MSCAA
DESIGN GUIDE and CONSTRUCTION STANDARDS

INDEX

Airfield Construction Standards

A. Joints and Joint Sealants

1. All joints to be beveled on new construction and reseal projects.
2. All concrete joint sealants to be a non-sag silicone or preformed material. Silicone is preferred on reseal projects.

B. Sodded Areas

1. All safety areas are to be 100% sod.
2. All areas that have had earth disturbed shall be sodded and fertilized.
3. Any sodded area within 2’ of an apron, pad or drainage structure shall be compacted to a minimum of 95% (Modified Proctor).

C. Drainage

1. Concrete down drains should be installed on any area that is sloped for drainage.
2. Any drain pipes that travel outside the SIDA fence should have proper security grates installed.
3. Outlets should have a run off pad; concrete if preferred but asphalt is acceptable for aprons or run-off pads.
4. The sub-base for concrete down drains, drain inlets or outlets should be compacted to a minimum of 95% (Modified Proctor).
5. All drain and under drain joints or connections should be properly grouted or sealed. All drain inlets and manholes boxes entries shall be properly grouted or sealed inside and outside junction structure.

D. Concrete Aprons

1. All sign bases, junction boxes and manholes on new construction are to have a minimum of a 6 ft. apron around the sign or structure, sloped away from the sign or structure.
2. Aprons should have a minimum thickness of 4”.
3. Aprons should be flush with the structure bases and sloped to be flush with soil. The slope shall not exceed the FAA maximum.
4. The sub bases should be compacted for the structure bases and aprons to a minimum of 95% (Modified Proctor).

E. Perimeter Fence

1. Perimeter fence shall be a minimum of 10’ tall fabric and shall include three-stand, double-sided barbed wire and 18” diameter concentric razor wire secured at 12” spacing.
2. Perimeter fence shall include a 6' paved lane under the fence. This will eliminate washouts, animal intrusions, reduce maintenance, and allow easy inspections by Airport Police.
3. Rolling, automatic gate operators shall be commercially/industrially rated and designed for high-security environments. Operators for gates with openings less than 15 feet must

operate at a minimum speed of 20” per second. Operators for gates with openings 15 feet or wider must include variable frequency drives and operate at a minimum speed of 36” per second.

F. Construction Contractors

1. The Contractor shall maintain all sodded areas through the duration of the contract. The Contractor shall be responsible for the upkeep of contracted areas including grass cutting, rut repair and maintaining proper drainage ditches.
2. Security grates that are installed must be maintained and in good working order by the contractor for the duration of the contract.
3. All areas that were used by the contractor must be left in conditions that will not hinder the normal routine maintenance of Airfield; this includes, but is not limited to debris removal, grading, drainage, and re-seeding or sod.

Airfield Electrical Construction Standards

A. General

1. Work performed shall be accomplished by crews with a minimum of one licensed journeyman per three apprentices.
2. All temporary cable installations shall be protected either by burying cable in grass areas or by installation in conduit for above ground applications. Other methods may be used for short term or emergency situations if approved by the Airfield Maintenance Electrical Supervisor. Location of temporary cables shall be marked sufficiently to prevent damage from construction and maintenance equipment.
3. In all circumstances enough cable shall be provided at light cans, junction cans and hand holes so as to allow a minimum of 3 feet extending above ground for maintenance purposes. The exception to this is in the installation of taxiway centerline lights on SMGCS routes where two interleaved circuits are present in the same light can. In this instance only the circuit that is attached to the transformer in an individual light can, should have the extra conductor provided. This prevents the can from becoming cluttered unnecessarily.
4. Constant current series circuits shall be limited in capacity to a maximum of 20kW. Preferred capacity is 15kW or less.

B. Testing

1. The contractor shall furnish all necessary equipment and appliances for testing the underground cable circuits after installation.
2. The contractor shall demonstrate that all lighting power and control circuits are continuous and free from short circuits and unspecified grounds.
3. The insulation resistance to ground of all non-grounded series circuits shall be not less than 500 MΩ and shall be maintained at the required level by the contractor during the term of the warranty period.
4. Each new series circuit, or new part of existing circuits being extended or replaced, shall be tested as follows:
    i. Low voltage megger tests shall be performed to comply with (c.) above. Circuits shall then be subjected to a Hi-Pot test in accordance with engineer's specifications.
5. All new fixture installations may, at the owner's request, be subjected to photometric testing to certify performance in accordance with FAA specifications.

C. Constant Current Regulators

1. The constant current regulators shall be magnetic designs; the susceptibility to extraneous signals of solid-state designs is not acceptable. The regulators shall not have solid-state controls in the series circuit and shall be designed to prohibit radio communications interference. The regulators shall limit transient current peaks without the use of solid-state series circuit controls with soft-on feature.
2. Each regulator shall include a true RMS ammeter, and ON/OFF/REMOTE switch and brightness controls.

3. In addition, the regulators shall be provided with SPDT contacts rated 2 amperes at 120 volts to indicate the following functions for remote monitoring:
4. REMOTE/LOCAL selected at control switch. Primary Power ON.
5. Constant current regulators, including standby regulators furnished or installed by the contractor shall be provided with seismic restraints and include all necessary equipment including control and monitoring equipment (Crouse-Hinds/Transtech digitrac units) to make the regulators operational.

D. Marking and Labeling

1. Wire identification. The contractor shall furnish and install self-sticking wire labels or identifying tags on all control wires at the point where they connect to the control equipment or to the terminal blocks.
2. Series circuit cables shall be identified with Thomas and Betts ty-rap #TY546MT or approved equivalent suitable for wet environments. Metal tags secured by tie wire or other means shall not be acceptable. All marking means shall be approved by the Airfield Maintenance Electrical Supervisor.
3. All conductors of series circuit conductors shall be marked with their circuit designation at all points where the conductor is accessible.
4. The contractor shall furnish and install engraved plastic labels on the cases of regulators, breakers, and distribution and control relay cases. All circuit breakers or other disconnecting means shall be marked and identified with their circuit designation.
5. Fiber optic runs should include #10 THWN stranded yellow tracer wire for locating purposes and connected in its entirety as a continuous conductor. Alternatively, armored fiber optic cables will be considered in lieu of tracer wire.
6. Underground electrical warning tape shall be installed above all underground conduit installations not concrete encased in unpaved areas. Warning tape shall be located as shown on the plans above the counterpoise wire.

E. Lighting Cans, Junction Cans, Junction Can Plazas and Hand Holes

1. Except in extreme cases where other means are not practical, manholes or hand holes larger than 4 feet x 4 feet x 4 feet deep shall not be used.
2. Hand holes shall be equipped with spring loaded/assisted hinged covers of a design easily opened by one person.
3. The preferred method of connectivity shall be by use of junction can plazas consisting of FAA L-868 cans installed in concrete plazas. Each can shall contain a single circuit with the designation of the circuit imprinted in a brass marker embedded in the concrete adjacent to the can. If deemed necessary, and at the approval of the Airfield Maintenance Electrical Supervisor, more than one circuit may be installed in a conduit/can. Can lids should be flush with concrete plazas with dam rings on the cans.
4. All ducts installed under paved areas shall be encased in concrete.
5. All unused conduits shall have the open ends plugged with removable tapered plugs and be provided with a pull rope equivalent to IDEAL Power-Fish pull line (200 lb strength)

6. Drain lines shall be installed to provide positive drainage to eliminate standing water in airfield lighting bases, junction cans, and hand holes in locations determined by the designer.
7. L-868 cans used for the installation of in-pavement lights shall be of a two-piece design with the top section including a multi-hole ring (VEGA #2419MEM) as manufactured by Jaquith Industries.
8. Fixture hold down bolts shall be all-thread stainless steel, type 304 or as recommended by the fixture manufacturer.
9. Fixture hold down bolts for in-pavement lights shall be tightened to the proper torque per fixture manufacture's specifications. All bolt holes shall be cleaned using a source of compressed air prior to installation of any bolts. Threads on all bolts shall be coated with anti-seize compound approved for use on stainless steel. Bolts shall not extend past the threaded adapter ring or into the can. Final tightening of the bolts shall be done using a properly calibrated torque wrench of the required range and verified by the engineer. Electrically or pneumatically operated wrenches shall not be used to achieve the final torque on bolts.
10. Lock washers installed on hold down bolts for all fixtures shall be one piece spring-type stainless steel. CRC type washers shall not be acceptable.
11. All cans shall have factory-installed hubs. Grommet cans are **not** acceptable unless approved for the application by the Airfield Maintenance Electrical Supervisor. Stub-in connections into existing light bases shall be Meyers hub installation.

F. Connectors

1. L-823 connectors used to splice L-824 type C #8 AWG cables shall be Elastimold style *54*-D4-D4 or equivalent. L-823 connectors shall be made waterproof by a double layer of rubber tape (scotch 23 or equal) covered by a double layer of plastic tape (scotch 88 or equal). Heat shrink, is not allowable. One-piece shrink kits that encapsulate the entire splice shall not be used. Provide Scotch 23/Scotch 88 waterproofing at center connection to extend 1-1/2" each side of break and at each end of splice kit.

G. Fixtures

1. Runway and taxiway elevated light fixtures shall use a quartz bi-pin type lamp of the minimum wattage required for the application unless LED fixtures are approved by Airfield Maintenance Electrical Supervisor.
2. In-pavement fixtures should be manufactured of aluminum and utilize no more than two lamps with a maximum total wattage of 100 watts per fixture. L-850C edge lights and fixtures used for stop bars and runway guard lights may exceed this wattage, however.

H. Signs

1. Signs should be re-lampable without the use of tools.
2. Concrete foundations for signs shall contain separate housings for transformers. Transformers shall not be housed under a leg of the sign or any portion of the sign. Sign power should be fed through the sign leg.

3. Where practical, signs should be style 5, size 3, and be installed on a dedicated circuit.
4. All signs installed on the airfield should be marked on each end with 4” vinyl reflective labels with the sign’s designation as shown on the plans.

Facilities Construction Standards

A. General

1. All work shall comply with the applicable construction codes and MSCAA standards. The contractor shall be responsible for construction code permits and shall arrange for all code required inspections. Copies of permits shall be supplied to the Manager of Building Maintenance.
2. Utilities will not be interrupted without prior coordination and approval from the MSCAA Building Maintenance Manager, telephone number (901) 922-8615 or the Maintenance Service Desk at (901) 922-8040. Approval is required for each and every interruption. A minimum of a 24-hour notice is required for utility interruptions.
3. All salvaged equipment shall be returned to MSCAA at their designated location for their use or disposed of off-site as directed by MSCAA.
4. Asbestos Containing Materials (ACMs) are specifically prohibited without specific written approval from MSCAA. Any installation of ACMs without prior written approval must be removed immediately by the installer in accord with local ACM removal regulations.

B. Penetrations

1. All concrete floor and roof penetrations must be accomplished by core drilling. Use of rotary hammer or other impact tools for this purpose is prohibited. Core drilling efforts must be coordinated with tenants occupying space below the cored floor slab. The contractor will be responsible for any damage resulting from core drilling.
2. Sealing of new and pre-existing floor penetrations must be filled full depth with hydraulic cement and sealed with epoxy or polyurethane caulk as noted under the Preferred Brands heading (pages 17 & 18). The installation shall be inspected by the MSCAA Development Division. Contractor shall coordinate with MSCAA Development Division for any x-ray or ultra-sound requirements for concrete floor/roof penetrations. No drilling through concrete beams unless approved by Development.
3. When drilling or core drilling through floors, walls, ceilings etc., the contractor is responsible for inspecting for electrical, plumbing, etc and is fully responsible for all repairs to anything damaged.
4. No drilling or ramset fastening is allowed in pan sections of the concrete structure. Any attachments installed above the ceiling will be suspended from the joist structure only.
5. No holes shall be drilled and no anchors shall be attached to the glazed brick, glazed wall tiles, or metal wall panels. Attachments shall be anchored in the mortar joints exclusively.
6. Penetrations through the roof are typically prohibited. When unavoidable, roof penetrations shall be coordinated with MSCAA and will be the responsibility of the contractor to restore the roof to such a condition as not to invalidate the roof warranty.
7. Hydraulic cement and core drill sealant shall be installed full depth. After curing, epoxy or polyurethane caulk shall be applied at the bottom of the plug and polyurethane caulk shall be applied at the top surface.

C. Signage

1. Signage shall comply with the standards established by MSCAA and final approval shall be the responsibility of MSCAA Development Division.

D. Electrical

1. Fiber optic runs should include #10 THWN stranded yellow tracer wire for locating purposes and connected in its entirety as a continuous conductor. Alternatively, armored fiber optic cables will be considered in lieu of tracer wire.
2. All electrical conductors will be installed in conduit and use of flex conduit is limited to runs of 6 feet or less. Conduit couplings and connectors utilizing setscrew fasteners are prohibited. Conduit shall be concealed from public view wherever possible. All conduits and electrical raceways shall contain an equipment grounding conductor.
3. All electrical conductors #14 AWG & larger shall be stranded copper wire unless otherwise approved in writing by MSCAA.
4. All emergency devices including emergency lights, exit lights, etc., shall be connected to emergency circuits. MSCAA does not allow battery packs.
5. MSCAA does not allow Bodine ballasts in fluorescent lighting fixtures. LED is preferred in all lay-in fixtures. Prior approval by Development must be received for use of fluorescent lay-in fixtures and the lamps shall be T8.
6. All use of cable trays is subject to MSCAA review and approval. Conduit installation must be independently supported and shall not be strapped to cable trays or any of the cable trays' support systems, including hangers and braces.
7. All equipment shall meet the appropriate UL listing for its intended purpose.
8. 23-kV rated cable shall conform to MLG&W standards. This requires cable having an aluminum or copper conductor, extruded conductor shield, ethylene propylene rubber insulation, extruded semi-conducting insulation shield, copper concentric neutral, and polyethylene jacket. The cable shall be suitable for direct burial, conduit/duct and aerial installations. All designers should re-verify MLG&W standards prior to publication of construction documents.

E. Mechanical

1. The use of flex duct shall not exceed more than four (4) feet and banded with metal straps, no tape. Use of flex duct other than at the end of a line or connected to air diffusers must be approved by MSCAA.
2. Controls for the HVAC system shall be open architecture and compatible with the JCI Metasys Extended Architecture System.
3. VAV Boxes shall be pressure dependent, electronic controls with no auxiliary fan or local filter.
4. A copy of the test and balance report shall be submitted to MSCAA Development. An independent contractor shall perform the testing and complete the report.
5. The contractor shall align all motors to the associated pump, gearbox, fan, etc. MSCAA Development and Maintenance shall inspect alignment prior to acceptance. Maximum

allowable angular and parallel misalignment is 0.003.

6. Heat trace cables shall have indicator lights installed in a visible location that illuminate when the cables are in operation.

F. Plumbing

1. Brass ball valves shall be installed at the water supply point of origin and in the ceiling directly above any newly installed plumbing fixture where a utility chase wall is not present. If a walk-in utility chase exists, then ball valves shall be installed in the accessible chase no more than five (5) feet above finished floor. There shall be no more than 4 plumbing fixtures on one ball valve. Brass valve tags shall be placed on all newly installed valves clearly identifying the origin and destination.

G. Fire Alarm and Suppression Systems

1. The fire suppression system shall interface with the airport's Simplex Fire Alarm System.
2. All dry sprinkler pipe and fittings must be galvanized. All grooves in piping shall be the correct depth per industry standards.
3. See section Facilities Construction Standards – Construction Contractors for additional requirements.

H. Antennae

1. All work shall comply with the applicable construction codes and MSCAA standards.
2. No antenna is permitted on the roof; it must be installed within the infrastructure on one of the antenna farms or roof mounted antenna racks or in very limited cases with prior approval parapet mounted. Proposed antenna locations must be approved by MSCAA Development.
3. Cables are not allowed on the roof or to run bare down a wall. A conduit from the parapet location down the wall with an LB connector into the wall below the spandrel beam is required. Parapet mount must be properly sealed to prevent leaks through the concrete. Any wall penetrations must also be sealed. Cables from antennas mounted on racks must utilize the conduit pathway at the rack location.
4. Cables above the ceiling must be independently supported from the roof structure and run by a licensed low voltage contractor, or a licensed electrical contractor, in accordance with applicable codes.
5. Installer shall be responsible for construction code permits and shall arrange for all code required inspections. Copies of permits shall be supplied to the Manager of Building Maintenance.
6. MSCAA Maintenance will not provide the escort for antenna work; either installer or Operator must be badged or tenant will have to escort antenna personnel.

I. Miscellaneous

1. Relocation and/or removal of any security device including CCTV cameras, access control equipment, etc. must be approved by MSCAA Development.
2. Non-shrink grout shall be used with all tile work, up to four (4) feet in height, laid on top

of an approved waterproofing membrane.

3. All 12” X 12” ceiling tile shall be installed with the arrow on the back of the tile pointing south.
4. All flammable gas and liquid systems that are piped into buildings shall be properly equipped with seismic shutoff valves. Seismic shutoff valves shall be designed and installed to comply with all governing code requirements, insurance requirements, and MSCAA Construction Standard requirements. In the case of conflict between the listed requirements, the most stringent shall apply.
5. For in-pavement loop installations, loop wire must meet IMSA Spec 51-7. Lead-in wire, if needed, must meet IMSA Spec 50-2. Loop wire shall be one continuous length with no splices from the junction box or control cabinet and back again. The wire shall be twisted by hand four twists per foot in the lead-in slot. Loops must be cut in a rectangular shape, with each 90 degree corner transected with a 45 degree cut to prevent over bending/stressing of the loop wire. Loop saw cuts should be ¼” to 3/8” wide and a minimum of 1½” deep in concrete and 2” deep in asphalt. Loop Lead-in saw cuts should be 3/8” wide and a minimum of 1½” deep in concrete and 2” deep in asphalt. Properly seal the saw cuts with Dow Corning 890 SL self-leveling sealant.
6. The terrazzo floor shall be protected during construction. The removal, cutting, disfigurement or covering of the Terrazzo floor shall be reviewed and approved by MSCAA Development.
7. Only black steel pipe is permitted for use on systems containing diesel fuel, including tank vent stack piping, tank fill piping, and tank drain piping. No other material, including galvanized pipe, is allowed.
8. 90^{o} brushed stainless steel corner protectors shall be installed on all new interior wall construction. The protectors shall be type 304 grade stainless, 22 gauge, 44” tall, 1.5” wings with a 3/8” wall grip edge, and a 1” radius at the top. Protectors shall be installed on top of the cove base and be adhered to the wall with F-26 construction adhesive.
9. Fire rated solid wood blocking that extends from wall stud to wall stud shall be installed for support of framed openings, wall mounted cabinets, wall mounted door hardware, wall mounted monitors, plumbing fixtures, toilet partitions, toilet accessories, mirrors, etc. on all new construction walls or remodels, excluding brick or block walls.
10. All fryers in kitchens must include automated in-line used cooking oil containment systems for proper collection and disposal. Tenants will be responsible for installation, maintenance, and used cooking oil recycling.

J. Construction Contractors

1. Electrical work performed shall be accomplished by crews with a minimum of one licensed journeyman per three apprentices.
2. The Contractor shall be responsible for maintaining a clean construction site and any space used for the removal of debris. The contractor shall be responsible for repair of any damage caused by construction to as good or better condition.
3. If directed by Development the Contractor shall erect a temporary wall around the

construction site. All temporary walls shall be constructed of metal studs; anchored on bottom with double stick tape and anchored to the roof deck on top (attachment to ceiling tiles or grid is prohibited). The outside (public side) of the wall shall be finished floor to ceiling with 5/8" drywall with 2 coats of flat off white latex paint. The bottom of the wall shall be trimmed with 4" black cove base. A 2"x6" chair rail, blocked 2" off the wall, shall be installed 36" to center above finished floor. The chair rail shall be sanded and painted with two coats of bronze paint (PPG Pitt-Tech Acrylic High Gloss DTM Industrial Enamel – Bronze Tone). The Contractor shall retain responsibility during construction to maintain the wall for aesthetic and security issues. MSCAA Development Division shall approve its location, any attachments to terrazzo floors and all signage and/or graphics. For short durations and in areas of limited public visibility, temporary walls may consist of metal studs and BC grade plywood with a high build primer and premium latex paint; use of these materials is allowed only with specific approval from MSCAA Development Division.

4. Walk-off mats shall be used at all access points to the construction area to prevent tracking of dust and debris and is responsible for cleanup if any dirt, dust and/or debris gets outside their construction limits.

5. When accessible to the public, the schedule of construction efforts and removal of debris shall be coordinated so as not to disrupt other tenants or endanger the safety of the public. Final approval shall be the responsibility of MSCAA Development Division. Unless directed otherwise, working at MEM requires a badge; coordinate with MSCAA Operations Division for specific project requirements. For badging information, the Identification Office telephone number is (901) 922-8005.

6. The contractor shall inform MSCAA Development Division, telephone number (901) 922-8033 at least 48 hours prior to startup of construction.

7. A set of completed as-built drawings shall be supplied to Development upon completion of the project.

8. Fire Alarm System – the Contractor shall contact Simplex to verify that the designer worked with Simplex during the design. If design is the responsibility of the Contractor, Contractor shall contact Simplex to design the installation.

9. A pre-test of the modifications to the fire alarm system shall be conducted with Simplex and the Contractor. This pre-test must be scheduled and successfully completed at least 24 hours in advance of any test with the Memphis Fire Department. MSCAA's Development Maintenance and Communications will participate in the pre-test, so close coordination is required. A minimum of 72 hours advanced notification is required to both Simplex and MSCAA to schedule the pre-test. The pre-test must be performed after hours. Upon completion of the pre-test, Simplex will provide written confirmation of the successful completion of the pre-test, a copy of which is to be provided to the MFD fire marshal, and a copy is to be provided to MSCAA.

10. The test with the Memphis Fire Department for occupancy must be performed after hours and closely coordinated with MSCAA Development, Maintenance and t Communications. Provide MSCAA a copy of any documentation from MFD, including deficiencies noted with the fire system, or approval of the system.

Painting Standards

A. Airfield

1. Airfield painting shall comply with the latest revision of the P-620 specification. Thermoplastic markings are not acceptable.

B. Roads

1. Road painting shall comply with the latest revision of the TT-P-1952 specification. Thermoplastic markings are not acceptable.

C. Paint Vendors

1. This vendor list is provided for reference only in regards to the specific products listed in the following paragraphs. The list is not exhaustive or exclusive as equivalent vendors will be considered by MSCAA Paint Shop.
2. PPG Architectural Finishes, Inc. (1525 Three Place, Memphis, TN, 38116)
3. Sherwin-Williams (3850 Lamar Avenue, Suite 1, Memphis, TN)
4. Farrell-Calhoun (3185 Millbranch Avenue, Memphis, TN)

D. Terminal, Concourses, and South Parking Garage

1. Exterior White Fasciae, Cargo Docks, Ramp, Walls, and Columns
   i. Sherwin-Williams Universal Primer (or equivalent)
   ii. PPG Pitt-Tech Acrylic Satin – White
   iii. Sherwin-Williams A-100 Acrylic Satin – White
2. Exterior CMU Walls
   i. Block Filler
   ii. PPG Pitt-Tech Acrylic Satin – White
   iii. Sherwin-Williams A-100 Acrylic Satin – White
3. Interior Walls
   i. Sherwin-Williams B31W4400 Promar 400 Interior Latex Semi-Gloss – White
   ii. Farrell-Calhoun Acrylic Interior Semi-Gloss Latex Enamel 650 – Carriage House
   iii. Offices (including Airport Police, most of Building Maintenance, and Cargo Building Offices): Farrell-Calhoun Acrylic Interior Semi-Gloss Latex Enamel 650 – Carriage House
   iv. Offices (Mezzanine & Apron level concourse B): Farrell-Calhoun Interior Premium Eggshell Latex Enamel 370 – Snowglory
   v. Gypsum Ceilings/Walls: Pittsburgh Paints PPG 1006-1 Color: Gypsum Various Sheens
   vi. Aluminum Curtainwall: Valspar Sherwin Williams Fluorpon Special Color: Special White 391B495

4. Doors and Frames
   i. Brown Doors: Sherwin Williams Pro Industrial Acrylic Semi-Gloss – Kodiak Olive
   ii. Green Doors: Sherwin Williams Pro Industrial Acrylic Semi-Gloss – Blarney Stone
   iii. Brown Frames: Sherwin Williams Pro Industrial Acrylic Semi-Gloss – Bronze Tone
   iv. Grey Frames and doors: Farrell-Calhoun Interior Alkyd Enamel Semi-Gloss – Zen Retreat
   v. White Frames and doors (Concourse B): Farrell-Calhoun Interior Alkyd Enamel Semi-Gloss - Gypsum
5. Window Bases
   i. Farrell-Calhoun Acrylic Interior Semi-Gloss Latex Enamel 650 – Carriage House
6. Exterior Metal Structures
   i. Alkyd Industrial Gloss Enamel – White
   ii. Alkyd Industrial Gloss Enamel – Farrell Calhoun Zen Retreat
7. Interior Metal Structure (Concourse B)
   a. PT-2 Valspar Super Special White
8. Rotunda Columns (located in the "Y" of the B Concourse)
9. PT-2 Valspar Super Special WhiteID Office
   i. Walls: Farrell-Calhoun Interior Premium Eggshell Latex Enamel 370 – Carriage House
   ii. Doors and Frames: match Terminal & Concourses doors and frames
10. Management Work Room
    i. Walls: Farrell-Calhoun Interior Premium Eggshell Latex Enamel 370 – Carriage House
    ii. Doors and Frames: match Terminal & Concourses doors and frames
11. FIS
    i. Walls: Farrell-Calhoun Acrylic Interior Semi-Gloss Latex Enamel 650 – Carriage House
    ii. Doors: PPG Pitt-Tech Acrylic Satin DTM Industrial Enamel 90-475 – Quick Silver
    iii. Frames: PPG Pitt-Tech Acrylic Satin DTM Industrial Enamel 90-709/05 – Dark Silver
12. Painted Floors (Building Maintenance areas)
    i. Farrell-Calhoun Floor and Deck Enamel 702 – Medium Gray

E. Administration Building

1. Walls
   i. Ceilings: Farrell-Calhoun Interior Premium Eggshell Latex Enamel 370 – Zurich White
   ii. Walls: Farrell-Calhoun Interior Premium Eggshell Latex Enamel 370 – Carriage House

2. Interior Doors and Frames
    i. Sherwin-Williams Semi-Gloss Oil Base 1019 – Grey Statue

F. Airfield Maintenance Building

1. Walls
    i. Walls: Farrell-Calhoun Acrylic Interior Semi-Gloss Latex Enamel 650 – Carriage House
2. Doors and Frames
    i. Doors: PPG Pitt-Tech Acrylic Satin DTM Industrial Enamel 90-475 – Quick Silver
    ii. Frames: PPG Pitt-Tech Acrylic Satin DTM Industrial Enamel 90-709/05 – Dark Silver

G. Miscellaneous

1. De-Ice Tanks
    i. Farrell-Calhoun Premium Alkyd Industrial Gloss Enamel 800 – White
2. Exterior Light, Sign Pole, Sign Bases, and Bollards
    i. PPG Alkyd Industrial Enamel Gloss Z-Line – Bronze Tone
3. Ticket Spitters and Bollards
    i. Farrell-Calhoun Premium Alkyd Industrial Gloss Enamel 800 – Safety Zone Yellow
4. Colored Metal Surfaces
    i. Red: Farrell-Calhoun Premium Alkyd Industrial Gloss Enamel 800 – International Red
    ii. Orange: Farrell-Calhoun Premium Alkyd Industrial Gloss Enamel 800 – International Orange
    iii. Yellow: Farrell-Calhoun Premium Alkyd Industrial Gloss Enamel 800 – Safety Zone Yellow

Preferred Equipment

A. Architectural Finishes

1. Flooring: VCT – Armstrong
2. Cove Base
    i. Terminal Building: Armstrong or Roppe
    ii. Administration Building: Johnsonite Rubber 700 Series; 4” high; #24 Grey Haze
    iii. Offices: Flexco Rubber wallflowers series; 4” high; #03 Charcoal
3. 4” Rubber Wall Base
    i. Manufacturer: Roppe
    ii. Color: 123 Charcoal
4. 3/8” Epoxy Terrazzo TZ-3
    i. Manufacturer: Key Resin
    ii. Color: KEY 100-1779 Gull Wing Grey
    iii. Location: Concourse B
5. 3/8” Epoxy Terrazzo TZ-1
    i. Manufacturer: Key Resin
    ii. Color: KEY 001-563 White Diamond
    iii. Location: Concourse B
6. 3/8” Epoxy Terrazzo TZ-2
    i. Manufacturer: Key Resin
    ii. Color: Key 28-27 Hearthstone
    iii. Location: Concourse B
7. 3/8” Epoxy Terrazzo TZ-4
    i. Manufacturer: Key Resin
    ii. Color: KEY 100-675 Pewter
    iii. Location: Concourse B
8. 3/8” Epoxy Terrazzo TZ-5
    i. Manufacturer: Key Resin
    ii. Color: KEY 100-2018 Whale Gray
    iii. Location: Concourse B
9. 3/8” Epoxy Terrazzo TZ-6
    i. Manufacturer: Key Resin

ii. Color: KEY 001-563 White Diamond
iii. Location: Concourse B

10. 3/8” Epoxy Terrazzo TZ-7
    i. Manufacturer: Key Resin
    ii. Color: KEY 001-754 Whiteish
    iii. Location: Concourse A, B, & C Terminals
11. 3/8” Epoxy Terrazzo TZ-8
    i. Manufacturer: Key Resin
    ii. Color: KEY 012 Black
    iii. Location: Concourse B
12. 3/8” Epoxy Terrazzo TZ-9
    i. Manufacturer: Key Resin
    ii. Color: KEY 001-753 White Glass
    iii. Location: Concourse B
13. Accent Wall Tile T-1A
    i. Manufacturer: Fireclay
    ii. Product: Glazed Wall Tile White Clay Body (3”X12”)
    iii. Color: White Wash (V1)
    iv. Grout Color: Laticrete #89 Smoke Grey
    v. Location: Concourse B
14. Accent Wall Tile T-1B
    i. Manufacturer: Fireclay
    ii. Product: Glazed Wall Tile White Clay Body (3”X12”)
    iii. Color: Foggy Morning
    iv. Grout Color: Laticrete #89 Smoke Grey
    v. Location: Concourse B
15. Accent Wall Tile T-1C
    i. Manufacturer: Fireclay
    ii. Product: Glazed Wall Tile White Clay Body (3”X12”)
    iii. Color: Powder Blue
    iv. Grout Color: Laticrete #89 Smoke Grey
    v. Location: Concourse B
16. Accent Wall Tile T-1D

i. Manufacturer: Fireclay
ii. Product: Glazed Wall Tile White Clay Body (3”X12”)
iii. Color: Mayan Blue
iv. Grout Color: Laticrete #89 Smoke Grey
v. Location: Concourse B

17. Accent Wall Tile T-1E
    i. Manufacturer: Fireclay
    ii. Product: Glazed Wall Tile White Clay Body (3”X12”)
    iii. Color: Martinique
    iv. Grout Color: Laticrete #89 Smoke Grey
    v. Location: Concourse B
18. Porcelain Tile T-2 (restroom Floor)
    i. Manufacturer: Casalgrande Padana
    ii. Product: Balsaltina 18”X18” Naturale Finish
    iii. Color: Linosa
    iv. Grout Color: Laticrete #45 Raven
    v. Location: Concourse B
19. Ceiling Tile
    i. Armstrong 2’ x 2’, Cortega Angled Tegular 704A (2’ x 2’ x 5/8”)
    ii. Armstrong 2’ x 2’, Fissured Square Lay-in 756A (2’ x 2’ x 5/8”)
    iii. Armstrong 2’ x 4’, Cortega Second Look 2765 (2’ x 4’ x ¾”)
    iv. Armstrong 44”X 48”, Optima Techzone
    v. Armstrong 2’ X 2’, Ultima
20. Ceiling Grid: Armstrong Prelude
    i. Mains: 7300
    ii. 4’ Ts: XL7348
    iii. 2’ Ts: XL7328
    iv. Wall mold: 7800
21. Ceiling Grid: Armstrong Suprafine XL
    i. Location: Concourse B
22. Ceiling Metal Panel:
    i. Accent Ceilings & Walls
    ii. Perforated Aluminum Acoustic Backing Torsion Spring Hinged Pans

iii. Color: Ultra White

iv. Location: Concourse B

23. Ceiling Linear Metal

i. Accent Ceilings & Walls

ii. Pattern: Barcode

iii. Color: 8424 Walnut

iv. Location: Concourse B

24. Carpet (Hold Rooms)

i. Style Name: Resonance

ii. Style Number: J0118

iii. Color: 00406 Saddle

iv. Vendor: Continental Flooring (800-825-1221 Ext 206)

v. The pattern for the carpet is to run perpendicular to the concourse for hold room installations.

25. Carpet (Offices)

i. Style Name: Live Wire

ii. Style Number: 54733

iii. Color: 33506 Animated

iv. Vendor: Continental Flooring (800-825-1221 Ext 206)

26. Carpet (MEM Executive Offices)

i. Style Name: Ripple Effect

ii. Style Number: J0116

iii. Color: 00501 Laughs & Yawns

iv. Vendor: Continental Flooring (800-825-1221 Ext 206)

27. Carpet CPT-1 (Concourse B)

i. Manufacturer: Interface

ii. Product: Custom Soundwave Verse Sample

iii. No: 265317-005

28. Carpet Tile CPT-1A (Concourse B)

i. Manufacturer: Interface

ii. Product: Custom Groundwaves Verse Samples

iii. No: 265317-008

29. Carpet Tile CPT-1B (Concourse B)

i. Manufacturer: Interface
ii. Product: Custom Off Line Sample
iii. No: 265317-007

30. Carpet Tile CPT-1 (Concourse B)
    i. Manufacturer: Interface
    ii. Product: Custom Off Line Sample
    iii. No: 265317-002
31. Carpet Tile CPT-1D (Concourse B)
    i. Manufacturer: Interface
    ii. Product: Custom SL910 Sample
    iii. No: 265317-013
32. Wood Paneling (Concourse B)
    i. Strait Grain
    ii. Species: White Oak
    iii. Color: Custom
33. Quartz QZ-1 (Concourse B)
    i. Manufacturer: Silestone
    ii. Color: Blanco Maple
34. Quartz QZ-2 (Concourse B)
    i. Manufacturer: Silestone
    ii. Color: Cemento Spa. Polished Finish
35. Quartz QZ-3 (Concourse B)
    i. Manufacturer: Cambria
    ii. Color: Berwyn
36. Quartz QZ-4 (Concourse B)
    i. Manufacturer: Cambria
    ii. Color: Whitehall
37. Quartz QZ-5 (Concourse B)
    i. Manufacturer: Silestone
    ii. Color: Cemento Spa. Polished Finish
38. Quartz QZ-6 (Concourse B)
    i. Manufacturer: Silestone
    ii. Color: Whitehall

39. Quartz QZ-7 (Concourse B)
    i. Manufacturer: Silestone
    ii. Color: Whitehall
40. Curtain Wall (Concourse B)
    i. Manufacturer: Kawneer
    ii. Product: 1600 System 2
    iii. Color: Interior Valspar Super Special White / Exterior Clear Anodized
41. Epoxy Flooring (Concourse B)
    i. Manufacturer: BASF Building Systems
    ii. Product: BASF Masterdeal 2500 LT Duty
    iii. Color: Gray
42. Epoxy Flooring (Concourse B)
    i. Manufacturer: Dex-O-Tex
    ii. Product: Color Flake L
    iii. Color: BX 520
43. Exterior Aluminum Composite Metal Paneling (Concourse B)
    i. Manufacturer: Alucobond
    ii. Product: Alucobond Plus – fire rated core
    iii. Colors:
        1. Type 1: Titanium Metallic II
        2. Type 3A: Southwest Gold Metallic
        3. Type 3B: Harvest Gold Mica
        4. Type 3C: Driftwood Mica

B. Plumbing & Restrooms

1. Flush valves: Sloan, Royal
2. Electronic flush valve retrofits:
    i. Urinals: Zurn ZRK-C-3.5, 3.5 GPF
    ii. Water Closets: Zurn ZRK-C-3.5, 3.5 GPF
3. Plumbing fixtures: Crane, American Standard, Kohler
4. Partitions: Accurate, Stainless Steel, No sight design, overhead braced, Continuous, Hinge type-Integral, Hinge In-swing/out-swing standard closed position, Floor mounted
5. Sinks: American Standard, 0355.012 Lucerne wall mounted Lav. sink w/4" centers

6. Service Sinks: 8” centers w/ ZURN Z841M1 Faucet
7. Urinals: 6501.010 wash brook urinal American Standard white. Zurn Retro Flush Valve.
8. Water Closets
    i. Wall-mounted: American Standard 2257.103 af wall toilet 4 bolt wall mount, white
    ii. Floor-mounted: Kohler K-4368
9. Lavatories
    i. Non-ADA: American Standard, vandal resistant lavatory faucet with grid drain 2385.130 polished chrome
    ii. ADA: Delta – 511-WFHDF
10. Faucets: Sloan Optima EBF-85M infrared
11. Water closet gaskets: Wade Part # M-8 for wall hung closets
12. Backflow devices: Watts
13. Water coolers: Halsey Taylor – model #HAC8FS-Q(SS) wall-mounted
14. Toilet Accessories: Bobrick
    i. Recessed towel dispenser and waste receptacle: B-3961
    ii. Surface mounted toilet tissue dispenser: B-2888
    iii. Sanitary napkin disposal: B-270
    iv. Heavy duty robe hook: B-2116
    v. Handicap tilt mirror: B-293 (24” x 36”)
    vi. Grab bars: stainless steel with Snap Flange
15. Toilet Accessories: Non-Bobrick
    i. Foam Dispenser – Spartan Chemical Company 975700
    ii. Toilet paper dispenser: Shoreline 830 from Memphis Chemical (not for use in public restrooms)
    iii. Toilet Seat Cover Cabinet: Franklin Brass #1988 (Stainless Steel)
16. Eye Wash Station: Bradley S19314F
17. Angle Stops: Brasscraft

C. Doors

1. Exterior: Steelcraft Door; 16 gauge metal, galvanized; fully reinforced for door closer and continuous gear hinge; with 24” x 32” window prep (if specified)
    a. Standard doors shall be 3.0’ x 7.0’.
    b. Jet Bridge doors shall be 4.0’ x 7.0’.
2. Interior: 3070 (3.0’ x 7.0’) solid core wooden door with prep for continuous gear hinge; with 24” x 32” window prep (if specified)

3. Window Kits (if specified): Anemostat #LOPRO Visionlite 24”x32” with Tempered Glass
4. Metal Frames: Fit door openings to frame for a Steelcraft door or solid core wooden door with fully reinforced frame for door closer and continuous gear hinge
5. Threshold: Aluminum to fit door frame
6. Drip Caps: 16 ad if outside door
7. Closers:
    a. Standard Doors: LCN model 4041, arm RW/ PA, finish to match existing areas adjustment size 1-6 PC 23
    b. Jet Bridge Doors: Dorma 1816HT Series with smoke detector
8. Hinges:
    a. New doors shall have reinforcement on the hinge side and hinges shall be continuous geared hinges by National Guard Products, Stanley, or PBB. Minimum 0.120-inch thick hinge leaves with minimum overall width of 4 inches; fabricated to full height of door and frame. Fabricate hinges non-handed and to template screw locations. Continuous hinges guaranteed for the life of the opening.
        1. At electrified hardware locations provide electric transfer continuous hinges with a 12” removable hinge modification accessible without de-mounting door from the frame and Molex standardized plug connectors to accommodate up to 12 wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number of concealed wires to accommodate electric function of specified hardware. Preferred hardware is Von Duprin EPT10.
    b. Existing doors without reinforcement on the hinge side shall use hinges by Stanley FBB 179-4.5 x 4.5 x USP x NRP
9. Lock Prep: Yale 6-pin lockset-PB5407LN 694X497 Finish – US 10B
10. Keyways: 6-pin LFIC Cores with SA keyway
11. Panic Hardware: Dorma 9000 Series or Von Duprin RX QEL 98NL-F
12. Flush Bolts: Trimco, Burns, or Ives. Provide manual flush bolts with top rod of sufficient length to allow bolt location approximately six feet from the floor. Furnish dust proof strikes for bottom bolts. Surface bolts to be 8” in length and U.L. listed for labeled fire doors.
13. Low voltage door operators: Dorma ED900 Series or LCN 9000 Series

D. Electrical

1. Wire: THHN or equal for insulation
2. VFDs: PowerFlex 400 by Allen-Bradley including latest harmonic distortion units w/ Metasys board
3. High Voltage Substations: General Electrical, Cutler Hammer
4. Panels, breakers, and contactors: Westinghouse, ITE (Siemens), Square D, Allen Bradley,

Cutler Hammer

5. Devices: Leviton, Bryant, P&S, Hubbell
6. Device Covers: Stainless Steel
7. Lighting: G.E, Phillips, Sylvania, Lithonia
8. Fittings (no Set screws, couplings, or connectors): Raco, Steel City
9. Conduit/Wire: No MC or BX cable other than 6' or less to be used as whips from junction box to item being fed

E. Mechanical

1. Heaters: Trane, McQuay
2. Electronic Controls: Johnson Controls (FEC, NAE, BACnet MS/TP), Barber Coleman, Trane, McQuay
3. Valves, Hot/Chill Water: Johnson Controls, Barber Coleman, Honeywell
4. AHUs: Trane
5. Boilers: Cleaver Brooks
6. Chillers: Trane
7. Pumps: Peerless, Bell & Gossett, Aurora, Ingersoll Rand, Pyramid Pump, Grundfos
8. VAV Boxes (All VAVs shall be pressure dependent with electronic controls): Environmental Tech, Varitrane Systems, Tuttle & Bailey
9. Electronic Thermostats: TE-6700, BACnet MS/TP, N2, Johnson Control
10. Cooling Towers: Marley, BAC

F. Miscellaneous

1. Joint Seals and Floor Penetration Seals: Evazote 380 E. S. P. with Hindered Amine Light Stabilizer
2. Automatic Perimeter Fence Gate Operators: HySecurity