AIA CAD Layer Guidelines:

U.S. National CAD Standard Version 3

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1990: *CAD Layer Guidelines* (1st edition, AIA Press)
1997: *CAD Layer Guidelines* (2nd edition, AIA Press)
2002: *AIA CAD Layer Guidelines: U.S. National CAD Standard Version 2*

To order additional copies of the National CAD Standard, go to *www.nationalcadstandard.org*.

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COMMENTARY: U.S. NCS AND ISO 13567

Introduction

Overview

Virtually all vector-based CAD systems support the concept of layers. This function allows building design information to be organized in a systematic fashion, facilitates the visual display of the information on a computer screen, and allows the information to be efficiently converted to the conventional print media of drawings. Efficient use of layers can reduce document preparation time and improve document coordination. Organizing data by layers allows a single CAD file to contain a wealth of information about a building or facility. By turning selected layers on or off, data can be created, reviewed and edited according to a hierarchy that simulates the physical organization of building systems, the relative position of building elements, or the sequence of construction.

A Brief History of CAD Layer Guidelines

The American Institute of Architects published the first edition of *CAD Layer Guidelines* in 1990. The early success of the first edition and rapidly evolving technology resulted in the second edition being published in 1997. The most significant change between the first and second editions was the elimination of the "short" layer name format and the adoption of the long layer name format as a single standard. The second edition also included additional layer field codes for remodeling projects, added new discipline designations for interiors, telecommunications, and other disciplines, and improved the method of organizing drawing annotation.

In July 1997, the AIA agreed to incorporate *CAD Layer Guidelines* into the emerging *U.S. National CAD Standard* (U.S. NCS), a project of the National Institute of Building Sciences (NIBS). The AIA and NIBS were joined in that effort with the Construction Specifications Institute (CSI) and the (then-known) Tri-Service CADD/GIS Technology Center of the U.S. Army Corps of Engineers. CSI and Tri-Service agreed to incorporate their own publications into the U.S. NCS, the *Uniform Drawing System* and the *Plotting Guidelines,* respectively. These four

constituent publishers, as they came to be known, were joined by a number of building design and construction industry organizations in developing and publishing the U.S. NCS.

In March 1999, the U.S. National CAD Standard Project Committee formally accepted *CAD Layer Guidelines, Second Edition* (with minor amendments) as a constituent document of the *U.S. National CAD Standard, Version 1.0,* published in July 1999. The U.S. NCS Project Committee immediately set to work on publication of Version 2.0, which was published in 2002.

Considerable confusion resulted from the lack of "alignment" between the **"Second Edition"** of *CAD Layer Guidelines* and **"Version 1.0"** of the *U.S. National CAD Standard*. Because *CAD Layer Guidelines, Second Edition* was published before, and later incorporated into, the *U.S. National CAD Standard, Version 1.0,* this could not be avoided. With publication of the *U.S. National CAD Standard, Version 2.0,* this problem was corrected by giving the constituent document an entirely new name. For the first time, "AIA" became part of the title of the publication, and the numbered "editions" were abandoned. As a result, this publication is known as *AIA CAD Layer Guidelines: U.S. NCS Version 2.0.* No doubt some confusion will still arise between the *U.S. NCS Version 2.0* and the old *CAD Layer Guidelines, Second Edition,* but the problem should be resolved with the publication of the new U.S. NCS, Version 3.0.

Version 2

AIA CAD Layer Guidelines, version 2, was designed and formatted to match its companion document, CSI's Uniform Drawing System. It was also carefully coordinated with that document, so that the two function as a whole.

Additions and improvements to version 2 of *AIA CAD Layer Guidelines*:

- Incorporation of NCS v1 amendments, including the change from a four-character to a single character Status field.
- An expanded Layer Format that includes a two-character discipline designator and a second optional Minor Group.
- An expanded Drawing View Layer List for users with a need to organize data by drawing type rather than by building system.
- Expanded Layer Lists for Civil, Structural, Mechanical, Plumbing, and Telecommunications Disciplines.

- New Discipline Designators for Survey/Mapping, Geotechnical, Civil Works, Process, and Operations Disciplines.
- An entirely new Layer List for the Survey/Mapping Discipline.
- New Annotation Minor Groups, and a new "free agent" rule permitting Annotation Minor Groups to modify any Major Group.
- Clarification of the existing "free agent" rule, emphasizing that any reasonable combination of Discipline Designator, Major Group and Minor Group is permitted.
- New rules and a detailed Commentary to facilitate conformance with the ISO CAD Standard.

New in Version 3

Highlights of revisions and additions to Version 3 include the following:

- User-defined Minor Group field codes may now be four alphabetic and/or numeric characters (0–9) and/or "~".
- Additions to the Process Layer List allow users to define layers by individual systems or groups of systems.
- Expanded the Landscape Layer List.
- New Major and Minor Groups added to the Equipment, Mechanical, and Interior Layer Lists.
- Equipment layer added to the Fire Protection Layer List.

Layer Name Format

Hierarchy of Data Fields

The layer name format is organized as a hierarchy. This arrangement allows users to select from a number of options for naming layers according to the level of detailed information desired. Layer names consist of distinct data fields separated from one another by dashes. A detailed list of abbreviations, or field codes, is prescribed to define the content of layers. Most field codes are mnemonic English abbreviations of construction terminology that are easy to remember.

There are four defined layer name data fields: ***Discipline Designator***, ***Major Group***, two ***Minor Groups***, and ***Status***. The Discipline Designator and Major Group fields are mandatory. The Minor Group and Status fields are optional. Each data field is separated from adjacent fields by a dash ("-") for clarity.

The complete U.S. NCS layer name format, showing the Discipline Designator, the Major Group, two Minor Groups, and the Status fields.

Before You Begin

The U.S. NCS allows you to select from a number of format options for creating layer names. It is recommended that you select the options that you wish to use for layer names on a given project, and then apply the resulting format consistently for all layer names on that project.

Note that for ***conceptual conformance*** to ISO 13567*, Organization and Naming of Layers for CAD,* the layer name format and length must be the same for all layers on a given project. See "Commentary: U.S. NCS and ISO 13567" (p. 91) at the end of *AIA CAD Layer Guidelines* for detailed information about ISO conformance.

Discipline Designator, Level 1

A typical layer name showing the required data fields only.

Note that only the mandatory discipline character is shown, creating a Level 1 Discipline Designator.

A	-	W	A	L	L

The Discipline Designator denotes the category of subject matter contained on the specified layer. The Discipline Designator is a two-character field. The first character is the discipline character, and the second character is an optional modifier. The Discipline Designator is described in greater detail on page UDS-01.14. For a complete list of Discipline Designators, see Appendix A of UDS Module 1 beginning on page UDS-01.35.

LEVEL 1 DISCIPLINE DESIGNATORS	
G	General
H	Hazardous Materials
V	Survey / Mapping
B	Geotechnical
W	Civil Works
C	Civil
L	Landscape
S	Structural
A	Architectural
I	Interiors
Q	Equipment
F	Fire Protection
P	Plumbing
D	Process
M	Mechanical
E	Electrical
T	Telecommunications
R	Resource
X	Other Disciplines
Z	Contractor / Shop Drawings
O	Operations

Discipline Designator, Level 2

The optional second character is used to further define the discipline character. As an example, the Level 2 Discipline Designators for Architectural are shown:

A typical layer name showing the required data fields only.

Note that the mandatory Level 1 discipline character is supplemented by the optional discipline modifier to create a Level 2 Discipline Designator.

Designator	Description	New
A	Architectural	
AS	Architectural Site	
AD	Architectural Demolition	
AE	Architectural Elements	
AI	Architectural Interiors	
AF	Architectural Finishes	
AG	Architectural Graphics	
AJ	User-Defined	●
AK	User-Defined	●

For a complete list of Discipline Designators, see Appendix A of UDS Module 1 beginning on page UDS-01.35.

Major Group

The Major Group is a four-character field that identifies a major building system. The prescribed Major Group field codes (four-character abbreviations) shown on the Layer List are logically grouped with specific discipline designators. However, any Major Group may be combined with any prescribed Discipline Designator, provided that the definition of the Major Group remains unchanged. Therefore, any reasonable combination of the prescribed Discipline Designators and Major Groups is permitted.

NOTE: User-defined Major Group field codes are not permitted.

NOTE: For *conceptual conformance* to ISO 13567*, Organization and Naming of Layers for CAD,* the use of the Major Group "ANNO" is not permitted. See "Commentary: U.S. NCS and ISO 13567" (p. 91) at the end of *AIA CAD Layer Guidelines* for detailed information about ISO conformance.

Minor Group

This is an optional, four-character field to further define the Major Groups. For example, *A-WALL-FULL* denotes *Architectural, Wall, Full-height.* A second minor group may be used for still further delineation of the data contained on a layer. For example, *A-WALL-FULL-TEXT* indicates *Architectural, Wall, Full-height, Text.*

The prescribed Minor Group field codes (four-character abbreviations) shown on the Layer List are logically grouped with specific Major Groups. However, any Minor Group may be used to modify any Major Group, provided that the definition of the Minor Group remains unchanged. Therefore, any reasonable combination of the prescribed Major and Minor Groups is permitted.

NOTE: User-defined Minor Group field codes are permitted. They must contain four alphabetic and/or numeric characters and/or "~", and must be fully documented on the U.S. NCS Compliance Disclosure Statement for the project on which they are used.

NOTE: For ***conceptual conformance*** to ISO 13567*, Organization and Naming of Layers for CAD,* the use of certain Minor Group field codes is restricted. See "Commentary: U.S. NCS and ISO 13567" (p. 91) at the end of *AIA CAD Layer Guidelines* for detailed information about ISO conformance.

A typical layer name showing the required data fields only.

The mandatory Major Group field is highlighted:

A typical layer name showing one optional Minor Group field:

A typical layer name showing two optional Minor Group fields:

Status (Phase)

A typical layer name showing the location of the optional Status field:

The status field is an optional single-character field that distinguishes the data contained on the layer according to the status of the work or the construction phase. The prescribed field codes for this field are as follows:

STATUS FIELD CODES	
N	New work
E	Existing to remain
D	Existing to demolish
F	Future work
T	Temporary work
M	Items to be moved
X	Not in contract
1-9	Phase numbers

Note that for ***conceptual conformance*** to ISO 13567*, Organization and Naming of Layers for CAD,* this field may be used to denote either "Status" OR "Phase," but not BOTH. See "Commentary: U.S. NCS and ISO 13567" (p. 91) at the end of *AIA CAD Layer Guidelines* for detailed information about ISO conformance.

Drawing View Layer List

Drawing View Field Codes

The Drawing View field codes are specialized codes for layers that are organized primarily by drawing type, rather than by major building system. The field codes DETL, ELEV, and SECT may also be used as Minor Group field codes to modify a major building system.

For data sets that are organized by drawing type, an optional alphanumeric Minor Group field code, ANNN, is prescribed to further distinguish drawings within a single CAD file. This Minor Group may be used ONLY to modify the prescribed Drawing View Major Groups; it may not be used to modify any other Major Group. The format of ANNN is also prescribed. It must consist of a single alphabetic character followed by a three-digit number between 001 and 999. The definition of ANNN is not prescribed; it must be defined by the user. The definition must be documented on the U.S. NCS Compliance Disclosure Statement for the project on which it is used.

The Minor Group field codes MCUT, MBND, PATT, and IDEN may be used to modify any Major or Minor Group in the Layer List. The definitions of these prescribed field codes cannot be changed. See page CLG-8 for rules and options governing the use of field codes.

Drawing View Layer Names

Layer Name	Description	New
□□-DETL	Detail	
□□-ELEV	Elevation	
□□-SECT	Section	
□□-□□□□-**ANNN**	Drawing View Major Group: optional number (**A** = letter, **NNN** = number between 001 and 999)	
□□-□□□□-**ANNN**-MCUT	Drawing View Major Group: optional number: material cut by the view	
□□-□□□□-**ANNN**-MBND	Drawing View Major Group: optional number: material beyond cut	
□□-□□□□-**ANNN**-PATT	Drawing View Major Group: optional number: textures and hatch patterns	
□□-□□□□-**ANNN**-IDEN	Drawing View Major Group: optional number: component identification numbers	
□□-□□□□-**ANNN**-OTLN	Drawing View Major Group: optional number: outline of object drawn	

Annotation Layer List

Annotation Field Codes

Annotation consists of text, dimensions, notes, sheet borders, detail references and other elements on CAD drawings that do not represent physical aspects of a building. Use of the Major Group ANNO allows all annotation to be placed in a defined group of layers.

The Layer Names shown below provide examples for the use of Minor Group field codes for annotation. **These Minor Groups may be used to modify any Major or Minor Group in the Layer List.** See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Annotation Layer Names

Layer Name	Description	New
□□-ANNO	Annotation	
□□-□□□□-BRNG	Bearings and distance labels (survey coordinates)	
□□-□□□□-DIMS	Dimensions	
□□-□□□□-IDEN	Identification tags	
□□-□□□□-KEYN	Keynotes	
□□-□□□□-LABL	Labels	
□□-□□□□-LEGN	Legends, symbol keys	
□□-□□□□-MARK	Markers, break marks, leaders	
□□-□□□□-MATC	Match lines	
□□-□□□□-NOTE	Notes	
□□-□□□□-NPLT	Non-plotting graphic information	

Layer Name	Description	New
□□-□□□□-RDME	Read-me layer (not plotted)	
□□-□□□□-REDL	Redlines	
□□-□□□□-REFR	Reference, external files	
□□-□□□□-REVC	Revision clouds	
□□-□□□□-REVS	Revisions	
□□-□□□□-SCHD	Schedules	
□□-□□□□-SYMB	Reference symbols	
□□-□□□□-TEXT	Text	
□□-□□□□-TABL	Data tables	
□□-□□□□-TITL	Drawing or detail titles	
□□-□□□□-TTLB	Border and title block	

General Layer List

General Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

General Discipline Designators

Designator	Description	New
G	General	
GI	General Informational	
GC	General Contractual	
GR	General Resource	
GJ	User-Defined	
GK	User-Defined	

General Layer List

Layer Name	Description	New
G□-ACCS	Access plan	
G□-CODE	Code compliance plan	
G□-EVAC	Evacuation plan	
G□-FIRE	Fire protection plan	
G□-PLAN	Key plan (floor plan)	
G□-SITE	Key plan (site plan)	

Hazardous Materials Layer List

Hazardous Materials Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Hazardous Materials Discipline Designators

Designator	Description	New
H	Hazardous Materials	
HA	Asbestos	
HC	Chemicals	
HL	Lead	
HP	PCB	
HR	Refrigerants	
HJ	User-Defined	
HK	User-Defined	

Hazardous Materials Layer List

Layer Name	Description	New
H□-PLAN	Key plan (floor plan)	
H□-SITE	Key plan (site plan)	

Survey/Mapping Layer List

Survey/Mapping Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Survey/Mapping Discipline Designators

Designator	Description	New
V	Survey / Mapping	
VA	Aerial Survey	
VF	Field Survey	
VI	Digital Survey	
VJ	User-Defined	
VK	User-Defined	

Survey/Mapping Layer Names

Layer Name	Description	New
V□-BLDG	Buildings and primary structures	
V□-BLDG-DECK	Buildings and primary structures: outdoor decks (attached, no roof overhead)	
V□-BLDG-OTLN	Buildings and primary structures: outline	
V□-BLDG-OVHD	Buildings and primary structures: overhead (overhang)	
V□-BLDG-PRCH	Buildings and primary structures: porch (attached, roof overhead)	
V□-BNDY	Political boundaries	
V□-BNDY-BORO	Political boundaries: borough	
V□-BNDY-CITY	Political boundaries: city	
V□-BNDY-CNTY	Political boundaries: county	
V□-BNDY-CORP	Political boundaries: corporation	
V□-BNDY-NATL	Political boundaries: national	

Layer Name	Description	New
Survey/Mapping (continued)		
V□-BNDY-POLI	Political boundaries: all	
V□-BNDY-PROV	Political boundaries: province	
V□-BNDY-STAT	Political boundaries: state	
V□-BNDY-TSHP	Political boundaries: town or township	
V□-BNDY-ZONE	Political boundaries: zoning	
V□-BRDG	Bridge	
V□-BRDG-BENT	Bridge: top of bent	
V□-BRDG-CNTR	Bridge: centerline	
V□-BRDG-CTLJ	Bridge: control joint	
V□-BRDG-DECK	Bridge: top of deck	
V□-BRDG-RAIL	Bridge: railing	
V□-BRKL	Break / fault lines	
V□-BRKL-BOTB	Break / fault lines: bottom of bank	
V□-BRKL-FLOW	Break / fault lines: flowline (lowest point of ditch)	
V□-BRKL-TOPB	Break / fault lines: top of bank	
V□-BRLN	Building restriction line	
V□-BZNA	Buffer zone area	
V□-CHAN	Navigable channels	
V□-CHAN-BWTR	Navigable channels: breakwater	
V□-CHAN-CNTR	Navigable channels: channel centerline and survey report lines	
V□-CHAN-DACL	Navigable channels: de-authorized channel limits, anchorages, etc.	
V□-CHAN-DOCK	Navigable channels: decks, docks, floats, piers	
V□-CHAN-NAID	Navigable channels: navigation aids	

Layer Name	Description	New
Survey/Mapping (continued)		
V□-COMM	Communications	
V□-COMM-MHOL	Communications: manhole	
V□-COMM-OVHD	Communications: overhead lines	
V□-COMM-POLE	Communications: box / pole	
V□-COMM-UNDR	Communications: underground lines	
V□-CTRL	Control points	
V□-CTRL-BMRK	Control points: benchmarks	
V□-CTRL-FLYS	Control points: fly station	
V□-CTRL-GRID	Control points: grid lines	
V□-CTRL-HCPT	Control points: horizontal	
V□-CTRL-HVPT	Control points: horizontal / vertical	
V□-CTRL-PNPT	Control points: panel points	
V□-CTRL-TRAV	Control points: traverse	
V□-CTRL-VCPT	Control points: vertical	
V□-DRIV	Driveways	
V□-DRIV-ASPH	Driveways: asphalt surface	
V□-DRIV-CNTR	Driveways: centerline	
V□-DRIV-CONC	Driveways: concrete surface	
V□-DRIV-CURB	Driveways: curb	
V□-DRIV-FLNE	Driveways: fire lane	
V□-DRIV-GRVL	Driveways: gravel surface	
V□-DRIV-MRKG	Driveways: pavement markings	
V□-DRIV-UPVD	Driveways: unpaved surface	
V□-DTCH	Ditches or washes	
V□-DTCH-BOTD	Ditches or washes: bottom	
V□-DTCH-CNTR	Ditches or washes: centerline	
V□-DTCH-EWAT	Ditches or washes: edge of water	

Layer Name	Description	New
Survey/Mapping (continued)		
V□-DTCH-TOPD	Ditches or washes: top	
V□-ESMT	Easements	
V□-ESMT-ACCS	Easements: access (pedestrian only; private access)	
V□-ESMT-CATV	Easements: cable television	
V□-ESMT-CONS	Easements: conservation	
V□-ESMT-CSTG	Easements: construction / grading	
V□-ESMT-ELEC	Easements: electrical	
V□-ESMT-FDPL	Easements: flood plain	
V□-ESMT-INEG	Easements: ingress / egress (vehicles; private access)	
V□-ESMT-LSCP	Easements: landscape	
V□-ESMT-NGAS	Easements: natural gas line	
V□-ESMT-PHON	Easements: telephone line	
V□-ESMT-ROAD	Easements: roadway	
V□-ESMT-ROAD-PERM	Easements: roadway: permanent	
V□-ESMT-ROAD-TEMP	Easements: roadway: temporary	
V□-ESMT-RWAY	Easements: right-of-way (public access)	
V□-ESMT-SGHT	Easements: sight distance	
V□-ESMT-SSWR	Easements: sanitary sewer	
V□-ESMT-STRM	Easements: storm sewer	
V□-ESMT-SWMT	Easements: storm water management	
V□-ESMT-TRAL	Easements: trail / path (public access)	
V□-ESMT-UTIL	Easements: utilities	
V□-ESMT-WATR	Easements: water supply	
V□-FLHA	Flood hazard area	

Layer Name	Description	New
Survey/Mapping (continued)		
V□-FUEL	Fuel gas	
V□-FUEL-MHOL	Fuel gas: manhole	
V□-FUEL-PIPE	Fuel gas: above-ground piping	
V□-FUEL-TANK	Fuel gas: storage tanks	
V□-FUEL-UNDR	Fuel gas: underground piping	
V□-NGAS	Natural gas	
V□-NGAS-MHOL	Natural gas: manhole	
V□-NGAS-PIPE	Natural gas: above-ground piping	
V□-NGAS-UNDR	Natural gas: underground piping	
V□-NGAS-TANK	Natural gas: storage tanks	
V□-NODE	Node	
V□-NODE-DASP	Node: description attributes for survey points	
V□-NODE-EASP	Node: elevation attributes for survey points	
V□-NODE-PASP	Node: point number attributes for survey points	
V□-NODE-ABUT	Node: abutment	
V□-NODE-ACTL	Node: aerial horizontal and vertical control points	
V□-NODE-BLIN	Node: baseline	
V□-NODE-BLDG	Node: building points	
V□-NODE-BRDG	Node: bridge survey points	
V□-NODE-BRKL	Node: break lines, spot elev. points and lines for creation of break lines as top of bank	
V□-NODE-BROW	Node: brush row points	
V□-NODE-BRSH	Node: brush points	

Layer Name	Description	New
Survey/Mapping (continued)		
V□-NODE-CABL	Node: underground cable points	
V□-NODE-CNTL	Node: baseline, property line and centerline points	
V□-NODE-CURB	Node: curb points	
V□-NODE-DECK	Node: bridge deck points	
V□-NODE-DRIV	Node: driveway points	
V□-NODE-EXPJ	Node: expansion joint	
V□-NODE-GRND	Node: ground points indicating elevations	
V□-NODE-MRKG	Node: pavement marking points (yellow / white stripes)	
V□-NODE-MHOL	Node: manhole points	
V□-NODE-NGAS	Node: gas line & appurtenances points	
V□-NODE-PIPE	Node: pipe points (driveway / roadway culverts)	
V□-NODE-POLE	Node: pole points (power, telephone, etc.)	
V□-NODE-PVMT	Node: pavement points	
V□-NODE-SIGN	Node: sign	
V□-NODE-SSWR	Node: sanitary sewer and appurtenances points	
V□-NODE-STRM	Node: storm sewer and appurtenances points	
V□-NODE-SWLK	Node: sidewalk points	
V□-NODE-TREE	Node: tree points	
V□-NODE-TROW	Node: tree row points	
V□-NODE-WATR	Node: water line and appurtenances points	

Layer Name	Description	New
Survey/Mapping (continued)		
V□-POWR	Power	
V□-POWR-FENC	Power: fence enclosure	
V□-POWR-INST	Power: instrumentation (meters, transformers)	
V□-POWR-MHOL	Power: manholes	
V□-POWR-OVHD	Power: overhead lines	
V□-POWR-POLE	Power: box / pole	
V□-POWR-STRC	Power: structures	
V□-POWR-UNDR	Power: underground lines	
V□-PRKG	Parking lots	
V□-PRKG-ASPH	Parking lots: asphalt surface	
V□-PRKG-CNTR	Parking lots: centerline	
V□-PRKG-CONC	Parking lots: concrete surface	
V□-PRKG-CURB	Parking lots: curb	
V□-PKNG-DRAN	Telephone systems: drainage slope indications	
V□-PRKG-FLNE	Parking lots: fire lane	
V□-PRKG-GRVL	Parking lots: gravel surface	
V□-PRKG-MRKG	Parking lots: pavement markings	
V□-PRKG-STRP	Parking lots: striping	
V□-PRKG-UPVD	Parking lots: unpaved surface	
V□-PROP	Property boundary	
V□-PROP-LINE	Property boundary: property lines, survey benchmarks, property corners	
V□-PROP-QTRS	Property boundary: quarter section	
V□-PROP-RSRV	Property boundary: reserve	
V□-PROP-SBCK	Property boundary: setback lines	

Layer Name	Description	New
Survey/Mapping (continued)		
V□-PROP-SECT	Property boundary: section boundary	
V□-PROP-SUBD	Property boundary: subdivision (interior) lines	
V□-PROP-SXTS	Property boundary: sixteenth section	
V□-PVMT	Property boundary: pavement	
V□-PVMT-ASPH	Property boundary: asphalt surface	
V□-PVMT-CONC	Property boundary: concrete surface	
V□-PVMT-GRVL	Property boundary: gravel surface	
V□-RAIL	Railroad	
V□-RAIL-CNTR	Railroad: centerline	
V□-RAIL-EQPM	Railroad: equipment (gates, signals, etc.)	
V□-RAIL-TRAK	Railroad: track	
V□-RIVR	River	
V□-RIVR-BOTM	River: bottom	
V□-RIVR-CNTR	River: centerline	
V□-RIVR-EDGE	River: edge	
V□-RIVR-TOPB	River: top of bank	
V□-ROAD	Roads, streets and highways	
V□-ROAD-ASPH	Roads, streets and highways: asphalt surface	
V□-ROAD-CNTR	Roads, streets and highways: centerline	
V□-ROAD-CONC	Roads, streets and highways: concrete surface	
V□-ROAD-CURB	Roads, streets and highways: curb	
V□-ROAD-FLNE	Roads, streets and highways: fire lane	

Layer Name	Description	New
Survey/Mapping (continued)		
V□-ROAD-GRVL	Roads, streets and highways: gravel surface	
V□-ROAD-MRKG	Roads, streets and highways: pavement markings	
V□-ROAD-UPVD	Roads, streets and highways: unpaved surface	
V□-RRAP	Riprap	
V□-RWAY	Right-of-way	
V□-RWAY-CTLA	Right-of-way: controlled access	
V□-RWAY-CNTR	Right-of-way: centerline	
V□-RWAY-LINE	Right-of-way: lines	
V□-RWAY-LMTA	Right-of-way: limited access	
V□-RWAY-MRKR	Right-of-way: marker	
V□-RWAY-STAN	Right-of-way: stationing	
V□-SITE	Site features	
V□-SITE-EWAT	Site features: edge of water	
V□-SITE-FENC	Site features: fences	
V□-SITE-ROCK	Site features: rocks and rock outcroppings	
V□-SITE-RTWL	Site features: retaining wall	
V□-SITE-SIGN	Site features: signs	
V□-SITE-VEGE	Site features: trees, shrubs, and other vegetation	
V□-SSWR	Sanitary sewer system	
V□-SSWR-MHOL	Sanitary sewer system: manhole	
V□-SSWR-PIPE	Sanitary sewer system: above-ground piping	

Layer Name	Description	New
Survey/Mapping (continued)		
V□-SSWR-STRC	Sanitary sewer system: structures	
V□-SSWR-UNDR	Sanitary sewer system: underground piping	
V□-STEM	Steam system	
V□-STEM-INST	Steam system: instrumentation (meters, valves, pumps)	
V□-STEM-MHOL	Steam system: manhole	
V□-STEM-PIPE	Steam system: above-ground pipe	
V□-STEM-STRC	Steam system: structures	
V□-STEM-UNDR	Steam system: underground piping	
V□-STRM	Storm drainage and sewer system	
V□-STRM-DTCH	Storm drainage and sewer system: ditches and swales	
V□-STRM-MHOL	Storm drainage and sewer system: manhole	
V□-STRM-PIPE	Storm drainage and sewer system: above-ground piping	
V□-STRM-POND	Storm drainage and sewer system: retention pond	
V□-STRM-STRC	Storm drainage and sewer system: structures	
V□-STRM-UNDR	Storm drainage and sewer system: underground	
V□-SURV	Survey	
V□-SURV-DATA	Survey: data	
V□-SURV-LINE	Survey: control Line	
V□-SWLK	Sidewalks	
V□-SWLK-ASPH	Sidewalks: asphalt	
V□-SWLK-CONC	Sidewalks: concrete	

Layer Name	Description	New
Survey/Mapping (continued)		
V□-TOPO	Topography	
V□-TOPO-BORE	Topography: test borings	
V□-TOPO-EWAT	Topography: edge of water	
V□-TOPO-GRID	Topography: coordinate grids	
V□-TOPO-MAJR	Topography: major topographical contours	
V□-TOPO-MINR	Topography: minor topographical contours	
V□-TOPO-SPOT	Topography: spot elevations	
V□-TOPO-SOUN	Topography: soundings	
V□-UNID	Unidentified site objects	
V□-UNID-CABL	Unidentified site objects: cable	
V□-UNID-PIPE	Unidentified site objects: above-ground piping	
V□-UNID-TANK	Unidentified site objects: storage tanks	
V□-UNID-UTIL	Unidentified site objects: utility lines	
V□-UNID-UTIL-OVHD	Unidentified site objects: utility lines: overhead	
V□-UNID-UTIL-UNDR	Unidentified site objects: utility lines: underground	
V□-WATR	Water supply	
V□-WATR-INST	Water supply: instrumentation (meters, valves, pumps)	
V□-WATR-MHOL	Water supply: manhole	
V□-WATR-PIPE	Water supply: above-ground piping	
V□-WATR-STRC	Water supply: structures	
V□-WATR-UNDR	Water supply: underground piping	

Geotechnical Layer List

Geotechnical Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Geotechnical Discipline Designators

Designator	Description	New
B	Geotechnical	
BJ	User-Defined	
BK	User-Defined	

Geotechnical Layer List

Layer Name	Description	New
B□-BORE	Borings	
B□-BORE-FDTA	Borings: field data	
B□-BORE-HOLE	Borings: perc holes	
B□-BORE-LDTA	Borings: laboratory data	
B□-DETL-**ANNN**	Detail: optional detail number (**A** = letter, **NNN** = number between 001 and 999)	
B□-DETL-**ANNN**-BORE	Detail: optional detail number: borings and perc holes	
B□-DETL-**ANNN**-CONC	Detail: optional detail number: concrete	
B□-DETL-**ANNN**-ERTH	Detail: optional detail number: earth	
B□-DETL-**ANNN**-FILL	Detail: optional detail number: fill and cover material	
B□-DETL-**ANNN**-FDTA	Detail: optional detail number: field data	
B□-DETL-**ANNN**-GENF	Detail: optional detail number: general features	
B□-DETL-**ANNN**-GNDW	Detail: optional detail number: ground water	
B□-DETL-**ANNN**-LDTA	Detail: optional detail number: laboratory data	
B□-DETL-**ANNN**-PVMT	Detail: optional detail number: pavement	

Layer Name	Description	New
Geotechnical (continued)		
B□-DETL-**ANNN**-SPCL	Detail: optional detail number: special features	
B□-DETL-**ANNN**-STRM	Detail: optional detail number: storm water	
B□-DETL-**ANNN**-SUBS	Detail: optional detail number: sub-surface areas	
B□-DETL-**ANNN**-SURF	Detail: optional detail number: surface areas	

Civil Works Layer List

Civil Works Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

The Civil Works discipline is defined as large-scale projects that usually cross property boundaries, such as highways, tunnels, dams, utility distribution systems, water supply systems, and sewer systems. The selection of the Civil or Civil Works Discipline Designator is at the discretion of the user, but should generally be used to distinguish projects in terms of scale.

Civil Works Layer List

Layer Name	Description	New

No layer names have been prescribed for this discipline. However, in addition to the rules on page CLG-8 allowing any combination of Discipline Designator, Major Group and Minor Group, the layer names prescribed in the Civil and Survey / Mapping Layer Lists are particularly applicable to the Civil Works Discipline.

Civil Works Discipline Designators

Designator	Description	New
W	Civil Works	
WJ	User-Defined	
WK	User-Defined	

Civil Layer List

Civil Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

The Civil Discipline is defined as a project or a portion of a project that is usually contained within a single property boundary. The selection of the Civil or Civil Works Discipline Designator is at the discretion of the user, but should generally be used to distinguish projects in terms of scale.

Civil Discipline Designators

Designator	Description	New
C	Civil	
CD	Civil Demolition	
CS	Civil Site	
CG	Civil Grading	
CP	Civil Paving	
CI	Civil Improvements	
CT	Civil Transportation	
CU	Civil Utilities	
CJ	User-Defined	
CK	User-Defined	

Civil Layer List

Layer Name	Description	New
C□-AFLD	Airfields	
C□-AFLD-ASPH	Airfields: asphalt surface	
C□-AFLD-CNTR	Airfields: centerline	
C□-AFLD-CONC	Airfields: concrete surface	
C□-AFLD-FLNE	Airfields: fire lane	
C□-AFLD-FLNE-MRKG	Airfields: fire lane: pavement markings	
C□-AFLD-FLNE-SIGN	Airfields: fire lane: signage	

Layer Name	Description	New
Civil (continued)		
C□-AFLD-GRVL	Airfields: gravel surface	
C□-AFLD-MRKG	Airfields: pavement markings	
C□-AFLD-SIGN	Airfields: signs	
C□-AFLD-STAN	Airfields: stationing	
C□-AFLD-WHIT	Airfields: white paint	
C□-AFLD-WHIT-TICK	Airfields: white paint: tick marks	
C□-AFLD-YELO	Airfields: yellow paint	
C□-AFLD-YELO-TICK	Airfields: yellow paint: tick marks	
C□-BLDG	Buildings and primary structures	
C□-BLDG-DECK	Buildings and primary structures: outdoor decks (attached, no roof overhead)	
C□-BLDG-OTLN	Buildings and primary structures: outline	
C□-BLDG-OVHD	Buildings and primary structures: overhead (overhang)	
C□-BLDG-PRCH	Buildings and primary structures: porch (attached, roof overhead)	
C□-BLIN	Baseline	
C□-BLIN-STAN	Baseline: stationing	
C□-BORE	Test borings	
C□-BRDG	Bridge	
C□-BRDG-FALT	Bridge: deck fault / break line	
C□-BRDG-CNTJ	Bridge: construction joint	
C□-BRDG-CNTR	Bridge: centerline	
C□-BRDG-DECK	Bridge: deck	
C□-BRDG-EXPJ	Bridge: expansion joint	

Layer Name	Description	New
Civil (continued)		
C□-BRDG-HIDD	Bridge: objects or lines hidden from view	
C□-BRDG-OBJT	Bridge: objects	
C□-BRDG-OBJT-PRIM	Bridge: objects: primary	
C□-BRDG-OBJT-SECD	Bridge: objects: secondary	
C□-BRDG-RBAR	Bridge: reinforcing bar	
C□-CATV	Cable TV	
C□-CATV-OVHD	Cable TV: overhead lines	
C□-CATV-POLE	Cable TV: box / pole	
C□-CATV-UNDR	Cable TV: underground lines	
C□-CEME	Cemetery	
C□-CHAN	Navigable channels	
C□-CHAN-DACL	Navigable channels: de-authorized channel limits, anchorages, etc.	
C□-CHAN-CNTR	Navigable channels: channel centerline and survey report lines	
C□-CHAN-NAID	Navigable channels: navigation aids	
C□-CHAN-DOCK	Navigable channels: decks, docks, floats, piers	
C□-CHAN-BWTR	Navigable channels: breakwater	
C□-COMM	Communications	
C□-COMM-OVHD	Communications: overhead lines	
C□-COMM-POLE	Communications: box / pole	
C□-COMM-UNDR	Communications: underground lines	
C□-CTRL	Control points	
C□-CTRL-BMRK	Control points: benchmarks	
C□-CTRL-FLYS	Control points: fly station	
C□-CTRL-GRID	Control points: grid lines	

Layer Name	Description	New
Civil (continued)		
C□-CTRL-HCPT	Control points: horizontal	
C□-CTRL-HVPT	Control points: horizontal / vertical	
C□-CTRL-PNPT	Control points: panel points	
C□-CTRL-TRAV	Control points: traverse	
C□-CTRL-VCPT	Control points: vertical	
C□-DFLD	Drain fields	
C□-DFLD-OTLN	Drain fields: outline	
C□-DFLD-PROF	Drain fields: profile	
C□-DRIV	Driveways	
C□-DRIV-ASPH	Driveways: asphalt surface	
C□-DRIV-CNTR	Driveways: centerline	
C□-DRIV-CONC	Driveways: concrete surface	
C□-DRIV-CURB	Driveways: curb	
C□-DRIV-CURB-FACE	Driveways: curb: face	
C□-DRIV-CURB-BACK	Driveways: curb: back	
C□-DRIV-FLNE	Driveways: fire lane	
C□-DRIV-FLNE-MRKG	Driveways: fire lane: pavement markings	
C□-DRIV-FLNE-SIGN	Driveways: fire lane: signs	
C□-DRIV-GRVL	Driveways: gravel surface	
C□-DRIV-MRKG	Driveways: pavement markings	
C□-DRIV-SIGN	Driveways: signs	
C□-DRIV-UPVD	Driveways: unpaved surface	
C□-DRIV-WHIT	Driveways: white paint	
C□-DRIV-WHIT-TICK	Driveways: white paint: tick marks	
C□-DRIV-YELO	Driveways: yellow paint	
C□-DRIV-YELO-TICK	Driveways: yellow paint: tick marks	

Layer Name	Description	New
Civil (continued)		
C□-DTCH	Ditches or washes	
C□-DTCH-BOTD	Ditches or washes: bottom	
C□-DTCH-CNTR	Ditches or washes: centerline	
C□-DTCH-EWAT	Ditches or washes: edge of water	
C□-DTCH-TOPD	Ditches or washes: top	
C□-EROS	Erosion and sediment control	
C□-EROS-CIPR	Erosion and sediment control: culvert inlet protection	
C□-EROS-CNTE	Erosion and sediment control: construction entrance	
C□-EROS-DDIV	Erosion and sediment control: drainage divides	
C□-EROS-DVDK	Erosion and sediment control: diversion dike	
C□-EROS-INPR	Erosion and sediment control: inlet protection	
C□-EROS-SILT	Erosion and sediment control: silt fence	
C□-EROS-SSLT	Erosion and sediment control: super silt fence	
C□-ESMT	Easements	
C□-ESMT-ACCS	Easements: access (pedestrian only; private access)	
C□-ESMT-CATV	Easements: utility - cable television	
C□-ESMT-CONS	Easements: conservation	
C□-ESMT-CSTG	Easements: construction / grading	
C□-ESMT-ELEC	Easements: utility - electrical	
C□-ESMT-FDPL	Easements: flood plain	

Layer Name	Description	New
Civil (continued)		
C□-ESMT-INEG	Easements: ingress / egress (vehicles; private access)	
C□-ESMT-LSCP	Easements: landscape	
C□-ESMT-NGAS	Easements: natural gas line	
C□-ESMT-PHON	Easements: telephone line	
C□-ESMT-ROAD	Easements: roadway	
C□-ESMT-ROAD-PERM	Easements: roadway: permanent	
C□-ESMT-ROAD-TEMP	Easements: roadway: temporary	
C□-ESMT-RWAY	Easements: right-of-way (public access)	
C□-ESMT-SGHT	Easements: sight distance	
C□-ESMT-SSWR	Easements: sanitary sewer	
C□-ESMT-STRM	Easements: storm sewer	
C□-ESMT-SWMT	Easements: storm water management	
C□-ESMT-TRAL	Easements: trail or path (public access)	
C□-ESMT-UTIL	Easements: utilities	
C□-ESMT-WATR	Easements: water supply	
C□-FENC	Fences	
C□-FENC-GRAL	Fences: guard rail	
C□-FENC-POST	Fences: posts	
C□-FENC-STEL	Fences: steel (barbed wire and/or chain link)	
C□-FENC-WOOD	Fences: wood	
C□-FIRE	Fire protection system	
C□-FIRE-HYDR	Fire protection system: hydrants and connections	
C□-FIRE-PIPE	Fire protection system: piping	

Layer Name	Description	New
Civil (continued)		
C□-FIRE-UNDR	Fire protection system: underground piping	
C□-FLHA	Flood hazard area	
C□-FLHA-025Y	Flood hazard area: 25 year mark	
C□-FLHA-050Y	Flood hazard area: 50 year mark	
C□-FLHA-100Y	Flood hazard area: 100 year mark	
C□-FLHA-200Y	Flood hazard area: 200 year mark	
C□-FUEL	Fuel gas	
C□-FUEL-EQPM	Fuel gas: equipment (pumps, motors)	
C□-FUEL-INST	Fuel gas: instrumentation (meters, valves, etc.)	
C□-FUEL-MHOL	Fuel gas: manhole	
C□-FUEL-PIPE	Fuel gas: piping	
C□-FUEL-TANK	Fuel gas: storage tanks	
C□-FUEL-UNDR	Fuel gas: underground piping	
C□-LOCN	Limits of construction	
C□-NGAS	Natural gas	
C□-NGAS-EQPM	Natural gas: equipment (pumps, motors)	
C□-NGAS-INST	Natural gas: instrumentation (meters, valves, etc.)	
C□-NGAS-MHOL	Natural gas: manhole	
C□-NGAS-PIPE	Natural gas: piping	
C□-NGAS-TANK	Natural gas: storage tanks	
C□-NGAS-UNDR	Natural gas: underground piping	
C□-PERC	Perc testing	
C□-PERC-HOLE	Perc testing: test holes	
C□-PRKG	Parking lots	

Layer Name	Description	New
Civil (continued)		
C□-PRKG-ASPH	Parking lots: asphalt surface	
C□-PRKG-CARS	Parking lots: cars and other vehicles	
C□-PRKG-CONC	Parking lots: concrete surface	
C□-PRKG-CURB	Parking lots: curb	
C□-PRKG-CURB-FACE	Parking lots: curb: face	
C□-PRKG-CURB-BACK	Parking lots: curb: back	
C□-PRKG-DRAN	Parking lots: drainage slope indications	
C□-PRKG-FIXT	Parking lots: fixtures (wheel stops, parking meters, etc.)	
C□-PRKG-FLNE	Parking lots: fire lane	
C□-PRKG-FLNE-MRKG	Parking lots: fire lane: pavement markings	
C□-PRKG-FLNE-SIGN	Parking lots: fire lane: signage	
C□-PRKG-GRVL	Parking lots: gravel surface	
C□-PRKG-MRKG	Parking lots: pavement markings	
C□-PRKG-SIGN	Parking lots: signs	
C□-PRKG-STRP	Parking lots: striping	
C□-PRKG-UPVD	Parking lots: unpaved surface	
C□-PRKG-WHIT	Parking lots: white paint	
C□-PRKG-WHIT-TICK	Parking lots: white paint: tick marks	
C□-PRKG-YELO	Parking lots: yellow paint	
C□-PRKG-YELO-TICK	Parking lots: yellow paint: tick marks	
C□-POND	Ponds	
C□-POND-EDGE	Ponds: edge	
C□-POND-TOPB	Ponds: top of bank	
C□-POWR	Power	

Layer Name	Description	New
Civil (continued)		
C□-POND-SWAY	Ponds: spillway	
C□-POWR-FENC	Power: enclosure fence	
C□-POWR-INST	Power: instrumentation (meters, transformers)	
C□-POWR-MHOL	Power: manhole	
C□-POWR-OVHD	Power: overhead lines	
C□-POWR-POLE	Power: box / pole	
C□-POWR-STRC	Power: structures	
C□-POWR-UNDR	Power: underground lines	
C□-PROP	Property	
C□-PROP-LINE	Property: property lines, survey benchmarks, property corners	
C□-PROP-SBCK	Property: setback lines	
C□-PVMT	Pavement	
C□-PVMT-ASPH	Pavement: asphalt surface	
C□-PVMT-CONC	Pavement: concrete surface	
C□-PVMT-GRVL	Pavement: gravel surface	
C□-RAIL	Railroad	
C□-RAIL-CNTR	Railroad: centerline	
C□-RAIL-EQPM	Railroad: equipment (gates, signals, etc.)	
C□-RAIL-TRAK	Railroad: track	
C□-RIVR	River	
C□-RIVR-BOTM	River: bottom	
C□-RIVR-CNTR	River: centerline	
C□-RIVR-EDGE	River: edge	
C□-RIVR-TOPB	River: top of bank	

Layer Name	Description	New
Civil (continued)		
C□-ROAD	Roadways	
C□-ROAD-ASPH	Roadways: asphalt surface	
C□-ROAD-CNTR	Roadways: centerline	
C□-ROAD-CONC	Roadways: concrete surface	
C□-ROAD-CURB	Roadways: curb	
C□-ROAD-CURB-FACE	Roadways: curb: face	
C□-ROAD-CURB-BACK	Roadways: curb: back	
C□-ROAD-FLNE	Roadways: fire lane	
C□-ROAD-FLNE-MRKG	Roadways: fire lane: pavement markings	
C□-ROAD-FLNE-SIGN	Roadways: fire lane: signs	
C□-ROAD-GRVL	Roadways: gravel surface	
C□-ROAD-MRKG	Roadways: pavement markings	
C□-ROAD-PROF	Roadways: profile	
C□-ROAD-SIGN	Roadways: signs	
C□-ROAD-STAN	Roadways: stationing	
C□-ROAD-UPVD	Roadways: unpaved surface	
C□-ROAD-WHIT	Roadways: white paint	
C□-ROAD-WHIT-TICK	Roadways: white paint: tick marks	
C□-ROAD-YELO	Roadways: yellow paint	
C□-ROAD-YELO-TICK	Roadways: yellow paint: tick marks	
C□-RRAP	Riprap	
C□-SGHT	Sight distance	
C□-SGHT-PROF	Sight distance: profile	
C□-SOIL	Soils	
C□-SSWR-DIAG	Sanitary sewer: plan diagram	
C□-SSWR-FORC	Sanitary sewer: force main	

Layer Name	Description	New
Civil (continued)		
C□-SSWR	Sanitary sewer	
C□-SSWR-LATL	Sanitary sewer: lateral line	
C□-SSWR-MHOL	Sanitary sewer: manhole	
C□-SSWR-PIPE	Sanitary sewer: piping	
C□-SSWR-PIPE-RCON	Sanitary sewer: piping: reinforced concrete	
C□-SSWR-PIPE-STEL	Sanitary sewer: piping: steel	
C□-SSWR-PROF	Sanitary sewer: profile	
C□-SSWR-STAN	Sanitary sewer: stationing	
C□-SSWR-STRC	Sanitary sewer: structures	
C□-SSWR-UNDR	Sanitary sewer: underground piping	
C□-STEM	Steam system	
C□-STEM-INST	Steam system: instrumentation (meters, valves, etc.)	
C□-STEM-MHOL	Steam system: manhole	
C□-STEM-PIPE	Steam system: piping	
C□-STEM-STRC	Steam system: structures	
C□-STEM-UNDR	Steam system: underground piping	
C□-STRM	Storm sewer	
C□-STRM-CNTR	Storm sewer: centerline	
C□-STRM-DIAG	Storm sewer: plan diagram	
C□-STRM-HWAL	Storm sewer: headwall	
C□-STRM-MHOL	Storm sewer: manhole	
C□-STRM-PIPE	Storm sewer: piping	
C□-STRM-PIPE-RCON	Storm sewer: piping: reinforced concrete	

Layer Name	Description	New
Civil (continued)		
C□-STRM-PIPE-CMTL	Storm sewer: piping: corrugated metal	
C□-STRM-PROF	Storm sewer: profile	
C□-STRM-STAN	Storm sewer: stationing	
C□-STRM-STRC	Storm sewer: structures	
C□-STRM-UNDR	Storm sewer: underground piping	
C□-SWLK	Sidewalks	
C□-SWLK-ASPH	Sidewalks: asphalt	
C□-SWLK-CONC	Sidewalks: concrete	
C□-TINN	Triangulated irregular network	
C□-TINN-BNDY	Triangulated irregular network: boundary	
C□-TINN-FALT	Triangulated irregular network: fault / break lines	
C□-TINN-VIEW	Triangulated irregular network: triangulation	
C□-TINN-VOID	Triangulated irregular network: void regions	
C□-TOPO	Topography	
C□-TOPO-BORE	Topography: test borings	
C□-TOPO-DEPR	Topography: depression contours	
C□-TOPO-MAJR	Topography: major contours	
C□-TOPO-MINR	Topography: minor contours	
C□-TOPO-SPOT	Topography: spot elevations	
C□-TOPO-TPIT	Topography: test pits	
C□-TRAL	Trails or paths	
C□-TRAL-ASPH	Trails or paths: asphalt surface	
C□-TRAL-GRVL	Trails or paths: gravel surface	
C□-TRAL-MRKG	Trails or paths: pavement markings	

Layer Name	Description	New
Civil (continued)		
C□-TRAL-CONC	Trails or paths: concrete surface	
C□-TRAL-SIGN	Trails or paths: signs	
C□-TRAL-UPVD	Trails or paths: unpaved surface	
C□-WALL	Walls	
C□-WALL-SHEA	Walls: structural bearing or shear walls	
C□-WALL-CTLJ	Walls: control joints	
C□-WALL-NSBR	Walls: noise barrier	
C□-WALL-RTWL	Walls: retaining	
C□-WATR	Water supply systems	
C□-WATR-DIAG	Water supply systems: plan diagram	
C□-WATR-INST	Water supply systems: instrumentation (meters, valves, etc.)	
C□-WATR-PIPE	Water supply systems: piping	
C□-WATR-PROF	Water supply systems: profile	
C□-WATR-STAN	Water supply systems: stationing	
C□-WATR-STRC	Water supply systems: structures	
C□-WATR-UNDR	Water supply systems: underground piping	
C□-WATR-WELL	Water supply systems: well	
C□-WETL	Wetlands	

Landscape Layer List

Landscape Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Landscape Discipline Designators

Designator	Description	New
L	Landscape	
LD	Landscape Demolition	
LI	Landscape Irrigation	
LP	Landscape Planting	
LJ	User-Defined	
LK	User-Defined	

Landscape Layer List

Layer Name	Description	New
L□-ANNO	Annotation	●
L□-ANNO-ALIN	Annotation: alignment stationing	●
L□-ANNO-ALIN-LABL	Annotation: alignment stationing: labels	●
L□-ANNO-ALIN-INFO	Annotation: alignment stationing: information	●
L□-ANNO-CURV-LABL	Annotation: curve: labels	●
L□-ANNO-CURV-TABL	Annotation: curve: tables	●
L□-ANNO-CURV-TABL-BRDR	Annotation: curve: tables: border	●
L□-ANNO-CURV-TABL-HEDR	Annotation: curve: tables: header	●
L□-ANNO-CURV-TABL-TEXT	Annotation: curve: tables: text	●
L□-ANNO-LINE-LABL	Annotation: line: labels	●
L□-ANNO-LINE-TABL	Annotation: line: tables	●

Layer Name	Description	New
Landscape (continued)		
L□-ANNO-LINE-TABL-BRDR	Annotation: line: tables: border	●
L□-ANNO-LINE-TABL-HEDR	Annotation: line: tables: header	●
L□-ANNO-LINE-TABL-TEXT	Annotation: line: tables: text	●
L□-IRRG	Irrigation	
L□-IRRG-COVR	Irrigation: coverage	
L□-IRRG-DRIP	Irrigation: drip irrigation tubing	●
L□-IRRG-EQPM	Irrigation: equipment (pumps, valves, and controllers)	●
L□-IRRG-LTRL	Irrigation: lateral pipe	●
L□-IRRG-MAIN	Irrigation: mainline	●
L□-IRRG-PIPE	Irrigation: piping	
L□-IRRG-SLVE	Irrigation: pipe sleeve	●
L□-IRRG-SPKL	Irrigation: sprinklers (rotors, heads)	
L□-IRRG-VALV	Irrigation: valves*	●
L□-PLNT	Plant and landscape material	●
L□-PLNT-BEDS	Plant and landscape material: perennial and annual beds	●
L□-PLNT-BUSH	Plant and landscape material: bushes and shrubs	●
L□-PLNT-CONI	Plant and landscape material: coniferous trees	●
L□-PLNT-CTNR	Plant and landscape material: container or planter	●
L□-PLNT-EDGR	Plant and landscape material: planting bed edger	●

Layer Name	Description	New
Landscape (continued)		
L□-PLNT-EVGR	Plant and landscape material: evergreen trees - broadleaf	●
L□-PLNT-GRND	Plant and landscape material: ground covers	●
L□-PLNT-PALM	Plant and landscape material: palm trees	●
L□-PLNT-REMN	Plant and landscape material: material to remain	●
L□-PLNT-REMV	Plant and landscape material: material to be removed	●
L□-PLNT-SEED	Plant and landscape material: seeding areas	●
L□-PLNT-SHAD	Plant and landscape material: shadow area	●
L□-PLNT-SHRB	Plant and landscape material: shrub symbols	●
L□-PLNT-TREE	Plant and landscape material: trees	●
L□-PLNT-TURF	Plant and landscape material: lawn areas	●
L□-PLNT-PLTS	Plant and landscape material: planting plants	●
L□-PLNT-VINE	Plant and landscape material: vines	●
L□-SITE	Site improvements	
L□-SITE-BRDG	Site improvements: bridges (pedestrian)	●
L□-SITE-CURB	Site improvements: curbs	●
L□-SITE-CURB-BACK	Site improvements: curbs: back of curb	●

Layer Name	Description	New
Landscape (continued)		
L□-SITE-CURB-FACE	Site improvements: curbs: face of curb	●
L□-SITE-DECK	Site improvements: raised decks (wood, typ.)	●
L□-SITE-FENC	Site improvements: fencing	●
L□-SITE-FENC-LINK	Site improvements: fencing: chain link	●
L□-SITE-FENC-LINK-04FT	Site improvements: fencing: chain link: four feet high	●
L□-SITE-FENC-LINK-06FT	Site improvements: fencing: chain link: six feet high	●
L□-SITE-FENC-PRVC	Site improvements: fencing: privacy fence	●
L□-SITE-FENC-WOOD	Site improvements: fencing: wood	●
L□-SITE-FURN	Site improvements: furnishings	
L□-SITE-PKNG	Site improvements: parking	●
L□-SITE-PKNG-STRP	Site improvements: parking: paint striping	●
L□-SITE-PLAY	Site improvements: play structures	
L□-SITE-PLAY-EQPM	Site improvements: play structures: equipment	●
L□-SITE-PLAY-ZONE	Site improvements: play structures: fall zones	●
L□-SITE-POOL	Site improvements: pools and spas	
L□-SITE-POOL-BACK	Site improvements: pools and spas: back of pool wall	●
L□-SITE-POOL-FACE	Site improvements: pools and spas: face of pool wall	●
L□-SITE-PVMT	Site improvements: pavement edge	●

Layer Name	Description	New
Landscape (continued)		
L□-SITE-PVMT-ASPH	Site improvements: pavement edge: asphalt	●
L□-SITE-PVMT-BRCK	Site improvements: pavement edge: brick	●
L□-SITE-PVMT-CONC	Site improvements: pavement edge: concrete	●
L□-SITE-PVMT-CONC-AGGR	Site improvements: pavement edge: concrete: exposed aggregate	●
L□-SITE-PVMT-GRAV	Site improvements: pavement edge: gravel	●
L□-SITE-PVMT-JNTC	Site improvements: pavement edge: control joint	●
L□-SITE-PVMT-JNTE	Site improvements: pavement edge: expansion joint (for concrete only)	●
L□-SITE-PVMT-PAVR	Site improvements: pavement edge: unit pavers	●
L□-SITE-PVMT-RAMP	Site improvements: pavement edge: accessible ramp	●
L□-SITE-PVMT-STEP	Site improvements: pavement edge: stair tread	●
L□-SITE-ROAD	Site improvements: edge of road line	●
L□-SITE-RPRP	Site improvements: riprap	●
L□-SITE-SPRT	Site improvements: sports fields	
L□-SITE-SPRT-EQPM	Site improvements: sports fields: equipment	●
L□-SITE-SPRT-PRIM	Site improvements: sports fields: perimeter	●
L□-SITE-STEP	Site improvements: steps	
L□-SITE-RTWL	Site improvements: retaining walls	
L□-SITE-TRAL	Site improvements: trail edge	●

Layer Name	Description	New
Landscape (continued)		
L□-SITE-TRAL-ASPH	Site improvements: trail edge: asphalt	●
L□-SITE-TRAL-CONC	Site improvements: trail edge: concrete	●
L□-SITE-TRAL-GRVL	Site improvements: trail edge: gravel	●
L□-SITE WALK	Site improvements: walks and steps	
L□-SITE WALL	Site improvements: walls	●
L□-SITE WEIR	Site improvements: pool weir	●
L□-TOPO	Proposed grading	●
L□-TOPO-DEPR	Proposed grading: depression	●
L□-TOPO-INDX	Proposed grading: index contour	●
L□-TOPO-INTR	Proposed grading: intermediate contours	●
L□-TOPO-LIMI	Proposed grading: limit of earthwork	●
L□-TOPO-SPOT	Proposed grading: spot elevations	●

Structural Layer List

Structural Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Structural Discipline Designators

Designator	Description	New
S	Structural	
SD	Structural Demolition	
SS	Structural Site	
SB	Structural Substructure	
SF	Structural Framing	
SJ	User-Defined	
SK	User-Defined	

Structural Layer List

Layer Name	Description	New
S□-BEAM	Beams	
S□-BEAM-ALUM	Beams: aluminum	
S□-BEAM-CONC	Beams: concrete	
S□-BEAM-STEL	Beams: steel	
S□-BEAM-WOOD	Beams: wood	
S□-BRAC	Bracing	
S□-BRAC-ALUM	Bracing: aluminum	
S□-BRAC-ALUM-HORZ	Bracing: aluminum: horizontal	
S□-BRAC-ALUM-VERT	Bracing: aluminum: vertical	
S□-BRAC-STEL	Bracing: steel	
S□-BRAC-STEL-HORZ	Bracing: steel: horizontal	
S□-BRAC-STEL-VERT	Bracing: steel: vertical	
S□-BRAC-WOOD	Bracing: wood	
S□-BRAC-WOOD-HORZ	Bracing: wood: horizontal	
S□-BRAC-WOOD-VERT	Bracing: wood: vertical	
S□-COLS	Columns	

Layer Name	Description	New
Structural (continued)		
S□-COLS-ALUM	Columns: aluminum	
S□-COLS-CONC	Columns: concrete	
S□-COLS-STEL	Columns: steel	
S□-COLS-WOOD	Columns: wood	
S□-DECK	Structural deck	
S□-DECK-FLOR	Structural deck: floor	
S□-DECK-FLOR-OPNG	Structural deck: floor: openings	
S□-DECK-ROOF	Structural deck: roof	
S□-DECK-ROOF-OPNG	Structural deck: roof: openings	
S□-FNDN	Foundation	
S□-FNDN-FTNG	Foundation: footings	
S□-FNDN-GRBM	Foundation: grade beams	
S□-FNDN-PCAP	Foundation: pile caps	
S□-FNDN-PIER	Foundation: drilled piers	
S□-FNDN-PILE	Foundation: piles	
S□-FNDN-RBAR	Foundation: reinforcing	
S□-GRID	Column grid	
S□-GRID-EXTR	Column grid: exterior columns	
S□-GRID-INTR	Column grid: interior columns	
S□-JNTS	Joints	
S□-JNTS-CNTJ	Joints: construction	
S□-JNTS-CTLJ	Joints: control	
S□-JNTS-EXPJ	Joints: expansion	
S□-JOIS	Joists	
S□-JOIS-BRGX	Joists: bridging	
S□-PROP	Property lines	
S□-SLAB	Slab	

Layer Name	Description	New
Structural (continued)		
S□-SLAB-CONC	Slab: cast-in-place concrete	
S□-SLAB-OPNG	Slab: openings and depressions	
S□-SLAB-OPNX	Slab: opening indication (“x”)	
S□-SLAB-EDGE	Slab: edge of slab	
S□-SLAB-STEL	Slab: steel slab	
S□-SLAB-WOOD	Slab: wood	
S□-STRS	Stairs	
S□-STRS-LADD	Stairs: ladders & ladder assemblies	
S□-TRUS	Trusses	
S□-WALL	Walls	
S□-WALL-CMUW	Walls: concrete masonry unit	
S□-WALL-CONC	Walls: cast-in-place concrete	
S□-WALL-MSNW	Walls: masonry	
S□-WALL-PCST	Walls: pre-cast concrete	
S□-WALL-SHEA	Walls: structural shear walls	
S□-WALL-STEL	Walls: steel stud	
S□-WALL-WOOD	Walls: wood	
S□-□□□□-ABLT	Any major group: anchor bolts	
S□-□□□□-METL	Any major group: misc. metals	
S□-□□□□-GRAT	Any major group: grates	
S□-□□□□-GRAT-OVHD	Any major group: grates: overhead	
S□-□□□□-RBAR	Any major group: reinforcing bar	
S□-□□□□-RBAR-BOT1	Any major group: reinforcing bar: bottom group 1	
S□-□□□□-RBAR-BOT2	Any major group: reinforcing bar: bottom group 2	

Layer Name	Description	New
Structural (continued)		
S□-□□□□-RBAR-TOP1	Any major group: reinforcing bar: top group 1	
S□-□□□□-RBAR-TOP2	Any major group: reinforcing bar: top group 2	

Architectural Layer List

Architectural Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Architectural Discipline Designators

Designator	Description	New
A	Architectural	
AS	Architectural Site	
AD	Architectural Demolition	
AE	Architectural Elements	
AI	Architectural Interiors	
AF	Architectural Finishes	
AG	Architectural Graphics	
AJ	User-Defined	
AK	User-Defined	

Architectural Layer List

Layer Name	Description	New
A□-□□□□-FNSH	Any major group: finishes	
A□-□□□□-CASE	Any major group: casework	
A□-□□□□-FIXT	Any major group: plumbing fixtures	
A□-□□□□-GRID	Any major group: grid	
A□-□□□□-SIGN	Any major group: signs	

Layer Name	Description	New
A□-AREA	Area	
A□-AREA-OCCP	Area: occupant or employee names	
A□-CLNG	Ceiling	
A□-CLNG-ACCS	Ceiling: access	
A□-CLNG-OPEN	Ceiling: openings	

Layer Name	Description	New
Architectural (continued)		
A□-CLNG-TEES	Ceiling: main tees	
A□-CLNG-SUSP	Ceiling: suspended elements	
A□-COLS	Columns	
A□-CONV	Conveying systems	
A□-DOOR	Doors	
A□-DOOR-FULL	Doors: full-height (swing and leaf)	
A□-DOOR-PRHT	Doors: partial height (swing and leaf)	
A□-EQPM	Equipment	
A□-EQPM-ACCS	Equipment: access	
A□-EQPM-FIXD	Equipment: fixed equipment	
A□-EQPM-MOVE	Equipment: moveable equipment	
A□-EQPM-NICN	Equipment: not in contract	
A□-EQPM-OVHD	Equipment: overhead	
A□-FLOR	Floor	
A□-FLOR-CASE	Floor: casework	
A□-FLOR-EVTR	Floor: elevator cars and equipment	
A□-FLOR-HRAL	Floor: handrails, guard rails	
A□-FLOR-LEVL	Floor: level changes, ramps, pits, depressions	
A□-FLOR-OTLN	Floor: outline	
A□-FLOR-OVHD	Floor: overhead (objects above)	
A□-FLOR-RAIS	Floor: raised	
A□-FLOR-RISR	Floor: stair risers	
A□-FLOR-SIGN	Floor: signs	
A□-FLOR-SPCL	Floor: specialties (toilet room accessories, display cases)	
A□-FLOR-STRS	Floor: stair treads, escalators, ladders	
A□-FLOR-TPTN	Floor: toilet partitions	

Layer Name	Description	New
Architectural (continued)		
A□-FLOR-WDWK	Floor: architectural woodwork	
A□-FURN	Furnishings	
A□-FURN-FILE	Furnishings: file cabinets	
A□-FURN-FIXD	Furnishings: fixed in place	
A□-FURN-FREE	Furnishings: freestanding	
A□-FURN-PLNT	Furnishings: plants	
A□-FURN-PNLS	Furnishings: system panels	
A□-FURN-SEAT	Furnishings: seating	
A□-FURN-STOR	Furnishings: system storage components	
A□-FURN-WKSF	Furnishings: system work surface components	
A□-GLAZ	Glazing	
A□-GLAZ-FULL	Glazing: full-height	
A□-GLAZ-PRHT	Glazing: partial-height	
A□-GLAZ-SILL	Glazing: window sills	
A□-HVAC	HVAC	
A□-HVAC-SDFF	HVAC: supply diffusers	
A□-HVAC-RDFF	HVAC: return air diffusers	
A□-LITE	Lighting fixtures	
A□-ROOF	Roof	
A□-ROOF-HRAL	Roof: handrails	
A□-ROOF-LEVL	Roof: level changes	
A□-ROOF-OTLN	Roof: outline	
A□-ROOF-RISR	Roof: stair risers	
A□-ROOF-STRS	Roof: stair treads, ladders	
A□-WALL	Walls	
A□-WALL-CAVI	Walls: cavity	

Layer Name	Description	New
Architectural (continued)		
A□-WALL-CNTR	Walls: centerline	
A□-WALL-FIRE	Walls: fire wall	
A□-WALL-FULL	Walls: full-height	
A□-WALL-HEAD	Walls: door and window headers	
A□-WALL-JAMB	Walls: door and window jambs	
A□-WALL-MOVE	Walls: moveable partitions	
A□-WALL-PRHT	Walls: partial-height	
A□-WALL-PATT	Walls: texture or hatch patterns	

Interiors Layer List

Interiors Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Interiors Discipline Designators

Designator	Description	New
I	Interior	
ID	Interior Demolition	
IN	Interior Design	
IF	Interior Furnishings	
IG	Interior Graphics	
IJ	User-Defined	
IK	User-Defined	

Interiors Layer List

Layer Name	Description	New
I□-□□□□-FIXT	Any major group: plumbing fixtures	
I□-□□□□-GRID	Any major group: grid	
I□-□□□□-SIGN	Any major group: signs	
I□-AREA	Area	
I□-AREA-OCCP	Area: occupant or employee names	
I□-CASE	Casework	
I□-CLNG	Ceiling	

Layer Name	Description	New
I□-CLNG-ACCS	Ceiling: access	
I□-CLNG-OPEN	Ceiling: openings	
I□-CLNG-SUSP	Ceiling: suspended elements	
I□-CLNG-TEES	Ceiling: main tees	
I□-COLS	Columns	
I□-DOOR	Doors	
I□-DOOR-FULL	Doors: full-height	

Layer Name	Description	New
Interiors (continued)		
I□-DOOR-PRHT	Doors: partial height	
I□-EQPM	Equipment	
I□-EQPM-ACCS	Equipment: access	
I□-EQPM-FIXD	Equipment: fixed equipment	
I□-EQPM-MOVE	Equipment: moveable equipment	
I□-EQPM-NICN	Equipment: not in contract	
I□-EQPM-OVHD	Equipment: overhead	
I□-EQPM-STOR	Equipment: storage	
I□-FLOR	Floor	
I□-FLOR-EVTR	Floor: elevator cars and equipment	
I□-FLOR-FIXT	Floor: plumbing fixtures	
I□-FLOR-HRAL	Floor: handrails, guard rails	
I□-FLOR-LEVL	Floor: level changes, ramps, pits, depressions	
I□-FLOR-OTLN	Floor: outline	
I□-FLOR-OVHD	Floor: overhead (objects above)	
I□-FLOR-RAIS	Floor: raised	
I□-FLOR-RISR	Floor: stair risers	
I□-FLOR-SIGN	Floor: signs	
I□-FLOR-STRS	Floor: stair treads, escalators, ladders	
I□-FLOR-SPCL	Floor: architectural specialties (toilet room accessories, display cases)	
I□-FLOR-TPTN	Floor: toilet partitions	
I□-FLOR-WDWK	Floor: architectural woodwork	
I□-FNSH	Finishes	●
I□-FURN	Furnishings	
I□-FURN-FILE	Furnishings: file cabinets	
I□-FURN-FREE	Furnishings: freestanding	

Layer Name	Description	New
Interiors (continued)		
I□-FURN-PLNT	Furnishings: plants	
I□-FURN-PNLS	Furnishings: system panels	
I□-FURN-SEAT	Furnishings: seating	
I□-FURN-STOR	Furnishings: system storage components	
I□-FURN-WKSF	Furnishings: system work surface components	
I□-GLAZ	Glazing	
I□-GLAZ-FULL	Glazing: full-height	
I□-GLAZ-PRHT	Glazing: partial-height	
I□-GLAZ-SILL	Glazing: window sills	
I□-HVAC	HVAC	
I□-HVAC-SDFF	HVAC: supply diffusers	
I□-HVAC-RDFF	HVAC: return air diffusers	
I□-MILL	Millwork	●
I□-PRTN	Partitions	●
I□-PRTN-FULL	Partitions: full-height	●
I□- PRTN-PRHT	Partitions: partial-height	●
I□- PRTN-MOVE	Partitions: moveable partitions	●
I□- PRTN-HEAD	Partitions: door and window headers	●
I□- PRTN-JAMB	Partitions: door and window jambs	●
I□- PRTN-FIRE	Partitions: fire wall	●

Equipment Layer List

Equipment Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Equipment Discipline Designators

Designator	Description	New
Q	Equipment	
QA	Athletic Equipment	
QB	Bank Equipment	
QC	Dry Cleaning Equipment	
QD	Detention Equipment	
QE	Educational Equipment	
QF	Food service Equipment	
QH	Hospital Equipment	
QL	Laboratory Equipment	
QM	Maintenance Equipment	
QP	Parking Lot Equipment	
QR	Retail Equipment	
QS	Site Equipment	
QT	Theatrical Equipment	
QV	Video / Photographic Equipment	
QY	Security Equipment	
QJ	User-Defined	
QK	User-Defined	

Equipment Layer List

Layer Name	Description	New
Q□-□□□□-OTLN	Any major group: outline	
Q□-□□□□-PIPE	Any major group: piping	
Q□-CASE	Casework	●
Q□-CASE-DVDR	Casework: thin dividers	●
Q□-CASE-EDGE	Casework: cabinet and worksurface edging	●
Q□-CASE-ELEV	Casework: casework elevation	●
Q□-CASE-FIXT	Casework: plumbing/service fixtures	●
Q□-CASE-FRAM	Casework: casework structural framing	●
Q□-CASE-FULL	Casework: full height cabinets/lockers	●
Q□-CASE-GLAZ	Casework: casework glazing	●
Q□-CASE-GRND	Casework: cabinet grounds, wall backing	●
Q□-CASE-HRDW	Casework: hardware	●
Q□-CASE-IDEN	Casework: cabinet section/model number	●
Q□-CASE-LOWR	Casework: lower cabinets	●
Q□-CASE-PATT	Casework: casework hatching	●
Q□-CASE-SHLF	Casework: wall mounted shelving	●
Q□-CASE-SUBA	Casework: cabinet sub-assemblies, drawer boxes	●
Q□-CASE-UCTR	Casework: undercounter cabinets-for layout	●
Q□-CASE-UPPR	Casework: upper cabinets	●
Q□-CASE-WKSF	Casework: worksurface	●

Layer Name	Description	New
Q□-CMPQ	Computer equipment	●
Q□-ELEV-EQPM	Elevation: equipment outlines	●
Q□-ELEV-FIXT	Elevation: plumbing/service fixtures	●
Q□-ELEV-GLAZ	Elevation: glass, glazing hardware	●
Q□-ELEV-HRDW	Elevation: locks, pulls, supports, other hardware	●
Q□-ELEV-OVHD	Elevation: elevation object	●
Q□-ELEV-PATT	Elevation: section hatch	●
Q□-ELEV-STRC	Elevation: structural support components	●
Q□-EXHS	Exhaust	
Q□-MAJQ	Major equipment	●
Q□-MAJQ-ACCS	Major equipment: access and clearance lines	●
Q□-MAJQ-ENGR	Major equipment: engineering information	●
Q□-MAJQ-FIXD	Major equipment: fixed	●
Q□-MAJQ-MOVE	Major equipment: movable	●
Q□-MAJQ-MVNG	Major equipment: moving or suspended	●
Q□-MAJQ-OVHD	Major equipment: overhead or ceiling mounted	●
Q□-MAJQ-PATT	Major equipment: patterns	●
Q□-MAJQ-UCTR	Major equipment: undercounter	●
Q□-MINQ	Minor equipment	●
Q□-NICN	Not in contract equipment	●

Layer Name	Description	New
Equipment (continued)		
Q□-POWR	Power	
Q□-SPCQ	Special equipment	●
Q□-SPCQ-ACCS	Specialized equipment: access and clearance lines	●
Q□-SPCQ-ENGR	Specialized equipment: engineering information	●
Q□-SPCQ-FIXD	Specialized equipment: fixed	●
Q□-SPCQ-MOVE	Specialized equipment: movable	●
Q□-SPCQ-MVNG	Specialized equipment: moving or suspended	●
Q□-SPCQ-OVHD	Specialized equipment: overhead or ceiling mounted	●
Q□-SPCQ-PATT	Specialized equipment: patterns	●
Q□-SPCQ-UCTR	Specialized equipment: undercounter	●

Fire Protection Layer List

Fire Protection Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Fire Protection Discipline Designators

Designator	Description	New
F	Fire Protection	
FA	Fire Detection and Alarm	
FX	Fire Suppression	
FJ	User-Defined	
FK	User-Defined	

Fire Protection Layer List

Layer Name	Description	New
F□-AFFF	Aqueous film-forming foam system	
F□-AFFF-EQPM	Aqueous film-forming foam system: equipment	
F□-AFFF-PIPE	Aqueous film-forming foam system: piping	
F□-CO2S	CO2 system	
F□-CO2S-EQPM	CO2 system: equipment	
F□-CO2S-PIPE	CO2 system: piping	
F□-HALN	Halon	
F□-HALN-EQPM	Halon: equipment	
F□-HALN-PIPE	Halon: piping	
F□-IGAS	Inert gas	
F□-IGAS-EQPM	Inert gas: equipment	
F□-IGAS-PIPE	Inert gas: piping	
F□-PROT	Fire protection system	
F□-PROT-ALRM	Fire protection system: alarm	
F□-PROT-EQPM	Fire protection system: equipment	
F□-PROT-SMOK	Fire protection system: smoke detector / heat sensors	
F□-PROT-STAN	Fire protection system: standpipe	

Layer Name	Description	New
Fire Protection (continued)		
F□-SPRN	Sprinkler system	
F□-SPRN-CLHD	Sprinkler system: ceiling heads	
F□-SPRN-EQPM	Sprinkler system: equipment	●
F□-SPRN-OTHD	Sprinkler system: other heads	
F□-SPRN-PIPE	Sprinkler system: piping	
F□-SPRN-STAN	Sprinkler system: standpipe	

Plumbing Layer List

Plumbing Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Plumbing Discipline Designators

Designator	Description	New
P	Plumbing	
PS	Plumbing Site	
PD	Plumbing Demolition	
PP	Plumbing Piping	
PQ	Plumbing Equipment	
PL	Plumbing	
PJ	User-Defined	
PK	User-Defined	

Plumbing Layer List

Layer Name	Description	New
P□-ACID	Acid waste systems	
P□-ACID-EQPM	Acid waste systems: equipment	●
P□-ACID-PIPE	Acid waste systems: piping	
P□-ACID-VENT	Acid waste systems: vents	●
P□-DOMW	Domestic water systems	
P□-DOMW-CPIP	Domestic water systems: cold water piping	
P□-DOMW-EQPM	Domestic water systems: equipment	
P□-DOMW-HPIP	Domestic water systems: hot water piping	
P□-DOMW-RISR	Domestic water systems: hot and cold water risers	

Layer Name	Description	New
Plumbing (continued)		
P□-DOMW-RPIP	Domestic water systems: hot water recirculation piping	
P□-MDGS	Medical gas	
P□-MDGS-CAIR	Medical gas: compressed air	
P□-MDGS-EQPM	Medical gas: equipment	
P□-MDGS-NITG	Medical gas: nitrogen	
P□-MDGS-NOXG	Medical gas: nitrous oxide	
P□-MDGS-OXYG	Medical gas: pure O2	
P□-MDGS-PIPE	Medical gas: piping	
P□-MDGS-SAIR	Medical gas: scavenge air	
P□-MDGS-VACU	Medical gas: medical vacuum	
P□-SANR	Sanitary drainage systems	
P□-SANR-PIPE	Sanitary drainage systems: piping	
P□-SANR-FIXT	Sanitary drainage systems: plumbing fixtures	
P□-SANR-FLDR	Sanitary drainage systems: floor drains	
P□-SANR-RISR	Sanitary drainage systems: risers	
P□-SANR-EQPM	Sanitary drainage systems: equipment	
P□-SANR-VENT	Sanitary drainage systems: vent piping	●
P□-STRM	Storm drainage systems	●
P□-STRM-PIPE	Storm drainage systems: piping	●
P□-STRM-RISR	Storm drainage systems: risers	●
P□-STRM-RFDR	Storm drainage systems: roof drains	●

Process Layer List

Process Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Process Discipline Designators

Designator	Description	New
D	Process	
DS	Process Site	
DD	Process Demolition	
DJ	User-Defined	
DK	User-Defined	
DL	Process Liquids	
DG	Process Gases	
DP	Process Piping	
DQ	Process Equipment	
DE	Process Electrical	
DI	Process Instrumentation	
DW	Process Waters	●
DC	Process Chemicals	●
DA	Process Airs	●
DX	Process Exhaust	●
DR	Process Drains and Reclaims	●
DM	Process HPM Gases	●
DY	Process Slurry	●
DO	Process Oils	●
DV	Process Vacuum	●

Process Layer List

Layer Name	Description	New
Process (continued)		
D□-□□□□-□□□□-ANNO	Any major group: any minor group: notes, callouts, specifications	●
D□-□□□□-□□□□-BOLD	Any major group: any minor group: heavy	●
D□-□□□□-□□□□-CNTR	Any major group: any minor group: center line	●
D□-□□□□-□□□□-DIMS	Any major group: any minor group: dimensions	●
D□-□□□□-□□□□-EQPM	Any major group: any minor group: equipment	●
D□-□□□□-□□□□-FINE	Any major group: any minor group: light	●
D□-□□□□-□□□□-HDLN	Any major group: any minor group: hidden line	●
D□-□□□□-□□□□-IDEN	Any major group: any minor group: labels, identifiers	●
D□-□□□□-□□□□-MEDM	Any major group: any minor group: medium	●
D□-□□□□-□□□□-MISC	Any major group: any minor group: miscellaneous	●
D□-□□□□-□□□□-PATT	Any major group: any minor group: cross hatch	●
D□-□□□□-□□□□-PHTM	Any major group: any minor group: phantom	●
D□-□□□□-□□□□-PIPE	Any major group: any minor group: piping systems	●
D□-□□□□-□□□□-SPEC	Any major group: any minor group: specialty items	●
D□-□□□□-□□□□-SUPT	Any major group: any minor group: general pipe supports	●

Layer Name	Description	New
Process (continued)		
D□-□□□□-□□□□-UGRD	Any major group: any minor group: underground	●
D□-DETL-BOLD	Details: bold lines	●
D□-DETL-FINE	Details: fine lines	●
D□-DETL-MEDM	Details: medium lines	●
D□-DETL-NPLT	Details: nonplot layer	●
D□-DETL-TEXT	Details: text	●
D□-PAIR-AA~~	Air: agitation air - system	●
D□-PAIR-BA~~	Air: breathable air - system	●
D□-PAIR-CA~~	Air: compressed air - system	●
D□-PAIR-CDA~	Air: clean dry air - system	●
D□-PAIR-HCDA	Air: high pressure clean dry air - system	●
D□-PAIR-IA~~	Air: instrument air - system	●
D□-PAIR-OA~~	Air: outside air - system	●
D□-PAIR-OFA~	Air: oil free air - system	●
D□-PAIR-PA~~	Air: plant air - system	●
D□-PAIR-V~~~	Air: vent - system	●
D□-PCHM-ARC~	Chemical: regenerative caustic - system	●
D□-PCHM-C~~~	Chemical: caustic - system	●
D□-PCHM-DEV~	Chemical: developer - system	●
D□-PCHM-EG~~	Chemical: ethylene glycol - system	●
D□-PCHM-H2O2	Chemical: hydrogen peroxide - system	●
D□-PCHM-HCL~	Chemical: hydrochloric acid - system	●
D□-PCHM-HF~~	Chemical: hydrofluoric acid - system	●
D□-PCHM-IPA~	Chemical: isopropyl alcohol - system	●

Layer Name	Description	New
Process (continued)		
D□-PCHM-PHOS	Chemical: phosphoric acid - system	●
D□-PCHM-RER~	Chemical: solvent - system	●
D□-PCHM-SULF	Chemical: sulfuric acid - system	●
D□-PCHM-TMAH	Chemical: tmah - system	●
D□-PDRN-AMW~	Drains: ammonia waste - system	●
D□-PDRN-CD~~	Drains: condensate drain - system	●
D□-PDRN-CLW~	Drains: concentrated lead waste - system	●
D□-PDRN-CMW~	Drains: concentrated metals waste - system	●
D□-PDRN-CUPW	Drains: copper plating waste - system	●
D□-PDRN-CURW	Drains: copper rinse waste - system	●
D□-PDRN-CUSW	Drains: copper slurry waste - system	●
D□-PDRN-DIRC	Drains: di reclaim - system	●
D□-PDRN-DLW~	Drains: dilute waste - system	●
D□-PDRN-EGW~	Drains: ethylene glycol waste - system	●
D□-PDRN-HFW~	Drains: hydrofluoric waste - system	●
D□-PDRN-IW~~	Drains: industrial waste - system	●
D□-PDRN-MW~~	Drains: metals waste - system	●
D□-PDRN-NPWR	Drains: non-potable water reuse - system	●
D□-PDRN-OIW~	Drains: organic industrial waste - system	●
D□-PDRN-OLW~	Drains: organic liquid waste - system	●
D□-PDRN-OSW~	Drains: organic solvent waste - system	●
D□-PDRN-PHRC	Drains: phosphoric acid reclaim - system	●
D□-PDRN-PSW~	Drains: photo solvent waste - system	●

Layer Name	Description	New
Process (continued)		
D□-PDRN-SDD~	Drains: scrubber duct drains - system	●
D□-PDRN-SLW~	Drains: slurry waste - system	●
D□-PDRN-SULF	Drains: sulfuric acid waste - system	●
D□-PDRN-SULR	Drains: sulfuric acid reclaim - system	●
D□-PDRN-SW~~	Drains: solvent waste - system	●
D□-PDRN-SWF~	Drains: solvent waste flammable - system	●
D□-PDRN-SWNF	Drains: solvent waste non-flammable - system	●
D□-PEXH-AMEX	Exhaust: ammonia exhaust - system	●
D□-PEXH-AREX	Exhaust: arsenic exhaust - system	●
D□-PEXH-HTEX	Exhaust: heat exhaust - system	●
D□-PEXH-SCEX	Exhaust: scrubber exhaust - system	●
D□-PEXH-SVEX	Exhaust: solvent exhaust - system	●
D□-PGAS-AR~~	Gas: argon - system	●
D□-PGAS-ARB~	Gas: argon bulk - system	●
D□-PGAS-BUT~	Gas: butane - system	●
D□-PGAS-CLG~	Gas: chlorine gas - system	●
D□-PGAS-H2~~	Gas: hydrogen - system	●
D□-PGAS-HE~~	Gas: helium - system	●
D□-PGAS-HPN2	Gas: high purity nitrogen - system	●
D□-PGAS-HPO2	Gas: high purity oxygen - system	●
D□-PGAS-LCHE	Gas: leak check helium - system	●
D□-PGAS-N2~~	Gas: nitrogen - system	●
D□-PGAS-N2O~	Gas: nitrous oxide - system	●
D□-PGAS-NG~~	Gas: natural gas - system	●
D□-PGAS-O2~~	Gas: oxygen - system	●
D□-PGAS-PRO~	Gas: propane - system	●
D□-PGAS-SG~~	Gas: specialty gas - system	●
D□-PGAS-UN2~	Gas: utility nitrogen - system	●

Layer Name	Description	New
Process (continued)		
D□-PGAS-VN2~	Gas: venturi nitrogen - system	●
D□-PGAS-WAR~	Gas: weld argon - system	●
D□-PIPE-CNTR	General: center line	●
D□-PIPE-EQPM	General: equipment	●
D□-PIPE-HDLN	General: hidden line	●
D□-PIPE-IDEN	General: labels & identifiers	●
D□-PIPE-MISC	General: misc.	●
D□-PIPE-PATT	General: crosshatch	●
D□-PIPE-PIPE	General: piping systems	●
D□-PIPE-UGRD	General: underground	●
D□-PLQD-LPG~	Liquid: liquid petroleum gas - system	●
D□-POIL-LO~~	Oil: lube oil - system	●
D□-PSLR-SLR~	Slurry: slurry return - system	●
D□-PSLR-SLS~	Slurry: slurry supply - system	●
D□-PVAC-CLV~	Vacuum: chlorine vacuum - system	●
D□-PVAC-CV~~	Vacuum: chemical vacuum - system	●
D□-PVAC-EV~~	Vacuum: equipment vacuum - system	●
D□-PVAC-HV~~	Vacuum: house vacuum - system	●
D□-PVAC-HVA~	Vacuum: arsenic house vacuum - system	●
D□-PVAC-PV~~	Vacuum: vacuum - system	●
D□-PWTR-BFW~	Water: boiler feed water - system	●
D□-PWTR-DIR~	Water: deionized water return - system	●
D□-PWTR-DIS~	Water: deionized water supply - system	●
D□-PWTR-DIWP	Water: di polishing loop - system	●
D□-PWTR-FW~~	Water: fire water - system	●
D□-PWTR-HDIR	Water: hot di return - system	●
D□-PWTR-HDIS	Water: hot di supply - system	●

Layer Name	Description	New
Process (continued)		
D□-PWTR-HDRC	Water: hot di reclaim - system	●
D□-PWTR-HPDR	Water: high ph di return - system	●
D□-PWTR-HPDS	Water: high ph di supply - system	●
D□-PWTR-ICW~	Water: industrial city water - system	●
D□-PWTR-NPW~	Water: non-potable water - system	●
D□-PWTR-PCWR	Water: cooling water return - system	●
D□-PWTR-PCWS	Water: cooling water supply - system	●
D□-PWTR-PW~~	Water: potable water - system	●
D□-PWTR-RO~~	Water: reverse osmosis water - system	●
D□-PWTR-ROR~	Water: reverse osmosis reject water - system	●
D□-PWTR-TDIR	Water: tempered di return - system	●
D□-PWTR-TDIS	Water: tempered di supply - system	●
D□-PWTR-TW~~	Water: tempered water - system	●
D□-PWTR-UPRW	Water: ultra pure recycle water - system	●
D□-PWTR-UPW~	Water: ultra pure water - system	●

Mechanical Layer List

Mechanical Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Mechanical Discipline Designators

Designator	Description	New
M	Mechanical	
MS	Mechanical Site	
MD	Mechanical Demolition	
MH	Mechanical HVAC	
MP	Mechanical Piping	
MI	Mechanical Instrumentation	
MJ	User-Defined	
MK	User-Defined	

Mechanical Layer List

Layer Name	Description	New
M□-ANNO	Annotation	●
M□-ANNO-DLTA	Annotation: revision delta	●
M□-ANNO-TTLB	Annotation: titleblock	●
M□-ANNO-TTLB-PROS	Annotation: titleblock: date/time/file name stamp	●
M□-BRIN	Brine systems	
M□-BRIN-EQPM	Brine systems: equipment	
M□-BRIN-PIPE	Brine systems: piping	
M□-CHIM	Chimneys and stacks	
M□-CMPA	Compressed / processed air systems	
M□-CMPA-ANNO	Compressed / processed air systems: annotation	●

Layer Name	Description	New
Mechanical (continued)		
M□-CMPA-EQPM	Compressed air systems: equipment	●
M□-CMPA-PIPE	Compressed air systems: piping	
M□-CMPA-PEQP	Compressed air systems: process equipment	
M□-CMPA-PPIP	Compressed air systems: process piping	
M□-CNDW	Condenser water systems	
M□-CNDW-ANNO	Condenser water systems: annotation	●
M□-CNDW-CONP	Condenser water systems: condensate piping	●
M□-CNDW-EQPM	Condenser water systems: equipment	
M□-CNDW-PIPE	Condenser water systems: piping	●
M□-CNDW-RETN	Condenser water systems: return	●
M□-CNDW-RETN-PIPE	Condenser water systems: return: piping	●
M□-CNDW-RETN-SKCH	Condenser water systems: return: sketch	●
M□-CNDW-SUPP	Condenser water systems: supply	●
M□-CNDW-SUPP-PIPE	Condenser water systems: supply: piping	●
M□-CNDW-SUPP-SKCH	Condenser water systems: supply: sketch	●
M□-CNDW-SYMB	Condenser water systems: symbol	●
M□-CONT	Controls and instrumentation	
M□-CONT-THER	Controls and instrumentation: thermostats	
M□-CONT-WIRE	Controls and instrumentation: low voltage wiring	
M□-CWTR	Chilled water systems	

Layer Name	Description	New
Mechanical (continued)		
M□-CWTR-ANNO	Chilled water systems: annotation	●
M□-CWTR-CONP	Chilled water systems: condensate piping	●
M□-CWTR-PIPE	Chilled water systems: piping	
M□-CWTR-EQPM	Chilled water systems: equipment	
M□-CWTR-RETN	Chilled water systems: return	●
M□-CWTR-RETN-PIPE	Chilled water systems: return: piping	●
M□-CWTR-RETN-SKCH	Chilled water systems: return: sketch	●
M□-CWTR-SUPP	Chilled water systems: supply	●
M□-CWTR-SUPP-PIPE	Chilled water systems: supply: piping	●
M□-CWTR-SUPP-SKCH	Chilled water systems: supply: sketch	●
M□-CWTR-SYMB	Chilled water systems: symbols	●
M□-DOMW	Domestic water systems	●
M□-DOMW-ANNO	Domestic water systems: annotation	●
M□-DOMW-MKUP	Domestic water systems: make-up water	●
M□-DUAL	Dual temperature systems	●
M□-DUAL-ANNO	Dual temperature systems: annotation	●
M□-DUAL-RETN	Dual temperature systems: return	●
M□-DUAL-RETN-PIPE	Dual temperature systems: return: piping	●
M□-DUAL-RETN-SKCH	Dual temperature systems: return: sketch	●
M□-DUAL-SUPP	Dual temperature systems: supply	●
M□-DUAL-SUPP-PIPE	Dual temperature systems: supply: piping	●
M□-DUAL-SUPP-SKCH	Dual temperature systems: supply: sketch	●

Layer Name	Description	New
Mechanical (continued)		
M□-DUAL-SYMB	Dual temperature systems: symbols	●
M□-DUST	Dust and fume collection systems	
M□-DUST-DUCT	Dust and fume collection systems: ductwork	
M□-DUST-EQPM	Dust and fume collection systems: equipment	
M□-ELHT	Electric heat	
M□-ELHT-EQPM	Electric heat: equipment	
M□-ENER	Energy management systems	
M□-ENER-EQPM	Energy management systems: equipment	
M□-ENER-WIRE	Energy management systems: wiring	
M□-EXHS	Exhaust system	
M□-EXHS-CDFF	Exhaust system: ceiling diffusers	
M□-EXHS-DUCT	Exhaust system: ductwork	
M□-EXHS-EQPM	Exhaust system: equipment	
M□-EXHS-RFEQ	Exhaust system: rooftop equipment	
M□-FUEL	Fuel systems	
M□-FUEL-EQPM	Fuel systems: equipment	
M□-FUEL-GGEP	Fuel systems: gas general piping	
M□-FUEL-GGEP-ANNO	Fuel systems: gas general piping: annotation	●
M□-FUEL-GGEP-HPIP	Fuel systems: gas general piping: high pressure	●
M□-FUEL-GGEP-LPIP	Fuel systems: gas general piping: low pressure	●
M□-FUEL-GGEP-LQPG	Fuel systems: gas general piping: liquid petroleum gas	●

Layer Name	Description	New
Mechanical (continued)		
M□-FUEL-GGEP-MPIP	Fuel systems: gas general piping: medium pressure	●
M□-FUEL-GPRP	Fuel systems: gas process piping	
M□-FUEL-OPRP	Fuel systems: oil process piping	
M□-FUEL-OGEP	Fuel systems: oil general piping	
M□-FUEL-OGEP-ANNO	Fuel systems: oil general piping: annotation	●
M□-FUEL-OGEP-DISC	Fuel systems: oil general piping: discharge	●
M□-FUEL-OGEP-FLLW	Fuel systems: oil general piping: flow	●
M□-FUEL-OGEP-GAGE	Fuel systems: oil general piping: gauge	●
M□-FUEL-OGEP-RETN	Fuel systems: oil general piping: return	●
M□-FUEL-OGEP-SUPP	Fuel systems: oil general piping: supply	●
M□-FUEL-OGEP-VENT	Fuel systems: oil general piping: vent	●
M□-FUEL-RPIP	Fuel systems: return piping	●
M□-FUEL-SPIP	Fuel systems: supply piping	●
M□-FUME	Fume hood	
M□-FUME-DUCT	Fume hood: exhaust ductwork	●
M□-FUME-EQPM	Fume hood: equipment	
M□-GLYC	Glycol systems	●
M□-GLYC-ANNO	Glycol systems: annotation	●
M□-GLYC-RETN	Glycol systems: return	●
M□-GLYC-RETN-PIPE	Glycol systems: return: piping	●
M□-GLYC-RETN-SKCH	Glycol systems: return: sketch	●
M□-GLYC-SUPP	Glycol systems: supply	●

Layer Name	Description	New
Mechanical (continued)		
M□-GLYC-SUPP-PIPE	Glycol systems: supply: piping	●
M□-GLYC-SUPP-SKCH	Glycol systems: supply: sketch	●
M□-GLYC-SYMB	Glycol systems: symbol	●
M□-HOTW	Hot water heating system	
M□-HOTW-ANNO	Hot water heating system: annotation	●
M□-HOTW-EQPM	Hot water heating system: equipment	
M□-HOTW-PIPE	Hot water heating system: piping	
M□-HOTW-RETN	Hot water heating system: return	●
M□-HOTW-RETN-PIPE	Hot water heating system: return: piping	●
M□-HOTW-RETN: SKCH	Hot water heating system: return: sketch	●
M□-HOTW-SUPP	Hot water heating system: supply	●
M□-HOTW-SUPP-PIPE	Hot water heating system: supply: piping	●
M□-HOTW-SUPP-SKCH	Hot water heating system: supply: sketch	●
M□-HOTW-SYMB	Hot water heating system: symbol	●
M□-HVAC	HVAC systems	
M□-HVAC-ANNO	HVAC systems: annotation	●
M□-HVAC-BOXD	HVAC systems: mixing box, dual duct	●
M□-HVAC-BOXS	HVAC systems: mixing box, single duct	●
M□-HVAC-CDFF	HVAC systems: ceiling diffusers	
M□-HVAC-CLDA	HVAC systems: cold air	●
M□-HVAC-CLDA-ANNO	HVAC systems: cold air: annotation	●
M□-HVAC-CLDA-DUCT	HVAC systems: cold air: ductwork	●

Layer Name	Description	New
Mechanical (continued)		
M□-HVAC-CLDA-EQPM	HVAC systems: cold air: ductwork equipment	●
M□-HVAC-CLDA-RSCH	HVAC systems: cold air: sketch line round or oval duct	●
M□-HVAC-CLDA-SECT	HVAC systems: cold air: ductwork section	●
M□-HVAC-CLDA-SIZE	HVAC systems: cold air: ductwork size	●
M□-HVAC-CLDA-SSCH	HVAC systems: cold air: sketch line rectangular duct	●
M□-HVAC-DMPR	HVAC systems: fire, smoke, volume damper	●
M□-HVAC-DOOR	HVAC systems: equipment doors	
M□-HVAC-EFAN	HVAC systems: equipment with electric fans	●
M□-HVAC-EPDU	HVAC systems: equipment with piping, ductwork and electricity	●
M□-HVAC-EPIP	HVAC systems: equipment with piping and electricity	●
M□-HVAC-EQPM	HVAC systems: equipment	
M□-HVAC-EXHS	HVAC systems: exhaust air	●
M□-HVAC-EXHS-ANNO	HVAC systems: exhaust air: annotation	●
M□-HVAC-EXHS-DUCT	HVAC systems: exhaust air: ductwork	●
M□-HVAC-EXHS-EQPM	HVAC systems: exhaust air: ductwork equipment	●
M□-HVAC-EXHS-GRIL	HVAC systems: exhaust air: grilles	●
M□-HVAC-EXHS-RSCH	HVAC systems: exhaust air: sketch line round or oval duct	●

Layer Name	Description	New
Mechanical (continued)		
M□-HVAC-EXHS-SECT	HVAC systems: exhaust air: ductwork section	●
M□-HVAC-EXHS-SIZE	HVAC systems: exhaust air: ductwork size	●
M□-HVAC-EXHS-SSCH	HVAC systems: exhaust air: sketch line rectangular duct	●
M□-HVAC-HOTA	HVAC systems: hot air	●
M□-HVAC-HOTA-ANNO	HVAC systems: hot air: annotation	●
M□-HVAC-HOTA-DUCT	HVAC systems: hot air: ductwork	●
M□-HVAC-HOTA-EQPM	HVAC systems: hot air: ductwork equipment	●
M□-HVAC-HOTA-RSCH	HVAC systems: hot air: sketch line round or oval duct	●
M□-HVAC-HOTA-SECT	HVAC systems: hot air: ductwork section	●
M□-HVAC-HOTA-SIZE	HVAC systems: hot air: ductwork size	●
M□-HVAC-HOTA-SSCH	HVAC systems: hot air: sketch line rectangular duct	●
M□-HVAC-IDEN	HVAC systems: identification tags	●
M□-HVAC-ODFF	HVAC systems: other diffusers	
M□-HVAC-PIPE	HVAC systems: piping	●
M□-HVAC-RDFF	HVAC systems: return air diffusers	
M□-HVAC-RDFF-IDEN	HVAC systems: return air diffusers: identification tags	●
M□-HVAC-RETN	HVAC systems: return ductwork	
M□-HVAC-RETN-ANNO	HVAC systems: return ductwork: annotation	●
M□-HVAC-RETN-DUCT	HVAC systems: return ductwork: ductwork	●

Layer Name	Description	New
Mechanical (continued)		
M□-HVAC-RETN-EQPM	HVAC systems: return ductwork: equipment	●
M□-HVAC-RETN-RSCH	HVAC systems: return ductwork: sketch line round or oval duct	●
M□-HVAC-RETN-SECT	HVAC systems: return ductwork: ductwork section	●
M□-HVAC-RETN-SIZE	HVAC systems: return ductwork: ductwork size	●
M□-HVAC-RETN-SSCH	HVAC systems: return ductwork: sketch line rectangular duct	●
M□-HVAC-SUPP	HVAC systems: supply ductwork	
M□-HVAC-SUPP-ANNO	HVAC systems: supply ductwork: annotation	●
M□-HVAC-SUPP-DUCT	HVAC systems: supply ductwork: ductwork	●
M□-HVAC-SUPP-EQPM	HVAC systems: supply ductwork: equipment	●
M□-HVAC-SUPP-RSCH	HVAC systems: supply ductwork: sketch line round or oval duct	●
M□-HVAC-SUPP-SECT	HVAC systems: supply ductwork: ductwork section	●
M□-HVAC-SUPP-SIZE	HVAC systems: supply ductwork: ductwork size	●
M□-HVAC-SUPP-SSCH	HVAC systems: supply ductwork: sketch line rectangular duct	●
M□-HVAC-SDFF	HVAC systems: supply diffusers	
M□-HVAC-SDFF-IDEN	HVAC systems: supply diffusers: identification tags	●
M□-LGAS	Laboratory gas systems	

Layer Name	Description	New
Mechanical (continued)		
M□-LGAS-EQPM	Laboratory gas systems: equipment	
M□-LGAS-PIPE	Laboratory gas systems: piping	
M□-MACH	Machine shop	
M□-MDGS	Medical gas	
M□-MDGS-CAIR	Medical gas: compressed air	
M□-MDGS-EQPM	Medical gas: equipment	
M□-MDGS-NITG	Medical gas: nitrogen	
M□-MDGS-NOXG	Medical gas: nitrous oxide	
M□-MDGS-OXYG	Medical gas: pure O2	
M□-MDGS-PIPE	Medical gas: piping	
M□-MDGS-SAIR	Medical gas: scavenge air	
M□-MDGS-VACU	Medical gas: medical vacuum	
M□-MKUP	Make-up air systems	
M□-MKUP-CDFF	Make-up air systems: ceiling diffusers	
M□-MKUP-DUCT	Make-up air systems: supply ducts	
M□-MKUP-EQPM	Make-up air systems: equipment	
M□-MPIP	Miscellaneous piping systems	●
M□-MPIP-ANNO	Miscellaneous piping systems: annotation	●
M□-MPIP-IDEN	Miscellaneous piping systems: identification tags	●
M□-MPIP-PIPE	Miscellaneous piping systems: piping	●
M□-MPIP-SYMB	Miscellaneous piping systems: symbols	●
M□-NGAS	Natural gas systems	
M□-NGAS-EQPM	Natural gas systems: equipment	
M□-NGAS-PIPE	Natural gas systems: piping	

Layer Name	Description	New
Mechanical (continued)		
M□-PROC	Process systems	
M□-PROC-EQPM	Process systems: equipment	
M□-PROC-PIPE	Process systems: piping	
M□-RAIR	Relief air systems	
M□-RCOV	Energy recovery systems	
M□-RCOV-EQPM	Energy recovery systems: equipment	
M□-RCOV-PIPE	Energy recovery systems: piping	
M□-REFG	Refrigeration systems	
M□-REFG-ANNO	Refrigeration systems: annotation	●
M□-REFG-DISC	Refrigeration systems: discharge	●
M□-REFG-EQPM	Refrigeration systems: equipment	
M□-REFG-PIPE	Refrigeration systems: piping	
M□-REFG-RETN	Refrigeration systems: return	●
M□-REFG-SUPP	Refrigeration systems: supply	●
M□-SMOK	Smoke extraction systems	
M□-SMOK-CDFF	Smoke extraction systems: ceiling diffusers	
M□-SMOK-DUCT	Smoke extraction systems: duct	
M□-SMOK-EQPM	Smoke extraction systems: equipment	
M□-SPCL	Special systems	
M□-SPCL-EQPM	Special systems: equipment	
M□-SPCL-PIPE	Special systems: piping	
M□-STEM	Steam systems	
M□-STEM-ANNO	Steam systems: annotation	●
M□-STEM-BLBD	Steam systems: boiler blow down piping	●

Layer Name	Description	New
Mechanical (continued)		
M□-STEM-BLBD-PIPE	Steam systems: boiler blow down piping: piping	●
M□-STEM-CONP	Steam systems: condensate piping	
M□-STEM-CONP-PIPE	Steam systems: condensate piping: piping	●
M□-STEM-CONP-SKCH	Steam systems: condensate piping: sketch	●
M□-STEM-EQPM	Steam systems: equipment	
M□-STEM-HPIP	Steam systems: high-pressure steam piping	
M□-STEM-HPIP-PIPE	Steam systems: high-pressure steam piping: piping	●
M□-STEM-HPIP-SKCH	Steam systems: high-pressure steam piping: sketch	●
M□-STEM-LPIP	Steam systems: low-pressure steam piping	
M□-STEM-LPIP-PIPE	Steam systems: low-pressure steam piping: piping	●
M□-STEM-LPIP-SKCH	Steam systems: low-pressure steam piping: sketch	●
M□-STEM-MPIP	Steam systems: medium-pressure steam piping	
M□-STEM-MPIP-PIPE	Steam systems: medium-pressure steam piping: piping	●
M□-STEM-MPIP-SKCH	Steam systems: medium-pressure steam piping: sketch	●
M□-STEM-SYMB	Steam systems: symbols	●
M□-TEST	Test equipment	

Electrical Layer List

Electrical Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Electrical Discipline Designators

Designator	Description	New
E	Electrical	
ES	Electrical Site	
ED	Electrical Demolition	
EP	Electrical Power	
EL	Electrical Lighting	
EI	Electrical Instrumentation	
ET	Electrical Telecommunications	
EY	Electrical Auxiliary Systems	
EJ	User-Defined	
EK	User-Defined	

Electrical Layer List

Layer Name	Description	New
E□-□□□□-1LIN	Any major group: one-line diagrams	
E□-□□□□-RISR	Any major group: riser diagram	
E□-ALRM	Alarm system	
E□-AUXL	Auxiliary systems	
E□-BELL	Bell system	
E□-CABL	Cable system	●
E□-CABL-ANNO	Cable system: annotation	●
E□-CABL-ANNO-KEYN	Cable system: annotation: keynotes	●

Layer Name	Description	New
Electrical (continued)		
E□-CABL-ANNO-NOTE	Cable system: annotation: notes	●
E□-CABL-COAX	Cable system: coax cable	●
E□-CABL-FIBR	Cable system: fiber optics cable	●
E□-CABL-MULT	Cable system: multi-conductor cable	●
E□-CABL-REVC	Cable system: revision clouds	●
E□-CABL-REVS	Cable system: revisions	●
E□-CABL-TRAY	Cable system: cabletray and wireways	●
E□-CCTV	Closed-circuit TV	
E□-CLOK	Clock system	
E□-CLOK-ANNO	Clock system: annotation	●
E□-CLOK-ANNO-KEYN	Clock system: annotation: keynotes	●
E□-CLOK-ANNO-NOTE	Clock system: annotation: notes	●
E□-CLOK-CIRC	Clock system: circuits	●
E□-CLOK-CLNG	Clock system: ceiling-mounted	●
E□-CLOK-CNMB	Clock system: circuit numbers	●
E□-CLOK-EQPM	Clock system: equipment	●
E□-CLOK-FLOR	Clock system: floor-mounted	●
E□-CLOK-IDEN	Clock system: identification and text	●
E□-CLOK-REVC	Clock system: revision clouds	●
E□-CLOK-REVS	Clock system: revisions	●
E□-CLOK-WALL	Clock system: wall-mounted	●
E□-COMM	Telephone, communication outlets	
E□-COMM-ANNO	Telephone, communication outlets: annotation	●
E□-COMM-ANNO-KEYN	Telephone, communication outlets: annotation: keynotes	●

Layer Name	Description	New
Electrical (continued)		
E□-COMM-ANNO-NOTE	Telephone, communication outlets: annotation: notes	●
E□-COMM-CIRC	Telephone, communication outlets: circuits	●
E□-COMM-CLNG	Telephone, communication outlets: ceiling-mounted	●
E□-COMM-CNMB	Telephone, communication outlets: circuit numbers	●
E□-COMM-EQPM	Telephone, communication outlets: equipment	●
E□-COMM-IDEN	Telephone, communication outlets: identification and text	●
E□-COMM-REVC	Telephone, communication outlets: revision clouds	●
E□-COMM-REVS	Telephone, communication outlets: revisions	●
E□-COMM-WALL	Telephone, communication outlets: wall-mounted	●
E□-CTRL	Control systems	
E□-CTRL-DEVC	Control systems: devices	
E□-CTRL-WIRE	Control systems: wiring	
E□-DATA	Data outlets	
E□-DATA-ANNO	Data outlets: annotation	●
E□-DATA-ANNO-KEYN	Data outlets: annotation: keynotes	●
E□-DATA-ANNO-NOTE	Data outlets: annotation: notes	●
E□-DATA-CIRC	Data outlets: circuits	●
E□-DATA-CLNG	Data outlets: ceiling-mounted	●
E□-DATA-CNMB	Data outlets: circuit numbers	●
E□-DATA-EQPM	Data outlets: equipment	●

Layer Name	Description	New
Electrical (continued)		
E□-DATA-FLOR	Data outlets: floor-mounted	●
E□-DATA-IDEN	Data outlets: identification and text	●
E□-DATA-REVC	Data outlets: revision clouds	●
E□-DATA-REVS	Data outlets: revisions	●
E□-DATA-WALL	Data outlets: wall-mounted	●
E□-DIAG	Diagrams	●
E□-DIAG-ANNO	Diagrams: annotation	●
E□-DIAG-ANNO-KEYN	Diagrams: annotation: keynotes	●
E□-DIAG-ANNO-NOTE	Diagrams: annotation: notes	●
E□-DIAG-BKRS	Diagrams: breakers	●
E□-DIAG-BUSS	Diagrams: bus duct	●
E□-DIAG-ENCL	Diagrams: equipment enclosures	●
E□-DIAG-EQPM	Diagrams: equipment	●
E□-DIAG-FEED	Diagrams: feeders	●
E□-DIAG-FLOR	Diagrams: floor lines	●
E□-DIAG-GRND	Diagrams: grounding	●
E□-DIAG-REVC	Diagrams: revision clouds	●
E□-DIAG-REVS	Diagrams: revisions	●
E□-DIAG-SWCH	Diagrams: switches	●
E□-DIAG-XFMR	Diagrams: transformers	●
E□-DICT	Central dictation system	
E□-DICT-ANNO	Central dictation system: annotation	●
E□-DICT-ANNO-KEYN	Central dictation system: annotation: keynotes	●
E□-DICT-ANNO-NOTE	Central dictation system: annotation: notes	●
E□-DICT-CIRC	Central dictation system: circuits	●

Layer Name	Description	New
Electrical (continued)		
E□-DICT-CLNG	Central dictation system: ceiling-mounted	●
E□-DICT-CNMB	Central dictation system: circuit numbers	●
E□-DICT-EQPM	Central dictation system: equipment	●
E□-DICT-IDEN	Central dictation system: identification and text	●
E□-DICT-REVC	Central dictation system: revision clouds	●
E□-DICT-REVS	Central dictation system: revisions	●
E□-DICT-WALL	Central dictation system: wall-mounted	●
E□-FIRE	Fire alarm, fire extinguishers	
E□-FIRE-ANNO	Fire alarm, fire extinguishers: annotation	●
E□-FIRE-ANNO-KEYN	Fire alarm, fire extinguishers: annotation: keynotes	●
E□-FIRE-ANNO-NOTE	Fire alarm, fire extinguishers: annotation: notes	●
E□-FIRE-CIRC	Fire alarm, fire extinguishers: circuits	●
E□-FIRE-CLNG	Fire alarm, fire extinguishers: ceiling-mounted	●
E□-FIRE-CNMB	Fire alarm, fire extinguishers: circuit numbers	●
E□-FIRE-EQPM	Fire alarm, fire extinguishers: equipment	●
E□-FIRE-IDEN	Fire alarm, fire extinguishers: identification and text	●
E□-FIRE-REVC	Fire alarm, fire extinguishers: revision clouds	●

Layer Name	Description	New
Electrical (continued)		
E□-FIRE-REVS	Fire alarm, fire extinguishers: revisions	●
E□-FIRE-WALL	Fire alarm, fire extinguishers: wall-mounted	●
E□-GRND	Ground system	
E□-GRND-ANNO	Ground system: annotation	●
E□-GRND-ANNO-KEYN	Ground system: annotation: keynotes	●
E□-GRND-ANNO-NOTE	Ground system: annotation: notes	●
E□-GRND-CIRC	Ground system: circuits	
E□-GRND-CLNG	Ground system: ceiling-mounted	●
E□-GRND-CNMB	Ground system: circuit numbers	●
E□-GRND-DIAG	Ground system: diagram	
E□-GRND-EQPM	Ground system: equipment	●
E□-GRND-IDEN	Ground system: identification and text	●
E□-GRND-REFR	Ground system: reference	
E□-GRND-REVC	Ground system: revision clouds	●
E□-GRND-REVS	Ground system: revisions	●
E□-GRND-WALL	Ground system: wall-mounted	●
E□-GRND-EQUI	Ground system: equipotential	
E□-INST	Instrumentation system	●
E□-INST-ANNO	Instrumentation system: annotation	●
E□-INST-ANNO-KEYN	Instrumentation system: annotation: keynotes	●
E□-INST-ANNO-NOTE	Instrumentation system: annotation: notes	●
E□-INST-CIRC	Instrumentation system: circuits	●
E□-INST-CLNG	Instrumentation system: ceiling-mounted	●

Layer Name	Description	New
Electrical (continued)		
E□-INST-CNMB	Instrumentation system: circuit numbers	●
E□-INST-EQPM	Instrumentation system: equipment	●
E□-INST-IDEN	Instrumentation system: identification and text	●
E□-INST-REVC	Instrumentation system: revision clouds	●
E□-INST-REVS	Instrumentation system: revisions	●
E□-INST-WALL	Instrumentation system: wall-mounted	●
E□-INTC	Intercom system	
E□-LEGN	Legend of symbols	
E□-LITE	Lighting	
E□-LITE-ANNO	Lighting: annotation	●
E□-LITE-ANNO-KEYN	Lighting: annotation: keynotes	●
E□-LITE-ANNO-NOTE	Lighting: annotation: notes	●
E□-LITE-CIRC	Lighting: circuits	
E□-LITE-CIRC-CRIT	Lighting: circuits: critical	●
E□-LITE-CIRC-EMER	Lighting: circuits: emergency	●
E□-LITE-CIRC-NUMB	Lighting: circuits: numbers	
E□-LITE-CLNG	Lighting: ceiling-mounted	
E□-LITE-CLNG-CRIT	Lighting: ceiling-mounted: critical	●
E□-LITE-CLNG-EMER	Lighting: ceiling-mounted: emergency	●
E□-LITE-CLNG-EXIT	Lighting: ceiling-mounted: exit	●
E□-LITE-CNMB	Lighting: circuit numbers	●
E□-LITE-CNMB-CRIT	Lighting: circuit numbers: critical	●
E□-LITE-CNMB-EMER	Lighting: circuit numbers: emergency	●
E□-LITE-EMER	Lighting: emergency	
E□-LITE-EQPM	Lighting: equipment	●

Layer Name	Description	New
Electrical (continued)		
E□-LITE-EQPM-CRIT	Lighting: equipment: critical	●
E□-LITE-EQPM-EMER	Lighting: equipment: emergency	●
E□-LITE-EXIT	Lighting: exit	
E□-LITE-EXTR	Lighting: exterior and site	
E□-LITE-FLOR	Lighting: floor-mounted	
E□-LITE-OTLN	Lighting: outline for background	
E□-LITE-SPCL	Lighting: special	
E□-LITE-REVC	Lighting: revision clouds	●
E□-LITE-REVS	Lighting: revisions	●
E□-LITE-ROOF	Lighting: roof lighting	
E□-LITE-WALL	Lighting: wall-mounted	
E□-LITE-WALL-CRIT	Lighting: wall-mounted: critical	●
E□-LITE-WALL-EMER	Lighting: wall-mounted: emergency	●
E□-LITE-WALL-EXIT	Lighting: wall-mounted: exit	●
E□-LITE-SWCH	Lighting: switches	
E□-LITE-SWCH-CRIT	Lighting: switches: critical	●
E□-LITE-SWCH-EMER	Lighting: switches: emergency	●
E□-LITE-IDEN	Lighting: identification and text	
E□-LITE-IDEN-CRIT	Lighting: identification and text: critical	●
E□-LITE-IDEN-EMER	Lighting: identification and text: emergency	●
E□-LITE-JBOX	Lighting: junction box	
E□-LTNG	Lightning protection system	
E□-LTNG-ANNO	Lightning protection system: annotation	●
E□-LTNG-ANNO-KEYN	Lightning protection system: annotation: keynotes	●

Layer Name	Description	New
Electrical (continued)		
E□-LTNG-ANNO-NOTE	Lightning protection system: annotation: notes	●
E□-LTNG-CIRC	Lightning protection system: circuits	●
E□-LTNG-CLNG	Lightning protection system: ceiling-mounted	●
E□-LTNG-CNMB	Lightning protection system: circuit numbers	●
E□-LTNG-EQPM	Lightning protection system: equipment	●
E□-LTNG-IDEN	Lightning protection system: identification and text	●
E□-LTNG-REVC	Lightning protection system: revision clouds	●
E□-LTNG-REVS	Lightning protection system: revisions	●
E□-LTNG-WALL	Lightning protection system: wall-mounted	●
E□-NURS	Nurse call system	
E□-NURS-ANNO	Nurse call system: annotation	●
E□-NURS-ANNO-KEYN	Nurse call system: annotation: keynotes	●
E□-NURS-ANNO-NOTE	Nurse call system: annotation: notes	●
E□-NURS-CIRC	Nurse call system: circuits	●
E□-NURS-CLNG	Nurse call system: ceiling-mounted	●
E□-NURS-CNMB	Nurse call system: circuit numbers	●
E□-NURS-EQPM	Nurse call system: equipment	●
E□-NURS-FLOR	Nurse call system: floor-mounted	●
E□-NURS-IDEN	Nurse call system: identification and text	●
E□-NURS-REVC	Nurse call system: revision clouds	●

Layer Name	Description	New
Electrical (continued)		
E□-NURS-REVS	Nurse call system: revisions	●
E□-NURS-WALL	Nurse call system: wall-mounted	●
E□-PGNG	Paging system	
E□-POWR	Power	
E□-POWR-ANNO	Power: annotation	●
E□-POWR-ANNO-KEYN	Power: annotation: keynotes	●
E□-POWR-ANNO-NOTE	Power: annotation: notes	●
E□-POWR-BUSW	Power: busways	
E□-POWR-CABL	Power: cable trays	
E□-POWR-CIRC	Power: circuits	
E□-POWR-CIRC-CRIT	Power: circuits: critical	●
E□-POWR-CIRC-NUMB	Power: circuits: numbers	
E□-POWR-CLNG	Power: ceiling-mounted	●
E□-POWR-CLNG-CRIT	Power: ceiling-mounted: critical	●
E□-POWR-CNMB	Power: circuit numbers	●
E□-POWR-CNMB-CRIT	Power: circuit numbers: critical	●
E□-POWR-DEVC	Power: devices	
E□-POWR-EQPM	Power: equipment	
E□-POWR-EQPM-CRIT	Power: equipment: critical	●
E□-POWR-EXTR	Power: exterior	●
E□-POWR-FEED	Power: feeders	
E□-POWR-FLOR	Power: floor-mounted	●
E□-POWR-FLOR-CRIT	Power: floor-mounted: critical	●
E□-POWR-IDEN	Power: identification and text	●
E□-POWR-JBOX	Power: junction box	
E□-POWR-PANL	Power: panels	

Layer Name	Description	New
Electrical (continued)		
E□-POWR-SWBD	Power: switchboards	
E□-POWR-URAC	Power: underfloor raceways	
E□-POWR-UCPT	Power: under-carpet wiring	
E□-POWR-ROOF	Power: roof	
E□-POWR-REVC	Power: revision clouds	●
E□-POWR-REVS	Power: revisions	●
E□-POWR-WALL	Power: wall-mounted	●
E□-POWR-WALL-CRIT	Power: wall-mounted: critical	●
E□-SERT	Security	
E□-SERT-ANNO	Security: annotation	●
E□-SERT-ANNO-KEYN	Security: annotation: keynotes	●
E□-SERT-ANNO-NOTE	Security: annotation: notes	●
E□-SERT-CIRC	Security: circuits	●
E□-SERT-CLNG	Security: ceiling-mounted	●
E□-SERT-CNMB	Security: circuit numbers	●
E□-SERT-EQPM	Security: equipment	●
E□-SERT-FLOR	Security: floor-mounted	●
E□-SERT-IDEN	Security: identification and text	●
E□-SERT-REVC	Security: revision clouds	●
E□-SERT-REVS	Security: revisions	●
E□-SERT-WALL	Security: wall-mounted	●
E□-SITE	Site	
E□-SITE-UNDR	Site: underground lines	
E□-SITE-POLE	Site: electric poles	
E□-SITE-OVHD	Site: overhead lines	
E□-SOUN	Sound/PA system	
E□-TVAN	TV antenna system	

Layer Name	Description	New
Electrical (continued)		
E□-TVAN-ANNO	TV antenna system: annotation	●
E□-TVAN-ANNO-KEYN	TV antenna system: annotation: keynotes	●
E□-TVAN-ANNO-NOTE	TV antenna system: annotation: notes	●
E□-TVAN-CIRC	TV antenna system: circuits	●
E□-TVAN-CLNG	TV antenna system: ceiling-mounted	●
E□-TVAN-CNMB	TV antenna system: circuit numbers	●
E□-TVAN-EQPM	TV antenna system: equipment	●
E□-TVAN-IDEN	TV antenna system: identification and text	●
E□-TVAN-REVC	TV antenna system: revision clouds	●
E□-TVAN-REVS	TV antenna system: revisions	●
E□-TVAN-WALL	TV antenna system: wall-mounted	●

Telecommunications Layer List

Telecommunications Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Telecommunications Discipline Designators

Designator	Description	New
T	Telecommunications	
TA	Audio Visual	
TC	Clock and Program	
TI	Intercom	
TM	Monitoring	
TN	Data Networks	
TT	Telephone	
TY	Security	
TJ	User-Defined	
TK	User-Defined	

Telecommunications Layer List

Layer Name	Description	New
T□-□□□□-1LIN	Any major group: one-line diagrams	
T□-□□□□-DIAG	Any major group: diagrams	
T□-□□□□-EQPM	Any major group: equipment	
T□-□□□□-JACK	Any major group: jacks	
T□-□□□□-JBOX	Any major group: junction boxes	
T□-□□□□-RISR	Any major group: riser diagrams	
T□-ALRM	Alarm system	
T□-BELL	Bell system	
T□-CABL	Cable systems	
T□-CABL-COAX	Cable systems: coax cable	

Layer Name	Description	New
Telecommunications (continued)		
T□-CABL-FIBR	Cable systems: fiber optics cable	
T□-CABL-MULT	Cable systems: multi-conductor cable	
T□-CABL-TRAY	Cable systems: cable tray & wireway	
T□-CATV	Cable television system	
T□-CLOK	Clock systems	
T□-CCTV	Closed-circuit television system	
T□-DATA	Data / LAN system	
T□-DICT	Dictation system	
T□-ELEC	Electrical system, telecom plan	
T□-EMCS	Energy monitoring control system	
T□-FIRE	Fire alarm system	
T□-INTC	Intercom / PA systems	
T□-NURS	Nurse call system	
T□-PGNG	Paging system	
T□-PHON	Telephone system	
T□-SERT	Security system	
T□-SOUN	Sound system	
T□-TVAN	Television antenna system	

Resource Layer List

Resource Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Resource Discipline Designators

Designator	Description	New
R	Resource	
RC	Resource Civil	
RS	Resource Structural	
RA	Resource Architectural	
RM	Resource Mechanical	
RE	Resource Electrical	
RJ	User-Defined	
RK	User-Defined	

Resource Layer List

Layer Name	Description	New

No layer names have been prescribed for this discipline.

Other Disciplines Layer List

Other Disciplines Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Other Disciplines Discipline Designators

Designator	Description	New
X	Other Disciplines	
XJ	User-Defined	
XK	User-Defined	

Other Disciplines Layer List

Layer Name	Description	New

No layer names have been prescribed for this discipline.

Contractor/Shop Drawing Layer List

Contractor/Shop Drawing Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Contractor/Shop Drawing Discipline Designators

Designator	Description	New
Z	Contractor/Shop Drawings	●
ZJ	User-Defined	●
ZK	User-Defined	●

Contractor/Shop Drawing Layer List

Layer Name	Description	New

No layer names have been prescribed for this discipline.

Operations Layer List

Operations Field Codes

The Layer Names shown below provide examples for the use of Major and Minor Group field codes for this discipline. See page CLG-8 for complete rules and options governing the use of Major and Minor Group field codes.

Operations Discipline Designators

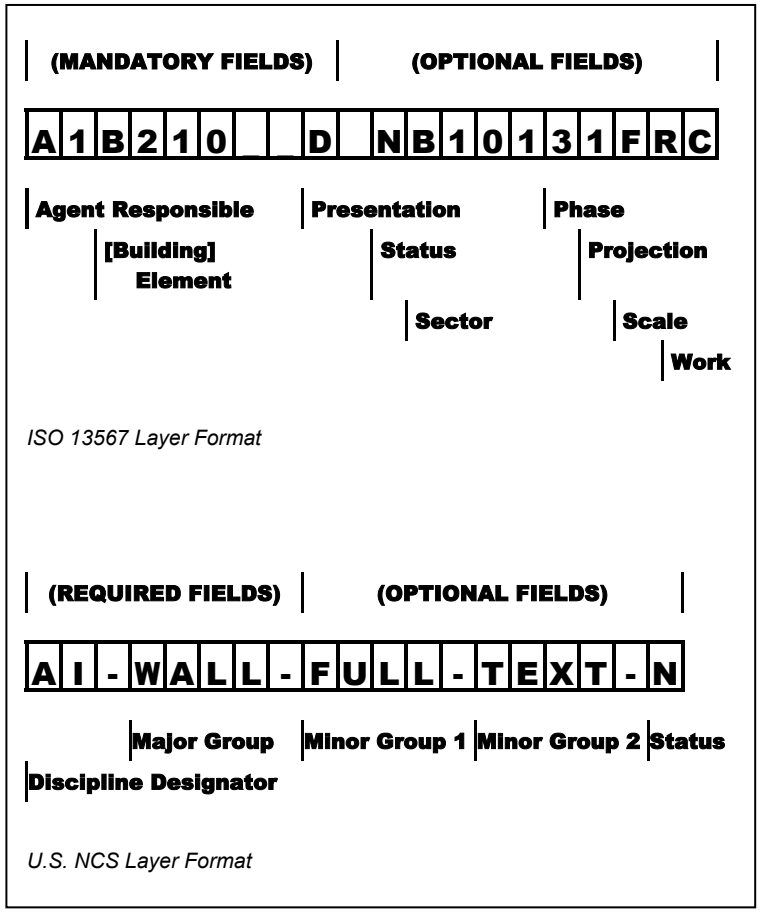
Designator	Description	New
O	Operations	
OJ	User-Defined	
OK	User-Defined	

Operations Layer List

Layer Name	Description	New

No layer names have been prescribed for this discipline.

Commentary: U.S. NCS and ISO 13567



Overview

The International Standards Organization (ISO) is the only recognized international body promulgating standards in the area of electronic building design data. ISO Standard 13567, *Organization and Naming of Layers for CAD*, can be purchased at *http://www.ansi.org*. The complete document is in three parts: 13567-1, 13567-2, and 13567-3.

While the U.S. NCS and ISO 13567 differ somewhat in their approach to standards for CAD layers, they are alike in several important respects. Both standards specify the names of the data fields that make up a typical layer name, define the field names, specify which fields are mandatory (required) and which fields are optional, specify the number of characters in each field, and specify the order in which the fields are to appear.

When one compares the NCS and ISO layer formats shown at left, the question immediately arises whether it is possible to produce electronic building design documents that conform to both the U.S. NCS and ISO 13567. The answer is a qualified "yes."

Both standards provide several options for naming layers. The range of options allows either standard to meet the needs of diverse users and projects. By carefully choosing from among the available U.S. NCS options for naming CAD layers, and by establishing and adhering to the guidelines at the end of this Commentary, documents can be produced that are in ***full conformance*** with the U.S. NCS and in ***conceptual conformance*** with ISO 13567 for the naming of CAD layers (an acceptable alternative to ISO ***default conformance*****).** Adoption of the approach outlined herein could arguably reduce the effort required to produce documents in conformance with ISO 13567 by eliminating the ISO-mandated task of prescribing valid field codes for each project.

TWO STANDARDS OR ONE?

- The U.S. NCS offers users an opportunity to comply with both U.S. and ISO CAD standards. By adhering to the guidelines in this commentary, summarized in ten (10) steps on the last page, the U.S. NCS becomes a "country-specific" implementation of the ISO CAD Standard.

- For design firms doing international work, using the U.S. NCS can simplify the ISO-mandated task of preparing the layer naming system definition file that must accompany the project data files on every project.

- A default ISO Layer Naming System Definition File based on the U.S. NCS is available at:

  http://www.nationalcadstandard.org

  Users may customize this file for specific projects.

Field Codes

The U.S. NCS and ISO 13567 differ in one important respect. The U.S. NCS prescribes the valid alpha-numeric field codes that can appear in each data field, and the definitions of the field codes (e.g., EQPM = equipment). Users of ISO 13567 must determine, for each project, the valid field codes for that project and their definitions. ISO 13567 users are required to document this information in a metadata file known as a ***layer naming system definition file*** that must accompany the project data files. In its simplest form, this is nothing more than a tab-delimited text file.

There are valid reasons for both approaches. The prescriptive approach of the U.S. NCS relieves users of the task of developing and documenting field codes for every project. However, in order to accommodate all possible users, the list of prescribed NCS field codes must be comprehensive. By not prescribing field codes, ISO 13567 allows the ISO layer format to be applied uniformly without having to define all possible field codes in advance.

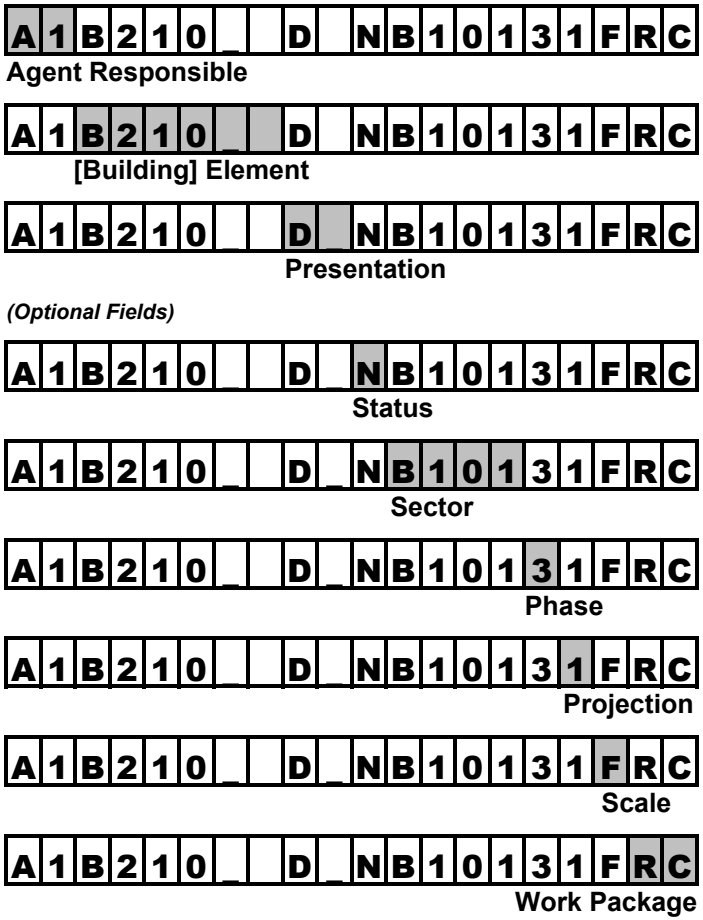
Field Codes and Language

By not prescribing field codes, ISO 13567 also allows the ISO layer format to be applied uniformly without regard to language. Users may, if they wish, develop codes endowed with language-specific meaning. Citing our earlier example, English users might use the field code "EQPM" to represent the [major building] element "equipment," while users in another language group might use another field code that has similar mnemonic association to the word for "equipment" in that language.

While the field codes themselves might differ, the category of information contained in any given field is defined by the standard, facilitating translation of the actual content. In practice, ISO 13567 users tend to favor numeric codes to define the content of data fields. This eliminates any need to "translate" the field codes themselves. If, for example, the field code "720" is prescribed to mean "equipment," then only the definition, and not the code itself, would need to be translated. This eliminates the need for "translating" the actual file or layer name.

Default ISO Layer Format

(Mandatory Fields)



(Optional Fields)

ISO 13567 Conformance

CAD data sets that adhere to ISO 13567 with respect to field names, field length, field definition and field order (as shown at left), and that are accompanied by the required ***layer naming system definition file,*** are defined by ISO to be in ***default conformance*** with the ISO standard.

ISO 13567 anticipates that groups of users or national standards bodies might not only wish to prescribe a list of valid field codes (as the U.S. NCS has done), but might also wish to vary from the specified ISO layer format. 13567-3 is explicitly designed ***"to allow national standards bodies (or projects where agreement is reached between the parties) to implement layer naming conventions which satisfy the requirements of the [ISO] standard while using alternative and more convenient layer naming structures and codes."***

To permit this, ISO 13567-3 establishes rules for modifying the layer format itself. As with the field codes, users are required to fully document layer format modifications in the ***layer naming system definition file.*** CAD data sets that adhere to these rules are defined by ISO as being in ***conceptual conformance*** with the ISO standard, an approved alternative to default conformance.

The rules for ***conceptual conformance*** specify that the mandatory data fields must always be used, but the order of all fields in the layer name (both mandatory and optional), the number of optional fields used, and the number of characters in each field can vary from the default ISO layer format. Additionally, the ***names*** of the fields can differ from the names specified, as long as the ***conceptual definition*** of each field conforms to the ISO standard. All modifications to the default layer format ***must be applied uniformly throughout the project.*** Layer names must all be of the same length, use the same set of mandatory and optional fields in the same order, and have the same number of characters per field.

These rules allow data sets created in ***conceptual conformance*** with ISO 13567 to be mapped to the ISO 13567 ***default layer format.*** However, ISO does not require users to actually "map" or otherwise convert the data into the default layer format.

Field Name Comparison Table	
NCS Field Name	*ISO Field Name*
Discipline Designator	***Agent Responsible***
Major & Minor Groups	***Element***
Annotation Minor Group*	***Presentation***
Status**	***Status***
(none)	***Sector***
Status (Phase)**	***Phase***
Dwg. View Minor Group**	***Projection***
(none)	***Scale***
(none)	***Work Package***

* ISO compliance requires that the last NCS Minor Group field be reserved for annotation.

** ISO compliance requires that this field be reserved for status OR project phase, but not both; duplicate use of the field is not permitted.

*** ISO compliance requires that Drawing View field names not appear in the same fields as Major or Minor Group fields that define major building elements. If both annotation and drawing view are to be included in any layer names, one Minor Group Field must be reserved for Annotation and the other for Drawing View.

Field Names and Definitions

Though the specified field names in the U.S. NCS layer format differ from the specified field names in the ISO layer format, the definitions of the field names are ***conceptually*** the same (with one important exception, discussed in the next paragraph below). This allows NCS-compliant data to meet the principal ISO 13567 criterion for ***conceptual conformance***. The Field Name Comparison Table at left highlights additional rules that must be followed to create data that is in conformance with both the U.S. NCS and ISO 13567.

"Discipline Designator" vs. "Agent Responsible"

The ***conceptual definitions*** of these corresponding field names in the U.S. NCS and ISO 13567 differ sufficiently to merit detailed discussion. The definition for **Discipline Designator** is defined in NCS Version 2.0 as ***"the category of subject matter contained in the file or layer designated."*** In other words, if the information contained is "structural," the file or layer name will begin with the Discipline Designator "S," regardless of who created the data.

ISO 13567 defines **Agent Responsible** as ***"the construction specialist responsible for the data."*** Regrettably, ISO 13567 does not further define the terms ***"construction specialist"*** and ***"responsible for."***

"Construction specialist" could be interpreted to mean "design professional," "design drafter," or even "skilled tradesperson or contractor." Though the text of ISO 13567 does not define which of these individuals is the "agent responsible," one can reasonably infer from the sample ***layer naming system definition file*** shown in Annex A of ISO 13567-3 that "construction specialist" is defined as the design professional.

"Agent Responsible" and Professional Liability

Identifying the design professional as the "construction specialist" still allows considerable room for interpretation of the definition for "agent responsible." It could be interpreted to mean either ***"design professional who is professionally liable for the***

information by virtue of professional licensure and role on the project," or, alternatively, ***"design professional who is professionally liable for the information by virtue of having signed and sealed the document in question."*** An example is a lighting plan prepared under the supervision of, and signed and sealed by, the architect. Should the field code for this drawing file or layer name be "E" or "A?" If the field code is "E," is the Electrical Engineer still the designated "Agent Responsible," and therefore professionally liable for data created by others not under his/her supervision?

The burden of professional liability borne by design professionals is generally less in other countries than it is in the U.S. Perhaps for this reason, the issue of defining ***agent responsible*** more precisely with respect to professional liability did not arise when this field name was defined by ISO 13567.

In the U.S., however, use of the imprecise ISO definition for ***agent responsible*** might possibly expose design professionals to professional liability for data over which they had no oversight.

"Discipline Designator" and the Building Life Cycle

The U.S. NCS definition for the field ***Discipline Designator*** was agreed-upon following considerable debate by the U.S. NCS Project Committee, and with the full understanding that it differed from the conceptual definition of the corresponding ISO 13567 field ***Agent Responsible.*** In addition to the liability issues cited above, it was the consensus of the Project Committee that the ability to identify the data by subject matter ***throughout the life-cycle of a building facility*** was ultimately more important than the identity of the person or persons who originally created the data.

"Discipline Designator" and ISO 13567 Conformance

The difference in the conceptual definitions of ***Discipline Designator*** and ***Agent Responsible*** would seem to be an insurmountable obstacle to creating data in conformance with both the U.S. NCS and ISO 13567. This is not necessarily true. In most cases, the content of the fields ***Discipline Designator*** and ***Agent Responsible*** are one and the same, regardless of the definition. For example, if the subject matter

U.S. NCS Field Code Restrictions
(for conceptual conformance to ISO 13567)

The field code "ANNO" may NOT be used, because "annotation" is not a major building "element:"

A I - A N N O - T E X T - N
Major Group (Element)

The Annotation Minor Group field codes MAY be used, provided the field is reserved for these codes. Two allowable formats are shown:

A I - W A L L - T E X T - N
(Presentation) **Annotation**

A I - W A L L - F U L L - T E X T - N
(Presentation) **Annotation**

Figure 1 - Annotation Field Codes

Two allowable formats for Drawing View field codes:

A I - W A L L - E L E V - N
(Projection) **Drawing View**

A I - W A L L - F U L L - E L E V - N
(Projection) **Drawing View**

Figure 2 - Drawing View Field Codes

Two allowable formats for Status field codes.

A - W A L L - E L E V - T E X T - N
(Status) **Status**

A - W A L L - E L E V - T E X T - 2
(Phase) **Status**

Figure 3 - "Status" field codes

contained in the drawing file or layer is "mechanical systems," the mechanical engineer is likely to be the design professional under whose supervision the data was created.

Users who wish to produce data that is in conformance with the U.S. NCS and in conceptual conformance with ISO 13567 can do so by establishing a rule for their projects that data will be created only under the supervision of the design professional ***typically*** responsible for the subject matter. In this way, the ***conceptual definition*** for the data field can be BOTH ***"category of subject matter contained in the file or layer designated"*** AND ***"construction specialist responsible for the data."*** Implementation of this rule can help reduce the risk of professional liability by minimizing the likelihood of conflicts that might arise when different elements of the same building system are designed by more than one design professional.

Field Code Restrictions

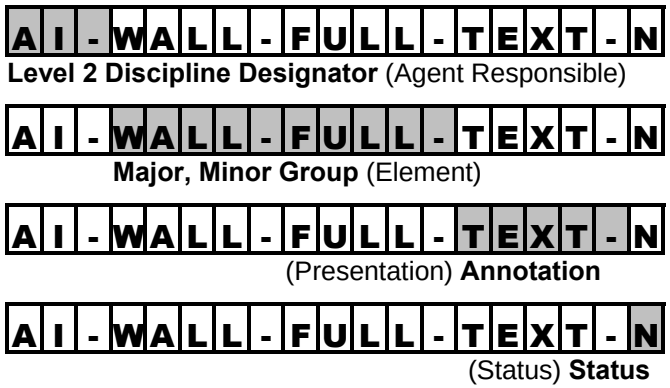
A key principal of the ISO 13567 layer format is that each data field can be used to define only one category of data. Duplicate use of a field is prohibited. This ensures that data sets in ***conceptual conformance*** can be readily mapped to the ISO default layer format. Adherence to this provision requires U.S. NCS users to restrict their use of certain U.S. NCS field codes.

The U.S. NCS allows "ANNO" to be used as a Major Group, which allows all annotation to be placed in a defined group of layers. This results in a duplicate use of the Major Group field. The corresponding field in ISO, "Element," is reserved for major building elements. Therefore, the field code "ANNO" cannot be used at all (Figure 1). However, the prescribed annotation Minor Group field codes (TEXT, DIMS, etc.) can be used to modify any preceding Major/Minor Group, provided that the field in which they appear is reserved for annotation field codes.

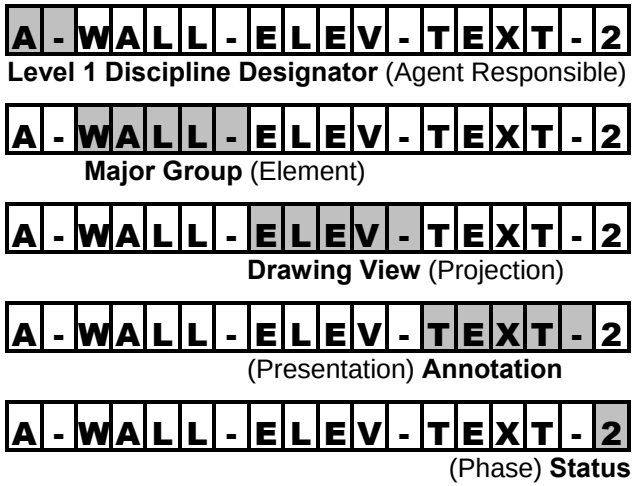
If Drawing View field codes are used (Figure 2), the Minor Group field in which they appear must likewise exclude any other field codes.

If the Status field is used (Figure 3), the allowable field codes must be restricted to the specified letters (to correspond to the ISO field "Status") or to the specified numbers (to correspond to the ISO field "Phase") but not both.

Example U.S. NCS Layer Formats
(in conceptual conformance to ISO 13567)



Example 1



Example 2

U.S. NCS and ISO 13567 Implementation Options

The examples shown here illustrate two possible U.S. NCS layer formats that are in conceptual conformance with ISO 13567. Note that ISO 13567 does not use dashes as field delimiters. For purposes of ISO conformance, the dashes in the NCS layer format are defined as an additional character of the field preceding it.

Example 1 shows the optional two-character U.S. NCS Level 2 Discipline Designator; together with the dash that follows it, this field is defined as three (3) characters in length. A Major and one Minor Group are defined as corresponding to the ISO field [Building] "Element." The field is ten (10) characters in length. The second Minor Group is reserved for Annotation field codes, corresponds to the ISO field "Presentation," and is five (5) characters in length. The final field is Status, which corresponds to the ISO field of the same name, and is one (1) character in length.

Example 2 shows the U.S. NCS required Level 1 Discipline Designator only, and is defined as two (2) characters in length. The Major Group is defined as corresponding to the ISO field [Building] "Element," and is five (5) characters in length. The first Minor Group is reserved for Drawing View field codes, corresponds to the ISO field "Projection," and is five (5) characters in length. The second Minor Group is reserved for Annotation field codes, corresponds to the ISO field "Presentation," and is five (5) characters in length. The final field is reserved for Phase field codes, corresponds to the ISO field "Phase," and is one (1) character in length.

Note that for ISO conformance, the total length of the layer name must be the same for all layers on a given project. Layer names that do not require a certain field, such as "Annotation," must use placeholders (usually dashes or underscores) to maintain the length of the layer name and the relative position of the fields.

While the ISO 13567 rules for conceptual conformance allow the fields to appear in any order, ***this is not permitted by the U.S. NCS.*** The fields must be in the order of Discipline Designator, Major Group, Minor Group 1, Minor Group 2, Status. If a Minor Group field is used to modify the "building element" shown in the Major Group, that Minor Group must appear immediately following the Major Group.

Required Use of Placeholders
(for conceptual conformance to ISO 13567)

Layers in which reserved field codes are not used must have placeholders in the reserved fields.

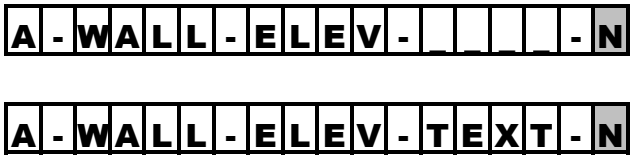


Figure 4

U.S. NCS and ISO 13567 Implementation Guidelines

The information in this Commentary is summarized in the following steps for preparing documents with layer names in conformance with the U.S. NCS and in conceptual conformance with ISO 13567. While these guidelines are intended to aid U.S. NCS users, adherence to these rules in some form would be required by ISO 13567 whether or not the U.S. NCS layer format were used.

1. Require that all documents be prepared only under the supervision of the design professional typically responsible for the subject matter contained in the documents.
2. Do not use the field code "ANNO" in any layer name.
3. Determine whether the Discipline Designator will be one character (Level 1) or two characters (Level 2) in length.
4. Determine whether the "building element" will consist of a Major Group only, or of a Major Group and one Minor Group.
5. Determine whether a Minor Group is to be reserved for Drawing View field codes, and fix its position in the sequence of fields.
6. Determine whether a Minor Group is to be reserved for Annotation field codes, and fix its position in the sequence of fields.
7. Note that only two Minor Groups are available. Of the three options described in 4, 5, and 6 above, only two can be exercised on a given project.
8. Determine whether to include the Status field in the layer name and whether to use the specified letters to denote "Status," or the specified numbers to denote "Phase."
9. For layer names in which one or more fields are not required, use placeholders (dashes or underscores) to maintain consistent layer name length and the relative positions of fields (Figure 4).
10. Prepare a layer naming system definition file in accordance with ISO 13567-3 that defines the selected layer format for the project.