Union Station
REDEVELOPMENT CORPORATION
750 First Street, N.E., Suite 1010
Washington, D.C. 20002
(202) 222-0271

Union Station Parking Garage Fire Alarm Upgrades

Washington, D.C.

Addendum Number 1: Issue Date: March 02, 2026

A. GENERAL

This Addendum forms a part of the Contract Documents and modifies the original bidding documents dated 10/03/2025.

Bidders shall acknowledge receipt of this Addendum in their bid submission.

The following clarifications are provided in response to pre-bid RFIs and shall be incorporated into the Work.

- **Bid-RFI 01:**
  Communication devices in elevator cabs are existing, and to remain. No work in the elevators cabs is required. No fire alarm speaker coverage for voice evacuation is required throughout the garages including elevator cabs. Horn/strobe shall be provided per fire alarm drawings. Upon further review, the 2" empty conduits between FACP and elevator shafts per Keynote #4 on sheet FA5.00-3 are not required.

- **Bid-RFI 02:**
  USRC will obtain and pay for any required permits.

- **Bid-RFI 03:**
  GPR is not required for drill depth of 3/4" or less. Reference *Union Station Parking Garage Cutting, Coring, Drilling, and Anchoring Requirements* for more detail.

- **Bid-RFI 04:**
  Provide a 1” conduit with pull string between FACP communication modem and telephone interface backboard. A ¾” conduit is acceptable based on accommodating the required cable quantity. Allow 150 LF. A ¾” conduit is acceptable based on accommodating the required cable quantity.

- **Bid-RFI 05:**
  The remote annunciator in the garage dry sprinkler room and associated wiring and conduit shall be replaced with new. The new remote annunciator shall include the digital readout from the main fire alarm control panel and include all indicator lights for normal, alarm, supervisory, and trouble to match existing. Also, it shall include buttons for reset, alarm, silence, trouble silence, drill/ all call, back and next to match existing.

- **Bid-RFI 06**
  Additional remote alarm lamps for all sprinkler control devices are not required, provided that the modules have the status light built in.

- **Bid-RFI 07**
  WSP has no objection to the referenced Honeywell's Gamewell/FCI addressable Fire alarm system, on the condition that it supports future interfacing with other future Station Complex fire alarm systems.

- **Bid-RFI 08**
  Contractors will be provided with (2) parking spaces.

- **Bid-RFI 09**
  Contractors to provide bond cost as an alternate. Reference bid form.

- **Bid-RFI 10**
  EMT is acceptable. Provide EMT with raintight compression fittings.

- **Bid-RFI 11**
  USRC will coordinate 3rd party monitoring during fire alarm installation.

- **Bid-RFI 12**
  The new fire alarm system shall provide generator monitoring per fire alarm specification section 28 30 01.

- **Bid-RFI 13**
  Roof-mounted valve rooms contain notification appliances. Any existing notification appliances shall be removed and replaced with new.

- **Bid-RFI 14**
  Provide a 1" conduit with pull string from the FACP to the security control panel for future integration. A ¾" conduit is acceptable based on accommodating the required cable quantity.

- **Bid-RFI 15**
  Use of UL-listed cellular communicator for fire alarm signal transmission is not allowed. See response to Bid-RFI-04.

- **Bid-RFI 16**
  2-hour rated cabling is not required.

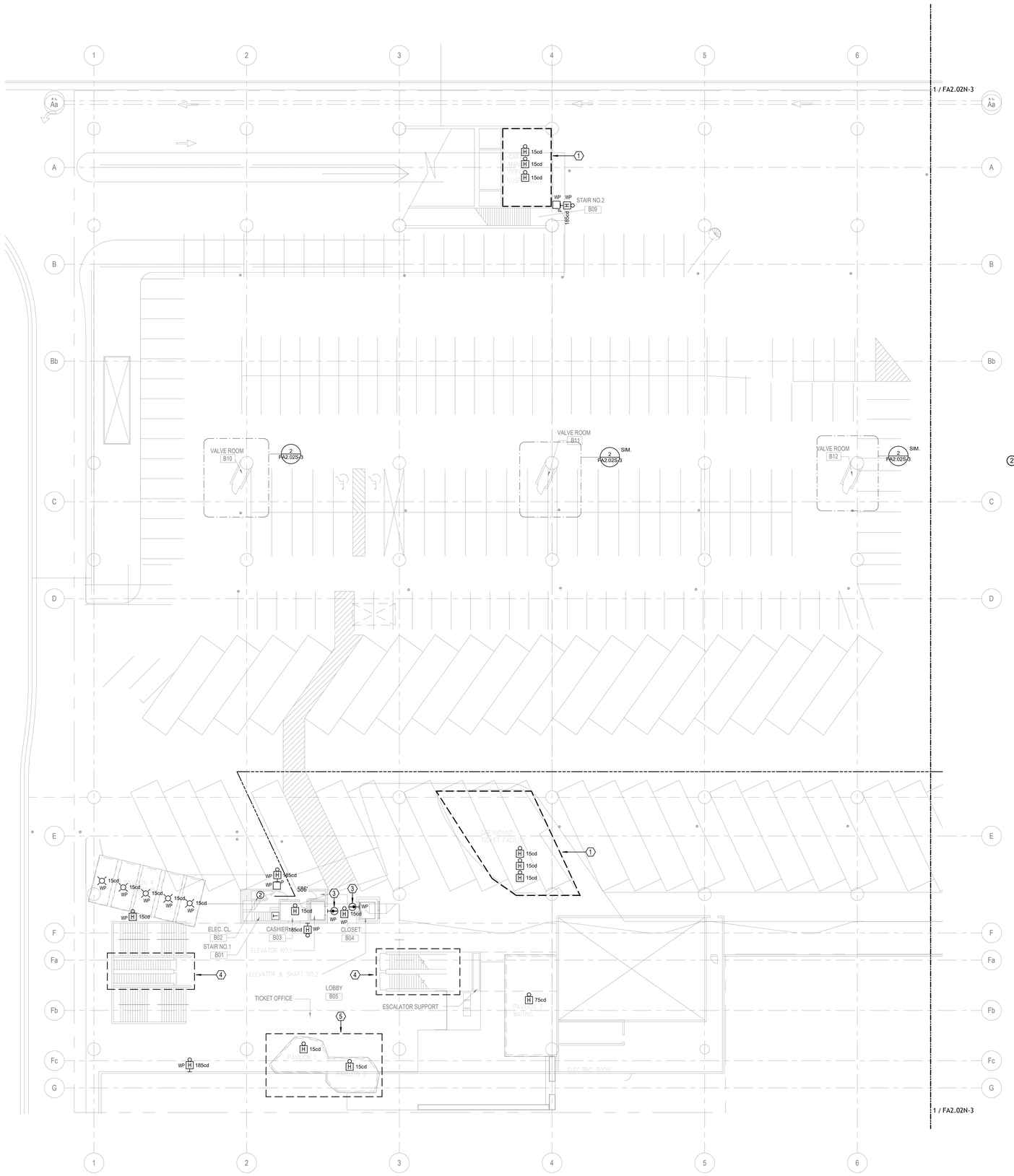
- **Bid-RFI 17**
  Annual inspection reports for the fire alarm and sprinkler systems are not available as part of the bid documents.

B. ATTACHMENTS / DOCUMENT MODIFICATIONS

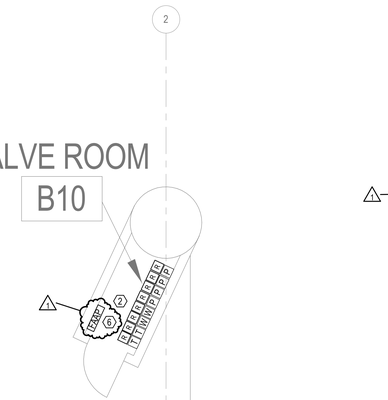
The following documents are issued with this Addendum and form part of the Contract Documents:

- *2026-02-11 USPG Cutting Coring, Drilling & Anchoring Requirements*
- *Revised Fire Alarm Drawings Sheet FA2.02S-3 - FIRE ALARM-BUS LEVEL-NEW WORK-SOUTH*
- *Revised Fire Alarm Drawings Sheet FA5.00-3 - FIRE ALARM-RISER DIAGRAM*
- *Updated Specifications 26 05 33 Raceways and Boxes*
- *Updated Specifications 28 30 01 Fire Management System - Low Rise*

End of Addendum



1 FIRE ALARM - BUS LEVEL - NEW WORK - FAS - SOUTH
1/16" = 1'-0"



2 FIRE ALARM - BUS LEVEL - NEW WORK - FAS - TYPICAL VALVE ROOM
1/4" = 1'-0"

GRAPHIC SCALE
16' 8' 0 16' 32' 48'
SCALE: 1/16" = 1' - 0"

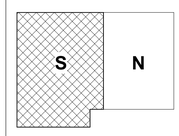
SHEET NOTES

1. PROVISION OF (3) HORN/STROBE COMBINATION DEVICES. FIELD COORDINATE MOUNTING LOCATIONS PER EXISTING SPACE LAYOUT.
2. REFER TO DETAIL#3 ON SHEET FA7.00-3 FOR ADDITIONAL INFORMATION.
3. REFER TO DETAIL#5 ON SHEET FA7.00-3 FOR MOUNTING HEIGHT.
4. INTERFACE EXISTING ESCALATORS WITH NEW FIRE ALARM SYSTEM. REPLACE ALL EXISTING FIRE ALARM DEVICES WITH NEW. COORDINATE WITH ESCALATOR CONTRACTOR TO PROVIDE ALL REQUIRED INTERFACE MODULES, WIRING, AND CONDUITS. REFER TO SHEET FA0.00-3 FOR MORE DETAILS ON SCOPE OF WORK.
5. FIELD COORDINATE MOUNTING LOCATIONS PER EXISTING SPACE LAYOUT.
6. EXISTING FIRE ALARM REMOTE ANNUNCIATOR PANEL IN VALVE ROOM B10 ONLY. REPLACE THE REMOTE ANNUNCIATOR PANEL AND ASSOCIATED WIRING AND CONDUIT WITH NEW.

GENERAL NOTES

A. REFER TO DRAWING FA0.00-3 FOR LEGENDS AND ABBREVIATIONS.
B. FIRE ALARM DRAWINGS AS SHOWN ARE FOR PERMITTING AND DESIGN REFERENCE ONLY. CONTRACTOR SHALL PROVIDE THE FINAL FIRE ALARM LAYOUT AND SYSTEM DESIGN WITH ALL REQUIRED SYSTEM CALCULATIONS THAT SHALL BE SUBMITTED TO AHJ FOR APPROVAL.
C. ALL FIRE ALARM DEVICES IN GARAGES, EXTERIOR AREAS, AND OTHER LOCATIONS WHERE SUBJECT TO WET CONDITIONS SHALL BE WEATHERPROOF UL LISTED AND EQUIPPED WITH WEATHERPROOF BACKBOXES AND GASKETS. FIRE ALARM DEVICES IN THESE AREAS SHALL BE SUITABLE FOR THE ENVIRONMENT IN ACCORDANCE WITH NFPA 72.
D. PROVIDE DUAL ACTION MANUAL PULL STATIONS WITH WEATHERPROOF PROTECTIVE SHIELDS AND WARNING HORNS. REFER TO FIRE ALARM SPECIFICATION FOR MORE DETAILS.
E. ALL FIRE ALARM DEVICES ARE RATED AT 185CD U.O.N.
F. COORDINATE WITH PLUMBING, FIRE PROTECTION, AND SPRINKLER SHOP DRAWINGS FOR EXACT LOCATIONS AND QUANTITIES OF VALVE TAMPER, WATER FLOW, AND HIGH AND LOW PRESSURE SWITCHES.
G. PROVIDE CONDUIT, WIRE, RELAYS, DEVICES, ETC. FOR A COMPLETE FIRE ALARM INSTALLATION AS DEFINED BY THE PLANS AND SPECIFICATIONS.
H. ALL WIRING SHALL BE IN ELECTRIC METAL TUBING.
I. ALL FIRE ALARM DEVICES SHALL BE MOUNTED AT THE HIGHEST POSSIBLE HEIGHT AS ALLOWED BY NFPA 72.
J. ALL PENETRATIONS THROUGH FLOOR SLAB AND FIRE RATED WALLS SHALL BE PROPERLY FIRE-STOPPED.
K. FIRE ALARM DEVICES SHALL BE MOUNTED IN ACCORDANCE TO NFPA 72. APPLIANCES SHALL BE PERMANENTLY INSTALLED AT A LOCATION WHERE ALARM SIGNALS SHALL BE VISIBLE IN ALL PARTS OF THE ROOM OR AREA. THE REQUIRED INSTALLATION HEIGHT FOR THE CEILING FIRE ALARM DEVICES IN THE GARAGE SHALL BE BELOW THE STRUCTURAL BEAM LOWEST POINT. PROVIDE UNISTRUT MOUNTED DEVICES OFF OF THE CEILING WHERE REQUIRED IN THE GARAGE.

KEY PLAN



MEPFPT Engineer:

WSP USA Buildings Inc
1300 N 17TH ST, SUITE 1000
ARLINGTON VA, 22209
(202) 362-2800
wsp.com

Architect:

Structural Engineer:

WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS. THESE DRAWING SHALL BE COPIED FROM THE ORIGINAL BLUEPRINTS AND ARE APPROXIMATELY TO SCALE. IT IS THE CONTRACTORS' RESPONSIBILITY TO VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND SHALL NOTIFY THE ENGINEER OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN.

NO.	REVISION	DATE
	PERMIT / BID	OCT 3, 2025
1	FIRE ALARM UPGRADE - ADDENDUM 1	FEB 27, 2026

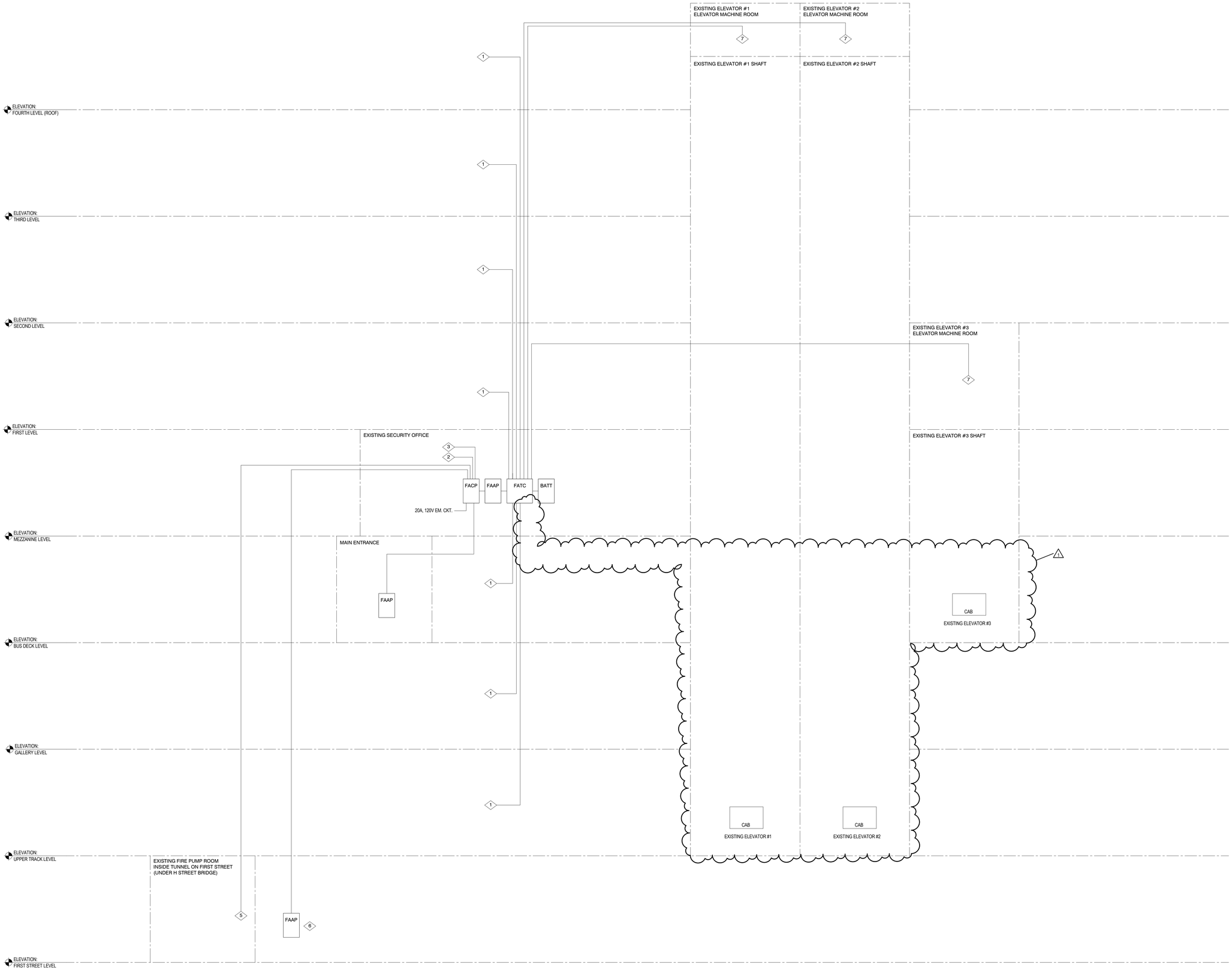
PROJECT
PM SUPPORT SERVICES
FIRE ALARM SYSTEM UPGRADE

OWNER
UNION STATION REDEVELOPMENT CORPORATION

TITLE
FIRE ALARM - BUS LEVEL - NEW WORK - SOUTH

PROJECT NO.: US-WSP-192801E
DATE: 10/03/2025
DWN. BY: Author
CKD. BY: Checker
SCALE: As indicated

FA2.02S-3



1. REFER TO FLOOR PLAN FOR ACTUAL LOCATIONS OF ALL DEVICES.
2. PROVIDE A 1-INCH EMPTY CONDUIT WITH PULL STRING FROM THE FACP TO THE NEAREST TELECOM TERMINAL BACKBOARD. CONNECT THE FIRE ALARM CONTROL PANEL COMMUNICATIONS MODEM TO DEDICATED TELEPHONE LINES PER THE REQUIREMENTS OF THE AHJ.
3. PROVIDE A 1-INCH EMPTY CONDUIT FROM THE FACP TO THE SECURITY SYSTEM CONTROL PANEL.
4. DELETED.
5. REFER TO DETAIL 4 ON SHEET FA7.00-3 FOR SCOPE OF WORK ON REPLACEMENT OF EXISTING FIRE ALARM DEVICES ASSOCIATED WITH EXISTING FIRE PUMP ROOM.
6. FAAP TO BE LOCATED ADJACENT TO EXISTING WET PIPE FIRE DEPARTMENT CONNECTION (FDC).
7. REFER TO SHEET FA0.00-3 FOR SCOPE OF WORK ON FIRE ALARM INTERFACE WITH EXISTING ELEVATOR.

RISER ABBREVIATIONS	
BATT	BATTERY CABINET
FATC	FIRE ALARM TERMINAL CABINET
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL

GENERAL NOTE
HEAT DETECTORS IN ELEVATOR MACHINE ROOMS OR MACHINE ROOM-LESS ELEVATOR SHAFTS SHALL BE CONNECTED DIRECTLY TO THE SHUNT TRIP OF THE ASSOCIATED ELEVATOR DISCONNECT

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NO.	REVISION	DATE
	PERMIT / BID	OCT 3, 2025
1	FIRE ALARM UPGRADE - ADDENDUM 1	FEB 27, 2026

PROJECT
PM SUPPORT SERVICES
FIRE ALARM SYSTEM UPGRADE

OWNER
UNION STATION REDEVELOPMENT CORPORATION

TITLE
FIRE ALARM - RISER DIAGRAM

PROJECT NO.: US-WSP-192801E		FA5.00-3
DATE: 10/03/2025		
DWN. BY: Author	CKD. BY: Checker	
SCALE: 12" = 1'-0"		

SECTION 26 05 33

RACEWAYS AND BOXES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Provide a compliance / non-compliance specification attached to the front of the submittal. Identify each paragraph stating the submittal complies with the specification or does not comply. For every statement of non-compliance, include clear language as to the reason for the non-compliance and the submitted provisions that are intended to operate in its place.

B. Provide raceways and boxes in accordance with the Contract Documents.

1.2 SUBMITTALS

A. Conduit, Boxes:

B. Manufacturer's product data sheets, volume dimensions, physical dimensions, Listing agencies, and weights.

1.3 IDENTIFICATION

A. Mark junction box covers with permanent stencil identification of panelboard and circuit numbers of wiring contained within.

B. Paint fire alarm raceways and red. Pre-painted raceways will be acceptable.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Conduit and Boxes:

1. UL Listed and labeled products of any manufacturer meeting the specified performance requirements are acceptable.

B. Wireways and Auxiliary Gutters:

1. Siemens, Square D, or equal.
2. Wireways and auxiliary gutters shall be UL Listed and labeled.

2.2 CONDUIT AND FITTINGS

A. Rigid Steel Conduit:

1. Rigid conduit, heavy wall, hot-dipped galvanized inside and out, threaded ends.
2. Threaded type fittings.
3. Schedule 40

B. Electrical Metallic Tubing:

1. Continuous, seamless steel tubing galvanized or sherardized on exterior, coated on interior with smooth hard finish of lacquer, varnish or enamel.
2. Steel, set screw or compression fittings. Cast connectors and coupling are prohibited.
3. Provide concrete type fittings where required.
4. Conduits shall be color coded and identified as required by code or the local authority having jurisdiction and as specified herein.
5. Conforming to NEC Article 358

C. Flexible Metal Conduit:

1. Single strip, continuous, flexible interlocked double-wrapped steel, hot-dip galvanized inside and out forming smooth internal wiring channel.
2. Steel, compression type fittings.
3. Conforming to NEC Article 348.

D. Liquid Tight Flexible Conduit:

1. Same as flexible metal conduit except with tough, inert, watertight plastic outer jacket.
2. Fittings shall be cast malleable iron body and gland nut, zinc-plated with one-piece brass grounding bushings threaded to interior of conduit. Spiral molded vinyl sealing ring between gland nut and bushing and nylon-insulated throat.
3. Conforming to NEC Article 350.

E. Flexible non-metallic conduit

1. Prohibited

F. Electric Non Metallic Tubing

1. Prohibited

2.3 WIREWAYS AND AUXILIARY GUTTERS

A. Sizes and shapes as indicated and/or as required.

B. Provide necessary elbows, tees, connectors, adapters, etc.

C. Continuous removable cover secured with screws and keyhole slots. Hinged cover where installed above suspended ceiling.

D. Provide wire retainers at not greater than 12 inches on center.

2.4 OUTLET, JUNCTION, AND PULL BOXES

A. Cast Type Boxes:

1. Ferrous alloy box with inside threaded hubs for rigid steel conduit.
2. Ferrous alloy box with compression or inside threaded hubs with adapter for electrical metallic tubing.
3. Cast raised cover, size matched to contour of box.
4. Tapered threads for hubs.

B. Galvanized Pressed Steel Type Boxes:

1. General:

    a. Pressed steel, galvanized or cadmium-plated, 4 inches minimum octagonal or square with galvanized cover or extension ring as required.

C. Sheet Steel Boxes:

1. No. 12 gauge sheet steel for boxes with maximum side less than 40 inches, and maximum area not exceeding 1,000 square inches; riveted or welded 3/4-inch flanges at exterior corners.
2. No. 10 gauge sheet steel for boxes with maximum side 40 to 60 inches, and maximum area 1,000 to 1,500 square inches; riveted or welded 3/4-inch flanges at exterior corners.
3. No. 10 gauge sheet steel riveted or welded to 1.5 inch by 1.5 inch by 1/4-inch welded angle iron framework for boxes with maximum side exceeding 60 inches and more than 1,500 square inches in area.
4. Covers:

    a. Same gauge steel as box.
    b. Subdivided single covers so no section of cover exceeds 50 pounds.
    c. Machine bolts or machine screws threaded into tapped holes.

5. Paint:

    a. Rust inhibiting primer, ANSI 61 grey enamel finish coat.

PART 3 – EXECUTION

3.1 GENERAL

A. 277/480V or 265/460V wiring shall be kept independent of 120/208V wiring. Emergency system wiring shall be kept independent of other wiring systems. Provide insulated grounding conductor in all feeder and branch circuit raceways. Minimum conduit size shall be 3/4-inch, including conduit for low-voltage cabling. Wiring of each type and system shall be installed in separate raceways.

B. Protect metallic raceway in earth or fill from corrosion with two coats of corrosion-resistant paint or tape wrap.

C. Locate raceways so that the integrity of structural members is not affected, and they do not conflict with the services of other trades. Draw up couplings and fittings full and tight. Protect threads from corrosion after installation with zinc chromate or equivalent protection.

D. Conceal raceways except at surface-mounted cabinets and freestanding equipment. Install minimum of 6 inches from flues, steam pipes, or other heated lines. Route exposed raceways parallel or perpendicular to building lines with right-angle turns and symmetrical bends. Provide sleeves in concrete walls, floor slabs and partitions. Waterproof sleeved raceways where required.

E. Provide raceway expansion joints for exposed and concealed raceways at expansion joints and between structures to compensate for differential movement. Provide bonding conductor.

F. Clear raceway of all obstructions and dirt prior to pulling in wires or cables. Use ball mandrel (diameter approximately 85 percent of conduit insider diameter) followed by close-fitting wire brush and wad of felt or similar material. This assembly may be pulled with, but ahead of cable being installed. Clean empty raceways similarly. Clear or replace any raceway which rejects ball mandrel.

G. Secure raceways clamps or supports to masonry materials with toggle bolts, expansion bolts, or steel inserts. Install raceway on steel construction with approved clamps which do not depend on friction or set-screw pressure alone.

H. Provide independent support of raceways larger than 3/4 inch. Provide uni-strut support and threaded rod to structure above for multiple suspended raceways run together. Use of lathe channels or other miscellaneous steel to support raceways is not permitted. Use listed supports such as uni-strut or similar systems for support.

I. Raceways installed in open garages shall be Electrical Metallic Tubing (EMT) with raintight compression fittings.

3.2 WIREWAYS AND AUXILIARY GUTTERS

A. Install wireways such that cover will hinge upward from side.

3.3 OUTLET, JUNCTION, AND PULL BOXES

A. Provide outlet, junction, and pull boxes as indicated and as required for a complete installation and to facilitate proper pulling of wires and cables. Boxes shall be sized per National Electrical Code as minimum. Plug open knock outs.

B. The exact location of outlets and equipment is governed by field conditions. Where necessary, relocate outlets so that fixtures and equipment are symmetrically located in accordance with the room layout and will not interfere with other work or equipment. Verify final location of outlets, fixtures, and equipment with engineer.

C. Provide pull boxes so that an individual run of conduit does not contain more than the equivalent of four 90-degree bends (360 degrees total).

D. Where boxes are installed outside exposed to the elements, weatherproof in-use covers shall be provided.

3.4 APPLICATION OF RACEWAYS

A. Electrical Metallic Tubing:

1. General purpose feeders and branch circuits rated greater that 100A, except where another conduit type is specifically required.
2. Exposed indoor installations in branch electrical closets and telecommunications rooms below ten feet above finished floor.

B. Metal Clad Cable:

1. Prohibited

C. Flexible Metal Conduit:

1. Dry locations only.

2. Connections to equipment where vibration isolation is needed.
3. Maximum length shall be six feet.

D. Liquid-Tight Flexible Steel Conduit:

1. Same as Flexible Metal Conduit in damp or wet locations.
2. Motor connections.

E. Liquid-Tight Flexible Non-metallic Conduit:

1. Prohibited.

F. Rigid Polyvinyl Conduit:

1. Prohibited

G. Electric Non Metallic Tubing

1. Prohibited

H. Wireways and Auxiliary Gutters:

1. Where indicated.
2. Above and below panelboards, lighting relay cabinets, fire alarm panels, and terminal cabinets to accommodate large concentrations of wires.

3.5 APPLICATION OF BOXES OUTLET, JUNCTION AND PULL BOXES

A. Galvanized Pressed Steel Type Boxes:

1. Where connected to electrical metallic tubing and flexible steel conduit, 1.25 inches and smaller.
2. Dry locations.
3. Where concealed in walls and above suspended ceilings.

B. Sheet Steel Boxes:

1. Where connected to conduit larger than 1.25 inches.

END OF SECTION 26 05 33

SECTION 28 30 01

FIRE MANAGEMENT SYSTEM – LOW RISE

PART 1 – GENERAL

1.1 DESCRIPTION

A. Provide a microprocessor controlled, electrically supervised fire management system in accordance with the Contract Documents. Provide a detailed system design, all equipment, tools, drawings, labor, materials, accessories, and approvals from governing agencies required to furnish, install, start up, and test a complete operating fire management system. Systems shall be provided and placed into proper operation in accordance with the requirements of the Authority Having Jurisdiction (AHJ).

B. The system shall include (but not be limited to) the following functions:

1. Smoke and fire detection
2. Alarm initiating devices – manual pull stations, smoke detectors, duct mounted smoke detectors, water flow switches, valve tamper switches, flame detectors and items noted below.
3. Alarm indicating devices to include horns as audible alarms, visual alarms, combination audible / visual devices.
4. Sprinkler suppression system monitoring
5. Emergency generator monitoring and status indication.
6. Fire pump monitoring and status indication.

C. Labor, materials including conduit and wiring, and accessories not specifically called for in the Contract Documents but required to provide complete, operating, and approved systems, shall be provided within the scope of the Contract.

D. All fire alarm devices in garages, exterior areas, and other locations where subject to wet conditions shall be weatherproof UL listed and equipped with weatherproof backboxes and gaskets. Fire alarm devices in these areas shall be suitable for the environment in accordance with NFPA 72.

E. Determine, coordinate, and incorporate the design and construction requirements of other systems, and auxiliary systems including emergency generator monitoring, fire pump monitoring, elevators, and other related systems, to fully meet all code requirements.

F. The purpose of the Contract Drawings and this performance-based Specification is to convey the scope of work required, all of which the Contractor is responsible to furnish, install, adjust, test and make operable to the satisfaction of the AHJ

G. The Contractor shall provide all devices and equipment required by these specifications and drawings. The intent of these specifications and drawings is to convey the general requirements and approximate device locations and quantities. Provide a complete set of shop drawings, stamped and signed by a professional engineer as a Subcontractor as the Engineer of Record for the system. Under no circumstances shall the Contractor delete any equipment without the written directive of the Owner and engineer.

H. Fire alarm initiating and indicating devices are indicated on plans for coordination and general design intent, and do not necessarily represent the actual quantity of devices required. The Contractor is responsible for providing the quantity of devices required for complete coverage, and to meet the requirements of the codes and of the AHJ. If

additional devices are required, they shall be provided and installed at no additional cost. Provide all required conduit, wire, panels, controls, auxiliary devices, accessories, testing, etc. for a complete, tested and functional operating system.

I. The fire management system shall be a stand-alone system operating independently of other control systems.

J. Connect the new fire alarm control panel to the existing branch circuits. Provide dedicated 120V circuits to all equipment and booster panels as required, and connect to the emergency power system. See electrical drawings for emergency power panel locations. Connect to the panel noted on the drawings.

K. Related work specified in other divisions of these specifications:

1. Sprinkler water flow switches and valve tamper switches.
2. Installation of remote alarm lamps associated with water flow switches, valve tamper switches, high and low pressure alarms.
3. Installation of interface modules associated with sprinkler water flow switches and valve tamper switches.
4. Installation of fire alarm audible devices.
5. Installation of fire alarm visual devices.
6. Installation of combination fire alarm audible and visual devices.
7. Installation of smoke detectors associated with elevator recall.
8. Installation of heat detectors associated with elevator lobby and elevator recall.
9. Electric and hydraulic elevators.
10. Engine generator monitoring system.
11. Fire pump monitoring system.
12. Raceways and boxes.

L. The Fire Management System contract is a performance-based contract. The Contractor shall develop a complete set of code-compliant and fully coordinated construction documents to the satisfaction of the Authorities Having Jurisdiction. The fire alarm system manufacturer, vendor and Contractor shall provide all required documentation, obtain all required permits and approvals, and shall provide all devices and accessories in the quantities and locations necessary for a tested, fully functional and code-compliant system to the satisfaction of the AHJ.

M. The fire management system shall be new, utilizing recent and latest technology. The control panel, extender panels, remote panels, graphic annunciator panels shall be a standard production system tailored to the project. The system manufacturer shall offer maintenance programs, service contracts and a spare parts inventory for a minimum of twenty years. The system manufacturer shall provide a statement identifying the life expectancy of the system shall be twenty years.

N. The fire alarm system shall have provisions in the control panel for accepting signals of ALARM, TROUBLE and SUPERVISORY from the separate fire alarm system monitoring the retail area and the separate fire alarm system associated with the Main Terminal area.

O. The fire alarm system graphic annunciator shall have provisions and space for accepting signals of ALARM, TROUBLE and SUPERVISORY from the separate fire alarm system monitoring the retail area and the separate fire alarm system associated with the Main Terminal area.

P. Programming of system shall be based on FINAL room names and numbers, which may not be necessarily be the same as those used on the construction documents.

1.2 QUALITY ASSURANCE

A. Provide engineering design, equipment and labor to provide a complete, tested and properly operating system acceptable to the AHJ.

B. Obtain approval from the Fire Department of Washington District of Columbia of the fire management system and installation.

C. Manufacturer and equipment supplier shall have a minimum of ten years' prior experience in the Washinton District of Columbia. Equipment supplier shall have 24-hour parts and labor service available with a maximum 4-hour response time.

D. The Contractor shall have successfully installed similar fire detection, visual and audible signaling systems in a previous project of comparable size and complexity.

E. The Contractor shall employ NICET (minimum Level IV – Fire Alarm Technology) technicians on-site to guide the final checkout and to ensure the systems integrity.

F. Contractor shall be Factory Authorized by the system manufacturer and technicians shall be Factory Certified to perform the installation work in this Section.

G. Prior to making required submittals, the Contractor shall meet with the Fire Department and make an informal presentation of the fire management system. Meeting minutes shall be issued and submitted with the submittal drawings, with comments incorporated into the required submittals.

H. System installation shall proceed only after shop drawings have been submitted, accepted and approved by the Washington District of Columbia fire department.

1.3 DESIGN REQUIREMENTS

A. The fire management system submittal drawings shall be prepared under the supervision of a Professional Engineer registered in the District of Columbia and submitted drawings and calculations shall bear the Engineer of Record's stamp and signature.

B. The Contractor shall have in-house engineering and project management capability consistent with the requirements of the project. Qualified representatives of the system manufacturer shall perform the detailed engineering design of central and remote control equipment, and shall produce all panel and equipment drawings, submittals and operating manuals. The Contractor is responsible for detailed system design and documentation, coordination of system installation requirements and final system testing in accordance with these specifications.

C. Previous system architecture with spare capacity already built in within fire alarm panels for batteries and for amplifiers for an additional 10% increase to quantity of initiating and indicating devices. Contractor's bid shall include the necessary components for this spare capacity, as well as a total of 10% additional speakers, strobes, combination speaker / strobes, smoke detectors, water flow switches, sprinkler valve tamper switches and duct smoke detectors with combination remote alarm lamp / key test switches.

1.4 REFERENCE STANDARDS

The following standards and guides (latest edition except where noted) are hereby made a part of this work by reference thereto:

A. Americans with Disabilities Act (ADA)

B. Local Building and Fire Department Requirements

C. American National Standards Institute (ANSI) / American Society of Mechanical Engineers (ASME) A17.3, Elevator Code for Existing Elevators

D. International Building Code (Applicable Edition) with Local Amendments

E. NFPA 1 – Uniform Fire Code (Applicable Edition) with Local Amendments

F. NFPA 13 – Sprinkler Systems

G. NFPA 20 – Standard for the Installation of Stationary Pumps for Fire Protection

H. NFPA 70 – National Electrical Code (Applicable Edition) with Local Amendments

I. NFPA 72 – National Fire Alarm Code with Local Amendments

J. NFPA 101 – Life Safety Code

K. NFPA 110 – Emergency and Standby Power Systems

L. Owner's Insurance Underwriter

M. Local Fire Marshal

N. UL Standard 33 – Releasing Devices

O. UL Standard 38 – Manual Alarm Stations

P. UL Standard 217 – Smoke Detectors – Single/Multiple Stations

Q. UL Standard 268 – Smoke Detectors for Fire Protective Signaling Systems

R. UL Standard 521 – Heat Detectors for Fire Protective Signaling Systems

S. UL Standard 864 – Control Units for Fire Protective Signaling Systems

T. UL Standard 1424 – Cables for Power-Limited Fire Protective Signaling Systems

U. UL Standards 464 and 1480 – Audible Devices, Speakers for Fire Protective Signaling Systems

V. UL Standard 1481 – Power Supplies for Fire Protective Signaling Systems

W. UL Standard 1711 – Amplifiers for Fire Protective Signaling Systems

X. UL Standard 1971 – Visual Signaling Appliances

1.5 ABBREVIATIONS

A. ADA Americans with Disabilities Act

B. AHJ Authority Having Jurisdiction

C. ECC Engineer's Control Center

D. FACP Fire Alarm Control Panel

E. FARA Fire Alarm Remote Annunciator

F. FARP Fire Alarm Remote Panel

G. FATC Fire Alarm Terminal Cabinet

H. FCC Fire Control Center

I. NFPA National Fire Protection Association

J. SCC Security Control Center

K. UL Underwriters Laboratories Inc.

1.6 SUBMITTALS

A. Minutes of fire management system Contractor's meeting with Fire Department.

B. Manufacturer's product data sheets for equipment including Fire Marshal listing numbers.

C. Floor plans (minimum 1/8-inch scale) with room names and numbers, showing device locations and interconnecting conduit and wire. Include location of fire/smoke rated or barrier walls.

D. Floor plan (minimum 1/2-inch scale) of the security room indicating fire management system equipment, existing equipment.

E. Drawings shall show proposed layout and anchorage of equipment and appurtenances and equipment relationship to other parts of the work, including clearances for maintenance and operation.

F. Scaled detail drawings of FACP, FARA, FARPs, FCIP, FTS, and VCS panel fronts.

G. Wiring diagram for each device. Include connection details to auxiliary equipment.

H. Riser diagram showing devices, equipment, and interconnecting conduit and wire. Indicate points of connection to other equipment such as, damper actuators, fire pump controllers, dry pipe systems, elevator machine rooms and shafts. Provisions for electric door locking hardware, fire door releases, magnetic door holders, and other related devices and equipment.

I. Control and wiring diagrams.

J. Complete narrative of the sequence of operation.

K. Sequence of operation matrix table including a complete line-by-line listing of fire alarm initiating devices, corresponding device address, and input/output matrix.

L. Voltage drop calculations.

M. Battery sizing calculations including spare devices.

N. Visual alarm power supply sizing calculations.

O. Power supply calculations for magnetic door holders, and electric door locking hardware.

P. Wire identification schedule.

Q. All drawings must be stamped and signed by a Professional Engineer registered in the District of Columbia for approval by the Fire Marshal.

R. Samples:

1. Submit non-returnable material samples of the following devices: Manual pull stations, visual alarms, audible alarms, combination devices, heat detector, magnetic hold open device.

1.7 IDENTIFICATION

A. Provide an identification nameplate for each equipment cabinet. Nameplates shall correspond with labeling identified in the submittal drawings.

B. Fire alarm conduit shall be painted red. As an alternate, conduit shall be permanently labeled “FIRE ALARM” every 30 feet. Labels shall be typed and legible from the floor level.

C. Fire alarm junction boxes shall be painted red.

D. All field initiating and indicating devices shall be labeled with self-adhesive tape with black lettering and identification labeling according to circuit loop and device address/number.

E. Color code all wiring per recommended standards. Tag all wires in terminal cabinets with tie wrap tags with inked identification.

1.8 SEQUENCE OF OPERATION

A. See contract drawings for detailed Sequence of Operation Matrix and associated notes.

B. Elevators shall be recalled to the designated Level or an alternate level if the designated Level smoke detector has been activated. Alternate level assignment shall be determined by the Fire Department.

C. Combination Fire/Smoke Dampers:

1. Activation of a duct detector or area smoke detector at a combination fire/smoke damper shall close the associated fire/smoke damper. Activation of the duct mounted detector shall illuminate the associated remote alarm lamp / key test switch.

D. Elevator Machine Rooms:

1. Activation of smoke detectors in the elevator machine/control room, elevator lobby, pit or hoistway shall initiate elevator recall sequence.
2. Activation of heat detector in an elevator machine room pit or hoistway shall automatically operate the shunt-trip operated overcurrent protection devices supplying power to the elevators, resulting in the disconnection of power to the associated elevators.

3. Control circuits that shut down elevator power shall be monitored for presence of operating voltage. Loss of voltage to the control circuit for the disconnecting means shall cause a supervisory signal to be indicated at the control unit and required remote annunciators.

1.9 SYSTEM ZONING

A. Alarm Initiating Devices:

1. Provide a separate, individual zone for each manual pull station, area smoke detector, area heat detector, and sprinkler water flow switch.

B. Supervisory Initiating Devices:

1. Provide a separate, individual zone for each sprinkler valve tamper switch.

C. Electric Fire Pumps:

1. Controller has operated into a motor running position.
2. Loss of line power on line side of motor starter, in any phase.
3. Phase reversal on line side of motor starter.
4. Motor fault.
5. Controller connected to alternate source.

D. Fire Pump Room

1. Low temperature (below 40 degrees Fahrenheit)
2. Temperature restored (40 degrees Fahrenheit or higher)

E. Engine Generator System:

1. Generator running.
2. Status of generator main circuit breaker.
3. Generator fault.
4. Generator phase reversal.
5. Battery disarrangement.
6. System trouble (1 zone per generator carrying life safety systems).

F. Fire Speakers and Visual Alarm Strobes:

1. Each floor of the garage (above and below grade) shall be a separate, individual zone or multiple zones no greater than 20,000 square feet.
2. Each stairwell shall be a separate, individual zone.
3. Each elevator bank shall be a separate, individual zone.
4. Each exterior roof area shall be a separate individual zone.

G. Initiating and signaling device wiring circuits/loops/channels shall be loaded to no more than 50 percent capacity to allow for the installation of future devices.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Fire management system components shall be of the same manufacturer.

B. Acceptable manufacturers: Siemens, Honeywell, Honeywell Notifier, or Simplex.

C. Products for this project shall be of the latest design that has been in service for at least two (2) years, and no more than 4 years. Obsolete or discontinued models are not acceptable.

2.2 SYSTEM TYPE

A. The FACP, FARP's, and FARA's shall be connected in a network configuration to become components for a distributed intelligence system. Each FARP shall be capable of performing individual supervision and control on its locally connected devices and shall have the ability to inform the FACP and other FARP's of point status and panel condition.

B. The fire management system shall be the fully addressable type. Each fire alarm initiating and indicating device shall be a separate, individual zone with a unique address. Provide individually addressable interface modules to connect non-addressable devices to addressable wiring channels.

C. The system shall support a single stand-alone node or can be combined for up to sixty four (64) nodes communicating on a peer-to-peer multi-priority token ring communication network. Loop alarm recognition must be within 750 milliseconds and network alarm response must be under three (3) seconds of a device reporting an alarm state.

D. All zoning/device location information shall be field-programmable to meet the exact job requirements as required by the Fire Department and Fire Marshal.

E. Siemens XLSV, Honeywell XLS 3000, Notifier NFS2-3030, or Simplex 4100U, connected through a token ring network or equal.

2.3 LINE SUPERVISION

A. All system equipment and wiring shall be supervised in compliance with the requirements of NFPA 72.

B. The system must be capable of being wired in a Class A with non-shielded wire. Disruption or failures of communication between devices and the data controller, or loss of a bus connection, shall result in a signal to the network to identify the alarm condition.

C. Unless otherwise required by the AHJ, wiring classification shall be as follows:

1. FACP, FARP, FARA, and FATC communications wiring: Class A.
2. Initiating device circuits: Class B.
3. Notification device circuits: Class B.

D. Where designated for Class A wiring, Class A circuits shall be installed such that the outgoing and return conductors, exiting from and returning to the control unit, respectively, are routed separately. The outgoing and return (redundant) circuit conductors shall not be run in the same cable assembly (multi-conductor cable), enclosure, or raceway.

E. Wiring for initiating and notification circuits must allow the addition of T-taps for Class B wiring.

F. ~~Notification appliance circuits and any other circuits necessary for the operation of the notification appliance circuits shall be protected from the point at which they exit the~~

~~control unit until the point that they enter the notification zone that they serve using a 2-hour rated cable assembly.~~

2.4 STANDBY BATTERIES

A. Provide sufficient battery capacity to operate the entire system upon loss of power as required by NFPA 72. The on-site emergency power system shall not be used when sizing the battery supply.

B. The system shall automatically transfer to the standby batteries upon power failure. Battery charging and recharging shall be automatic.

2.5 FIRE ALARM CONTROL PANEL (FACP)

A. Solid state, microprocessor based, modular design, fully supervised. Steel enclosure in standard red finish, with hinged, locking door. Integral network interface modules, power supply, standby batteries, and battery charger. Wall mount in FCC.

B. Provide power on LED, power failure LED, system trouble LED, system reset key switch, alarm silence key switch, trouble silence switch, manual evacuations switch, alarm acknowledge switch, trouble acknowledge switch, supervisory service acknowledge switch, lamp test button, tone alert, battery supervision LED, auxiliary relays, and other system indicators and controls necessary for processing alarm and signaling functions. Indicating lamps shall be LED type.

C. Provide appropriate permanent identification labeling of control and indicating functions.

D. Annunciation:

1. Serial annunciator with back lit, alphanumeric, 168-character liquid crystal display indicating clear language information as to the type of alarm (device type), point status (alarm or trouble), number of alarms on the system, and a custom location label. Ability to scroll back through prior system actions, with events automatically placed in easy to access queues for viewing specific event types separately.

2. LED matrix annunciator indicating initiating device type (columns) and floor of initiating device (rows). Provide a separate row for each floor level and a separate column for each device type (manual pull station, area smoke detector, elevator lobby smoke detector, duct smoke detector, sprinkler water flow, and sprinkler valve tamper). Labeling shall be modifiable to customize the designation of all LED's and switches. Provide individual zones for miscellaneous system points including electric fire pump, diesel fire pump, kitchen hood fire protection systems, pre-action fire protection systems, clean agent fire protection systems, engine generator systems, fuel oil systems, water chiller systems, emergency radio amplification systems, firefighter's air replenishment systems, etc. Provide a red (alarm or trouble) and yellow (zone supervision) light for each annunciation zone. Provide matrix layout, identification, and zoning requirements that meet the requirements of the Fire Department.
3. Include RS 232 port for printer connection.
4. Stand-alone workstation computer complete with software and hardware for user interface.
5. Provide a permanent binder with typewritten, laminated inserts cross-referencing location labels to the description and location of system address.

E. System shall utilize analog type smoke detection with alarm verification, self-test feature, individual sensor automatic timed sensitivity adjustment, individual smoke sensor field adjustable sensitivity set from FACP, and automatic maintenance alarm feature.

F. Siemens XLSV, Honeywell XLS 3000, Notifier NFS2-3030

2.6 FIRE ALARM INITIATING DEVICES

A. General:

1. Addressable type.
2. Provide auxiliary relays where required to satisfy system operational requirements.
3. Smoke detectors shall be analog type.

B. Manual Pull Stations:

1. High impact Lexan polycarbonate or die cast metal.
2. Push and pull type, dual action, mechanically latched upon operation until key-operated manual reset. Pull station front shall be hinged to back plate assembly, requiring keyed opening to reset.
3. Siemens HMS_D, or equal for manual pull stations.

4. Provide surface mounted protective shields for manual pull stations. Tamper-proof, weatherproof, clear Lexan shield, with warning horn and integral 9-volt battery.
5. Weather Stopper II (STI-1155), or equal for pull station cover.

C. Area Smoke and Heat Detectors:

1. General:

a. Common base for detachable detector heads.
b. Intelligent detectors with integral microprocessor, non-volatile memory, automatic device mapping, electronic addressing, environmental compensation and red/green status LED’s.
c. Area smoke / carbon monoxide detectors shall be combination smoke / carbon monoxide and have integral audible alarm using sounder base and connected to the indicated 120 volt power source
d. Provide relay bases where required for detectors with local device/accessory interface.
e. Provide auxiliary relay one Form C rated 0.5A.
f. Piezo sounder rated 90 dBA at 10 feet per UL 464
g. Visual notification 177 cd strobe.
h. Push to test switch.
i. Integral visual indicating light indicating detector has operated and power “ON” status.

2. Photoelectric type area smoke detector:

a. Smoke sensing and digital filtering for alarm validation.
b. Adjustable sensitivity.
c. Siemens HFP-11 with DB-11 base, or equal.

3. Area heat detector:

a. 135-degrees fixed temperature self-restoring type.
b. Siemens HFPT-11 with DB-11 base, or equal.

D. Remote alarm lamp / key test switch indicator:

1. Wall mounted, red LED, stainless steel faceplate engraved ALARM. Provide where indicated and for all water flow switches, valve tamper switches, low pressure alarm and high pressure alarm interfaces devices associated with the dry pipe sprinkler system.
2. Siemens TSM-1, or equal.

E. Addressable Transmitters/Monitor Modules:

1. Addressable transmitters/monitor modules shall be provided where required to interface with contact alarm devices.
2. Siemens HTRI-D/S, or equal.

F. Addressable Relay Modules:

1. Addressable relay modules shall be provided where required to provide audible alarm interface and/or relay control interface.
2. Siemens HTRI-R, or equal.

PART 3 – EXECUTION

3.1 GENERAL

A. All equipment shall be installed and connected in accordance with the manufacturer's recommendations.

B. Wiring shall be color coded~~, Radix 2-Hour Fire Rated circuit integrity cable CIC~~ installed in electric metal tubing and in accordance with the manufacturer's recommendations, NEC, and Fire Department requirements. Install vertical and riser associated wiring in an independent, dedicated electric metallic tubing raceway system.

C. Minimum conduit size for all applications shall be 3/4".

D. ~~Connections to devices shall be Radix 2-Hour Fire Rated circuit integrity cable CIC installed in electric metal tubing. Device back boxes shall be securely attached to structural members. All fire alarm conductors that are exposed, shall be run in electrical metal tubing.~~ Connections to devices installed in accessible tile ceilings and horizontal runs to wall mounted devices shall be in metal clad cable (MC). Device back boxes shall be securely attached to framing members. All fire alarm conductors that are exposed, routed in finished or unfinished areas shall be run in electrical metal tubing.

E. Refer to the drawings for the indicated fire alarm zone. The fire alarm zones shall coincide with the sprinkler zones and shall not overlap or intermix. The fire alarm zones shall not be loaded more than 75% capacity to allow for future expansion.

F. Provide appropriately sized back boxes for surface-mounted fire alarm signaling devices, paint to match device faceplate color. Stacked or punch pressed steel type back boxes are not permitted.

G. Provide water-tight type back boxes where installed recessed flush in perimeter walls below grade.

H. Provide wireways above and/or below equipment cabinets to accommodate large concentrations of wiring. Conductors within equipment cabinets shall be carefully formed and harnessed.

I. Connect fire management system equipment to emergency power system.

J. Area smoke detectors shall be photoelectric type, unless otherwise specified or shown on the Drawings.

K. Provide a 1-inch empty conduit from the FACP to the nearest telecom terminal backboard. Connect the fire alarm control panel communications modem to dedicated telephone lines per the requirements of the AHJ.

L. Provide a 1-inch empty conduit from the FACP to the security system control panel.

M. ~~Provide a 2-inch empty conduit from the FCC to each elevator hoist way.~~

N. Auxiliary relays connected to the fire management system used to initiate control of monitor status of fire safety functions shall be located within 3 feet of the controlled circuit or device. The wiring between the fire management system and the auxiliary relay shall be supervised.

O. Provide additional alarm and annunciation devices as required by the AHJ within the spare device allowances noted. Include conduit, wire and testing as part of this scope of work.

3.2 SPARE PARTS LIST

A. Provide the following spare parts:

1. 5 visual alarms
2. 5 speakers
3. 5 combination audible / visual alarms
4. 5 surface mounted smoke detectors
5. 5 duct mounted smoke detectors
6. 5 remote alarm / key test switch
7. 2 manual pull stations
8. 2 heat detectors

3.3 DEVICE MOUNTING

A. Unless otherwise noted on the Drawings, plans, specifications, manufacturer's recommendations, or by the AHJ, the recommended mounting heights and requirements are as follows:

1. Control Panel:

a. Fire Alarm control panel and remote panels and their components shall be mounted so that no part of the enclosing cabinet is less than 12 inches or more than 78 inches above the finished floor. All manually operable controls shall be at least three feet and less than five feet

above the finished floor. Panel shall be installed to comply with the requirements of UL 864. The LCD display for the control panel shall be mounted at centerline 5 feet-6 inches above the finished floor.

2. Detectors:

   a. Detectors shall be mounted on the ceiling not less than 4 inches from the side wall to the near edge, or if side wall, between 4 inches and 12 inches down from the ceiling to the top of the detector.
   b. Smoke detectors shall be located at least three feet from supply or return air diffusers.
   c. Smoke detector shall be mounted at the highest point on the ceiling.

3. Visual Signal Appliances:

   a. Visual signal appliances shall be wall-mounted at 80 inches [2030 millimeters] above the finished floor or 6 inches [152 millimeters] below the ceiling, whichever is lower. For purposes of installation, the bottom of the visual portion or lens of the fixture shall be used for mounting reference.

   b. Visual signal appliances may be installed on the ceiling, but must be listed for ceiling mount. Ceiling-mounted appliances shall be in accordance with the requirements of NFPA 72.

4. Audible Signal Appliances:

   a. Where ceiling heights permit, wall-mounted appliances shall have their tops at 90 inches above the finished floor or 6 inches below the ceiling.

5. Combination Audible and Visual Signal Appliances:

   a. The location of audible/visual signal appliances shall comply with visual signal appliance mounting requirements.
   b. Ceiling-mounted appliances shall be in accordance with the requirements of NFPA 72.

6. End of Line (EOL) Resistors shall be mounted in accessible areas. Mounting of EOL resistors in tenant spaces not accessible to the landlord shall not be allowed. In these cases, mount the end of line resistor in a cabinet in the local electrical room.
7. Speakers, strobes, manual pull stations shall be surface-mounted. All surface-mounted devices shall be smooth sided, without knockouts and painted white (red). Use of standard electrical boxes for surface-mounted equipment is prohibited.
8. Point-addressable monitor modules and control modules shall be securely mounted in back boxes or mounted on rails within a larger enclosure. The use of wire nuts to make connections to these modules is strictly prohibited.

B. Device Spacing:

1. Provide one heat detector within 2’-0” of each sprinkler head in all elevator machine rooms.

3.4 FIELD TESTING

A. All testing must be in accordance with current NFPA 72 standards and requirements. Refer to PART 3 for additional testing requirements.

B. Wiring shall be inspected and tested for continuity and short circuits.

C. Field Test Reports shall include at minimum the following:

1. Certification that equipment has been properly installed and is in satisfactory operating condition.
2. Sensitivity settings for smoke detectors.
3. Detailed operational test report in matrix form indicating each initiating device, each signaling device, each communication device, and each control and indicating light on each piece of equipment. Report shall certify the following:

a. Successful operation of each alarm and supervisory initiating device.
b. Successful operation of each signaling device.
c. Successful operation of automatic smoke control sequences.
d. Successful operation of FACP.
e. Successful operation of FARA.
f. Successful operation of FARPs.
g. Successful operation of FCIP.
h. Successful operation of FTS.
i. Successful operation of VCS.
j. Successful operation of elevator recall sequence.
k. Successful operation of kitchen hood exhaust equipment connections.
l. Successful operation of line supervision devices.
m. Successful operation of off-site alarm monitoring system connection.
n. Successful release of electric door locking hardware and magnetic door holders.

3.5 TEST/FIELD QUALITY CONTROL

A. A complete system pre-test shall be performed by the installing contractors before the final system acceptance test. All deficiencies shall be corrected. Upon successful completion of the pre-test, a complete pre-test report shall be submitted to the Owner's Representative to document that the fire alarm system is operating properly, along with an NFPA 72, Fire Alarm System Record of Completion document. These documents shall be received before scheduling a final test with the fire department representative or designated testing AHJ.

B. The final alarm acceptance test shall be coordinated with the Owner's Representative, and the local Fire Department representative or testing authority. A letter certifying that the installation is complete and fully operational shall be forwarded to the Owner's Representative.

C. Before final acceptance of the project can be made, the Contractor must submit from NFPA 72, the Fire Alarm System Record of Completion, signed by a factory-certified technician, certifying that the fire alarm system has been installed, tested and will function in accordance with the manufacturer's specifications and the Fire Marshal requirements. The installing contractor shall also issue a letter to the Owner's Representative indicating the fire alarm system has been installed and tested to operate according to the design drawings and specifications.

3.6 FUNCTIONAL TESTING

A. Functional Testing - refer to 019113 for additional details.

1. The contractor is responsible for providing tools, test equipment, materials and labor to demonstrate the functional performance, including multiple test teams if required.
2. The responsible contractor shall complete all required repairs, test the system, and inform the Commissioning Professional that the open and deficient items have been resolved within one week after receipt of the Cx Action List.
3. If more than one retest on the same system is required, Owner may back charge the contractor for all additional retests at a rate of $150/hr. per person.

END OF SECTION 28 30 00

Union Station
REDEVELOPMENT CORPORATION

Union Station Parking Garage

Cutting, Coring, Drilling, and Anchoring Requirements

Date: February 11, 2026

Summary

This document includes general procedural requirements for all projects that will require cutting, drilling, coring or anchoring into the existing structural elements of the Union Station Parking Garage. This document was developed by THA Consulting, Inc., who is USRC's Structural Engineer of Record for the parking garage.

Design Review Process

1) Submit to USRC for review, schematic plans (30%) along with a Letter of Necessity which should provide a justification as to why there are no other alternatives besides penetrating and/or attaching to federal property. The schematic plans should identify any proposed penetrations and/or anchorage points, along with the order-of-magnitude loads.
2) USRC review time is 14 to 28 days for the 30% submission depending upon the complexity of the project. If USRC approves, the material will be submitted to FRA (AHJ) for review (time - 14 to 28 days).
3) If FRA approves, USRC will send preliminary approval so that the project may proceed to next step.
4) Submit to USRC for review, 60% submission which must include:
    a. Detailed load calculations.
    b. Methods and details of the proposed penetrations and/or attachments to the garage.
    c. Structural analysis of the garage members, including the existing and proposed loads.
    d. Summary of the impacts on the garage members.
    e. Proposed solution if the analysis shows that the garage members are overstressed (due to the age, condition, and significant amount of modifications and repairs that have been made to the garage structure, strengthening will be required for utilization ratios greater than 1.00).
    f. The generic notes regarding "Examination required prior to cutting, drilling, coring or anchoring into the existing structure". These notes should be added to the front page of each discipline, including Architectural, Structural, MEP&FP, and any other disciplines that have proposed penetrations and/or attachments to the garage. A generic example of these notes is enclosed. At this stage of the review USRC's EOR will determine if modifications are needed to the generic notes based on the type,

P: 202.222.0271
E: usrc@usrcdc.com

750 First Street NE, Suite 1010 | Washington, DC 20002 www.usrcdc.com

magnitude and complexity of the proposed penetrations and/or attachments to the garage.

g. Responses to all questions generated during the 30% review (submission will be reviewed only if all responses to 30% design comments are accepted by USRC and FRA (AHJ).

5) USRC review time is 14 to 28 days for the 60% submission depending upon the complexity of the project. If USRC approves, the material will be submitted to FRA (AHJ) for review (time - 14 to 28 days).

6) 100% Submission should include satisfactory responses to all questions and comments from the 60% design review (submission will be reviewed only if all responses to 60% design comments are accepted by USRC and FRA (AHJ).

7) USRC review time is 14 days for the 100% submission, FRA review time (time -14 to 28 days).

Delegated Design Review

1) Each delegated design must be submitted with a seal and be approved by both USRC and FRA (AHJ)

2) USRC review time is 14 to 28 days per submission depending upon the complexity of the design. Each delegated design submitted during construction, will add additional review time, at USRC and FRA's discretion, and will likely result in the delay of the issuance of a construction permit.

3) Once USRC approves the delegated design, USRC will send to FRA (AHJ) for review and approval (time -14 to 28 days)

Construction Permit

1) Once all designs have been approved by both USRC and the FRA (AHJ), the Contractor may submit for a building permit if necessary.

General Notes (for Contractor compliance/to be added to Construction Documents)

The following are generic general drawing notes that must be included in all projects that will require cutting, drilling, coring, or anchoring into the existing structural elements of the Union Station Parking Garage.

A. Examination required prior to cutting, drilling, coring or anchoring into the existing structure.
   1. Do not cut, drill, core or anchor into any structural element without prior written approval from USRC's Engineer of Record (USRC's EOR), unless noted otherwise.

   2. Scanning the concrete to locate embedded objects:
      a. If approved by USRC's EOR through the review process, post-installed concrete anchors with a drill depth of 3/4 inch or less may be installed without scanning the concrete. This is at the Contractor's option and does not relieve the Contractor of correcting damage caused to embedded objects during the installation of the post-

installed anchors. The Contractor should consider that the original construction documents for the garage required at least 3/4 inch concrete cover for post tension tendons and reinforcing bars. However, USRC's EOR and concrete restoration contractor have encountered post tension tendons and reinforcing bars that have less than 3/4 inch concrete cover.

b. Otherwise, the Contractor shall scan the concrete at all locations of proposed cuts, penetrations or anchorages to locate and mark all embedded objects including but not limited to embedded reinforcement, prestress or post-tension strands, embedded connections, electrical conduit, and any other embedded hardware/equipment. Scanning shall be performed by a certified technician using a Ground Penetrating Radar (GPR) concrete scanning system such as Conquest by Sensors & Software Inc. or equal. Calibrate and recalibrate the scanner in accordance with the scanning system manufacturer's written instructions. Calibrations must be performed at the beginning of each shift and when conditions change. Prove the calibration of each scanner on a test location or test piece accepted by USRC's EOR, locating at least three reinforcing bars using the scanner and hammer drilled test holes to determine depth of cover. Do not calibrate at post-tension strands since the hammer drill bit will damage the post-tension sheathing and strand.

3. Adjust locations of cuts, penetrations and anchorages as required to avoid embedded objects by a minimum of 3", unless noted otherwise by USRC's EOR.

4. Submit scanning reports including photographs and scaled drawings and/or sketches, to USRC's EOR and applicable design team to review and approve or comment on proposed cuts, penetrations and anchorages. Adjust the locations as directed by USRC's EOR and/or design team. Review time is 7 to 14 days depending upon the quality and complexity of the submission.

5. Use hammer drills when possible; do not core drill unless the scanning operation has clearly shown that the area is free of embedded objects.

6. Do not cut through or damage the embedded reinforcing, prestress or post-tension strands, embedded objects/connections, electrical conduit, and any other embedded hardware/equipment. If prestress strands, post-tension strands, or other embedded objects are inadvertently damaged, the Tenant/Contractor must notify the Landlord (USRC) and USRC's EOR immediately.