AUSTIN BERGSTROM INTERNATIONAL AIRPORT (AUS)

CADD STANDARDS- QUICK REFERENCE GUIDE- Rev. 20

This AUS CADD Standards Quick Reference Guide contains the basic AUS CADD standards required information to produce CADD drawings for use in terminal and airport projects. All other AUS CADD standards requirements information can be found in the official AUS CADD standards PDF book also found in the architectural and civil consultant folders.

The initial source for the information contained within this document is the national cadd standards - Version 6 (NCS) can be found on the internet at the following location: https://www.nationalcadstandard.org/ncs6/, A/E/C cadd standards release 6.0, and FAA Advisory Circular 150/5300-18B. In addition to the NCS, A/E/C cadd standards release 6.0, and FAA Advisory Circular 150/5300-18B a supplemental documents containing additional cadd standards information has been developed to set guidelines that will provide additional support for AutoCAD. The AUS CAD standards are consider a living document and as such are subject to revisions and updates on a continuous basis. This document addresses all disciplines in AutoCAD 2018 with respect to general drafting standards as well as electronic file delivery requirements. The AUS cadd standards manual can be found on the AUS airport construction and design resources website at:
http://www.austintexas.gov/page/construction-and-design-resources-airport

Consultant firms are required to contact the AUS Planning and Development project manager (PM) or project coordinator (PC) to receive the latest AUS cadd architectural or civil consultant folder and quick reference guide with all cadd related content emailed to the contact person at a consultant firm.

TABLE OF CONTENTS

TABLE OF CONTENTS-cont'd

1. INTRODUCTION

INTRODUCTION
This AUS CADD Standards Quick Reference Guide is a quick introduction to the AUS CADD standards drawing requirements for all architectural and civil drawings. The official AUS CADD Standards PDF book is located in the architectural and civil consultant folder with more detailed information required for cadd drawings.

COMPLIANCE
Compliance with these standards is mandatory and subject to the individual consultant contracts. The consultant/contractor shall use these standards for all design work during the course of the project, file transfers between AUS & other consultants as well as for all files transmitted as record drawings upon completion of the project. Any modifications, deletions or variances to these standards will not be allow without the permission of the AUS International Airport CADD department.

2. TYPES OF DRAWING FILES

Defined in this guide are: Master Map Files (base files) and Model files (reference files). The definitions of each are listed below.

☐ **MASTER MAP FILES (BASE FILES)** Master map files contain information regarding the current existing conditions, however users should field verify any and all information contained within these files prior to any design work. The AUS cadd department will provide all master map files. Any discrepancies should be brought to the attention of the AUS cadd department. Note that all users are urge to inquire about current survey and construction activities prior to commencing design of any project within the ABIA airport.

☐ **MODEL FILES- AUS Architectural CADD STANDARDS** drawing templates need to be at the scale of 1/16" = 1' – 0". Terminal CADD floor plan drawings are set at 1/16" = 1' – 0" scale. All other buildings must use a architectural unit for the drawing template.

☐ **MODEL FILES- AUS Civil CADD STANDARDS** drawing templates must be scaled at 1:1.

☐ **SHEET FILES (MASTER FILES)** A Sheet File represents the final plotted cadd drawing file. Sheet files contain the notes, annotations, dimensions, call-outs, titles and other text required to convey the design to the contractor. Model files, including the border files, and Master files are referenced to the sheet files in order to create the final plotted sheets.

3. CADD PROCEDURES REQUIREMENTS

(IF AT ANY TIME QUESTIONS ARE NEEDED TO BE ANSWERED WHILE WORKING WITH THE AUS CAD STANDARDS. MEETINGS CAN BE SCHEDULED and HELD THROUGH MICROSOFT TEAMS OR GOTO MEETINGS TO DISCUSS ANY OF CADD PROCEDURES REQUIREMENTS.)

CONTENTS (cont'd)

☐ **Master Map Files (Base Files) –** All design files representing any changes to the AUS cadd master maps as a result of the project in question will be contained in separate cadd files along with the referenced base files and will comply with the cadd master maps standards.

☐ **Specification Files –** All project specifications.

☐ **CAD, TIFF and PDF Files –** Full size (22x34-paper size and CAD paper space) for all projects and combine/bind project set of all TIFF's and PDF's. TIFF's are only required for the record set.

☐ **Paper Bond Set –**One-half size (11x17-paper size) for all projects.

PROTECTION OF SENSITIVE SECURITY INFORMATION (SSI)
Any documentation submitted to the Aviation Department is deemed SSI must comply with the provisions described in 49 CFR 15 and 49 CFR 1520.13. Transmittals must also indicate the documentation/electronic files classified as SSI.

FORMAT
All files included in any submittal including the permitted submittal to be saved to AutoCad 2013 format in order to allow them to open. Drawings created with Revit®.rvt or other cadd software need to be converted to the latest version of Autodesk® AutoCAD® .dwg format. Attention should be taking to ensure drawing information, entities or data is not lost during the conversion or translation process.

MEDIA
All electronic submittals & file transfers with a transmittal letter are receive by a downloadable link supplied by a consultant and the link could be a FTP site, Drop Box or Own Cloud. A paper bond set with a paper transmittal letter is required and must consist of one ANSI B (11x17) paper size.

☐ **MODEL FILES- Architecture** drawing templates need to be at the scale of 1/16" = 1' – 0" for all floor plans. Terminal CADD floor plan drawings are set at 1/16" = 1' – 0" scale. All other buildings must use a architectural unit for the drawing template.

☐ **MODEL FILES- Civil** drawing templates must be scaled at 1:1.

☐ **External Reference Files –** Required for all projects.
   A. All drawings need to be separate Xref's. Architectural- for example: Floor Plan, MEP's, Grid Lines and etc. Civil- for example: Site Plan, Utilities and etc.
   B. All Xref's need to be inserted into 1 template in the model tab along with the title block shown in the paper space. For Architectural- new buildings need to have floor plan(s) in a separate Xref. Terminal improvements- must have the floor plan CAD drawing(s) inserted into the new template from AUS CAD Standards Architectural Terminal Floor Plan folder. Civil- must insert the airport base map CAD drawing from AUS CAD Standards Civil consultant folder into the new template.

3. <u>CADD PROCEDURES REQUIREMENTS (cont'd)</u>

☐ All projects must have a external reference file CAD drawing of the utility site plan, architectural floor plan, mechanical, electrical, plumbing, structural and a civil site plan separate from the other utility, architectural floor plan, mechanical, electrical, plumbing, structural and civil site plan CAD drawings. **(All drawings must fit into the airport base map CAD drawing included in the Civil AUS CAD Standards consultant folder and the Architectural AUS CAD Standards consultant folder for terminal related projects).**
1. Architectural floor plan- doors, walls, columns and windows.
2. Mechanical, Electrical and Plumbing- only scope of work shown.
3. Structural- only scope of work shown
4. Utilities (Civil)- lines and text only
5. Site Plan (Civil)- area layout of project

☐ All Revit drawings must be converted to 2D cadd drawings and must be re-sized after the conversion to fit correctly in the project layout plan (architectural) or site plan (civil) including all other areas in the scope of the project.

☐ All drawings must be a separate drawing. No multiple drawings (2 or more cadd drawings saved in one drawing).

☐ On any plan CAD drawing be it floor plan, lighting plan or etc. do include the any general information, notes, legends and abbreviations associated to that one plan on one drawing and number the sheet using the SHEET DESIGNATOR as number 1. All other general information, notes, legends and abbreviations need to be on a separate CAD drawing.

☐ CAD drawing details, schedules and diagrams still need to be on a separate drawing from the plan CAD drawing.

☐ Remove everything from model tab not shown in the paper space cadd viewport window located in the title block.

☐ Remove all unnecessary features, block references and text outside the border area and no consultant plot stamp on cadd drawings and bond set print outs.

☐ No multiple tabs on one drawing. For example: Tabs: Phase 1, Phase 2 and so on. all shown under one drawing. Each individual drawing need to have the standard three tabs: Model and Layout 1 (Can be labeled with a name) and layout 2 (empty or removed from drawing).

☐ Make sure all reference files are attached and etransmitted into the drawing.

☐ Include a folder labeled external reference file (Xref) for all external reference file (Xref) drawings and graphic logos to be stored in with every project.

☐ The title block and cover sheet cannot be converted to blocks and you must use the provided AUS title block and cover sheet. If title block is a block, the block must be exploded and block lines removed.

☐ The DETAIL TITLES always need to have either a scale size or the abbreviation: NTS shown. Not the words: AS NOTED or left blank with no scale size or text.

☐ Filters in the Layer Properties Manager box located in the ribbon area of AutoCad need to have all filters removed except for ALL, ALL NON-XREF LAYERS, ALL USED LAYERS and XREF.

3. <u>CADD PROCEDURES REQUIREMENTS (cont'd)</u>

☐ Purge/ Audit and –Purge all drawings.

☐ Delete all Xref's not associated with a cadd drawing.

☐ Remove consultant plot stamp, grid use over AUS title block and cover sheet, copy write text from cadd drawings.

☐ Make sure the SCALE text in the title block matches the scale size in the viewport cadd window.

☐ The title block key map location must have a hatch pattern at the correct terminal sector and for civil projects, a hatch pattern must be place inside a box inside the airport grid box where the project is located. All other new buildings, garages, renovations of existing buildings with a different key map other than the terminal or airport map of a project must use a hatch pattern in the sector where work is performed.

☐ Move the word: SITE and the associated leader arrow to point to the project location in the SITE LOCATION MAP located in the cover sheet CAD drawing.

☐ All paper space tab cadd drawings being a title block, cover sheet and index sheet drawings must be full size 22x34 paper size for all projects.

☐ Use command: **LAYDEL** to remove all layer names in each drawing that are not used in the final design of the project cadd drawings.

☐ To generate TIFF and PDF's set lineweight at 0 in the CTB file and don't click the box next to the words PLOT OBJECT LINEWEIGHT.

☐ Consultant is required to incorporate contractor's red lines in As-Built into the Record Drawing set.

☐ *"**RECORD DRAWING**"* is to be notated in the revision block or stamp prominently on each page.

☐ Electronic PDF and TIFF including the paper bond set must match the cadd drawing files. The consultant color base table line weight must be 0 to be able to read PDF and TIFF along with paper bond set. Use DWG to PDF print command to make PDF copy.

☐ LAYER PROPERTIES MANAGER box - Filters needed are: Used Layers and Xref's. All other filters need to be deleted.

☐ All CAD drawings should only have associated single Xref's (External Reference Files) with no nested Xref's inside of the single Xref.

☐ External Reference File (Xref) CAD drawings cannot have a letter(s) made up and labeled as such. Xref CAD drawings naming MUST follow National CAD Standards and AUS CAD Standards requirements. See page 23 of this cadd standards PDF for correct naming of a external reference file (Xref).

3. <u>CADD PROCEDURES REQUIREMENTS (cont'd)</u>

☐ The DRAWING DESCRIPTION wording in the DRAWING DESCRIPTION box located in the title block MUST match the number "1" DETAIL TITLE wording only.
(If 2 or more CAD viewport windows are shown in the title block viewport window almost all the wording from each DETAIL TITLE must be shown in the DRAWING DESCRIPTION box). For example: 1) LEVEL 1 FLOOR PLAN, 2) DETAIL, 3) SCHEDULE, so the wording would be in the DRAWING DESCRIPTION box: LEVEL 1 FLOOR PLAN, DETAIL and SCHEDULE.

☐ The SHEET NUMBERING of all CAD drawings must MATCH the first/number 1 DETAIL TITLE WORDING. For example: Detail title number 1 is FLOOR PLAN-CONCOURSE LEVEL. Detail title number 2 is ENLARGED SECTION. The correct sheet number will be: A-1-01. Not A-4-01 (coming from Detail Title #2) is completely wrong. The SHEET TYPE DESIGNATOR number always comes from DETAIL TITLE number 1 and no other DETAIL TITLE listed in the CAD viewport window of the title block.

☐ Make sure all graphic logo's/seals are copied and paste into the title block logo/seal boxes. Don't use a Xref for logo's and seals. Can make logo's and seals a block.

<u>DEFINITIONS:</u>

☐ EGRESS: refers to an entire exit system from a building: stairs, corridors, and evacuation routes outside. the building

☐ LIFE SAFETY: Any interior building element (Interior Stairs) designed to protect and evacuate the building population in emergencies.

☐ DETAIL TITLE: The first/number 1 Detail Title wording shows what word(s) goes into the DRAWING DESCRIPTION box located in the title block. If space is allow for other word(s) for example: DETAILS, SECTIONS, ELEVATIONS shown in the cadd viewport window of the title block then those words can be added.

4. <u>FILE NAME AND SHEET NUMBERING FORMAT</u>

FILE NAMING AND SHEET NUMBERING CONVENTIONS
The following guidelines are to be use for naming all cadd files associated with the AUSTIN-BERGSTROM INTERNATIONAL AIRPORT. File names are to be arrange by AUS Project No., Discipline Code, Drawing Type and Sheet Number. The following is an example of the naming and sheet numbering convention.

Example: L2065-C-0-01.dwg

ABIA Project No. (Provided by ABIA)

Discipline Code (See Pages 23-27)

Sheet Type Designator (See Page 19)

Sheet No. *

Status Field Codes (Optional-RCRD)

AutoCad Drawing Extension

L2065 - C - 0 – 01-RCRD.dwg

To be used in title block for sheet numbering of drawings

This portion of the CADD file name will not be use within the title block Sheet No.

<u>**NOTE:**</u> * The Sheet No. will reset to start at 01 as the drawing type changes.

SHEET TYPE DESIGNATORS

0	General (Symbols legend, notes, etc.)
1	Plans (Floor, Ceiling and etc., Site-Civil)
2	Elevations (Vertical and Horizontal views)
3	Sections (Sectional views, wall sections)
4	Large-Scale Views (plans, elevations, stair sections, or sections that are not details)
5	Details
6	Schedules and Diagrams
7	User Defined (for types that do not fall in other categories, including typical detail sheets)
8	User Defined (for types that do not fall in other categories)
9	3d Representations (isometrics, perspectives, photographs)

DISCIPLINE CODES

Level 2		Description of Suggested Name	Content
G	-	General	All or any portion of subjects included in Level 2
-	G	Cover Sheet	Cover sheet with or without sheet index (depends on how many sheet listings). Use GI for sheet index sheet if needed
-	GI	General Information	Sheet Index, general notes, symbols, codes, abbreviations, symbol legend, orientation maps, accessibility access
-	GC	General Contract	Phasing, schedules, contractor staging areas, fencing, haul routes, erosion control, temporary and special requirements
-	GR	General Resource	Photographs, soil borings
-	GE	General Egress	Egress Plan Only (Don't use for Life Safety Plan is different)
H	-	Hazardous Materials	All or any portion of subjects included in Level 2
-	HA	Asbestos	Asbestos abatement, identification or containment
-	HC	Chemicals	Phasing, schedules, contractor staging areas, fencing, haul routes, erosion control, temporary and special requirements
-	HL	Lead	Lead piping or paint removal
-	HP	PCB	PCB containment and removal
-	HR	Refrigerants	Ozone depleting refrigerants
V	-	Survey/Mapping	All or any portion of subjects included in Level 2
-	VA	Aerial	Aerial surveyed points and features
-	VF	Field	Field Surveyed points and features
-	VI	Digital	Digitized points and features
-	VU	Combined Utilities	
B	-	Geotechnical	All or any portion of subjects included in Level 2
-	BH	Bore Hole	Bore Hole
C	-	Civil	All or any portion of subjects included in Level 2
-	CD	Civil Demolition	Structure removal and site clearing
-	CS	Civil Site	Plats, dimension control
-	CG	Civil Grading	Excavation, grading, drainage, erosion control
-	CP	Civil Paving	Roads, driveways, parking lots
-	CI	Civil Improvements	Pavers, flagstone, exterior tile, furnishings, retaining walls, and water features
-	CT	Civil Transportation	Waterways, wharves, docks, trams, railways, people movers
-	CU	Civil Utilities	Water, sanitary sewer, storm sewer, power, communications, fiber optic, telephone, cable television, natural gas, jet fuel and steam systems
-	CUPH	Civil Utilities Phase	Utilities Phasing Plan
-	CSG	Civil Signage	Roadways, streets, parking lots
L	-	Landscape	All or any portion of subjects included in Level 2
-	LD	Landscape Demolition	Demolition, relocation, and salvage information
-	LG	Landscape Grading	Proposed contours and spot grades
-	LI	Landscape Irrigation	Mainlines, valves, controllers, pumps, etc.
-	LL	Landscape Lighting	Lighting
-	LP	Landscape Planting	Landscape Planting
-	LR	Landscape Relocation	Vegetation relocation information
-	LS	Landscape Site	All site hardscape and call-outs
S	-	Structural	All or any portion of subjects included in Level 2
-	SD	Structural Demolition	Protection and removal
-	SS	Structural Site	Site
-	SB	Structural Substructure	Foundations, piers, slabs, and retaining walls
-	SF	Structural Framing	Floors and roofs

DISCIPLINE CODES-cont'd

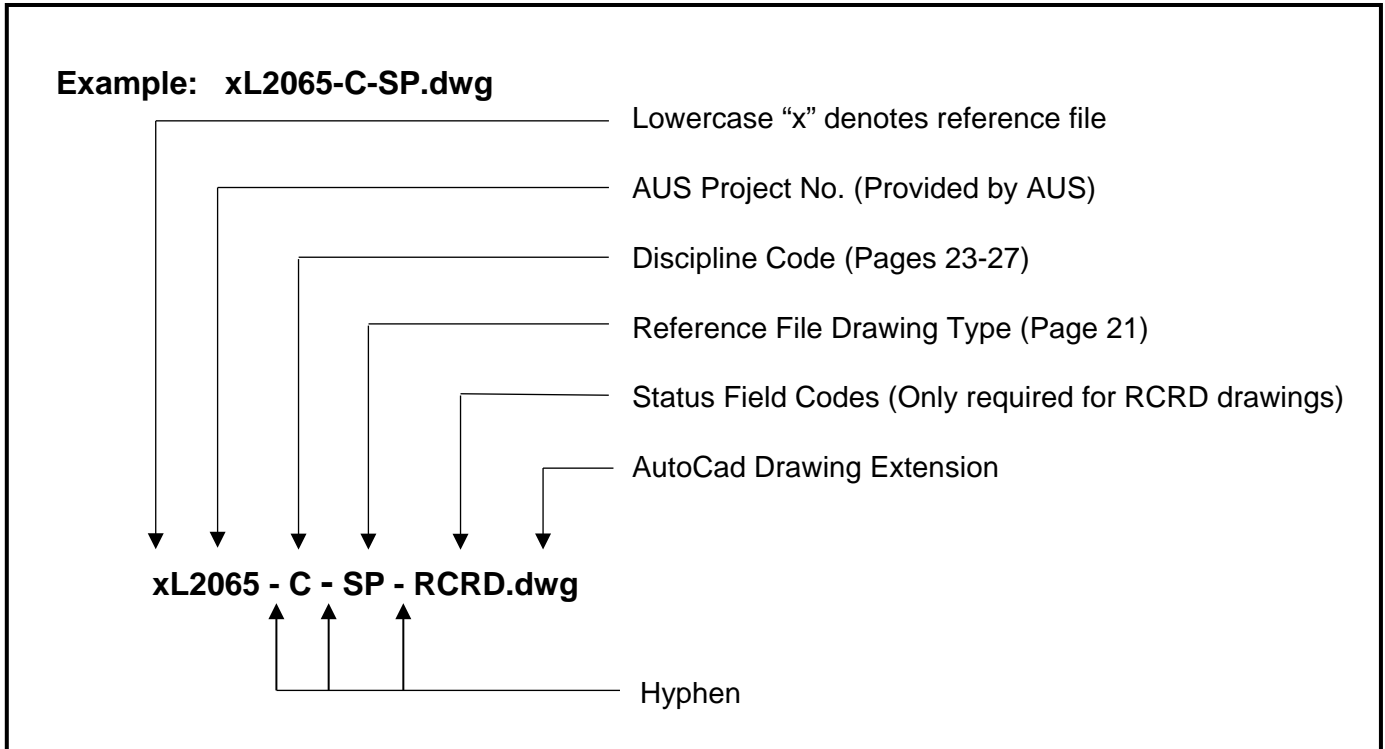| Level 1	Level 2	Description of Suggested Name	Content
A	-	Architectural	All or any portion of subjects included in Level 2
-	AD	Architectural Demolition	Structural part of building or removing exterior walls and etc
-	AE	Architectural Elements	Sections, Details, Elevations
-	AG	Architectural Graphics	Signage
-	AP	Architectural Partition	Construction Wall
-	RCP	Reflective Ceiling Panel	Reflective ceiling panel layout
I	-	Interiors	All or any portion of subjects included in Level 2
-	ID	Interior Demolition	Interior walls, ceilings, floors, doors, windows and etc.
-	IE	Interior Elements	Sections, Details, Elevations
-	IF	Interior Furnishings	Cabinet(s), Free-Standing Cabinet(s), Furniture
-	IG	Interior Graphics	Murals and visuals
-	IJ	User Define	Interior Signage
-	IN	Interior Design	Interior of a area
-	IM	Interior Millwork	Millwork
-	IS	Interior Specifications	Specifications-Finishes, Hardware
Q	-	Equipment	All or any portion of subjects included in Level 2
-	QF	Food Service Equipment	Kitchen, bar, service, storage, and processing
-	QM	Maintenance Equipment	Housekeeping, window washing, and vehicle servicing
-	QP	Parking Lot Equipment	Gates, ticket and card access
-	QR	Retail Equipment	Display, vending, and cash register
-	QS	Site Equipment	Bicycle racks, benches, playgrounds
-	QY	Security Equipment	Access control and monitoring, surveillance
F	-	Fire Protection	All or any portion of subjects included in Level 2
-	FA	Fire Detection and Alarm	Smoke alarms, heat alarms, Fire alarm notification appliance, Pull Stations
-	FZ	Fire Suppression	Fire extinguishing systems and equipment
-	FD	Fire Demolition	Demolition
P	-	Plumbing	All or any portion of subjects included in Level 2
-	PS	Plumbing Site	Extension and connections to Civil Utilities
-	PD	Plumbing Demolition	Protection, termination, and removal
-	PP	Plumbing Piping	Piping, valves and insulation
-	PQ	Plumbing Equipment	Pumps and tanks
-	PL	Plumbing	Domestic water, sanitary and storm drainage, fixtures
-	NG	Plumbing-Natural Gas	Gas Riser, Gas Lines
-	QFP	Food Service Plumbing	Connection and fixture types, positions, load requirements
BH	-	Baggage Handling	All or any portion of subjects included in Level 2

DISCIPLINE CODES-cont'd

Level 1	Level 2	Description of Suggested Name	Content
D	-	Process	All or any portion of subjects included in Level 2
-	D	Process Site	Extension and connections to Civil Utilities
-	D	Process Demolition	Protection, termination and removal
-	D	Process Liquids	Liquid process systems
-	D	Process Gases	Gaseous process systems
-	DR	Process Drains and Reclaims	Piping, valves, system components, equipment
-	DM	Parking Lot Equipment	Piping, valves, system components, equipment
-	DY	Retail Equipment	Piping, valves, system components, equipment
-	DO	Site Equipment	Piping, valves, system components, equipment
M	-	Mechanical	All or any portion of subjects included in Level 2
-	MS	Mechanical Site	Utility tunnels and piping between facilities
-	MDH	Mechanical Demolition HVAC/DUCTWORK	HVAC/Ductwork protection, termination and removal
-	MDP	Mechanical Demolition Piping	Piping protection, termination and removal
-	MH	Mechanical HVAC	Ductwork, air devices and equipment
-	MP	Mechanical Piping	Chilled and heating water, steam
-	MI	Mechanical Instrumentation	Instrumentation and control
E	-	Electrical	All or any portion of subjects included in Level 2
-	EG	Electrical Grounding	Grounding
-	ES	Electrical Site	Utility tunnels and site lighting
-	ED	Electrical Demolition	Protection, termination and removal
-	EP	Electrical Power	Electric Circuit
-	EL	Electrical Lighting	Light Fixtures
-	EI	Electrical Instrumentation	Controls, relays, instrumentation and measurement devices
-	ET	Electrical Telecommunications	Telephone, network, voice and data cables
-	EY	Electrical Auxiliary Systems	Alarms, nurse call, security, CCTV, PA, music, clock and program
-	QFE	Food Service Electrical	Connection and fixture types, positions, load requirements
W		Distributed Energy	All or any portion of subjects
T	-	Telecommunications	All or any portion of subjects included in Level 2
-	TA	Audio Visual	Cable, music and CCTV systems
-	TC	Clock and Program	Time generators and bell program systems
-	TI	Intercom	Intercom and public address systems
-	TM	Monitoring	Monitoring and alarm systems
-	TN	Data Networks	Data switching, transmission lines, and system controls
-	TY	Security	
R	-	Resource	All or any portion of subjects included in Level 2
-	RC	Resource Civil	Surveyor's information and existing civil drawings
-	RS	Resource Structural	Existing facility structural drawings
-	RA	Resource Architectural	Existing facility architectural drawings
-	RM	Resource Mechanical	Existing facility mechanical drawings
-	RE	Resource Electrical	Existing facility electrical drawings
-	RP	Resource Plumbing	Existing facility plumbing drawings
-	RFA	Resource Fire Detection and Alarm	Existing facility pull stations, smoke alarms, heat alarms and Fire alarm notification appliance
-	RFZ	Resource Fire Suppression	Existing facility fire suppression drawings
Z	-	Contractor/Shop Drawings	All or any portion of subjects included in Level 2
O	-	Operations	All or any portion of subjects included in Level 2

5. <u>EXTERNAL REFERENCE FILES</u>

REFERENCE FILE NAMING CONVENTION

The following guidelines are to be used for naming all reference files associated with the Austin-Bergstrom International Airport. The following is an example of the reference file naming convention.

Example: xL2065-C-SP.dwg

Lowercase "x" denotes reference file

AUS Project No. (Provided by AUS)

Discipline Code (Pages 23-27)

Reference File Drawing Type (Page 21)

Status Field Codes (Only required for RCRD drawings)

AutoCad Drawing Extension

xL2065 - C - SP - RCRD.dwg

Hyphen

REFERENCE FILE DRAWING

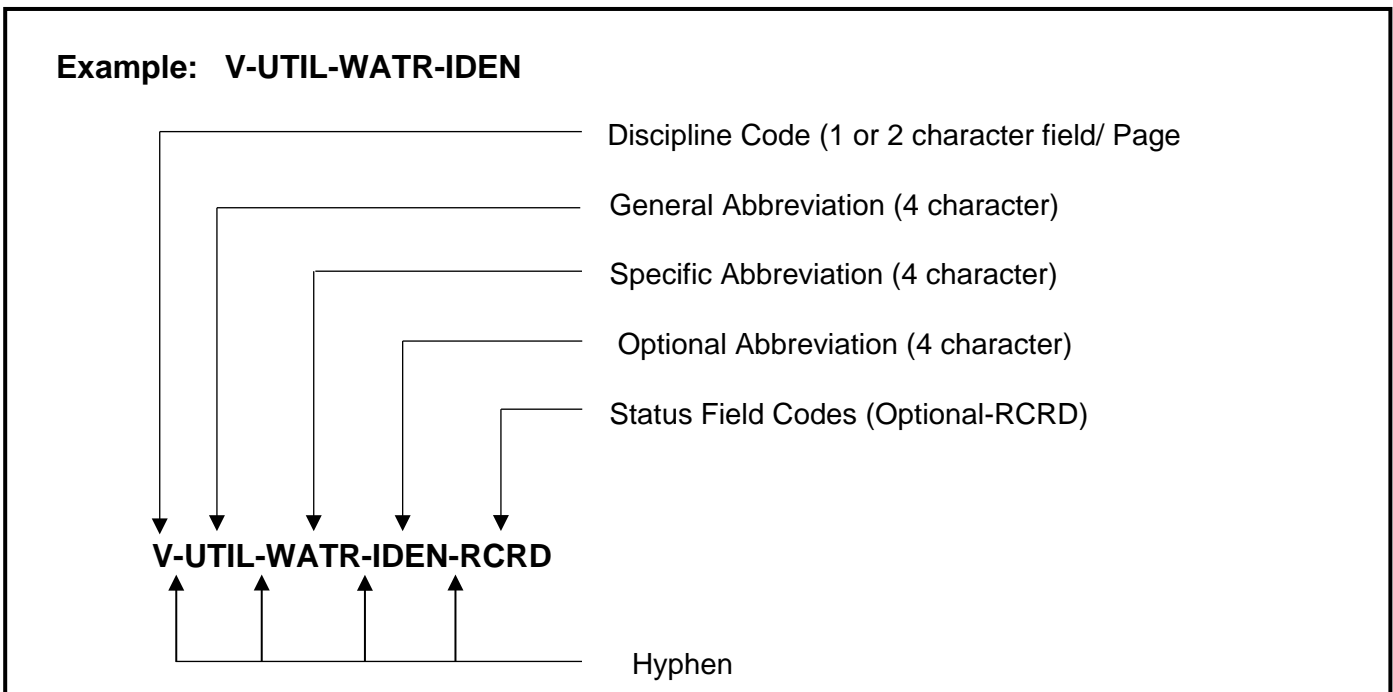| CODE	DRAWING TYPE DESCRIPTION	CODE	DRAWING TYPE DESCRIPTION
3D	Isometric/3D	LG	Legend
AB	As-Built	LP	Landscape Plan
AC	Area Calculations/Occupancy Plan	LT	Lighting Plan
AD	Airport Data	LU	Land Use Plan
AF	Airfield Plan	MD	Machine Design Plan
AI	Aerial Image/Photograph	MP	Master Plan/Airport Layout Plan
AL	Airfield Lighting Plan	MS	Miscellaneous Plan
AP	Airfield Pavement Marking Plan	NB	Non-Building Structures Plan
AS	Airspace	NG	Natural Gas Utilities Plan
BL	Boring Location Plan	PB	Project Boundary/Property Boundary
BM	Base Map	PC	Power & Communication Plan
BS	Boundary Survey	PI	Piping Plan
CP	Column Plan	PL	Project Location Map
CS	Cover Sheet	PP	Pollution Prevention Plan
CT	Control Plan	PR	Profile
DG	Diagram	PV	Pavement Plan & Striping Plan
DP	Demolition Plan	PW	Power Plan
DT	Detail	QP	Equipment Plan
EA	Easement	RC	Reflected Ceiling Plan
EC	Exterior Communication Systems Plan	RP	Roof Plan
EL	Elevation	SC	Section
EP	Enlarged Plan	SG	Signage Placement Plan
ES	Erosion & Sedimentation Control Plan	SH	Schedule
EU	Electrical Utilities Plan	SI	Subsurface Investigation Plan
EV	Environmental Concerns	SK	Staking Plan
FA	Fire Alarm/Detection Plan	SM	Survey and Mapping Plan
FD	Foundation Plan	SP	Site Plan/Layout Plan
FP	Floor Plan	SS	Special Systems Plan
FR	Framing Plan	ST	Storm Sewer Plan
FS	Fire Suppression Plan	TB	Title Block
FT	Furniture Plan	TC	Traffic Control
FU	Liquid Fuel Utilities Plan	TG	Topographic/DTM
GI	General Information	TP	Telephone/Data Plan
GS	Grounding System Plan	TS	Transportation Site Plan
GP	Grading Plan	TX	Text
GR	Graphics & Exhibits	UP	Utility Plan
HA	HVAC Plan	WP	Water Plan
HP	Hydrographic Survey	WW	Wastewater Plan
HT	HTCW Utilities Plan	XP	Existing Plan
IP	Irrigation Plan		
IW	Industrial Waste Water Plan		
JP	Joint Layout Plan		
KP	Key Plan		
LB	Boring Log		

6. LAYER NAME FORMAT

LAYERING

All drawings must conform to the ABIA predetermined layer structure. See Appendix F for predetermined layers and abbreviations. Layers not listed on the layering standards, but necessary for drawing production must follow the national cadd standards V.4.0 layering standards.

Any exceptions to the predetermined layer structure must be submitted in writing and approved by the AUS Project Manager.

LAYER NAMING CONVENTION:

The following guidelines are to be use for naming all layers within all cadd drawing files associated with the Austin-Bergstrom International Airport. A one-character discipline code, a four character general abbreviation, a four character specific abbreviation, and an optional four character descriptive abbreviation or project number arranges the layer naming convention. All fields are to be separated by a hyphen. The following is an example of the layer naming convention.

Example: V-UTIL-WATR-IDEN

Discipline Code (1 or 2 character field/ Page

General Abbreviation (4 character)

Specific Abbreviation (4 character)

Optional Abbreviation (4 character)

Status Field Codes (Optional-RCRD)

V-UTIL-WATR-IDEN-RCRD

Hyphen

Figure 2: Layer Naming Convention

As-built layer shall use the above-mentioned guideline with an "RCRD" abbreviation added to the end of the layer name. Example: V-UTIL-WATR-RCRD.

Consultant shall incorporate Contractor's "As-built" information to CADD drawing files

Note: For quick compliance of cadd standards, ask for an AUS drawing template. Then use AutoCAD's "match properties".

7. DELIVERABLE REQUIREMENTS

REQUIREMENTS

☐ **Electronic files (CADD drawings) –** Submittals- 30% -100%, Permit, As Built and Record Set.

☐ **CADD drawing submittals (30%-Record Set) –** Will go through a QA/QC review process until each submittal meets AUS CADD (architectural or Civil) Standards requirements. Record set CADD drawings should not have any errors due to previous reviews during the project construction.

☐ **Record Set deliverables –** CADD drawings, Revit drawings, TIFF's, PDF's, Project Manual and Specifications.

☐ **Permitted projects –** Per City of Austin Development Services Department requirement all projects that require permitting will only be accepted by **Vector PDF** using the online COA DSD EPlan Review. **Paper bond sets will no longer be accepted** by COA DSD and the consultant of each project is responsible to get the project permitted through online EPlan Review.
Required: a permit paper bond set to be printed out (11x17 paper size) and given to a project manager.

☐ **Sheet Files (Master Files) –** All sheet files used to produce the project cadd drawing set.

☐ **Model Files (Reference Files) –** All design files that represent the design are require to produce the project drawing set.

☐ **External Reference Files –** Required are two separate external reference file layouts.
   A. All projects must have external reference files that make up the complete set of the project.
   B. There needs to be a separate external reference cadd drawing of the architectural layout plan or the civil site plan.
   For example:
      Architectural- Just the layout plan of walls, doors, windows, symbols and etc. No text is required. Using just a hatch for walls or window locations will not be accepted.
      Civil drawings- Just the site plan with just lines and no text. Utility/Storm sewer external drawings- only need the line layout and not the airport base map attached or any other external reference files. Must have symbols and text to show size of piping/tubing and etc.

☐ **Master Map Files (Base Files) –** All design files representing any changes to the AUS cadd master maps as a result of the project in question will be contained in separate cadd files along with the referenced base files and will comply with the cadd master maps standards.

☐ **Specification Files –** All project specifications.

☐ **CAD,TIFF and PDF Files –** Full size (22x34-paper size and CAD paper space) for all projects and combine/bind set of all TIFF's and PDF's. TIFF's are only required for the record set.

☐ **Paper Bond Set –**One-half size (11x17-paper size) for all projects.

PROTECTION OF SENSITIVE SECURITY INFORMATION (SSI)
   Any documentation submitted to the Aviation Department is deem SSI must comply with the provisions described in 49 CFR 15 and 49 CFR 1520.13. Transmittals must also indicate the documentation/electronic files classified as SSI.

7. <u>DELIVERABLE REQUIREMENTS-</u> (cont'd)

FORMAT
All files included in any submittal including the permitted submittal to be saved to AutoCad 2013 format in order to allow them to open. Drawings created with Revit®.rvt or other cadd software need to be converted to the latest version of Autodesk® AutoCAD® .dwg format. Attention should be taking to ensure drawing information, entities or data is not lost during the conversion or translation process.

MEDIA
All electronic submittals & file transfers with a transmittal letter are receive by a downloadable link supplied by a consultant and the link could be a FTP site, Drop Box or Own Cloud. A paper bond set with a paper transmittal letter is required and must consist of one ANSI B (11x17) paper size.

8. <u>DRAFTING STANDARDS</u>

INTRODUCTION
This chapter supplements the information provided by NCS in Module 04. These two documents provide the basic drafting standards to be use in the creation of cadd documents for all AUS airport projects.

ACCEPTABLE SCALES
For acceptable commonly used standardized scales, see NCS USD-04.12. Any scale other than those shown in the NCS manual is not permitted and will not be accepted by ABIA airport. Note that the use of any Metric scales will not be permitted.

☐ **Numerical Scales:** For sheets where there is only one scale associated with a drawing, the scale will be noted in the title block as per the Architectural or Engineering scales shown in NCS USD-04.12. For sheets where there are multiple drawings shown, the term AS SHOWN will be noted in the title block and each drawing will show the scale of the individual detail. For drawings or details that are considered not to scale, they will be indicated as such either by the words NOT TO SCALE or by N.T.S.

☐ **Graphical Scales:** Bar scales will be used on all sheets in order to allow the reduction or enlargement of plans while maintaining the ability to scale distances off of the sheet. These bar scales will be graphical in nature as shown in NCS beginning on pg UDS-06.14, but will also show the scale in text form as indicated below under DETAIL TITLES. Also text should be added under the graphical bar scales that will indicate SCALE IN FEET. If there is a difference between the horizontal and vertical scales, both should be shown and the text HORIZONTAL SCALE IN FEET or VERTICAL SCALE IN FEET should be added. Examples are shown below:
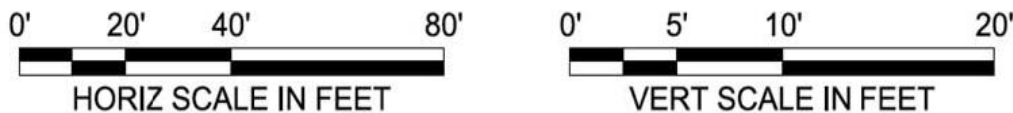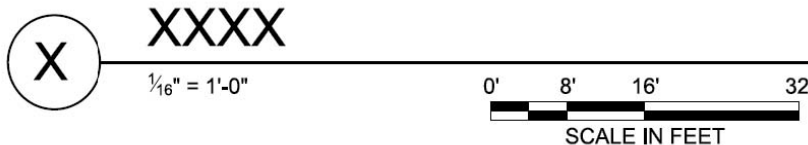

NORTH ARROWS
North arrows will be used on all sheets where required and will be shown as per NCS pg UDS-06.23. Example is shown below:

DETAIL TITLES
All details will show an individual title as per NCS page UDS-06.13. Example is shown to the right.

8. <u>DRAFTING STANDARDS-</u> (cont'd)

EGRESS PATH SYMBOL

9. TITLE BLOCK AND COVER SHEET

DATE
Drawing dates shall be CADD generated on all drawings. The date shall be listed in the following manner:
(Day, Month, and Year)   Example: 22MAR09

The months shall be abbreviated as follows:

JAN .... January	JUL……………………………July
FEB .... February	AUG......................................August
MAR .... March	SEP…………………………September
APR.. April	OCT……………………………October
MAY .... May	NOV…………………………November
JUN .... June	DEC…………………………December
JUL.. July		

CONSULTANTS ID BLOCK AND SEAL
A) Provide Company's Name and or Logo on Consultants ID Block.
B) All Bid Documents (Final Submittal) and each issuance immediately shall be sealed, signed and dated by a State of Texas Registered Professional Engineer, a State of Texas Registered Architect, or a State of Texas Registered Land Surveyor, as appropriate.

DRAWING TITLE
A) The drawing title shall include no more than four lines.
B)   Title shall agree with the drawing index.
C)   Drawing title shall be CADD generated.

SHEET TYPE DESIGNATOR
A) The sheet type designator shall be located in the lower right hand corner of the title block.
B) All drawing sheets in a package shall be consecutively numbered within each Drawing Type group. See page 15 for explanation of file naming & sheet type designator.

SITE KEY MAP AND TERMINAL KEY MAP
Site and Terminal key maps are included with their respective title block templates. Key Maps shall be shaded to reflect area shown on drawing.

10. <u>TEXT ATTRIBUTES</u>

INTRODUCTION
The following are guidelines for the application of text strings and text nodes on all construction documents. The text sizes and weights are based on basic manual drafting principles utilizing Leroy text sizes.

Fonts: In order to ensure consistency between Consultants and their documents, the approved font for all construction documents will be a true type font "ARIAL". However, for certain conditions such as presentation or conceptual graphics, other fonts may be more desirable. To ensure consistency only true type fonts will be allowed. The use of fonts in this manner will ensure consistency throughout the set of construction documents and eliminates the management of any specific resource files.

Text Size: The text sizes and weights shown below are based on basic manual drafting principles utilizing standard Leroy text sizes for Civil drawings as well as standard Architectural text sizes. No text smaller that 0.10" or 3/32" will be utilized in the development of any construction documents. With the exception of Cover Sheets, text larger than 0.250" or 1/4" will not be used in the development of any construction documents.

TEXT SIZES FOR ARCHITECTURAL & STRUCTURAL DRAWINGS

For thicknesses associated with these weights, refer to LINE WEIGHTS previously described in this Chapter in the official AUS CADD standards PDF book.

TEXT SIZES FOR CIVIL DRAWINGS
For thicknesses associated with these weights, refer to LINE WEIGHTS previously described in this Chapter in the official AUS CADD standards PDF book.

| PLOTTED SIZE IN INCHES	EQUIVALENT CADD SETTING	DESCRIPTION	WEIGHT
0.100	Plot scale X .100	Existing Topographic Features	2
0.120	Plot scale X .120	General Annotations & Dimensions	3
0.120	Plot scale X .120	Sub-titles & Column Headings	4
0.240	Plot scale X .240	Chart Titles	5
0.240	Plot scale X .240	Detail Titles	6
0.240	Plot scale X .240	Sheet Titles	6

10. <u>TEXT ATTRIBUTES-</u> (cont'd)

Text Justification

The typical text justification for all text strings and text nodes is Top Left. This insures that when a multiple line of text is edited, the first word holds its position and minimizes the need to relocate text after it is revised. For certain conditions such as sheet titles, detail titles, sheet numbers and column headings other justifications are warranted. The user should utilize basic drafting and cadd principles along with good judgment in the selection of alternative text justifications.

PLOTTED SIZE IN INCHES	EQUIVALENT CADD SETTING	DESCRIPTION	WEIGHT
3/32"	Plot scale X .0938	Existing Topographic Features	2
1/8"	Plot scale X .1250	General Annotations & Dimensions	3
1/8"	Plot scale X .1250	Sub-titles & Column Headings	4
1/4"	Plot scale X .2500	Chart Titles	5
1/4"	Plot scale X .2500	Detail Titles	6
1/4"	Plot scale X .2500	Sheet Titles	6

Text Orientation

All text is to be placed such that it is readable from the bottom or right hand side of the sheet as shown below. Text that is placed in the area 7.5 degrees either side of vertical may be rotated as required depending on the layout and readability of the sheet.
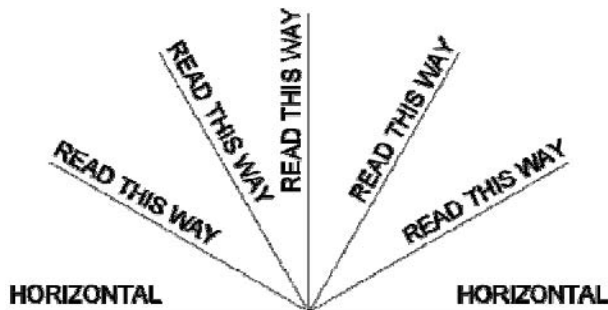
Line Spacing

In general, for multiple lines of text, the Line Spacing will be 50% of the text height as shown. If there is a need for a line to fall between two lines of text then the Line Spacing should be set to 100% of the text height. This allows for a clean uncongested look for full size drawings as well as on drawings that have been reduced.

Leader Lines

Leader lines shall be line strings with an arrow terminator as described below. The use of curved leader lines will not be permitted. They should be angled so they are not confused with other lines on the drawing and not allowed to cross dimension lines or other leader lines.

□ Leader lines that terminate to the left should start at the center of the first line of text.
□ Leader lines that terminate to the right should start at the center of the last line of text.

10. <u>TEXT ATTRIBUTES-</u> (cont'd)

ABBREVIATIONS

All words or terms shown on the sheets should be spelled completely and abbreviations should not to be used unless it is necessary to save space or for clarity. All abbreviations used must conform to NCS UDS-05.1 and be used as such consistently throughout the project. The use of obscure or undefined abbreviations should not be used in order to avoid confusion. If there is doubt or confusion regarding an abbreviation, spell it out. All abbreviations utilized for a specific discipline will be shown on a sheet entitled "Discipline Standard Abbreviations" where the word Discipline will be replaced with the appropriate discipline term. These sheets will be located at the beginning of the drawing package within the General subset after the cover sheet. (see NCS USD-01.6)

11. <u>DIMENSION ATTRIBUTES</u>

INTRODUCTION

The following are guidelines for the application of dimensions on all construction documents.

Terminators: The approved line terminator for dimensions on all construction documents is the standard filled terminator in the dimension settings. The size of the filled terminators is a width of .5 and length of 1.5 x the text height.

Terminators for Architecture: The approved line terminator for dimensions on Architecture construction documents is the stroke terminator in the dimension settings. The size of the stroke terminators is a width of .5 and height of .75 x the text height. The weight of the stroke terminator is 3 (WT=3).

Dimensioning: Dimension text shall be place with a justification of Center Bottom when placed on top of the center of the dimension line. When Dimension text is placed to the left of the extension line, outside of the area being dimensioned, it should have a justification of Right Bottom. When Dimension text is placed to the right of the extension line, outside of the area being dimensions, it should have a justification of Left Bottom. This will enable the revision of the text without the need to relocate it after revising. Line spacing shall be one half the text heights. For multiple lines of text, the line spacing should be increased to 100% of the text height (see Line Spacing section previously described).

☐ Text may be place above and below a dimension line, but never solely below.
☐ User should exercise basic drafting techniques in the display of all dimensioning.