



**Fire Suppression Services Incorporated**  
3802 South 2300 East, Salt Lake City, UT 84109. Ph (801) 277-6464

## Employee Training Manual

### Contract Terminology

## Bid

## Bid

### Summary

A Bid Proposal is an explanation of the services or products offered at an estimated cost to a company.

When the bid proposal is unsolicited, there is no contractual agreement between the bid recipient and its author.

If the proposal is submitted in response to a request for proposal (RFP), it can be accepted as a bid later in the contracting process.

### Structure-Layout

The bid form is often divided into four sections:

1. Submitting company's contact information,
2. Project details,
3. Bid details,
4. Essential notes.

Experienced companies require vendors to prepare two copies of the bid form in advance of the submission.

Upon receipt of the bid response, both copies are stamped with the time and date received, and signed by a duly authorized representative of the tendering firm.

One copy is attached to the submission, and the other returned to the vendor.

This bid form is then part of the overall package, providing proof of receipt, should there be a dispute later on.

### Layout

The layout of a Bid Document Page is as follows:

#### 1. Font

The FONT for all **Fire Suppression Services** documents will be in "Times New Roman". The Body text "12pt"  
The Paragraph outlining should use the "Legal Style"

#### 2. Company Letterhead:

- |                               |  |
|-------------------------------|--|
| 2.1. Registered Logo          | FSSlogo.png  |
| 2.2. Full Registered name     | <b>Fire Suppression Services Incorporated</b>        |
| 2.3. Corporate Address        | 3802 South 2300 East, Salt Lake City Utah 84109-3124 |
| 2.4. Main office phone number | (801) 277-6464                                       |
| 2.5. Fax number               | (801) 278-2199                                       |
| 2.6. Watts line (toll-free)   | (800) 273-6465                                       |
| 2.7. Website if you have it.  | www.fs-ut.cxm  |
| 2.8. Tax ID (TIN)             | 87-047 3806  |

Authors note: The Corporation Fire Suppression Services does NOT have an owner. No Corporation does! Under the Corporation Act, it is illegal and dangerous to claim you are 'the owner'. You can claim you are an 'officer' of a Corporation, if you have been elected. Usually Corporate Officers have titles like CEO-Chief Executive Officer; CIO-Chief Information Officer; CFO-Chief Financial Officer; CCO-Chief Compliance Officer; President; Vice President etc.

Like all Corporations in the world, it does have Corporate officers who are subject to the whims of its' stock holders. Stock holders own a piece of the stock of the Corporate Body

Ref: [http://en.wikipedia.org/wiki/Corporate\\_law\\_in\\_the\\_United\\_States](http://en.wikipedia.org/wiki/Corporate_law_in_the_United_States)

#### 3. Titling

3.1. The Bid Document must be headed:

3.2. **Construction Bid Proposal For:**



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And the sub heading should be the division and section/s you are bidding in to.

This company, Fire Suppression Services Incorporated has a number of 'divisions'. They are Portable Fire Extinguishers & Cabinets, Hood System Suppression Installation & Steam Cleaning; Sprinkler Installation; and the corresponding Service & Inspection departments. The American Institute of Architects and all major contractors follow the Construction Specification Institute of North America (meaning US and Canada) Master Format Standard Numbering System. So in order to present a professional and knowledgeable appearance to those we bid in to, we must use the same format. The Division numbers and their titles that apply to our company are as follows:

#### 3.2.1. Fire Protection Specialties Div 10

3.2.1.1. section 104413 Fire Protection Cabinets, &/or

3.2.1.2. section 104416.13 Portable Fire Extinguishers

#### 3.2.2. Fire Suppression Systems Div 21

3.2.2.1. section 10 Water-based Fire Suppression Systems

3.2.2.2. section 211119 Fire Department Connections

3.2.2.3. section 211313 Wet Pipe Sprinkler System, &/or

3.2.2.4. section 212316 Dry-pipe Sprinkler System, &/or

3.2.2.5. section 211319 Preaction Sprinkler System, &/or

3.2.2.6. section 211326 Deluge Fire Suppression Sprinkler System, &/or

3.2.2.7. section 211336 Antifreeze Sprinkler System

3.2.2.8. section 212200 Clean Agent Fire Extinguishing System

3.2.2.9. section 213000 Fire Pumps

#### 3.2.3. Ventilation Hoods Div 23

3.2.3.1. Section 2338 Commercial Kitchen Hoods

(Author's note: For the precise numbering, refer to the Master Format Numbers and Titles pdf in this folder.

Ref: csinet.org & masterformat.com)

3.3. Bid Number: use your numbering system, must be consecutive, monitor very closely.

3.4. Date: yyyy-mm-dd this changes if it is resubmitted!

3.5. Expires: 30/60/90 days from Proposal Due Date.

3.6. Project Name: (from the RFP)

3.7. Total Bid Price: \$111,111.22

3.8. Contact name: *yourName*

3.9. Contact Phone: *yourPhone*

#### 4. Cover Letter:

#### 5. Body:

5.1. List Inclusions Items & describe the item. Refer to an attached photo-cutsheet.

5.1.1. Pipe

5.1.2. Pump, fdc

5.1.3. Switch, bfp

5.1.4. Alarm

5.1.5. Labour

5.2. List Exclusion Items

5.2.1. Elbows

5.2.2. Tees

5.2.3. Wire

5.2.4. Design & Submittals



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5.2.5. Permits

5.2.6. Bond

5.2.7. Environmental Assessment and Approval

#### 5.3. Essential Notes

5.3.1. This section should provide information that forms part of the bid that is subject to change. Such as information about potential delays in project start time, due to strikes or material unavailability.

### Body:

#### Summary:

This should list your total bid broken out. Detail items for the various departments, and overheads.

We propose to furnish labor and materials for the following work at the new Hotel Chain Suite.

Install a Fire Suppression Sprinkler System fully compliant with NFPAxxx and Local Code requirements for:

- each floor in order to protect the premises and its various sections.

Install a Chemical Fire Suppression System fully compliant with NFPAxxx and Local Code requirements for:

- the PBX and IT Data rooms.

Install a Chemical Fire Suppression System fully compliant with NFPAxxx and Local Code requirements for:

- the Kitchen Cooking equipment.

The System will have the following components:

1.1

1.2 etc.

Our price for performing this work is \$111,111.22. A detailed cost breakdown is attached.

This Proposal excludes the pricing for any bonding-surety-insurance, and excludes Design, Submittals and Permitting, which are covered in a separate Proposal. (Numbered: xxx-xx-xxx)

As soon as we have your approval, we can begin work on this job for you.

#### 6. Breakdown:

Individual quantities and rates

#### 7. Qualifications:

List the important qualifications of Fire Suppression Services Inc.

#### 8. Benefits:

Sell FSS, to the Contractor/Owner. And remember, it is not what you Sell, it's how you TELL 'em the price.

#### 9. Brief Summary of Client References

Choose only those relevant to THIS project and of equivalent dollar value.

Also Keep in mind:

#### Terms & Conditions

Fire Suppression Services Incorporated Bid/Proposal & the ensuing Contract must reflect NO RETAINAGE on BOND (100% paid on gaining the Bond). This is because as soon as the Bond is issued, the Surety must be paid the full price of Issuance and the Agent must be paid the Commission for Underwriting, within five days with seasoned funds or the bond is automatically cancelled (expires).



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**Bid**

Fire Suppression Services Incorporated Bid Proposal & ensuing Contract must ALSO reflect NO RETAINAGE on Permit/Design/Submittals (100%). We do not have our own Licensed Project Engineer (PE). They must be paid upon submittal, in full, because the Design becomes the property of the 'Owner' and must be free of all Liens, and must be reflected as such in the final Punch-List.

A copy of Fire Suppression's Terms & Conditions exists in the >Companies>Common folder as two files: Paragraphs to add to your bid.docx AND as Terms & Conditions.pdf



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## Bond, Surety & Retainage; Insurance Summary

### What is a Surety Bond?

In simple terms, surety bonds are a form of a contract.

They promise that work will be completed per agreed upon terms and payments will be given to subcontractors and material suppliers.

In all cases, surety bonds are an agreement involving three parties:

Obligee – the project owner

Principal – the bond purchaser or bond owner

Surety – the agency selling the bond and overseeing work is performed per the bond's protections

### How do surety bonds differ from insurance?

The biggest difference between bonds and insurance is due to risk assessment.

For insurance most of the risk associated with protecting a client lies with the insurance agency.

On the other hand, bonds are issued under the expectation a claim will never have to be filed.

If however a principal is found to be in violation of his/her bond protections, the surety agency will pay reparations to the claimant and then seek reimbursement from the bond purchaser.

Due to this, risk always lies on the side of the principal – the bond owner.

### The Bonding of a Company is quite a process.

It is the process of gaining a 'Certified money-back & a Certified money-to-pay-to-complete guarantee' to another party to whom one is contractually obligated.

Each Bond type is a separate entity and is put through the analysis process separate from any other bond analysis process.

In order for an Agent & a Surety to underwrite a bond, all of the following must be submitted to the underwriters and are minutely reviewed for inconsistencies and negative attributes are analyzed closely:

- This Company's
  - Bonding history:
    - Current Bonds it may have, and
    - how long they have run, and
    - how close to completion they are.
    - Bond applications that have been denied.
    - Bonds that have had to be paid out on. (you failed to complete/perform)
  - Knowledge and experience
  - Years of operation in the field of the Bondable Contracting.
  - Experience Modification Rating (EMR)
  - Last five years OSHA logs.
  - Legal Standing & freedom from legal claims & past litigation history
  - Employee
    - Accident Rating & Union Rating.
    - Training Program
    - Health & Safety Program



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## Bond Surety Retainage Insurance

### Contract Terminology

- Drug & Alcohol Testing Program
- Wage Rates, FICA, WIC, Medical, etc.
- Certification & Experience
- Local, State & Federal Tax Standing
- Last five years Annual Reports and Tax Filings.
- Company Credit history & Rating
- Dun & Bradstreet Rating
- Paydex Score
- Corporate Officer's Credit Ratings (President, CEO, CFO, CCO Secretary, Treasurer etc.).
- Company Insurance & claims & payout history
- Company Financial Statement (preferably Audited) including:
  - Latest Balance Sheet
  - Profit & Loss Statement
  - Accounts Receivable
    - Accounts & Notes receivable
    - Aged Receivables as at date of application.
  - Assets & Liabilities Statement
    - Cash
    - Joint Venture
    - Accounts & Notes receivable
    - Accrued income
    - Deposits
    - Prepaid expenses
    - Current Materials Inventory
    - Provision for income taxes, advances, accrued salaries & payroll taxes.
  - Accounts Payable
    - Notes payable
    - Suppliers payable
  - Equity Accounts
    - Capital
    - Capital Stock, Outstanding Shares
    - Retained Earnings
- Supplier Credit Reports & Ratings & outstanding balances.
- .. and any other information the Surety deems necessary it needs to know before it writes said bond.

Any negatives in the above list severely affect the ability of a company to obtain Bonds and Insurance. Negatives also markedly increase the cost to obtain Bonds and to obtain Insurance/s. The approximate cost to Bond for a \$250,000.00 contract is in the order of \$15,000.00 plus a commission rate of \$1200.00. A negative Aged Receivables increases the cost by \$500.00 per \$100,000.00 of AR that are over sixty days, with the attendant increase in the commission rate. Refer also to the 'Design, Submit, Permit' doc. In this same folder.

(Author's Note: If you have ever tried to get a mortgage, recall the paperwork, then multiply that grief by 42!)



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### Contract Terminology

## Terminology

Contract Security Bonds are made up of several bond types to cover the construction project from start to end. They are:

- **Bid Bonds**

Guarantee that the bonding company will provide a performance bond if the contractor is awarded the bond.

Note that the Surety Bond & the Performance Bond are interdependent on each other. (ya cain't have one without t'other!)

In general the Surety will NOT approve a Bid Bond if they do not write/approve the Performance Bond and vice versa.

Bond Companies are now unwilling to extend Surety Credit. Hence the 2010-2012 stagnation on 'new business'

- **Construction Bond**

No Such thing! It is a 'General term' used to describe the bonding process. It is NOT a bond.

What the term describes is a '**Category**' of bond types which include:

- Performance bonds
- Subdivision Bonds etc.

Authors note: The underwriting methods of the bonding & surety industry are VERY conservative. However between 1998- to -2000 they relaxed as the surety & bonding companies became de-regulated and as a consequence their appetite grew too large, became very aggressive and thence lead to historical losses. This effect brought 'em back to more traditional underwriting rules in 2012

- **Lien Bond**

This bond names a person's property as collateral against a loan. It is used to ensure that debts are paid. If the debt is not paid on time, the property may be seized as payment. Specific legal situations determine the type of lien bond that will be used.

In the United States, the term lien bond has a broader definition than that used in other countries.

- **Maintenance Bond**

This is the bond on a contractor that remains in force following the performance bond. It guarantees your work to the Owner, for a specified period, after you have left the project and the Owner has taken possession. (2-5 yrs)

- **Payment Bond**

This bond ensures that all your suppliers, labourers, and all your subcontractors will be paid if the contract defaults. This is another Bond that is tied interdependently with your Performance Bond. (Performance & Payment Bond)

- **Performance Bond**

This is a bond that guarantees that you 'The Contractor' will

- Complete your project according to the terms of your contract,
- Pay your materials,
- Pay your workers and
- Pay YOUR subcontractors.

This bond is submitted, by the WINNING bidder immediately upon being awarded The Contract.

Performance & Payment Bond are usually submitted together, because of their interdependence.

- **Retainage Bond**

The portion of a contract's final payment withheld by a principal (client or owner) until the project is complete in all respects, functioning satisfactorily according to the contract terms, and all mechanic's liens have either been released or have expired.





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### Contract Terminology

- **Site Improvement Bond**

Guarantees to the Owner that you will return all Public property affected by your work, AND the Owner's property, to an improved condition.

- **Subdivision Bond**

This bond is required when Local Authorities insist that the Owner completes all mandatory public improvements that the Owner (or developers) makes to a property.

- **Supply Bond**

Required by

- Federal,
- State and
- Municipalities having jurisdiction, and as such
- the Owner,

to secure all payments to all your 'suppliers' (Parts, Freight, Drawing, Design, Engineering, Nuts, Bolts, and Pipe etc. Not Labour)

There are others; however they do not affect **Fire Suppression Services Inc.** in this discussion.

### Retainage

Points of note:

Retainage ensures the Contractor or the Subcontractor completes:

- Site Cleanup
- Equipment Removal
- Payment Waivers
- Supplier payments
- Form Completion
- Punch Lists

Authors note: The Surety always has 'First Right' to the Retainage. Retainage is held in escrow, with first right Lien. So, if YOU require your subcontractor to post bond on his/her bid, any retainage on sections of his bid payouts must be held in an escrow account, and his/her Surety Company has first right to the retainage. (In the case of FSSI, it is Old Republic Surety via Leslie Robles)

To reduce or remove the Retainage, you will need to complete AIA form G705A yyyy 'Consent of Surety to Reduction or Partial Release of Retainage'. (Remember the Surety has a Lien of first right on the Retainage.)

Again, the use of Standard Forms eases the underwriting process.

### Public Works

For public works projects, a municipal government must withhold a sum of money referred to as retainage from progress and other payments and must also have a contractor's performance and payment bond on file.

For public works contracts under \$35,000, these requirements may be waived under a Limited Public Works Process.

For public works contracts under \$35,000 that are not processed under the Limited Public Works Process, there is another exception, described below in the Bonding section of this document.

Laws require municipal governments to withhold 5% of money due the contractor for a public improvement or work until completion and/or acceptance of the contract.

This money is to be set aside as a trust fund for the claims of any person arising under the contract; and the state with respect to taxes imposed pursuant to

- Title 50 RCW (Employment Security),
  - Title 51 RCW (Industrial Insurance), and
  - Title 82 RCW (Department of Revenue) RCW
- Which may be due from such contractor.





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## Bond Surety Retainage Insurance

### Contract Terminology

A person is defined as a "person or persons, mechanic, subcontractor, or material-person who performs labor or provides materials for a public improvement contract, and any other person who supplies the person with provisions or supplies for RCW 39.08.010 requires municipal governments to call for a performance and payment bond. The bond is to be issued by a surety company licensed to do business in the State that the project is in.(UT, WY, ID etc).

It is to be conditioned that the contractor shall faithfully perform all the provisions of such contract and pay all laborers, mechanics, and subcontractors and material-men, and all persons who supply such person or persons, or subcontractors, with provisions and supplies for the carrying on of such work.

Note: State agencies (DOR, L&I, ESD) have no direct claim against the bond.

### Also Keep in mind:

#### Terms & Conditions

Fire Suppression Services Incorporated Bid/Proposal & the ensuing Contract must reflect the Standard Price for a Bond and stipulate that there is to be NO RETAINAGE on BOND (100% paid on gaining the Bond). This is because as soon as the Bond is issued, the Surety must be paid the full price of Issuance and the Agent must be paid the Commission for Underwriting, within five days with seasoned funds or the bond is automatically cancelled (expires).

Fire Suppression Services Incorporated Bid Proposal & ensuing Contract must ALSO reflect NO RETAINAGE on Permit/Design/Submittals (100%). We do not have our own Licensed Project Engineer (PE). They must be paid upon submittal, in full, because the Design becomes the property of the 'Owner' and must be free of all Liens, and must be reflected as such in the final Punch-List.

A copy of Fire Suppression's Terms & Conditions exists in the >Companies>Common folder as two files: Paragraphs to add to your bid.docx AND as Terms & Conditions.pdf. They are the same, choose one. AND, in the same folder is another critical pdf: 'Special Lead Times Required.pdf'; be conversant with both docs, and send 'em to your customer.

### And finally:

If we are required to supply a Bond, then there should be NO RETAINAGE on any part of the Application for Payment. The Contractor does not need both a Bond & Retainage. The Bond/s is/are their money back gaurantee!



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## Permits Design & Submittals

### Summary

Designs refer to the AutoCAD drawings that layout all aspects of the construction project and include but are not limited to amendments, ASI's etc.

Designs are submitted along with other specific articles to a Governing Body that has jurisdiction over the project location.

Permits are the articles that are issued by the Governing Body having jurisdiction (AHJ) after analyzing the Submittals for compliance to National & local Codes and Ordinances and are required to install fire suppression systems.

Submittals are the items to be 'given' to another.

All three attract fees and costs immediately upon being actioned.

Note: the process flow is: Design->Submit->Permit; however on Break-Outs it is often shown as Permit, Design & Submittals!

All Permits and Certificate must be numbered and recorded by you and handed off to the Owner.

### Discussion

The Fire Department, the Fire Marshal's Office, the County or Local Governing Jurisdiction, all require payment with the Submittals. These entities are generally referred to as the "Authority Having Jurisdiction" (AHJ).

To get your submittals acted upon in a timely manner your Design Engineers require payment prior to submission.

Your Surety knows this. (Old Republic Surety Co.)

You should ensure that all **FSSI** Bid Proposals address these costs as separate items and that your Bid Proposal document stipulates zero Retainage.

When you submit your first request for payment, on the G702/703 it asks for Permit Design and Submittals in full (100%). Just before you receive payment you have to sign a waiver to the Owner/General that you will pay the Permit, Design and Submittal expense.

When you receive the payment you must show that it is used as such. (Paper Trail)

Note: the same applies for the 'Bond'. Remember, there are Liens on your Bond. If it is not paid for, in full within five days the Surety cancels the Bond. The effect of which is to invalidate Design, Permits and submittals; then YOUR Insurance Company is pressured to pay all of the Contract completion; and then comes back to you for reimbursement.

When a Bond is issued to an Owner/General for **Fire Suppression Services Incorporated**, the fee for the issuance must be paid by an instrument in the name of **Fire Suppression Services Incorporated**. (Paper Trail) And, the funds used to pay the Surety and the Agent (Leslie), must be 'Seasoned Funds', i.e. money that has been in your bank account for at least sixty days. You cannot use a credit card!

The price of a Performance bond is approximately \$5,000.00 for EVERY \$100,000.00, PLUS a fee of approx \$200.00 per \$100,000.00 for the Agent (Leslie) to write it. (total of approx 4.5 to 5% of total Bid Price) Refer to the 'Bond' article in this folder.



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## Permit Design & Submittals

When you pay your Bond, Permit, Design & Submittal costs, you or the General are entitled to ask the Surety to have the Liens for these items removed.

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## Mob-DeMob. Mobilization and Demobilization

### Summary

Generally, contractors are not entitled to an additional/separate payment for mobilization and demobilization costs.

Presumably, when you bid the project you included your expected mobilization and demobilization costs in your price.

However, mobilization and demobilization costs can become an issue when you have to demobilize before finishing the project and especially if you then have to remobilize and demobilize again.

Are you entitled to the additional mobilization and demobilization costs? Perhaps.

Extra costs related to mobilization and demobilization is an issue that you would be wise to address in your contract documents.

This typically comes up as a problem when a payment has been missed and one contractor suspends works under the contract and then takes the further step of demobilizing.

If you have not yet reached a payment milestone in the contract then you may be stuck absorbing the costs, which could be substantial on a large project, especially if heavy equipment is involved.

Having to absorb the demobilization costs can be a problem because if you didn't finish the entire contract the profit margin on the completed portion may not justify the demobilization costs.

If your contract is silent on early demobilization you can make the argument that you are entitled to payment. But you could lose the argument.

Rather than risk it, put a provision in your contract that specifically states that if you have to suspend work, for any reason, and have to demobilize before completion, then you are entitled to recover your demobilization costs.

Of course the next thing may be remobilizing to complete the project after the payment is (hopefully) made.

Again, the remobilization costs could significantly eat into your profit margin.

Therefore, your contract should also provide that if you have to remobilize you are entitled to recover the remobilization costs.

These small changes to your contract can be accomplished in a few simple sentences but the cost savings could be enormous. You will see all of these in our Terms & Conditions file in the \companies\common folder\paragraph to add to your bid

These provisions, in my experience, are typically accepted by the other side because they only kick in if there is a breach.

For example, a general contractor would only get the demobilization and remobilization costs if the owner breached the contract.



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## Mobilization-Demobilization

Similarly a subcontractor would only get the demobilization and remobilization costs if the general contractor breached the contract.

Thinking of these small issues before you complete your contract can be the difference between breaking even and making a profit.

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## The PCO. Proposed Change Order

### Summary

Changes to a construction contract require the agreement of three key players:

1. the architect,
2. the owner, and
3. the contractor ...

### **!!-in writing.-!!**

A proposed change order (PCO) is a tool for tracking on-site changes that document the process thoroughly. Using a PCO helps to prevent late or unforeseen claims and maintains open communication. You will need G701 "Change Order--yyyy" or G714--yyyy, "Construction Change Directive"

### The Contractor's Role

A PCO is initiated when the contractor sends a request for information (RFI) to the architect.

If the RFI requires a change to the contract price or schedule and the architect agrees, the RFI becomes a PCO and is given a unique tracking number.

Because a PCO is most effective when backed by systematic documentation, the contractor should provide all back up to the architect and the owner.

The contractor should also develop a spreadsheet to track and organize all proposed change orders.

Once a PCO is in progress, the contractor should generate a list of subcontractors affected by the change and distribute the change request to them.

Subcontractors should review the change request to confirm whether it will affect price or schedule.

If it will, the subcontractor should cite the adjustment in writing and send it to the contractor.

If there is no effect on price or schedule, the subcontractor should state that in writing at the time.

If the subcontractor does not respond within one month, it is assumed there is no impact and the subcontractor waives the right to make a claim.

(This needs to be stipulated in the owner-contractor contract and the contractor-subcontractor contract. And probably will be, SO WATCH OUT for this.)

Once all responses have been received, the contractor can choose one of the following actions.

In either case, the action must be recorded in the PCO spreadsheet.

1. Close the PCO because there is no price or schedule impact.

Or

2. Review the price or schedule adjustment and accept or deny it

### The Architect's Role

The contractor should send a copy of the entire file to the architect:

Include

- the RFI;
- the architect's answer to the RFI;
- the written documentation from the subcontractors (including the ones from subcontractors showing no impact);



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## Proposed Change Order

- and a price quote breakdown showing:
  - Unit prices and
  - Extended prices,
  - Fees, and
  - Mark-ups.

The architect should review the scope and price of the PCO, then respond with comments for “as-is” or suggest changes.

1. Scope is the most important part of an architect’s review.

The architect is best-suited to determine if the change affects the scope of the project.

2. The price should be consistent with the market.

If it is, the architect approves the PCO as-is; if it is not, the architect returns the PCO to the contractor requesting further cost analysis.

### The Final Phase

The contractor should review the architect’s comments and do one of the following:

Send the PCO to the owner for final review.

Or

Modify the PCO according to the architect’s comments.

Or

Work to resolve the architect’s concerns.

If the architect and contractor cannot agree on the change order, the contractor should add it to the resolution list for future review with the owner.

The last step is to secure approval—in writing—from the owner.

If the owner does not initially accept the PCO, the owner can discuss any concerns with all parties at a project review meeting.

The goal of the meeting is to achieve a resolution which may result in a compromise.

### Reminder

A Proposed Change Order (PCO) is PROPOSED

IT IS NOT an ORDER.

- It is not an order until the Owner has signed it.
- The Contractor who is responsible for the schedule should be charged with making sure the work is progressing in the field and is not held up while the PCO is in review





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## The CCD. Construction Change Directive. (G714)

G714–yyyy, “Construction Change Directive”

Some situations require the use of a construction change directive (CCD) rather than a PCO.

A CCD is used when the contractor thinks a change is necessary to maintain the project schedule.

When this happens, the architect answers a CCD request rather than an RFI.

The architect then **meets** with the owner and reviews the situation and the solution.

If the CCD request is agreed to, the owner signs it.

In this scenario, the cost is determined after the change is under way. If the owner chooses not to sign the CCD, the architect must work to modify it to the satisfaction of the owner or the issue is set aside.

A CCD should be used when time is critical and the team knows the change is necessary.

This tool is typically used as a project nears completion.

Remember, for all project matters that involve price and schedule adjustments, it is best to write them in a log; thus, the CCD should be recorded in the PCO spreadsheet as well.

## The CCO. Construction Change Order (G701).

As advised above, the PCO, CCD should be sequentially recorded in you spreadsheet, along with the CCO.

The Construction Change Order can be the most time consuming and stressful of all the change orders. These are ones that usually hold up the job, and often lead to legal battles.

## Most common causes for CCO

### Poor knowledge of the Scope

This type of change order usually results from inadequate detail in the original scope, misrepresentation of the scope of work or just plain avoidance by the bidder.

### Design Changes

This particular type of change order most often occurs in Design-Build projects. The on-going design causes work-stoppage whilst both parties ‘discuss’ the cost impact and settlement of payment for changes.

### Specifications

Drawings ask for one product, but the specs call for another, or the ‘Standards’ call for another product. Most common cause of this is where different Consultants (Architects, Engineers) are assigned different drawings or the Design engineers for the Bidder do not Communicate with the Owner/General’s Engineers. The bidding contractor then assumes and quotes on one type of product, but when the installation is going to be made, the owner, requires another article to be installed, instead of the one that you have already quoted.

### Substitutions

This is normally a contractor’s idea to substitute material, when he cannot get the specified materials or there is a shortage in supplies. This is kind of different because it can lead to another issue: a credit will be asked if the material cost is less, or sometimes the contractor will have to absorb the costs’ difference between materials and/or products. Sometimes, the



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## Employee Training Manual

### Contract Terminology

## Construction Change Directive

Owner also asks for some upgrades during the construction process, in this case you must submit a change order request claiming the economic and time costs associated with the proposed modifications.

DRAFT



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## Employee Training Manual

G-702-703

Application for Payment  
Construction Application &  
Certification for Payment  
AIA forms G-702-703

### Applying for Payment

#### Summary

The Construction Application & Certification for Payment and Continuation sheet, known as G702-G703 is the American Institute of Architects standardised method of construction percentage of completion billing. (In short: Progress Billing.)

**Authors Note:** AIA Forms G-702 and G-703 and all AIA forms are copyrighted by the American Institute of Architects and fall under copyright laws

The sheets are the second and third sheets in division seven in the AIA G-series of documents. First used by the developers, AIA, in 1992.

The AIA G-series includes:

- AIA G-702 Contractor Application for Payment and G-703 Continuation Sheet.
- AIA G-702 CMa Construction Managers and Advisors edition and G-703 Continuation Sheet.
- AIA G-706 Contractor's Affidavit of Payment of Debts and Claims.
- AIA G-706A Contractor's Affidavit of Release of Liens.
- AIA G-707 Consent of Surety to Final Payment.
- AIA G-707A Consent of Surety to Reduction in or Partial Release of Retainage.

The AIA billing system was developed to provide a standardized method of submitting job related paperwork to send to architects and others by a contractor in order for the contractor to be paid for work performed on a construction project.

The two sheets we will be concerned with in this article are:

- G-702 Contractors Application & Certification for Payment
- G-703 Continuation Sheet

These forms serve as both the contractors application for current payment due and the architect's certification that payment is due to the contractor. Its use can expedite payment and reduce the possibility of errors.

If the application is properly completed and acceptable to the architect, the architect's signature certifies to the owner that a payment in the amount indicated on Line 8 of the G-702 is due to the contractor. This form allows the architect to certify an amount different than the amount applied for, with explanations provided by the architect as to why the amount is different.

Completing the AIA G-702 and G-703 forms by hand is frustrating and difficult.

To fill out one correctly, you pretty much have to:

- forget about any basic accounting principals you've ever learned
- ignore change orders that have been submitted or approved, but not processed
- ignore money that is still outstanding from previously submitted applications for payment

Be aware that the payment applications that you submit are an important piece of our overall cash flow management. When your payment applications get screwed up - -bad things happen; none of which put you in "good standing" with the General Contractor or Project Owner, and can ultimately damage your company's overall cash position



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## Employee Training Manual

G-702-703

Application for Payment  
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### INSTRUCTIONS for:

#### The G702 -Application & Certification for Payment & the G703 Continuation Sheet.

#### Fire Suppression Services Incorporated

Note: The Excel WorkBook **FSSI** uses is Macro-Enabled.

Create a NEW file each month. (Copy this file to the General's Job-Payments Folder) and name it in format  
yyy-mm-dd Schedule of Values.xlsx

Click 'View-ArrangeAll-select horizontal-Ok' to see the sheet tabs at the bottom of the workbook.

Or,

If macros are disabled, The “Security Warning: Macros have been disabled”, will appear above the excel grid.  
Click options and select: ‘enable this Content’ and we will resize the form for you.

### Discussion

#### G702

#### Fill in the G702 Application & Certification for Payment

First page

**TO:** Owner or Contractor (General's) Name and Address

**Project name:**

**Application Number:** when you number your payment applications, give the first one "1" and then count up from there. If you find that you have to revise a Payment Application, do not increase the number - just give it the same number, and then with a bright orange or green highlighter, handwrite REVISED across the top of the header.

**Application date:**

**Period:** the dates this application cover

**Contract number & date:** (off your Contract document)

Place an 'X' in the 'Distribution To' box; this indicates a list of who else will receive a copy of the Application for Payment.

**Contract For:** this is a brief description of the scope of work that is being performed and can be found in the Contract/Subcontract Agreement. (e.g. Div-21: Fire Suppression -Sprinklers; or Div-10: Fire Suppression – Chemical, Kitchen Hoods)

**FROM:** Your Company name in to the 'From subcontractor' (That's us!)

In the 'Contractor's Application for Payment' section,

**Architects Name Address**

#### Summary of Work

**LINE 1.** Fill in the sum from the ORIGINAL contract document. It NEVER changes, from Start to End of the Contract term.

**LINE 2.** Net Change by Change Orders. Add up in your head all the CCO's that have been APPROVED by the General and enter the total here.

**LINE 3.** Contract Sum to Date, will total automatically

**LINE 4.** Total Completed & Stored comes from the left side of column G on the G703



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## Employee Training Manual

G-702-703

Application for Payment  
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AIA forms G-702-703

### LINE 5. Retainage

Your contract should set the retention terms, if any. FSSI never accepts retention on Bonds, Design or Permitting. If we are required to underwrite a Bond/s for the GC or Owner, No Retention on any item is justified. Bond is a 'Money-Back' guarantee. There is no need to also have retention. Bond/s serve same purpose as retention. If it's 5% for both, enter % in appropriate slot.

5a Completed work. Enter the appropriate %.

Amounts to the right are calculated from bottom of column D + E on the G703

5b Stored materials.. Enter the appropriate %

Amounts to the right are calculated from bottom of column F on the G703

Total retainage: the lessor is used because FSSI does not permit retainage on Bond, Design or Permits

### LINE 6. Total Earned Less Retainage

Calculated using LINE4 minus the lessor of 5a or 5b

LINE 7. Enter the amount from your PREVIOUS pay applications LINE 6: Total Earned Less Retainage Trust the paper trail; This application does NOT care whether you have been paid. It only cares whether you have EARNED additional payment.

**So do NOT enter payments received!**

### LINE 8. Line6 minus Line7

It represents the value we should be paid for work during this pay period AND any change in retainage during the period.

### LINE 9. Balance to Finish INCLUDING retainage. Line3 minus Line6

The payment you are still owed AFTER this application is paid

### CHANGE ORDER SUMMARY TABLE

Separate out the CCO's that add money to your contract from those that subtract money from the contract. The Net Changes by Change Order should be EXACTLY equal to LINE 2. Amounts must also be added to the G703 Schedule of Values column



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## Employee Training Manual

G-702-703

### Application for Payment Construction Application & Certification for Payment AIA forms G-702-703

APPLICATION AND CERTIFICATION FOR PAYMENT			AIA DOCUMENT G702																
TO CONTRACTOR:		PROJECT:	Costco Wholesale Spanish Fork	APPLICATION NO: 1															
FROM SUBCONTRACTOR:		VIA ARCHITECT:	Mulvanney G2 Architecture	PERIOD TO: 2012-10-25															
CONTRACT FOR: Div-10: Fire Suppression Chemical- Kitchen Hoods		CONTRACT DATE: 2012-05-10																	
<b>CONTRACTOR'S APPLICATION FOR PAYMENT</b> Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.			The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.																
1. ORIGINAL CONTRACT SUM \$ 5,093.00 2. Net change by Change Orders \$ 1,635.00 3. CONTRACT SUM TO DATE (Line 1 + 2) \$ 6,728.00 4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) \$ 6,728.00 5. RETAINAGE: a. 5% of Completed Work (Column D + E on G703) 6,728.00 336.40 b. 5% of Stored Material (Column F on G703) 0.00 0.00 Total Retainage (Lines 5a + 5b or Total in Column I of G703) 336.40 6. TOTAL EARNED LESS RETAINAGE (Line 4 Less Line 5 Total) \$ 6,409.10 7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate) \$ 0.00 8. CURRENT PAYMENT DUE \$ 6,409.10 9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6) \$ 318.90			<b>Contractor: RSR Construction</b>  By: _____ Date: _____ State of: _____ County of: _____ Subscribed and sworn to before me this _____ day of _____ 2012 Notary Public: _____  My Commission expires: _____																
<b>CHANGE ORDER SUMMARY</b> <table border="1"> <thead> <tr> <th></th> <th>ADDITIONS</th> <th>DEDUCTIONS</th> </tr> </thead> <tbody> <tr> <td>Total changes approved in previous months by Owner</td> <td></td> <td></td> </tr> <tr> <td>Total approved this Month</td> <td>\$1,635.00</td> <td></td> </tr> <tr> <td>TOTALS</td> <td>\$1,635.00</td> <td>\$0.00</td> </tr> <tr> <td>NET CHANGES by Change Order</td> <td>\$1,635.00</td> <td></td> </tr> </tbody> </table>				ADDITIONS	DEDUCTIONS	Total changes approved in previous months by Owner			Total approved this Month	\$1,635.00		TOTALS	\$1,635.00	\$0.00	NET CHANGES by Change Order	\$1,635.00		<b>ARCHITECT'S CERTIFICATE FOR PAYMENT</b> In accordance with the Contract Documents, based on on-site observations and the data comprising the application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.  AMOUNT CERTIFIED ..... \$ _____  (Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.) ARCHITECT: _____ Date: _____  By: _____ Date: _____ This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.	
	ADDITIONS	DEDUCTIONS																	
Total changes approved in previous months by Owner																			
Total approved this Month	\$1,635.00																		
TOTALS	\$1,635.00	\$0.00																	
NET CHANGES by Change Order	\$1,635.00																		
AIA DOCUMENT G702 - APPLICATION AND CERTIFICATION FOR PAYMENT - 1992 EDITION - AIA - ©199 THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVE., N.W., WASHINGTON, DC 20006-3 Users may obtain validation of this document by requesting a completed AIA Document D401 - Certification of Document's Authenticity from the Licensee.																			

## G703

### Fill in the G703 Continuation Sheet

Second page

This sheet is often referred to as page two of the Application & Certification form G-702.

It breaks down the contract sum into portions or segments of the work in accordance with a Schedule of Values required by the General Conditions of your contract.

These Schedules of Values should be consistent with the Schedule of Values (estimate/bid documents) submitted to the Architect at the beginning of the project. This breakout should be used consistently throughout the project, using multiple pages when necessary.

**HEADER INFORMATION** (must be included on each Continuation Sheet page that you submit)

To - the contract owner or the person who will be cutting your checks for payment of work you have performed and should be entered in.

From - the "From" is always us.

Page - the page number of the Continuation Sheet.

Application No. - same as the Application Number from the header of the G-702.

Application Date - the date that you are submitting the Application for Payment.





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Period To -should be the same as the Period To date from the header of the G-702.  
Architects Project No - the project number that the Architect has assigned to this project.

### SUMMARY

#### *Column A Item number*

Number the items sequentially in column A. (Authors note: sometimes you may be asked to number them according to specification section numbers in the specifications sheet)

FSSI always puts Bond first, Design, Permit & Submittals next

We MUST pay the Surety the full amount of the Bond within FIVE days of underwriting with SEASONED funds, or it is cancelled. Which 'ticks-off' the Owner/GC

We must pay Design Engineers for their Stamp or they Lien the Property

We are required by Law to pay all AHJ's upon submission of Request for Design approval and for the Permit, else the Owner cannot release the property to the General for construction ...  
... and their insurance is compromised.

(Submittals, to us, FSS means to an AHJ, NOT to the Owner/Contractor)

#### *Column B Description of Work*

Enter the Item description in column B 'Description' from your Cost Accounting folks or the Estimator's Bid Document. Note: BE BRIEF!

Extra Items like Net Change in CCO's that are approved are also entered.

Create a new line item by copying a cell line from spreadsheet column B to column K

Never change the amount of any original line item.

#### *Column C From previous application*

Enter the dollar amount of each item in column C 'Schedule of Values' from your Cost Accounting folks or the Estimator's Bid Document.

The total at the bottom of column C should initially total to the original contract amount

As you add CCO net items, this total will change.

#### *Column D & E Work Completed*

##### *Column D*

Enter the amounts for each item that you submitted from the PREVIOUS application  
(The total of requested payments for work you submitted for all previous months)

##### *Column E*

Enter the amounts for each item that you have completed THIS period, & requesting payment for.

Eg. The work you did THIS month

#### *Column F Stored Materials*

If you have delivered pipe, valves, sheetrock, framing or like materials to the site enter their dollar amount here.  
This column is for items that are not yet attached to the building but will soon be, and ..

.. are APPROVED for payment

Do NOT include labour or any NON-materials items.

The Owner's Bank/Financier/Insurance folk need to know about these items.

Our Bank/Insurance/Surety/Supplier/Lien Holder also need to know.

#### *Column G Total completed and stored*

Automatically calculates the amount and percentage completed

#### *Column H Balance to finish*





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## Employee Training Manual

G-702-703

### Application for Payment Construction Application & Certification for Payment AIA forms G-702-703

Automatically calculates how much you are still owed by the contractor/owner when you finish the job and submit future applications for payments.

CONTINUATION SHEET			AIA DOCUMENT G703								
AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, containing Contractor's signed certification is attached.						APPLICATION NO: <b>1</b>					
In tabulations below, amounts are stated to the nearest dollar.						APPLICATION DATE: <b>2012-10-27</b>					
Use Column I on Contracts where variable retainage for line items may apply.						PERIOD TO: <b>2012-10-25</b>					
						CONTRACT NUMBER: <b>1218-009</b>					
A	B	C	D	E	F	G	H	I			
ITEM NO.	DESCRIPTION OF WORK Bid Date: 2012-08-21 Award Date: 2012-09-19 Start Date: 2012-10-xx End Date: 2012-10-19	SCHEDULED VALUE	WORK COMPLETED FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD	MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G + C)	BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE RATE)		
1	Bond	\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0	No Retainage	
2	Permit, Design & Submittals	\$350.00	\$0.00	\$350.00		\$350.00	100%	0.00	\$0	No Retainage	
3	Mobilization/Demobilization	\$150.00	\$0.00	\$150.00		\$150.00	100%	0.00	\$8		
4	Gas Valves x2	\$523.00	\$0.00	\$523.00		\$523.00	100%	0.00	\$26		
5	Ansul Automan x2	\$750.00	\$0.00	\$750.00		\$750.00	100%	0.00	\$38		
6	Pull Station w/EMT and Cable 2x	\$325.00	\$0.00	\$325.00		\$325.00	100%	0.00	\$16		
7	Pneum. Release w/EMT & Cables x2	\$450.00	\$0.00	\$450.00		\$450.00	100%	0.00	\$23		
8	Detectors & Links x2	\$375.00	\$0.00	\$375.00		\$375.00	100%	0.00	\$19		
9	MicroSwitches LV & HV x2	\$128.00	\$0.00	\$128.00		\$128.00	100%	0.00	\$6		
10	Nozzles & caps	\$1,047.00	\$0.00	\$1,047.00		\$1,047.00	100%	0.00	\$52		
11	Labor	\$810.00	\$0.00	\$810.00		\$810.00	100%	0.00	\$41		
12	Testing & Inspections Trip Test	\$185.00	\$0.00	\$185.00		\$185.00	100%	0.00	\$9		
13	Net CCO #1	\$1,635.00	\$0.00	\$1,635.00		\$1,635.00	100%	0.00	\$82		
14		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
15		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
16		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
17		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
18		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
19		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
20		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
21		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
22		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
23		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
24		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
25		\$0.00	\$0.00	\$0.00		\$0.00	0%	0.00	\$0		
GRAND TOTALS		\$6,728.00	\$0.00	\$6,728.00	\$0.00	\$6,728.00	100%	0.00	\$318.90		

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#### Column I Retainage

If it is at varying rates you may have to change the formula in these cells.

The total at the bottom of the column should be the same as that on LINE5 on the G702

Note, though, that FSSI does not permit retainage on Bond, Design Permit

and that if we supply a Bond, their should be ZERO retainage. (AIA standards)

#### Change Orders

Enter the amount(s) on **BOTH** the G702 AND the G703.

#### Additions (Extras)

##### G702:

Add the total value to the "Change Order Summary" in the Additions section.

It will automatically transfer to Line 2 and calculate Line 3.

##### G703:

Do not change the amount of any original line item.

Create a new line item at the end and enter the total amount of the addition in the "C" column.

Example:

(standard description) "Net of Change Order #1": \$1,635.00



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G-702-703

Calculate the amount up to 100%, as the work is completed.

### **Credits or Deductions (Negative Numbers)**

#### **G702:**

Add the total value to the "Change Order Summary" in the Deductions section.  
It will automatically transfer to Line 2 and calculate Line 3.

#### **G703:**

Do NOT change the amount of any original line items.

Calculate the original amount in column "C" at 100% completed, after all work is completed.

Create a new line item at the end of the list and enter the deduction amount with a minus sign.

Example:

(standard description) "Net of Change Order #2": -5,000.00

Enter the amount in column "C" with a minus sign. (-)

Enter the amount in column "E" with a minus sign (-) after all work is completed.

Calculate retainage, column "I", if any. It will display a negative amount.

#### **Accounting Tip, negative numbers:**

To balance the accounting, calculate both the original line item amount and the credit line item at 100% completed AFTER all work is completed.

**Author's Note:** It is good practice not to alter previous Pay Requests. "Duplicate" this file, then add any changes.

### **Finishing**

When completed, click the Office button, top left corner

HOVER over 'Save as ..' (the HOVER is important!)

And in the 'Fly-out' Click 'pdf or xps ..' to save the page/s as a pdf file  
email the pdf to your upline (GC/Owner)

REPEAT the process with a new file each month

#### **Authors Note:**

Our 'AIA G702-703' has been modified to reflect our Surety & Insurance & AHJ requirements, and my not quite suit 'Other Trades'

Specifically there is no retainage if we are Bonded to the Owner/GC, & no retainage on Bond Permit Design & Submittal to AHJ's)

The Calculated fields are 'Protected' (Format Cells-Protection, in excel)

The Sheets are protected (Review-Protect Sheet, in excel)

.. And

.. this is by no means an exhaustive instruction set. Refer to the AIA at: <http://www.aia.org/>  
2012-09-01

**INSTRUCTIONS for:****The G702 -Application & Certification for Payment & the G703 Continuation Sheet.****Fire Suppression Services Incorporated**

Create a NEW file each month. (Copy this file to the General's Job-Payments Folder) and name it in format yyy-mm-dd Schedule of Values.xlsx  
Click 'View-ArrangeAll-select horizontal-Ok' to see the sheet tabs at the bottom of the workbook.

or if macros are disabled, The Security Warning: Macros have been disabled, above appears, click options and enable this Content  
and we will resize the form for you.

<b>G702</b>	
<b>Fill in the G702 Application &amp; Certification for Payment</b>	
TO: Contractor (General's) Name and Address	
Project name	
Application date	
Period: the dates this application cover	
Contract number (off your Contract document)	
Place an 'X' in the 'Distribution To' box	
FROM: Your Company name in to the 'From subcontractor'	
In the 'Contractor's Application for Payment' section, Architects Name Address	
LINE 1.	Fill in the sum from the ORIGINAL contract document. It NEVER changes, from Start to End of the Contract term.
LINE 2.	Net Change by Change Orders. Add up in your head all the CCO's that have been APPROVED by the General and enter the total here.
LINE 3.	Contract Sum to Date, will total automatically
LINE 4.	Total Completed & Stored comes from the left side of column G on the G703
LINE 5.	Retainage
Your contract should set the retention terms, if any	
FSSI never accepts retention on Bonds, Design or Permitting	
If we are required to underwrite a Bond/s for the GC or Owner, No Retention on any item.	
Bond is a 'Money-Back' gaurantee. There is no need to also have retention.	
Bond/s serve same purpose as retention	
If it's 5% for both, enter % in appropriate slot.	
5a	Completed work. Enter the appropriate %.
Amounts to the right are calculated from bottom of column D + E on the G703	
5b	Stored materials.. Enter the appropriate %
Amounts to the right are calculated from bottom of column F on the G703	
Total retainage, the lessor is used because FSSI does not permit retainage on Bond, Design or Permits	
LINE 6.	Total Earned Less Retainage Calculated using LINE4 minus the lessor of 5a or 5b
LINE 7.	Enter the amount from your PREVIOUS pay applications LINE 6: Total Earned Less Retainage Trust the paper trail; This application does NOT care whether you have been paid. It only cares whether you have EARNED additional payment. <b>So do NOT enter payments received!</b>
LINE 8.	Line6 minus Line7 It represents the value we should be paid for work during this pay period AND any change in retainage during the period.
LINE 9.	Balance to Finish INCLUDING retainage. Line3 minus Line6 The payment you are still owed AFTER this application is paid
<b>CHANGE ORDER SUMMARY TABLE</b>	
Separate out the CCO's that add money to your contract from those that subtract money from the contract.	
The Net Changes by Change Order should be EXACTLY equal to LINE 2	
Amounts must also be added to the G703 Schedule of Values colimnn	
<b>G703</b>	
<b>Fill in the G703 Continuation Sheet</b>	
Column A Item number	
Number the items in column A	
FSSI always puts Bond first, Design, Permit & Submittals next	
We MUST pay the Surety the full amount of the Bond within FIVE days of underwriting with SEASONED funds, or it is cancelled. Which 'ticks-off' the Owner/GC	
We must pay Design Engineers for their Stamp or they Lien the Property	
We are required by Law to pay all AHJ's upon submission of Request for Design approval and for the Permit, else the Owner cannot release the property to the General for construction ...	
... and their insurance is compromised.	
(Submittals, to us, FSS means to an AHJ, NOT to the Owner/Contractor)	
Column B Description of Work	
Enter the Item description in column B 'Description' from your Cost Accounting folks or the Estimator's Bid Document.	
Note: BE BRIEF!	
Extra Items like Net Change in CCO's that are approved are also entered.	
Create a new line item by copying a cell line from spreadsheet column B to column K	
Never change the amount of any original line item.	
Column C From previous application	
Enter the dollar amount of each item in column C 'Schedule of Values' from your Cost Accounting folks or the Estimator's Bid Document.	
The total at the bottom of column C should initially total to the original contract amount	
As you add CCO net items, this total will change.	
Column D & E Work Completed	
Column D	
Enter the amounts for each item that you submitted from the PREVIOUS application	

(The total of requested payments for work you submitted for all previous months)	
Column E	
Enter the amounts for each item that you have completed THIS period, & requesting payment for.	
Eg. The work you did THIS month	
<i>Column F Stored Materials</i>	
If you have delivered pipe, valves, sheetrock, framing or like materials to the site enter their dollar amount here.	
This column is for items that are not yet attached to the building but will soon be, and ..	
.. are APPROVED for payment	
Do NOT include labour or any NON-materials items.	
The Owner's Bank/Financier/Insurance folk need to know about these items.	
Our Bank/Insurance/Surety/Supplier/Lien Holder also need to know.	
<i>Column G Total completed and stored</i>	
Automatically calculates the amount and percentage completed	
<i>Column H Balance to finish</i>	
Automatically calculates how much you are still owed by the contractor/owner when you finish the job	
and submit future applications for payments	
<i>Column I Retainage</i>	
If it is at varying rates you may have to change the formula in these cells.	
The total at the bottom of the column should be the same as that on LINE5 on the G702	
Note, though, that FSSI does not permit retainage on Bond, Design Permit	
and that if we supply a Bond, their should be ZERO retainage. (AIA standards)	
<b>Change Orders</b>	
Enter the amount(s) on <b>BOTH</b> the G702 AND the G703.	
<b>Additions (Extras)</b>	
<b>G702:</b>	
Add the total value to the "Change Order Summary" in the Additions section.	
It will automatically transfer to Line 2 and calculate Line 3.	
<b>G703:</b>	
Do not change the amount of any original line item.	
Create a new line item at the end and enter the total amount of the addition in the "C" column.	
Example:	
(standard description) "Net of Change Order #1": 1,000.00	
Calculate the amount up to 100%, as the work is completed.	
<b>Credits or Deductions (Negative Numbers)</b>	
<b>G702:</b>	
Add the total value to the "Change Order Summary" in the Deductions section.	
<b>G703:</b>	
Do NOT change the amount of any original line items.	
Calculate the original amount in column "C" at 100% completed, after all work is completed.	
Create a new line item at the end of the list and enter the deduction amount with a minus sign.	
Example:	
(standard description) "Net of Change Order #2": -5,000.00	
Enter the amount in column "C" with a minus sign. (-)	
Enter the amount in column "E" with a minus sign (-) after all work is completed.	
Calculate retainage, column "I", if any. It will display a negative amount.	
<b>Accounting Tip, negative numbers:</b>	
To balance the accounting, calculate both the original line item amount and	
the credit line item at 100% completed AFTER all work is completed.	
<b>Author's Note:</b>	
It is good practice not to alter previous Pay Requests.	
"Duplicate" this file, then add any changes.	
<b>Finishing</b>	
When completed, click the Office button, top left corner	
HOVER over 'Save as ..' (the HOVER is important!)	
Click 'pdf or xps ..'	
save it as a pdf file	
email the pdf to your upline (GC/Owner)	
REPEAT the process with a new file each month	

**Arun (Mr.)**

CCM

Fire Suppression Services Incorporated

**Authors Note:**

Our 'AIA G702-703' has been modified to reflect our Surety & Insurance & AHJ requirements, and my not quite suit 'Other Trades'	
Specifically there is no retainage if we are Bonded to the Owner/GC, & no retainage on Bond Permit Design & Submittal to AHJ's)	
The Calculated fields are 'Protected' (Format Cells-Protection, in excel)	
The Sheets are protected (Review-Protect Sheet, in excel)	
.. And	
.. this is by no means an exhaustive instuction set. Refer to the AIA at:	
<a href="http://www.aia.org/">http://www.aia.org/</a>	
2012-09-01	



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## The Punch or Snag List

### Summary

The Punch List is a Contract Document.

It is used in the Architectural and Construction process to organise the completion of a construction project. In a Contract we are bound to complete a Punch List that shows completed and uncompleted contract items before receiving payment from the 'Owner'. The Design Engineer is part of the Punch List and is required to sign off that the work has been completed according to his design. The Compliance Manager is also incorporated into the Punch list to sign off that all work is in compliance with the Contract and with, in our case AHJ's and IBC's.

### Discussion

Refer to AIA A201 General Conditions Section 9.8.2. The Contractor, (FSS) prepares and submits to the Architect a comprehensive list of items to be completed/corrected. The Architect will inspect the list, and determine if the work is substantially complete.

We must prepare, submit and complete Punch lists in order to receive the withheld retainage.

Eum munere omittam pericula ei, accumsan sensibus euripidis vix in. Quod omnes civibus nec at, usu mazim deserunt consulatu an. Et lorem deserunt suavitate nec. Ne postea iisque theophrastus eum. Te quod legere semper ius, qui quem summo ut, pri eu nostro aperiam. Eum diceret partiendo ut, ea mea cetero deserunt rationibus.

Vim oratio euismod laboramus in. Ius libris omittantur te. Facilisi sadipscing no has, audiam aliquando ad mel. Ei enim ferri detracto nec



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## Job Costing or Cost Accounting

### Summary

Cost Accounting, commonly known as Job Costing, involves the calculation of costs involved in a construction "job".

It is the process of tracking the expenses incurred during a job against the revenue produced by that job. It is mostly used by building contractors, subcontractors, architects, engineers and consultants; and the process usually requires good software.

It allows for analysis of the bid against the cost, estimated revenue against actual revenue and showing the profitable & least profitable areas of a business, results of which enable you to be more accurate on future bidding processes.

### Discussion

The purpose/intent of Cost Accounting is to compare job costs against actual costs AND to find out if the project required less or additional resources towards the middle and end of the project.

Cost Accounting uses items.

1. Use Items when purchasing
2. Use items when selling goods and services
3. SO! This means: use an ITEM TYPE instead of an expense type on a check, bill or credit card charge.
  - a. Set items up carefully: chose 'I buy this item' for items we purchase and enter the 'Standard Cost' (see further down the page for Standard Costs definition);
4. Use the same items you record for costs for a job on the invoice for the job.
  - a. Remember, expenses become revenues, and to be able to compare Direct Costs to Gross Revenues, We **MUST USE** the same item on both sides of the transaction.
  - b. Watch out for this, you can have the owner invoice for a generic item by insisting on a simple invoice. Have him use excel or word, and you enter a matching invoice in the Job Cost software using the proper items.

There are a number of items to attend to in Cost Accounting:

1. Tracking the costs involved in the job
2. Ensure all of the costs are invoiced to the customer
3. Produce Reports showing details of costs and revenues by job

The fundamental components of cost accounting are:

1. Bids (aka quotes, estimates, proposals)
2. Revenues
  - a. Critical to the life of our Company!
  - b. Cost Accounting categorizes revenue by account AND by customer, AND by job and item
  - c. Jobs are sub-categories of customers.
  - d. Items are sub-categories of revenues/expenses.
  - e. Expenses become revenues as costs are incurred for a job, marked up and passed on to the customer as revenue.



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## Employee Training Manual

## Job Costing

### Contract Terminology

- f. To enable us to compare our costs to the revenues they produce, we should create matching categories in your revenue accounts and goods sold accounts (COGS)
  - g. SO, **Fire Suppression Services Incorporated**'s Chart of Accounts should reflect general overall categories of the business, NOT individual customers, vendors or detailed sales/costs information.
    - i. It does not. The reverse is true.
  - h. Such details should be 'items', 'cust list' vend list'
3. Time & Materials job
- a. Cost of labour, cost of materials are both passed on to the customer.
  - b. Markup for overhead and profit may be built-in as a percentage of each item or listed as a separate line item
  - c. Often preferred by the SELLER, as unforeseen costs are passed on to the customer.
4. Fixed Fee job
- a. Is an agreement between you and the customer to complete a job for a fixed price, no matter what costs are incurred by you. Estimator should set the price high enough to cover all contingencies, which generally results in a higher price than a Time & Materials job.
  - b. To the customer, it 'seems' like a good idea!

### Items

- a. Represent the products AND services we sell.
- b. We should have many items for each revenue/expense account categories in our COA.
- c. With 'items' we can enter details about what we buy & sell, then 'map' or 'link' the detailed item to the more generalised accounts in the COA.
- d. Then we can 'map' many detailed 'items' to a single account in our COA.
- e. Doing it this way permits a greater level of detail in the item list whilst keeping the Chart of Accounts list concise.
- f. The 'logic' is: "a single item would be mapped to a matching pair of accounts in our COA. E.g. an Inspection hourly labour item would map to Inspection Labour Revenue in the item setup dialog ..(I Sell This Item), and to Inspection Labour COGS ..(I buy this item)
- g. Items focus on revenues
  - i. They are goods and services we sell
  - ii. Use 'Service Items' for labour
  - iii. Use non-inventory items for materials. (the non-inventory title just indicates that you are not tracking unit quantities or unit costs; they are still goods & inventory we hold in inventory.)
  - iv. To track unit quantities and unit costs, use inventory items; **VERY CAREFULLY!**
  - v. 'Inventory Items' means you want to track and enter unit quantities when you buy and sell as well as reconciling accounting records to the physical quantities on hand in between buying and selling. (NOT an ITEM type for the faint of heart!)

### Direct Costs

- c. Direct Costs are directly associated with a job, and can be identified as part of the finished product.
  - i. Cost of pipe, or chemical or tank or nozzle or sprinkler head ...
  - ii. Cost of labour to cut the pipe, fill the chemical, fit the nozzle or sprinkler head.
- d. Direct Costs are different and separate from indirect costs.
- e. Direct Costs are the costs, to FSSI, of the products and services we sell.





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- f. These are the costs involved in job costing.
- g. Direct costs are NOT overhead
- h. Direct Costs are categorised on the 'Profit & Loss' report as Cost of Good Sold (COGS).

### Standard Costs

- i. Standard Costs = direct costs + calculated/estimated piece of related costs that are not billed separately
- j. Standard Costs are 'theoretical' calculations. (spreadsheet)
  - i. Example. 1. For every Hood System we install we need, on average, 100 ft of stainless steel wire; 80 ft of pull-station conduit; fifteen elbow-pulleys; 8 hood seals ... etc. These are items we buy in bulk, and are not billed directly to the job.
  - ii. The purchase cost for this item (hood System) is the cost of the item alone.
  - iii. The Standard Cost of the item (Hood System) includes the cost of the wire, conduit, elbows & seals.
  - iv. Example 2: for every hour we pay labour, we incur costs,(approx. 8%) in payroll taxes, 5% in workers compensation, FICA etc.
    - 1. In creating this labour item, the 'purchase' price is the hourly cost of the labour.
    - 2. The Standard Cost includes the hourly costs of the labour, plus the payroll taxes, Workers Comp, FICA etc.
- k. Standard Costs should be accurately identified.
- l. Standard Costs are only used in job cost reports
- m. Standard Costs are NOT used in the general ledger or in Financial Statement reports.
- n. SO! In most cost accounting software, when you set up an item the dialog will ask you to set three different amounts:
  - i. Sales Price,
  - ii. Purchase Price and
  - iii. Standard Cost.

If you set a Standard Cost, it will show in job profitability reports, even though you have not assigned the cost to a customer or a job when it was purchased.

### Indirect Costs

- o. Indirect Costs are costs that cannot be identified as part of the job even though they were incurred indirectly, in the process of completing the job.
    - i. E.g.: Rent, Insurance, EDP/IT, payroll.
  - p. Indirect Costs are NOT included in job cost reports.
  - q. Indirect Costs are categorised on the 'Profit & Loss' report as 'Operating Expenses'
5. Quotes
- a. A Non-posting transaction. They do not affect your financial statement or the General Ledger.
  - b. They do provide a means to track costs as the job progresses, so that costs stay in line, and that variances are dealt with quickly
  - c. They are estimates of projected costs before the job is awarded.



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## Five Common-Sense Rules of Successful Estimating

1. A good estimate must start with a complete understanding of scope of work followed by an accurate quantity takeoff.
  - a. It's all too easy to miss out identifying items of work in the project. This may be due to absolutely mundane reasons such as missing drawings, details or specs. It could be due to a misinterpretation of the scope based on an ambiguous statement or comment. Or, it could be due to a more serious reason such as lack of experience in conceptualizing the work to be performed in the field.
2. Understand your resources and their cost to you:
  - a. – material suppliers, (Ferguson, Hilti, Oxarc etc.)
  - b. – labor force, (Des, Tim, Bill, Tek, Office Staff etc.)
  - c. – subcontractors, (Craig, AA Fire, Gary Marchant etc.)
  - d. – construction equipment, (Steam Machine, Compressors, Water Pumps, AWP, Ladders.)
  - e. – indirect costs, (Rent, Phone, Power, Payroll, Insurance, IT)
  - f. – management. (not the person, but the act of managing the job)

Easier said than done, this requires a thorough analysis of costs. A cost engineer may very well team up with the comptroller, accountant, field superintendent, project manager, purchasing manager. Even outside labor consultants may be hired to reach cost data to be incorporated in estimates. Remember, such data is not static, but changing in time, and periodic reviewing and updating is a must.
3. Evaluate your strength and weakness and establish comparative advantage.

This is where the upper echelons of management should participate extensively. Typically, they have the background experience not just within the company but with other companies and industries vis-à-vis competition.

Once the main parameters are established, the middle management in collaboration within departments may detail out the analysis and attach workable numbers.

These, in turn, become the ammunition of choice for the estimating department so that they can come up with an estimate that is not only sufficiently low but also profitable for the company.

### 4. Determine appropriate Overhead and Profit rates

In order to achieve optimal overhead and profit applications, item 3 above has to be completed so that risk factors are established and evaluated.

Considering the general description of profit as being the return for taking a risk, it's essential that it has to be a calculated risk.

To arrive at these figures, not only the company cost structure and records must be thoroughly analyzed but also competition must be evaluated.

In general, it is not recommended to trim bid figures from overhead and profit since they represent the long term viability of an ongoing business concern.

### 5. Use sound estimator's judgment and keep an open mind and ear.

When preparing a bid level estimate, care must be taken to identify not only labor and material cost items shown on the plans, but also labor and cost items that may not be reflected on the plans.

This is where good estimating and estimator's judgment comes into play.

It's all right to consult a project manager, an engineer, a field superintendent and even a simple workman.

A few new ideas here and a few there may mean understanding the project better and trimming estimating costs which may in turn mean a winning and profitable bid as opposed to a disappointing loss.

## Summary

Three main divisions in costing a job



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1. Direct material costs
  - a. Ferguson, Hilti, gasoline, packaging, shipping/freight
2. Direct Labour costs

Direct labor directly adds value to the product or service. This type of labor takes materials and machines it, or assembles it, etc to make it worth more than it was worth before.

  - a. Fitters, Inspectors, Estimator, Project Management
3. Overhead (sometimes called Burden costs)
  - a. Office Staff (Payroll, Accounting, Debt Collection, Estimators)
  - b. Rent, mortgage, utilities, vehicle maintenance.

These three can be subdivided further.

1. Direct Labour
  - a. Direct labor is the wage amount paid to those employees directly involved in the manufacture of the product or service, such as an assembler or machinist. Direct labor costs get a lot of scrutiny. This is a cost that management can control and the Cost Accountant is asked to report on the direct labor cost per part, direct labor downtime, and improvement trends in labor.
2. Indirect Labour
  - a. Indirect labor is the labor that is indirectly involved in a product or service, such as a fork truck driver or machine repair. These costs too are controllable and management constantly reviews the costs and looks for ways to be more efficient. Some of the analysis the Cost Accountant will do is: what savings will be realized by going to two 10 hour days instead of three eight hours shifts, what savings are available if we hire outside contractors to rebuild machinery, etc.
3. Material cost
  - a. The material cost is the cost of direct materials that go into making the product. This cost is analyzed to minimize the scrap amount. Scrap can occur in the production process or in the material handling process. The purchasing department is tasked to keep the costs of the purchased material low and to try and achieve cost reductions on this material.
  - b. Material is the raw and purchased parts that make up a product. Do not confuse supplies as material. Supplies are items like gloves, hand tools, sandpaper, etc, that may be used in the production process, but are not part of the completed product.
4. Burden cost

Burden costs are the costs for the plant that are not included in direct labor or material costs.

These costs are often the largest cost for a product. Allocation of these costs to the product is often done incorrectly.

#### **These costs include:**

- Indirect labor costs
- Fringe benefit costs for plant salary and labor
- Plant leases and utilities cost
- Plant maintenance costs
- Machinery maintenance and depreciation

#### **Allocation:**

When allocating to a part or a job, the Cost Accountant needs to develop a reasonable allocation method.

#### **This method must take into consideration:**

- If certain machines require more maintenance than others.
- If more indirect labor is used on certain jobs.



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- Floor space needed.
- If area used is more expensive due to building type, etc.

This is sometimes a difficult job for the Cost Accountant. However, allocation should not be done in haste. These costs are very large and can make a part or service profitable or unprofitable.

The end result needs to fairly allocate costs to jobs. Allocation needs to be based on cost studies and interviews with plant personnel.

#### Allocation of the rate to the job:

The allocation rate is usually calculated for each machine or operation.

The allocation rates can be based on the time each part spends at the operation or in the machine. Some other method may be used also.

The outcome of the allocation should be to accurately reflect the cost to produce the part.

- a. Burden costs are accounting costs that are not direct product costs. These include building rent, health insurance, utility costs, etc. Administrative costs are the costs related to administrative functions, such as sales people salaries, upper management, etc. Management watches these costs, but controlling these costs is not as easy as the production costs, since a lot of these costs are considered to be fixed costs. Fixed costs are like building rent and taxes.

#### 5. Administrative cost

Administrative costs are usually not part of the burden costs that a Cost Accountant will determine for a business, and therefore are not part of the costs of a manufactured part or service. These costs are reported separately and include:

- Sales people salary and associated costs
- Upper Management salary and costs
  - a. There is a good reason that these costs are not part of burden and are not included in the product price. The administrative people are usually working for more than one plant or business. They may also be working on several different projects. To try and incorporate these costs in a product or service is often difficult. The costs are usually allocated to several locations and projects. The Cost Accountant or whoever is creating the budget, will receive these costs from Management. She will then simply add this amount to the budget. Each month these costs are recorded in the general ledger. The costs are also reported on the income statement. When the account structure of the accounting reporting software is initially set up, administrative costs should be segregated by assigning a range of account numbers for these costs.

In many companies, these costs are kept as private as possible. Most professionals in this group are highly compensated and receive many benefits that the rest of the workforce does not. These include large salaries, car allowances, country club memberships, expense accounts, etc. Many public companies must report these costs to the public though. A company's annual report can be interesting reading.

Like any other costs, management will usually review the budgeted admin costs for the year and also review the actual costs to the budgeted costs. In slow economic times, even these costs are certain to be reduced.

#### Cost reports:

Once the accounting costs are defined, these costs can be collected and then reported to management.

Costs can be reported by part, or for the entire plant and can be generated for any period of time. These reports are reviewed by management and often result in management decisions for change or improvements.

A thorough analysis of costs is usually the job of the Cost Accountant. The Cost Accountant works for and reports to the management of the company. Unlike other accounting information, the cost information for individual products or services is secret and only



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reported to management. If the competition knew the cost of other businesses, they would have an unfair advantage when quoting on new work.

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## Compliance

### Summary

During the pre-construction, actual construction & post-construction phases, careful attention to various aspects of the job are required by the 'Contract/s' between you and the Owner, you and the General and you and your subcontractors.

These include, Safety, Certificates, Auditing, Payroll, Item Costs, Milestones, Punch lists, and a myriad of other documents, codes/laws.

### Discussion

When nearing the final phases of the 'Contract' your contract manager will have to have prepared for completion, sign and 'swear to' the following documents:

- Certificate of Compliance Form
- Certificate of Substantial Completion Form
- Certificate of Completion Form
- Affidavit of Payment of Debts and Claims Form
- Affidavit of Release of Liens Form
- Consent of Surety to Final Payment Form
- Acceptance Certificate Form
- Final Settlement Certificate Form
- Warranty Form
- Statutory Declaration Form

# **MasterFormat® Numbers & Titles**

April 2012

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.

The numbers and titles presented here are identical to the numbers and titles contained in the MasterFormat® 2012 publication available for purchase from the Construction Specifications Institute (CSI) and Construction Specifications Canada (CSC).

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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)
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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
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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
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00 45 23	Statement of Disposal Facility
00 45 26	Workers Compensation Certificate Schedule
00 45 33	Non-Segregated Facilities Affidavit
00 45 36	Equal Employment Opportunity Affidavit
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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
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00 54 36	Building Information Modeling Exhibit
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00 62 76	Application for Payment Form
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00 62 76.16	Consent of Surety to Reduction of Retainage Form
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00 62 83	Construction Schedule Form
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00 63 46	Construction Change Directive Form
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00 63 54	Proposal Worksheet Summary Form

00 63 55	Proposal Worksheet Detail Form
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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
<b>02 55 00</b>	<b>Remediation Soil Stabilization</b>
<b>02 56 00</b>	<b>Site Containment</b>
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
<b>02 57 00</b>	<b>Sinkhole Remediation</b>
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
<b>02 58 00</b>	<b>Snow Control</b>
02 58 13	Snow Fencing
02 58 16	Snow Avalanche Control
<b>02 60 00</b>	<b>Contaminated Site Material Removal</b>
<b>02 61 00</b>	<b>Removal and Disposal of Contaminated Soils</b>
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
<b>02 62 00</b>	<b>Hazardous Waste Recovery Processes</b>
02 62 13	Air and Steam Stripping
02 62 16	Soil Vapor Extraction
02 62 19	Soil Washing and Flushing
<b>02 65 00</b>	<b>Underground Storage Tank Removal</b>
<b>02 66 00</b>	<b>Landfill Construction and Storage</b>
<b>02 70 00</b>	<b>Water Remediation</b>
<b>02 71 00</b>	<b>Groundwater Treatment</b>
<b>02 72 00</b>	<b>Water Decontamination</b>
02 72 13	Chemical Water Decontamination
02 72 16	Biological Water Decontamination
02 72 19	Electrolysis Water Decontamination
<b>02 80 00</b>	<b>Facility Remediation</b>
<b>02 81 00</b>	<b>Transportation and Disposal of Hazardous Materials</b>
<b>02 82 00</b>	<b>Asbestos Remediation</b>
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
<b>02 83 00</b>	<b>Lead Remediation</b>
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
<b>02 84 00</b>	<b>Polychlorinate Biphenyl Remediation</b>
02 84 16	Handling of Lighting Ballasts and Lamps Containing PCBs and Mercury
02 84 33	Removal and Disposal of Polychlorinate Biphenyls
<b>02 85 00</b>	<b>Mold Remediation</b>
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
<b>02 86 00</b>	<b>Hazardous Waste Drum Handling</b>

## **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
<b>03 15 00</b>	<b>Concrete Accessories</b>
03 15 13	Waterstops
03 15 13.13	Non-Expanding Waterstops
03 15 13.16	Expanding Waterstops
03 15 13.19	Combination Expanding and Injection Hose Waterstops
03 15 13.21	Injection Hose Waterstops
03 15 16	Concrete Construction Joints
03 15 19	Cast-In Concrete Anchors
<b>03 20 00</b>	<b>Concrete Reinforcing</b>
<b>03 21 00</b>	<b>Reinforcement Bars</b>
03 21 11	Plain Steel Reinforcement Bars
03 21 13	Galvanized Reinforcement Steel Bars
03 21 16	Epoxy-Coated Reinforcement Steel Bars
03 21 19	Stainless Steel Reinforcement Bars
03 21 21	Composite Reinforcement Bars
03 21 21.11	Glass Fiber-Reinforced Polymer Reinforcement Bars
03 21 21.13	Organic Fiber-Reinforced Polymer Reinforcement Bars
03 21 21.16	Carbon Fiber-Reinforced Polymer Reinforcement Bars
<b>03 22 00</b>	<b>Fabric and Grid Reinforcing</b>
03 22 13	Galvanized Welded Wire Fabric Reinforcing
03 22 16	Epoxy-Coated Welded Wire Fabric Reinforcing
03 22 19	Composite Grid Reinforcing
<b>03 23 00</b>	<b>Stressed Tendon Reinforcing</b>
<b>03 24 00</b>	<b>Fibrous Reinforcing</b>
<b>03 25 00</b>	<b>Composite Reinforcing</b>
03 25 13	Glass Fiber-Reinforced Polymer Reinforcing
03 25 16	Organic Fiber-Reinforced Polymer Reinforcing
03 25 19	Carbon Fiber-Reinforced Polymer Reinforcing
<b>03 30 00</b>	<b>Cast-in-Place Concrete</b>
03 30 53	Miscellaneous Cast-in-Place Concrete
<b>03 31 00</b>	<b>Structural Concrete</b>
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
<b>03 33 00</b>	<b>Architectural Concrete</b>
03 33 13	Heavyweight Architectural Concrete
03 33 16	Lightweight Architectural Concrete
<b>03 34 00</b>	<b>Low Density Concrete</b>
<b>03 35 00</b>	<b>Concrete Finishing</b>
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
<b>03 37 00</b>	<b>Specialty Placed Concrete</b>
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
<b>03 38 00</b>	<b>Post-Tensioned Concrete</b>
03 38 13	Post-Tensioned Concrete Preparation
03 38 16	Unbonded Post-Tensioned Concrete
03 38 19	Bonded Post-Tensioned Concrete
<b>03 39 00</b>	<b>Concrete Curing</b>
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
<b>03 40 00</b>	<b>Precast Concrete</b>
<b>03 41 00</b>	<b>Precast Structural Concrete</b>
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
<b>03 45 00</b>	<b>Precast Architectural Concrete</b>
03 45 13	Faced Architectural Precast Concrete
03 45 33	Precast Architectural Pretensioned Concrete
03 45 36	Precast Architectural Post-Tensioned Concrete
<b>03 47 00</b>	<b>Site-Cast Concrete</b>
03 47 13	Tilt-Up Concrete
03 47 16	Lift-Slab Concrete
<b>03 48 00</b>	<b>Precast Concrete Specialties</b>
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
<b>03 49 00</b>	<b>Glass-Fiber-Reinforced Concrete</b>
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
<b>03 50 00</b>	<b>Cast Decks and Underlayment</b>
<b>03 51 00</b>	<b>Cast Roof Decks</b>

03 51 13	Cementitious Wood Fiber Decks
03 51 16	Gypsum Concrete Roof Decks
<b>03 52 00</b>	<b>Lightweight Concrete Roof Insulation</b>
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
<b>03 53 00</b>	<b>Concrete Topping</b>
03 53 13	Emery-Aggregate Concrete Topping
03 53 16	Iron-Aggregate Concrete Topping
<b>03 54 00</b>	<b>Cast Underlayment</b>
03 54 13	Gypsum Cement Underlayment
03 54 16	Hydraulic Cement Underlayment
<b>03 60 00</b>	<b>Grouting</b>
<b>03 61 00</b>	<b>Cementitious Grouting</b>
03 61 13	Dry-Pack Grouting
<b>03 62 00</b>	<b>Non-Shrink Grouting</b>
03 62 13	Non-Metallic Non-Shrink Grouting
03 62 16	Metallic Non-Shrink Grouting
<b>03 63 00</b>	<b>Epoxy Grouting</b>
<b>03 64 00</b>	<b>Injection Grouting</b>
03 64 23	Epoxy Injection Grouting
<b>03 70 00</b>	<b>Mass Concrete</b>
<b>03 71 00</b>	<b>Mass Concrete for Raft Foundations</b>
<b>03 72 00</b>	<b>Mass Concrete for Dams</b>
<b>03 80 00</b>	<b>Concrete Cutting and Boring</b>
<b>03 81 00</b>	<b>Concrete Cutting</b>
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
<b>03 82 00</b>	<b>Concrete Boring</b>
03 82 13	Concrete Core Drilling

<b>04 00 00</b>	<b>Masonry</b>
<b>04 01 00</b>	<b>Maintenance of Masonry</b>
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
<b>04 05 00</b>	<b>Common Work Results for Masonry</b>
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 21	Masonry Strengthening
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
<b>04 06 00</b>	<b>Schedules for Masonry</b>
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
<b>04 08 00</b>	<b>Commissioning of Masonry</b>
<b>04 20 00</b>	<b>Unit Masonry</b>
<b>04 21 00</b>	<b>Clay Unit Masonry</b>
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
<b>04 22 00</b>	<b>Concrete Unit Masonry</b>
<b>04 22 00.13</b>	<b>Concrete Unit Veneer Masonry</b>
<b>04 22 00.16</b>	<b>Surface-Bonded Concrete Unit Masonry</b>
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
<b>04 23 00</b>	<b>Glass Unit Masonry</b>
04 23 13	Vertical Glass Unit Masonry
04 23 16	Glass Unit Masonry Floors
04 23 19	Glass Unit Masonry Skylights
<b>04 24 00</b>	<b>Adobe Unit Masonry</b>
04 24 13	Site-Cast Adobe Unit Masonry
04 24 16	Manufactured Adobe Unit Masonry
<b>04 25 00</b>	<b>Unit Masonry Panels</b>
04 25 13	Metal-Supported Unit Masonry Panels
<b>04 26 00</b>	<b>Single-Wythe Unit Masonry</b>
04 26 13	Masonry Veneer
<b>04 27 00</b>	<b>Multiple-Wythe Unit Masonry</b>
04 27 13	Composite Unit Masonry
04 27 23	Cavity Wall Unit Masonry
<b>04 28 00</b>	<b>Concrete Form Masonry Units</b>
04 28 13	Dry-Stacked, Concrete-Filled Masonry Units
04 28 23	Mortar-Set, Concrete-Filled Masonry Units
<b>04 29 00</b>	<b>Engineered Unit Masonry</b>
<b>04 40 00</b>	<b>Stone Assemblies</b>
<b>04 41 00</b>	<b>Dry-Placed Stone</b>
<b>04 42 00</b>	<b>Exterior Stone Cladding</b>
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
<b>04 43 00</b>	<b>Stone Masonry</b>
04 43 13	Stone Masonry Veneer
04 43 13.13	Anchored Stone Masonry Veneer

04 43 13.16	Adhered Stone Masonry Veneer
<b>04 50 00</b>	<b>Refractory Masonry</b>
<b>04 51 00</b>	<b>Flue Liner Masonry</b>
<b>04 52 00</b>	<b>Combustion Chamber Masonry</b>
<b>04 53 00</b>	<b>Castable Refractory Masonry</b>
<b>04 54 00</b>	<b>Refractory Brick Masonry</b>
<b>04 57 00</b>	<b>Masonry Fireplaces</b>
04 57 33	Modular Masonry Fireplaces
<b>04 60 00</b>	<b>Corrosion-Resistant Masonry</b>
<b>04 61 00</b>	<b>Chemical-Resistant Brick Masonry</b>
<b>04 62 00</b>	<b>Vitrified Clay Liner Plate</b>
<b>04 70 00</b>	<b>Manufactured Masonry</b>
<b>04 71 00</b>	<b>Manufactured Brick Masonry</b>
04 71 13	Calcium Silicate Manufactured Brick Masonry
<b>04 72 00</b>	<b>Cast Stone Masonry</b>
<b>04 73 00</b>	<b>Manufactured Stone Masonry</b>
04 73 13	Calcium Silicate Manufactured Stone Masonry



<b>05 00 00</b>	<b>Metals</b>
<b>05 01 00</b>	<b>Maintenance of Metals</b>
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
<b>05 05 00</b>	<b>Common Work Results for Metals</b>
05 05 13	Shop-Applied Coatings for Metal
05 05 19	Post-Installed Concrete Anchors
05 05 23	Metal Fastenings
05 05 53	Security Metal Fastenings
<b>05 06 00</b>	<b>Schedules for Metals</b>
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
<b>05 08 00</b>	<b>Commissioning of Metals</b>
<b>05 10 00</b>	<b>Structural Metal Framing</b>
<b>05 12 00</b>	<b>Structural Steel Framing</b>
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
<b>05 13 00</b>	<b>Structural Stainless-Steel Framing</b>
<b>05 14 00</b>	<b>Structural Aluminum Framing</b>
05 14 13	Architecturally-Exposed Structural Aluminum Framing
<b>05 15 00</b>	<b>Wire Rope Assemblies</b>
05 15 13	Aluminum Wire Rope Assemblies
05 15 16	Steel Wire Rope Assemblies
05 15 19	Stainless-Steel Wire Rope Assemblies
<b>05 16 00</b>	<b>Structural Cabling</b>
05 16 13	Cable Bow Truss Assemblies
05 16 33	Bridge Cabling
<b>05 17 00</b>	<b>Structural Rod Assemblies</b>
<b>05 19 00</b>	<b>Tension Rod and Cable Truss Assemblies</b>
05 19 13	Facade Support Truss Assemblies
05 19 19	Canopy Support Truss Assemblies

<b>05 20 00</b>	<b>Metal Joists</b>
<b>05 21 00</b>	<b>Steel Joist Framing</b>
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
<b>05 25 00</b>	<b>Aluminum Joist Framing</b>
<b>05 30 00</b>	<b>Metal Decking</b>
<b>05 31 00</b>	<b>Steel Decking</b>
05 31 13	Steel Floor Decking
05 31 23	Steel Roof Decking
05 31 33	Steel Form Decking
<b>05 33 00</b>	<b>Aluminum Decking</b>
05 33 13	Aluminum Floor Decking
05 33 23	Aluminum Roof Decking
<b>05 34 00</b>	<b>Acoustical Metal Decking</b>
<b>05 35 00</b>	<b>Raceway Decking Assemblies</b>
<b>05 36 00</b>	<b>Composite Metal Decking</b>
05 36 13	Composite Steel Plate and Elastomer Decking
<b>05 40 00</b>	<b>Cold-Formed Metal Framing</b>
<b>05 41 00</b>	<b>Structural Metal Stud Framing</b>
<b>05 42 00</b>	<b>Cold-Formed Metal Joist Framing</b>
05 42 13	Cold-Formed Metal Floor Joist Framing
05 42 23	Cold-Formed Metal Roof Joist Framing
<b>05 43 00</b>	<b>Slotted Channel Framing</b>
<b>05 44 00</b>	<b>Cold-Formed Metal Trusses</b>
05 44 13	Cold-Formed Metal Roof Trusses
<b>05 45 00</b>	<b>Metal Support Assemblies</b>
05 45 13	Mechanical Metal Supports
05 45 16	Electrical Metal Supports
05 45 19	Communications Metal Supports
05 45 23	Healthcare Metal Supports
<b>05 50 00</b>	<b>Metal Fabrications</b>
<b>05 51 00</b>	<b>Metal Stairs</b>
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

<b>05 52 00</b>	<b>Metal Railings</b>
05 52 13	Pipe and Tube Railings
<b>05 53 00</b>	<b>Metal Gratings</b>
05 53 13	Bar Gratings
05 53 16	Plank Gratings
<b>05 54 00</b>	<b>Metal Floor Plates</b>
<b>05 55 00</b>	<b>Metal Stair Treads and Nosings</b>
05 55 13	Metal Stair Treads
05 55 16	Metal Stair Nosings
<b>05 56 00</b>	<b>Metal Castings</b>
<b>05 58 00</b>	<b>Formed Metal Fabrications</b>
05 58 13	Column Covers
05 58 16	Formed Metal Enclosures
05 58 19	Heating/Cooling Unit Covers
05 58 23	Formed Metal Guards
<b>05 59 00</b>	<b>Metal Specialties</b>
05 59 13	Metal Balconies
05 59 63	Detention Enclosures
<b>05 70 00</b>	<b>Decorative Metal</b>
<b>05 71 00</b>	<b>Decorative Metal Stairs</b>
05 71 13	Fabricated Metal Spiral Stairs
<b>05 73 00</b>	<b>Decorative Metal Railings</b>
05 73 13	Glazed Decorative Metal Railings
05 73 16	Wire Rope Decorative Metal Railings
<b>05 74 00</b>	<b>Decorative Metal Castings</b>
<b>05 75 00</b>	<b>Decorative Formed Metal</b>
<b>05 76 00</b>	<b>Decorative Forged Metal</b>

<b>06 00 00</b>	<b>Wood, Plastics, and Composites</b>
<b>06 01 00</b>	<b>Maintenance of Wood, Plastics, and Composites</b>
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
<b>06 05 00</b>	<b>Common Work Results for Wood, Plastics, and Composites</b>
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
<b>06 06 00</b>	<b>Schedules for Wood, Plastics, and Composites</b>
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
<b>06 08 00</b>	<b>Commissioning of Wood, Plastics, and Composites</b>

<b>06 10 00</b>	<b>Rough Carpentry</b>
06 10 53	Miscellaneous Rough Carpentry
06 10 63	Exterior Rough Carpentry
<b>06 11 00</b>	<b>Wood Framing</b>
06 11 13	Engineered Wood Products
06 11 16	Mechanically Graded Lumber
<b>06 12 00</b>	<b>Structural Panels</b>
06 12 13	Cementitious Reinforced Panels
06 12 16	Stressed Skin Panels
<b>06 13 00</b>	<b>Heavy Timber Construction</b>
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
<b>06 14 00</b>	<b>Treated Wood Foundations</b>
<b>06 15 00</b>	<b>Wood Decking</b>
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
<b>06 16 00</b>	<b>Sheathing</b>
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
<b>06 17 00</b>	<b>Shop-Fabricated Structural Wood</b>
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
<b>06 18 00</b>	<b>Glued-Laminated Construction</b>
06 18 13	Glued-Laminated Beams
06 18 16	Glued-Laminated Columns
<b>06 20 00</b>	<b>Finish Carpentry</b>
06 20 13	Exterior Finish Carpentry
06 20 23	Interior Finish Carpentry
<b>06 22 00</b>	<b>Millwork</b>

06 22 13	Standard Pattern Wood Trim
<b>06 25 00</b>	<b>Prefinished Paneling</b>
06 25 13	Prefinished Hardboard Paneling
06 25 16	Prefinished Plywood Paneling
<b>06 26 00</b>	<b>Board Paneling</b>
06 26 13	Profile Board Paneling
<b>06 40 00</b>	<b>Architectural Woodwork</b>
06 40 13	Exterior Architectural Woodwork
06 40 23	Interior Architectural Woodwork
<b>06 41 00</b>	<b>Architectural Wood Casework</b>
06 41 13	Wood-Veneer-Faced Architectural Cabinets
06 41 16	Plastic-Laminate-Clad Architectural Cabinets
06 41 93	Cabinet and Drawer Hardware
<b>06 42 00</b>	<b>Wood Paneling</b>
06 42 13	Wood Board Paneling
06 42 14	Stile and Rail Wood Paneling
06 42 16	Flush Wood Paneling
06 42 19	Plastic-Laminate-Faced Wood Paneling
<b>06 43 00</b>	<b>Wood Stairs and Railings</b>
06 43 13	Wood Stairs
06 43 16	Wood Railings
<b>06 44 00</b>	<b>Ornamental Woodwork</b>
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
<b>06 46 00</b>	<b>Wood Trim</b>
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 Fasciae and Soffits
06 46 33	Wood Stops, Stools, and Sills
06 46 91	Splicing of Wooden Components
<b>06 48 00</b>	<b>Wood Frames</b>
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
<b>06 49 00</b>	<b>Wood Screens and Exterior Wood Shutters</b>
06 49 13	Wood Screens

06 49 16	Exterior Wood Blinds
06 49 19	Exterior Wood Shutters
<b>06 50 00</b>	<b>Structural Plastics</b>
<b>06 51 00</b>	<b>Structural Plastic Shapes and Plates</b>
06 51 13	Plastic Lumber
<b>06 52 00</b>	<b>Plastic Structural Assemblies</b>
<b>06 53 00</b>	<b>Plastic Decking</b>
06 53 13	Solid Plastic Decking
<b>06 60 00</b>	<b>Plastic Fabrications</b>
<b>06 61 00</b>	<b>Simulated Stone Fabrications</b>
06 61 13	Cultured Marble Fabrications
06 61 16	Solid Surfacing Fabrications
06 61 19	Quartz Surfacing Fabrications
<b>06 63 00</b>	<b>Plastic Railings</b>
<b>06 64 00</b>	<b>Plastic Paneling</b>
06 64 13	Plastic Lattice Paneling
<b>06 65 00</b>	<b>Plastic Simulated Wood Trim</b>
<b>06 66 00</b>	<b>Custom Ornamental Simulated Woodwork</b>
<b>06 70 00</b>	<b>Structural Composites</b>
<b>06 71 00</b>	<b>Structural Composite Shapes and Plates</b>
06 71 13	Composite Lumber
<b>06 72 00</b>	<b>Composite Structural Assemblies</b>
06 72 13	Composite Joist Assemblies
<b>06 73 00</b>	<b>Composite Decking</b>
06 73 13	Composite Structural Decking
<b>06 74 00</b>	<b>Composite Gratings</b>
06 74 13	Fiberglass Reinforced Gratings
<b>06 80 00</b>	<b>Composite Fabrications</b>
<b>06 81 00</b>	<b>Composite Railings</b>
06 81 13	Glass-Fiber-Reinforced Plastic Railings
<b>06 83 00</b>	<b>Composite Paneling</b>
06 83 13	Resin Composite Paneling
06 83 16	Fiberglass Reinforced Paneling

<b>07 00 00</b>	<b>Thermal and Moisture Protection</b>
<b>07 01 00</b>	<b>Operation and Maintenance of Thermal and Moisture Protection</b>
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
<b>07 05 00</b>	<b>Common Work Results for Thermal and Moisture Protection</b>
07 05 53	Fire and Smoke Assembly Identification
<b>07 06 00</b>	<b>Schedules for Thermal and Moisture Protection</b>
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
<b>07 08 00</b>	<b>Commissioning of Thermal and Moisture Protection</b>
<b>07 10 00</b>	<b>Dampproofing and Waterproofing</b>
<b>07 11 00</b>	<b>Dampproofing</b>
07 11 13	Bituminous Dampproofing
07 11 16	Cementitious Dampproofing
07 11 19	Sheet Dampproofing
<b>07 12 00</b>	<b>Built-Up Bituminous Waterproofing</b>
07 12 13	Built-Up Asphalt Waterproofing



07 12 16	Built-Up Coal Tar Waterproofing
<b>07 13 00</b>	<b>Sheet Waterproofing</b>
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
<b>07 14 00</b>	<b>Fluid-Applied Waterproofing</b>
07 14 13	Hot Fluid-Applied Rubberized Asphalt Waterproofing
07 14 14	Hot Fluid-Applied Polyurea Waterproofing
07 14 16	Cold Fluid-Applied Waterproofing
<b>07 15 00</b>	<b>Sheet Metal Waterproofing</b>
07 15 13	Sheet Lead Waterproofing
<b>07 16 00</b>	<b>Cementitious and Reactive Waterproofing</b>
07 16 13	Polymer Modified Cement Waterproofing
07 16 16	Crystalline Waterproofing
07 16 19	Metal Oxide Waterproofing
<b>07 17 00</b>	<b>Bentonite Waterproofing</b>
07 17 13	Bentonite Panel Waterproofing
07 17 16	Bentonite Composite Sheet Waterproofing
<b>07 18 00</b>	<b>Traffic Coatings</b>
07 18 13	Pedestrian Traffic Coatings
07 18 16	Vehicular Traffic Coatings
<b>07 19 00</b>	<b>Water Repellents</b>
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
<b>07 20 00</b>	<b>Thermal Protection</b>
<b>07 21 00</b>	<b>Thermal Insulation</b>
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
<b>07 22 00</b>	<b>Roof and Deck Insulation</b>
07 22 13	Asphaltic Perlite Concrete Deck
07 22 16	Roof Board Insulation
<b>07 24 00</b>	<b>Exterior Insulation and Finish Systems</b>
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
<b>07 25 00</b>	<b>Weather Barriers</b>
<b>07 26 00</b>	<b>Vapor Retarders</b>
07 26 13	Above-Grade Vapor Retarders
07 26 16	Below-Grade Vapor Retarders
07 26 23	Below-Grade Gas Retarders
<b>07 27 00</b>	<b>Air Barriers</b>
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 27 36	Sprayed Foam Air Barrier
<b>07 30 00</b>	<b>Steep Slope Roofing</b>
07 30 91	Canvas Roofing
<b>07 31 00</b>	<b>Shingles and Shakes</b>
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
<b>07 32 00</b>	<b>Roof Tiles</b>
07 32 13	Clay Roof Tiles
07 32 14	Ceramic and Porcelain 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
<b>07 33 00</b>	<b>Natural Roof Coverings</b>
07 33 13	Sod Roofing
07 33 16	Thatched Roofing
07 33 63	Vegetated Roofing
<b>07 40 00</b>	<b>Roofing and Siding Panels</b>
<b>07 41 00</b>	<b>Roof Panels</b>
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
<b>07 42 00</b>	<b>Wall Panels</b>

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
<b>07 44 00</b>	<b>Faced Panels</b>
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
<b>07 46 00</b>	<b>Siding</b>
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
<b>07 50 00</b>	<b>Membrane Roofing</b>
<b>07 51 00</b>	<b>Built-Up Bituminous Roofing</b>
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
<b>07 52 00</b>	<b>Modified Bituminous Membrane Roofing</b>
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
<b>07 53 00</b>	<b>Elastomeric Membrane Roofing</b>

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
<b>07 54 00</b>	<b>Thermoplastic Membrane Roofing</b>
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
<b>07 55 00</b>	<b>Protected Membrane Roofing</b>
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
<b>07 56 00</b>	<b>Fluid-Applied Roofing</b>
<b>07 57 00</b>	<b>Coated Foamed Roofing</b>
07 57 13	Sprayed Polyurethane Foam Roofing
<b>07 58 00</b>	<b>Roll Roofing</b>
<b>07 60 00</b>	<b>Flashing and Sheet Metal</b>
<b>07 61 00</b>	<b>Sheet Metal Roofing</b>
07 61 13	Standing Seam Sheet Metal Roofing
07 61 16	Batten Seam Sheet Metal Roofing
07 61 19	Flat Seam Sheet Metal Roofing
<b>07 62 00</b>	<b>Sheet Metal Flashing and Trim</b>
<b>07 63 00</b>	<b>Sheet Metal Roofing Specialties</b>
<b>07 64 00</b>	<b>Sheet Metal Wall Cladding</b>
07 64 13	Standing Seam Sheet Metal Wall Cladding
07 64 16	Batten Seam Sheet Metal Wall Cladding
07 64 19	Flat Seam Sheet Metal Wall Cladding
<b>07 65 00</b>	<b>Flexible Flashing</b>
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
<b>07 70 00</b>	<b>Roof and Wall Specialties and Accessories</b>
<b>07 71 00</b>	<b>Roof Specialties</b>
07 71 13	Manufactured Copings
07 71 16	Manufactured Counterflashing Systems
07 71 19	Manufactured Gravel Stops and Fasciae
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
<b>07 72 00</b>	<b>Roof Accessories</b>
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
<b>07 76 00</b>	<b>Roof Pavers</b>
07 76 13	Roof Ballast Pavers
07 76 16	Roof Decking Pavers
<b>07 77 00</b>	<b>Wall Specialties</b>
<b>07 80 00</b>	<b>Fire and Smoke Protection</b>
<b>07 81 00</b>	<b>Applied Fireproofing</b>
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
<b>07 82 00</b>	<b>Board Fireproofing</b>
07 82 13	Calcium-Silicate Board Fireproofing
07 82 16	Slag-Fiber Board Fireproofing
<b>07 84 00</b>	<b>Firestopping</b>
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
<b>07 86 00</b>	<b>Smoke Seals</b>
<b>07 87 00</b>	<b>Smoke Containment Barriers</b>
<b>07 90 00</b>	<b>Joint Protection</b>
<b>07 91 00</b>	<b>Preformed Joint Seals</b>
07 91 13	Compression Seals
07 91 16	Joint Gaskets
07 91 23	Backer Rods
07 91 26	Joint Fillers
<b>07 92 00</b>	<b>Joint Sealants</b>
07 92 13	Elastomeric Joint Sealants
07 92 16	Rigid Joint Sealants
07 92 19	Acoustical Joint Sealants
<b>07 95 00</b>	<b>Expansion Control</b>

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
<b>08 08 00</b>	<b>Commissioning of Openings</b>
<b>08 10 00</b>	<b>Doors and Frames</b>
<b>08 11 00</b>	<b>Metal Doors and Frames</b>
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
<b>08 12 00</b>	<b>Metal Frames</b>
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
<b>08 13 00</b>	<b>Metal Doors</b>
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
<b>08 14 00</b>	<b>Wood Doors</b>
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
<b>08 15 00</b>	<b>Plastic Doors</b>
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
<b>08 16 00</b>	<b>Composite Doors</b>
08 16 13	Fiberglass Doors
08 16 73	Sliding Composite Doors
08 16 76	Bifolding Composite Doors
<b>08 17 00</b>	<b>Integrated Door Opening Assemblies</b>
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
<b>08 30 00</b>	<b>Specialty Doors and Frames</b>
<b>08 31 00</b>	<b>Access Doors and Panels</b>
08 31 13	Access Doors and Frames
08 31 13.53	Security Access Doors and Frames
08 31 16	Access Panels and Frames
<b>08 32 00</b>	<b>Sliding Glass Doors</b>
08 32 13	Sliding Aluminum-Framed Glass Doors
08 32 16	Sliding Plastic-Framed Glass Doors
08 32 19	Sliding Wood-Framed Glass Doors
<b>08 33 00</b>	<b>Coiling Doors and Grilles</b>
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 33 44	Overhead Coiling Fire Curtains
<b>08 34 00</b>	<b>Special Function Doors</b>
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
<b>08 35 00</b>	<b>Folding Doors and Grilles</b>
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
<b>08 36 00</b>	<b>Panel Doors</b>
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
<b>08 38 00</b>	<b>Traffic Doors</b>
08 38 13	Flexible Strip Doors
08 38 16	Flexible Traffic Doors
08 38 19	Rigid Traffic Doors
<b>08 39 00</b>	<b>Pressure-Resistant Doors</b>
08 39 13	Airtight Doors
08 39 19	Watertight Doors
08 39 53	Blast-Resistant Doors
<b>08 40 00</b>	<b>Entrances, Storefronts, and Curtain Walls</b>
<b>08 41 00</b>	<b>Entrances and Storefronts</b>
08 41 13	Aluminum-Framed Entrances and Storefronts
08 41 13.13	Fire-Rated 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
<b>08 42 00</b>	<b>Entrances</b>
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
<b>08 43 00</b>	<b>Storefronts</b>
08 43 11	Timber-Framed Storefronts
08 43 13	Aluminum-Framed Storefronts
08 43 13.13	Fire-Rated Aluminum 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
<b>08 44 00</b>	<b>Curtain Wall and Glazed Assemblies</b>
08 44 11	Glazed Timber Curtain Walls
08 44 12	Glazed Composite Curtain Wall
08 44 12.13	Glazed Fiberglass Curtain Wall
08 44 13	Glazed Aluminum Curtain Walls
08 44 16	Glazed Bronze Curtain Walls
08 44 18	Glazed Steel 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
<b>08 45 00</b>	<b>Translucent Wall and Roof Assemblies</b>
08 45 13	Structured-Polycarbonate-Panel Assemblies
08 45 23	Fiberglass-Sandwich-Panel Assemblies
<b>08 50 00</b>	<b>Windows</b>
<b>08 51 00</b>	<b>Metal Windows</b>
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
<b>08 52 00</b>	<b>Wood Windows</b>
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
<b>08 53 00</b>	<b>Plastic Windows</b>
08 53 13	Vinyl Windows
08 53 66	Vinyl Window Screens
08 53 69	Vinyl Storm Windows
<b>08 54 00</b>	<b>Composite Windows</b>
08 54 13	Fiberglass Windows
08 54 66	Fiberglass Window Screens

08 54 69	Fiberglass Storm Windows
<b>08 55 00</b>	<b>Pressure-Resistant Windows</b>
<b>08 56 00</b>	<b>Special Function Windows</b>
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
<b>08 60 00</b>	<b>Roof Windows and Skylights</b>
<b>08 61 00</b>	<b>Roof Windows</b>
08 61 13	Metal Roof Windows
08 61 16	Wood Roof Windows
<b>08 62 00</b>	<b>Unit Skylights</b>
08 62 13	Domed Unit Skylights
08 62 16	Pyramidal Unit Skylights
08 62 19	Vaulted Unit Skylights
08 62 23	Tubular Skylights
<b>08 63 00</b>	<b>Metal-Framed Skylights</b>
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
<b>08 64 00</b>	<b>Plastic-Framed Skylights</b>
<b>08 67 00</b>	<b>Skylight Protection and Screens</b>
<b>08 70 00</b>	<b>Hardware</b>
<b>08 71 00</b>	<b>Door Hardware</b>
08 71 13	Automatic Door Operators
08 71 53	Security Door Hardware
08 71 63	Detention Door Hardware
<b>08 74 00</b>	<b>Access Control Hardware</b>
08 74 13	Card Key Access Control Hardware
08 74 16	Keypad Access Control Hardware
08 74 19	Biometric Identity Access Control Hardware
<b>08 75 00</b>	<b>Window Hardware</b>
08 75 13	Automatic Window Equipment
08 75 16	Window Operators
<b>08 78 00</b>	<b>Special Function Hardware</b>
<b>08 79 00</b>	<b>Hardware Accessories</b>
08 79 13	Key Storage Equipment
<b>08 80 00</b>	<b>Glazing</b>

<b>08 81 00</b>	<b>Glass Glazing</b>
08 81 13	Decorative Glass Glazing
<b>08 83 00</b>	<b>Mirrors</b>
08 83 13	Mirrored Glass Glazing
08 83 16	Mirrored Plastic Glazing
<b>08 84 00</b>	<b>Plastic Glazing</b>
08 84 13	Decorative Plastic Glazing
<b>08 85 00</b>	<b>Glazing Accessories</b>
<b>08 87 00</b>	<b>Glazing Surface Films</b>
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
<b>08 88 00</b>	<b>Special Function Glazing</b>
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
<b>08 90 00</b>	<b>Louvers and Vents</b>
<b>08 91 00</b>	<b>Louvers</b>
08 91 13	Motorized Wall Louvers
08 91 16	Operable Wall Louvers
08 91 19	Fixed Louvers
08 91 26	Door Louvers
<b>08 92 00</b>	<b>Louvered Equipment Enclosures</b>
<b>08 95 00</b>	<b>Vents</b>
08 95 13	Soffit Vents
08 95 16	Wall Vents
08 95 33	Explosion Vents
08 95 43	Flood Vents

<b>09 00 00</b>	<b>Finishes</b>
<b>09 01 00</b>	<b>Maintenance of Finishes</b>
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
<b>09 05 00</b>	<b>Common Work Results for Finishes</b>
09 05 13	Common Finishes
09 05 61	Common Work Results for Flooring Preparation
<b>09 06 00</b>	<b>Schedules for Finishes</b>
<b>09 06 00.13</b>	<b>Room Finish Schedule</b>
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
<b>09 08 00</b>	<b>Commissioning of Finishes</b>
<b>09 20 00</b>	<b>Plaster and Gypsum Board</b>
<b>09 21 00</b>	<b>Plaster and Gypsum Board Assemblies</b>
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
<b>09 22 00</b>	<b>Supports for Plaster and Gypsum Board</b>
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
<b>09 23 00</b>	<b>Gypsum Plastering</b>
09 23 13	Acoustical Gypsum Plastering
09 23 82	Fireproof Gypsum Plastering
<b>09 24 00</b>	<b>Cement Plastering</b>
09 24 13	Adobe Finish
09 24 23	Cement Stucco
09 24 33	Cement Parging
<b>09 25 00</b>	<b>Other Plastering</b>
09 25 13	Acrylic Plastering
09 25 13.13	Acrylic Plaster Finish
09 25 23	Lime Based Plastering
09 25 26	Natural Clay Plastering
<b>09 26 00</b>	<b>Veneer Plastering</b>
09 26 13	Gypsum Veneer Plastering
<b>09 27 00</b>	<b>Plaster Fabrications</b>
09 27 13	Glass-Fiber-Reinforced Plaster Fabrications
09 27 23	Simulated Plaster Fabrications
<b>09 28 00</b>	<b>Backing Boards and Underlayments</b>
09 28 13	Cementitious Backing Boards
09 28 16	Glass-Mat Faced Gypsum Backing Boards
09 28 19	Fibered Gypsum Backing Boards
<b>09 29 00</b>	<b>Gypsum Board</b>
09 29 82	Gypsum Board Fireproofing
<b>09 30 00</b>	<b>Tiling</b>
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
<b>09 31 00</b>	<b>Thin-Set Tiling</b>
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
<b>09 32 00</b>	<b>Mortar-Bed Tiling</b>

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
<b>09 33 00</b>	<b>Conductive Tiling</b>
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
<b>09 34 00</b>	<b>Waterproofing-Membrane Tiling</b>
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
<b>09 35 00</b>	<b>Chemical-Resistant Tiling</b>
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
<b>09 50 00</b>	<b>Ceilings</b>
<b>09 51 00</b>	<b>Acoustical Ceilings</b>
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
<b>09 53 00</b>	<b>Acoustical Ceiling Suspension Assemblies</b>
09 53 13	Curved Profile Ceiling Suspension Assemblies
09 53 23	Metal Acoustical Ceiling Suspension Assemblies
09 53 33	Plastic Acoustical Ceiling Suspension Assemblies
<b>09 54 00</b>	<b>Specialty Ceilings</b>



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	Suspended 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
<b>09 56 00</b>	<b>Textured Ceilings</b>
09 56 13	Gypsum-Panel Textured Ceilings
09 56 16	Metal-Panel Textured Ceilings
<b>09 57 00</b>	<b>Special Function Ceilings</b>
09 57 53	Security Ceiling Assemblies
<b>09 58 00</b>	<b>Integrated Ceiling Assemblies</b>
<b>09 60 00</b>	<b>Flooring</b>
09 60 13	Acoustic Underlayment
<b>09 61 00</b>	<b>Flooring Treatment</b>
09 61 13	Slip-Resistant Flooring Treatment
09 61 19	Concrete Staining
09 61 36	Static-Resistant Flooring Treatment
<b>09 62 00</b>	<b>Specialty Flooring</b>
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
<b>09 63 00</b>	<b>Masonry Flooring</b>
09 63 13	Brick Flooring
09 63 13.35	Chemical-Resistant Brick Flooring
09 63 40	Stone Flooring
09 63 43	Composition Stone Flooring
<b>09 64 00</b>	<b>Wood Flooring</b>
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

<b>09 65 00</b>	<b>Resilient Flooring</b>
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
<b>09 66 00</b>	<b>Terrazzo Flooring</b>
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
<b>09 67 00</b>	<b>Fluid-Applied Flooring</b>
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
<b>09 68 00</b>	<b>Carpeting</b>
09 68 13	Tile Carpeting
09 68 16	Sheet Carpeting
<b>09 69 00</b>	<b>Access Flooring</b>
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
<b>09 70 00</b>	<b>Wall Finishes</b>
<b>09 72 00</b>	<b>Wall Coverings</b>
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
<b>09 73 00</b>	<b>Wall Carpeting</b>
<b>09 74 00</b>	<b>Flexible Wood Sheets</b>
09 74 13	Wood Wall Coverings
09 74 16	Flexible Wood Veneers
<b>09 75 00</b>	<b>Stone Facing</b>
09 75 13	Stone Wall Facing
09 75 19	Stone Trim
<b>09 76 00</b>	<b>Plastic Blocks</b>
<b>09 77 00</b>	<b>Special Wall Surfacing</b>
09 77 13	Stretched-Fabric Wall Systems
09 77 23	Fabric-Wrapped Panels
09 77 53	Vegetated Wall Systems
<b>09 78 00</b>	<b>Interior Wall Paneling</b>
09 78 13	Metal Interior Wall Paneling
<b>09 80 00</b>	<b>Acoustic Treatment</b>
<b>09 81 00</b>	<b>Acoustic Insulation</b>
09 81 13	Acoustic Board Insulation
09 81 16	Acoustic Blanket Insulation
09 81 29	Sprayed Acoustic Insulation
<b>09 83 00</b>	<b>Acoustic Finishes</b>
09 83 13	Acoustic Wall Coating
09 83 16	Acoustic Ceiling Coating
09 83 22	Acoustic Drapery
<b>09 84 00</b>	<b>Acoustic Room Components</b>
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
<b>09 90 00</b>	<b>Painting and Coating</b>
<b>09 91 00</b>	<b>Painting</b>
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

<b>10 00 00</b>	<b>Specialties</b>
<b>10 01 00</b>	<b>Operation and Maintenance of Specialties</b>
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
<b>10 05 00</b>	<b>Common Work Results for Specialties</b>
<b>10 06 00</b>	<b>Schedules for Specialties</b>
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
<b>10 08 00</b>	<b>Commissioning of Specialties</b>
<b>10 10 00</b>	<b>Information Specialties</b>
<b>10 11 00</b>	<b>Visual Display Units</b>
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
<b>10 12 00</b>	<b>Display Cases</b>
<b>10 13 00</b>	<b>Directories</b>

10 13 13	Electronic Directories
10 13 23	Illuminated Directories
<b>10 14 00</b>	<b>Signage</b>
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 14 67	Tactile Signage
<b>10 17 00</b>	<b>Telephone Specialties</b>
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
<b>10 18 00</b>	<b>Informational Kiosks</b>
<b>10 20 00</b>	<b>Interior Specialties</b>
<b>10 21 00</b>	<b>Compartments and Cubicles</b>
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
<b>10 22 00</b>	<b>Partitions</b>
10 22 13	Wire Mesh Partitions
10 22 14	Expanded Metal 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
<b>10 25 00</b>	<b>Service Walls</b>
10 25 13	Patient Bed Service Walls
10 25 16	Modular Service Walls
<b>10 26 00</b>	<b>Wall and Door Protection</b>
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 23.16	Fiberglass Reinforced Protective Wall Covering
10 26 33	Door and Frame Protection
10 26 41	Bullet Resistant Panels
<b>10 28 00</b>	<b>Toilet, Bath, and Laundry Accessories</b>
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
<b>10 30 00</b>	<b>Fireplaces and Stoves</b>
<b>10 31 00</b>	<b>Manufactured Fireplaces</b>
10 31 13	Manufactured Fireplace Chimneys
10 31 16	Manufactured Fireplace Forms
<b>10 32 00</b>	<b>Fireplace Specialties</b>
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
<b>10 35 00</b>	<b>Stoves</b>
10 35 13	Heating Stoves
10 35 23	Cooking Stoves
<b>10 40 00</b>	<b>Safety Specialties</b>
<b>10 41 00</b>	<b>Emergency Access and Information Cabinets</b>
10 41 13	Fire Department Plan Cabinets

10 41 16	Emergency Key Cabinets
<b>10 43 00</b>	<b>Emergency Aid Specialties</b>
10 43 13	Defibrillator Cabinets
10 43 16	First Aid Cabinets
10 43 21	Accessibility Evacuation Chairs
10 43 31	Respiration Equipment
10 43 33	Breathing Air Replenishment Systems
<b>10 44 00</b>	<b>Fire Protection Specialties</b>
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 19	Fire Blankets
10 44 43	Fire Extinguisher Accessories
<b>10 50 00</b>	<b>Storage Specialties</b>
<b>10 51 00</b>	<b>Lockers</b>
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 29	Phenolic Lockers
10 51 33	Glass Lockers
10 51 43	Wire Mesh Storage Lockers
10 51 53	Locker Room Benches
<b>10 55 00</b>	<b>Postal Specialties</b>
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
<b>10 56 00</b>	<b>Storage Assemblies</b>
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
<b>10 57 00</b>	<b>Wardrobe and Closet Specialties</b>
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
<b>10 70 00</b>	<b>Exterior Specialties</b>
<b>10 71 00</b>	<b>Exterior Protection</b>
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 13.53	Exterior Daylighting Devices
10 71 16	Storm Panels
10 71 16.13	Demountable Storm Panels
10 71 16.16	Movable Storm Panels
10 71 19	Flood Barriers
10 71 19.16	Removable Flood Barriers
<b>10 73 00</b>	<b>Protective Covers</b>
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
<b>10 74 00</b>	<b>Manufactured Exterior Specialties</b>
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

<b>10 75 00</b>	<b>Flagpoles</b>
10 75 13	Automatic Flagpoles
10 75 16	Ground-Set Flagpoles
10 75 19	Nautical Flagpoles
10 75 23	Wall-Mounted Flagpoles
<b>10 80 00</b>	<b>Other Specialties</b>
<b>10 81 00</b>	<b>Pest Control Devices</b>
10 81 13	Bird Control Devices
10 81 16	Insect Control Devices
10 81 19	Rodent Control Devices
<b>10 82 00</b>	<b>Grilles and Screens</b>
10 82 13	Exterior Grilles and Screens
10 82 19	Exterior Sound Screens
10 82 23	Interior Grilles and Screens
<b>10 83 00</b>	<b>Flags and Banners</b>
10 83 13	Flags
10 83 16	Banners
<b>10 84 00</b>	<b>Gas Lighting</b>
10 84 13	Exterior Gas Lighting
10 84 16	Interior Gas Lighting
<b>10 86 00</b>	<b>Security Mirrors and Domes</b>
<b>10 88 00</b>	<b>Scales</b>

<b>11 00 00</b>	<b>Equipment</b>
<b>11 01 00</b>	<b>Operation and Maintenance of Equipment</b>
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
<b>11 05 00</b>	<b>Common Work Results for Equipment</b>
11 05 13	Common Motor Requirements for Equipment
<b>11 06 00</b>	<b>Schedules for Equipment</b>
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
<b>11 08 00</b>	<b>Commissioning of Equipment</b>
<b>11 10 00</b>	<b>Vehicle and Pedestrian Equipment</b>
<b>11 11 00</b>	<b>Vehicle Service Equipment</b>
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
<b>11 12 00</b>	<b>Parking Control Equipment</b>
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 12 33.13	Lift Arm Parking Gates
11 12 33.16	Sliding Parking Gates
11 12 33.19	Swinging Parking Gates

<b>11 13 00</b>	<b>Loading Dock Equipment</b>
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
<b>11 14 00</b>	<b>Pedestrian Control Equipment</b>
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
<b>11 15 00</b>	<b>Security, Detention, and Banking Equipment</b>
<b>11 16 00</b>	<b>Vault Equipment</b>
11 16 13	Safe Deposit Boxes
11 16 16	Safes
11 16 23	Vault Ventilators
11 16 33	Time Capsules
<b>11 17 00</b>	<b>Teller and Service Equipment</b>
11 17 13	Teller Equipment Systems
11 17 16	Automatic Banking Systems
11 17 23	Money Handling Equipment
11 17 26	Money Depositories
11 17 33	Money Cart Pass-Through
11 17 36	Package Transfer Units
<b>11 18 00</b>	<b>Security Equipment</b>
11 18 13	Deal Drawers
11 18 16	Gun Ports
11 18 23	Valuable Material Storage
<b>11 19 00</b>	<b>Detention Equipment</b>
11 19 13	Detention Pass-Through Doors

11 19 16	Detention Gun Lockers
<b>11 20 00</b>	<b>Commercial Equipment</b>
<b>11 21 00</b>	<b>Mercantile and Service Equipment</b>
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
<b>11 22 00</b>	<b>Refrigerated Display Equipment</b>
<b>11 23 00</b>	<b>Commercial Laundry and Dry Cleaning Equipment</b>
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
<b>11 24 00</b>	<b>Maintenance Equipment</b>
11 24 13	Floor and Wall Cleaning Equipment
11 24 16	Housekeeping Carts
11 24 19	Vacuum Cleaning Systems
11 24 23	Facade Access Equipment
11 24 23.13	Window Washing Systems
11 24 29	Facility Fall Protection
<b>11 25 00</b>	<b>Hospitality Equipment</b>
11 25 13	Registration Equipment
<b>11 26 00</b>	<b>Unit Kitchens</b>
11 26 13	Metal Unit Kitchens
11 26 16	Wood Unit Kitchens
11 26 19	Plastic-Laminate-Clad Unit Kitchens
<b>11 27 00</b>	<b>Photographic Processing Equipment</b>
11 27 13	Darkroom Processing Equipment
11 27 16	Film Transfer Cabinets
<b>11 28 00</b>	<b>Office Equipment</b>
11 28 13	Computers
11 28 16	Printers
11 28 19	Self-Contained Facsimile Machines
11 28 23	Copiers
<b>11 29 00</b>	<b>Postal, Packaging, and Shipping Equipment</b>
11 29 23	Packaging Equipment
11 29 33	Shipping Equipment
11 29 55	Postal Equipment
<b>11 30 00</b>	<b>Residential Equipment</b>
<b>11 31 00</b>	<b>Residential Appliances</b>
11 31 13	Residential Kitchen Appliances
11 31 23	Residential Laundry Appliances

<b>11 33 00</b>	<b>Retractable Stairs</b>
<b>11 34 00</b>	<b>Residential Ceiling Fans</b>
<b>11 40 00</b>	<b>Foodservice Equipment</b>
<b>11 41 00</b>	<b>Foodservice Storage Equipment</b>
11 41 13	Refrigerated Food Storage Cases
11 41 23	Walk-In Coolers
11 41 26	Walk-In Freezers
11 41 33	Foodservice Shelving
<b>11 42 00</b>	<b>Food Preparation Equipment</b>
11 42 13	Food Preparation Appliances
11 42 16	Food Preparation Surfaces
<b>11 43 00</b>	<b>Food Delivery Carts and Conveyors</b>
11 43 13	Food Delivery Carts
11 43 16	Food Delivery Conveyors
<b>11 44 00</b>	<b>Food Cooking Equipment</b>
11 44 13	Commercial Ranges
11 44 16	Commercial Ovens
<b>11 46 00</b>	<b>Food Dispensing Equipment</b>
11 46 13	Bar Equipment
11 46 16	Service Line Equipment
11 46 19	Soda Fountain Equipment
11 46 23	Coffee and Espresso Equipment
<b>11 47 00</b>	<b>Ice Machines</b>
<b>11 48 00</b>	<b>Cleaning and Disposal Equipment</b>
11 48 13	Commercial Dishwashers
<b>11 50 00</b>	<b>Educational and Scientific Equipment</b>
<b>11 51 00</b>	<b>Library Equipment</b>
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
<b>11 52 00</b>	<b>Audio-Visual Equipment</b>
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 52 23	Audio-Visual Equipment Supports
<b>11 53 00</b>	<b>Laboratory Equipment</b>
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 26	Laboratory Freezers
11 53 29	Laboratory Controlled-Environment Cabinets
11 53 33	Emergency Safety Appliances
11 53 43	Service Fittings and Accessories
11 53 53	Biological Safety Cabinets
<b>11 55 00</b>	<b>Planetarium Equipment</b>
11 55 13	Planetarium Projectors
11 55 16	Planetarium Pendulums
<b>11 56 00</b>	<b>Observatory Equipment</b>
11 56 13	Telescopes
11 56 16	Telescope Mounts
11 56 19	Telescope Drive Mechanisms
11 56 23	Telescope Domes
<b>11 57 00</b>	<b>Vocational Shop Equipment</b>
<b>11 59 00</b>	<b>Exhibit Equipment</b>
<b>11 60 00</b>	<b>Entertainment Equipment</b>
<b>11 61 00</b>	<b>Broadcast, Theater, and Stage Equipment</b>
11 61 13	Acoustical Shells
11 61 23	Folding and Portable Stages
11 61 33	Rigging Systems and Controls
11 61 33.11	Lighting Rigging Systems
11 61 33.16	Scenery Rigging Systems
11 61 33.19	Curtain Systems
11 61 43	Stage Curtains
<b>11 62 00</b>	<b>Musical Equipment</b>
11 62 13	Bells
11 62 16	Carillons
11 62 19	Organs
<b>11 65 00</b>	<b>Athletic and Recreational Equipment</b>
<b>11 66 00</b>	<b>Athletic Equipment</b>
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
<b>11 67 00</b>	<b>Recreational Equipment</b>
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
<b>11 68 00</b>	<b>Play Field Equipment and Structures</b>
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
<b>11 70 00</b>	<b>Healthcare Equipment</b>
<b>11 71 00</b>	<b>Medical Sterilizing Equipment</b>
<b>11 72 00</b>	<b>Examination and Treatment Equipment</b>
11 72 13	Examination Equipment
11 72 53	Treatment Equipment
<b>11 73 00</b>	<b>Patient Care Equipment</b>
<b>11 74 00</b>	<b>Dental Equipment</b>
<b>11 75 00</b>	<b>Optical Equipment</b>
<b>11 76 00</b>	<b>Operating Room Equipment</b>
<b>11 77 00</b>	<b>Radiology Equipment</b>
<b>11 78 00</b>	<b>Mortuary Equipment</b>
11 78 13	Mortuary Refrigerators
11 78 16	Crematorium Equipment
11 78 19	Mortuary Lifts
<b>11 79 00</b>	<b>Therapy Equipment</b>
<b>11 80 00</b>	<b>Collection and Disposal Equipment</b>
<b>11 82 00</b>	<b>Solid Waste Handling Equipment</b>
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
<b>11 90 00</b>	<b>Other Equipment</b>
<b>11 91 00</b>	<b>Religious Equipment</b>



11 91 13	Baptisteries
<b>11 92 00</b>	<b>Agricultural Equipment</b>
11 92 13	Milkers
11 92 16	Stock Feeders
11 92 19	Stock Waterers
11 92 23	Agricultural Waste Clean-Up Equipment
<b>11 93 00</b>	<b>Horticultural Equipment</b>
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
<b>11 95 00</b>	<b>Arts and Crafts Equipment</b>
11 95 13	Kilns

<b>12 00 00</b>	<b>Furnishings</b>
<b>12 01 00</b>	<b>Operation and Maintenance of Furnishings</b>
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
<b>12 05 00</b>	<b>Common Work Results for Furnishings</b>
12 05 13	Fabrics
<b>12 06 00</b>	<b>Schedules for Furnishings</b>
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
<b>12 08 00</b>	<b>Commissioning of Furnishings</b>
<b>12 10 00</b>	<b>Art</b>
<b>12 11 00</b>	<b>Murals</b>
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
<b>12 12 00</b>	<b>Wall Decorations</b>
12 12 13	Commissioned Paintings
12 12 16	Framed Paintings
12 12 19	Framed Prints
12 12 23	Tapestries
12 12 26	Wall Hangings
<b>12 14 00</b>	<b>Sculptures</b>
12 14 13	Carved Sculpture
12 14 16	Cast Sculpture
12 14 19	Constructed Sculpture
12 14 23	Relief Art
<b>12 17 00</b>	<b>Art Glass</b>
12 17 13	Etched Glass
12 17 16	Stained Glass
<b>12 19 00</b>	<b>Religious Art</b>
<b>12 20 00</b>	<b>Window Treatments</b>

<b>12 21 00</b>	<b>Window Blinds</b>
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
<b>12 22 00</b>	<b>Curtains and Drapes</b>
12 22 13	Draperies
12 22 16	Drapery Track and Accessories
<b>12 23 00</b>	<b>Interior Shutters</b>
12 23 13	Wood Interior Shutters
<b>12 24 00</b>	<b>Window Shades</b>
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
<b>12 25 00</b>	<b>Window Treatment Operating Hardware</b>
12 25 09	Window Treatment Control System
12 25 13	Motorized Drapery Rods
<b>12 26 00</b>	<b>Interior Daylighting Devices</b>
<b>12 30 00</b>	<b>Casework</b>
<b>12 31 00</b>	<b>Manufactured Metal Casework</b>
12 31 16	Manufactured Metal Sandwich Panel Casework
<b>12 32 00</b>	<b>Manufactured Wood Casework</b>
12 32 13	Manufactured Wood-Veneer-Faced Casework
12 32 16	Manufactured Plastic-Laminate-Clad Casework
<b>12 34 00</b>	<b>Manufactured Plastic Casework</b>
12 34 16	Manufactured Solid-Plastic Casework
<b>12 35 00</b>	<b>Specialty Casework</b>
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
<b>12 36 00</b>	<b>Countertops</b>
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 Agglomerate Countertops
<b>12 40 00</b>	<b>Furnishings and Accessories</b>
<b>12 41 00</b>	<b>Office Accessories</b>
12 41 13	Desk Accessories
<b>12 42 00</b>	<b>Table Accessories</b>
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
<b>12 43 00</b>	<b>Portable Lamps</b>
12 43 13	Lamps
12 43 13.13	Desk Lamps
12 43 13.16	Table Lamps
12 43 13.19	Floor Lamps
<b>12 44 00</b>	<b>Bath Furnishings</b>
12 44 13	Bath Linens
12 44 13.13	Bath Mats
12 44 13.16	Bath Towels
12 44 16	Shower Curtains
<b>12 45 00</b>	<b>Bedroom Furnishings</b>
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 43.23 Anti-Fatigue Floor Mats
- 12 48 43.26 Fall-Cushioning Floor 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 55 86	Detention Control Room Furniture
<b>12 56 00</b>	<b>Institutional Furniture</b>
12 56 23	Religious Furniture
12 56 33	Classroom Furniture
12 56 33.13	Fixed Classroom Tables
12 56 33.23	Classroom Computer 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 56 86	Institutional Control Room Furniture
<b>12 57 00</b>	<b>Industrial Furniture</b>
12 57 13	Welding Benches
12 57 16	Welding Screens
12 57 19	Laser Containment Screens
12 57 83	Custom Industrial Furniture
12 57 86	Industrial Control Room Furniture
<b>12 58 00</b>	<b>Residential Furniture</b>
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
<b>12 59 00</b>	<b>Systems Furniture</b>
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
<b>12 60 00</b>	<b>Multiple Seating</b>
<b>12 61 00</b>	<b>Fixed Audience Seating</b>
12 61 13	Upholstered Audience Seating

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



<b>13 12 00</b>	<b>Fountains</b>
13 12 13	Exterior Fountains
13 12 23	Interior Fountains
<b>13 13 00</b>	<b>Aquariums</b>
<b>13 14 00</b>	<b>Amusement Park Structures and Equipment</b>
13 14 13	Water Slides
13 14 16	Wave Generating Equipment
13 14 23	Amusement Park Rides
<b>13 17 00</b>	<b>Tubs and Pools</b>
13 17 13	Hot Tubs
13 17 23	Therapeutic Pools
13 17 33	Whirlpool Tubs
<b>13 18 00</b>	<b>Ice Rinks</b>
13 18 13	Ice Rink Floor Systems
13 18 16	Ice Rink Dasher Boards
<b>13 19 00</b>	<b>Kennels and Animal Shelters</b>
13 19 13	Kennel Enclosures and Gates
13 19 16	Kennel Feeding Devices
<b>13 20 00</b>	<b>Special Purpose Rooms</b>
<b>13 21 00</b>	<b>Controlled Environment Rooms</b>
13 21 13	Clean Rooms
13 21 16	Hyperbaric Rooms
13 21 23	Insulated Rooms
13 21 26	Cold Storage Rooms
13 21 26.13	Walk-in Coolers
13 21 26.16	Walk-in Freezers
13 21 29	Constant Temperature Rooms
13 21 48	Sound-Conditioned Rooms
<b>13 22 00</b>	<b>Office Shelters and Booths</b>
<b>13 23 00</b>	<b>Planetariums</b>
<b>13 24 00</b>	<b>Special Activity Rooms</b>
13 24 16	Saunas
13 24 26	Steam Baths
13 24 66	Athletic Rooms
<b>13 26 00</b>	<b>Fabricated Rooms</b>
13 26 13	Storm Shelter Rooms
<b>13 27 00</b>	<b>Vaults</b>
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
<b>13 28 00</b>	<b>Athletic and Recreational Special Construction</b>
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
<b>13 30 00</b>	<b>Special Structures</b>
<b>13 31 00</b>	<b>Fabric Structures</b>
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
<b>13 32 00</b>	<b>Space Frames</b>
13 32 13	Metal Space Frames
13 32 23	Wood Space Frames
<b>13 33 00</b>	<b>Geodesic Structures</b>
13 33 13	Geodesic Domes
<b>13 34 00</b>	<b>Fabricated Engineered Structures</b>
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
<b>13 35 00</b>	<b>Rammed Earth Construction</b>
13 35 13	Rammed Earth Walls
13 35 13.13	Traditional Rammed Earth Walls
13 35 13.23	Stabilized Insulated Rammed Earth Walls
<b>13 36 00</b>	<b>Towers</b>
13 36 13	Metal Towers
13 36 13.13	Steel Towers
13 36 23	Wood Towers
<b>13 40 00</b>	<b>Integrated Construction</b>
<b>13 42 00</b>	<b>Building Modules</b>
13 42 13	Bathroom Unit Modules
13 42 25	Hospitality Unit Modules
13 42 33	Apartment Unit Modules
13 42 43	Dormitory Unit Modules
13 42 46	Education 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
<b>13 44 00</b>	<b>Modular Mezzanines</b>
<b>13 48 00</b>	<b>Sound, Vibration, and Seismic Control</b>
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
<b>13 49 00</b>	<b>Radiation Protection</b>
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
<b>13 50 00</b>	<b>Special Instrumentation</b>
<b>13 51 00</b>	<b>Stress Instrumentation</b>
<b>13 52 00</b>	<b>Seismic Instrumentation</b>
<b>13 53 00</b>	<b>Meteorological Instrumentation</b>
13 53 13	Solar Instrumentation
13 53 23	Wind Instrumentation

<b>14 00 00</b>	<b>Conveying Equipment</b>
<b>14 01 00</b>	<b>Operation and Maintenance of Conveying Equipment</b>
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
<b>14 05 00</b>	<b>Common Work Results for Conveying Equipment</b>
<b>14 06 00</b>	<b>Schedules for Conveying Equipment</b>
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
<b>14 08 00</b>	<b>Commissioning of Conveying Equipment</b>
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
<b>14 10 00</b>	<b>Dumbwaiters</b>
<b>14 11 00</b>	<b>Manual Dumbwaiters</b>
<b>14 12 00</b>	<b>Electric Dumbwaiters</b>
<b>14 14 00</b>	<b>Hydraulic Dumbwaiters</b>
<b>14 20 00</b>	<b>Elevators</b>
<b>14 21 00</b>	<b>Electric Traction Elevators</b>
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
<b>14 24 00</b>	<b>Hydraulic Elevators</b>
14 24 13	Hydraulic Freight Elevators
14 24 23	Hydraulic Passenger Elevators
14 24 33	Hydraulic Residential Elevators

14 24 43	Hydraulic Service Elevators
<b>14 26 00</b>	<b>Limited-Use/Limited-Application Elevators</b>
<b>14 27 00</b>	<b>Custom Elevator Cabs and Doors</b>
14 27 13	Custom Elevator Cab Finishes
14 27 16	Custom Elevator Doors
<b>14 28 00</b>	<b>Elevator Equipment and Controls</b>
14 28 16	Elevator Controls
14 28 19	Elevator Equipment
14 28 19.13	Elevator Safety Equipment
14 28 19.16	Elevator Hoistway Equipment
<b>14 30 00</b>	<b>Escalators and Moving Walks</b>
<b>14 31 00</b>	<b>Escalators</b>
<b>14 32 00</b>	<b>Moving Walks</b>
<b>14 33 00</b>	<b>Moving Ramps</b>
14 33 13	Motorized Ramps
14 33 16	Powered Ramps
<b>14 40 00</b>	<b>Lifts</b>
<b>14 41 00</b>	<b>People Lifts</b>
14 41 13	Counterbalanced People Lifts
14 41 16	Endless-Belt People Lifts
<b>14 42 00</b>	<b>Wheelchair Lifts</b>
14 42 13	Inclined Wheelchair Lifts
14 42 16	Vertical Wheelchair Lifts
<b>14 43 00</b>	<b>Platform Lifts</b>
14 43 13	Orchestra Lifts
14 43 16	Stage Lifts
<b>14 44 00</b>	<b>Sidewalk Lifts</b>
<b>14 45 00</b>	<b>Vehicle Lifts</b>
<b>14 70 00</b>	<b>Turntables</b>
<b>14 71 00</b>	<b>Industrial Turntables</b>
14 71 11	Vehicle Turntables
<b>14 72 00</b>	<b>Hospitality Turntables</b>
14 72 25	Restaurant Turntables
<b>14 73 00</b>	<b>Exhibit Turntables</b>
14 73 59	Display Turntables
<b>14 74 00</b>	<b>Entertainment Turntables</b>
14 74 61	Stage Turntables
<b>14 80 00</b>	<b>Scaffolding</b>
<b>14 81 00</b>	<b>Suspended Scaffolding</b>
14 81 13	Beam Scaffolding
14 81 16	Carriage Scaffolding
14 81 19	Hook Scaffolding
<b>14 82 00</b>	<b>Rope Climbers</b>
14 82 13	Manual Rope Climbers

14 82 16	Powered Rope Climbers
<b>14 83 00</b>	<b>Elevating Platforms</b>
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
<b>14 84 00</b>	<b>Powered Scaffolding</b>
14 84 13	Window Washing Scaffolding
14 84 23	Window Washing Hoists
<b>14 90 00</b>	<b>Other Conveying Equipment</b>
<b>14 91 00</b>	<b>Facility Chutes</b>
14 91 13	Coal Chutes
14 91 23	Escape Chutes
14 91 33	Laundry and Linen Chutes
14 91 82	Trash Chutes
<b>14 92 00</b>	<b>Pneumatic Tube Systems</b>
<b>14 93 00</b>	<b>Slide Pole Systems</b>
14 93 13	Firehouse Slide Poles

<b>21 00 00</b>	<b>Fire Suppression</b>
<b>21 01 00</b>	<b>Operation and Maintenance of Fire Suppression</b>
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
<b>21 05 00</b>	<b>Common Work Results for Fire Suppression</b>
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
<b>21 06 00</b>	<b>Schedules for Fire Suppression</b>
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
<b>21 07 00</b>	<b>Fire Suppression Systems Insulation</b>
21 07 16	Fire-Suppression Equipment Insulation
21 07 19	Fire-Suppression Piping Insulation
<b>21 08 00</b>	<b>Commissioning of Fire Suppression</b>
<b>21 09 00</b>	<b>Instrumentation and Control for Fire-Suppression Systems</b>
<b>21 10 00</b>	<b>Water-Based Fire-Suppression Systems</b>
<b>21 11 00</b>	<b>Facility Fire-Suppression Water-Service Piping</b>
21 11 16	Facility Fire Hydrants
21 11 19	Fire-Department Connections
<b>21 12 00</b>	<b>Fire-Suppression Standpipes</b>
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
<b>21 13 00</b>	<b>Fire-Suppression Sprinkler Systems</b>
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
<b>21 16 00</b>	<b>Fire-Suppression Pressure Maintenance Pumps</b>
<b>21 20 00</b>	<b>Fire-Extinguishing Systems</b>
<b>21 21 00</b>	<b>Carbon-Dioxide Fire-Extinguishing Systems</b>

21 21 13	Carbon-Dioxide Fire-Extinguishing Piping
21 21 16	Carbon-Dioxide Fire-Extinguishing Equipment
<b>21 22 00</b>	<b>Clean-Agent Fire-Extinguishing Systems</b>
21 22 13	Clean-Agent Fire-Extinguishing Piping
21 22 16	Clean-Agent Fire-Extinguishing Equipment
<b>21 23 00</b>	<b>Wet-Chemical Fire-Extinguishing Systems</b>
21 23 13	Wet-Chemical Fire-Extinguishing Piping
21 23 16	Wet-Chemical Fire-Extinguishing Equipment
<b>21 24 00</b>	<b>Dry-Chemical Fire-Extinguishing Systems</b>
21 24 13	Dry-Chemical Fire-Extinguishing Piping
21 24 16	Dry-Chemical Fire-Extinguishing Equipment
<b>21 30 00</b>	<b>Fire Pumps</b>
<b>21 31 00</b>	<b>Centrifugal Fire Pumps</b>
21 31 13	Electric-Drive, Centrifugal Fire Pumps
21 31 16	Diesel-Drive, Centrifugal Fire Pumps
<b>21 32 00</b>	<b>Vertical-Turbine Fire Pumps</b>
21 32 13	Electric-Drive, Vertical-Turbine Fire Pumps
21 32 16	Diesel-Drive, Vertical-Turbine Fire Pumps
<b>21 33 00</b>	<b>Positive-Displacement Fire Pumps</b>
21 33 13	Electric-Drive, Positive-Displacement Fire Pumps
21 33 16	Diesel-Drive, Positive-Displacement Fire Pumps
<b>21 40 00</b>	<b>Fire-Suppression Water Storage</b>
<b>21 41 00</b>	<b>Storage Tanks for Fire-Suppression Water</b>
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 10.16 Video Piping Inspections
- 22 01 10.51 Plumbing Piping Cleaning
- 22 01 10.61 Plumbing Piping Repairs
- 22 01 10.62 Plumbing Piping Relining
- 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 21 Facility Underground 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

<b>22 35 00</b>	<b>Domestic Water Heat Exchangers</b>
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
<b>22 40 00</b>	<b>Plumbing Fixtures</b>
<b>22 41 00</b>	<b>Residential Plumbing Fixtures</b>
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
<b>22 42 00</b>	<b>Commercial Plumbing Fixtures</b>
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
<b>22 43 00</b>	<b>Healthcare Plumbing Fixtures</b>
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

<b>22 45 00</b>	<b>Emergency Plumbing Fixtures</b>
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
<b>22 46 00</b>	<b>Security Plumbing Fixtures</b>
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
<b>22 47 00</b>	<b>Drinking Fountains and Water Coolers</b>
22 47 13	Drinking Fountains
22 47 16	Pressure Water Coolers
22 47 19	Water-Station Water Coolers
22 47 23	Remote Water Coolers
<b>22 50 00</b>	<b>Pool and Fountain Plumbing Systems</b>
<b>22 51 00</b>	<b>Swimming Pool Plumbing Systems</b>
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
<b>22 52 00</b>	<b>Fountain Plumbing Systems</b>
22 52 13	Fountain Piping
22 52 16	Fountain Pumps
22 52 19	Fountain Water Treatment Equipment
22 52 23	Fountain Equipment Controls
<b>22 60 00</b>	<b>Gas and Vacuum Systems for Laboratory and Healthcare Facilities</b>
<b>22 61 00</b>	<b>Compressed-Air Systems for Laboratory and Healthcare Facilities</b>
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

<b>22 62 00</b>	<b>Vacuum Systems for Laboratory and Healthcare Facilities</b>
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
<b>22 63 00</b>	<b>Gas Systems for Laboratory and Healthcare Facilities</b>
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
<b>22 66 00</b>	<b>Chemical-Waste Systems for Laboratory and Healthcare Facilities</b>
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
<b>22 67 00</b>	<b>Processed Water Systems for Laboratory and Healthcare Facilities</b>
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
<b>23 08 00</b>	<b>Commissioning of HVAC</b>
<b>23 09 00</b>	<b>Instrumentation and Control for HVAC</b>
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
<b>23 10 00</b>	<b>Facility Fuel Systems</b>
<b>23 11 00</b>	<b>Facility Fuel Piping</b>
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
<b>23 12 00</b>	<b>Facility Fuel Pumps</b>
23 12 13	Facility Fuel-Oil Pumps
23 12 16	Facility Gasoline Dispensing Pumps
<b>23 13 00</b>	<b>Facility Fuel-Storage Tanks</b>
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
<b>23 20 00</b>	<b>HVAC Piping and Pumps</b>
<b>23 21 00</b>	<b>Hydronic Piping and Pumps</b>
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
<b>23 22 00</b>	<b>Steam and Condensate Piping and Pumps</b>



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
<b>23 23 00</b>	<b>Refrigerant Piping</b>
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
<b>23 24 00</b>	<b>Internal-Combustion Engine Piping</b>
23 24 13	Internal-Combustion Engine Remote-Radiator Coolant Piping
23 24 16	Internal-Combustion Engine Exhaust Piping
<b>23 25 00</b>	<b>HVAC Water Treatment</b>
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
<b>23 30 00</b>	<b>HVAC Air Distribution</b>
<b>23 31 00</b>	<b>HVAC Ducts and Casings</b>
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
<b>23 32 00</b>	<b>Air Plenums and Chases</b>
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
<b>23 33 00</b>	<b>Air Duct Accessories</b>
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
<b>23 34 00</b>	<b>HVAC Fans</b>
23 34 13	Axial HVAC Fans
23 34 16	Centrifugal HVAC Fans
23 34 23	HVAC Power Ventilators
23 34 33	Air Curtains
<b>23 35 00</b>	<b>Special Exhaust Systems</b>
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
<b>23 36 00</b>	<b>Air Terminal Units</b>
23 36 13	Constant-Air-Volume Units
23 36 16	Variable-Air-Volume Units
<b>23 37 00</b>	<b>Air Outlets and Inlets</b>
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
<b>23 38 00</b>	<b>Ventilation Hoods</b>
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
<b>23 40 00</b>	<b>HVAC Air Cleaning Devices</b>
<b>23 41 00</b>	<b>Particulate Air Filtration</b>
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
<b>23 42 00</b>	<b>Gas-Phase Air Filtration</b>
23 42 13	Activated-Carbon Air Filtration
23 42 16	Chemically-Impregnated Adsorption Air Filtration
23 42 19	Catalytic-Adsorption Air Filtration
<b>23 43 00</b>	<b>Electronic Air Cleaners</b>
23 43 13	Washable Electronic Air Cleaners
23 43 16	Agglomerator Electronic Air Cleaners
23 43 23	Self-Contained Electronic Air Cleaners
<b>23 50 00</b>	<b>Central Heating Equipment</b>
<b>23 51 00</b>	<b>Breechings, Chimneys, and Stacks</b>
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
<b>23 52 00</b>	<b>Heating Boilers</b>
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
<b>23 53 00</b>	<b>Heating Boiler Feedwater Equipment</b>
23 53 13	Boiler Feedwater Pumps
23 53 16	Deaerators
<b>23 54 00</b>	<b>Furnaces</b>
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
<b>23 55 00</b>	<b>Fuel-Fired Heaters</b>
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 23.13	Low-Intensity Gas-Fired Radiant Heaters
23 55 23.16	High-Intensity 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
<b>23 56 00</b>	<b>Solar Energy Heating Equipment</b>
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 56 23	Solar Air-Heating Panels
<b>23 57 00</b>	<b>Heat Exchangers for HVAC</b>

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 Geoechange Heat Exchangers
<b>23 60 00</b>	<b>Central Cooling Equipment</b>
<b>23 61 00</b>	<b>Refrigerant Compressors</b>
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
<b>23 62 00</b>	<b>Packaged Compressor and Condenser Units</b>
23 62 13	Packaged Air-Cooled Refrigerant Compressor and Condenser Units
23 62 23	Packaged Water-Cooled Refrigerant Compressor and Condenser Units
<b>23 63 00</b>	<b>Refrigerant Condensers</b>
23 63 13	Air-Cooled Refrigerant Condensers
23 63 23	Water-Cooled Refrigerant Condensers
23 63 33	Evaporative Refrigerant Condensers
<b>23 64 00</b>	<b>Packaged Water Chillers</b>
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
<b>23 65 00</b>	<b>Cooling Towers</b>
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
<b>23 70 00</b>	<b>Central HVAC Equipment</b>
<b>23 71 00</b>	<b>Thermal Storage</b>
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
<b>23 72 00</b>	<b>Air-to-Air Energy Recovery Equipment</b>
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
<b>23 73 00</b>	<b>Indoor Central-Station Air-Handling Units</b>
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
<b>23 74 00</b>	<b>Packaged Outdoor HVAC Equipment</b>
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
<b>23 75 00</b>	<b>Custom-Packaged Outdoor HVAC Equipment</b>
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
<b>23 76 00</b>	<b>Evaporative Air-Cooling Equipment</b>
23 76 13	Direct Evaporative Air Coolers
23 76 16	Indirect Evaporative Air Coolers
23 76 19	Combined Direct and Indirect Evaporative Air Coolers
<b>23 80 00</b>	<b>Decentralized HVAC Equipment</b>
<b>23 81 00</b>	<b>Decentralized Unitary HVAC Equipment</b>
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 29	Variable Refrigerant Flow HVAC Systems
23 81 43	Air-Source Unitary Heat Pumps
23 81 46	Water-Source Unitary Heat Pumps
<b>23 82 00</b>	<b>Convection Heating and Cooling Units</b>
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 82 41	Water-to-Water Heat Pumps
<b>23 83 00</b>	<b>Radiant Heating Units</b>
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 33	Electric Radiant Heaters
<b>23 84 00</b>	<b>Humidity Control Equipment</b>
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

<b>25 00 00</b>	<b>Integrated Automation</b>
<b>25 01 00</b>	<b>Operation and Maintenance of Integrated Automation</b>
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
<b>25 05 00</b>	<b>Common Work Results for Integrated Automation</b>
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
<b>25 06 00</b>	<b>Schedules for Integrated Automation</b>
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
<b>25 08 00</b>	<b>Commissioning of Integrated Automation</b>
<b>25 10 00</b>	<b>Integrated Automation Network Equipment</b>
<b>25 11 00</b>	<b>Integrated Automation Network Devices</b>
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
<b>25 12 00</b>	<b>Integrated Automation Network Gateways</b>
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
<b>25 13 00</b>	<b>Integrated Automation Control and Monitoring Network</b>
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
<b>25 14 00</b>	<b>Integrated Automation Local Control Units</b>
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
<b>25 15 00</b>	<b>Integrated Automation Software</b>
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
<b>25 30 00</b>	<b>Integrated Automation Instrumentation and Terminal Devices</b>
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
<b>25 36 00</b>	<b>Integrated Automation Instrumentation and Terminal Devices for Electrical Systems</b>
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
<b>25 37 00</b>	<b>Integrated Automation Instrumentation and Terminal Devices for Communications Systems</b>
<b>25 38 00</b>	<b>Integrated Automation Instrumentation and Terminal Devices for Electronic Safety and Security Systems</b>
<b>25 50 00</b>	<b>Integrated Automation Facility Controls</b>
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



<b>25 58 00</b>	<b>Integrated Automation Control of Electronic Safety and Security Systems</b>
<b>25 90 00</b>	<b>Integrated Automation Control Sequences</b>
<b>25 91 00</b>	<b>Integrated Automation Control Sequences for Facility Equipment</b>
<b>25 92 00</b>	<b>Integrated Automation Control Sequences for Conveying Equipment</b>
<b>25 93 00</b>	<b>Integrated Automation Control Sequences for Fire-Suppression Systems</b>
<b>25 94 00</b>	<b>Integrated Automation Control Sequences for Plumbing</b>
<b>25 95 00</b>	<b>Integrated Automation Control Sequences for HVAC</b>
<b>25 96 00</b>	<b>Integrated Automation Control Sequences for Electrical Systems</b>
<b>25 97 00</b>	<b>Integrated Automation Control Sequences for Communications Systems</b>
<b>25 98 00</b>	<b>Integrated Automation Control Sequences for Electronic Safety and Security Systems</b>

## **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 43.19	Wireless Network Lighting Controls
26 09 61	Theatrical Lighting Controls
<b>26 10 00</b>	<b>Medium-Voltage Electrical Distribution</b>
<b>26 11 00</b>	<b>Substations</b>
26 11 13	Primary Unit Substations
26 11 16	Secondary Unit Substations
<b>26 12 00</b>	<b>Medium-Voltage Transformers</b>
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
<b>26 13 00</b>	<b>Medium-Voltage Switchgear</b>
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
<b>26 28 00</b>	<b>Low-Voltage Circuit Protective Devices</b>
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
<b>26 29 00</b>	<b>Low-Voltage Controllers</b>
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
<b>26 30 00</b>	<b>Facility Electrical Power Generating and Storing Equipment</b>
<b>26 31 00</b>	<b>Photovoltaic Collectors</b>
<b>26 32 00</b>	<b>Packaged Generator Assemblies</b>
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 32 36	Resistive Load Banks
<b>26 33 00</b>	<b>Battery Equipment</b>
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
<b>26 35 00</b>	<b>Power Filters and Conditioners</b>
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
<b>26 36 00</b>	<b>Transfer Switches</b>
26 36 13	Manual Transfer Switches
26 36 23	Automatic Transfer Switches
<b>26 40 00</b>	<b>Electrical and Cathodic Protection</b>
<b>26 41 00</b>	<b>Facility Lightning Protection</b>
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
<b>26 42 00</b>	<b>Cathodic Protection</b>
26 42 13	Passive Cathodic Protection for Underground and Submerged Piping
26 42 16	Passive Cathodic Protection for Underground Storage Tank
<b>26 43 00</b>	<b>Surge Protective Devices</b>
26 43 13	Surge Protective Devices for Low-Voltage Electrical Power Circuits
<b>26 50 00</b>	<b>Lighting</b>
<b>26 51 00</b>	<b>Interior Lighting</b>
26 51 13	Interior Lighting Fixtures, Lamps, And Ballasts
<b>26 52 00</b>	<b>Emergency Lighting</b>
<b>26 53 00</b>	<b>Exit Signs</b>
<b>26 54 00</b>	<b>Classified Location Lighting</b>
<b>26 55 00</b>	<b>Special Purpose Lighting</b>
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
26 55 83	Broadcast 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

<b>27 00 00</b>	<b>Communications</b>
<b>27 01 00</b>	<b>Operation and Maintenance of Communications Systems</b>
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
<b>27 05 00</b>	<b>Common Work Results for Communications</b>
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 28	Pathways 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
<b>27 06 00</b>	<b>Schedules for Communications</b>
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
<b>27 08 00</b>	<b>Commissioning of Communications</b>
<b>27 10 00</b>	<b>Structured Cabling</b>
<b>27 11 00</b>	<b>Communications Equipment Room Fittings</b>
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
<b>27 13 00</b>	<b>Communications Backbone Cabling</b>
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
<b>27 15 00</b>	<b>Communications Horizontal Cabling</b>
<b>27 15 00.16</b>	<b>Voice Communications Horizontal Cabling</b>
<b>27 15 00.19</b>	<b>Data Communications Horizontal Cabling</b>
<b>27 15 00.23</b>	<b>Audio-Video Communications Horizontal Cabling</b>
<b>27 15 00.39</b>	<b>Patient Monitoring and Telemetry Communications Horizontal Cabling</b>
<b>27 15 00.43</b>	<b>Nurse Call and Intercom Communications Horizontal Cabling</b>
<b>27 15 00.46</b>	<b>Paging Communications Horizontal Cabling</b>
<b>27 15 00.49</b>	<b>Intermediate Frequency/Radio Frequency Communications Horizontal Cabling</b>
<b>27 15 00.53</b>	<b>Antennas Communications Horizontal Cabling</b>
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
<b>27 16 00</b>	<b>Communications Connecting Cords, Devices, and Adapters</b>
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
<b>27 20 00</b>	<b>Data Communications</b>
<b>27 21 00</b>	<b>Data Communications Network Equipment</b>
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
<b>27 22 00</b>	<b>Data Communications Hardware</b>
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
<b>27 24 00</b>	<b>Data Communications Peripheral Data Equipment</b>
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
<b>27 25 00</b>	<b>Data Communications Software</b>
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
<b>27 26 00</b>	<b>Data Communications Programming and Integration Services</b>
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
<b>27 30 00</b>	<b>Voice Communications</b>
<b>27 31 00</b>	<b>Voice Communications Switching and Routing Equipment</b>
27 31 13	PBX/ Key Systems
27 31 23	Internet Protocol Voice Switches
<b>27 32 00</b>	<b>Voice Communications Terminal Equipment</b>
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
<b>27 33 00</b>	<b>Voice Communications Messaging</b>
27 33 16	Voice Mail and Auto Attendant
27 33 23	Interactive Voice Response
27 33 26	Facsimile Servers
<b>27 34 00</b>	<b>Call Accounting</b>
27 34 13	Toll Fraud Equipment and Software
27 34 16	Telemanagement Software
<b>27 35 00</b>	<b>Call Management</b>
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
<b>27 40 00</b>	<b>Audio-Video Communications</b>
<b>27 41 00</b>	<b>Audio-Video Systems</b>
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
<b>27 42 00</b>	<b>Electronic Digital Systems</b>
27 42 13	Point of Sale Systems
27 42 16	Transportation Information Display Systems
27 42 19	Public Information Systems
<b>27 50 00</b>	<b>Distributed Communications and Monitoring Systems</b>
<b>27 51 00</b>	<b>Distributed Audio-Video Communications Systems</b>
27 51 13	Paging Systems
27 51 13.13	Overhead Paging Systems
27 51 16	Public Address 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
<b>27 52 00</b>	<b>Healthcare Communications and Monitoring Systems</b>
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
<b>27 53 00</b>	<b>Distributed Systems</b>
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

<b>28 00 00</b>	<b>Electronic Safety and Security</b>
<b>28 01 00</b>	<b>Operation and Maintenance of Electronic Safety and Security</b>
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
<b>28 05 00</b>	<b>Common Work Results for Electronic Safety and Security</b>
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
<b>28 06 00</b>	<b>Schedules for Electronic Safety and Security</b>
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
<b>28 08 00</b>	<b>Commissioning of Electronic Safety and Security</b>
<b>28 10 00</b>	<b>Electronic Access Control and Intrusion Detection</b>
<b>28 13 00</b>	<b>Access Control</b>
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 26.11	Wireless Access Control 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
<b>28 16 00</b>	<b>Intrusion Detection</b>
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
<b>28 20 00</b>	<b>Electronic Surveillance</b>
<b>28 23 00</b>	<b>Video Surveillance</b>
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
<b>28 26 00</b>	<b>Electronic Personal Protection Systems</b>
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
<b>28 30 00</b>	<b>Electronic Detection and Alarm</b>
<b>28 31 00</b>	<b>Fire Detection and Alarm</b>
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
<b>28 32 00</b>	<b>Radiation Detection and Alarm</b>
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
<b>28 33 00</b>	<b>Gas Detection and Alarm</b>
28 33 13	Gas Detection and Alarm Control, GUI, and Logic Systems
28 33 23	Gas Detection and Alarm Integrated Audio Evacuation Systems
28 33 33	Gas Detection Sensors
<b>28 34 00</b>	<b>Fuel-Oil Detection and Alarm</b>
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
<b>28 35 00</b>	<b>Refrigerant Detection and Alarm</b>
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
<b>28 36 00</b>	<b>Water Detection and Alarm</b>
28 36 13	Water Detection and Alarm Control, GUI, and Logic Systems
28 36 33	Water Detection Sensors
28 36 43	Building Envelope Water Detection and Alarm
<b>28 39 00</b>	<b>Mass Notification Systems</b>
<b>28 40 00</b>	<b>Electronic Monitoring and Control</b>
<b>28 41 00</b>	<b>Electronic Structural Monitoring Systems</b>
<b>28 46 00</b>	<b>Electronic Detention Monitoring and Control Systems</b>
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

<b>31 00 00</b>	<b>Earthwork</b>
<b>31 01 00</b>	<b>Maintenance of Earthwork</b>
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
<b>31 05 00</b>	<b>Common Work Results for Earthwork</b>
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 19.23	Geosynthetic Clay Liners
31 05 19.26	Geocomposites
31 05 19.29	Geonets
31 05 23	Cement and Concrete for Earthwork
<b>31 06 00</b>	<b>Schedules for Earthwork</b>
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
<b>31 08 00</b>	<b>Commissioning of Earthwork</b>
31 08 13	Pile Load Testing
31 08 13.13	Dynamic Pile Load Testing
31 08 13.16	Static Pile Load Testing
<b>31 09 00</b>	<b>Geotechnical Instrumentation and Monitoring of Earthwork</b>
31 09 13	Geotechnical Instrumentation and Monitoring
31 09 13.13	Groundwater Monitoring During Construction
31 09 16	Foundation Performance Instrumentation
31 09 16.26	Bored and Augered Pile Load Tests
<b>31 10 00</b>	<b>Site Clearing</b>
<b>31 11 00</b>	<b>Clearing and Grubbing</b>
<b>31 12 00</b>	<b>Selective Clearing</b>

<b>31 13 00</b>	<b>Selective Tree and Shrub Removal and Trimming</b>
31 13 13	Selective Tree and Shrub Removal
31 13 16	Selective Tree and Shrub Trimming
<b>31 14 00</b>	<b>Earth Stripping and Stockpiling</b>
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
<b>31 20 00</b>	<b>Earth Moving</b>
<b>31 21 00</b>	<b>Off-Gassing Mitigation</b>
31 21 13	Radon Mitigation
31 21 13.13	Radon Venting
31 21 16	Methane Mitigation
31 21 16.13	Methane Venting
<b>31 22 00</b>	<b>Grading</b>
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
<b>31 23 00</b>	<b>Excavation and Fill</b>
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
<b>31 24 00</b>	<b>Embankments</b>
31 24 13	Roadway Embankments
31 24 16	Railway Embankments
<b>31 25 00</b>	<b>Erosion and Sedimentation Controls</b>
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
<b>31 30 00</b>	<b>Earthwork Methods</b>
<b>31 31 00</b>	<b>Soil Treatment</b>

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
<b>31 32 00</b>	<b>Soil Stabilization</b>
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 17	Water Injection 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
<b>31 33 00</b>	<b>Rock Stabilization</b>
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
<b>31 34 00</b>	<b>Soil Reinforcement</b>
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
<b>31 35 00</b>	<b>Slope Protection</b>
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
<b>31 36 00</b>	<b>Gabions</b>
31 36 13	Gabion Boxes
31 36 19	Gabion Mattresses
31 36 19.13	Vegetated Gabion Mattresses
<b>31 37 00</b>	<b>Riprap</b>
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
<b>31 40 00</b>	<b>Shoring and Underpinning</b>
<b>31 41 00</b>	<b>Shoring</b>
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
<b>31 43 00</b>	<b>Concrete Raising</b>
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
<b>31 45 00</b>	<b>Vibroflotation and Densification</b>
31 45 13	Vibroflotation
31 45 16	Densification
<b>31 46 00</b>	<b>Needle Beams</b>
31 46 13	Cantilever Needle Beams
<b>31 48 00</b>	<b>Underpinning</b>
31 48 13	Underpinning Piers
31 48 19	Bracket Piers
31 48 23	Jacked Piers
31 48 33	Micropile Underpinning
<b>31 50 00</b>	<b>Excavation Support and Protection</b>
<b>31 51 00</b>	<b>Anchor Tiebacks</b>
31 51 13	Excavation Soil Anchors
31 51 16	Excavation Rock Anchors

<b>31 52 00</b>	<b>Cofferdams</b>
31 52 13	Sheet Piling Cofferdams
31 52 16	Timber Cofferdams
31 52 19	Precast Concrete Cofferdams
<b>31 53 00</b>	<b>Cribbing and Walers</b>
31 53 13	Timber Cribwork
<b>31 54 00</b>	<b>Ground Freezing</b>
<b>31 56 00</b>	<b>Slurry Walls</b>
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
<b>31 60 00</b>	<b>Special Foundations and Load-Bearing Elements</b>
<b>31 62 00</b>	<b>Driven Piles</b>
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
<b>31 63 00</b>	<b>Bored Piles</b>
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
<b>31 64 00</b>	<b>Caissons</b>
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
<b>31 66 00</b>	<b>Special Foundations</b>
31 66 13	Special Piles
31 66 13.13	Rammed Aggregate Piles
31 66 15	Helical Foundation 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
<b>31 68 00</b>	<b>Foundation Anchors</b>
31 68 13	Rock Foundation Anchors
31 68 16	Helical Foundation Anchors
<b>31 70 00</b>	<b>Tunneling and Mining</b>
<b>31 71 00</b>	<b>Tunnel Excavation</b>
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
<b>31 72 00</b>	<b>Tunnel Support Systems</b>
31 72 13	Rock Reinforcement and Initial Support
31 72 16	Steel Ribs and Lagging
<b>31 73 00</b>	<b>Tunnel Grouting</b>
31 73 13	Cement Tunnel Grouting
31 73 16	Chemical Tunnel Grouting
<b>31 74 00</b>	<b>Tunnel Construction</b>
31 74 13	Cast-in-Place Concrete Tunnel Lining
31 74 16	Precast Concrete Tunnel Lining
31 74 19	Shotcrete Tunnel Lining
<b>31 75 00</b>	<b>Shaft Construction</b>
31 75 13	Cast-in-Place Concrete Shaft Lining
31 75 16	Precast Concrete Shaft Lining
<b>31 77 00</b>	<b>Submersible Tube Tunnels</b>
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

<b>32 06 00</b>	<b>Schedules for Exterior Improvements</b>
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
<b>32 08 00</b>	<b>Commissioning of Exterior Improvements</b>
<b>32 10 00</b>	<b>Bases, Ballasts, and Paving</b>
<b>32 11 00</b>	<b>Base Courses</b>
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
<b>32 12 00</b>	<b>Flexible Paving</b>
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
<b>32 13 00</b>	<b>Rigid Paving</b>
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
<b>32 14 00</b>	<b>Unit Paving</b>
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
<b>32 15 00</b>	<b>Aggregate Surfacing</b>
32 15 13	Cinder Surfacing
32 15 40	Crushed Stone Surfacing
<b>32 16 00</b>	<b>Curbs, Gutters, Sidewalks, and Driveways</b>
32 16 13	Curbs and Gutters
32 16 13.13	Cast-In-Place Concrete Curbs and Gutters
32 16 13.16	Steel Faced Curbs
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
<b>32 17 00</b>	<b>Paving Specialties</b>
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 17	Expanded Metal 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 32	Composite 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
<b>32 34 00</b>	<b>Fabricated Bridges</b>
32 34 13	Fabricated Pedestrian Bridges
32 34 23	Fabricated Roadway Bridges
32 34 33	Fabricated Railway Bridges
<b>32 35 00</b>	<b>Screening Devices</b>
32 35 13	Screens and Louvers
32 35 16	Sound Barriers
<b>32 39 00</b>	<b>Manufactured Site Specialties</b>
32 39 13	Manufactured Metal Bollards
32 39 33	Artificial Rock Fabrications
<b>32 70 00</b>	<b>Wetlands</b>
<b>32 71 00</b>	<b>Constructed Wetlands</b>
<b>32 72 00</b>	<b>Wetlands Restoration</b>
<b>32 80 00</b>	<b>Irrigation</b>
<b>32 82 00</b>	<b>Irrigation Pumps</b>
<b>32 84 00</b>	<b>Planting Irrigation</b>
32 84 13	Drip Irrigation
32 84 23	Underground Sprinklers
<b>32 86 00</b>	<b>Agricultural Irrigation</b>
<b>32 90 00</b>	<b>Planting</b>
<b>32 91 00</b>	<b>Planting Preparation</b>
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
<b>32 92 00</b>	<b>Turf and Grasses</b>
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
<b>32 93 00</b>	<b>Plants</b>
32 93 13	Ground Covers
32 93 23	Plants and Bulbs
32 93 33	Shrubs
32 93 43	Trees
32 93 93	Exterior Artificial Plants
<b>32 94 00</b>	<b>Planting Accessories</b>
32 94 13	Landscape Edging
32 94 16	Landscape Timbers
32 94 19	Landscape Surfacing
32 94 33	Planters
32 94 43	Tree Grates
32 94 46	Tree Grids
<b>32 95 00</b>	<b>Exterior Planting Support Structures</b>
<b>32 96 00</b>	<b>Transplanting</b>
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 10.71 Water Utility Storage Tank Rehabilitation
- 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 Moling
- 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
<b>33 09 00</b>	<b>Instrumentation and Control for Utilities</b>
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
<b>33 10 00</b>	<b>Water Utilities</b>
<b>33 11 00</b>	<b>Water Utility Distribution Piping</b>
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
<b>33 12 00</b>	<b>Water Utility Distribution Equipment</b>
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
<b>33 13 00</b>	<b>Disinfecting of Water Utility Distribution</b>
<b>33 16 00</b>	<b>Water Utility Storage Tanks</b>
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
<b>33 20 00</b>	<b>Wells</b>
<b>33 21 00</b>	<b>Water Supply Wells</b>
33 21 13	Public Water Supply Wells
33 21 16	Irrigation Water Wells
<b>33 22 00</b>	<b>Test Wells</b>
<b>33 23 00</b>	<b>Extraction Wells</b>
<b>33 24 00</b>	<b>Monitoring Wells</b>

33 24 13	Groundwater Monitoring Wells
<b>33 25 00</b>	<b>Recharge Wells</b>
<b>33 26 00</b>	<b>Relief Wells</b>
<b>33 29 00</b>	<b>Well Abandonment</b>
<b>33 30 00</b>	<b>Sanitary Sewerage Utilities</b>
<b>33 31 00</b>	<b>Sanitary Utility Sewerage Piping</b>
33 31 13	Public Sanitary Utility Sewerage Piping
33 31 16	Industrial Waste Utility Sewerage Piping
<b>33 32 00</b>	<b>Wastewater Utility Pumping Stations</b>
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
<b>33 33 00</b>	<b>Low Pressure Utility Sewerage</b>
33 33 13	Sanitary Utility Sewerage
33 33 16	Combined Utility Sewerage
<b>33 34 00</b>	<b>Sanitary Utility Sewerage Force Mains</b>
33 34 13	Sanitary Utility Sewerage Inverted Siphons
<b>33 36 00</b>	<b>Utility Septic Tanks</b>
33 36 13	Utility Septic Tank and Effluent Wet Wells
33 36 13.13	Concrete Utility Septic Tank
33 36 13.16	Fiberglass Utility Septic Tank
33 36 13.19	Polyethylene Utility Septic Tank
33 36 16	Utility Septic Tank Effluent Pumps
33 36 16.13	Utility Septic Tank High-Head Effluent Pump
33 36 16.16	Utility Septic Tank Effluent Pump Package
33 36 19	Utility Septic Tank Effluent Filter
33 36 19.13	Utility Septic Tank Effluent Tube Filter
33 36 19.16	Utility Septic Tank Effluent Textile Media Filter
33 36 33	Utility Septic Tank Drainage Field
33 36 33.13	Utility Septic Tank Tile Drainage Field
33 36 33.16	Utility Septic Tank Shallow Pressurized Dispersal System
<b>33 38 00</b>	<b>Treatment Lagoons</b>
33 38 13	Municipal Wastewater Treatment Lagoons
33 38 16	Industrial Waste Lagoons
33 38 23	Agricultural Waste Lagoons
33 38 26	Residential Sewerage Lagoons
<b>33 39 00</b>	<b>Sanitary Utility Sewerage Structures</b>
33 39 13	Sanitary Utility Sewerage Manholes, Frames, and Covers
33 39 23	Sanitary Utility Sewerage Cleanouts
<b>33 40 00</b>	<b>Storm Drainage Utilities</b>
<b>33 41 00</b>	<b>Storm Utility Drainage Piping</b>
33 41 13	Public Storm Utility Drainage Piping
<b>33 42 00</b>	<b>Culverts</b>
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
<b>33 44 00</b>	<b>Storm Utility Water Drains</b>
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
<b>33 45 00</b>	<b>Storm Utility Drainage Pumps</b>
<b>33 46 00</b>	<b>Subdrainage</b>
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
<b>33 47 00</b>	<b>Ponds and Reservoirs</b>
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 Retention Reservoirs
33 47 19.23	Cooling Water Ponds
33 47 19.33	Fire-Protection Water Ponds
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
<b>33 49 00</b>	<b>Storm Drainage Structures</b>
33 49 13	Storm Drainage Manholes, Frames, and Covers
33 49 22	Storm Drainage Water Detention Structures
33 49 23	Storm Drainage Water Retention Structures
33 49 23.13	Underground Storm Drainage Water Retention Tanks
33 49 24	Storm Drainage Water Storage Structures
<b>33 50 00</b>	<b>Fuel Distribution Utilities</b>

<b>33 51 00</b>	<b>Natural-Gas Distribution</b>
33 51 13	Natural-Gas Piping
33 51 33	Natural-Gas Metering
<b>33 52 00</b>	<b>Liquid Fuel Distribution</b>
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
<b>33 56 00</b>	<b>Fuel-Storage Tanks</b>
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
<b>33 60 00</b>	<b>Hydronic and Steam Energy Utilities</b>
<b>33 61 00</b>	<b>Hydronic Energy Distribution</b>
33 61 13	Underground Hydronic Energy Distribution
33 61 23	Aboveground Hydronic Energy Distribution
33 61 33	Hydronic Energy Distribution Metering
<b>33 63 00</b>	<b>Steam Energy Distribution</b>
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
<b>33 70 00</b>	<b>Electrical Utilities</b>
<b>33 71 00</b>	<b>Electrical Utility Transmission and Distribution</b>
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
<b>33 72 00</b>	<b>Utility Substations</b>
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
<b>33 73 00</b>	<b>Utility Transformers</b>
33 73 13	Liquid-Filled Utility Transformers
33 73 23	Dry-Type Utility Transformers
<b>33 75 00</b>	<b>High-Voltage Switchgear and Protection Devices</b>
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
<b>33 77 00</b>	<b>Medium-Voltage Utility Switchgear and Protection Devices</b>
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
<b>33 79 00</b>	<b>Site Grounding</b>
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
<b>33 80 00</b>	<b>Communications Utilities</b>
<b>33 81 00</b>	<b>Communications Structures</b>
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
<b>33 82 00</b>	<b>Communications Distribution</b>
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
<b>33 83 00</b>	<b>Wireless Communications Distribution</b>
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



<b>34 00 00</b>	<b>Transportation</b>
<b>34 01 00</b>	<b>Operation and Maintenance of Transportation</b>
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
<b>34 05 00</b>	<b>Common Work Results for Transportation</b>
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
<b>34 06 00</b>	<b>Schedules for Transportation</b>
34 06 13	Schedules for Roadways
34 06 23	Schedules for Railways
34 06 33	Schedules for Airfields
34 06 43	Schedules for Bridges
<b>34 08 00</b>	<b>Commissioning of Transportation</b>
34 08 13	Commissioning of Roadways
34 08 23	Commissioning of Railways
34 08 33	Commissioning of Airfields
34 08 43	Commissioning of Bridges
<b>34 10 00</b>	<b>Guideways/Railways</b>
<b>34 11 00</b>	<b>Rail Tracks</b>
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
<b>34 12 00</b>	<b>Monorails</b>
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
<b>34 13 00</b>	<b>Funiculars</b>
34 13 13	Inclined Railway
<b>34 14 00</b>	<b>Cable Transportation</b>
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
<b>34 20 00</b>	<b>Traction Power</b>
<b>34 21 00</b>	<b>Traction Power Distribution</b>
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
<b>34 23 00</b>	<b>Overhead Traction Power</b>
34 23 13	Traction Power Poles
34 23 16	Overhead Cable Suspension
34 23 23	Overhead Traction Power Cables
<b>34 24 00</b>	<b>Third Rail Traction Power</b>
34 24 13	Bottom-Contact Third Rail
34 24 16	Side-Contact Third Rail
34 24 19	Top-Contact Third Rail
<b>34 40 00</b>	<b>Transportation Signaling and Control Equipment</b>
<b>34 41 00</b>	<b>Roadway Signaling and Control Equipment</b>
34 41 13	Traffic Signals
34 41 16	Traffic Control Equipment
34 41 23	Roadway Monitoring Equipment
<b>34 42 00</b>	<b>Railway Signaling and Control Equipment</b>
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
<b>34 43 00</b>	<b>Airfield Signaling and Control Equipment</b>
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
<b>34 48 00</b>	<b>Bridge Signaling and Control Equipment</b>
34 48 13	Operating Bridge Signals
34 48 16	Operating Bridge Control Equipment
<b>34 50 00</b>	<b>Transportation Fare Collection Equipment</b>
<b>34 52 00</b>	<b>Vehicle Fare Collection</b>
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
<b>34 54 00</b>	<b>Passenger Fare Collection</b>
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 Boarding Bridges
- 34 77 13.13      Fixed Aircraft Passenger Boarding Bridges
- 34 77 13.16      Movable Aircraft Passenger Boarding Bridges
- 34 77 13.23      Ship Passenger Boarding Bridges
- 34 77 33      Baggage Scanning Equipment
- 34 77 36      Baggage Scales
- 34 77 39      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 81 29      Pontoon Bridge Machinery
- 34 81 32      Bascule 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

<b>35 00 00</b>	<b>Waterway and Marine Construction</b>
<b>35 01 00</b>	<b>Operation and Maintenance of Waterway and Marine Construction</b>
35 01 30	Operation and Maintenance of Coastal Construction
35 01 40	Operation and Maintenance of Waterway Construction
35 01 40.51	Waterway Dredging
35 01 40.92	Preservation of Water Courses
35 01 50	Operation and Maintenance of Marine Construction
35 01 50.51	Marine Dredging
35 01 50.71	Channel Excavation, Cleaning and Deepening
35 01 70	Operation and Maintenance of Dams
<b>35 05 00</b>	<b>Common Work Results for Waterway and Marine Construction</b>
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
<b>35 06 00</b>	<b>Schedules for Waterway and Marine Construction</b>
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
<b>35 08 00</b>	<b>Commissioning of Waterway and Marine Construction</b>
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
<b>35 10 00</b>	<b>Waterway and Marine Signaling and Control Equipment</b>
<b>35 11 00</b>	<b>Signaling and Control Equipment for Waterways</b>
35 11 13	Signaling Equipment for Waterways
35 11 53	Control Equipment for Waterways
<b>35 12 00</b>	<b>Marine Signaling and Control Equipment</b>
35 12 13	Marine Signaling Equipment
35 12 13.13	Lighthouse Equipment
35 12 33	Marine Navigation Equipment
35 12 53	Marine Control Equipment
<b>35 13 00</b>	<b>Signaling and Control Equipment for Dams</b>
35 13 13	Signaling Equipment for Dams
35 13 53	Control Equipment for Dams
<b>35 20 00</b>	<b>Waterway and Marine Construction and Equipment</b>
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 49 26 Floodgate Machinery

## **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 Pontoon

### **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**

- 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

<b>40 00 00</b>	<b>Process Integration</b>
<b>40 01 00</b>	<b>Operation and Maintenance of Process Integration</b>
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
<b>40 05 00</b>	<b>Common Work Results for Process Integration</b>
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
<b>40 06 00</b>	<b>Schedules for Process Integration</b>
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
<b>40 10 00</b>	<b>Gas and Vapor Process Piping</b>
<b>40 11 00</b>	<b>Steam Process Piping</b>
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
<b>40 12 00</b>	<b>Compressed Air Process Piping</b>
40 12 13	Breathing Compressed Air Process Piping
40 12 16	Non-Breathing Compressed Air Process Piping
<b>40 13 00</b>	<b>Inert Gases Process Piping</b>
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
<b>40 14 00</b>	<b>Fuel Gases Process Piping</b>
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
<b>40 15 00</b>	<b>Combustion System Gas Piping</b>
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
<b>40 16 00</b>	<b>Specialty and High-Purity Gases Piping</b>
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
<b>40 17 00</b>	<b>Welding and Cutting Gases Piping</b>
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
<b>40 18 00</b>	<b>Vacuum Systems Process Piping</b>
40 18 13	Low-Vacuum Systems Process Piping
40 18 16	High-Vacuum Systems Process Piping

<b>40 20 00</b>	<b>Liquids Process Piping</b>
<b>40 21 00</b>	<b>Liquid Fuel Process Piping</b>
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
<b>40 22 00</b>	<b>Petroleum Products Piping</b>
40 22 13	Heavy-Fractions Petroleum Products Piping
40 22 16	Light-Fractions Petroleum Products Piping
<b>40 23 00</b>	<b>Water Process Piping</b>
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
<b>40 24 00</b>	<b>Specialty Liquid Chemicals Piping</b>
40 24 13	Alcohol Piping
40 24 16	Gel Piping
40 24 19	Slurries Process Piping
40 24 23	Thixotropic Liquid Piping
<b>40 25 00</b>	<b>Liquid Acids and Bases Piping</b>
40 25 13	Liquid Acids Piping
40 25 16	Liquid Bases Piping
<b>40 26 00</b>	<b>Liquid Polymer Piping</b>
<b>40 30 00</b>	<b>Solid and Mixed Materials Piping and Chutes</b>
<b>40 32 00</b>	<b>Bulk Materials Piping and Chutes</b>
40 32 13	Abrasive Materials Piping and Chutes
40 32 16	Nonabrasive Materials Piping and Chutes
<b>40 33 00</b>	<b>Bulk Materials Valves</b>
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
<b>40 34 00</b>	<b>Pneumatic Conveying Lines</b>
40 34 13	Dense Phase Pneumatic Conveying Lines
40 34 16	Dilute Phase Pneumatic Conveying Lines
<b>40 40 00</b>	<b>Process Piping and Equipment Protection</b>
<b>40 41 00</b>	<b>Process Piping and Equipment Heat Tracing</b>
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
<b>40 42 00</b>	<b>Process Piping and Equipment Insulation</b>
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
<b>40 46 00</b>	<b>Process Corrosion Protection</b>
40 46 16	Coatings and Wrappings for Process Corrosion Protection
40 46 42	Cathodic Process Corrosion Protection
<b>40 47 00</b>	<b>Refractories</b>
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
<b>40 80 00</b>	<b>Commissioning of Process Systems</b>
<b>40 90 00</b>	<b>Instrumentation and Control for Process Systems</b>
<b>40 91 00</b>	<b>Primary Process Measurement Devices</b>
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
<b>40 93 00</b>	<b>Analog Controllers/Recorders</b>
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
<b>40 94 00</b>	<b>Digital Process Controllers</b>
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
<b>40 95 00</b>	<b>Process Control Hardware</b>
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
<b>40 96 00</b>	<b>Process Control Software</b>
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
<b>40 97 00</b>	<b>Process Control Auxiliary Devices</b>

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
<b>41 13 00</b>	<b>Bulk Material Feeders</b>
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
<b>41 14 00</b>	<b>Batching Equipment</b>
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
<b>41 20 00</b>	<b>Piece Material Handling Equipment</b>
<b>41 21 00</b>	<b>Conveyors</b>
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
<b>41 22 00</b>	<b>Cranes and Hoists</b>
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
<b>41 23 00</b>	<b>Lifting Devices</b>
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
<b>41 24 00</b>	<b>Specialty Material Handling Equipment</b>
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
<b>41 30 00</b>	<b>Manufacturing Equipment</b>
<b>41 31 00</b>	<b>Manufacturing Lines and Equipment</b>
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
<b>41 32 00</b>	<b>Forming Equipment</b>
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
<b>41 33 00</b>	<b>Machining Equipment</b>
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
<b>41 34 00</b>	<b>Finishing Equipment</b>

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
<b>41 35 00</b>	<b>Dies and Molds</b>
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
<b>41 36 00</b>	<b>Assembly and Testing Equipment</b>
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
<b>41 53 00</b>	<b>Storage Equipment and Systems</b>
41 53 13	Storage Cabinets
41 53 16	Container Storage Systems
41 53 19	Flat Files
41 53 23	Storage Racks
41 53 23.13	Mobile Storage Racks
41 53 26	Mezzanine Storage Systems
<b>41 60 00</b>	<b>Mobile Plant Equipment</b>
<b>41 61 00</b>	<b>Mobile Earth Moving Equipment</b>
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
<b>41 62 00</b>	<b>Trucks</b>
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
<b>41 63 00</b>	<b>General Vehicles</b>
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
<b>41 64 00</b>	<b>Rail Vehicles</b>
41 64 13	Locomotives
41 64 13.13	Diesel Locomotives
41 64 13.23	Electric Locomotives
41 64 16	Mobile Railcar Movers
<b>41 65 00</b>	<b>Mobile Support Equipment</b>
41 65 13	Mobile Air Compressors
41 65 16	Mobile Generators
41 65 19	Mobile Welders
<b>41 66 00</b>	<b>Miscellaneous Mobile Equipment</b>
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
<b>42 15 00</b>	<b>Industrial Ovens</b>
42 15 13	Industrial Drying Ovens
42 15 16	Industrial Curing Ovens
42 15 19	Industrial Specialty Ovens
<b>42 20 00</b>	<b>Process Cooling Equipment</b>
<b>42 21 00</b>	<b>Process Cooling Towers</b>
42 21 13	Open-Circuit Process Cooling Towers
42 21 16	Closed-Circuit Process Cooling Towers
<b>42 22 00</b>	<b>Process Chillers and Coolers</b>
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
<b>42 23 00</b>	<b>Process Condensers and Evaporators</b>
42 23 13	Process Condensers
42 23 16	Process Cooling Evaporators
42 23 19	Process Humidifiers
<b>42 30 00</b>	<b>Process Drying Equipment</b>
<b>42 31 00</b>	<b>Gas Dryers and Dehumidifiers</b>
42 31 13	Drying Evaporators
42 31 16	Desiccant Equipment
42 31 19	Regenerative Dryers
42 31 23	Refrigerant Dryers
<b>42 32 00</b>	<b>Material Dryers</b>
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 10.13 Gas Blowers Maintenance and Rehabilitation
    - 43 01 10.16 Gas Compressors Maintenance and Rehabilitation
    - 43 01 20 Operation and Maintenance of Liquid Handling Equipment
    - 43 01 20.13 Liquid Pumps Maintenance and Rehabilitation
    - 43 01 20.16 Liquid Process Equipment Maintenance and Rehabilitation
    - 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 01 40.13 Non-pressurized Tanks Cleaning, Maintenance, and Rehabilitation
    - 43 01 40.16 Pressurized Tanks Cleaning, Maintenance, and Rehabilitation
  - 43 05 00 Common Work Results for Process Gas and Liquid Handling, Purification, and Storage Equipment**
    - 43 05 10 Common Work Results for Gas Handling Equipment
    - 43 05 20 Common Work Results for Liquid Handling Equipment
    - 43 05 30 Common Work Results for Gas and Liquid Hi-Purification Equipment
    - 43 05 40 Common Work Results for 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, Pumps and Boosters**
      - 43 11 11 Direct Drive Single Stage Centrifugal Blowers
      - 43 11 12 Integrally Geared Single Stage Centrifugal Blowers
      - 43 11 13 Separately Geared Single Stage Centrifugal Blowers
      - 43 11 14 Direct Drive Integral Shaft Single Stage Centrifugal Blowers
      - 43 11 17 Horizontally Split Multistage Centrifugal Blowers
      - 43 11 18 Vertically Split Multistage Centrifugal Blowers
      - 43 11 19 Centrifugal Fans
      - 43 11 23 Axial Blowers
      - 43 11 26 Axial Fans
      - 43 11 31 Rotary Helical Screw Blowers
      - 43 11 33 Rotary Lobe Blowers
      - 43 11 34 Regenerative Rotary Blowers
      - 43 11 36 Rotary Vane Blowers

43 11 41	Gas-handling Venturi Jet Pumps
43 11 43	Gas-handling Vacuum Pumps
43 11 46	Gas Boosters
<b>43 12 00</b>	<b>Gas Compressors</b>
43 12 11	Centrifugal Compressors
43 12 13	Diagonal or Mixed-flow Compressors
43 12 16	Axial-flow Compressors
43 12 33	Single-acting Reciprocating Compressors
43 12 34	Double-acting Reciprocating Compressors
43 12 37	Diaphragm Reciprocating Compressors
43 12 51	Rotary Screw Compressors
43 12 53	Rotary Vane Compressors
43 12 56	Rotary Liquid-ring Compressors
43 12 57	Rotary Scroll Compressors
<b>43 13 00</b>	<b>Gas Process Equipment</b>
43 13 13	Gas Blenders
43 13 19	Gas Mixers
43 13 23	Gas Pressure Regulators
43 13 31	Gas Separation Equipment
43 13 33	Gas Dehydration Equipment
43 13 36	Combined Gas Separation and Dehydration Equipment
43 13 39	Gas Recovery and Condensing Equipment
43 13 43	Waste Gas Burner System
43 13 46	Gas Control and Safety Equipment
<b>43 15 00</b>	<b>Process Air and Gas Filters</b>
43 15 13	Blower Intake and Turbine Air Filters
43 15 13.13	Static Prefilters
43 15 13.16	Static Final Filters
43 15 13.19	Static HEPA Filters
43 15 13.23	Pulse Filters
43 15 33	Grease Filters
43 15 43	Mist Eliminators
43 15 63	High-temperature Air Filters
43 15 73	Multiple-application Air Filters
43 15 73.11	Air Filter Media
43 15 73.12	Permanent Washable Filters
43 15 73.13	Poly-ring Air Filters
43 15 73.15	Rigid Cell Filters
43 15 73.17	Automatic Roll-type Air Filters
43 15 76	Chemical Media for Air and Gas Filters
<b>43 20 00</b>	<b>Liquid Handling Equipment</b>
<b>43 21 00</b>	<b>Liquid Pumps</b>
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
<b>43 22 00</b>	<b>Liquid Process Equipment</b>
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 56	Liquid Process Mixers
43 22 59	Liquid Process Pressure Regulators
43 22 63	Liquid Separation Towers
43 22 66	Liquid Weigh Systems
43 22 69	Liquid Grease Receiving and Dewatering Systems
43 22 73	Liquid Fillers
43 22 76	Liquid Screeners
43 22 79	Liquid Clarifiers
43 22 83	Liquid Classifiers
43 22 86	Liquid Homogenizers
43 22 89	Liquid Presses
43 22 96	Liquid Versators
43 22 99	Liquid Votators
<b>43 27 00</b>	<b>Process Liquid Filters</b>
43 27 13	Cyclonic Liquid Filters
43 27 16	Centrifugal Horizontal Pressure Leaf Liquid Filters
43 27 19	Press Liquid Filters
43 27 23	Liquid Bag Filters
43 27 33	Mechanically Cleaned Liquid Filters
43 27 43	Tubular Backwashing Liquid Filters
43 27 53	Vacuum Belt Liquid Filters
43 27 63	Woven Media Liquid Filters
43 27 63.13	Disc Liquid Filters
43 27 63.23	Rotating Drum Liquid Filters
43 27 63.33	Layer Liquid Filters
43 27 63.43	Candle Liquid Filters
43 27 63.53	Vertical Leaf Liquid Filters
43 27 73	Nonwoven Media Liquid Filters
43 27 73.13	Surface Liquid Filters
43 27 73.23	Depth Liquid Filters
<b>43 30 00</b>	<b>Gas and Liquid Purification Equipment</b>
<b>43 31 00</b>	<b>Gas and Liquid Purification Filtration Equipment</b>
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 Non-pressurized Tanks and Vessels**

- 43 41 11 Bolted Steel Tanks
- 43 41 13 Welded Steel Tanks
- 43 41 13.13 Glass-lined Welded Steel Tanks
- 43 41 13.23 Rubber-lined Welded Steel Tanks
- 43 41 13.33 Epoxy-lined Welded Steel Tanks
- 43 41 13.43 Ceramic-lined Welded Steel Tanks
- 43 41 23 Stainless Steel Tanks
- 43 41 26 Aluminum Tanks
- 43 41 31 Metallic Specialty Tanks
- 43 41 41 Polyvinyl Chloride Tanks
- 43 41 43 Polyethylene Tanks
- 43 41 45 Fiberglass Reinforced Plastic Tanks
- 43 41 53 Wood Stave Tanks
- 43 41 63 Precast Concrete Tanks
- 43 41 73 Ceramic Tanks
- 43 41 83 Non-metallic Specialty Tanks

### **43 42 00 Pressurized Tanks and Vessels**

- 43 42 11 Cast Iron Pressure Tanks
- 43 42 13 Ductile Iron Pressure Tanks
- 43 42 21 Welded Steel Pressure Tanks
- 43 42 23 Glass-lined Steel Pressure Tanks
- 43 42 26 Welded Steel Gas Storage Sphere
- 43 42 33 Stainless Steel Pressure Tanks
- 43 42 36 Aluminum Pressure Tanks
- 43 42 41 Metallic Specialty Pressure Tanks

43 42 53	Fiberglass Reinforced Plastic Pressure Tanks
43 42 83	Non-metallic Specialty Pressure Tanks

## **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 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

<b>44 32 00</b>	<b>Odor Dispersing and Masking/Counteracting Equipment</b>
44 32 13	Odor Dispersing Exhaust Stacks
44 32 13.13	Fan-equipped Odor Dispersing Exhaust Stacks
44 32 23	Odor Masking/Counteracting Equipment
<b>44 40 00</b>	<b>Water Pollution Control Equipment</b>
<b>44 41 00</b>	<b>Water Pollution Containment and Cleanup Equipment</b>
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
<b>44 50 00</b>	<b>Solid Waste Control and Reuse</b>
<b>44 51 00</b>	<b>Solid Waste Collection, Transfer, and Hauling Equipment</b>
44 51 13	Solid Waste Portable Containers
44 51 16	Solid Waste Stationary Containers
44 51 23	Solid Waste Transfer Trailers
<b>44 53 00</b>	<b>Solid Waste Processing Equipment</b>
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	Briquettters
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
<b>44 55 00</b>	<b>Composting Equipment</b>
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
<b>44 60 00</b>	<b>Waste Thermal Processing Equipment</b>
<b>44 61 00</b>	<b>Waste-to-Energy Plants</b>
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
<b>44 62 00</b>	<b>Fluidized Bed Combustion Equipment</b>
<b>44 63 00</b>	<b>Rotary Kiln Incinerators</b>
<b>44 64 00</b>	<b>Gasification Equipment</b>
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
<b>44 65 00</b>	<b>Pyrolysis Equipment</b>
<b>44 66 00</b>	<b>Hazardous Waste and Medical Waste Incinerators</b>
<b>44 67 00</b>	<b>Heat Recovery Equipment for Waste Thermal Processing</b>
<b>44 68 00</b>	<b>Synthesis Gas Cleanup and Handling Equipment</b>

- 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 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 to 45 52 99 *User-Defined Other Manufacturing Equipment*

<b>46 00 00</b>	<b>Water and Wastewater Equipment</b>
<b>46 01 00</b>	<b>Operation and Maintenance of Water and Wastewater Equipment</b>
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
<b>46 05 00</b>	<b>Common Work Results for Water and Wastewater Equipment</b>
<b>46 06 00</b>	<b>Schedules for Water and Wastewater Equipment</b>
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
<b>46 07 00</b>	<b>Packaged Water and Wastewater Treatment Equipment</b>
46 07 13	Packaged Water Treatment Equipment
46 07 53	Packaged Wastewater Treatment Equipment
<b>46 08 00</b>	<b>Commissioning of Water and Wastewater Equipment</b>
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
<b>46 20 00</b>	<b>Water and Wastewater Preliminary Treatment Equipment</b>
<b>46 21 00</b>	<b>Screening Equipment</b>
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
<b>46 23 00</b>	<b>Grit Removal and Handling Equipment</b>
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
<b>46 24 00</b>	<b>Grinding and Shredding Equipment</b>
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
<b>46 25 00</b>	<b>Oil and Grease Separation and Removal Equipment</b>
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
<b>46 30 00</b>	<b>Water and Wastewater Chemical Feed Equipment</b>
<b>46 31 00</b>	<b>Gas Chemical Feed Equipment</b>
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
<b>46 33 00</b>	<b>Liquid Chemical Feed Equipment</b>



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
<b>46 36 00</b>	<b>Dry Chemical Feed Equipment</b>
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
<b>46 40 00</b>	<b>Water and Wastewater Clarification and Mixing Equipment</b>
<b>46 41 00</b>	<b>Mixing Equipment</b>
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
<b>46 43 00</b>	<b>Clarifier Equipment</b>
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
<b>46 46 00</b>	<b>Sediment Removal Equipment</b>
46 46 13	Tipping Sediment Flushing Tanks
46 46 16	Flushing Gates
46 46 23	Water Cannon
46 46 26	Nozzle Systems
<b>46 50 00</b>	<b>Water and Wastewater Secondary Treatment Equipment</b>
<b>46 51 00</b>	<b>Air and Gas Diffusion Equipment</b>
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
<b>46 53 00</b>	<b>Biological Treatment Systems</b>
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
<b>46 60 00</b>	<b>Water and Wastewater Advanced Treatment Equipment</b>
<b>46 61 00</b>	<b>Filtration Equipment</b>
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
<b>46 63 00</b>	<b>Demineralization Equipment</b>
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
<b>46 66 00</b>	<b>Ultraviolet Equipment</b>
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
<b>46 70 00</b>	<b>Water and Wastewater Residuals Handling and Treatment</b>
<b>46 71 00</b>	<b>Residuals Thickening Equipment</b>
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
<b>46 73 00</b>	<b>Residuals Stabilization</b>

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
<b>46 76 00</b>	<b>Residuals Dewatering Equipment</b>
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
<b>46 78 00</b>	<b>Thermal Treatment of Residuals</b>
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

<b>48 00 00</b>	<b>Electrical Power Generation</b>
<b>48 01 00</b>	<b>Operation and Maintenance for Electrical Power Generation</b>
48 01 10	Operation and Maintenance of Electrical Power Generation Equipment
48 01 70	Operation and Maintenance of Electrical Power Generation Testing
<b>48 05 00</b>	<b>Common Work Results for Electrical Power Generation</b>
<b>48 06 00</b>	<b>Schedules for Electrical Power Generation</b>
48 06 10	Schedules for Electrical Power Generation Equipment
48 06 70	Schedules for Electrical Power Generation Testing
<b>48 08 00</b>	<b>Commissioning of Electrical Power Generation</b>
<b>48 09 00</b>	<b>Instrumentation and Control for Electrical Power Generation</b>
<b>48 10 00</b>	<b>Electrical Power Generation Equipment</b>
<b>48 11 00</b>	<b>Fossil Fuel Plant Electrical Power Generation Equipment</b>
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
<b>48 12 00</b>	<b>Nuclear Fuel Plant Electrical Power Generation Equipment</b>
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 Plant Generators
<b>48 13 00</b>	<b>Hydroelectric Plant Electrical Power Generation Equipment</b>
48 13 13	Hydroelectric Power Plant Water Turbines
48 13 16	Hydroelectric Power Plant Electrical Power Generators
<b>48 14 00</b>	<b>Solar Energy Electrical Power Generation Equipment</b>
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
<b>48 15 00</b>	<b>Wind Energy Electrical Power Generation Equipment</b>
48 15 13	Wind Turbines
48 15 16	Wind Energy Electrical Power Generators
<b>48 16 00</b>	<b>Geothermal Energy Electrical Power Generation Equipment</b>
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
<b>48 17 00</b>	<b>Electrochemical Energy Electrical Power Generation Equipment</b>
48 17 13	Electrical Power Generation Batteries
<b>48 18 00</b>	<b>Fuel Cell Electrical Power Generation Equipment</b>
48 18 13	Electrical Power Generation Fuel Cells
48 18 16	Hydrogen Control Equipment
<b>48 19 00</b>	<b>Electrical Power Control Equipment</b>
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
<b>48 70 00</b>	<b>Electrical Power Generation Testing</b>
<b>48 71 00</b>	<b>Electrical Power Generation Test Equipment</b>
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