

DIVISION 1

GENERAL INFORMATION

1.1 Scope and Purpose - This Manual establishes specific design criteria for all public infrastructure, terminal buildings and other public facilities owned, operated or maintained by the Dallas/Fort Worth International Airport Board (hereinafter referred to as "Board"). It also serves as a design guide for all other facilities constructed within the boundaries of the Dallas/Fort Worth International Airport (hereinafter referred to as "Airport"). The Design Criteria manual is not intended to limit or dismiss the experience, knowledge or talent of the Designer. The Board encourages Designers to recommend alternates when deviations from the guidelines would be beneficial. However, adherence to these guidelines should result in project development that conforms to the goals and objectives of the Board. Additional design criteria is contained in the following manuals for projects of specific scope and location on airport property:

1. "Leasehold Development Criteria for International Commerce Park"
2. "Tenant Design Handbook" for concession spaces in terminal buildings."
3. "Sign Design Manual"

1.2 Standard Details – This Design Criteria Manual is supplemented by Standard Details, which have been posted at the website www.dfwairport.com.

1.3 Request for Variances and/or Interpretation Statement - It is recognized that variances to the referenced standards and/or other design criteria in this Manual, may be necessary. A request for variance shall be submitted along with any substantiating documentation to the Building Official.

1.4 Procedures for Changes to this Manual - Proposed changes to this manual should be submitted to the Building Official for consideration.

1.5 Project Type - Facilities constructed by the Board shall be referred to as "Board Projects." All other construction projects shall be referred to as "Tenant Projects."

1.6 Airport Contact - Reference is made in this document to "Airport Contact". For the purposes of this manual, "Airport Contact" is defined as follows:

1. For Board Projects, "Airport Contact" shall be the Project Manager.
2. For Tenant Projects, "Airport Contact" shall be the Building Official or his designee.

1.7 DFW Airport Insurance Requirements - A current insurance certificate is required for every Contractor performing work on the premises of the Airport. The minimum coverage required is Comprehensive General Liability, Workers Compensation and Automobile and Truck Liability. For work in the Air Operations Area, an additional Umbrella or Excess Liability is required.

1.8 Manual for Design of Streets and Roadways - Texas Department of Transportation (TxDOT) Highway Design Division Operations and Procedures Manual, latest version, shall govern the design of streets and roadways.

1.9 Federal Aviation Administration (FAA) Standards - These standards may be obtained from the Federal Aviation Administration, Post Office Box 1689, Fort Worth, Texas 76101; U. S. Department of Transportation, Subsequent Distribution Section, M-4943, Washington, D.C. 20590; Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. 20402; or other FAA regional offices.

1.10 Glare and Noise in Buildings

1.10.1 Glare - It is imperative that all structures be glare controlled. Inherently high reflective materials, such as glass veneered curtain walls, shall not be used as a major building element. It is preferable to use non-reflective bronze glass as opposed to highly reflective silver or gold glass. All high sheen materials such as aluminum or stainless steel panels must be coated or clad with light-absorbing finish. Light colored aggregates on roofs are acceptable. Designers should review FAA requirements prior to final design.

1.10.2 Noise - All structures, whose primary function is to house people-oriented activities, shall be designed with a suitable combination of building materials and execution of construction details in accordance with established architectural and acoustical principles to reduce the noise between the outside and inside of the building to the following levels.

1.10.2.1 The methodology to be used shall be the Shell Isolation Rating (SIR) method set out by the U.S. Department of Commerce, National Bureau of Standards "Design Guide for Reducing Transportation Noise In and Around Buildings" - Publication: Building Science Series No. 84.

1.10.2.1.1 Schools, churches, hotels, meeting facilities and other spaces where noise intrusion is more sensitive than average and would disrupt the intended operation of the space - SIR 40 dB.

1.10.2.1.2 Offices, shops, Terminals, etc. where routine people-to-people and telephone communications occur frequently - SIR 30 dB.

1.10.2.1.3 Warehouses, freight facilities and other structures not involving significant communication between individuals - No Limit.

1.10.2.2 The design shall take into account all possible paths into the facility to include, but not be limited to walls, roofs, windows, doors and ventilation openings.

1.11 Regulation of Construction Overview

1.11.1 DFW Airport Construction and Fire Prevention Standards - The Airport Board, through the Construction and Fire Prevention Standards Resolution, regulates construction within the boundaries of the Dallas-Fort Worth International Airport. This Resolution has been approved by the Airport Board and ratified by the Cities of Dallas and Fort Worth and includes the adoption of, and amendments to, the Building Code, Fire Code, Electrical Code, Mechanical Code, Plumbing Code, Fuel Gas Code and Energy Code. Amendments to these Standards and Codes are posted for reference at www.dfwairport.com.

1.11.2 Construction Permit Required – A Construction Permit must be obtained from the Building Official in order to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by the Construction and Fire Prevention Standards, or to perform any construction work on the Airport. The Office of the Building Official shall be referred to as Building Standards.

1.11.2.1 Submittals – The Applicant shall submit to the Building Official items A through E below with the Application for Construction or Sign Permit form. Refer to Commissioning Policy and Procedures for Board construction projects. The Contractor shall submit the documents listed in item F after award of the contract and after the Construction Permit has been issued.

- A. Complete and dated plans and specifications (including traffic control plans if applicable) of sufficient clarity to indicate the location, nature and extent of the work proposed and with sufficient detail to indicate that the proposed work conforms to the provisions of the Construction and Fire Prevention Standards, the Design Criteria Manual, and other applicable laws, statutes, orders, and regulations. Plans and specifications shall be prepared by an architect, engineer or other design professional licensed in the State of Texas to

- practice as such and shall bear the seal of the design professional responsible for preparation of the plans and specifications. Submit eight (8) sets of construction documents. The Building Official shall accept only half-size prints for plan review unless the original drawing size does not exceed 11 inches by 17 inches.
- B. Completion of an Accessibility Compliance Checklist is required for all projects. Submit required documents per the Checklist with this Application. A construction permit cannot be issued until all required information has been received and approved.
 - C. If applicable, completion of Airspace Study Application form, is required. Approval from the Federal Aviation Administration (FAA) is required for projects resulting in a change in the Airport Layout Plan or for the use of cranes and certain other construction equipment. Permits for construction will be limited until required FAA approvals are obtained.
 - D. Applicant is required to schedule a meeting with the Environmental Engineer (EnvE), Building Standards, (phone 972.586.6036) to discuss the project scope. Based upon the scope, the EnvE will provide the technical input for completing the Environmental Compliance Checklist (ECC). The purpose of this checklist is to identify the environmental regulations that apply to the proposed construction or to the operation of the completed work, structure, or facility. The Applicant must submit to the Building Official the Checklist and all applicable attachments. A Construction Permit cannot be issued until all required information has been received and approved.
 - E. A check payable to the DFW Airport Board for payment of Plan Review and Permit Fees must be paid at the Building Official's office (Building Standards). Furnish to the Building Official a Certification Letter (internal memorandum or e-mail for Airport Board projects) stating the estimated cost of construction. This sum must be consistent with the amount indicated on the TDLR Project Registration form required in Item B above.
 - F. Prior to proceeding with the installation of fire protection or fire alarm systems, three (3) full-size sets of shop drawings, hydraulic calculations and related submittal data must be submitted to the Building Official, who will forward them to the Bureau of Fire Prevention, DFW Airport Department of Public Safety (DPS). Work related to these systems may not proceed until the related shop drawings have been approved by DPS.

1.11.2.2 Building Construction Projects – For building construction projects, provide the following information on the cover sheet of the drawings:

1. Construction Application Number
2. The street address of the structure
3. For tenant projects the name and address of the Owner
4. The edition of the codes under which the project is designed
5. Building Code Use and Occupancy Classification
6. Building Code Construction Type
7. Design Occupant Load and Exiting Analysis
8. If automatic sprinkler system is provided
9. U-factors of building envelope systems and a statement signed and sealed by the architect of record that the building envelope complies with the Energy Code
10. Tabulation of building components and systems and a statement signed and sealed by the engineer of record that all building components and systems comply with the Energy Code.

1.11.3 Construction Permit Issued - When it has been determined that the plans for the proposed project are in compliance with the Construction and Fire Prevention Standards, the Design Criteria Manual and that all other requirements have been met, the Building Official will approve the Construction Application and issue a Construction Permit in the form of an approval letter. Typically, an Environmental Assessment Memorandum, outlining the environmental conditions of the Permit, and an Environmental Close-Out Checklist, to be completed and submitted to the Building Official at the close of construction, will be attached to the Permit.

1.11.4 Project Construction and Inspection – Through the approval letter, the Applicant is given instructions to contact the Construction Facilitator for the purpose of scheduling a pre-construction conference. The conference should include the Applicant, the Applicant's Contractor and the Contractor's major Subcontractors. The Contractor will be briefed on rules, regulations and procedures to be followed for construction projects on the Airport. The Contractor must submit an emergency phone list, any required submittals and a construction schedule. After posting the Construction Permit and placing approved construction documents at the project site, the Contractor may begin construction. An inspection is required before covering or concealing any electrical, plumbing, utility, mechanical, fire sprinkler, fire alarm or structural systems. Work may not progress beyond any point for which an inspection is required until the Contractor receives an approved inspection report for the inspected work.

1.11.5 Record Documents - Record documents (as-constructed) reflecting the final installation after all modification and changes shall be furnished to the Airport Contact at the end of each construction project. Record specifications shall be those used for the actual construction, marked with changes made by addendum, change order, or product substitution. Record drawings shall be made on reproducible Mylar copies with the required Contractor's signature block attesting to the accuracy and completeness of the drawings. **For Airport Board projects**, also provide electronic media. All file transfers shall be written to a 650MB Compact Disc compatible with a standard FAT or NTFS file system. Files shall be placed on the CD uncompressed in the file format specified in the DFW Airport CADD Standards Manual. The CD shall be delivered in a standard CD jewel case, and both the CD and the jewel case shall be appropriately labeled. The record drawings shall include the following information:

1. The final location, alignments and material type of all underground utilities.
2. The final location of all structures, buildings, roads, parking areas, and other elements of the project.
3. The final locations of all heating and air conditioning equipment, ductwork, air devices, piping, or other devices necessary to the operation of the HVAC systems.
4. The final locations of all plumbing equipment, pumps, piping, necessary for the operation of the plumbing systems.
5. The final locations of all the electrical equipment, devices, wiring sequences, wiring methods and connections of component systems as installed. The drawings shall include color codes, panel identification, and any other information necessary to identify and locate the equipment.
6. All initiating devices such as flow switches/pressure switches for fire protection systems.
7. Initiating devices, wiring sequence, wiring method, and connections of the components of the protective signaling system as installed. The drawings shall include color codes and terminal identifications.
8. The final locations of all the communications equipment, devices, wiring sequences, wiring methods and connections of component systems as installed. The drawings shall include color codes.
9. The final locations of all the security equipment, wiring sequences, wiring methods and connections of component systems as installed. The drawings shall include color codes.
10. All abandoned piping.
11. Location of any identified, but undisturbed asbestos remaining encapsulated.

1.11.6 Certificates of Occupancy/Use – The Contractor must deliver to the Building Official the completed Environmental Close-Out Checklist (including MSDS sheets for all materials used in the construction) at the close of construction. Upon acceptance of the Environmental Close-Out Checklist, other required submittals and acceptance of the work following all required final inspections, the Building Official will issue a Temporary Certificate of Occupancy/Use. After receipt of the required As-Built Documents and correction or completion of any outstanding items of work as listed in the Temporary Certificate of Occupancy/Use, the Building Official will issue the (Final) Certificate of Occupancy/Use.

THE FOLLOWING REQUIREMENTS PERTAIN ONLY TO AIRPORT BOARD PROJECTS:

1.12 Project Process Overview - The following overview describes in general the process used for design and construction of Airport Board projects.

1.12.1 Commissioning Policy and Procedures – Reference is made to the Administrative Policy and Procedures Manual, Policy 2-11, Commissioning Policy and Procedures, which requires commissioning of all Board construction projects, including development, maintenance and renovation, having a construction budget greater than \$500,000 or Board building construction projects, including new construction and modifications, having a construction budget greater than \$50,000. For Board construction projects subject to the Commissioning Policy, the Building Official shall not issue a construction permit until the Commissioning Authority has approved the Commissioning Plan. The Building Official shall not issue a certificate of occupancy/use until all pre-occupancy commissioning activities identified in the Commissioning Plan have been successfully completed.

Design Consultants – The following information pertains to design consultants for Airport Board projects and their services.

1.12.2 Selection of Consultant(s) - Proposals are solicited for professional services through advertisements. A “short list” of candidates is selected after a careful review of the Statements of Qualifications that are submitted. These “short listed” firms are usually asked to make a presentation to a selection committee, which will make the recommendation for final selection.

1.12.3 Consultant Contract - After completion of the selection process, the first-rated consultant(s) enter into contract negotiations with Board representatives. If negotiations with the first-rated firm(s) are unsuccessful, negotiations may be terminated, and the Board representatives may begin negotiations with the next highest rated firm(s). Once an agreement is successfully negotiated, the final contract is presented to the Board for approval. If the Board approves the agreement, the contract will be executed, and a notice to proceed with design will be issued.

1.12.4 Project Initiation - At the beginning of every design project, a pre-design conference will be scheduled to be attended by the project manager, contract administrator, other Board representatives and pertinent members of the design team. During this meeting, discussion will include the program for the design, the project budget and the project schedule.

1.12.5 Design Milestones - Design review submittals are required at the Schematic, Design Development and Construction Document levels of completion. Specific information on the requirements and level of detail required for each of these submittals is described in the following sections.

1.12.6 Project Review - Normally, two weeks should be allowed for Board staff review of each submittal. However, additional time may be required under certain circumstances, particularly if there are interfaces with other projects, or if outside agency approvals are necessary.

1.12.7 Review Comments – The consultant must respond to all review comments. Copies of these responses shall be turned in to the project manager with the next submittal. Review comments noted directly on the submitted drawings do not require written responses, but the consultant may be asked to return the previously reviewed plans temporarily to verify responses to specific review comments.

1.12.8 Consultant Participation During Bid Phase – In general the following process is usually followed in the selection of contractors. Construction bids are solicited through general advertisements. A pre-bid conference is conducted prior to the opening of the bids to discuss the scope of the work and answer questions from bidders. The design consultant is expected to conduct or participate in this conference to provide answers to pertinent questions and to assist in preparing any resulting contract addenda. At the advertised time, the bids that have been received will be opened and read aloud. The consultant may be asked to assist in analyzing the bids to determine the responsive low bidder. A notice to proceed with construction will be issued after Board approval of the final construction contract.

1.12.9 Consultant Participation During Construction Process - Prior to the start of construction, a pre-construction conference is held to review contract requirements, operational and site restrictions, notification procedures and required inspections. Depending upon contract scope requirements, the consultant may be responsible for assisting in the review of shop drawings, submittals, change orders and other documents and may be required to attend periodic or regular construction progress meetings. On some projects, partnering sessions may be conducted. Board representatives, the consultant, the contractor and/or the construction manager and the major sub contractors will be included in the partnering sessions.

1.12.10 Consultant Participation at Completion of Construction – Depending upon contract requirements, the consultant generally participates in a final project “walk-through” at the completion of construction and is usually responsible for reviewing the contractor’s certified as-built drawings and specifications submittal and for preparing the final record drawings.

1.13 Software Requirements and Project Design Delivery – Production and maintenance of project documentation shall comply with the DFW Airport CADD Standards Manual. The final deliverables shall consist of the construction Contract Documents which shall be complete and shall set forth in detail all work required for the architectural, civil, structural, mechanical, plumbing, electrical, fire protection and fire detection, communication, security and utility service systems, including transportation interfaces, site work, and all necessary bidding information.

1.14 Design Calculations - Most design projects require that various engineering calculations be performed and/or design criteria/material cut sheets be assembled that provide the basis for information on the construction plans and specifications. These values and calculations shall be assembled in a “Basis of Design Manual” for each project. These documentation requirements will vary for each specific design discipline.

1.15 Required Submittals - During the planning and design stages of project development, certain submittals are required in bound form for review and approval. The submittals described below should be considered as the minimum. Intermediate reviews may be required, only if the scope of the project has been changed or if an earlier review found the plans and specifications unacceptable, either as a whole or in part. The required stage of completion of the plans and specifications shall be as hereinafter outlined.

1.15.1 Schematic Design Phase (early-review) - For all Airport Board projects the schematic plans and specifications shall include:

1. A boundary survey and/or site topographic survey shall be made on the ground of the proposed building or construction site. All points shall be tied to the existing Airport Coordinate System. Ground survey verification of existing utility alignments and flow lines may be required.
2. All existing buildings, facilities, contours, roadways, utilities, or signs in the immediate area of the project site or relevant to the proposed work should be shown on a preliminary site plan.
3. Layouts of the proposed roadways, access drives, parking areas, site utilities and building locations should be shown.

1.15.2 Schematic plans and specifications for Airfield Projects shall include:

1. All existing terminals, runways, taxiways, taxi lanes, aprons, ground support equipment areas, emergency roads, buildings and structures, contours, underground utilities, or signs in the immediate area of the project site or relevant to the proposed work should be shown. Identify from the DFW Airport Storm Drainage Map the outfall number for drainage.
2. All existing FAA NAVAIDS, duct banks, guidance signs, lighting fixtures, electrical ducts, vaults, handholds, and circuit locations should be shown and identified.
3. Layouts of proposed paving, drainage, and electrical improvements.
4. Limits and dimensions of all object free areas, safety areas, exclusion zones, NAVAIDS, critical areas, and FAR part 77 airspace surfaces that affect project site.
5. Locations of proposed buildings, signs, NAVAIDS, AOA fences, and other site structures.

1.15.3 Schematic plans and specifications for Buildings shall include:

1. Building code summary on cap sheet showing governing codes and requirements for building and site.
2. Floor plans.
3. Elevations.
4. Schedule of materials to be used.
5. Design Data - The building program and any special studies which will affect the project design.
6. Tower Line-of-Sight Studies (if required).
7. Service entrances, trash locations.
8. Design live loads.

1.15.4 Schematic plans and specifications for HVAC shall include:

1. Mechanical rooms.
2. Location of all chases required for air conditioning systems.
3. Location of all air handling and refrigeration equipment.
4. Narrative description of the proposed systems including a schematic diagram of air flow through the various system components (the general scheme outlined in the narrative must be previously discussed with the Airport Contact and agreed to at the Pre-design Conference).

1.15.5 Schematic plans and specifications for Plumbing shall indicate:

1. A brochure defining all plumbing fixtures.
2. Narrative description of plumbing systems proposed, including source of exterior services.
3. Location of janitorial closets.

1.15.6 Schematic plans and specifications for Electrical shall include:

1. Electrical rooms.
2. Narrative description of the proposed systems including a schematic diagram of the distribution system (the general scheme outlined in the narrative must be previously discussed with the Airport Contact and agreed to at the Pre-design Conference).
3. Preliminary lighting layout showing general types of illumination to be used such as fluorescent, H.I.D., or others.
4. Tabulation of lighting levels to be used for the design of the lighting system.
5. A sample lighting calculation for a typical room or area (exterior lighting projects).

1.15.7 Schematic plans and specifications for Fire Protection shall include:

1. Fire vehicle access.
2. Narrative description of fire protection systems proposed, including source of exterior fire protection services such as water mains.

3. Schematic fire protection drawings with identification of all sprinkled areas and areas protected by other automatic suppression systems.
4. Drawings shall be drawn to a scale of 1/8"=1'-0".

1.15.8 Schematic plans and Specifications for Communications shall include:

1. Communication rooms.
2. Narrative description of the proposed systems including a schematic diagram of the communication system (the general scheme outlined in the narrative must be previously discussed with the Airport Contact and agreed to at the Pre-design Conference).

1.15.9 Schematic plans and specifications for Security shall indicate:

1. Site security.
2. CCTV/monitor and equipment rooms.
3. Narrative description of the proposed systems including a schematic diagram of the security system (the general scheme outlined in the narrative must be previously discussed with the Airport Contact and agreed to at the Pre-design Conference).

1.15.10 Number of Submittals: Submit the number of sets of schematic plans required by the designer's contract to the Airport Contact for review and approval before proceeding to Design Development stage.

1.15.11 Design Development Phase (mid-review) - For all Airport Board projects the Design Development plans and specifications shall include all information in previous submittals plus all annotated comments from previous submittals and shall indicate:

1. Proposed landscaping, exterior signing, exterior lighting, fencing or other site elements.
2. Preliminary horizontal and vertical alignments for all roadways, drainage systems, and applicable exterior utilities tied into Airport coordinate system.
3. Preliminary paving and parking layouts with horizontal and vertical ties to site survey and representative cross-sections.
4. Preliminary Cost Estimates and Construction Schedule.
5. Perspective Rendering - May be required if the project has visual impact on the Airport development as a whole.
6. Design data and analysis.
7. Soil tests data and analysis.
8. Outline Specifications.

1.15.12 Design Development plans and specifications for Airfield Projects shall include:

1. Horizontal and vertical layouts for all proposed airfield paving, emergency roads, and drainage features.
2. Layouts for proposed airfield electrical circuits, NAVAIDS, and underground utilities.
3. Typical sections for each type of paving, including surface drainage.
4. Site access points and haul routes.
5. Typical details for all paving, jointing, sealing, drainage, electrical, utilities, etc..

1.15.13 Design Development plans and specifications for Buildings shall include:

1. Floor plans.
2. Framing plans.
3. Ceiling plans.
4. Roof plans.
5. Sections and elevations.
6. Details of typical conditions.

1.15.14 Design Development plans and specifications for HVAC shall include:

1. Mechanical rooms with all equipment and required connecting ductwork drawn to scale (this requirement is mandatory to establish the space needs for mechanical equipment).
2. Routing of major piping systems when space is a consideration; and ductwork for remainder of project in one line form to indicate the breakdown of proposed zones.
3. Report on design criteria and system loads.
4. Specifications shall be in the form of an outline covering all Heating & Air Conditioning equipment and materials to be used in the project.

1.15.15 Design Development plans and specifications for Plumbing shall indicate:

1. All plumbing fixtures including those for disabled persons drawn to scale.
2. Roof drains and route of storm drains to storm sewer.
3. Sump pump and sewage ejector locations.
4. One typical riser diagram for each type of system.
5. Report on design criteria and system loads.
6. Specifications shall be in the form of an outline covering all plumbing equipment and materials to be used in the project.

1.15.16 Design Development plans and specifications for Electrical shall include:

1. Electrical rooms with all equipment drawn to scale (this requirement is mandatory to establish the space needs for electrical equipment).
2. Routing of feeder and service conduit systems when space is a consideration.
3. A one-line diagram of distribution system shall indicate approximate equipment and service size.
4. Lighting layout for projects, including exterior systems, with tabulated loads.
5. A brochure showing cut sheets on all lighting fixtures (and poles) proposed for project. Submit five (5) sets of D.D. electrical systems plans for review and approval before proceeding to final working drawings (Contract Bid Documents).
6. Specifications shall be in the form of an outline covering all electrical equipment and materials to be used in the project.

1.15.17 Design Development plans and specifications for Fire Protection shall include:

1. Fire protection plans shall indicate all underground water mains and their sizes.
2. Fire hydrant locations.
3. Proposed water supply connections to sprinkler systems.
4. Control valve locations.
5. Fire alarm panel locations.
6. Smoke control/removal systems layout.
7. Underground valve meter pit.
8. Standpipe locations.
9. Specifications shall be in the form of an outline covering all fire protection items, equipment and materials including manufacturers and model numbers to be used in the project (this shall include smoke/heat detectors and pressure, flow, and tamper switches).

1.15.18 Design Development plans and specifications for Communications shall include:

1. Communication rooms with all equipment drawn to scale (this requirement is mandatory to establish the space needs for equipment).
2. One-line diagram of communication system shall indicate intercom, speakers, equipment, terminal boards and cabinets.
3. Specifications shall be in the form of an outline covering all communication equipment and materials to be used in the project.

1.15.19 Design Development plans and specifications for Security shall indicate:

1. CCTV/monitor and equipment rooms with all equipment drawn to scale (this requirement is to establish the space needs for equipment). Provide adequate working clearance for monitors and operator console.
2. One-line diagram of security system shall indicate control panels, sensors, cameras, monitors, telephone interface, and any other system devices critical to operation.
3. Specifications shall be in the form of an outline covering all security equipment and materials to be used in the project.

1.15.20 Number of Submittals: Submit the number of sets of Design Development plans required by the designer's contract, to the Airport Contact for review and approval before proceeding to Construction Documents stage.

1.15.21 Construction Document Phase (final-review) - For all Airport Board projects the Construction Document plans and specifications shall include all information in previous submittals plus all annotated comments from previous submittals and shall include:

1. Complete drawings with all plan, profile, detail, section, schedule, calculation and miscellaneous sheets included.
2. Specifications complete in final typed form.
3. Final Construction schedule.
4. Final cost estimate.
5. Storm water pollution prevention plan.

1.15.22 Construction Document plans and specifications for Airfield Projects shall include:

1. All proposed paving and facilities.
2. Proposed grading and surface contours.
3. Final profiles and flow lines for all drainage systems.
4. All required sections and details.

1.15.23 Architectural Construction Document plans and specifications shall include:

1. Index, Symbols, Abbreviations, Key Plan Notes.
2. Demolition, Site Plan, Temp Work.
3. Plans, Material Schedule, Door Schedule, Key Drawing.
4. Sections, Exterior Elevations.
5. Detailed Floor Plans.
6. Interior Elevations.
7. Reflected Ceiling Plans.
8. Vertical Circulation, Stairs, Elevators, Escalators.
9. Exterior Details.
10. Interior Details.

1.15.24 Structural Construction Document plans and specifications shall include:

1. Index, Symbols, Abbreviations, Key Plan, Notes, Loading Criteria.
2. Demolition Site Work.
3. Foundation Plans and Details, Foundation Design Criteria.
4. Framing Plans and Details.
5. Elevations.
6. Details.
7. Schedules.
8. Special Design.

1.15.25 Construction Document plans and specifications for HVAC shall include:

1. All air conditioning systems drawn to scale, including all ductwork in two lines with all fittings to scale.
2. Sections through mechanical rooms to adequately describe the construction requirements.
3. Schedule of all major items of equipment drawn on the plan sheets to indicate performance characteristics.
4. All piping systems, complete with necessary sections to clarify routing.
5. Applicable details, including those included in the Design Criteria modified to suit project.
6. Flow diagrams for each piping system except drains.
7. A copy of the heating and air conditioning load calculations shall be furnished for future reference. Calculations shall clearly indicate all zoning requirements, etc.
8. The type and contents of the Test and Balance Reports to be furnished shall coincide with the work scope of the system being designed.

1.15.26 Construction Document plans and specifications for Plumbing shall indicate:

1. All plumbing fixtures shown and identified by a number.
2. Riser diagrams in isometric form for all plumbing risers in the building.
3. Flow diagrams for all pressure systems including hot and cold water, gas, oxygen, air vacuum, etc.
4. Details such as lavatory connection, pump connection, hot water generator, water softener, sewer manholes, backflow prevention, water header, etc..
5. Schedule all major equipment on drawings.
6. Plumbing fixtures may be scheduled, but must also be described in detail in the specifications.

1.15.27 Construction Document plans and specifications for Electrical shall include:

1. All electrical systems drawn to scale including light fixtures, distribution equipment and other miscellaneous system components.
2. Schedule of all light fixtures, switchboards and motor control centers.
3. Schedule of all panel boards which include connected loads and demand loads.
4. One-line diagram of electrical distribution system including all equipment, feeder, service ratings and available symmetrical three phase fault current at each device.
5. Applicable standard details from these guidelines modified to suit project.
6. One-line diagrams for each system.
7. Include all information in previous submittals plus annotated comments from last submission review.

1.15.28 Construction Document plans and specifications for Fire Protection shall include:

1. All fire risers shown and identified by a number.
2. Flow diagrams for fire protection pressure systems.
3. Details such as fire hose cabinets, fire hydrants, fire pumps, fire department connections, backflow prevention, water header, connections, cathodic protection and riser insulation's, etc..
4. Schedule all major equipment on drawings; fire sprinkler drawings will include all piping sizes and locations, drawn to scale of no less than 1/8 inch equals one foot.

1.15.29 Construction Document plans and specifications for Communications shall include:

1. All communication system equipment, cabinets, boards drawn to scale, telephone outlets, intercom stations, repeater stations, etc.; one-line diagram of communication systems.
2. Applicable standard details from these guidelines modified to suit project.

1.15.30 Construction Document plans and specifications for Security shall indicate:

1. All security system control and monitoring equipment drawn to scale, sensor locations and types.
2. Applicable standard details from these guidelines modified to suit project.
3. Security devices.
4. Security signage.
5. Individual zone location and designation, with all alarm device locations, including the security alarm and data panel, annunciators, and any other devices necessary for the operation of the system.

1.15.31 Number of Submittals: Submit the number of sets of Contract Bid Documents required by the designer's contract, for review and approval before printing for distribution to bidders.

1.15.32 The documents at this point should be ready to be signed and sealed pending approval by the Airport Contact. Once these documents are approved, signed and sealed, they can be provided to contractors for bidding purposes.

1.16 Specification Format - For all non-AIP projects, specifications shall be in accordance with the Construction Specification Institute (CSI). For all airfield construction projects, contract documents shall be prepared in accordance with AC 150/5370-10. Division 1, including Notice to Bidders, Instructions to Bidders, Proposal Forms, Bid Schedule Forms, Bond Forms, General and Special Provisions of the contract documents shall be prepared based on guidance and direction from the Airport Contact. Specifications shall be printed on colored paper as follows:

Non-AIP Projects		AIP Projects	
Bid Documents	White	Bid Documents	White
General Prov.	Yellow	General Prov.	Yellow
Special Prov.	Orange	Special Prov.	Orange
Division 1-14	White	Base Specs	White
Division 15	Blue	Base Electrical Specs	Pink
Division 16	Pink	Spec Modifications	Blue
Addendum 1	Yellow	Addendum 1	Yellow
Addendum 2	Blue	Addendum 2	Blue
Addendum 3	Pink	Addendum 3	Pink

1.17 Coordination of Design - Every effort shall be made to coordinate the design between disciplines.

1.17.1 HVAC - The final HVAC drawings shall, as a minimum, be checked for the following:

1. Electrical lighting fixtures shall be checked for conflict with air diffusers, ceiling grilles, sprinkler heads, ceiling type speakers, and other ceiling mounted devices.
2. Ductwork shall be checked for clearance between ceiling construction and underside of beams, recessed lighting fixtures and other interferences where space is limited.
3. Large mechanical system piping shall be coordinated with building structure to assure clearances and accessibility for maintenance. Piping and electrical switchgear locations are to be coordinated.
4. Coordinate requirements for louvers, equipment supports and other devices serving mechanical systems, but furnished under the general construction section of the project.
5. Coordinate special types of or Board furnished equipment for correct rough-in requirements.
6. Plans and specifications shall be checked for conflicts.
7. Plans shall be coordinated for size and location of all chases.

1.17.2 Plumbing - The final Plumbing drawings shall, as a minimum, be checked for the following:

1. Piping shall be coordinated with building construction, beams, etc., to assure clearances and accessibility for maintenance. Piping and electrical switchgear locations are to be coordinated.
2. Piping shall be checked for clearance between ceiling construction and underside of beams,

- recessed lighting fixtures and other interferences where space is limited.
3. Piping, ductwork, electrical conduits, etc. shall be checked for interferences that would prevent proper installation of each system.
 4. Coordinate special types of equipment for correct rough-in requirements.
 5. Plans shall be coordinated for size and location of all chases.

1.17.3 Electrical - The final Electrical drawings shall, as a minimum, be checked for the following:

1. Electrical lighting fixtures shall be checked for conflict with air diffusers, ceiling grilles, sprinkler heads, ceiling type speakers, etc..
2. Large electrical system conduit and pull boxes shall be coordinated with building construction, beams, etc., to assure clearances and accessibility. Piping and electrical switchgear locations are to be coordinated.
3. Plans and specifications shall be checked for conflicts.
4. Plans shall be coordinated for size and location of all chases.

1.17.4 Fire Protection - The final Fire Protection drawings shall, as a minimum, be checked for the following:

1. Piping shall be coordinated with building construction, beams, etc., to assure clearances and accessibility for maintenance. Piping and electrical switchgear locations are to be coordinated.
2. Routing of sprinkler piping shall have minimum turns to avoid building construction, etc..
3. No areas are to be left without fire protection/detection, such as wedges in terminals and utility closets when one project is subdivided into several phases.

1.17.5 Communications - The final Communications drawings shall, as a minimum, be checked for the following:

1. Ceiling type speakers shall be checked for conflict with light fixtures, air diffusers, ceiling grilles, sprinkler heads, etc..
2. Large communication system conduit and pull boxes shall be coordinated with building construction, beams, etc., to assure clearances and accessibility.

1.17.6 Security - The final Security drawings shall, as a minimum, be checked for the following:

1. Security system components and types and locations shall be coordinated through the Airport Contact with the Airport Department of Public Safety (DPS) to properly interface with existing system.
2. Coordinate design to allow for uninterrupted operation of existing security systems. Security must be maintained during construction.
3. Large security system conduit and pull boxes shall be coordinated with building construction, beams, etc., to assure clearances and accessibility.

1.17.7 Exterior Utilities - The final Exterior Utility drawings shall, as a minimum, be checked for the following:

1. Electrical lighting poles, manholes, handholds and underground conduit shall be coordinated with existing utility locations as well as installation of other new utilities.
2. Plans and specifications shall be checked for conflicts.

1.18 Project Solicitation - Proposals shall be solicited in accordance with Texas Bidding Statutes. The Airport Board will coordinate and be responsible for the contracting arrangements. Public Advertisement for Bids by the Airport Board will be run for two (2) consecutive Sundays in various local newspapers and listed in local plan rooms.

1.19 Sale and Issuance of Contract Documents to Contractors - Beginning on Tuesday after the first Sunday advertisement, bid packages will be available to bidders from a local reproduction company. The designer should confirm this procedure with the Airport Contact.

1.20 Pre-Bid Conference - The Airport Board will conduct a Pre-Bid conference for the bidders. The designer will brief the bidders on the overall scope of the project, answer questions from bidders and arrange for and conduct a site tour.

1.21 Addenda - If questions come up during the Pre-Bid Conference or if there are clarifications required, the designer will provide answers to the Airport Contact. The Airport Board is responsible for issuing all Addenda.

1.22 Bid Opening - The Airport Board will conduct the bid opening at the Airport. After the bid opening the Airport will perform a bid analysis. Upon completion of the bid analysis a recommendation to award the contract to the lowest responsible bidder will be issued to the Board for approval.

1.23 Pre-Construction - Upon approval of the project, the applicant, his design agents, and his contractor shall meet with Board Representatives for a pre-construction conference. At such time, principal aspects of coordination will be established: project schedule, coordination, inspections, as well as any other items of a timely nature to the project.

1.24 Site Clean-up - The designer should specify that the Contractor will be responsible for maintaining an orderly and accommodative environment of the construction area and shall, prior to conclusion of the work, remove all rubble, debris, and surplus material occasioned from the immediate site. In addition, he shall similarly render and restore all off-site areas disturbed during the construction of the facility.

1.25 Operational Procedures - The Airport is in operation twenty-four (24) hours a day and construction procedures must provide safe operation during the entire period. In order to provide operating safety, a system of tags shall be provided by the Airport Board and shall be specified in the construction documents for turning central chilled water systems, central hot water systems, steam, plumbing or utility systems on and off to facilitate construction. The designer shall identify all interface valves on the plans or provide for new valves to use for sectionalization. Prior to sectionalizing or turning off systems, the Contractor shall tag the valve and his representative shall sign. At the same time, the Airport Contact and the respective operating and maintenance organizations shall all sign at the same time. Prior to turning the system back on, all representatives shall again sign off on the operation.

1.26 Operational Safety - In order to provide operational safety, the Contractor is to notify the DPS communications Center (972 / 574-4454) two (2) hours prior to commencement of work and prior to turning fire protection/detection systems on or off. The contractor is expected to give the following information, once in contact with the DPS Communications Center:

1. Name and phone number of contractor.
2. System identification (i.e. sprinkler valve number, fire alarm zoning identification).
3. Time the system will be deactivated.
4. Time the system will be reactivated.
5. Total time the system will be out of service.

1.27 Testing - Prior to the time the system is connected in the main system, detailed testing requirements shall be completed as specified by the Design Engineer.

-- END OF DIVISION --