

## **University of Arizona Design Specification Standards Overview of Update 10 Changes**

A brief summary of key DSS **changes** are provided **in red** below.

### **INTRODUCTION**

- Updated for signatories and DSS committee chairs

### **REQUEST FOR REVISION**

- Form removed from DSS. A new online request process will be initiated in the coming months.

### **TAB A TABLE OF CONTENTS**

#### **TAB B PROCEDURES**

B-4 International Suite of Codes

B-9 As-Builts and Record Drawings B-10 Variance Procedure

**B-10 Variance Procedure**

- Updated references to former University departments.

B-11 Surface Water Procedures

#### **TAB C DESIGN CRITERIA**

C-2 Campus Planning and Urban Design Guidelines

**C-3 Laboratory Planning and Design Criteria**

- Changed requirements such that floor drains/sinks shall not be provided at emergency showers to be consistent with current UA requirements

C-5 Custodial Planning and Design

C-6 Keyless Access and Security System Guideline

C-7 Room Numbering

C-9 Surface Water Design Guidelines

C-10 Tree Preservation, Protection, & Salvage Guidelines

C-11 Indoor Air Quality Criteria

**C-12 Campus Accessibility**

- Added clarification for accessories mounting height

C-13 Campus Sustainability

C-14 All Gender Restroom Requirements

C-15 Lactation Room Requirements

C-16 Use of Sage Green Color on Campus



THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186  
1405 N. Ring Rd  
PO Box 210186  
Tucson, AZ 85721

Office #: 520-621-9113  
ufs.arizona.edu

### **TAB D ~~BOILERPLATE~~ Not Used**

~~DIVISION 00~~

~~DIVISION 01~~

- Content moved into Appendices section

### **TAB E STANDARDS**

#### DIVISION 02 - SITE WORK

Section 02100	Demolition
Section 02200	Earthwork
Section 02280	Soil Treatment
Section 02500	Paving and Surfacing
Section 02610	Site Chilled Water & Heating Water Utilities
Section 02620	Site Potable Water & Reclaimed Water Utilities
Section 02640	Site Natural Gas Utility
Section 02710	Site Sanitary Drainage
Section 02720	Site Storm Drainage
Section 02810	Irrigation
Section 02830	Fences and Gates
Section 02850	Trash Compactor Embed Plan
Section 02870	Site and Street Furnishings
Section 02900	Landscaping
Section 02910	Temporary Tree and Plant Protection
Section 02920	Tree Salvage
Section 02930	Palm Tree Salvage and Planting

#### DIVISION 03 – CONCRETE

Section 03310	Structural Concrete
Section 03330	Architectural Concrete

#### DIVISION 04 – MASONRY

Section 04200	Unit Masonry
---------------	--------------

#### DIVISION 05 – METALS

Section 05300	Metal Decking
Section 05500	Metal Fabrications
Section 05700	Ornamental Metals- Skateboard Deterrents

#### DIVISION 06 – WOOD & PLASTICS

Section 06000	General Discussion
Section 06100	Rough Carpentry



THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186  
1405 N. Ring Rd  
PO Box 210186  
Tucson, AZ 85721

Office #: 520-621-9113  
[ufs.arizona.edu](http://ufs.arizona.edu)

Section 06170 Prefabricated Structural Wood  
Section 06200 Finish Carpentry  
Section 06402 Architectural Woodwork / Custom Casework

### DIVISION 07 – THERMAL & MOSITURE PROTECTION

Section 07000 General Discussion  
Section 07100 Waterproofing and Dampproofing  
Section 07200 Insulation  
Section 07240 Exterior Insulation and Finish Systems  
Section 07250 Fireproofing  
Section 07270 Firestopping

#### Section 07310 Shingles

- Updated weight and type of underlayment.

#### Section 07320 Clay Tile Roofing

- Removed "Clay" option. Concrete left.

#### Section 07410 Preformed Roof and Wall Panels

- Removed clay tile per Roman Romero.

#### Section 07500 Membrane Roofing

- Updated weight and type of underlayment.

#### Section 07570 Traffic Topping

#### Section 07590 Horizontal Traffic Surfacing

- Updated weight and type of underlayment.

#### Section 07600 Flashing and Sheet Metal

#### Section 07700 Roof Specialties and Accessories

#### Section 07800 Skylights

#### Section 07900 Sealants

### DIVISION 08 - DOORS & WINDOWS

#### Section 08000 General Discussion

#### Section 08110 Steel Doors and Frames

#### Section 08210 Wood Doors

#### Section 08305 Access Doors

#### Section 08330 Overhead Coiling Doors

- Removed section.



THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186  
1405 N. Ring Rd  
PO Box 210186  
Tucson, AZ 85721

Office #: 520-621-9113  
ufs.arizona.edu

Section 08400 Entrances and Storefronts

Section 08500 Metal Windows

Section 08610 Wood Windows

- Removed section

Section 08710 Finish Hardware

Section 08711 Finish Hardware; Residence Life

Section 08720 Automatic Door Operators

Section 08800 Glazing

### DIVISION 09 - FINISHES

Section 09000 General Discussion

Section 09100 Metal Support Systems

- Removed metal studs bearing strength and added an option for splicing non-load bearing studs.
- Changed minimum stud grade requirement from G90 to G60 and clarified that this requirement is specifically for interior wet walls.

Section 09200 Lath and Plaster

Section 09250 Gypsum Board

Section 09330 Tile

Section 09500 Acoustical Treatment

Section 09650 Resilient Flooring

Section 09680 Carpet and Carpet Tile

Section 09900 Painting

Section 09950 Wall Covering

### DIVISION 10 - SPECIALTIES

Section 10000 General Discussion

- Clarification of fire extinguisher brand and locations.

Section 10100 Chalkboards, Markerboards and Tackboards

Section 10160 Toilet Compartments

Section 10260 Wall Protection Systems / Corner Guards

Section 10293 Bird Control

Section 10410 Directories and Bulletin Boards

Section 10420 Dedication Plaque

Section 10430 Exterior Signs

Section 10431 AED (Defibrillators) and Cabinets

Section 10520 Fire Protection Devices



THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186  
1405 N. Ring Rd  
PO Box 210186  
Tucson, AZ 85721

Office #: 520-621-9113  
ufs.arizona.edu

- Clarification of fire extinguisher brand, locations, mounting instructions, clearly define signage requirements, provide direction on fire extinguisher cabinet selection.

### Section 10810 Toilet Accessories

- Updated seat cover dispensers to be required at all toilets per current standards/policies
- Updated baby changing table basis of design model number.

### DIVISION 11 - EQUIPMENT

Section 11050 Compact Shelving

Section 11132 Projection Screens

### DIVISION 12 - FURNISHINGS

Section 12000 General Discussion

Section 12345 Laboratory Casework

Section 12510 Blinds

Section 12690 Floor Mats and Frames

Section 12710 Fixed Seating

### DIVISION 14 - CONVEYING SYSTEMS

#### Section 14000 General Discussion

- Add requirement for minimum of two (2) elevators
- Add requirement for all elevators to be supplied with emergency power
- Add requirement for battery lowering in the event of emergency power failure
- Define minimum expectations for machine room size and types of elevators
- Require emergency elevator communication systems and define the requirement
- Require fire sprinkler in elevator hoistways, lobbies, and machine rooms
- Require fire detection in elevator hoistways, lobbies, and machine rooms

#### Section 14210 Electric Traction Elevators

- Allow other controllers with pre-conditions
- Add allowance for elevator vendors
- Require all fire detection devices tie into main building fire alarm system
- Require shunt trip be connected to and controlled by the main building fire alarm system

#### Section 14240 Hydraulic Elevators

- Allow other controllers with pre-conditions
- Add allowance for elevator vendors
- Require all fire detection devices tie into main building fire alarm system



THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186  
1405 N. Ring Rd  
PO Box 210186  
Tucson, AZ 85721

Office #: 520-621-9113  
ufs.arizona.edu

- Require shunt trip be connected to and controlled by the main building fire alarm system

### Section 14440 Lifts

## DIVISION 15 – MECHANICAL

### Section 15000 General Requirements

#### Section 15050 Basic Mechanical Materials and Methods

- Reworked this section so that it is the reference for hydronic valve type requirements
  - Requirements previously spread out over multiple sections
- Added references to other sections for other valve types (e.g. control valves, fire suppression, and steam)
- Clarified which valve types are applicable to which pipe sizes
- Clarified/augmented requirements for valve internal components
- Added provision for alternative pipe label types if approved by the University
- Added a table detailing utility types, acronyms, and label coloring.
  - This effort intends to standardize pipe labeling across projects/buildings
- Added requirement for unions on both sides of threaded valves.

#### Section 15250 Mechanical Insulation

- Clarified that duct liner, where approved, must be fiber free.
- Added requirement to discuss the inclusion of insulation for systems between 56 and 104 °F, previously indicated as not required
- Clarified that system with multiple fluid temperatures should use the most stringent temperature
- Added requirement for coil condensate piping to be insulated
- Clarified that fiberglass pipe insulation shall include factory ASJ.
- Clarified duct insulation requirements apply to supply and return duct and added provision for ducts located in the space that they serve.
- Added requirement to discuss other duct system types (e.g. outside air) with UFS to determine if insulation is required.
- Altered duct material requirements to be based on installed R-value.
- Added requirement for outside duct jacketing to be pitched (tented) on the top surface.
- Altered indoor piping field applied jacketing to allow PVC in addition to canvas.
- Added requirements for equipment insulation to include removable sections for maintenance and to access equipment nameplates.

#### Section 15300 Fire Sprinkler Systems

- Specify UA as AHJ



THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186  
1405 N. Ring Rd  
PO Box 210186  
Tucson, AZ 85721

Office #: 520-621-9113  
ufs.arizona.edu

- Remove requirement for chemical treatment
- Remove requirement for document box
- Require horizontal fire pumps and vertical jockey pumps when needed in a building
- Require fire pumps and jockey pumps be connected to emergency power
- Clarify nitrogen requirements
- Define flow switch and pre-action expectations
- Require each floor be provided with a distinct fire sprinkler zone
- Define the requires for control and monitoring for zones, risers, and standpipes

### Section 15320 Clean Agent Systems

- New Section, previously described in multiple other sections

### Section 15410 Plumbing Piping and Specialties

- Corrected Hubless joint product reference on Drainage/Vent piping in table
- Added accommodations for existing buildings and systems to allow drain piping slope reduction to 1/8" per ft in certain circumstances.

### Section 15440 Plumbing Fixtures

### Section 15450 Plumbing Equipment

### Section 15480 Plumbing Special Systems

### Section 15510 Hydronic Piping and Specialties

### Section 15520 Steam Piping and Specialties

### Section 15530 Refrigerant Piping and Specialties

### Section 15540 Heat Transfer Equipment

- CHW System Design
  - Added Acknowledgement of that design temperatures may differ outside of main UA Campus
  - Added a table for summertime sensible/latent and wintertime CHW temperatures (in lieu of previous sentences) for ease of reference. Also lowered wintertime supply temperature to be consistent with current plant operations.
  - Clarified that requirements are applicable to air-to-water (coils) and water-to-water heat exchangers
  - Added design outdoor temperature requirements
  - Added coil design discharge air temperature requirement ( $\leq 52$  °F) to support dehumidification
- Building Heating Water System Design
  - Added Acknowledgement of that design temperatures may differ outside of main UA Campus
  - Changed building design temperature differential to 40 °F
  - Added other requirements to help facilitate future campus decarbonization



THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186  
1405 N. Ring Rd  
PO Box 210186  
Tucson, AZ 85721

Office #: 520-621-9113  
ufs.arizona.edu

- Added a table indicating current design requirements and current decarbonization targets. Requires new designs to comply with both.
- Added verbiage to allow heating water reset schedules based on parameters other than outdoor temperature
- Clarified language stating that steam heating coils are prohibited
- Clarified that shell and tube heat exchangers shall include replaceable tube bundles
- Added language prohibiting decentralized cooling towers without prior consent of the University
- Added requirement that multiple coil arrays have independent blowdown/drain assemblies on each coil

### Section 15550 Heat Generation

#### Section 15680 Packaged Liquid Chillers

- Updated refrigerant type due to current phase out of previous refrigerants.

#### Section 15780 Packaged Air Conditioners

#### Section 15810 Humidifiers

- Added requirement for humidifier source fluid to be generated within the building under certain circumstances to facilitate future decarbonization.
- Added requirement for all humidifiers to include high-humidity switch and minimum air velocity switch.

#### Section 15840 Ductwork

#### Section 15850 Ductwork Accessories

- Removed terminal unit (TU) reheat minimum gpm and temperature columns from table. These requirements are now described elsewhere in this section.
- Added language about preferred TU design inlet velocities and limited maximum velocity to 2,200 ft/min.
- Added language requiring coordination of TU minimum velocities with the minimum controllable by the airflow sensor technology specified.
- Added a requirement for all TUs to include a discharge air temperature sensor integrated into the BAS
- Added a requirement for all VAV TUs to have at least these 3 airflow set points: overall maximum, overall minimum, and heating maximum.
- Added a requirement to include a maximum leaving air temperature BAS set point on single deck reheat TUs and described logic on how to utilize it.

#### Section 15855 Air Handling Systems

- Added requirement to discuss hot deck cooling options on dual deck units.

#### Section 15860 Fans

#### Section 15870 Variable Frequency Drives

#### Section 15970 Control Systems





THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186  
1405 N. Ring Rd  
PO Box 210186  
Tucson, AZ 85721  
Office #: 520-621-9113  
ufs.arizona.edu

### Section 15980 Utility Meters

#### Section 15990 Testing, Adjusting, and Balancing

- Added a table for piping pressure testing requirements (in lieu of previous sentences) for ease of reference
- Updated Natural Gas testing requirements per local utility provider.
- Added requirement to ensure that dampers and valves are fully open prior to commencing TAB
- Added considerations for variable speed hydronic systems in the pump impeller trimming requirements

## DIVISION 16 – ELECTRICAL

### Section 16000 General Discussion

### Section 16050 Basic Electrical Materials and Methods

#### Section 16110 Raceways

- Reduce minimum raceway size to ½"
- Define review authority
- Require steel flex

#### Section 16115 Underground Conduits and Distribution Duct Banks

- Added the use of fiberglass elbows
- Added offsets and bends under 45 degrees may be PVC
- Added images for references
- Added metal stakes used to tie down duct banks may not be in direct contact with the metal rebar of the duct bank
- Added requirement for installations to be inspected by PD&C and the FM Medium Voltage Shop

### Section 16120 Wire and Cable

#### Section 16122 Primary Power Cables

- Added requirement for installations to be inspected by PD&C and the FM Medium Voltage Shop

### Section 16130 Boxes

#### Section 16140 Devices

- Remove requirement for snap-back receptacles and switches.

### Section 16160 Cabinets and Enclosures

### Section 16170 Motor Starters

#### Section 16175 Elevator Power and Controls

- Remove Hoffman Enclosure requirement and replace with open face enclosed breaker
- Require installation and operation of shunt trip to match details in section 16720



THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186

1405 N. Ring Rd

PO Box 210186

Tucson, AZ 85721

Office #: 520-621-9113

[ufs.arizona.edu](http://ufs.arizona.edu)

Section 16190 Supports

Section 16195 Electrical Identification

Section 16310 Primary Switching Station

- Added requirement for installations to be inspected by PD&C and the FM Medium Voltage Shop

Section 16320 Transformers (Medium Voltage)

- Added requirement for installations to be inspected by PD&C and the FM Medium Voltage Shop

Section 16390 Primary Grounding

- Added grounding plates allowed when grounds rods are not feasible
- Added compression/crimp style (C Billet) lugs are allowed for ground connections to rebar
- Added requirement for installations to be inspected by PD&C and the FM Medium Voltage Shop

Section 16420 Service Entrances

Section 16425 Motor Control Controllers and Contactors

- Removed identified manufactures

Section 16430 Metering

Section 16435 Switchboards

Section 16440 Disconnect Switches

Section 16450 Secondary Grounding

Section 16460 Transformers (Low Voltage)

Section 16465 Busduct

Section 16470 Panelboards

Section 16475 Overcurrent Protective Devices

Section 16485 Lighting Controls and Contactors

- Removed specific manufacture to allow lighting designer to specify the best system for the required operation
- Removed specific integration requirements

Section 16510 Lighting Design

Section 16530 Site Lighting

Section 16535 Emergency Lighting

- Require battery backup in all emergency lights regardless of source of power

Section 16580 Theatrical Lighting

Section 16610 Uninterruptable Power Supply Systems

- Specifically require APC brand equipment



THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186

1405 N. Ring Rd

PO Box 210186

Tucson, AZ 85721

Office #: 520-621-9113

[ufs.arizona.edu](http://ufs.arizona.edu)

### Section 16620 Standby Power Generator Systems

- Require docking stations for all emergency power systems
- Require generators and transfer switches come with the top available extended 10 year warranty

### Section 16622 Automatic Transfer Switch

- Require products by Caterpillar or pre-approved equal as listed. This is to ensure that systems seamlessly integrate into existing Cat Connect monitoring system.

### Section 16650 Electromagnetic Shielding Systems

### Section 16660 Ground Fault Protection Systems

### Section 16680 Variable Speed Drive Systems Coordination

### Section 16700 Telecommunications

### Section 16705 Blue Light Phones

### Section 16720 Fire Alarm Systems

- Allow specific brands with prior approval from UofA Fire
- Correct spelling issues
- Remove outdated requirements

### Section 16950 Testing

## APPENDICES

### APPENDIX A - MECHANICAL SUPPLEMENTAL SPECIFICATIONS

#### Section 15970 Control Systems

### APPENDIX B - ELECTRICAL SUPPLEMENTAL SPECIFICATIONS

#### Section 16122 Primary Power Cables

#### Section 16310 Primary Switch Station

- Removed the use of PME-9's and PME-11's
- Added the requirements for S&C Vista switches

#### Section 16311 Underground Distribution Switchgear 15kV Class

#### Section 16320 Pad Mount Transformer

- Removed the requirement of the transformer to have Taps
- Removed required manufacturers

#### Section 16425 Motor Controllers and Contactors

#### Section 16435 Switchboards

#### Section 16620A Diesel Engine Generator Set



THE UNIVERSITY OF ARIZONA  
BUSINESS AFFAIRS

## University Facility Services

UFS Bldg. 186  
1405 N. Ring Rd  
PO Box 210186  
Tucson, AZ 85721

Office #: 520-621-9113  
[ufs.arizona.edu](http://ufs.arizona.edu)

Section 16620B Natural Gas Engine Generator Set

Section 16621A Automatic Transfer Switch

Section 16621B Automatic Transfer Switch, Bypass Isolation Type

Section 16700 Telecommunications

### Section 16720 Fire Alarm Systems

- Remove single manufacture requirement
- Add requirement for prior approval of a manufacture
- Define expectations of AHU smoke detection
- Remove outdated requirements and update requirements to align with current codes
- Adjust emergency message board requirements
- Reduce required space capacity
- Corrected other section reference

### APPENDIX C – BOILERPLATE

- Tab D content moved to this location