

DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION



CONSULTANT
CAD GUIDELINES



JANUARY 2009

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I. INTRODUCTION

A. DEPARTMENT OF TRANSPORTATION - AIRPORTS DIVISION MISSION STATEMENT.

The mission of the Department of Transportation - Airports Division is to develop and maintain graphic and related information such that users can manage, operate, maintain and improve the State Air Transportation System thus providing safe and efficient air travel to the public.

B. AIRPORTS DIVISION GOALS

The Airports Division goal includes maintaining up-to-date information on the central master CAD files. These files are to be used as a resource to share within the organization as well as authorized Consultants in the public sector.

C. AIRPORTS BASEMAP COORDINATE SYSTEM

All State of Hawaii Airports AutoCAD Basemap drawings have been converted into North American Datum of 1983 High-Accuracy Reference Network (NAD83 HARN) Coordinate System. There are 3 (three) coordinates as noted in the basemap drawings that have been surveyed with NAD83 HARN Coordinate System.

D. OVERALL INTENT AND BENEFITS OF GUIDELINES

1. The purpose of this Consultant Guidelines is to provide consistent graphical information to and from the Department of Transportation - Airports Division. This will facilitate the timely access and delivery of information to internal and external users, provide means to update graphic information quickly, and to serve as a consistent guide for producing and delivering CAD drawings to the Department of Transportation - Airports Division.
2. This guideline shall apply to all individuals and State Government units who perform drafting and graphics services for Department of Transportation - Airports Division Engineering (AIR-E).
3. The purpose of the workflow policies are to assist the AIR-E staff to maintain an up-to-date central database of the State of Hawaii Airports and to be able to monitor timely return of built conditions from construction or maintenance improvements at each site.



II. CAD STANDARDS

A. CAD FILE TRANSFER PROCEDURES AND POLICIES

The intent of the Policy Guidelines is to assist the Airports Division to maintain the most current central resource of all State of Hawaii Airports as well as maintain records for accountability. The Policies are established to assist the workflow process and monitor timely return of built conditions from construction or maintenance improvements at each site. All documentation drawings and construction project drawings must be submitted to AIR-E in full compliance with their most current version of AutoCAD (file extension = .dwg). Throughout this document, the use of the name CAD always implies AIR-E's current version, unless otherwise noted.

CONSULTANTS (OUTSIDE PARTIES) CAD DRAWINGS/FILES REQUESTS PROCEDURES

1. Consultants (Outside Parties) may request from State Project Manager a copy of a specific area of the airport in a CAD format to execute their approved contract work. State Project Manager will send the Outside Parties the Request for Airports Plans and CAD/Computer Graphics Data and Recipient's Indemnification Clause Forms. A diagram of the Airport may be attached. This diagram should be used by the Outside Parties to show the extent of site needed.
2. Outside Parties shall fill out, sign and submit the Request for Airports Plans and CAD/Computer Graphics Data, Confidentiality and Non-Disclosure Agreement, Recipient's Indemnification Clause Forms and Airport diagram (if any) to the State Project Manager.
3. State Project Manager will review, verify the information filled in by the requestor and sign the Request for Airports Plans and CAD/Computer Graphics Data Form.
4. DOTA Engineers will make a copy of the approved Request for Airports Plans and CAD/Computer Graphics Data, Confidentiality and Non-Disclosure Agreement, and Recipient's Indemnification Clause Forms to AIR-EG.
5. AIR-EG will email the requested CAD files/drawings to the requestor.
6. Outside Parties will modify the copy of CAD files per project contract requirements.
7. After construction is completed, the Outside Parties will prepare their project drawings in accordance with DOTA Consultant CAD Guidelines and submit As-Built drawings to State Project Manager. If necessary, DOTA will send pertinent CAD base files back to requestor for updating which requestor will be requiring to show as-built conditions and submit back to DOTA.

CAD BASEMAP FILE TRANSFER POLICIES

1. AIR-E shall name file with a *consultant ID* prefix to the original basemap CAD file name.
 - a. For example, Consultant XYZ will receive a file named: XYZ-hnl-level01-terminalA.dwg
2. Copies of CAD basemap files shall not be released outside the Airports Division without State Project Manager approval and signature.



3. Only the Designer should request CAD basemap files and responsible for distributing the CAD basemap files to their sub-consultants.

CAD FILES SUBMITTED TO AIR-E:

1. Any As-Built changes should be submitted in the latest CAD format to State Project Manager within 3 (three) months of final construction completion. Larger projects shall be given more time based on State Project Manager approval.
2. All Consultants are required to submit As-Built drawings to State Project Manager in a timely manner.
3. All drawings submitted shall comply with the Consultant CAD Guidelines. CAD files shall follow the file naming convention on next page.



C. PAPER SPACE AND MODEL SPACE

PAPER SPACE

Paper space is one of two main spaces in which AutoCAD objects reside. Paper space is used to create a finished layout for plotting, sometimes having more than one view with more than one scale on a sheet. Listed below are some items that should be placed in Paper Space:

1. Sheet borders, insert at actual size.
2. Detail blow up grid bubbles.
3. Dimensions.
4. Notes that are specific to that drawing.
5. North Arrow.
6. Schedules.

MODEL SPACE

Model Space is used to do drafting/design work and to create two or three-dimensional models. Everything in Model Space is drawn at full scale. Listed below are some items in Model Space:

1. External Reference Files
2. Drawing entities.

D. EXTERNAL REFERENCE FILE (XREFs)

- All external references (xrefs) shall be “overlayed” at 0,0,0 in model space on layer “0”.
- Provide all external references (AutoCAD and images), font styles, and plot style (ctb files) when submitting As-Built CAD drawings to AIR-E.
- When attaching an Xref, in the “path type” box, select “Relative Path”. Selecting “Relative Path” will allow you to copy or move an intact directory without having to repath each xref.
- When attaching an Xref, name it the exact same name as the drawing file.
- Do not rename the Xref once it has been distributed to others for referencing or editing.

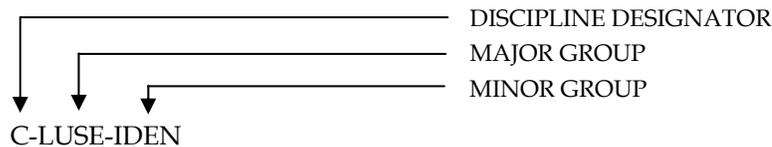


E. LAYERING SYSTEM

This section contains a combination of layers from A/E/C CADD Standard, Release 3.0, ERDC/ITL TR-06-X, September 2006, U.S. Department of Transportation Federal Aviation Administration Standard Engineering Drawing Preparation & Support, FAA-STD-002f, June 17, 2005 and Custom Layers based on AIA CAD Layer Guidelines: U.S. National CAD Standard Version 4.0

Layer names consist of a two-character *Discipline Designator* followed by four-character *Major Group* and followed by a four-character *Minor Group*.

A Architectural	K Food Service
C Civil	L Landscape
D Interior Design	M Mechanical
E Electrical	P Plumbing
F Fire Protection	S Structural
G Graphics	T Title



These recommended layers should be used when submitting CAD drawings to AIR-E.

The following guidelines shall be used:

1. Do not increase the width of a polyline to get a heavier line, the thickness of a line is controlled by the ctb line weight assignments.
2. Do not increase the width of a polyline to poche walls, use a solid hatch.
3. Layer colors and linetypes, are controlled by what they are assigned to in the layer list. Do not force colors or linetypes in your drawings every entity should be set to "bylayer".
4. Insert blocks with multiple layers on layer "0", create simple blocks using layer "0". See Block section.

AIR-E requires CONSULTANTS (OUTSIDE PARTIES) to adhere to the following LAYERING PRACTICE:

1. Create new layer D-DEMO, color 13, linetype: hidden 2 for all demolition work.
2. Create new layer(s) for ALL new work by adding an "N" prefix to the appropriate layer name. e.g. C-PRKG-MRKG is used for the existing parking, if new stalls are added; they would be drawn on layer: NC-PRKG-MRKG.



LAYERING STANDARDS

A new layer that will be added to the drawings and is not on the layering standard table below may be added complying with the current A/E/C CADD Standard, Main Text and Appendices A, B, C, ERDC/ITL TR-06-x, Sept. 2006 Release 3.0

Layer Name	Layer Description	*Name Source
Landuse		
c-flzo	Flood Zone marks	CSTM
c-luse	Landuse Information, Seismic Zones, Land Courts	CSTM
c-luse-iden	Landuse Information, Seismic Zones, Land Courts Annotation	CSTM
c-luse-ilnd	Improved Land - Demarcation Land defining improved land areas	CSTM
c-luse-plnd	Proposed Land Use	CSTM
c-luse-ulnd	Unimproved Land - Demarcation Land defining unimproved land areas	CSTM
Civil/ Survey		
c-prop	Boundary, Property Lines	FAA
c-prop-airp	Airport Property Lines	A/E/C
c-prop-cede	Ceded Lands	CSTM
c-prop-cons	Control Points, Survey Benchmarks	FAA
c-prop-esmt	Property Easement	FAA
c-prop-esmt-iden	Property Easement Annotation	CSTM
c-prop-exec	Executive Orders	CSTM
c-prop-exec-iden	Executive Orders Annotation	CSTM
c-prop-iden	Property Annotation, Tax Map Key	A/E/C
c-prop-subd	Subdivisions/Parcel/Lots	A/E/C
c-prop-subd-iden	Subdivisions/Parcel/Lots Annotation	CSTM
Geography		
c-topo-shor	Shorelines, Waterways, Channels and Levees	A/E/C
c-topo-shor-iden	Geograph Annotation	CSTM
l-plnt	Vegetation - Brushes, shrubs, tree lines, Renderings, Individual Trees	FAA
l-plnt-ctnr	Containers or planters	CSTM
l-plnt-iden	Vegetation Annotation	A/E/C
Aviation		
c-chan-naid	Navigation Aids - Lights, wind cones, segmented circle	A/E/C
c-obst-air	Obstructions	A/E/C
g-avia	Primary Surface, Safety Areas, Clear Zones, Approach Slopes, Other Surfaces (Transit/horizon/conical surfaces), Building restriction lines, Obstacle free lines	CSTM
g-avia-iden	Aviation Annotation	CSTM

*** LAYER NAMES ONLY**

FAA = FAA Standard Engineering Drawing Preparation & Support, FAA-STD-002f, June 17, 2005

A/E/C = A/E/C CADD Standard, Main Text and Appendices A, B, C, D ERDC/ITL TR-06-x, Sept. 2006 Release 3.0

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Department of Transportation - AIRPORTS DIVISION Consultant Guideline



Layer Name	Layer Description	*Name Source
RunTax		
c-runw-edge	Paved Area Edges (AOA pavement edge), Run Tax Edges (Load-bearing area defining lines), Airfield Runway Edges	A/E/C
c-runw-edge-subd	Subdivision of Runway Edge	CSTM
c-runw-iden	Paved Area Edges (AOA pavement edge), Run Tax Edges (Load-bearing area defining lines), Airfield Runway Edges Annotation	A/E/C
c-runw-misc-mrkg	Misc AOA markings - General Aviation Tiedown/Ramp Equipment Prkg,	CSTM
c-runw-mrkg	Run Tax Markings (Runway/Taxiway/Taxilanes/Heliports), Shoulder Markings (Shoulder/Demarcation/Ramp/Roads), Run Tax Demarcation Lines	CSTM
Road		
c-prkg-curb	Parking islands, curbs, and gutters	A/E/C
c-prkg-iden	Parking Lot Annotation	A/E/C
c-prkg-mrkg	Parking markings - Stall stripes, hatchings	A/E/C
c-road	Road edges - Lines of invert or pavement edge	FAA
c-road-curb	Curbs and gutters	A/E/C
c-road-cntr	Road Baselines (Center of Road Line), Demarcation Line	A/E/C
c-road-gral	Guard rails	A/E/C
c-road-iden	Road Baselines (Center of Road Line), Demarcation Line, Breaklines (Road Cutlines) Annotation	A/E/C
c-road-mrkg	Road Markings - Land stripes, directional arrows	A/E/C
c-road-mrkg-subd	Road Marking Dividing Line	CSTM
c-road-unpv	Unpaved Road Edges	CSTM
c-road-ofln	Road Outline	CSTM
c-site-iden	Overall site annotation	CSTM
c-site-strt	Bridges/tunnels - Bridges, tunnels, headwalls, Retaining walls	A/E/C
c-site-walk	Walkway Edges - Paved walkways	A/E/C
l-site-furn	Built -in details, Free-standing details - Landscape, furniture, equipment	FAA
General		
a-anno-note	General Notes	A/E/C
a-anno-dims	Dimensions	A/E/C
a-grid	Grid Lines, Coordinates, Column Grids	CSTM
a-grid-bubb	Grid Bubbles	CSTM
a-symb	Symbols - Building Sections, Wall Sections, Call Out Details	CSTM
Building		
a-area-iden	Room Numbers, Tenant Identifications, Area Calculations	A/E/C
a-area-line	Area Calculation boundary lines	A/E/C
a-eqpm-fixd	Fixed Equipment	A/E/C
a-flor-evtr	Elevator cars and equipment	A/E/C
a-flor-fixt	Plumbing Fixtures	A/E/C
a-flor-hral	Stair and balcony handrails, guard rails	A/E/C
a-flor-level	Level changes, shafts, ramps, pits, breaks in construction and depressions	A/E/C

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Department of Transportation - AIRPORTS DIVISION Consultant Guideline



Layer Name	Layer Description	*Name Source
Building		
a-furn	Built-in Details	CSTM
a-furn-free	Free Standing Details - Landscape, Furniture, Equipment	FAA
a-flor-numb	Room/space identification number and symbol	A/E/C
a-flor-otln	Floor outline/perimeter/building footprint	A/E/C
a-flor-ovhd	Overhead items (skylights, overhangs, etc.), Roof Lines - Roof Edge Above	A/E/C
a-flor-spcl	Architectural specialties (e.g. toilet room accessories, display cases)	A/E/C
a-flor-strs	Stair risers/treads, escalators, ladders	
a-flor-tptn	Toilet Partitions	A/E/C
a-flor-wdwk	Architectural woodwork (field built cabinets and counters), Built-in Details - Landscape, Furniture, Equipment	A/E/C
a-roof	Roof Line	FAA
a-roof-beam	Roof beam	CSTM
a-roof-expj	Expansion Joints	A/E/C
a-roof-rfdr	Roof drains and slopes	A/E/C
a-roof-wall	Parapet walls and wall caps	A/E/C
a-wall	Building Walls - Non-Structural or Undefined Structural Walls	CSTM
a-wall-full-extr	Exterior Full Height Wall	A/E/C
a-wall-full-intr	Interior Full Height Wall	A/E/C
a-wall-prht	Partial height walls (do not appear on Reflected Ceiling Plan)	A/E/C
a-wall-spcl	Wall-hung/Attached Specialties (e.g., fixtures, grab bars (incl. handicap), Telephone Booths	A/E/C
a-wall-subd	Subdivisions of rooms/ spaces	CSTM
a-wwdr	Doors and Windows	CSTM
c-bldg-iden	Building Annotation	A/E/C
c-bldg-otln	Building Outline	A/E/C
c-dema	Bldg demarcation lines	CSTM
c-hang	Hangar	CSTM
c-hang-subd	Subdivision of Hangar	CSTM
c-site-brdg	Loading bridges/ Jetway	A/E/C
Secure		
c-site-fenc	Security Fences (Fences, Perimeter Gates)	A/E/C
c-site-aoap	AOA Perimeter - Closed Line Defining AOA	CSTM
Utility		
c-domw-abnd-pipe	Abandoned piping	CSTM
c-domw-devc	Connectors, faucets, reducers, regulators, vents, intake points, taps, backflow preventers, valves, cut and cap	A/E/C
c-domw-fttg	Caps, cleanouts, crosses, and tees	A/E/C
c-domw-hydr	Hydrants	A/E/C

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Department of Transportation - AIRPORTS DIVISION Consultant Guideline



Layer Name	Layer Description	*Name Source
Utility		
c-domw-iden	Identifier tags, symbol modifier, and text	CSTM
c-domw-main-pipe	Main domestic water piping	CSTM
c-domw-abnd-pipe	Abandoned piping	CSTM
c-domw-devc	Connectors, faucets, reducers, regulators, vents, intake points, taps, backflow preventers, valves, cut and cap	A/E/C
c-domw-fttg	Caps, cleanouts, crosses, and tees	A/E/C
c-domw-hydr	Hydrants	A/E/C
c-domw-iden	Identifier tags, symbol modifier, and text	CSTM
c-domw-main-pipe	Main domestic water piping	CSTM
c-domw-metr	Meters	A/E/C
c-fuel-abnd-pipe	Abandoned piping	A/E/C
c-fuel-devc	Air eliminators, filter strainers, hydrant fill points, line vents, markers, oil/water separators, reducers, regulators, and valves	A/E/C
c-fuel-fttg	Caps, crosses, and tees	A/E/C
c-fuel-iden	Identifier tags, symbol modifier, and text	CSTM
c-fuel-main-pipe	Main fuel piping	CSTM
c-fuel-pits-vlve	Valve pits	A/E/C
c-npot-devc	Connectors, faucets, reducers, regulators, vents, intake points, taps, backflow preventers, and valves	CSTM
c-npot-fttg	Caps and cleanouts	CSTM
c-npot-iden	Identifier tags, symbol modifier, and text	CSTM
c-npot-mhol	Manholes	CSTM
c-npot-pipe	Non-potable water piping	CSTM
c-sswr-abnd-pipe	Abandoned piping	CSTM
c-sswr-fttg	Caps and cleanouts	A/E/C
c-sswr-iden	Identifier tags, symbol modifier, and text	CSTM
c-sswr-mhol	Manholes	A/E/C
c-sswr-main-pipe	Sewer piping	CSTM
c-strm-abnd	Abandoned piping	CSTM
c-strm-devc	Downspouts, flumes, oil/water separators, and flap gates	A/E/C
c-strm-fttg	Caps and cleanouts	A/E/C
c-strm-iden	Identifier tags, symbol modifier, and text	A/E/C
c-strm-inlt	Inlets (curb, surface, and catch basins)	A/E/C
c-strm-main	Storm sewer piping	A/E/C
c-strm-mhol	Manholes	A/E/C
v-comm-abnd	Abandoned duct lines	CSTM
v-comm-duct	Communications/telephone duct lines	CSTM
v-comm-iden	Identifier tags, symbol modifier and text	CSTM
v-comm-jbox	Communication junction boxes, pull boxes, manholes, hand holes, pedestals, splices	A/E/C

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Department of Transportation - AIRPORTS DIVISION Consultant Guideline



Layer Name	Layer Description	*Name Source
Structural		
s-conc	Concrete Walls, Columns, Structural Elements	CSTM
s-conc-iden	Concrete Walls, Columns, Structural Elements Annotation	CSTM
s-conc-patt	Concrete Walls, Columns, Structural Elements Patterns	CSTM
Mechanical		
m-xxxx		CSTM
Plumbing		
p-xxx		CSTM
Fire Protection		
f-xxxx		CSTM
Electrical		
e-afld-jbox	Junction boxes, pull boxes, manholes, handholes, pedestals, splices	A/E/C
e-afld-lite-runw	Runway lights	CSTM
e-comm	Other communications distribution equipment	A/E/C
e-catv-eqpm	Cable TV system equipment	A/E/C
e-powr-iden	Identifier tags, symbol modifier, and text	A/E/C
e-powr-jbox	Junction boxes, pull boxes, manholes, hand holes, pedestals, splice	A/E/C
e-powr-panl	Panel boards, switchboards, MCC, unit substations, backing boards, patch panel racks	A/E/C
e-powr-pole	Power pole	A/E/C
e-powr-taxi	Taxiway lights	CSTM
e-prim-ovhd	Overhead electrical utility lines	A/E/C
e-prim-undr	Underground electrical utility lines	A/E/C
e-tvan-eqpm	Television antenna system equipment	A/E/C
e-llin	One Line Diagram	FAA
Interior		
i-xxxx		CSTM
Miscellaneous		
Misc	Miscellaneous Layers	CSTM
Noplot	Noplot	A/E/C
Defpoints	Defpoints	A/E/C

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CSTM = Custom layer based on FAA & A/E/C standards guide



F. GRAPHIC SYMBOLS, FONT STYLES & LINETYPES

1. SYMBOLS

Use A/E/C CADD Standard, Main Text and Appendix ERD/ITL TR-06-x, September 2006 Release 3.0

<https://tsc.wes.army.mil/products/standards/aec/aecstdsym.asp>

2. FONT STYLE

To simplify coordination and maintain clear and consistent drawings, use ROMANS for all notations and dimensions.

- All text specific to a sheet shall be put in paper space.
- The standard notation text height shall be 1/8"
- All text shall be UPPER CASE
- All text for notation shall be Romans
- All text heights for the titles shall be 3/16"
- Standard text styles, such as "Romans", should have text height set to "0".
- Custom text styles can be given a specific text height
- If custom fonts are used, send the font with the electronic drawing files.

3. LINETYPES

Use standard AutoCAD and A/E/C CADD Standard linetypes. If custom linetypes are necessary, send all shape files used to create the linetype with the electronic drawing files.

G. DRAWING SET UP

Once the design has been developed and approved, the consultant prepares the drawings and specifications that set forth the requirements for the construction of the project.

Construction documents serve multiple purposes. They communicate to the owner what the project involves in detail; they establish the contractual obligations of the owner and consultant to each other during the project; they communicate to the consultant the quantities, qualities and relationships of all work required to construct the project; and they may be the basis for obtaining regulatory and financial approvals to proceed into construction.

Construction documents include three basic types of information; legal and contractual information, procedural and administrative information, and architectural and construction information. The production of a successful set of construction documents is governed by an orderly and economic approach to the process and involves constant observation and direction.

The STATE will provide to the Design Consultant, electronic files which contain the Title Sheet and Standard Plan Sheet Layouts. (See Appendix A)

1. All AutoCAD drawings shall be drafted in Model Space at Full Scale in Feet Drawing Units, such that one drawing unit equals to one foot.
2. Notes, dimensions & symbols will be in paper space.
3. Line work (existing, proposed, demolished entities) shall be drawn or inserted, on the appropriate layers, in model space.



4. Sheet Borders will be inserted in paper space with the lower left corner @ 0,0 on Layer "0".

Standard Size: 22" x 34".

Material:

- Submittals: Bond.
- Bid Set Documents: Bond for DOT Record and Compact Disc (CD).
- Record Documents: Vellum and CD.

Alternate Size: 30" x 42".

Material:

- Submittals: Bond.
- Bid Set Documents: Bond for DOT Record and Compact Disc (CD).
- Record Documents: Vellum and CD.

5. Drawing Numbering Systems.

A readily identifiable alpha-numeric system. The alphabetical prefix shall be used to denote the specific discipline covered by that group of drawings. The alphabetical system utilized shall correspond to the following:

A	ARCHITECTURAL
C	CIVIL
D	INTERIOR DESIGN
E	ELECTRICAL
F	FIRE PROTECTION
G	GRAPHICS AND SIGNAGE
K	FOOD SERVICE
L	LANDSCAPE
M	MECHANICAL
P	PLUMBING
S	STRUCTURAL
T	TITLE

Large complex projects may involve specialty consultants such as baggage conveyor systems, water features, etc. Assign alphabetical prefixes to related drawings with care so as not to cause confusion with the major disciplines

6. Purge all drawings, including external reference, of all unused blocks, layers & line types.
7. All entity colors & line types shall be set "by layer" and not forced.
8. Standard fonts for notations shall be Romans with the height of 1/8". Lettering shall be Capital letters.
9. Do not set text heights in the "Style" command for the AutoCAD standard font styles.
10. Do not draw on layer "0". This layer is reserved for attaching xrefs and inserting blocks.



11. All documentation drawings and construction project drawings must be submitted to AIR-E in full compliance with their most current version of AutoCAD (file extension - *.dwg). Throughout this document, the use of the name AutoCAD always implies AIR-E's current version, unless otherwise noted.



H. RECORD DRAWINGS

It is the intent of the Department of Transportation Airports (DOTA) Division to maintain consistency in the production of Construction Drawings and Record Drawings submittals for all projects. Consistency and a product that will withstand the test of long term storage and being of a quality for the production of high contrast and easily read copies of these documents. Documents that accurately depict the as-constructed condition. Documents that serve as a resource for daily maintenance and planned work.

Compliance to the following general guidelines to produce "RECORD DRAWINGS" is an attempt to satisfy the objectives of the Airports Division.

1. Maintain a duplicate full-size set of Record Drawings at the job site. Clearly and accurately record all deviations from alignments, elevations and dimensions, which are stipulated on the drawings and for changes directed by the State Project Manager that deviate from the drawings.
2. Record any changes immediately after they are constructed in place and where applicable; refer to the authorizing document (such as Change Order, Contract Modification, etc.). Use permanent red markings to record those changes. Make Record Drawings available to the State Project Manager at any time so that its clarity and accuracy can be monitored.
3. Use the final updated Contract Drawing set plus applicable shop drawings for the final Record Drawings submittal.
4. Certify drawing accuracy and completeness. The CM and /or State Project Manager shall label and sign a certificate attesting to the accuracy of the record drawings.
5. The Consultant and each subconsultant shall certify each drawing attesting to the completeness and accuracy of the applicable drawing.
6. The drawing index shall be revised with the addition or deletion of Sheets noted in its appropriate place to reflect the actual composition of the set of drawings. The index shall conclude with the following note; "A COMPLETE SET CONTAINS ___ SHEETS"; with the total number of sheets comprising the set be placed in the blank.
7. A "RECORD DRAWING" note shall be placed in the block immediately above the Project Title Block. It is permitted to bisect this space, horizontally, to allow the placement of the design consultant name; in this case, the remaining space shall be reserved for placement of the "RECORD DRAWING" note. This space is specifically reserved for the placement of a "RECORD DRAWING" note to provide a consistent placement of this note. The date of acceptance of the "RECORD DRAWING" document by the State Project Manager shall be used as the date of the "RECORD DRAWING" and included with "RECORD DRAWING" notation on each sheet. (See Appendix A)



8. The State Project Manager shall state on the “RECORD DRAWING” either of the following statements, as it applies, on the title sheet:

No changes during construction:

“NO SIGNIFICANT CHANGES WERE MADE DURING CONSTRUCTION ON THESE PLANS (EXCEPT CHANGES IN THE ORIGINAL THEORETICAL QUANTITIES. FOR ACTUAL QUANTITIES, REFER TO PROJECT LEDGER AND/OR COMPUTATION BOOK)”.

With changes during construction:

“CHANGES MADE DURING CONSTRUCTION THAT WERE PROVIDED TO THE DESIGNER HAVE BEEN INCORPORATED ON THESE PLANS (EXCEPT CHANGES IN THE ORIGINAL THEORETICAL QUANTITIES. FOR ACTUAL QUANTITIES, REFER TO PROJECT LEDGER AND/OR COMPUTATION BOOK)”.

Either statement should be followed with the signature and date of all the following:

“STATE PROJECT MANAGER”
“DESIGNER”
“CONSTRUCTION MANAGER”

9. If the State Project Manager determines a drawing does not accurately record a deviation or omits relevant information, the State Project Manager or designated agent will correct any AS-BUILT DRAWINGS sheet. Consultant will be charged for the State Project Manager’s or designated agent’s cost to correct the error or omission.
10. The DOTA Division is committed to a computer graphic system operating AutoCAD software, making the AutoCAD format a Division standard for all electronic submittals. The final submittal shall include the entire set delivered in an AutoCAD format on an electronic medium with each sheet as separate files. Also, include reference files, custom font files and pen tables. Consultant to confirm with State Project Manager which AutoCAD version is required. File naming convention for each sheet will be based on Discipline and Sheet Number. All the AutoCAD files will be recorded on a recordable compact disc (CD-R) up to 700 MB or Digital Versatile Disc (DVD) up to 4.4GB.
11. Use the final “RECORD DRAWING” sheets to create an electronic version in Adobe Acrobat PDF (Portable Document Format) in separate files for each sheet. PDF File name for each sheet shall match with the DWG file name. Each sheet shall be setup with a minimum of 300 DPI minimum and recorded on a recordable compact disc (CD-R) up to 700 MB or Digital Versatile Disc (DVD) up to 4.4GB. All drawings shall be in landscape orientation.
12. The “RECORD DRAWING” submittal should also includes:
 - a. One Full Size Set with original stamps and signatures in Vellum Paper Media.
 - b. One Half Size Set in Bond Paper Media.



CAD QUALITY ASSURANCE CHECKLIST

CAD drawings delivered upon closeout of a project must be accompanied by submission of the following checklist. When a checklist has been signed and submitted, the consultants (architect, engineer, etc.) are assuring that all materials adhere to the standards and guidelines set forth in the document.

CHECKLIST

File Format & Setup

- Electronic File Format
- Scale, Units & Tolerances
- Fonts Styles
- Blocks
- Title Blocks
- Policy on Model Space and Paper Space
- Policy on External Reference Files (XREFs)

Layering

- Compliance with DOTA Layering System
- Layer Name Format
- General Rules regarding Naming Conventions and Uses
- Layer Attributes (Colors, Pens, Linetypes)

File Naming Convention

- Building and Floor Identification Codes
- Discipline Identification Codes
- Consultant's 3 character ID Code for CAD Base
- Sheets Naming Convention.

Changes

- Modification on DOTA CAD base (Check if applicable)

Name of Consultant *(please print)*

Authorized Consultant Signature

Phone Number

Fax Number

Email

Date



APPENDIX A - SAMPLE OF TITLE SHEET AND STANDARD BORDER

Airports Division

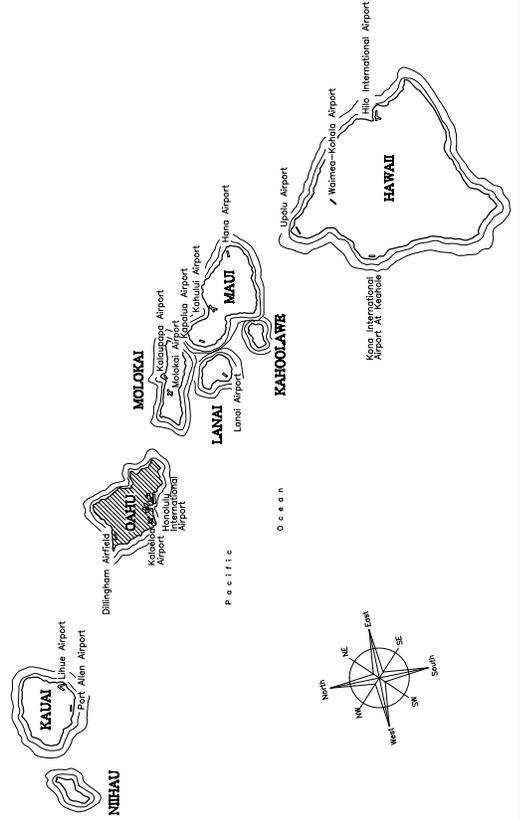
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII



PLANS FOR

AT

HONOLULU INTERNATIONAL AIRPORT HONOLULU, OAHU, HAWAII PROJECT NO. ???



ESCN.	DRWN.	CHKD.	APPD.
?	?	?	?

KEY PLAN / NOTES :

NO.	DATE	REVISIONS

PROJECT TITLE :

?

?

?

HONOLULU INTERNATIONAL AIRPORT
HONOLULU, OAHU, HAWAII

PROJECT NO. :

?

SHEET TITLE :

?

?

?

?

DATE :	SHEET
	?
DWG. NO. :	?
	?

DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	DATE
APPROVED:	
DIRECTOR OF TRANSPORTATION	



Division of
Public Safety
Office of the
Attorney General

ESGN.	DRWN.	CHKD.	APPD.

KEY PLAN / NOTES :

NO.	DATE	REVISIONS

PROJECT TITLE :

?

NEW JERSEY STATE POLICE
INVESTIGATIVE DIVISION
LABORATORY SERVICES

PROJECT NO. :

SHEET TITLE :

?

DATE :

DWG. NO. :

SHEET ? OF ? SHEETS



APPENDIX B - SAMPLE OF TITLE SHEET BORDER WITH AS-BUILT INFORMATION

Airports Division

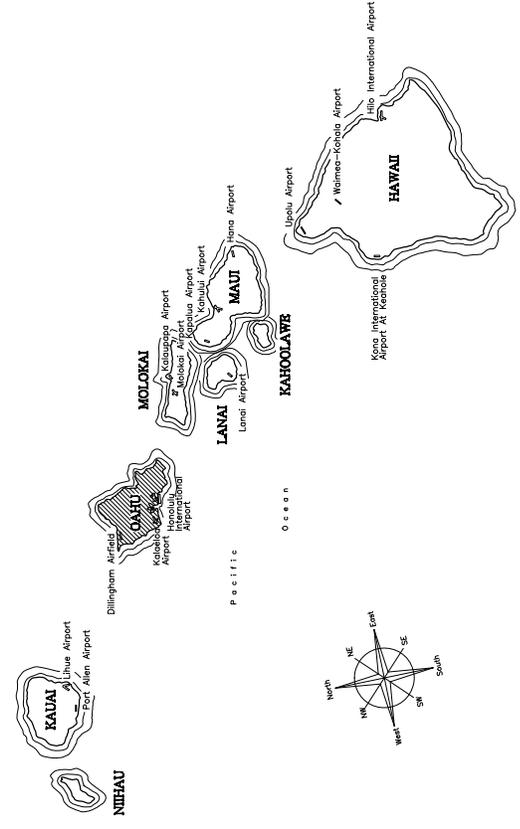
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

PLANS FOR

AIRPORT SECURITY SYSTEM

AT

HONOLULU INTERNATIONAL AIRPORT
HONOLULU, OAHU, HAWAII
PROJECT NO. AO1095-11 (0-1527)



ESCN.	DRWN.	CHKD.	APPD.
00	BY	WN	WN

KEY PLAN / NOTES :

NO.	DATE	REVISIONS

AS-BUILT
JAN 28, 1994
DOT

PROJECT TITLE :
AIRPORT SECURITY SYSTEM
HONOLULU INTERNATIONAL AIRPORT
HONOLULU, OAHU, HAWAII

PROJECT NO. :
AO1095-11 (0-1527)

SHEET TITLE :

TITLE SHEET

CHANGES MADE DURING CONSTRUCTION HAVE BEEN INCORPORATED ON THESE PLANS EXCEPT CHANGES IN THE PROJECT LEGER AND/OR COMPUTATION BOOK.

STATE PROJECT MANAGER
DOTA _____ DATE _____

DESIGNER
COMPANY NAME _____ DATE _____

CONSTRUCTION MANAGER
COMPANY NAME _____ DATE _____

APPROVED:	DATE
DIRECTOR OF TRANSPORTATION	DATE

