power Generation**
  - 48 06 10 Schedules for Electrical Power Generation Equipment
  - 48 06 70 Schedules for Electrical Power Generation Testing
- 48 08 00 Commissioning of Electrical Power Generation**
- 48 09 00 Instrumentation and Control for Electrical Power Generation**
- 48 10 00 Electrical Power Generation Equipment**
  - 48 11 00 Fossil Fuel Plant Electrical Power Generation Equipment**
    - 48 11 13 Fossil Fuel Electrical Power Plant Boilers
    - 48 11 16 Fossil Fuel Electrical Power Plant Condensers
    - 48 11 19 Fossil Fuel Electrical Power Plant Steam Turbines
    - 48 11 23 Fossil Fuel Electrical Power Plant Gas Turbines
    - 48 11 26 Fossil Fuel Electrical Power Plant Generators
  - 48 12 00 Nuclear Fuel Plant Electrical Power Generation Equipment**
    - 48 12 13 Nuclear Fuel Reactors
      - 48 12 13.13 Nuclear Fuel Fission Reactors
      - 48 12 13.16 Nuclear Fuel Fusion Reactors
    - 48 12 23 Nuclear Fuel Electrical Power Plant Steam Generators
    - 48 12 26 Nuclear Fuel Electrical Power Plant Condensers
    - 48 12 29 Nuclear Fuel Electrical Power Plant Turbines
    - 48 12 33 Nuclear Fuel Electrical Power Generators
  - 48 13 00 Hydroelectric Plant Electrical Power Generation Equipment**
    - 48 13 13 Hydroelectric Power Plant Water Turbines
    - 48 13 16 Hydroelectric Power Plant Electrical Power Generators

- 48 14 00 Solar Energy Electrical Power Generation Equipment**
  - 48 14 13 Solar Energy Collectors
    - 48 14 13.13 Amorphous Solar Energy Collectors
    - 48 14 13.16 Plate Cell Solar Energy Collectors
    - 48 14 13.19 Vacuum Tube Solar Energy Collectors
- 48 15 00 Wind Energy Electrical Power Generation Equipment**
  - 48 15 13 Windmills
  - 48 15 16 Wind Energy Electrical Power Generators
- 48 16 00 Geothermal Energy Electrical Power Generation Equipment**
  - 48 16 13 Geothermal Energy Heat Pumps
  - 48 16 16 Geothermal Energy Condensers
  - 48 16 19 Geothermal Energy Steam Turbines
  - 48 16 23 Geothermal Energy Electrical Power Generators
- 48 17 00 Electrochemical Energy Electrical Power Generation Equipment**
  - 48 17 13 Electrical Power Generation Batteries
- 48 18 00 Fuel Cell Electrical Power Generation Equipment**
  - 48 18 13 Electrical Power Generation Fuel Cells
  - 48 18 16 Hydrogen Control Equipment
- 48 19 00 Electrical Power Control Equipment**
  - 48 19 13 Electrical Power Generation Battery Charging Equipment
  - 48 19 16 Electrical Power Generation Inverters
  - 48 19 19 Electrical Power Generation Solar Tracking Equipment
  - 48 19 23 Electrical Power Generation Transformers
  - 48 19 26 Electrical Power Generation Voltage Regulators
- 48 70 00 Electrical Power Generation Testing**
  - 48 71 00 Electrical Power Generation Test Equipment**
    - 48 71 13 Electrical Power Generation Corona Test Equipment
    - 48 71 16 Electrical Power Generation Current Test Equipment
    - 48 71 19 Electrical Power Generation Power Test Equipment
    - 48 71 23 Electrical Power Generation Resistance Test Equipment
    - 48 71 26 Electrical Power Generation Voltage Test Equipment