UDS OVERVIEW
Uniform Drawing System

The Construction Specifications Institute
601 Madison Street
Alexandria, VA

1994

CSI began development of UDS
Organization and presentation of drawing sets
Organization and presentation of Sheets, schedules, and diagrams
Standards for drafting conventions and color
Standard systems for keynotes, attributes, and CAD layering
UDS OVERVIEW

1995

UDS was accepted by:

AIA
Tri-Service CADD/GIS Technology Center
US Coast Guard
National Institute of Building Sciences

UDS provides uniformity for graphical information in drawings – Similar to MasterFormat™, Section Format™, and Page Format™ in specifications
UDS OVERVIEW

Drawing Users:

Owner
Design Professionals
Contractor
Owner’s Rep
Consultant
Subcontractor
Material supplier
Product Manufacturer
Building Official
Government Official
Accountant
Attorney
Lender
End user
Figure IN.4 Drawing users change throughout facility and project cycles.
UDS OVERVIEW

**Modules**

**Drawing Set Organization**

For use by traditional architectural and engineering disciplines

Establishes standard designators for disciplines and presentation order of disciplines in document set.

Establishes consistency throughout set

Accommodates both simple and complex projects

**Drawing Sheet Organization**

Standards for sheet sizes – both metric and inch-pound systems

Provides a grid system of blocks for organizing information

Format for title block
UDS OVERVIEW

Modules, Con’t

Schedules

  Consistent format, heading terminology, and content organization

  Groups and identifies schedule types – based on MasterFormat™ Numbers

Layering

  AIA, CAD layer Standards – with updates from CSI

Drafting Conventions

  Symbols, Material indications, line types, dimensions, drawing scale, diagrams, notation, terminology and abbreviations
UDS OVERVIEW

Modules, Con’t

CAD Standards
  Reference files
  Presentation and model views
  Pen assignments
  Plotting guidelines
  Data exchange

Color
  Standards for construction drawings
UDS OVERVIEW

Drawings

- Plans
- Elevations
- Sections
- Large Scale Views
- Details
- Schedules
- Diagrams
- 3D Representations
Drawing Set Organization

Set Content and Order

Sheet Identification
- Discipline Designators
- Modifiers
- Sheet numbering sequence

File Naming
- Project Flies – specific drawings and sheets
- Library Files
  - Generic and template files
Drawing Set Organization

Set Content and Order

Types of Construction Drawings

Bidding Drawings
  Issued before signing of contract

Contract Drawings
  Describe the work of the project

Resource Drawings
  Shows existing conditions
  New construction not related to Contract
Drawing Set Organization

Drawing Subsets/Sheet Identification

- G - GENERAL
- H - HAZARDOUS MATERIALS
- C - CIVIL
- L - LANDSCAPE
- S - STRUCTURAL
- A - ARCHITECTURAL
- I - INTERIORS
- E - EQUIPMENT
- F - FIRE PROTECTION
- P - PLUMBING
- M - MECHANICAL
- E - ELECTRICAL
- T - TELECOMMUNICATIONS
- R - RESOURCE

Cover Sheet
Index Sheet
HAZ, MATL.
Civil
Landscape
Structural
Architectural
Interiors
Equipment
Fire Prot.
Plumbing
Mechanical
Electrical
Telecomm.
Resource
Drawing Set Organization

Discipline Designator

1st Component - character(s) (1or2)
  – Alphabetical (I)

Levels One and Two

Ex:
Level 1 – T (telecommunications)
Level 2 – TA (Telecommunications, audio visual)

If second level is not required then use a dash (-)

AANN

Discipline Designator

AANN

Sheet Type Designator

AANN

Sheet Sequence Number

A = alphabetical character
N = numerical character
Drawing Set Organization

Discipline Designator

Level 1

G - General
  Cover Sheet
  Index Sheet
H - Hazardous Materials
C - Civil
L - Landscape
S - Structural
A – Architectural

Level 2:
AS – Architectural site
AD – Architectural Demolition
AE – Architectural Elements
AI – Architectural Interiors
AF – Architectural Finishes
AG – Architectural Graphics
Drawing Set Organization

Discipline Designator’s Con’t

Level 1
I – Interiors

Level 2:
ID – Interior Demolition
IN – Interior Design
IF – Interior Furnishings
IG – Interior Graphics

AANN
Discipline Designator

AANN
Sheet Type Designator

AANN
Sheet Sequence Number

A = alphabetical character
N = numerical character
Drawing Set Organization

Discipline Designators, Con’t

Level 1

Q - Equipment
F - Fire Protection
P - Plumbing
M - Mechanical
E - Electrical
T - Telecommunications
R – Resource
X – Other Disciplines
Z – Contractor/Shop Drawings
Drawing Set Organization

Sheet Type Designator – 2nd Component – Numerical (I-1)

0 – General
1 – Plans
2 – Elevations
3 – Sections
4 – Large Scale Views
5 – Details
6 – Schedules and Diagrams
7 – User Defined
8 – User Defined
9 – 3D Representations

Remember, sheet type designators do not preclude combining different types of drawings

**Ex:** Place schedules on a sheet when the information is closely associated
Drawing Set Organization

Sheet Sequence Designator – 3rd Component – a two-character number.

Ex: 01, 02, 03 (I-101)
Drawing Set Organization

Supplemental Drawings

If revisions are extensive (revision cloud not feasible) the a new sheet must be altered. A user defined suffix would the be used

R – Revised – smaller scope
X – Complete changes

Ex: (I-101R1)

\[
\begin{align*}
A-102R1 & \text{ for a partially revised floor plan.} \\
A-102X1 & \text{ for a totally revised floor plan.} \\
A-102A1 & \text{ for Phase 1 of a sequenced construction floor plan.}
\end{align*}
\]
File Naming

Consistent file naming and folder structures are necessary for management of information that is reusable from project to project.

Categories
- Library Files
- Project Files
Drawing Set Organization

Library Files

The library file would be copied to the drawing and assigned a file name appropriate to the project:

- Details
- Schedules
- Text
- Database
- Symbols
- Borders
- Titleblock
- Etc.
Drawing Set Organization

Project Files

Specific to a project

Types:

Model Files

Electronic representation of a building
Ex: (I-FP0000.dwg) – 0, user defined modifier

FP – Floor Plan
SP – Site Plan
DP – Demolition Plan
QP – Equipment Plan
XP – Existing Plan
EL – Elevation
SC – Section
DT – Detail
SH – Schedules
3D –
DG - Diagrams
Drawing Set Organization

Project Files

Types:

**Detail Files**

A specific type of model file.

Detail indicator represents its position on the drawing detail sheet

Ex: (I-501-B3.dwg)

Sheet position system will be discussed later

**Sheet Files**

Name should be consistent with the sheet identification category of the physical drawing.

**Schedule Files**

Often produced by software other than CAD

If CAD software is used the schedule should be created full size

Designate similar to the Detail file – indicating the position on the drawing sheet

Ex: (I-601-D1)
Drawing Set Organization

Project Files

Types:

Text Files

Usable from one project to another
General Notes
Discipline specific Notes
Symbol Legends
This is a library file
Once imbedded in a drawing a new file name is not needed

Database Files

Examples

Any schedule
Inventory listings
Master Keynotes
So, this depends on the linkage of the file.
Drawing Set Organization

File Management

Project Folders

Simplifies back and archival tasks

Examples

1 PREDES – Programming and Pre-design phase
2 SCHEM – Schematic Design and Concept
3 DESDEV – Design Development
4 CONDOC – Construction Document
5 CONTRAC – Contract Submittal
6 RECORD – Record Document Phase
7 FACMAN – Facility Management Phase
Benefits of Sheet Organization

Provides a **consistent sheet format**
Provides **location system** for drawings on sheet
**Enhanced communication** among drawing preparers and users
Improved quality control – **less risk of error**
Easier **data management**
Coordinated images **among disciplines**
Drawing Sheet Organization

Sheet Sizes

The most important determinant is selecting a size that will allow placing the floor plan on a single sheet.

When plans are divided, a key plan on each plan sheet is necessary to indicate sector.

Architectural

A – 9x12  Project book, supplemental drawings, Mock-up sheets
B – 12x18  Reduced drawings from “D” size, Mock-up sheets
C – 18x24  Small Projects accommodating preferred plan scale
D – 24x36  Projects accommodating preferred scale, Government projects
E – 36x48  Accommodating preferred scale, Mapping and GIS
F – 30x42  Accommodating preferred scale
## SHEET SIZES

<table>
<thead>
<tr>
<th>ANSI</th>
<th>ISO</th>
<th>Architectural</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mark</strong></td>
<td><strong>Size mm (inches)</strong></td>
<td><strong>Mark</strong></td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>216 x 279 (8.5 x 11)</td>
<td><strong>A4</strong></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>279 x 432 (11 x 17)</td>
<td><strong>A3</strong></td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>432 x 559 (17 x 22)</td>
<td><strong>A2</strong></td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>559 x 864 (22 x 34)</td>
<td><strong>A1</strong></td>
</tr>
<tr>
<td><strong>E</strong></td>
<td>864 x 1118 (34 x 44)</td>
<td><strong>A0</strong></td>
</tr>
<tr>
<td><strong>F</strong></td>
<td>762 x 1067 (30 x 42)</td>
<td></td>
</tr>
</tbody>
</table>

ANSI, ISO, and all but F of Architectural size sheets have a consistent sheet module within each system. The sheet size for each type of sheet is an equal module to the next larger sheet size.
Drawing Sheet Organization

Sheet Layout

Drawing Area
Title Block Area

Minimum Sheet Margins:

Top and bottom 3/4”
Left Margin 1-1/2”
Right Margin 3/4”
Drawing Sheet Organization

Drawing Area

Divided into modules

Module size (approx) – 5-3/4” high x 6” wide

Drawing Area Coordinate System

Columns – left to right – 1, 2, 3, 4, ….

Rows – Bottom to top – A, B, C, D, ….

The drawing is identified based on the lower left hand location

Preferred that coordinates are placed on all four sides and outside drawing area – depends on plotting hardware

Minimum – place coordinates on right hand side and top or bottom

Note Block – (More on this later)

Keynotes, general notes, and key plans

most Right-hand column

Key plan is located in the lowest module of the right column
Figure 02.13  24" by 36" Mock-up Sheet.
Drawing Sheet Organization

Title Block Area

Designer Identification Block
Project Identification Block
Issue Block
Management Block
Sheet Title Block
Sheet Identification Block
Drawing Sheet Organization

Title Block Area

Sheet Identification Block

Optional data would be the sheet count and the total number of sheets (set or discipline)
Drawing Sheet Organization

Title Block Area

Sheet Title Block

Type of information on sheet
Sheet may contain one or more types of drawings – notation
usually refers to major drawing
Drawing Sheet Organization

Title Block Area

Management Block
  Drawing project number
  Owner’s contract Number
  File Number
  Design Phase Number
  Drawn by:
  Checked by:
  Copyright

| PROJECT NO:  | 97123.00 |
| CAD DWG FILE: | MONEY.DWG |
| DRAWN BY:    | CAD SMITH |
| CHK’D BY:    | CAD SMITH |
| COPYRIGHT    | DESIGN DREAMERS 1997 |
Drawing Sheet Organization

Title Block Area

Issue Block
- Phase issue dates
- Addendum issue dates
- Clarification dates
- Revision issue dates

<table>
<thead>
<tr>
<th>MARK</th>
<th>DATE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2/25/97</td>
<td>DESIGN DEVELOPMENT</td>
</tr>
<tr>
<td></td>
<td>4/09/97</td>
<td>REL. OF PRICING PACKAGE</td>
</tr>
<tr>
<td></td>
<td>7/05/97</td>
<td>REL. BIDDING</td>
</tr>
<tr>
<td></td>
<td>7/26/97</td>
<td>ADDENDUM #1</td>
</tr>
<tr>
<td></td>
<td>7/27/97</td>
<td>CLARIFICATION #2</td>
</tr>
</tbody>
</table>
Drawing Sheet Organization

Title Block Area

Project Identification Block
- Project name and address
- Building of facility name
- Construction phase sequence
- Project Logo
- Other client information – address, phone, etc.
Drawing Sheet Organization

Title Block Area

Designer Identification Block
  Name
  Address
  Contact info
  Logo and professional seal
  Consultants
Drawing Sheet Organization

Title Block Area

Formats

Horizontal – Most commonly used – preferred. Allows easier reading

Vertical – Sheet identification block is always horizontal
Drawing Sheet Organization

Cover Sheet

Unique
Project
Owner
Photograph
Rendering of project
Logo

If it contains project data then should have a sheet identifier –
G-001 - [Designator (G), Sheet type (0), Sequence number (01)]

Table of contents
Listing of Abbreviations
General notes
Building code survey
Key plan
Etc.
Drawing Sheet Organization

Supplemental Drawing Sheets

9x12 or 12x18

Minimum margins – ½” except for bound edge – ¾”
Notations

Notes are part of the contract document
Have important legal consequences
Terms used in the notes must be consistent with the terms used in the specifications

Early Twentieth Century

Drawings were primarily graphic
Notes were used sparingly affording the opportunity to provide additional information in the field (architect and engineer)
Keying became a standard method for improving drawing clarity through reduction is the amount of text
Types of Notes – Five

General Notes
General Discipline Notes
General Sheet Notes
Reference Keynotes
Sheet Keynotes
Notations

General Notes

Located in the General Drawings Sheet Types (G)
Apply to the entire work
Not necessary or desirable to repeat these notes on subsequent sheets
Notations

General Notes

Figure 07.1 Typical notes block.
Notations

General Discipline Notes

Located on the first or “O” series sheets within a discipline

Should not be repeated on other sheets of that discipline

Instruction concerning discipline specific drafting conventions

Coordinate with other project information

- General Architectural Notes
- General Structural Notes
- General Mechanical Notes
- General Interior Design Notes
Notations

General Sheet Notes

Sheet specific information or instructions

Sequential order

They Follow:

General Notes
General Discipline Notes

They Precede

Reference Keynotes
Sheet Keynotes

Ex:

“Dimensions on this sheet drawn to partition walls are to face of stud unless noted otherwise”
Figure 07.2 Three types of notes—general notes, general sheet notes, and general [discipline] notes.
Notations

Reference Keynotes
Reference graphic representations to specific sections in the specifications

Sheet Keynotes
Specific notes related to graphic information on the sheet

Drawn with a hexagonal symbol

The bottom of the symbol should be drawn parallel to the bottom of the sheet

Numerals are sequential

They Follow sheet reference keynotes if used
Notations

Note Block Hierarchy

Position notes within the note Block – as developed for the sheet

Remember to leave space for sheet key plan if using

General Notes are first in the note block

If more than on column is needed, shift first column to the left and add another column
NOTE BLOCK WITHOUT GENERAL NOTES

REFERENCE KEYNOTES

| XXX XX XXXXXXXX XX |
| XXX XX XXXXXXXX XXXXX |
| XXX XX XXXXXXXX XXXXX |
| XXX XX XXXXXXXX XXXXX |
| XXX XX XXXXXXXX XXXXX |
| XXX XX XXXXXXXX XXXXX |
| XXX XX XXXXXXXX XXXXX |
| XXX XX XXXXXXXX XXXXX |
| XXX XX XXXXXXXX XXXXX |
| XXX XX XXXXXXXX XXXXX |

SHEET KEYNOTES

1. XXX XX XXXXXXXX XXXX
2. XXXXX XX XXXXXXXX XXX|
3. XXXXX XX XXXXXXXX XXX |
4. XXXXX XX XXXXXXXX XXX |
5. XXXXX XX XXXXXXXX XXX |
6. XXXXX XX XXXXXXXX XXX |
7. XXXXX XX XXXXXXXX XXX |

NOTE BLOCK WITHOUT REFERENCE KEYNOTES

GENERAL SHEET NOTES

| 1. XXX XX XXXXXXXX XXXX |
| 2. XXXXX XX XXXXXXXX XXX |
| 3. XXXXX XX XXXXXXXX XXX |
| 4. XXXXX XX XXXXXXXX XXX |
| 5. XXXXX XX XXXXXXXX XXX |
| 6. XXXXX XX XXXXXXXX XXX |
| 7. XXXXX XX XXXXXXXX XXX |
| 8. XXXXX XX XXXXXXXX XXX |
| 9. XXXXX XX XXXXXXXX XXX |
| 10. XXXXX XX XXXXXXXX XXX |

NOTE BLOCK WITHOUT GENERAL NOTES AND REFERENCE KEYNOTES

SHEET KEYNOTES

1. XXX XX XXXXXXXX XXXX
2. XXXXX XX XXXXXXXX XXX |
3. XXXXX XX XXXXXXXX XXX |
4. XXXXX XX XXXXXXXX XXX |
5. XXXXX XX XXXXXXXX XXX |
6. XXXXX XX XXXXXXXX XXX |
7. XXXXX XX XXXXXXXX XXX |
8. XXXXX XX XXXXXXXX XXX |
9. XXXXX XX XXXXXXXX XXX |
10. XXXXX XX XXXXXXXX XXX |
11. XXXXX XX XXXXXXXX XXX |
12. XXXXX XX XXXXXXXX XXX |
13. XXXXX XX XXXXXXXX XXX |
14. XXXXX XX XXXXXXXX XXX |
15. XXXXX XX XXXXXXXX XXX |
16. XXXXX XX XXXXXXXX XXX |
17. XXXXX XX XXXXXXXX XXX |

DRAWING AREA BENEATH THE NOTE BLOCK MAY BE USED FOR DRAWING BLOCKS.
Notations

Users’ guide

Generic terminology should be based on well known, commonly available sources – CSI Terms and abbreviations Module

Drawing notes should match the terminology in the specifications

It is not a good practice to repeat proprietary names, model numbers, and other detailed information within the drawing notes

Fonts should be capitalized, proportional, san-serif, and non stylized. Do not use italics, underlining, bold

Try to avoid abbreviations. If abbreviations are necessary, they should be coordinated throughout drawing

If reference to a specification, then be specific
COLUMN GRID AND DIMENSION AREA—SEE DRAFTING CONVENTIONS MODULE

ALIGN NOTES

GRAPHIC AND NOTATION AREA

SECTION

C3
TRADITIONAL DRAWING

PREMOLDED NEOPRENE MASONRY CONTROL JOINT

ALIGN FACE OF PIER WITH FACE OF EXISTING WALL BEYOND

FACE OF EXISTING BUILDING

8" X 8" X 16" MEDIUM WEIGHT SPLIT FACE CMU IN RUNNING BOND "TORNADO RED" BY ACME BLOCK COMPANY OR EQUAL

#4 BARS @ 16" ON CENTER

UDS DRAWING

SECTION

04200.A
04200.B
08300.A

C3 SECTION X.X