

June 23, 2017

ADDENDUM NO. 2

**For
CHICAGO O'HARE INTERNATIONAL AIRPORT
BUILDING 521 RENOVATION FOR AIRPORT POLICE
SPECIFICATIONS AND CONTRACT DOCUMENTS NO. 335805**

CDA Project Number H4018.15-00

For which Bids are scheduled to be opened in the office of the Chief Procurement Officer, Department of Procurement Services, Room 301, City Hall, 121 N. LaSalle Street, Chicago, IL 60602 **at 11:00 a.m., Central Time, June 23, 2017.**

The following changes and/or revisions are incorporated into the Contract Documents as noted. All other provisions and requirements as originally set forth, except as amended by previous addenda, remain in force and are binding. Any additional work required by this Addendum must conform to the applicable provisions of the original Contract Documents.

In accordance with Paragraph 13 of the "Requirements for Bidding and Instructions for Bidders" in Part One of Three of the Specifications, the deadline for questions has passed. No additional questions will be answered prior to bid opening except as the Chief Procurement Officer, in her sole discretion, deems to be in the best interest of the City.

UPON SUBMITTING THE BID, THE BIDDER MUST ACKNOWLEDGE RECEIPT OF THE ADDENDUM IN THE APPROPRIATE PLACE AT THE TOP OF THE SIGNATURE PAGE OF THE PROPOSAL FORM.

REVISIONS TO CONTRACT DOCUMENTS
NOTICE OF ADDITIONS/REVISIONS

PART ONE OF THREE	
1.	Bid Opening Date has been extended to July 7, 2017, 11:00 a.m. Central time.
PART THREE OF THREE	
1. Spec 08210, 1.04, A.2.b	Revise paragraph to eliminate the reference to paint finish. b. Samples (1) Three (3) samples of each door type, showing door corner construction and veneer facing, illustrating wood grain, stain color, and sheen, for natural finish. and for paint finish.
2. Spec 09654	Revised to include resilient wall base requirements
3. Spec 15300	Revised to include additional manufacturers for the clean agent fire protection system

DRAWING	
1.A04-002 Details 1 & 5	Revised soffit material to read New Fiber Cement Soffit Panel On Existing Framing – Prefinished. (Attached)

2.A04-003 Details 1 &4	Revised soffit material to read New Fiber Cement Soffit Panel On Existing Framing – Prefinished. (Attached)
3.A04-004 Detail 1	Revised soffit material to read New Fiber Cement Soffit Panel On Existing Framing – Prefinished. (Attached)
4.A009-002 Detail 2	Revised soffit material to read ¼” Fiber Cement Board Soffit Panel – Prefinished. (Attached)
5. A03-003 Door Schedule	Revised to include information on openings 168 and 200A. (Attached)
6. A03-002 Finish Schedule	Revised to clarify floor finishes at rooms 103, 104, 117, 118. (Attached)

CLARIFICATIONS TO QUESTIONS

Question 1:	Please confirm that all electrical contractor scope of work for CCTV is only till junction box every work after Junction Boxes by other(outside of our contract)
Response:	Confirmed. See Drawing Sheet E10 004 for clarification of Electrical Contractor (EC) work, versus work provided by others.
Question 2:	Please confirm when term By others is used it refers to work outside GC Contract
Response:	Confirmed.
Question 3:	Please confirm that intercom Devices shall be provided and Installed by others.
Response:	Confirmed. See Drawing sheets E09 001, E09 002 and E10 003 for description of boxes, conduit and cabling to be provided by Electrical Contractor (EC)
Question 4:	Are the aluminum storefront windows AND doors receiving new paint (A 04 001 detail number 3) or will they be prefinished (A 04 002 detail #1)?
Response:	Aluminum windows and doors will be prefinished, see Spec Section 08411, Part 2.04, E.
Question 5:	Is the exterior Fiber Cement Soffit Panel getting painted (A 04 002 details # 1&3), or will all the Fiber Cement Board Colors be prefinished.
Response:	Fiber Cement Soffit Panels to be prefinished, see Spec Section 09900, part 3.07, D.
Question 6:	Will any of the walls in the Garage be painted? That room is not on the finish schedule
Response:	Painting is not required in Garage room 123
Question 7:	Will the wood doors be painted or stained?
Response:	Wood doors will be Natural Finish, see Spec Section 08210, part 2.03, C.
Question 8:	As of now the building is currently vacant, is the Fire alarm system Still Active? If so who is the existing fire alarm vendor if not who is the preferred fire alarm vendor for O'Hare?
Response:	Fire Alarm is active, and Siemens is the existing fire alarm system vendor
Question 9:	From reading the project document we understand that there will be no badging required, are there other security requirement to be taken into account

	when pricing this project
Response:	<i>Project is located on the land side, contractor shall comply with the Airport Security and Operations requirements described in the Part 2 General Conditions, of the Contract documents, Article XV if applicable.</i>
Question 10:	As stated in part 3 section H on Page 01732-8 Perform required work to existing roof in a manner not to void any roofing warranty. Please inform us who the previous roofers where for this building as to maintain the existing roof warranty
Response:	<i>This roof is not covered by a warranty, the roof is maintained by CDA.</i>
Question 11:	We would like to schedule a walk through for our subcontractors please advise if 6/1/17, 1:00pm works with your Schedule
Response:	<i>A 2nd site was conducted on June 7, 2017.</i>
Question 12:	Please indicate if ladder wire at 16" O.C. can be eliminated for detention walls due to detention walls having bond beams at 16" O.C. Please advise.
Response:	<i>Horizontal and vertical reinforcing at detention walls is required as shown on drawing sheet A03 004 note 9, note that bond beams are only required where shown.</i>
Question 13:	Holding Cell room walls are noted as 6B in the partition schedule. However, there are other shared walls, specifically, type 4D that complete the enclosure of the aforementioned rooms. Do these adjacent walls (type 4D) need to have the same requirements for horizontal and vertical bond beam/rebar detention walls? Please indicate.
Response:	<i>See notes on both 6B and 4D partition types that refer to detention CMU wall requirements, refer to note 9 on Drawing Sheet A03 004.</i>
Question 14:	Refer to sheet A 03 002 – Finish Schedule shows EP-1 as epoxy paint. It is currently scheduled to go on walls as well as floors.
Response:	<i>Confirmed.</i>
Question 15:	Please confirm the walls in areas designated as EP-1 shall be finished with epoxy paint per spec section 09900 3.07 Schedule of Painting
Response:	<i>Confirmed.</i>
Question 16:	Please confirm the floors in areas designated as EP-1 shall be finished with epoxy paint per spec section 09750 2.2 Resinous Epoxy Systems for Concrete Floors – D.E.P.
Response:	<i>Confirmed.</i>
Question 17:	Refer to specification 02843, parking bumpers, for estimating purposes please provide a quantity as none are shown on the plans.
Response:	<i>Refer to drawing sheet A 05 001 – parking bumpers (wheel stops) are shown in Garage 123 and Sally port 129, a total of 6 wheel stops are shown</i>
Question 18:	The clean agent fire system spec sole sources the equipment manufacturer as Minimax. No substitutions allowed. Minimax is a German manufacturer. Would a City of Chicago project typically require foreign made over USA made? There are numerous US manufacturers of clean agent systems that are equal in form and function. Is there any chance of getting this changed to 'or equal'? We are a Minimax distributor but have not sold any of their systems nor do we know of any installed in Chicago area.

Response:	Confirmed. See revised spec section 15300, paragraph 2.07.A for additional manufacturers.
Question 19:	Opening 168 is on the floor plans, but not in the door schedule – Please provide information on the door, frame and hardware.
Response:	<i>See revised drawing sheet A03 003 with updated door schedule.</i>
Question 20:	Opening 200-A is missing frame information – is this a hollow metal frame, existing, or is the whole opening supposed to be a storefront like 147-A?
Response:	<i>See revised drawing sheet A03 003 with updated door schedule.</i>
Question 21:	Are the wood doors the white maple or paint grade? The specifications had both mentioned and there is nothing on the plans showing which it should be
Response:	<i>Spec section 08210, 1.04, A.2.b Revise paragraph to eliminate the reference to paint finish. All wood doors to have clear natural finish as noted in Spec section 08210, part 2.03, C.</i>
Question 22:	Please reference the Door Schedule on A03003. Opening 138-A has hardware set 6, but also has electrical hardware noted on the drawing. Please clarify if the hardware “6.0” is correct or if the door is to be electrical? If electrified hardware is to be provided, please clarify the specific hardware.
Response:	<i>Hardware set 6 is correct, no electrified hardware is required. See attached revised drawing sheet A03 003 with updated door schedule.</i>
Question 23:	I would also like to know if there is a preferred Building Automation System for this project or if its open spec since there are control diagrams on the plans but no specs with a controls section.
Response:	<i>The controls portion of the spec is open controls.</i>
Question 24:	Spec section 15300, paragraph 3.02, sub paragraph A. states “if required by the Commissioner or fire department, provide temporary fire protection on all floors during construction.” Please confirm that we are to price demo of existing sprinkler drops and installing temporary upright heads during the demolition phase of the work. Our intent is to rework existing drops from the existing outlets to the new sprinkler locations and return the system to service each day. However initially after the existing ceilings are removed, the sprinklers will be too far from the roof deck to serve the purpose of providing protection. This is an extra step to provide the temporary upright protection. Please confirm we are to price the temporary upright protection
Response:	<i>Confirmed. Provide temporary upright protection.</i>
Question 25:	Spec section 15300, paragraph 3.04, sub paragraph B. states “Unless permitted otherwise by the Commissioner, sprinklers shall be provided throughout the entire project area. Sprinklers shall not be installed in electrical rooms required by the fire department to be without sprinklers. In these occupancies where sprinklers are not permitted, smoke or heat detectors are allowed.” The City of Chicago Building Code requires fire sprinkler protection in electrical rooms, except when the power inside the room is 600 volts or greater. Please confirm if the electrical room has that high of voltage in it and confirm that we are to install fire sprinklers in these rooms.
Response:	<i>The system voltage of panels inside electrical rooms is 120/208V 3ph 4W hence per The City of Chicago Building Code requirement to provide that fire sprinkler protection in electrical rooms, except when the power inside the room is 600 volts or greater. We should have fire sprinkler protection as the system voltage is 120/208V 3PH 4W System. In case sprinkler is</i>

	<i>activated ensure all panels are water proof or shielded adequately.</i>
Question 26:	Part of the fire protection scope of the project is to provide a Clean Agent system in 3 areas or rooms. Please confirm the use of WET fire sprinkler protection in these rooms. It is required by the City of Chicago building codes to provide fire sprinkler protection in these rooms even though they have the clean agent system. The protection does not have to be from the wet system it can be from a Pre-action system but one is not specified. Please confirm the wet fire sprinkler protection is acceptable
Response:	<i>Provide fire protection per the Contract documents, Chicago Police Department requested the clean agent system in the identified spaces. City of Chicago has reviewed the permit drawings for the fire protection system design.</i>
Question 27:	Is there currently a temperature control contractor for the building? Or is it currently stand alone controls?
Response:	<i>The controls are stand alone.</i>
Question 28:	Refer to A03 002 – Finish Schedule has rooms 103, 104, 117, and 118 having LT-2, Linoleum Tile. On I 05 004 – Finish Floor Plan shows these rooms are to receive CPT -1 .What is the floor finish these rooms are to receive?
Response:	<i>These rooms are to have carpet tile – CPT-1. See revised sheet A03 002 with updated finish schedule</i>
Question 29:	Currently there is no spec for the Resilient Base to be used on this project. Please provide spec for resilient base desired by the owner to be used on this project.
Response:	<i>See revised spec 09654 with updated information on wall base requirements</i>

END OF ADDENDUM NO. 2

**CITY OF CHICAGO
DEPARTMENT OF PROCUREMENT SERVICES**

**JAMIE L. RHEE
CHIEF PROCUREMENT OFFICER**

LINOLEUM FLOOR COVERINGS

SECTION 09654

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes linoleum floor tile and resilient wall base

1.2 RELATED SECTIONS

- A. Section 03930 - Concrete Rehabilitations
- B. Section 03542 - Hydraulic Cement Based Underlayment

1.3 SUBMITTALS

- A. Product Data: For each type of product.
- B. Each type of linoleum flooring and resilient wall base. Include flooring layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
 - 1. Show details of special patterns.
- C. Samples: For each exposed product and for each color and pattern specified in manufacturer's standard size, but not less than 6-by-9-inch
- D. Test Results for ASTM F 2170 and ASTM F 1869 moisture testing. Do not proceed with installation until floor moisture levels are in compliance with manufacturer's recommendations.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For linoleum flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
- B. FloorScore Compliance: Flooring shall comply with requirements of FloorScore certification.
- C. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.2 LINOLEUM FLOOR TILE LT-1

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Linoart linoleum, Granette Floor Tiles or equal by one of the following manufacturers:
 - 1. Forbo Industries, Inc.
 - 2. Johnsonite; A Tarkett Company.
- B. Linoleum Floor Tile: ASTM F 2195, Type I, linoleum floor tile with fibrous backing
 - 1. Nominal Floor Tile Size: 12 x 24
- C. Thickness: 0.08 inch
- D. Colors and Patterns: Match Architect's sample

2.3 RESILIENT WALL BASE RB-1

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Johnsonite Rubber (DC) wall base or equal by one of the following manufacturers:
 - 1. Roppe Corporation;

- 2. Armstrong Flooring
- 3. Flexco
- B. Style: Cove (with top-set toe) at resilient flooring
- C. Style: Straight at carpet locations
- D. Color: 23 Vapor Grey CG (or equal)
- E. Size: 4" x 0.125"
- F. Lengths: Coils in manufacturer's standard length
- G. Outside Corners: Pre-molded
- H. Inside Corners: Pre-molded
- I. Surface: Smooth

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by linoleum flooring manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit products and substrate conditions indicated.
 - 1. Adhesives shall have a VOC content of 50g/L or less.
 - 2. Adhesives shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- C. Floor Polish: Provide protective, liquid floor-polish products recommended by linoleum flooring manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare substrates according to linoleum flooring manufacturer's written instructions to ensure adhesion of flooring.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by linoleum flooring manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by linoleum flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9
4. Moisture Testing: Perform tests recommended by linoleum flooring manufacturer, but not less stringent than the following:
 - a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level.'
 - c. Provide moisture mitigation as recommended by flooring manufacturer to existing flooring to meet required moisture levels prior to installation

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install flooring until it is the same temperature as space where it is to be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by flooring.

3.2 INSTALLATION, GENERAL

- A. Comply with manufacturer's written instructions for installing flooring and wall base.
- B. Scribe and cut flooring to butt neatly and tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.

- C. Extend flooring into toe spaces, door reveals, closets, and similar openings.
- D. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on flooring as marked on substrates. Use chalk or other nonpermanent marking device.
- E. Install flooring on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of flooring installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.
- F. Adhere flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- G. Heat-Welded Seams: For seamless installation, comply with ASTM F 1516. Rout joints and heat weld with welding bead to permanently fuse sections into a seamless flooring. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.

3.3 LINOLEUM FLOOR TILE INSTALLATION

- A. Lay out linoleum floor tiles from center marks established with principal walls, discounting minor offsets, so floor tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay floor tiles square with room axis
- B. Match linoleum floor tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed floor tiles.
 - 1. Lay floor tiles with grain running in one direction

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting linoleum flooring.
- B. Floor Polish: Remove soil, visible adhesive, and surface blemishes from linoleum flooring before applying liquid floor polish.

1. Apply two coats
- C. After allowing drying room film (yellow film caused by linseed oil oxidation) to disappear, cover linoleum flooring until Substantial Completion.

PART 4 - Measurement and Basis of Payment

- A. Item No. G-1: The price for all Work specified in this Section will be included in the total price indicated by the bidder in the space provided in the "Proposal - Schedule of Prices" for Item G-1.

END OF SECTION 09654

FIRE PROTECTION

SECTION 15300

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Work under this Section is subject to the requirements of the Contract Documents.
- B. Furnish and install fire control equipment as shown on the Contract Drawings and as specified herein, including but not limited to the following.
 - 1. Pipe and fittings
 - 2. Reduced pressure zone back-flow preventers
 - 3. Sprinklers
 - 4. Valves
 - 5. Water flow and supervision alarms
 - 6. Wet pipe sprinkler systems
 - 7. Computer server area clean agent fire suppression systems

1.02 RELATED WORK:

- A. Division 15 – Supporting Provisions
- B. Division 16 – Electrical

1.03 REFERENCES:

- A. As a minimum, meet the requirements of the following codes and standards:
 - 1. Chicago Building Code
 - 2. FM – Factory Mutual Approval Guide
 - 3. NFPA 13 – Installation of Sprinkler Systems
 - 4. NFPA 13A – Recommended Practice for the Inspection, Testing and Maintenance of Sprinkler Systems

5. NFPA 14 – Standpipe and Hose Systems
6. NFPA 24 – Private Fire Service Mains and Their Appurtenances
7. NFPA 70 – National Electrical Code
8. NFPA 231 – General Storage
9. FM 1637 Approval Standard for Flexible Sprinkler Hose with Threaded End Fittings.
10. UL 2443 Standard for Flexible Sprinkler Hose with Fittings for Fire Protection Service.
11. NFPA 2001 – Clean Agent Fire Extinguishing Systems

1.04 SUBMITTALS:

- A. Prior to start of installation, the Contractor shall submit a copy of all permits, reviews, and approvals necessary to install fire control work required.
- B. Shop Drawings shall show compliance with the requirements of NFPA-13, 14, 20 and 24, including:
 1. Compliance with City of Chicago requirements for design density, sprinkler head coverage, and pressure delivered. If required by the Commissioner, submit hydraulic calculations. Hydraulic calculations for sprinkler systems shall be performed by the Contractor with the use of acceptable computer software.
 2. Building Construction:
 - a. Excluding exceptions permitted by NFPA 13, sprinklers shall be installed in concealed spaces with exposed combustible construction, particularly above ceilings.
 - b. Provide information about elevations of floors, ceilings, and roofs.
 - c. Show building cross-section
 3. Manufacturer/Model of Sprinklers: Because “K” factors (nozzle flow coefficients) of sprinklers vary from manufacturer to manufacturer, provide the specific “K” factors as given by the manufacturer for the models of sprinklers that shall be used on the project.

4. Water Supply Test (Flow Tests) Results: If a flow test has been required by the Commissioner, the results of any water supply tests that have performed shall be submitted with the Shop Drawings.
 5. Working plans indicating detailed layout of clean agent fire extinguishing system, locating each component (e.g. agent cylinder, control panel, electric/manual pull station, audible and visual alarms). Include control diagrams, wiring diagrams, written sequence of operation or cause and affect matrix along with battery calculations, and pipe locations including size and length. Refer to NFPA 2001 Section 5.1.2.
 6. Design calculations derived from the MX Design Manager computer program MX-1230 Module or approved equal, and verified by both Underwriters Laboratories and Factory Mutual. Analysis shall include calculations to verify system terminal pressures, nozzle flow rates, orifice code number, piping pressure losses, component flow data, and pipe sizes considering actual and equivalent lengths of pipe and elevation changes. Designers using this software shall be trained and certified by Minimax USA LLC or approved equal manufacturer.
 7. Manufacturer's installation and operation manual.
- C. Test Reports and Certificates:
1. Pressure Tests: Reports of piping system pressure tests as described in Part 3 of this Section.
 2. Flow Test: If required by the Commissioner, the Contractor shall conduct water flow test in the presence of Chicago Fire Department prior to preparation of hydraulic calculations. Submit a copy of the test results to the Commissioner for review.

1.05 QUALITY ASSURANCE:

- A. Refer to the Basic Mechanical Requirements, Section 15100.
- B. All materials, equipment, and methods of installation shall be in accordance with the requirements of NFPA 13, 14, 20 and 24.
- C. All materials and equipment shall be UL-listed and FM-approved.
- D. Only new sprinklers shall be installed.
- E. If the project has an automatic fire suppression system for a computer room, the air handling units of the computer room shall be interlocked to shutdown with the activation of the fire suppression system.

- F. Keep all fire protection piping within heated enclosures. Heat tracing of fire protection piping shall not be installed unless permitted by the Commissioner.
- G. The manufacturer of the suppression hardware, and detection equipment shall be Minimax no substitutions. The name of the manufacturer "Minimax" shall appear on all major components.
- H. All devices, components and equipment shall be new, standard products of the manufacturer's latest design and suitable to perform the functions intended.
- I. All devices, components and equipment shall be from the same manufacturer.
- J. Contractor Qualifications: Installation of fire protection equipment and accessories must be performed only by a qualified installer. The term qualified means experienced in performing the work required by this Section. The qualified installer will be responsible for demonstrating to the Commissioner's satisfaction that he/she has sufficient experience in its role. The installer must submit evidence of such qualifications upon request by the Commissioner.
- K. Manufacturer Qualifications: Fabrication of fire protection equipment and accessories must be performed only by a qualified fabricator. The term qualified means experienced in performing the work required by this Section. The qualified fabricator will be responsible for demonstrating to the Commissioner's satisfaction that he/she has sufficient experience in its role. The qualified fabricator must submit evidence of such qualifications upon request by the Commissioner.

1.06 DELIVERY, STORAGE AND HANDLING:

- A. Refer to the Basic Mechanical Requirements, Section 15100.
- B. Deliver and store valves in shipping containers, with labeling in place.
- C. Provide temporary protective coating on cast iron and steel valves.
- D. Provide temporary end caps and closures on piping and fittings.

1.07 WARRANTIES:

- A. Refer to the Basic Mechanical Requirements, Section 15100.

PART 2 PRODUCTS

2.01 AVAILABLE MANUFACTURERS:

- A. Subject to compliance with the requirements of the Contract Documents, the products shall be by one of the manufacturers listed in this Section of the specification.

Item	Manufacturer
Detection Devices	Siemens, Pyrotronics, Fenwall, Fire Control Instruments, Notifier
Detector Check Valves	Viking, Ames, Grinnell, Cla-Val Co., Hersey Products, Watts Regulator Co.
Electric Bell	Viking, Notifier, Potter Electric
Fittings	Allied Piping, Grinnell, Sprink, Inc.
Pressure Regulating Valves	Wilkins, Cla-Valve, Grinnell, O.C. Fire Control Valves
RPZ Back Flow Preventor	Cla-Valve, Febco, Beco, Watts, Ames, Wilkins
Sprinkler Heads	Viking, Star, Central, Grinnell, Reliable
Valves	Kennedy, Milwaukee, Nibco
Water Flow Switch and Valve Supervisory Units	Potter Electric, Watts, Notifier, ADT

- B. The design of this project, including all plans, drawings, and construction details, is based on the stated manufacturer's model numbers. If the Contractor intends to provide items or equipment from any of the other acceptable manufacturers listed in the Contract Documents, then the Contractor shall be responsible for the cost of any and all work, including, but not limited to additional design, engineering, labor, material, equipment and incidental costs, necessary to accommodate such items or equipment for this project.
- C. Any and all work that may be required to accommodate any items or equipment of the other acceptable manufacturers listed in the Contract Documents is, without limitation, subject to the review of the Commissioner.

2.02 PIPE AND FITTINGS:

- A. Cut-groove fittings are not permitted. Plain-end fittings are not permitted. Roll-groove fittings may be used, if permitted by the Commissioner, but not in the utility tunnels.
- B. Unless water pressure exceeds 150-psi, all components of sprinkler systems are to have minimum pressure rating of 175-psi. Most Airport fire protection systems do not have pressures higher than 150-psi.
- C. Piping (mains, risers, branches, and lines) shall be black carbon steel, Schedule 40, ASTM A53 or A120.
- D. The use of piping with a wall thickness less than that of Schedule 40 shall only be used if permitted by the Commissioner. Threads shall not be used on piping with a wall thickness less than that of Schedule 40.
- E. Flexible Sprinkler Hose Fittings for use in commercial suspended ceilings and sheetrock ceilings shall be FlexHead Industries flexible hose assemblies and end fittings. Type 304 stainless steel, braided, leak-tested with minimum 1 inch true-bore internal corrugated hose diameter.

2.03 SPRINKLERS:

- A. Except in high temperature areas and elevator machine rooms, only install quick response sprinklers (QRS).
- B. Sprinklers equipped with "O-ring" water seals shall not be utilized.
- C. Where ambient temperatures are less than 100 deg. F., Ordinary Temperature Rated sprinklers (135 to 170 deg. F.) shall be used. See the table below.

Sprinkler Temperature Ratings, Classification, Color Coding				
Max. Ceiling Temp. (F)	Temperature Rating (F)	Temperature Classification (F)	Color Code	Glass Bulb Color
100	135 to 170	Ordinary	Uncolored	Orange or Red
150	175 to 225	Intermediate	White	Yellow or Green
225	250 to 300	High	Blue	Blue
300	325 to 375	Extra High	Red	Purple

- D. Intermediate Temperature Rated sprinkler heads are required under skylights exposed to the direct rays of the sun. For unit heaters and other heat generating devices, refer to NFPA 13.
- E. Sidewall sprinklers shall typically only be permitted for Light Hazard occupancies. Sidewall sprinklers may be used in Ordinary Hazard occupancies if specifically listed for use with Ordinary Hazard occupancies.
- F. In finished ceiling areas, provide concealed-type sprinkler heads.
 - 1. Similar to Viking Horizon Mirage Model B.
- G. In unfinished ceiling areas, provide upright-type sprinkler heads. Provide head guards for sprinklers located in mechanical equipment areas and other areas where sprinkler heads are subject to damage.
 - 1. Similar to Viking Model M Micromatic.
- H. Sprinklers less than 7-feet above the floor and in electrical rooms and electrical closets shall be equipped with sprinkler guards to provide protection against accidental damage.

2.04 FIRE PROTECTION VALVES:

- A. Water supply control valves and drain valves shall be permanently marked to show the sprinkler system zones which they serve.
- B. UL-listed and FM-approved with 175-psi non-shock minimum working pressure. When water pressure exceeds 175-psi, valves shall be rated for 250-psi non-shock cold water.
- C. No valve shall obstruct water flow from fire department connections (siamese connections).
- D. All valves controlling water supplies fire control systems shall be of the outside screw and yoke (O.S. & Y.) type, or similar type of indicating valves. Such valves shall not close in less than 5-seconds when operated at maximum possible speed from the fully open position.
- E. All 2-1/2 inch or larger shut-off valves on fire protection systems shall be provided with supervisory units.
- F. Valves installed overhead shall be positioned so that the indicating feature is visible from the floor.

G. Gate Valves:

1. 2 inches and smaller shall be UL 262, cast-bronze, threaded ends, solid wedge, outside screw and yoke, rising stem.
2. 2-1/2 inches and larger shall be UL 262, iron body, bronze mounted, taper wedge, outside screw and yoke, rising stem. Include replaceable, bronze, wedge facing rings and flanged ends.

H. Butterfly Valves:

1. 2 inches and smaller shall be screwed, bronze iron body, bronze trim rated for 175-psi, non-shock cold water service.
2. 2-1/2 inches and larger shall be flanged ductile iron body, bronze trim rated for 175-psi, non-shock cold water service.

I. Check Valves:

1. An O.S. & Y. gate valve shall be installed on each side of all check valves.
2. Check valve assemblies for fire department connections shall include an automatic ball drip. Provide drains for all ball drips.
3. Check valves 2 inches and smaller shall be screwed, bronze body and trim, regrinding type, horizontal swing check rated for 175-psi, non-shock cold water service.
4. Check valves 2-1/2 inches and larger shall be flanged cast iron body, bronze mounted, full opening, horizontal swing/wafer type, rubber faced, rated for 175-psi, non-shock cold water service.
5. Swing check valves 2-1/2 inches and larger shall have cast-iron body and bolted cap, with bronze disc or cast iron disc with bronze disc ring and flanged ends, UL 312.
6. Butterfly check valves 4 inches and larger shall have split-clapper style, cast-iron body with rubber seal, bronze alloy discs, stainless-steel spring and hinge pin, UL 312.

2.05 WATER FLOW SWITCH, ALARM CHECK AND VALVE SUPERVISORY UNITS:

- A. Provide local audible alarms for new systems installed.
- B. Sprinkler System Water Flow Alarms:

1. The use of electrically operated water flow alarms is preferred to the used of hydraulically operated water flow alarms (such as “water motor gongs”).
2. Alarm Check Valves: Alarm check valve assembly shall include an alarm check valve complete with a retarding device.
 - a. Alarm check valves shall be provided with O.S. & Y. valve on each side of the check valve. Alarm check valves shall be installed no higher than 4'-0" above the floor. Provide trim sets for bypass, drain, electric sprinkler alarm switch, pressure gages (on both sides of the check valve), drip cup assembly piped without valves separate from main drain line, and fill line attachment with strainer. UL 193, 175-psi working pressure. A pressure-operated switch shall be mounted on a fitting connected to the alarm port of the alarm check valve to initiate a remote alarm signal.
 - (1) Similar to Globe Model G Alarm Check Valve.
 - b. Retard chambers shall be installed to help reduce false alarms. Water must first pass through the retard chamber before passing through the alarm check valve, thereby causing a time delay before the alarm check valve trips. A pressure-operated switch shall be mounted at the top of the retard chamber to initiate a local alarm signal.
3. Water Flow Pressure Switches: For dry and preaction systems provide pressure-operated switches. Piping connected to the outlets from the alarm passageways of dry and preaction valves shall have pressure switches attached.
 - a. Similar to Potter Electric Co. Model No. PS 10A2.
4. Vane-Type Water Flow Switches: For wet-pipe sprinkler systems, provide vane-type water flow switches for each sprinkler zone and at other locations as required by the Commissioner.
 - a. An alarm shall be activated by flow of water in excess of the discharge from one sprinkler head.
 - (1) Similar to Potter Electric Signal Co., VSR-D.
 - b. A small hole (approximately 1 inch in diameter) is required to be drilled into the piping to install vane-type flow switches. The “coupons” that result from this drilling shall be attached to the mounting bolts of the water flow alarm so that inspectors may verify that coupons were not left inside the pipe.

5. Testing Water Flow Alarm Initiating Devices:

- a. Alarm check valves, dry-pipe valves, and preaction valves shall be equipped with bypass connections with (normally-closed) bypass valves. Opening the bypass valves will allow flow to actuate pressure-operated switches.
- b. Vane-type water flow alarm devices shall be tested by opening the valve at the inspector's test connection.

C. Sprinkler System Supervision Alarms:

- 1. Valve Supervisory Units: All 2-1/2 inch or larger shut-off valves on fire protection systems shall be provided with supervisory units.
 - a. All the shut-off valves shall be supervised in the open position, except for valves of pump test connections which shall be supervised in the closed position.
 - (1) Similar to Potter Electric Signal Co., Model OSYS-U.
- 2. Air Pressure Supervisory Switches: For dry and preaction systems, air pressure supervisory switches shall be installed.
 - a. Air pressure supervisory switches shall operate at an increase or decrease of 10-psi from normal pressure.
 - (1) Similar to Potter Electric Model PS 40A2.

2.06 REDUCED PRESSURE ZONE BACKFLOW PREVENTORS:

- A. Refer to Plumbing and Drainage Systems, Section 15400.

2.07 Computer Server Room Suppression System:

- A. The suppression system installation shall be made in accordance with the drawings, specifications and applicable standards for a "Total Flooding" clean agent fire extinguishing system and conventional detection and control system from approved manufacturers, Minimax MX-1230 with 3M Novec 1230 fluid, Ansul FM-200, DuPont FE-25, Vulcan FE-25. The work is to include:
- B. 120 VAC or 220 VAC power supply to the system control panel.
- C. Interlock wiring and conduit for shutdown of HVAC, dampers and/or electric power supplies, relays or shunt trip breakers.
- D. Connection to local/remote fire alarm systems or listed central alarm stations.

- E. The installing contractor shall be trained by the supplier to design, install, test and maintain fire suppression systems.
- F. When possible, the installing contractor shall employ a NICET certified special hazard designer, Level II or above, who will be responsible for this project.
- G. The installing contractor shall be an experienced firm regularly engaged in the installation of automatic Clean Agent, or similar, fire suppression systems in strict accordance with all applicable codes and standards, having a significant number of years' experience in the design, installation and testing of Clean Agent, or similar, fire suppression systems. A list of systems of a similar nature and scope shall be provided on request.
- H. The installing contractor shall maintain, or have access to, a Clean Agent recharging station. The installing contractor shall provide proof of this ability to recharge the largest Clean Agent system within 24 hours after a discharge. Include the amount of bulk agent storage available.
- I. The installing contractor shall be an authorized stocking distributor of the Clean Agent system equipment so that immediate replacement parts are available from inventory.
- J. The installing contractor shall show proof of emergency service available on a twenty-four-hour-a-day, seven-day-a-week basis.

PART 3 EXECUTION

3.01 FIRE CONTROL SYSTEMS DESIGN:

- A. The following table shows Chicago Building Code sprinkler system design criteria. See the Chicago Building Code for more details. Unless stated otherwise by the Chicago Building Code, the project density shall be .20 gpm per sq. ft., the most remote area shall be 2,000 sq. ft., and the maximum area per sprinkler head shall be 130 sq. ft.

AIRPORT OCCUPANCY	DENSITY (in gpm/ sq. ft.)	MOST REMOTE DESIGN AREA (sq. ft.)	MAXIMUM AREA PER SPRINKLER (sq. ft.)
Wet Pipe Systems			
Class C, Assembly	.12	1,500	225
Class E, Business/Office	.12	1,500	225

AIRPORT OCCUPANCY	DENSITY (in gpm/ sq. ft.)	MOST REMOTE DESIGN AREA (sq. ft.)	MAXIMUM AREA PER SPRINKLER (sq. ft.)
Class F, Mercantile/Restaurant; Class G Industrial/H&R Plant; Class H, Storage/Garage; all with ceilings below 14 feet.	.20	2,000	130
Class F, Mercantile/Restaurant; Class G Industrial/H&R Plant; Class H, Storage/Garage; all with ceilings over 14 feet.	.25	2,500	130
Mechanical Rooms	.15	1,500	130

B. Sprinkler System Zones:

1. Fire monitoring systems shall be able to locate fires to the satisfaction of the Commissioner. Each sprinkler system shall be on a separate zone. Each zone shall be provided with necessary valve supervisory switches, water flow indicators, and alarm check valves.
2. All water supply control valves and drain valves shall be permanently marked to show their function and sprinkler system zones which they serve.

C. Fire Service Supply: Underground City water mains are the source of fire protection water for Airport buildings that are not part of the Terminal/Concourse complex. These mains are at City of Chicago pressure, which depending on the location, can be as low as a 10-psi.

D. Fire System Pressure:

1. Sprinkler systems shall be designed so that there is a minimum of 18-psi at the level of the highest head when the system is operating
2. Typically, the Fire Department will supply fire department connections with 150-psi water. The rated working pressure of sprinkler system components is required to be a minimum of 175-psi.
3. Recommended aboveground pipe maximum flow rate: 32-feet per second.

3.02 TEMPORARY FIRE PROTECTION REQUIREMENTS:

- A.** If required by the Commissioner or the Fire Department, provide temporary fire protection on all floors during construction.

1. Keep properly charged fire extinguishers at hand. Keep floors clean and free of oil and other chemical spills.
2. Both LP and natural gas become highly explosive if allowed to accumulate in closed areas. Vent work areas thoroughly.

3.03 SPRINKLER HEAD CLEANING:

- A. Clean dirt and debris from sprinklers. Replace sprinklers having paint other than factory finish with new sprinklers. Cleaning and reuse of painted sprinklers is prohibited.

3.04 INSTALLATION REQUIREMENTS:

- A. Penetrations of ductwork or structural members are not permitted.
- B. Unless permitted otherwise by the Commissioner, sprinklers shall be provided throughout the entire project area. Sprinklers shall not be installed in electrical rooms required by the Fire Department to be without sprinklers. In these occupancies where sprinklers are not permitted, smoke or heat detectors shall be provided.
- C. Wet-pipe fire protection piping may be installed level. Auxiliary drains shall be provided where a change in piping direction prevents drainage of system piping through the main drain valve.
- D. Pipes which pass through fire-resistive barriers, including floor slabs and shaft walls, shall be sleeved and grouted or sealed to maintain the integrity and rating of the fire resistive barrier.
- E. All exposed pipes that pass through a wall, ceiling, or floor shall be provided with escutcheon plates.

3.05 SPRINKLER HEAD LOCATIONS:

- A. All sprinkler heads shall be arranged symmetrically within each room or space. Sprinklers shall be placed in the center of ceiling tile.
- B. Sprinklers shall be installed beneath ducts over 4-feet wide.
- C. Sprinklers installed below 7'-6" above finished floor in areas having exposed construction shall be provided with head guards.
- D. A minimum of 18 inch clearance shall be maintained between top of storage and ceiling sprinkler deflector.

3.06 DRAINS:

- A. Infrequently used traps for drains shall be provided with deep-seal traps and trap primers.
- B. Provide a valved drain connection at the base of each standpipe riser.
- C. Provide drains at main shut-off valves. Install shutoff valves and drains at connections to existing piping.

3.07 INSPECTORS TEST CONNECTIONS:

- A. Install inspector's test connections in sprinkler piping, complete with shutoff valve, sized and located according to NFPA 13.
- B. A test pipe not less than one inch in diameter terminating in a corrosion resistant orifice giving a flow equivalent to one sprinkler head shall be provided for each systems or at each floor for a multi-story building.
- C. Test connection valves shall be readily accessible. The discharge from test connection shall discharge outside or to a point capable of accepting expected discharge under pressure. Interior drains shall be hub drains; the use of a standard floor drain is not acceptable.

3.08 FIRE PROTECTION PIPING CLEANING:

- A. Flush thoroughly in accordance with NFPA-13A requirements.

3.09 ACCEPTANCE PRESSURE TESTS:

- A. The Contractor shall perform all required acceptance pressure tests according to the applicable provisions of NFPA-13. Contractor shall give advance notification of the time when the testing will be performed. Complete the Contractor's Material and Test Certificates. Submit these certificates to the Commissioner prior to installation.
- B. All new fire protection systems shall be tested hydrostatically at not less than 200-psi pressure for 2 hours or at 50-psi in excess of the maximum pressure when the maximum pressure to be maintained in the system is in excess of 150-psi. The test pressure shall be read from a gauge located at the low elevation point of the system being tested. If weather does not permit testing system with water, an interim test may be conducted with air pressure of at least 40-psi, allowed to stand for 24-hours.
- C. Water flow detecting devices, including the associated alarm circuits, shall be tested with an actual water flow with the use of a test connection.

- D. Each pressure reducing/regulating valve shall be tested upon completion of the installation to ensure proper operation under flow conditions. Testing shall verify that the device properly regulates outlet pressure at both maximum and normal inlet pressure conditions.

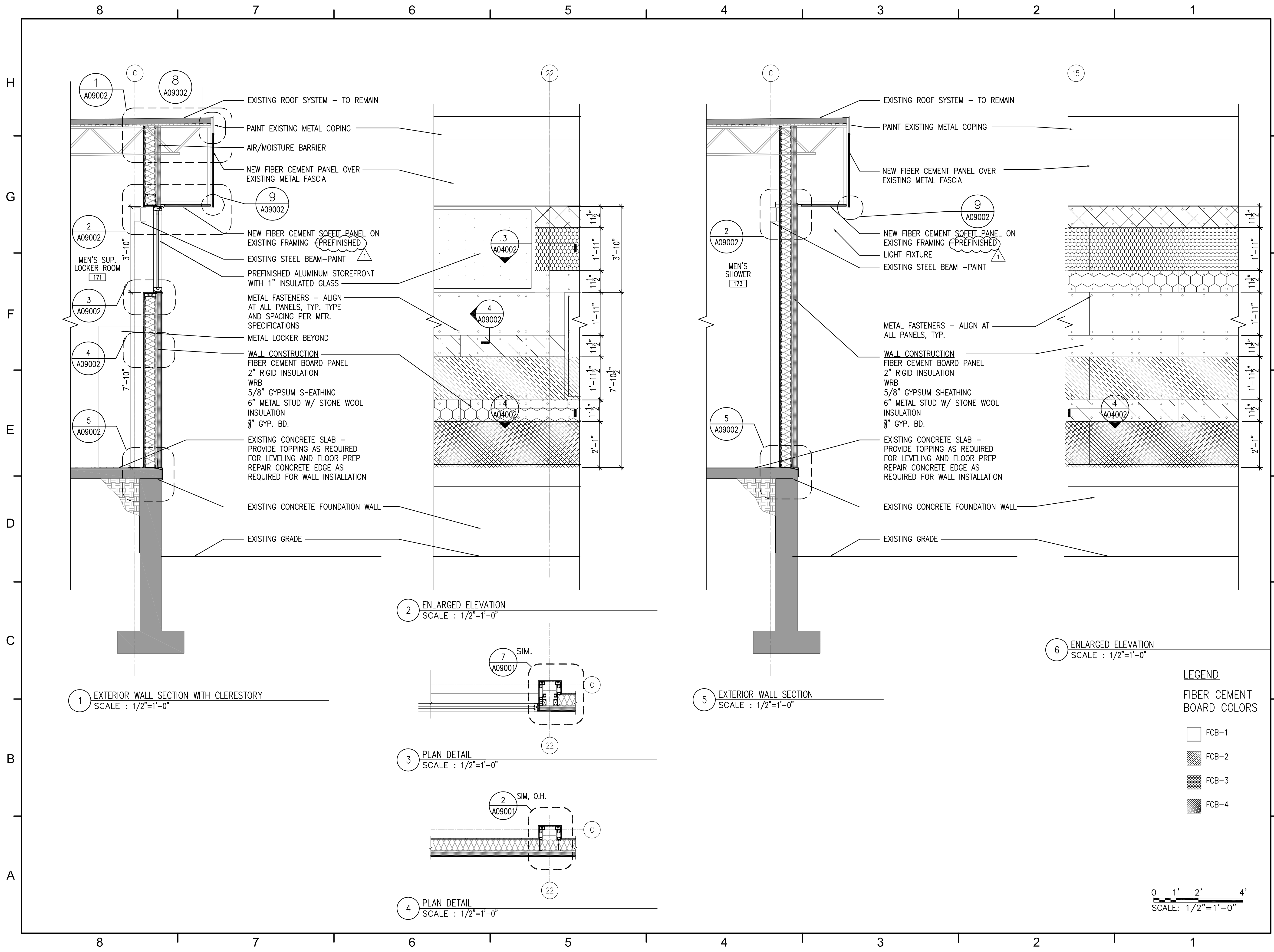
3.10 COMMISSIONING:

A. Starting Procedures:

1. Follow manufacturer's written procedures.
2. Verify that specialty valves, trim, fittings, controls, and accessories have been installed correctly and operate correctly.
3. Verify that specified tests of piping are complete.
4. Check that damaged sprinklers and sprinklers with paint or coating not specified have been replaced with new sprinklers.
5. Check sprinkler type, finish and temperature ratings.
6. Fill wet-pipe sprinkler systems with water.
7. Energize circuits to electrical devices.

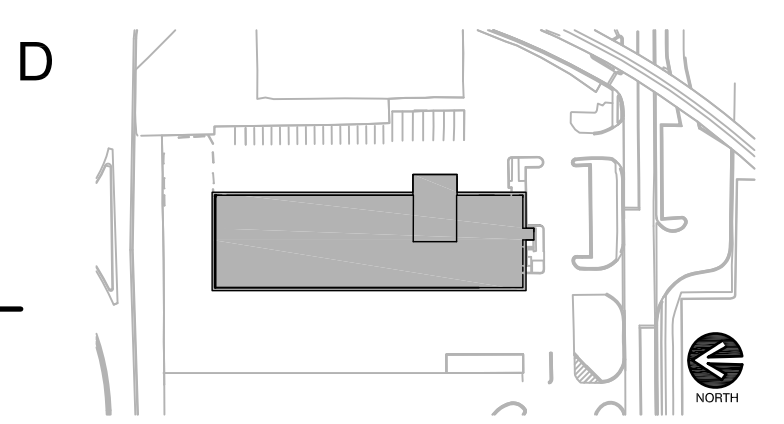
- B. Coordinate with fire alarm system tests. Operate systems as required.

END OF SECTION 15300



O'HARE INTERNATIONAL AIRPORT
CITY OF CHICAGO
CHICAGO DEPARTMENT OF AVIATION

RAHM EMANUEL
MAYOR
GINGER S. EVANS
COMMISSIONER



APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
1	6/23/17	ADDENDUM 2
	5/15/17	ISSUE FOR BID

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O'HARE INTERNATIONAL AIRPORT
BUILDING 521
RENOVATION FOR
AIRPORT POLICE

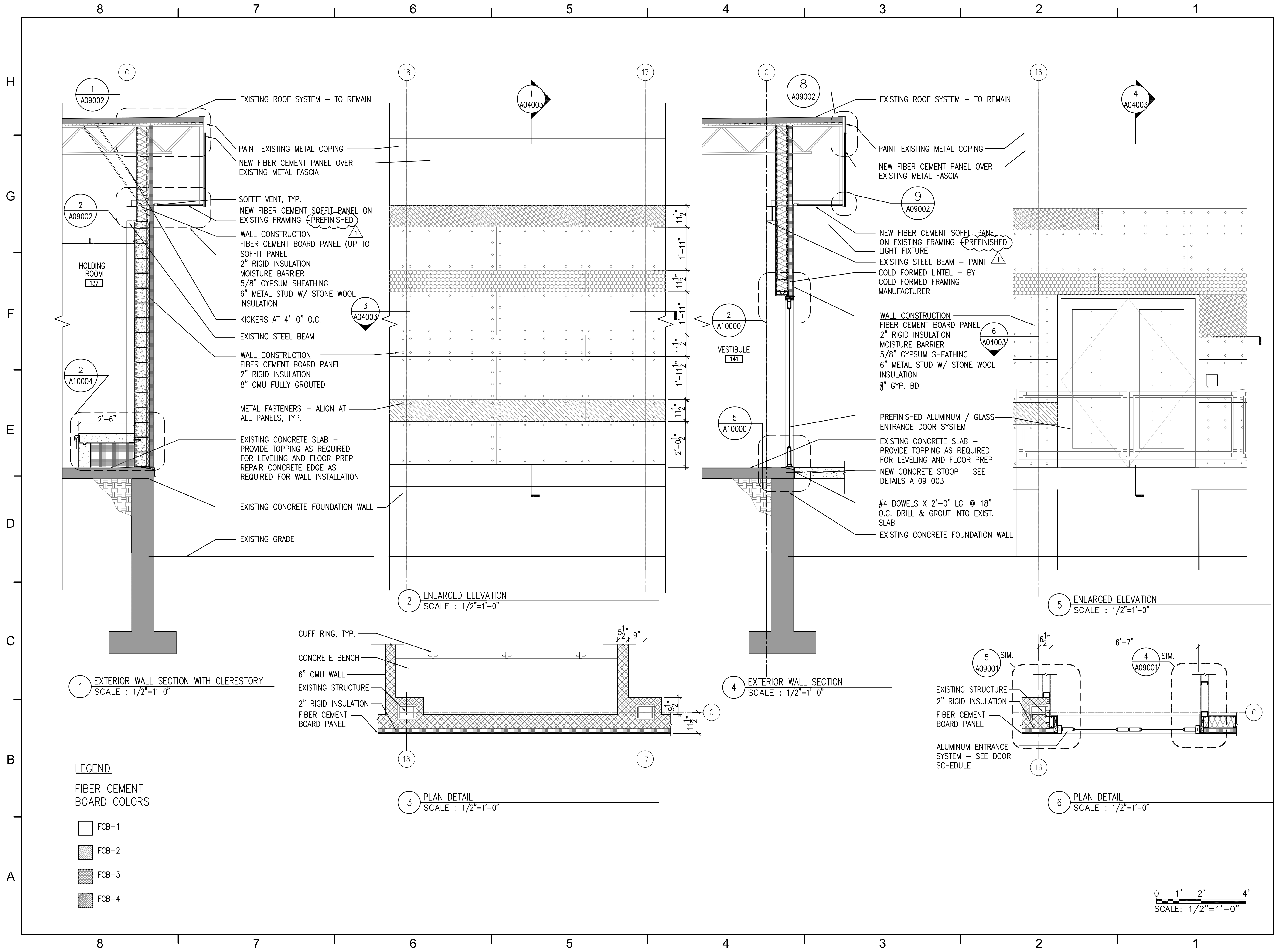
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SECTIONS

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CHECKED: KG, CB

PROJECT NO.: H4018.15
DATE: SEPTEMBER 21, 2016

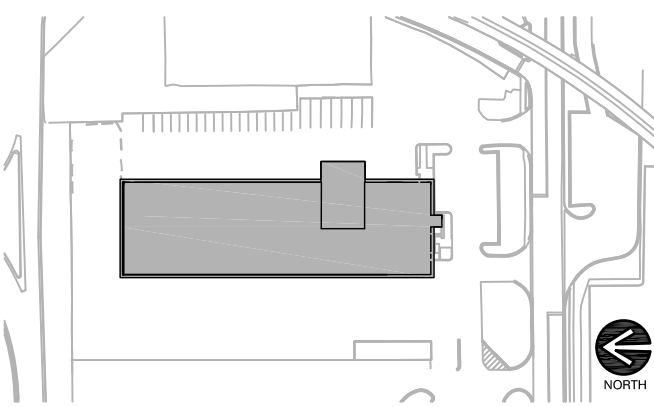
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REVISION

A 04 002



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RAHM EMANUEL
MAYOR
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COMMISSIONER



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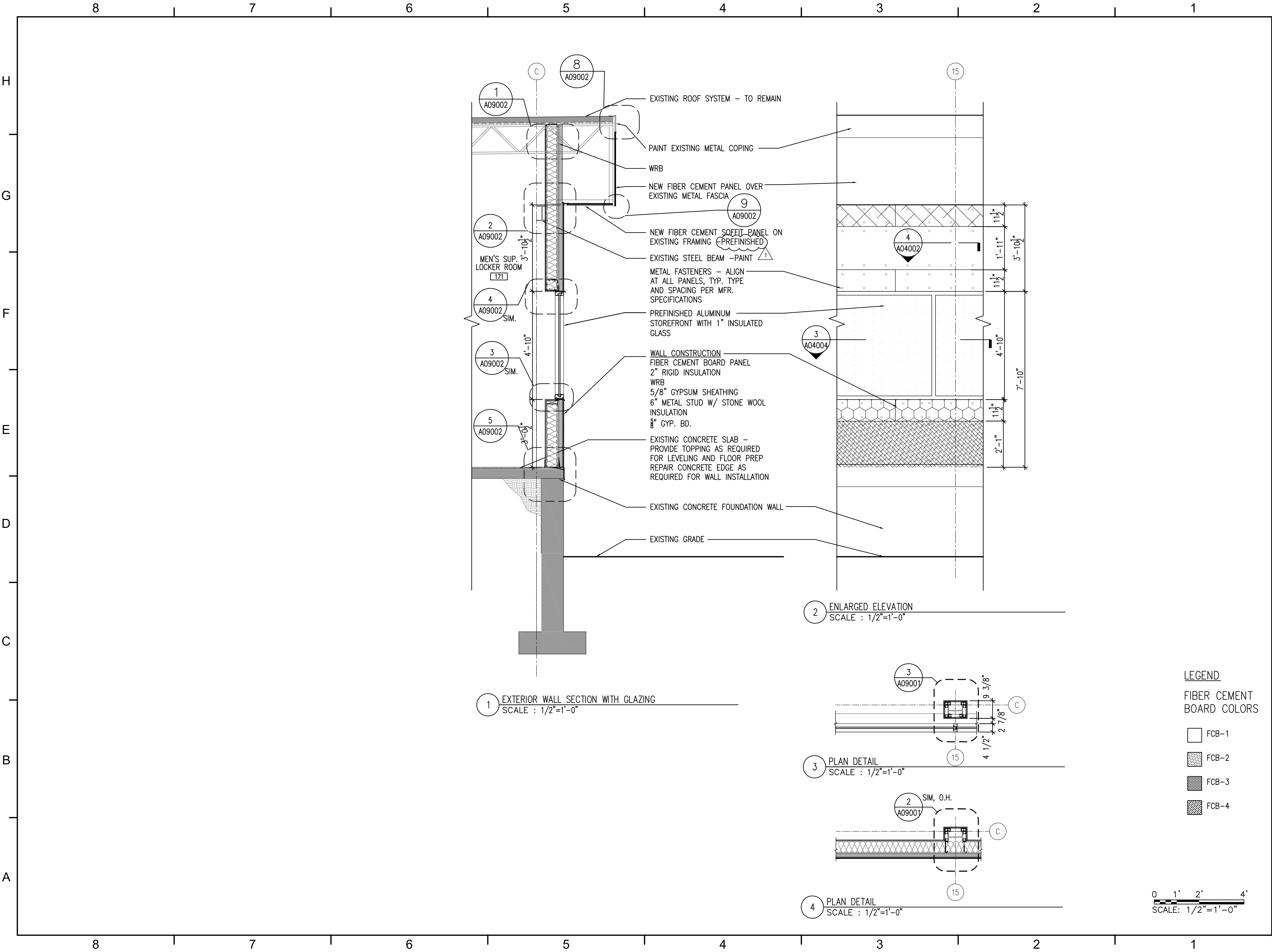
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BUILDING 521
RENOVATION FOR
AIRPORT POLICE

SHEET TITLE:
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SECTIONS

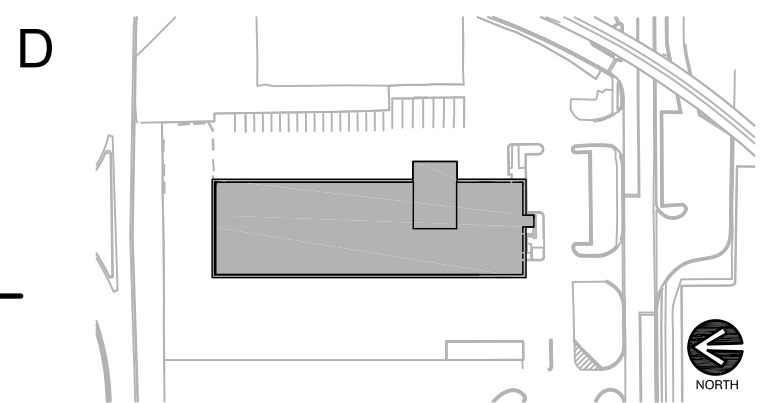
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DATE:	SEPTEMBER 21, 2016	
SHEET NO.		REVISION

A 04 003



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RAHM EMANUEL
MAYOR
GINGER S. EVANS
COMMISSIONER



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REV	DATE	DESCRIPTION
1	6/23/17	ADDENDUM 2
	5/15/17	ISSUE FOR BID

PROJECT NAME:

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BUILDING 521
RENOVATION FOR
AIRPORT POLICE

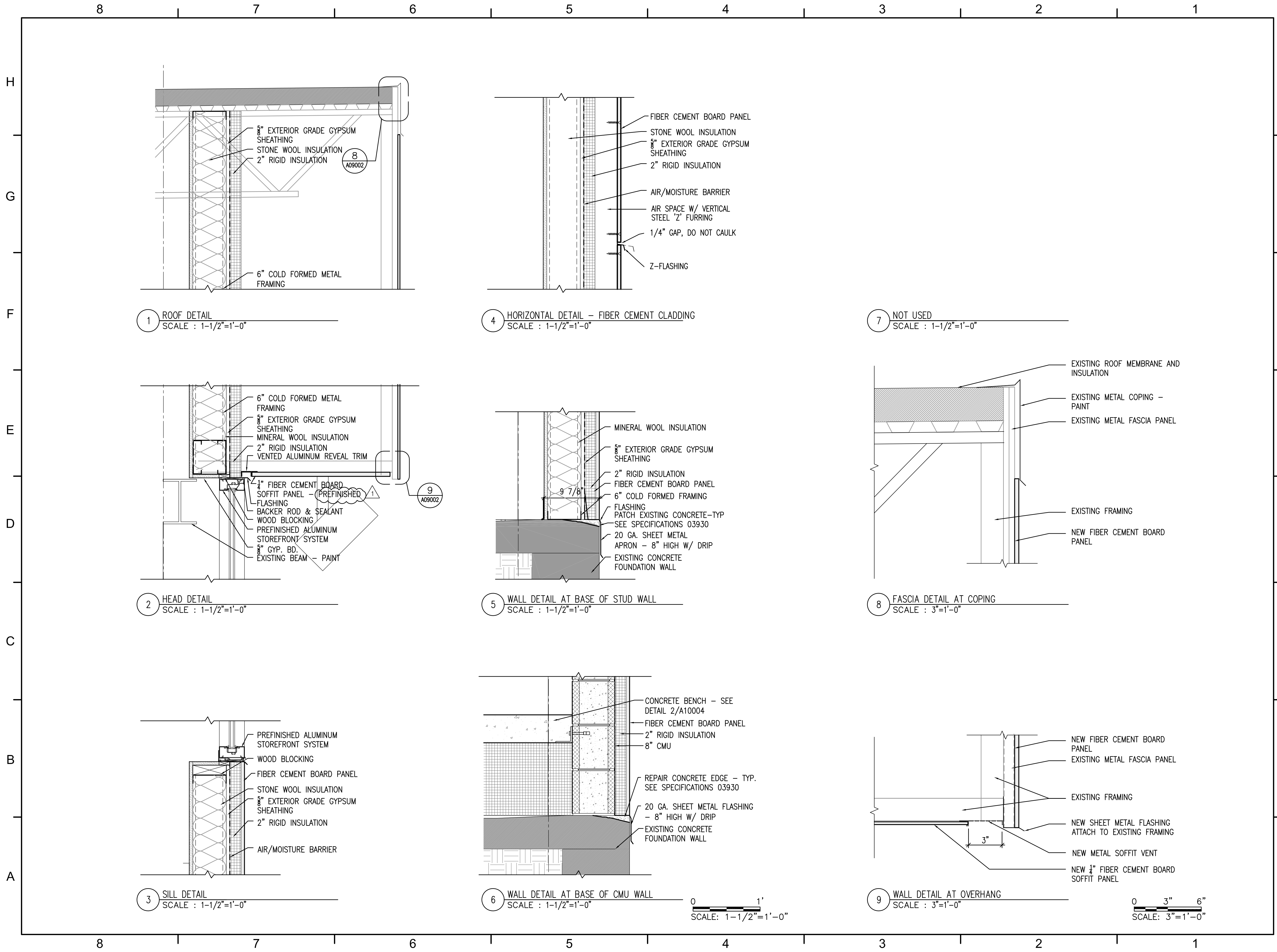
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SECTIONS

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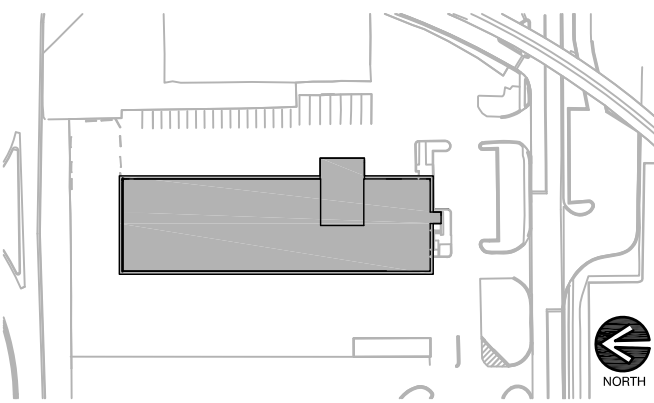
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A 04 004



O'HARE INTERNATIONAL AIRPORT
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GINGER S. EVANS
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1	6/23/17	ADDENDUM 2
	5/15/17	ISSUE FOR BID
REV	DATE	DESCRIPTION

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT
BUILDING 521
RENOVATION FOR
AIRPORT POLICE

SHEET TITLE:

EXTERIOR DETAILS

DESIGNED:	DRAWN:	CHECKED:
CB, KG, LT	KG, LT	KG, CB

PROJECT NO.: H4018.15
DATE: SEPTEMBER 21, 2016

SHEET NO.	REVISION
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A 09 002

