



Building Supplemental Instructions

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General Notes:

1. Any and all quantities noted on the construction drawings shall be used for general reference purposes only. The contractor is responsible to determine all final quantities.
2. Without specific written consent given prior to bid by the City of Scottsdale product catalog numbers and/or descriptions listed in Section 13: Preferred Products shall take precedence over those listed in other specification sections and/or those reviewed by the architect/engineer during shop drawing review.
3. Questions and/or conflicts concerning this specification section shall be sent in writing to the City of Scottsdale (COS) and/or Architect for resolution prior to bid. Otherwise, this section shall take precedence over construction drawings and other specification sections.

Section 1: Inspection and Construction Management

A. General Requirements

1. Submit written electrical "Lock Out Tag Out" (LOTO) procedures to the COS Construction Administration Supervisor prior to the beginning of construction.
2. Third Party Testing and/or Inspection Advance Notice: The COS Inspector shall be given a minimum one business day advance notice for testing/inspections.
3. General Contractor PDF daily reports shall be submitted via email to the COS Inspector and others as directed by COS by the end of each business day.
4. Coordinate a final SWPPP site walk through with the COS Project Manager prior to submitting the Notice of Termination.

Section 2: Landscaping and Irrigation Systems

A. General Requirements

1. Refer to City of Scottsdale Supplement to MAG Uniform Standard Specifications for Public Works Construction for additional installation requirements and details.

Section 3: Roofing

A. General Requirements

1. Crickets shall be installed on the uphill side of any equipment base, ductwork, etc. wider than 12".
2. The interior of parapet walls 48" and less in height (not viewable by the general public) shall have the roofing material run up the wall and over the top of the parapet wall under the cap. Parapet walls over 48" high shall have the roofing material run up the wall 18" minimum.
3. All four sides of the roof drain pans shall be sloped to the drain.

Section 4: Painting

A. General Requirements

1. REMINDER: Priming/preparation as required in the specifications shall be strictly enforced.
2. All cover/switch/receptacle plates, door hardware, etc. shall be removed prior to priming/painting.
3. Three coat systems shall have a white primer coat, 1st paint coat shall be 20% darker than final color, 2nd paint coat shall be 10% darker than final color, and the 3rd paint coat shall be the final color.
4. All interior/exterior metal handrails, guard rails, stair rails, and gates shall be primed and painted by an electrostatic process. The paint shall be specifically formulated for electrostatic application.

Section 5: Door Hardware Coordination

A. Hardware

1. Provide construction cores and keys during the construction period. Construction control, operating keys and cores shall not be part of the COS permanent keying system or furnished on the same keyway (or key section) as the permanent keying system.
2. Permanent cores shall be purchased by the contractor. The manufacturer shall email the COS locksmith at **FMLOCKSMITH@SCOTTSDALEAZ.GOV** to determine core and keyway. COS will install permanent cores and return the construction cores to the contractor.
3. Install factory made steel guards over door latches on park, trailhead, storage and other remotely located building doors.
4. Cores and uncut key blanks (one per core) shall be sent by the manufacturer via registered mail, return receipt requested to:
***Locksmith, City of Scottsdale Facilities Department
9191 San Salvador Drive Scottsdale, Arizona 85258***

Section 6: Common HVAC, Plumbing and Electrical Installation Requirements

A. General Requirements

1. There shall be no duct, conduit, piping, etc. that will interfere with a solar tube having an unobstructed, vertical path from the roof to the ceiling below.

2. There shall be a minimum of 4" clearance between any electrical, plumbing, HVAC, etc. component routed above removable ceiling tiles. There shall be sufficient space in the ceiling cavity to remove ceiling tiles (without damage) when components (such as fire alarm devices, speakers, etc.) are mounted on the ceiling tile.
3. Piping and conduits shall be sleeved through the roof structure with a sleeve sized to allow 1" of clearance around all piping/conduits/insulation, etc. and shall extend a minimum of 12" above the finished roof. Sleeve openings shall be made waterproof.
4. All roof or concrete pad mounted ductwork, piping, and conduits shall be supported by a Unistrut style frame/base and rubber Durablock style sleepers.
5. Piping/conduit penetrations through below ground foundation walls shall be sleeved and shall provide 2" minimum, 360 degrees of clearance. Piping/conduit shall be centered in the sleeve. Seal sleeve ends.
6. Piping/conduit routed under building footers shall be sleeved. Sleeves for conduit up to 4" shall be 8". Sleeves for conduit over 4" shall be 6" minimum larger than the conduit(s). Piping/conduit shall be centered in the sleeve. Sleeves shall extend a minimum of 12" past the edge of the footer. Seal sleeve ends.
7. All HVAC control and building energy management wire, including thermostat wiring, shall be in conduit.
8. All sleeves under footers, sidewalks, etc. shall be sealed. Spare sleeves shall have a removable cap on each end and a #12 tracer wire installed the entire length of the sleeve.

Section 7: HVAC

A. General Requirements

1. See Plumbing and Electrical sections for other applicable requirements.
2. Triple duty valves shall not serve as isolation valves.
3. All HVAC equipment located above removable ceilings shall be installed no higher than 24" above the ceiling. Isolation valves, disconnect switches, etc. shall be located as close as practicable to the unit.
4. All HVAC equipment requiring regular maintenance located above permanent ceilings shall have a 22"x22" access door and a work platform with a switched light and receptacle.
5. Condensate lines shall be copper, insulated for the first 10' from an indoor unit and have unions installed within 12" of the condensate outlet at the unit and on each side of the p-trap.
6. Install check valves where a backflow preventer serves two or more areas. *Example: cooling towers, chilled water loop, etc.*
7. All Split Direct Exchange Systems shall have the refrigerant charge type and weight logged and labeled on the unit. A typewritten log of these weights shall be included in the close out documents.
8. For systems equal to or greater than 25 tons 1) provide 2" taps with valves on chilled water closed loop systems for system cleaning requirements and 2) provide taps and valves for chilled and condenser water lines for temporary emergency equipment connections. Locate per COS direction.
9. Install 26 gage minimum sheet metal sunshield on all exterior flexible duct connectors.
10. Type AX belts shall be installed on all belt driven equipment.
11. Spacers shall be installed (width as required) in between or on the outside edge of air filters to eliminate gaps that allow unfiltered air to reach the coils.

Section 8: HVAC Building Automation System

A. System Description

1. The contractor shall install a complete Wide Area Network (WAN) Automation System (BAS). The Graphic User Interface (GUI) shall be displayable in HTML format, used as a common operating platform for all integrated control systems and shall be the Java-based Niagara N4 Framework. The entire HVAC control system shall be a network of inter-operable, stand-alone controllers communicating via BACnet communication protocols. COS shall sign a copy of the manufacturer's standard software and firmware licensing agreement as a condition of this contract. Such license shall grant COS use of all programs and application software as defined by the manufacturer's license agreement. COS shall receive ownership of all project software configuration documentation, data files, and application-level software. This shall include, but shall not be limited to, all software codes and documentation for configuration and programming that is generated for the project and/or configured for use within Network Area Controllers, Web server(s), and any related LAN/WAN/Intranet and Internet connected routers and devices. All

required IDs and passwords required for access to shall be provided. Upon installation of the BAS Graphic User Interface, the contractor shall provide (1) four-hour training session on the BAS and all system integration equipment. After system commissioning, or when COS determines that the BAS hardware and software has achieved an acceptable level of performance, the contractor shall provide (2) four-hour training sessions. Final Network Area Controller Global Control Functions and I/O Summary shall be reviewed and approved by COS.

Section 9: Plumbing

A. General Requirements

1. All potable water lines shall be copper.
2. All potable water line piping from the meter to the building and under building pads shall be soft drawn Type K. Water lines under building pads shall have no joints. Joints may be placed if the distance between the meter and the building is over 100'. Keep joints to the minimum possible. Electronic ballmakers (per COS detail 2397) shall be placed at joints.
3. All copper piping penetrating concrete floors, pads, etc. shall be sleeved. Sleeves shall extend 4" minimum above the surface of the concrete and shall be one trade size minimum larger than the water pipe it protects. Completely fill the sleeve with a waterproof sealant.
4. All equipment including pumps, water hammers, hose bibs, water heaters, expansion tanks, etc. shall have isolation valves on incoming and outgoing lines. Install valves behind an access door 24" above wall mounted hose bibs. Roof top hose bibs shall have the valve accessible on the roof.
5. All equipment piping shall have a brass union between the equipment and its isolation valve.
6. Water closet offsets shall not be used.
7. Air admittance valves may only be used with prior written approval from COS.
8. End of the line clean outs shall be provided for the main drainage line and all main branch lines 2" and larger.
9. Cleanouts shall be provided for all urinals and sinks.
10. All cleanouts shall be located in walls. Urinal cleanouts shall be located directly above the flush valve. Water closet cleanouts shall be placed at 24" AFF. All other cleanouts shall be placed at a height so that the cover plate does not overlap the cove base or sheetrock/wall tile. Multiple cleanouts in the same room shall be placed at a uniform height.
11. Clean outs in plumbing chases shall point towards the chase entry.
12. All clean out plugs shall be the raised square style and shall be set to be flush with the stud face. The access opening in the finished wall shall be a minimum of 2" larger in diameter than the clean out plug.
13. All drainage/vent lines shall be DWV rated schedule 40 PVC.
14. All building drainage lines shall have a 2% slope.
15. All drainage main lines under building pads shall have cleanouts a maximum of 75' apart.
16. All below ground, non-glued drainage line sections shall be connected with 4 band shielded connectors.
17. All exposed interior/exterior drainage/vent line sections installed less than 8' AFF and/or subject to damage shall be cast iron.
18. All drainage, vent and water lines shall have a bedding of sand or finely screened (rock free) native material 4" below and 12" above the pipe.
19. Pipe requiring insulation shall be installed so that the insulation will be set back 1/2" minimum from the stud face. Insulation shall not be removed or reduced to meet this requirement.
20. Pipe insulation shall be continuous and full sized when passing over hangers, through walls/structural elements, etc.
21. All buildings shall have a double cleanout with a 12"W x 12"D concrete apron.
22. All exterior valve boxes, clean outs, etc. shall have a 12"W x 12"D concrete apron.
23. Test ball access points shall be installed parallel with the wall so they are not confused with clean outs.
24. When waterless urinals are specified, stub out a 3" long capped water line feed with escutcheon plate at the future valve location for a future water line connection. The water line header feeding the urinal(s) shall be controlled by a dedicated valve. The stub out shall be painted to match the wall.

25. All buildings shall have a pressure reducing valve (PRV) at the main water line building entry point (inside the building) or on the downstream vertical leg (above ground) of the backflow preventer.
26. Hose bibs shall be provided within 15' of all roof top and ground mounted HVAC equipment requiring water for maintenance procedures.
27. Water zone valves shall be inside wall access panels at 60" AFF. Piping shall be arranged and enclosures shall be sized to allow all valves to be set in the "off" position at the same time.
28. Tank style water heaters shall not be installed higher than 36" AFF.
29. Water, drainage, and vent lines closer than 1.5" from plywood backer board shall be protected with 16 gage sheet metal.
30. All restroom floor drains shall be fed from the vacuum tube of a water closet/urinal flush valve. Exposed supply tubing shall be chrome plated or flexible braided stainless steel. The tap shall be placed so a minimum amount of exposed tubing between the flush valve and the wall will be installed. Install a 1" diameter, or less, chrome escutcheon plate where the tubing penetrates the wall. One tap shall feed only one floor drain unless approved by COS. All other floor drains shall be fed from an electronic trap primer installed at 60" A.F.F. inside a recessed metal enclosure with stainless steel door and screwdriver latch access. Electronic trap primers shall be set within 25' of the floor drains they serve. Install the water supply valve inside the enclosure. Surface mount trap primer, receptacle, and water valve on CMU walls. Coordinate with the electrician who shall install a GFCI receptacle inside the enclosure.

B. Testing

1. Underground drainage lines shall be water tested by providing a 10' section of 2" minimum test pipe at the lowest point of the drainage system filled with water for 30 minutes with no drop in water level.
2. All potable water lines shall be hydrostatically tested at 120 PSI for four (4) hours with no drop in pressure.

Section 10: Electrical

A. General Requirements

1. Existing Building Electrical Panel or Building Shutdown Procedure. Email the following to the project COS Building Inspector and the COS Construction Administration Supervisor a minimum of **five business days prior** to the shutdown:
 - The electrician's Lock Out Tag Out (LOTO) procedures (if not submitted already).
 - An MOP, including but not limited to, which panel(s) will be de-energized, bullet point timeline describing work to be completed, starting/end time, etc.
2. Performing work on energized equipment or circuits is strictly prohibited.
3. All wire shall be copper; #12 and larger wire shall be stranded.
4. All disconnect switches for HVAC equipment shall be fused and heavy duty rated.
5. All conduits with circuits rated 120V or greater entering j-boxes, disconnect switches, etc. through concentric or non-concentric knockouts shall have ground bushings.
6. Conduits under building pads shall have a minimum 6" of backfill above them.
7. Conduit shall be ¾" minimum.
8. Lighting and receptacle branch circuits with a maximum 120V or 277V OCPD rating of 20A shall be in conduit from the branch panel to the first concealed, accessible j-box. Stranded wire Metal-Clad Cable (MC) may be used thereafter in concealed spaces only. All MC shall have a full-sized equipment ground wire and 600V rated insulation. Anti-short bushings shall be used at all terminations. MC shall be installed parallel and perpendicular to structural elements and shall not have more than four bends (90 degree maximum per bend) between junction boxes. MC runs shall be grouped together in a neat, workmanlike manner. All circuits serving motors shall be in conduit.
9. Recessed branch panels shall have (4) ¾" spare conduits stubbed up into an accessible ceiling space.
10. All in-ground pull boxes, in asphalt or landscaped areas (subject to public/maintenance vehicle traffic), shall be traffic rated and shall have a 12"D x 12"W concrete apron. All wiring connections and splices shall be waterproof. Conduits shall enter from the bottom and shall extend 6" minimum into the pull box. Conduit entries shall be sealed watertight.
11. All light switch, receptacle and blank cover plates shall be stainless steel.

12. All storage room and closet lighting shall be controlled by wall switch style motion sensors. Set timer to turn light off after 5 minutes of no motion.
13. Receptacles shall be placed 6" (center to center) from adjacent data outlets.
14. PVC shall not be used for exposed interior/exterior conditions.
15. Receptacles requiring GFCI protection shall be GFCI rated. GFCI protection shall not be provided by an upstream GFCI receptacle or circuit breaker.
16. Grounding electrode conductor connections to ground rods, water pipes, building frames, UFER grounds, etc. shall consist of individual runs back to the service entrance ground bus. They shall not be daisy chained.
17. Install a GFCI receptacle inside the electronic trap primer enclosure. See Plumbing section for coordination requirements.

1. Light Poles

1. All light poles shall have a concrete pull box with tamperproof bolts securing the lid located within 48" of the base. The branch circuit serving the light pole shall be routed from the pull box to the light pole.
2. Install inline fuses in the light pole hand hole. The cover plate shall be secured with tamperproof screws.
3. All circuits entering pull boxes shall have 24" of spare conductor neatly coiled in the box prior to exiting to the next pull box. Secure coils of wire with plastic zip ties.
4. Each light pole type shall have a Light Pole Foundation Base detail stamped by an Arizona Structural Engineer

2. Fire Department Dispatch System (Fire Stations Only)

1. Install a 2" EMT conduit from the Fire Alarm Dispatch System to the rooftop antenna location. Extend 24" above roof and install a gooseneck.
2. Antenna support masts for the fire alarm monitoring system shall have a ground clamp attached to the bottom of each. A #6 ground wire shall be daisy chained between the masts and then connected to building steel or shall be run as a dedicated grounding electrode conductor terminated at the service entrance ground bus.

3. Fire Alarm System Conduit

The entire fire alarm wiring system shall be installed in 3/4" (factory colored red) conduit only.

4. Fire Alarm System Coordination

1. New Fire Alarm System Radio Dialer. The fire alarm system installer shall email the COS Facilities Department at **FMCONTRACTS@SCOTTSDALEAZ.GOV** to coordinate receipt of an authorization letter to purchase and install the dialer. The dialer cannot be purchased without the authorization letter.
2. New Fire Alarm System Account Set Up.
 - The radio dialer **must be** purchased by the fire alarm system installer prior to setting up a new account.
 - The General Contractor shall provide the COS Building Inspector with the fire alarm installer's name, point of contact, phone number and email address. The COS Building Inspector shall then submit a Facilities Work Order requesting a new fire alarm monitoring account with that information.
 - **FIRETROL** shall then contact the fire alarm system installer for programming the dialer, installation coordination, signal transmission testing, zone identification, etc.
 - The fire alarm system installer shall install a system information sticker provided by **FIRETROL** on the new fire alarm panel.
3. Modifying an Existing Fire Alarm System.
 - The General Contractor shall provide the COS Building Inspector with the fire alarm installer's name, point of contact, phone number and email address. The COS Building Inspector shall then submit a Facilities Work Order requesting modification to an existing account with that information.
 - **FIRETROL** shall contact the fire alarm system installer to coordinate system modifications.
4. Existing Fire Alarm System Coordination for Panel Shutdown or Test.
 - **The General Contractor shall call Arizona Security at 602.433.1271** a minimum of one business day (24 hours) prior to a system shutdown/test. Provide the 1) building name, address and/or number

per the Monitoring Information sticker on the fire alarm panel, 2) the fire alarm/sprinkler system installer name, point of contact name, email and phone number, and 3) the start/stop time/date of the shutdown/test. Send an email to the COS Building Inspector with information items 1, 2 and 3 who will issue a Facilities Work Order for Firetrol to physically set the alarm panel in test mode. The General Contractor shall coordinate with Firetrol to re-set the fire alarm panel after the work is completed.

- **Call Arizona Security at 602.433.1271** to cancel, reschedule a shutdown/test, or to report an accidental shutdown.

5. Photovoltaic Systems

1. Exterior wire gutter shall be the ventilated type.
2. All system conductors shall be in dedicated conduits, junction boxes, etc.
3. Multi-conductor cables shall not be used without written pre-approval from COS.

6. Security and Access Control System Coordination

1. Verify required conduits, sleeve placement through inaccessible spaces, requirements for access control points, sleeve locations, door hinge requirements, cable routing through fire rated walls, device locations, door/door frame access requirements, etc. with the architect/ COS security system installer prior to installation.

Section 11: Labeling and Identification

A. Underground Utilities

1. All underground services, including but not limited to, potable water, sewer, gas, electrical, and communications shall be identified with 6” wide, color coded, metal detectable polyester warning tape with wording specifically identifying the utility installed per the table below. Generic yellow plastic warning tape shall not be used.
2. Trenches wider than 24” shall have one additional strip of warning tape, equally spaced, per each additional 12” of width.
3. There shall be warning tape installed for each type of service in the same trench.
4. Replace tape removed during demolition/excavation with new.
5. Warning tape is not required under building pads.
6. Warning tape shall be placed per the following table:

Trench depth	Warning Tape Depth
Up to 24”	6” below finished grade
Deeper than 24” up to 36”	12” below finished grade
Deeper than 36”	24” above utility

B. All Equipment Located Above Grid Ceilings

1. All electrical, mechanical, plumbing, HVAC equipment, etc. located above grid ceilings shall have labels on the ceiling grid with their construction document identification.
2. Fire alarm junction boxes shall be labeled with the zone number(s) the circuiting serves. *Example: “FA Zone 3”*. Circuiting inside the junction box shall have labels indicating which zone they serve. *Example: “2”*.
3. Labels shall have a clear background and black ¼” minimum letters. *Example: “FCU-1” or “Water Valve #15” or “Exhaust Fan #12”*.
4. All damper handles, water valves, etc. shall have a 12” section of non-flammable warning tape attached to it per the following table:

Item	Color
HVAC duct damper handles	Orange
Potable water valves	Blue
Natural Gas valves	Red

C. Plumbing and HVAC System

1. All piping above accessible ceilings shall have self-adhesive labels indicating the type of service and an arrow indicating direction of flow. Labels shall be placed at room entry/exit points and every 20' in between. Exposed piping shall have labels every 50' per COS direction. Exterior piping shall have coil or strap type PVC, UV resistant labels.

D. HVAC

1. All HVAC equipment shall have a plastic label permanently attached to the equipment disconnect with the equipment name, voltage, and panel/circuit number. Exterior equipment shall have a sunlight resistant label. *Example: "AHU-3, 208V, L4-32,34,36"*. Place a duplicate label on the equipment housing if the disconnect is more than 6' from the equipment.
2. All HVAC ducts shall have 4" x24" self-adhesive labels with a yellow background and black letters defining type of duct, the unit serving it and an arrow indicating direction of flow. *Example: "AHU-5 Return Air"*. Labels shall be placed at room entry and exit points. Exposed ducts shall have labels every 100' (per COS direction) and every 20' in accessible ceiling cavities. Labels shall be placed on the bottom of duct. Exhaust fan ducts that route directly up from the unit to the roof do not need labeling.
3. All Split System Direct Exchange Systems shall have a plastic label permanently attached to the equipment with the refrigerant type and charge weight. *Example: "R410A, 4 lbs."*

E. Electrical

1. Panel schedules shall have specific device and location information matching Construction Document room numbers and room descriptions. Schedules shall be typed or neatly written in block letters. *Examples: "Receptacles: offices 101, 102, 103" or "Lighting: south parking lot" or "AHU-4: rooftop"*
2. Circuits in exterior in-ground pull boxes shall be labeled with waterproof labels indicating the circuit number. *Example "16"*
3. Light switch/receptacle and exposed junction box cover plates shall be labeled with their panel/circuit numbers. Labels shall have a clear background and black 1/4" letters. *Example: "L-32"*
4. All electrical equipment shall have a plastic label permanently attached to the equipment disconnect with the equipment designation, voltage and panel/circuit number feeding it. Exterior equipment shall have sunlight resistant labels. *Example: "Pump #1, 480V, H1-32,34,36"*
5. Label each grounding electrode conductor connected to the SES ground bus with its connection description and location. *Example: "water pipe, room #107"*
6. Install Arc Flash Warning Labels on the dead front of all electrical panels with information provided by the Electrical Engineer. Labels shall be dated. Submit sample of the label to COS for review prior to installation.

F. Plumbing

1. Zone valves shall be sequentially numbered with a brass tag beginning with #1 at the main valve. Zone valve access panels shall be labeled. *Example: Water Zone Valves #1 and #2*
2. Isolation or bypass valves on individual pieces of equipment do not need to be labeled.

G. Building and Room Signage

1. Email RFRANKLIN@SCOTTSDALEAZ.GOV to receive COS Enhanced ADA Wayfinding Sign System Standards for building and room signage requirements. Please include the project name in your request.

Section 12: As Built Drawings

A. General Requirements

1. The goal is to produce a set of documents so that those who have no prior knowledge of the project can easily find and understand information.
2. As-built drawings shall be maintained daily and kept current during construction.

3. All as-built drawings shall have "As Built" stamped on them.
 4. All RFIs shall be clearly and legibly referenced on final as built sheets. Indicate the item affected by the RFI with an arrow or area affected by the RFI with a cloud. Include a bullet point description of the RFI. *Example: "RFI #122: dimensions"*
 5. If an RFI refers to multiple details/drawings, RFI callouts shall be on all the details/drawings that are referred to in the RFI.
 6. Locate the grounding electrode conductor connection points on the electrical as built drawings. *Example: "water pipe connection to grounding electrode system"* indicate with an arrow to the location.
 7. All as-built information added to drawings shall be clearly distinguishable (darker, bolder, etc.) from the base bid information.
 8. Handwritten notes, symbols, etc. shall be in black or dark blue ink. Colored ink/pencil notations on drawings shall not be used since they will not be dark enough when scanned and printed in black and white.
 9. CADD developed as built drawings may have notes, symbols, etc. in red or other colors that define them from base bid work.
 10. If handwritten, all lettering/notes shall be in neatly written (in block letters) so they are readable on a ½ size set of prints.
 11. Added notes, references, clouded areas, etc. shall not block out other relevant information such as dimensions, notes, etc.
 12. All notes shall be written with clear and concise wording.
 13. Attached drawings, etc. shall be printed dark enough and at a scale that allows them to be readable on a ½ scale set of prints.
- B.** Requests for Information (RFIs) that pertain to specifications or other non-drawing items shall be referenced on the first sheet of the discipline it applies to. *Example: "RFI #45: specification section 264500, wiring size"* would be on the first electrical sheet.

C. RFI Sheets

1. Sheets with RFIs shall be placed at the end of the drawing set. In their numerical order, RFIs shall be placed first, Architectural Supplemental Instructions (ASIs) in the second group, and other drawings in the third group.
2. Place RFIs far enough to the right side of the page to allow information to be read when binding the pages together in a set.
3. RFIs responses that are issued as full-size sheets shall replace base bid sheets. These shall be clearly labeled with their RFI number and a note on the RFI reading *"RFI response issued as full-size drawing and is in the as built set of drawings"*.
4. All supplemental drawings attached to the original RFI shall be clearly labeled with their RFI number
5. Attached drawings, etc. shall be printed dark enough and at a scale that allows them to be readable at ½ size.
6. RFI sheets shall have the RFI numbers that are on the sheet written on leading edge of the sheet starting in the lower right-hand corner. *Example: "RFI 15, 16, 17, 18"*

D. Civil/Utility Drawings

1. When existing underground utilities are encountered during excavation, document their location with dimensions from two fixed positions, the type of utility, if it was damaged and repaired, if abandoned, and the burial depth. Indicate the general direction of the utility with an arrow.

Example 1: 4" water @ 36", repaired

Example 2: 6" sewer @ 36", 2" fiber optic @ 24"

Example 3: 2" electrical @ 24", empty and abandoned

Example 4: 1" electrical @ 24", conduit repaired, #12 wires replaced

2. As-Built Civil drawings shall be stamped by a Registered Land Surveyor.
3. Locate soft copper potable water joints and all irrigation/plumbing, etc. sleeves under roadways, sidewalks, pads, etc. with their sizes and burial depth. *Example: (2) 4"@ 18"*

E. Electrical Riser As-Built Drawing

1. Use an existing or develop a CADD/computer generated electrical riser diagram to show as built conditions that include all parts of the distribution system including transformers and branch panels. Indicate room number/room name next to the equipment. *Example: "Electrical Room 103"*
2. A separate photovoltaic system riser diagram shall clearly define a shutdown sequence of operation

3. Post framed (with a Plexiglass cover) 11"x17" copy of the riser diagram(s) in a room designated by COS. If required for readability, provide larger, framed drawings. COS to review and approve drawings prior to framing and posting.

F. Plumbing Riser As-Built Drawing

1. Use an existing or develop a CADD/computer generated wastewater riser and potable water riser diagrams to show as built conditions that include all fixtures, clean out locations, numbered valves, water lines, etc. Draw a box around fixture clusters and identify with room name/number, indicate location of individual items such as drinking fountains and clean outs. Include in the as-built drawing set.
2. Post framed (with a Plexiglass cover) 11"x17 copies of the riser diagrams in a room designated by COS. If required for readability, provide larger, framed drawings. COS to review and approve drawings prior to framing and posting.

G. Plumbing Video

1. To verify that drainage lines are clear and free from construction debris, dips, damage, etc., all main drainage lines 3" and larger shall be videotaped from their end of the line cleanout to where the line intersects with another/larger drain line and/or where it connects to the manhole/main sewer line servicing the building. Branch lines 3" and larger and over 25' feet shall also be videotaped.
2. Use the plumbing waste line riser diagram to make a PDF map of the drainage lines required to be videotaped. Color code and label runs (Example: Line # 1, Line #2, etc.) on the riser diagram. Indicate which end of the run the video starts at. Video clip labels shall match the riser diagram.
3. If remedial work (line flushing due to debris, repairing unacceptable dips in the line, etc.) is determined to be required after the initial videotaping, re-videotaping is required to confirm that remedial work was successful. Do not include video clips of failed sections in the final plumbing DVD.
4. The video tape shall continuously measure and display the one-way distance the camera travels through the piping. The video clip of each run shall also clearly record the surrounding area to document where the camera enters/exits a clean out.
5. The video shall be submitted to COS for final review and approval prior to substantial completion/occupancy.

H. Final As-Built Review, Drawings, and DVDs

2. Prior to final DVD submittal, provide (1) 11" x17" size set of As-Built drawings for COS review and comment. Update and resubmit as required until final approval by COS. Return all drawings, etc. with COS comments.
3. As applicable, provide final copies of As Built documents and DVDs per the table below. All individual PDF files within folders shall be labeled to clearly indicate their unique content. Do not use abbreviations or single letter designations to label files.
4. DVDs shall be re-writable. Label each DVD with project name, COS project number and the phrase "As Built Documents"

Item	# Required
Final As Built Drawing submittal to include hard copies of the following:	
11" x 17" set of As Built drawings	1 set
Final As Built DVDs shall include the following PDF files or folders labeled exactly as shown in bolded text and in the exact order below inside a main folder labeled with 1) the project name, 2) the COS project number, and 3) the year the project was completed. <i>Example: Fire Station #205 Remodel, COS Project # P03A, 2023</i>	2 Sets DVDs
As Built Drawings, Documents and Specifications This folder shall include the folders listed below in the exact order shown: <ul style="list-style-type: none"> • As Built Drawings: As Built drawing PDF files shall be grouped by discipline (mechanical, structural, RFI, etc.) in individual folders. Folders shall have individual PDF files for each drawing. <u>Do not</u> combine multiple sheets into one PDF file. Drawing files shall be labeled with their sheet number and drawing description to match the drawing index. <i>Example: "S7.05: roof framing details"</i> • DS&PM Design Checklist: PDF provided by the architect • Plumbing and Electrical Riser As-Built Drawing: Two PDF files. See descriptions above. 	Folder

<ul style="list-style-type: none"> • Project Specifications and Soils Report: This folder shall contain individual PDF files of specification sections, labeled with their specification number and content that match the specifications. <i>Example: "221116: domestic water piping"</i> • RFIs and ASIs: This folder shall include individual PDF files of all final versions of RFIs and ASIs. PDF file labels shall also include a brief description of the content. <i>Example: "RFI #32, re-route plumbing"</i> 		
Construction Drawing CADD Files Provided by the architect. Generic floor plans and site plans only.	Folder	
HVAC This folder shall include the folders listed below: <ul style="list-style-type: none"> • Equipment Warranty Registration: This folder shall have extended warranties (more than 1 year) for all HVAC equipment components such as compressors, etc. See specifications for those items. These shall be registered by the contractor with the manufacturer. Copies of these registrations and a registration summary sheet for all components with the unit names, serial numbers, the components warranted and the warranty expiration dates shall be included. 	Folder	

Item		# Required
Products and Manuals This folder shall include the folders listed below in the exact order shown: <ul style="list-style-type: none"> • Approved Products: This folder shall have individual PDF files of the final, approved product submittals. • O&M Manuals: This folder shall be divided into product division folders (Mechanical, Electrical, etc.) Contents within those folders shall be broken down into individual PDF files. Major pieces of equipment (such as chillers) shall have their own PDF file. Similar, smaller equipment (such as light fixtures) may be grouped into a single PDF file. PDF files shall be 25 pages maximum unless the pages all refer to the same piece of equipment. 	Folder	
Videos This folder shall include the folders listed below in the exact order shown: <ul style="list-style-type: none"> • Plumbing Videos: See Section 12 for requirements • Training Videos: As required per specifications 	Folder	
Warranties, Contact Information, and Inspections This folder shall include the folders listed below in the exact order shown: <ul style="list-style-type: none"> • Contractor Contact Information: Contractor/ subcontractor, the service (plumbing, roofing, etc.) they provided and contact information • Inspections: Third party inspection reports including, but not limited to, County or State inspections, Fire Marshal, water meter, backflow inspections, water quality, asbestos abatement, electrical testing, elevator, pest control, boiler, the Final HVAC Test and Balance Report, lowest floor verification certificate, etc. <u>Do not</u> include O&M product warranty information, county air quality or geotechnical reports. • Training: COS Owner Training session sign-in sheets • Warranties: Certificate of substantial completion and individual contractor/subcontractor warranties. The PDF file of each warranty shall be labeled with 1) the service they provided, 2) the contractors name, and 3) the specification section(s) it applies to. <i>Example: Roofing, Best Construction, section 075312</i> 	Folder	
Separate DVD All SWPPP documentation, drawings, inspection reports, etc.		1 DVD

Section 13: Preferred Products

A. Prior Approval

- For products or catalog numbers not listed, refer to the project specifications. When a preferred manufacturer is listed and the acceptable alternate is named as "May Submit", alternates must meet or exceed the functional ability and quality of construction of the preferred manufacturer's product. Approval of those alternate products shall be per the sole discretion of COS. **Manufacturers and products listed in this section take precedence over those listed in other specification sections.**

Item	Preferred Manufacturer	Catalog Number	Acceptable Alternate	Comments
Section 2: Landscape Irrigation System				
Sprinkler Pipe Glue	Weldon	721 or 725	May Submit	Primer shall be used
Irrigation Controller	Baseline	BL-1000	NONE	10-year warranty required
Industrial Flow Meter	CTS	FSI T-Series PVC	NONE	Install in separate valve box next to master valve
Two Wire Path	Paige	P7072D	NONE	With Baseline Bi-Coders
Pressure Sensor	Baseline	BL-5406	NONE	With 4-20MA Bi-Coder
Air/Vacuum Release Valve	Crispin	IC-10	NONE	1"
Basket Strainers	Mueller	304	NONE	Stainless Steel with .125 perforations
Sprinkler Heads	Rainbird	RD1804-SAM-PRS-NP Series	NONE	As required by design: Rainbird 5000 Series (5004) Rainbird 8005SS Rainbird 752 Series
Quick Couplers	Rainbird	44-LRC		In Carson #910 valve box
Irrigation Valves	Hunter	ICV-G-FS-R	NONE	
Drip Valve Pressure Reducer	Senninger	PRLV40M4F4FV	NONE	150 stainless steel mesh with flush cap
Hydrometer	Netafim	BL-BHM-200	NONE	Size as required
Valve Boxes	Carson		May Submit	Bolt down T cover. Color as required.
Ball Valves	Wilkins	850XL	Landscape Products	Lead free full port bronze valve w/stainless steel ball handle
Isolation Valves	American Flow Control	2500 Series AWWA C-509/515	Nibco MJ-619- RWS-SON	
Multi-Outlet Emitters	Bowsmith	ML220/210/206	NONE	
Mainline Pipe 1"-3"				Schedule 40 PVC
Mainline Pipe 4"-6"				C900 Class 235 SDR 21 PVC
Lateral Piping ¾"-3"				Schedule 40 PVC
Section 3: Roofing				
Modified Bitumen system	Performance Roof Systems Inc.	(Formerly Derbigum)	Firestone Johns-Manville	
Section 4: Interior				
Paper towel dispenser	ASI	8522	Bobrick B-2860 May Submit: Stainless Steel, manual feed Keylock (must match ASI/Bobrick key)	
Paper towel dispenser/waste receptacle	ASI	04692-9	Bobrick B-39619 May Submit: Stainless Steel, manual feed Keylock (must match ASI/Bobrick key)	
Toilet paper dispenser	ASI	0040	Bobrick B-2892 May Submit: Stainless Steel, Twin jumbo roll, Keylock (must match ASI/Bobrick key)	
Hand soap dispenser	ASI	5001-SS	Bobrick B-26627	

Item	Preferred Manufacturer	Catalog Number	Acceptable Alternate	Comments
			May Submit: Stainless Steel, Keylock (must match ASI/Bohrick key)	
Sanitary napkin disposal	ASI	Roval Series 20852	Bohrick B-270 May Submit: Stainless Steel	
Baby changing station	ASI	9013-9	May Submit: Stainless Steel	
Adult changing station	Foundations	100-SSE	May Submit: Stainless Steel	
Hand Dryer	ASI	0197-93	Excel TA-SB May Submit: Surface mount, Satin/Brushed Stainless Steel	
Wall/ceiling access doors				Stainless Steel with screwdriver latches
Section 5: Hardware/Gates				All finishes shall match Best #626
Hinges	Stanley	661HD	Roton, Hager	Continuous hinge heavy duty exterior doors
	Stanley	CB199xNRP	Roton, Hager	Heavy duty exterior doors
	Stanley	CB168	Roton, Hager	Heavy duty interior doors
	Stanley	CB179	Roton, Hager	Medium duty interior doors
	Stanley	CECB179-66	NONE	Electric
Exterior Locksets	Best	45H	NONE	45H mortise series x 15H trim
	Best	45HW7DEU-IDH-LMS	NONE	Electric
	Best	9K DEU	NONE	Electric, power supply by Best
Interior Locksets	Best	9K Cylindrical Series	NONE	15D lever, S3 strike package
	Von Duprin	RXS1	NONE	RX switch for electric lockset
	Securitron	TSBC	NONE	Door loop for electric lockset
Key System	Best	7pin removable core cylinder	Standard Cormax	Keyway shall be designated by COS
Closing Device	LCN	4041	NONE	EDA arms on all exterior and heavy traffic doors
ADA Open/Closing Device	LCN	LCN4642		Include pushbuttons and MS Sedco kit
Exit device	Von Duprin	99E, 99 Rim	NONE	Lever trim for electric lockset, Trim defined by COS
Mullions	Von Duprin	KR4954	NONE	Standard door, size and finish determined by COS
Mullions	Von Duprin	KR 9954	NONE	Fire door
Deadbolts	Best	83T series	NONE	Individual door function to be defined by COS
Door Stop	Trimco	1220-5	May Submit	Kick down type
Wall Bumpers	Trimco	1270CV	May Submit	Concave center
Storefront framing				Med. 6" style, 10" top/bottom frame, welded inner joints
Overhead doors	Overhead Door		May Submit	Commercial grade, 100,000 cycle springs.
Bi-Fold Doors	Door Engineering	FF30 (four-fold doors)	May Submit	Doors shall have hinge guards, monitored electric safety edge, interior swing path

Item	Preferred Manufacturer	Catalog Number	Acceptable Alternate	Comments
				safety edge, exterior light curtain photo eye, interior presence sensor, audio/visual warning beacon, wall mounted emergency stop button, safety bollards
Overhead door Controller	Overhead Door	RSX: trolley version RHX: wall mount version	May Submit	Trolley or jackshaft version per architectural plans. The safety edge shall be connected to the controller with a coiling cord cable. Take up reels are not acceptable. Mount the photo eye to the wall, use FMC to connect to the photo eye.
Automatic rolling gate Controller	Hy Security	Trailhead gates: Slide Smart DC HD Series (HD15 or 25, etc.) All other locations: Slide Driver Hydraulic Series	May Submit	Gates shall have an electric motor (with soft start and stop) and hydraulic drive. The operator shall be sized for a gate 50% heavier than the gate installed. The controller shall be equipped with a remote release to allow the motor wheels to disengage without the need to open the motor enclosure cabinet which shall be fully sealed to prevent rodent access, wireless safety edges shall not be allowed. Gate drive rail to be located approximately at the midway point (or higher) of the gate.
Gate Photo Eye	Omron	E3K-R10K4-NR	May Submit	Outdoor rated.
Section 7: HVAC				
Cooling Tower water treatment control panel	Lakewood	NXCS	NONE	Lakewood NexSys Single Control System
Pumps				Back pull-out style, end suction, close coupled base mounted
Evaporative coolers	United Metal	Low Static:Fan Air High Static:Cel Air	May Submit	Stainless steel with automatic flushing system, CELdek or Glasdek media
Diffusers				Step down style
Unit filters				Pleated, 2" minimum
Boilers	Parker		May Submit	Proposed boiler alternate shall have local manufacturer's representation, local availability of parts and no proprietary maintenance or service restrictions
Condenser Unit Accessory				All condenser units shall have hail guards
Section 7: HVAC Building Automation System				
	System components shall be provided by one of the two manufacturers and installed by one of the approved local contractors listed below. System components include all operator workstation software, controller software, custom application programming language/controllers, and specific/custom application controllers. The front end JACE shall be Niagara and shall be 100% compatible with the existing COS system. The specific Niagara version shall be reviewed and approved by the COS Facilities Department prior to installation. Email FMCONTRACTS@SCOTTSDALEAZ.GOV to coordinate review/approval.			
System Components	Distech Controls	BACnet series	NONE	Approved Local Contractors: <ul style="list-style-type: none"> Climatec Havel
System Components	Johnson Controls: Facility Explorer	BACnet series	NONE	Approved Local Contractors: <ul style="list-style-type: none"> IMCOR McCarthy Koro Havel Approved Parts Supplier/Programmer: <ul style="list-style-type: none"> RSD Total Control
Section 8: Plumbing				

Item	Preferred Manufacturer	Catalog Number	Acceptable Alternate	Comments
Water closet: wall mount	Kohler	K-84325-0	American Std. 2294.011EC May Submit	
Water closet: floor mount	American Std.	3461.001	Kohler K-96057-SSL May Submit	
Manual flush valve: Water closet	Moen	8310M128 (1.28 GPF)	NONE	
Touchless flush valve: Water closet	Moen	8311	NONE	
Urinal	American Std.	6590.001	NONE	
Flush valves: urinal (electronic)	Moen	8315 (0.5 GPF)	NONE	
Touchless flush valve: Urinal	Moen	M8312 R10	NONE	
Lavatories: Drop in, cast iron	Proflow	PF20174	NONE	
Lavatories: Wall mount, cast iron	Kohler	K2867	NONE	
Faucets: lavatory (metering)	Moen	8886	NONE	
Touchless lavatory faucet	Moen	M8553 With # M99557 4" deck plate and Acme # C25686 mixing valve	NONE	
Water lines: lavatory faucet	Fluidmaster	B6F16	16", 3/8"x3/8" female May Submit	
Faucets: kitchen	Moen	8701	Delta 100LF-HDF (single handle) May Submit	
Faucets: kitchen (Fire Stations ONLY)	Grohe	30211DC1 or 32298DC3	May Submit	
Faucets: bar	Fisher	84808-3525	T&S B-1141-XSCR4V15 May Submit	
Faucets: mop	Chicago	897-RCF	Proflow PF1119 May Submit	
Exposed p-traps			Chrome with clean out	
Hose bibs	Woodford	24P	May Submit	¾"
Angle stops	Chicago	STC-31-00-AB	May Submit	¼ turn, loose key
Disposals ¾ HP (with power cord)	Insinkerator	Evolution Compact	Moen GT75C May Submit	
Backflow preventers	Febco	825Y or 825YA	NONE	2.5" and smaller piping with upstream brass strainer
Backflow preventers	Watts	909	NONE	3" and larger piping with upstream brass strainer
Shower valves	Moen	2590	May Submit	Integral stops with L2352 trim
Water hammer	Watts	LF15M2	May Submit	Pressure charged type
Water heaters	Naview	NPE Series	May Submit	Natural Gas Tankless (when applicable)
Storm Water and Sewage Ejector Pumps	Flyght	For pits 48" and greater in depth	May Submit	With separate receiving basin to catch solids, rail system and controller. May Submit different manufacturers for pits less than 48" in depth
Floor drains	Zurn		JR Smith May Submit	Shall have strainers and (if no trap primer) trap guards

Item	Preferred Manufacturer	Catalog Number	Acceptable Alternate	Comments
Roof drains	Zurn		JR Smith May Submit	Nickel bronze grate, removable sediment bucket
Drinking fountains	Elkay	EZST18WS	May Submit	Interior, with bottle filler
Drinking fountains	MDF	493-18	May Submit	Exterior, with hose bib and pet fountain
Pet fountains	MDF	370SM	May Submit	Blue in color
Trap primer tap	Sloan	F-72-A1	May Submit	Tapped off water closet/urinal vacuum tube
Trap guard	Sureseal		May Submit	Only installed per COS direction
Electronic Trap Primer	Precision	MP-500	May Submit	Cord and plug (4 trap primer lines maximum per unit)
Section 9: Electrical				
Building Fire Alarm System	Edwards	EST-4: Voice System EST-IO-1000: Non-Voice System EST-IO-64: Non-Voice System 64 or less addressable points	NONE	The fire alarm system shall be able to be programmed and serviced without the need of proprietary access codes from the manufacturer and/or vendors The programming dongle shall be delivered to COS
Building Fire Alarm Radio Monitor	AES	7707P-88-ULP-M	NONE	Letter required from COS to purchase. See section 10.E for instructions. Leave WIFI USB inside the FACP
Building Fire Dry Suppression System	Kidde	Aries Series	May Submit	Clean Agent shall be NOVEC 1230. Panel to interface directly with the AES Radio Monitor when there is no main FACP.
Building Fire Wet Sprinkler System	Concealed style sprinkler heads shall be used in all hard lid ceilings. Semi Recessed Quick style heads with flex pipe shall be used in grid ceilings. Auto air vents shall not be used. Nitrogen shall be used in all air systems. All piping shall be black steel. Piping 2" and smaller shall be schedule 40, greater than 2" shall be schedule 10. Underground piping shall be poly wrapped ductile iron with tracer wire			
Emergency Generator	Kohler: w/ AMP Series Control Panel	Cummins: w/PCC Series Control Panel or May Submit. Proposed generator/control panel alternates shall be fully compatible (without field modifications to the generator control panel) with the Generator Monitoring Module and the existing COS generator monitoring system. Proposed alternate shall have local manufacturer's representation, local parts availability and no proprietary maintenance or service restrictions. Program generator to exercise for 15 minutes every Tuesday at 9am with no power transfer to the building.		
Generator Monitoring Module	OmniMetrix	TrueGuard PRO	NONE	Required for all control panels. Email FMCONTRACTS@SCOTTSDALEAZ.GOV to coordinate module purchase, installation, and connection to the remote monitoring system
Elevators and Wheelchair Lifts	Kone		May Submit	Gearless traction, elevator room not required. Proposed systems shall have local manufacturer's representation, local parts availability and no proprietary maintenance or service restrictions.
Panelboards		All branch panels 600A and smaller shall have hinged panel covers		

Section 14: Spare Parts

Provide spare parts in their original packaging and deliver to COS at substantial completion. This chart does not supersede providing spare parts from other specification sections. If duplicate items are specified in those sections, the more stringent requirement shall take precedence. See Section 13: Preferred Products chart or other specification sections for manufacturer/catalog numbers not shown.

Equipment	Number required based on Building Square Feet			Comments
	Up to 10K sq. ft.	10K sq. ft. to 25K sq. ft.	Over 25K sq. ft.	
Paint	5 gallons	10 gallons	15 gallons	Five-gallon containers, color/sheen per COS direction
Section 5: Hardware				
Door Stop	5	5	5	Floor mount
Wall Bumpers	5	5	5	Wall mount
Cylindrical Locks	1	2	3	Best #93K7AB15DS3 (no substitutions)
Universal Mortise Locks	1	2	3	Best #45H7UNR15H (no substitutions)
Padlocks	5	5	10	Best # 21B722L (Approved Equal: Cormax)
Section 9: Plumbing*				
Water closet flush valve	1	2	3	
Water closet flush valve repair kit	5	10	15	
Urinal flush valve	1	2	3	
Urinal flush valve repair kit	5	10	15	
Lavatory faucet	1	2	3	
Lavatory faucet repair kit**	5	10	15	

*Only required if water closet, lavatory faucet and/or urinal installed. Touchless and/or Manual as installed.

**Manufacturer's touchless lavatory faucet repair kit to consist of solenoid, pistons, and infrared eye.