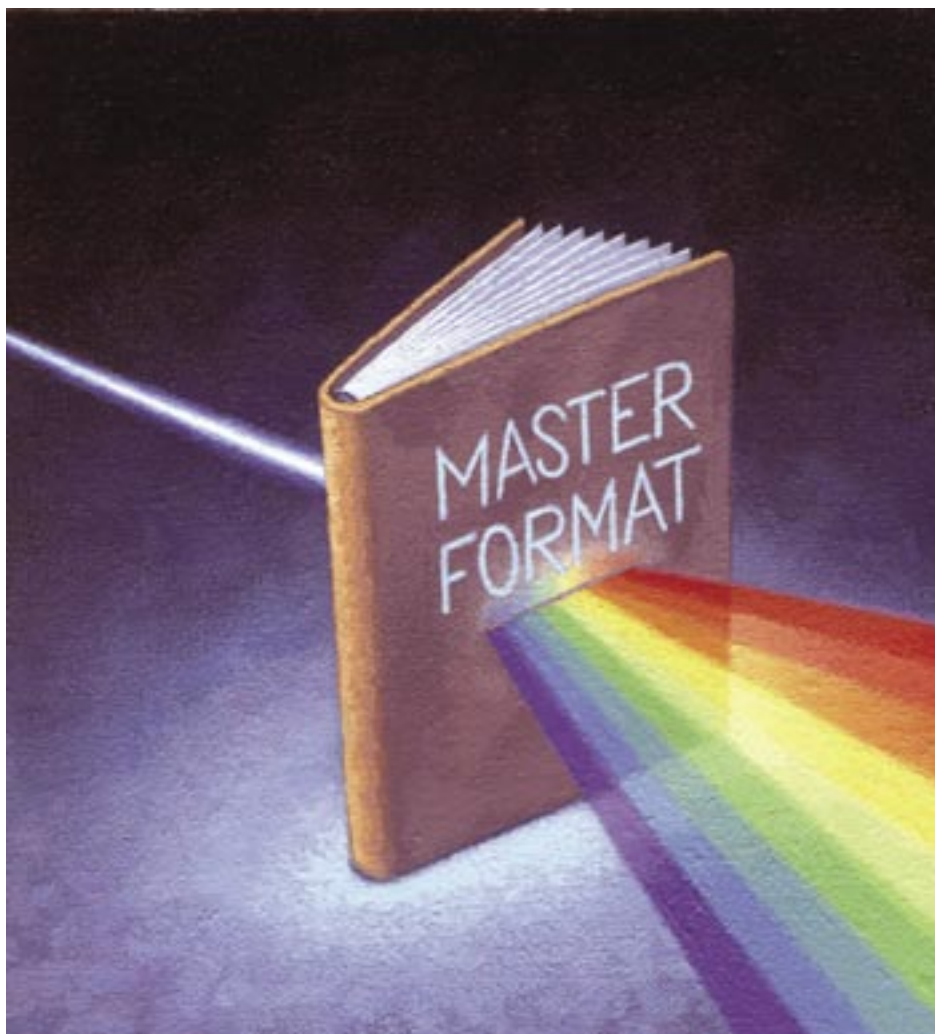


Shining the Light on MasterFormat 2004



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Electrical Design Library (EDL) publications are prepared for architects, consulting engineers, and qualified electrical contractors, as well as owners, developers, investors, and their electrical construction specifying personnel. Issued periodically by the National Electrical Contractors Association (NECA), the publications provide factual explanations of the increasing variety of sophisticated electrical systems and the economics of their installation by professional electrical contractors. They are distributed by the Association's chapters, located in all sections of the United States.

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Introduction

It is finally here and being implemented at breathtaking speed! We all thought, initially, that it would just go the way of Metrification, but its tenacity is winning out and organizations are actually adopting it in exponentially-increasing numbers.

So, what is “it” that has everyone in the construction industry on the edge of their seats?

“It” is *MasterFormat™ 2004*, published by Construction Specifications Institute (CSI) and released in fall 2004.

Why is this edition of *MasterFormat* of such concern to our industry? After all, CSI and *MasterFormat* have been in existence since the early 60’s, and at least two major publications of a CSI master list of specification titles and numbers have been published previously—in 1964 and 1995.

Coming up with an answer to this question requires an understanding that the initial impression in the construction industry—especially among the electrical and mechanical contractors and design professionals—is *MasterFormat 2004* has “undone” over 40 years of trade practices and has reassigned trade responsibilities.

Considering that most of the changes between *MasterFormat 1995* and *MasterFormat 2004*, discounting all the new divisions that were added, apply to the electrical and mechanical disciplines and trades, this impression is understandable.

This edition of the Electrical Design Library (EDL) will attempt to assuage concerns of readers by examining where the “work” has actually “gone.”

The Construction Specifications Institute

The Construction Specifications Institute (CSI), located in Alexandria, Va., is the organization designed to improve the process of creating and sustaining the built environment. Its 16,500 members represent virtually all disciplines involved in commercial and institutional building design and construction.

CSI strives to help everyone in that process to work together smarter by fostering clear communication via the written construction documents. Providing systems and formats concerning how construction documents are written and how their content is organized is one of CSI’s chief concerns. Thus, their work includes:

- ◆ Voluntary standards for creating and organizing specifications—the written “instructions” for construction. One example is *MasterFormat*. It’s the “Dewey Decimal System” for organizing construction project information.
- ◆ Continuing education sessions, conferences, and certification programs enabling practitioners to prepare and interpret written construction documents, administer construction contracts, and represent construction products.
- ◆ Construction product shows that inform everyone on the project team about the best construction products, technologies, and services for meeting building projects’ specifications.
- ◆ *The Construction Specifier* magazine, which covers construction practices and technology and is an authoritative resource on building processes and products and the relationships among those involved in project delivery.

For additional information about CSI, contact their offices via phone at 800-689-2900 or 703-684-0300 or via e-mail at csi@csinet.org. Check out their website at www.csinet.org.

MasterFormat 1995 Becomes 2004

Numerous documents, publications, articles, and websites are devoted to explaining the “who, what, when and why” of the conversion from *MasterFormat* 1995 (MF95) to *MasterFormat* 2004 (MF04). This article will focus on “where.” For the past 40 years, electrical work has “resided” primarily in Division 16—*Electrical* under MF95. Where is electrical work “found” in MF04?

Beyond tracking down what happened to Division 16, this article addresses where to find electrical-trade work that previously was located in *Division 2 – Site Construction*, *Division 11 – Equipment*, and *Division 13 – Special Construction*. Further, where does MF04 cover the electrical coordination requirements that had been in MF95 *Division 15 – Mechanical*. Finally, what happened to that mysterious no-name *Division 17*.

As reassurance, former Divisions 4 through 10 and 12—electrically speaking—have remained basically the same under MF04. Thus, anyone looking for plywood for a backboard can still find it in the Division titled *Wood, Plastics and Composites* (Division 06 vs. Division 6); anyone wondering what type of paint to use for exposed conduits, could still find it in *Finishes* (Division 09 vs. Division 9); and so on. Although the first nine division numbers have a new “0” prefixed, and some division names have slightly changed or expanded to support new technologies, the basic scopes of these divisions has not been altered.

Okay, Then...What Has Changed?

Before discussing individual divisions, let’s digress a bit. A brief overview of the major changes from MF95 to MF04 is in order. According to Karl Borgstrom, CSI executive director, *MasterFormat* 2004 now provides an organizational structure that:

- ◆ Systematically encompasses all data generated throughout a project’s life cycle;
- ◆ Assimilates growth, in both volume and complexity, of project information;
- ◆ Provides more space and detail for mechanical and electrical disciplines;
- ◆ Addresses horizontal construction as well as vertical;
- ◆ Covers process engineering;
- ◆ Maintains organizational consistency; and
- ◆ Follows recognized information classification principles.

In MF04, the original 16 divisions of MF95 were split apart and expanded to 50 divisions. The new “Divisions”

and the “Front End Documents” not previously addressed by CSI, were assigned into two major “Groups”—Procurement and Contracting Requirements and Specifications. Divisions 01 through 49 of the Specifications group have been split into five subgroups:

- ◆ Division 01: General Requirements Subgroup
- ◆ Divisions 02 – 19: Facility Construction Subgroup
- ◆ Divisions 20 – 29: Facility Services Subgroup
- ◆ Divisions 30 – 39: Site and Infrastructure Subgroup
- ◆ Divisions 40 – 49: Process Equipment Subgroup

Some division numbers between 02 and 49 have been reserved for future products, technologies and methods. A new six-digit section numbering system expands by more than tenfold the number of possible sections that can be assigned in each division.

Despite what appears to be a full scale demolition and rebuilding of the existing structure, the foundation and basic building blocks, the parts we use stay the same. Names and numbers have changed, but not the Section format—what you saw before, within the Sections, will be the same. Thus, what has changed is:

- ◆ coverage has expanded beyond buildings;
- ◆ the number of divisions has expanded from 16 to 50;
- ◆ section numbers,
- ◆ secondary applications; and
- ◆ organization.

The things that have stayed the same are:

- ◆ continues to provide a “master list” of numbers and titles for the construction industry;
- ◆ uses a hierarchical structure to present construction information; and
- ◆ maintains “section” as a basic element of specifications.

New Subgroups

The new General Requirements Subgroup consists of only one division: *Division 01 – General Requirements*. The second subgroup is the *Facility Construction Subgroup*, consisting of Divisions 02 through 19, with Divisions 15 through 19 reserved for future use.

The “change” to MF95 *Division 16 – Electrical* is not so much an “undoing” as it is an “expansion.” In MF04, coverage in the old Division 16 is expanded through the creation of new divisions under the new *Facility Services Subgroup: Division 26 – Electrical, Division 27*

– *Communications*, and *Division 28 – Electronic Safety and Security*.

A similar situation applies to MF95 *Division 15 – Mechanical*, which also goes the expansion route by replacing new divisions to provide expanded coverage, also under the new *Facility Services Subgroup*:

- ◆ Division 22 – Plumbing
- ◆ Division 23 – Heating, Ventilating and Air Conditioning

Two additional divisions—*Division 21 – Fire Suppression* and *Division 25 – Integrated Automation*—were created from previous MF95 divisions, round out the active sections within the *Facility Services Subgroup*, with Divisions 20, 24, and 29 reserved for future use.

The new *Site and Infrastructure Subgroup* (Divisions 31–35) contains heavy civil and utility subject matter not previously addressed in *MasterFormat*, including transportation, utility and marine construction, as well as site construction material moved from MF95 *Division 2*. In this subgroup, Divisions 30 and 36 through 39 are reserved for future use.

Some material in the new *Process Equipment Subgroup* (Divisions 40–48) is new to MF04 (e.g., manufacturing, water and wastewater treatment, power generation and other types of process engineering projects), while some has been relocated from MF95 Divisions 11, 13, and 14. This subgroup may experience the fastest growth rate as more design professionals and their clients implement MF04 and “fill in the gaps” intentionally left for this purpose. Divisions reserved for future use in this subgroup include 46, 47, and 49.

Many of the sections associated with *Site and Infrastructure and Process*

Equipment Subgroups are new to the CSI *MasterFormat*, and are part of CSI’s philosophy of expanding *MasterFormat* beyond vertical construction to also incorporate horizontal construction. Numerous sections used in these subgroups closely match, or were derived from those in the previous subgroups, since many of the materials, equipment, and work results can apply to more than one subgroup.

Published specifications sections for many of the divisions in these five subgroups do not presently exist, except perhaps, within the specifications libraries of design firms that have typically performed design services in these fields. It is also likely that some of the design firms specializing in the *Site and Infrastructure and Process Equipment Subgroup* types of construction, and the clients/owners for which they produce construction documents, will not “roll over” to the new MF04 format as quickly as the rest of the construction industry, if at all.

How does MF04 Help the Project Team?

Specifiers — Information generated for commercial and institutional construction projects is rapidly growing in volume and complexity. MF04 enables specifiers to produce construction project manuals with far more comprehensive and detailed information, which can reduce costly changes and delays during construction due to incomplete, misplaced, or totally missing information. It reduces the need for non-standard divisions, helping users handle future growth in construction project information in a systematic way.

Architects — Using MF04, architects can better communicate their design vision through more detailed and comprehensive specifications. Plus, because the new edition provides standardized locations for many subjects that often weren’t addressed, architect-contractor conflict may be reduced because of fewer changes and delays during construction due to vague, misplaced, or absent information.

Contractors — Because MF04 specification sections are more standardized, comprehensive and detailed, contractors’ bid documents and project schedules can be more accurate, yielding fewer cost overruns, mistakes, and delays...and more satisfied clients.

Owners — Using MF04 to develop commercial structures’ specifications could result in an estimated 5% to 10% savings in construction costs because its much expanded content fosters fuller and more accurate specifications.

MasterFormat 2004 Divisions

Now comes the “exciting” part: the divisions affecting electrical work and what has happened to them. Let’s start with the one that really never existed and get it out of the way, as did CSI. New MF04 divisions will follow, including how some relate to their former MF95 divisions. New divisions, not previously covered by *MasterFormat*, will also be discussed.

Division 17 – The Unnamed Catch-all

Division 17, which really was never a CSI-sanctioned nor named division, arose in the construction industry with the advent and rapid growth of low-voltage control communications and building automation. (It was frequently used for any work result not included in MF95). MF04 has resolved what to do with this division by assigning Division 17 to its list of “Reserved” division numbers. Work results that occasionally showed up in construction documents in Division 17 have been assigned “permanent” homes in new divisions, primarily 25 and 27.

Division 01 – General Requirements

Although this Division has grown, with conversion to Division 01 under MF04, it retains its title and, basically, retains the same scope as under MF95. One major change is the possibility to add performance requirements for elements that overlap work results (e.g., building systems, structure, etc.), which allows for including performance specifications and prescriptive specifications in the same set of Construction Documents. Other changes to note are that *Section 01900 – Hazardous Materials Abatement* has been split apart and moved to Division 02, as well as sections relating to existing conditions.

Division 02 – Existing Conditions

What previously had been *Division 2 – Site Construction* is now *Division 02 – Existing Conditions*. As the new MF04 division name implies, this division has experienced a major overhaul, with all the electrical site-related work formally located there relocated to new specification subgroups and divisions.

This division is now limited to work results and construction practices that relate to items at the site prior to work beginning, or “existing conditions.” Among other items, this includes selective demolition, subsurface and similar investigation, surveying, site decontamination, and site remediation. All site construction has been relocated to the *Site and Infrastructure Subgroup*, as well as heavy civil and infrastructure work, including utility and pavement work.

A key electrical work result to look for in the new Division 02 is *Section 024119 – Selective Structure Demolition*. It contains requirements for selective demolition of existing electrical systems. Additionally, *Section 02580 – Lighting Poles and Standards*, has moved to Division 26 as *Section 265613*, retaining its name; and *Section 02080 – Meters* has split apart, with a “piece” ending up in Division 26 as new *Section 262713 – Electricity Metering*.

Division 11 – Equipment

Although the division title and number remain the same, sections covering equipment related to process engineering have been relocated to the *Process Equipment Subgroup*. Sections covering equipment related to infrastructure have been relocated to the *Site and Infrastructure Subgroup*. A couple of sections that relate to electrical work have moved to the *Facilities Services Subgroup*: *Section 231216 – Facility Gasoline Dispensing Pumps* and *Section 233813 – Commercial Kitchen Hoods*.

Division 13 – Special Construction

This is another division that retained its number and title; however, special construction sections related to process engineering have been relocated to the *Process Equipment Subgroup*. Sections related to facility lightning protection, cathodic protection, security access, building automation, communications, detection and alarm, and fire suppression subjects have been relocated to divisions in the *Facility Services Subgroup*. The sections remaining in this division are those equipment sections that primarily support architectural installations.

Division 14 – Conveying Equipment

This division was renamed to reflect the equipment and work results that remain in the division after sections associated with process-related material handling equipment were relocated to the *Process Equipment Subgroup*.

Division 15 – Mechanical

Material and equipment sections that resided here under MF95 have been relocated mostly to *Division 22 – Plumbing* and *Division 23 – Heating, Ventilating, and Air Conditioning* in the *Facility Services Subgroup*; although, a few sections related to industrial processes were relocated to the *Process Equipment Subgroup*, and building systems controls relocated to *Division 25 – Integrated Automation*. Division 15 is now one of those division numbers that have been reserved for future expansion.

Division 16 – Electrical

Material and equipment sections that resided here under MF95 have been relocated to *Division 26 – Electrical* and *Division 27 – Communications* in the *Facility Services Subgroup*. Division 16 is also one of those division numbers that have been reserved for future expansion.

Division 21 – Fire Suppression

This is the first of the sections that comprise the new *Facility Services Subgroup*. It is also the location for the fire suppression sections that were relocated from MF95 Division 13. Electrically-related work found in this division includes sections for fire and jockey pumps and controllers and dry and wet chemical fire suppression systems.

Division 22 – Plumbing

This is the first of the two divisions that originated from the former MF96 *Division 15 – Mechanical*. It includes facility-related plumbing subjects relocated from Division 15, such as pumping systems for facility sanitary sewerage, storm water, and compressed air. Also included are medical gas and vacuum systems, fountain and pool equipment, emergency and healthcare fixtures, water coolers, and water heaters, all of which require coordination with electrical systems. In addition to the relocated sections, new sections have been included for new technology.

Division 23 – Heating Ventilating and Air Conditioning

This is the second of the two divisions that originated from the former MF96 *Division 15 – Mechanical*. It includes a majority of the remaining sections, specifically facility-related HVAC subjects, relocated from Division 15. There should be no “surprises” in store for anyone looking here for electrical work related to HVAC equipment and systems. Also, contrary to what some believe occurred, stand-alone HVAC instrumentation and control systems were retained in this division instead of relocating to *Division 25 – Integrated Automation*.

Division 25 – Integrated Automation

This is one division that will most likely be “up for grabs” by various trade groups. Although it consists of integrated automation subjects relocated from Divisions 13 and 15 (and lots of new stuff), it tends to be grouped with the other “electrical” divisions in the *Facility Services Subgroup* (Divisions 26, 27, and 28). Ironically, its sections are

intended to support all the other divisions in the *Facility Services Subgroup*, as well as those in the *Facility Construction Subgroup* and *Site and Infrastructure Subgroup*. Its published purpose is to provide the “link” between such building systems as “HVAC, lighting, power, elevator and security systems that use data from one operation to influence another.” Currently, it includes sections addressing network equipment, instrumentation and terminal devices, and facilities controls for facility integrated automation.

Division 26 – Electrical

A majority of the electrical power and lighting subjects relocated from Division 16 ended up here, along with sections relocated from Division 2 (e.g., site lighting and metering) and Division 13 (e.g., lightning and cathodic protection and photovoltaic and wind energy equipment). Again, no “surprises here; however, what will be “new” to users are enhancements that address features such as expanded operations and maintenance and commissioning capabilities. Also, public-utility-related sections have moved to *Division 33 – Utilities* (see below).

Division 27 – Communications

This is one of the divisions that “split-apart” from the old *Division 16 – Electrical* and “traditional” electrical work. It also includes communications sections relocated from Division 13. It, along with the next division, is at the heart of the “trade wars” between the “traditional” electrical contractors and the newer low-voltage “specialty” contractors. Nearly everything (i.e., cabling, equipment, and systems) related to voice, data, and audio-video communications will be found in this division, as well as distributed communications and monitoring systems (e.g., public address, paging, intercom, healthcare, and clock systems). There are also section numbers and titles that closely match, and appear to duplicate, common work result sections in *Division 26 – Electrical* (e.g., hangers and supports, raceways and fittings, cable trays, etc.). This allows each division to “stand alone”; however, there are no requirements for design professionals to use either or both sets of sections.

Division 28 – Electronic Safety and Security

Division 28 is the other “split-apart” from “traditional” electrically related work. It includes electronic safety and security sections relocated from Divisions 13 and 15, as well as new sections not previously covered in MF95. There are sections dealing with electronic access control and intrusion detection; surveillance; fire, gas, fuel, and radiation

detection and alarm, and electronic monitoring and control. As with Division 27, this division includes nearly duplicate common work result sections, allowing it to stand alone.

Division 31 – Earthwork

This is the first active division in the *Site and Infrastructure Subgroup*. Site construction sections relocated from Division 2 and new ones, primarily dealing with below-grade work results, make up this new division. Requirements for trenching and backfilling reside here.

Division 32 – Exterior Improvements

Site construction sections relocated from Division 2 and new ones, primarily dealing with above-grade work results, make up this new division. Requirements for hardscape and landscape restoration, and irrigation systems requiring electrical support, are found here.

Division 33 – Utilities

This division includes equipment, infrastructures, structures, and controls and instrumentation primarily for the collection and distribution of water, wastewater, communications, fuel, steam, hydronics, and electrical utilities for all public and private entities. Primarily utility sections relocated from Divisions 2 and 16 make up this division, with a few also from Division 11 (utility pumping stations), Division 13 (site lightning protection, utility storage tanks, utility optical fiber cabling).

Key Division 16 work results that now reside here include some that were direct transfers and some that duplicate sections that stayed with the transfer of sections to Division 26. Transfers and duplications include most of the 16300-series utility-related medium- and high-voltage and transmission and distribution materials and equipment (e.g., transformers, switchgear, overcurrent protection, surge arresters, and substations). They also include the 16700-series of utility-related communications (e.g., communications distribution equipment sections for transmitters, receivers, and antennas).

Division 34 – Transportation

Transportation sections have been relocated here from various MF95 Divisions, including Division 6 (timber cross ties), Division 13 (transportation-related signaling and control systems), Division 14 (all 14900-series transportation-related equipment and baggage conveying equipment), and Division 16 (transportation-related signaling equipment). Work results and equipment for roadways,

railways, airports, and bridges populate this division, with electrical work including cable transportation, traction power, transportation signaling and controls, fare collection, and electrified bridge machinery.

Division 35 – Waterway and Marine Construction

Waterway and marine sections have been relocated here mainly from Division 2, with a few also from Division 5 (hydraulic fabrications), Division 11 (hydraulic gates and marine navigation equipment), and Division 16 (marine and waterway signaling equipment).

Division 40 – Process Integration

This first division within the Process Equipment Subgroup includes new sections used to tie together and integrate process facilities, composed of a variety of subsystems, by incorporating distribution pathways, control, and instrumentation. Also found here are sections transferred or derived from Divisions 13 and 15 on heat tracing and instrumentation and control systems to support process piping for gases and vapors, liquids and solids, and mixed materials. Commissioning requirements for the subsystems and the complete facility are also included.

Division 41 – Material Processing and Handling Equipment

This division includes mostly new sections related to equipment for processing and conditioning of raw materials; material handling equipment for bulk and piece materials; manufacturing equipment and machinery; test equipment; and packaging and shipping systems. This division also relies on sections transferred or derived from Division 11 (industrial and process equipment) and Division 14 (material handling and transport equipment, bulk feeder equipment, and cranes and hoists).

Division 42 – Process Heating, Cooling, and Drying Equipment

Equipment and work results for process heating, cooling and drying of materials, liquids, gases and manufactured items and materials make up the sections in this division. Division_ contributed the bulk of sections transferred to this division. This division also relies on sections transferred or derived from Division 11 (process heating, cooling, and drying equipment) and Division 13 (solar process equipment).

Conclusion

Division 43 – Process Gas and Liquid Handling, Purification and Storage Equipment

Handling, purification and storage of process liquids, gases, and slurries get coverage by sections in this division. As with the other *Process Equipment Subgroup* divisions, this one derives its sections from Division 11 (liquid pumps and process liquid and gas handling, purification, and storage equipment) and Division 13 (gas and liquid processing and storage equipment). This division also includes support equipment for atmospheric tanks and pressure vessels.

Division 44 – Pollution Control Equipment

As the name implies, this division relates to equipment for controlling emissions of contaminants from manufacturing processes as well as treatment of air, water, soils, and noise contaminants. Division 11 (equipment for solid waste control and water, sewage, and fluid waste treatment), Division 13 (incinerators, water and wastewater filtration, conditioning, and handling equipment), and Division 15 (industrial ventilating and filtering equipment for air pollution control) are the main contributors of transferred or derived sections for this division.

Division 45 – Industry-Specific Manufacturing Equipment

This is a division in which specifiers can incorporate equipment sections that are used only within a single industry. It includes an allocation for every industry currently identified in the North American Industry Classification System (NAICS). Because its coverage is so extensive, this is one division where you have to wait to see how or if it will be used for construction projects.

Division 48 – Electrical Power Generation

This division includes sections relating to plants and equipment for generating and controlling electrical power from various energy sources, e.g., fossil fuel, nuclear, hydroelectric, wind, solar, geothermal, electrochemical, and fuel cells. Although the sections appear to apply primarily to public utility facilities, it is possible that most can be used for private generating plants (e.g., co-generation) in large industrial, commercial, and educational campus environments. The main contributors of transferred or derived sections include Division 13 (solar and wind energy generation equipment) and Division 16 (electrical power generating equipment).

Since there are several hundred pre-assigned section titles and numbers in the new *MasterFormat* 2004 edition, it is not practical to include all of them in this publication. Highlights of all new subgroups and divisions that relate to electrical work were briefly discussed in an effort to reduce some of the confusion on where all the electrical work has gone.

Although some divisions have been set up to “stand alone” for renovations or post-construction activities (e.g., Divisions 27 and 28), most will continue to be used in conjunction with each other as needed to address the scope of work for specific projects or programs. Keep in mind that expansion, although infrequent and at long intervals, has been a part of *MasterFormat* since its inception. Most of the changes and expansions brought about by *MasterFormat* 2004 would have been necessary at some time, either now or in the future, perhaps with the exception of splitting and reassigning certain divisions (i.e., 15 and 16).

The big question still remaining to be answered is whether *MasterFormat* 2004 will be universally adopted (at least within the United States) or just another failed attempt like Metrification. Already, various organizations, owners, design professionals, and design/builders have indicated an unwillingness to make the transition. They claim it is not necessary, not applicable to their needs, or costs too much. There are some, though, who may adopt it in part or at least in a modified form to reduce conversion efforts.

Unless owners and facilities managers insist on its use, design firms begin implementing it across-the-board, manufacturers support it, and contractors educate themselves on how to bid and propose on it, the construction industry will continue to live with multiple systems, confusion and conflict.

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Line Constructors] (914-723-2527), Western NY State (716-810-1664)

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OKLAHOMA: Tulsa (918-749-9449), Oklahoma City (405-848-8621)

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VERMONT: Springfield, MA (413-785-1337)

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WEST VIRGINIA: Charleston (304-346-1331)

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