Arlington Public Schools
Purchasing Office

NOTICE OF ADDENDUM NO. 3

Issued on May 31, 2017

TITLE: **THE GUNSTON MIDDLE SCHOOL RENOVATION PROJECT AT THE EXISTING GUNSTON MIDDLE SCHOOL SITE, LOCATED AT 2700 S. LANG STREET, ARLINGTON, VIRGINIA 22206**

ITB NO.: **88FY17**

ITB ISSUE DATE: **MAY 12, 2017**

BID CLOSING DATE AND TIME: **~~JUNE 2, 2017~~ JUNE 6, 2017 PRIOR TO 2:00 P. M., (LOCAL PREVAILING TIME)**

BID OPENING DATE/TIME: **PROMPTLY FOLLOWING BID CLOSING**

NOTE THAT BID CLOSING DATE AND TIME HAS CHANGED

See Attached Stantec documents for Addendum #3 with adds and deletions.

This Addendum #3 for ITB 88FY17 – THE GUNSTON MIDDLE SCHOOL CAPACITY OPTIMIZATION PROJECT AT THE EXISTING GUNSTON MIDDLE SCHOOL SITE, LOCATED AT 2700 S. LANG STREET, ARLINGTON, VIRGINIA 22206, must be signed, dated and received in the Purchasing Office prior to the date and time stated above *"OR"* acknowledgment of receipt of this addendum may be noted on the ITB. (See Page 00 4100-3).

ISSUED BY:

Ellen H. Wills, CPPB, VCO
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ADDENDUM # 3 **DATE: May 31, 2017**

REFERENCE:	Invitation for Bid:	#88FY17
	IFB Issue Date:	May 12, 2017
	Title & Location:	Gunston Middle School Renovation 2700 S. Lang Street Arlington, VA 22206
	Architect:	Stantec Architecture, Inc.
	Engineer:	2RW Consultants
	Sealed Bid Due Date & Time:	June 6, 2017 prior to 2:00 PM (New Date)

THE FOLLOWING CHANGES, ADDITIONS, DELETIONS AND CLARIFICATIONS ARE HEREBY MADE PART OF THE BIDDING REQUIREMENTS AND CONTRACT DOCUMENTS FOR THE ABOVE REFERENCED PROJECT AND SHALL BE TAKEN INTO ACCOUNT IN THE PREPARATION OF ALL BIDS AND THE EXECUTION OF ALL WORK. BIDDERS SHALL ACKNOWLEDGE RECEIPT OF THIS ADDENDUM IN THE APPROPRIATE SPACE ON THE BID FORM.

This Addendum is generally separated into Sections for convenience; however, all contractors, subcontractors, material suppliers and other involved parties shall be responsible for reading this entire Addendum. Failure to list an item(s) in all affected Sections of this Addendum does not relieve any party affected from performing according to the instructions, provided the information is set forth one time anywhere in this Addendum.

NOTE: If you have questions about this Addendum and Project, please contact Greg Overkamp at Greg.Overkamp@stantec.com.

GENERAL:

1. *Addendum No. 3 - All Drawings revisions are clouded with a Delta number and are identified and included in the Narrative and/or Reissued as attachments to this Addendum, Issue Date 05.31.2017.*
2. *Addendum No. 3 - All Specifications revisions, deletions, issuances, and reissuances are identified and included in the Narrative and/or Issued as attachments to this Addendum, Issue Date 05.31.2017.*

DRAWINGS NARRATIVE

DRAWING	DESCRIPTION
GENERAL	
All drawings	Remove all references to new lockers in the boy's locker room. No new lockers will be provided as part of the scope of this project.
ARCHITECTURAL	
A101	**Revised** plan to include door F008A. This is a new door and frame replacing the existing door and frame. Refer to sheet A701 for the door schedule. Existing door and frame are to be removed per demo key note 15 on sheet AD101. Remove wall as necessary to accommodate new door and frame.

A151	**Revised** all exterior railing details.
A701	**Revised** the door hardware schedule. **Added** hardware set 4A and door F008A.

SPECIFICATIONS NARRATIVE

SECTION	DESCRIPTION
10 51 13	**Delete** section 10 51 13 Metal Lockers in its entirety.
10 56 13	**Revised** paragraph 2.2.A.6 as follows: 6. Shelving Sizes and Quantities: a. MS1: 36 inches wide by 18 inches deep. b. MS2: 36 inches wide by 24 inches deep. c. Number of Shelves: Five.
Division 27	**Added** Division 27 specification sections.

END OF ADDENDUM # 3

SECTION 27 15 00

COMMUNICATIONS HORIZONTAL CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Conditions, Drawings, and Division 1, General Requirements, govern the work of this section.

1.2 SUMMARY

A. Section includes:

1. Horizontal UTP Station Cable
2. Cable connecting hardware, patch panels, and patch cords.

1.3 TECHNICAL STANDARDS

A. All designs and installations shall be done in accordance with the following standards. The Contractor is responsible for complying with all codes, standards, and regulations, including federal, state and local, which are applicable to the project design. All work shall comply with the requirements of the latest edition of codes and regulations in use by the local jurisdiction at the time of the design and installation.

1. NFPA 70 National Electric Code (NEC)
2. TIA-526-7 Revision A Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
3. TIA-526-14 Revision C Optical Power Loss Measurement of Installed Multimode Fiber Cable Plant
4. TIA-568.C.2 Revision C Balanced Twisted-pair Telecommunications Cabling and Components Standards
5. TIA-568.C.3 Revision C Optical Fiber Cabling Components Standard
6. TIA-568.C.4 Revision C Broadband Coaxial Cabling and Components Standard
7. TIA-568.0.D Revision D Generic Telecommunications Cabling for Customer Premises
8. TIA-568.1.D Revision D Commercial Building Telecommunications Infrastructure Standard
9. TIA-569 Revision D Telecommunications Pathways and Spaces
10. TIA-606 Revision B Administration Standard for Telecommunications Infrastructure
11. TIA-607 Revision B Generic Telecommunications Bonding and Grounding (Earthing) For Customer Premises
12. TIA-758 Revision B Customer-Owned Outside Plant Telecommunications Infrastructure Standard

1.4 DEFINITIONS

A. General: Basic Contract definitions are included in other Division 01 and -27 Sections and other Contract Documents.

B. In addition, the following list of terms as used in this Specification shall be defined as follows:

1. “AHJ”: Authority Having Jurisdiction
2. “AWG”: American Wire Gauge.
3. “CAT6”; Category 6 UTP copper cable.
4. “CAT6A”: Category 6A UTP copper cable.
5. CMP: Communications plenum rated cable.
6. CMR: Communications riser rated cable.
7. “FEP”: Fluorinated ethylene propylene, an insulating material for plenum rated cables.
8. “Permanent Link”: The portion of the horizontal cabling from station outlet termination to TR termination. This may include a consolidation point in the span. It does not include the patch cords which plug into the equipment on each end.
9. “PVC”: Polyvinyl chloride, an insulating material for non-plenum rated cables.
10. “NEC”: National Electrical Code.
11. “UTP”: Unshielded twisted pair copper cable.
12. WAO”: Work Area Outlet

1.5 SYSTEM DESCRIPTION

A. Work under this Section shall include the planning and coordination of telecommunications cable systems, the furnishing of necessary materials, and the labor and associated services required to install a complete working universal Ethernet telecommunications horizontal cabling system such that each cable can be used for Voice or Data. The installed system shall be capable of Fast Ethernet 100Base-T (100Mbs), 155Mbs ATM, Gigabit Ethernet 1000Base-T (1000Mbs), and 10 Gigabit Ethernet 10,000Base-T (10000Mbs).

B. Telecommunications horizontal cabling systems consist of the following subsystems:

1. Horizontal cable, terminations, and outlets.
2. Patch cords and cross-connects.
3. Cable identification tags and system labeling.
4. Record documents.
5. Warranty.

1.6 SUBMITTALS

A. All submittals shall be in accordance with Contract, Division 01, and Division 27 requirements.

B. A pre-cabling conference shall be conducted prior to the start of the project and presenting of the submittals that will include Contractor and Owner's Representative. The Contractor is responsible for scheduling this meeting with the Owner's Construction Manager. During the meeting, the following Developmental Submittals will be reviewed and must be approved before cable installation begins.

1. Detailed floor plans showing specific cable routing for main cabling trunks, supports (such as J Hooks), conduits, and junction boxes. Conduits shall be at a fill rate of 40% or less.

2. Actual telecommunication outlet locations, jack type, and outlet identification labels shall be identified on the CAD drawings and in the APS Jack Spreadsheet prior to starting to pull cabling. (Example: Outlet # A-123-B is for Closet A, Jack 123, Jack Type B)

3. Modifications to telecommunications outlet locations, if any.

C. Identify to Design consultant prior to installation, the cables which may be over the 90 meter (295 foot) limitation in total length.

D. Product Data: Submit manufacturer's written detailed technical product information and instruction installations for each type of product proposed for installation. Reference specification section in the submittal. Part Number and description must be clearly indicated for efficient review. Generic product data without clear reference will be rejected and returned for correction. Products shall be approved by COR before purchase and installation. Submit the following:

1. Communications outlets, faceplates, surface mount boxes, and accessories.

2. Copper cable, patch cables, and patch panels.

E. Samples: Provide samples of outlets and assemblies as described below, prior to installation, for approval by designer.

1. Telecommunications/communications outlets – Submit samples of telecommunications communications outlets to be provided including following components and characteristics:

2. Flush mounted outlets – Completely assembled faceplate and wall box with each type of outlet to be mounted in faceplate, including blank covers, dust covers, labeling field, port labels, cable labels, cabling, and adapter plates and bezels required.

3. Sample characteristics:
   a. Provide all components in colors selected by Design consultant.
   b. Provide multiple outlet samples where required to accurately representing range of outlets to be provided.

F. Substituitions: Requestoins for subsititutions shall adhere to Division 01 requirements.

G. Shop Drawings: Plans providing point-to-point wiring diagrams of proposed conduit, J hook, and cable tray pathway routes. In addition, the telecom outlets shall be numbered with their final numbers and shown on the floorplan layout at the beginning of the project.

H. As built drawings to be included in Operation and Maintenance Manuals. As built drawings shall depict the following: installed pathways layout(cable tray, conduits, J Hooks); location of all telecom outlets; labeling of each telecom outlet; final IDF and MDF layouts; final wall and rack elevations; and one line riser diagrams for voice/data and grounding.

I. Warranties: Manufacturer's warranty shall be provided for the structured cable system. Warranty shall be for at least 20 years. Warranty periods shall begin from Date of Substantial Completion.

1.7 QUALITY ASSURANCE

A. Material and equipment shall be new, a product of the same manufacturer throughout the Project, and conform to grade, quality, and standards specified.

B. Installer shall have BICSI and manufacturer trained technicians. Resumes and certificates of the qualified technicians shall be submitted with the contractor's proposal.

C. Comply with Telecommunications Industry Association (TIA)-568-C Commercial Building Telecommunications Cabling Standard and 569-B Series: Commercial Building Standard for Telecommunications Pathways and Spaces.

1.8 WARRANTY

A. Contractor must provide manufacturer's warranty without cost to the owner during that time period. A minimum twenty (20) year Extended Product Warranty and Systems Assurance Warranty for the telephone and data cabling system shall be provided by the Manufacturer and ensured by Contractor as follows:

1. Extended Product Warranty: The Extended Product Warranty shall ensure against product and workmanship defects, that all approved cabling components exceed the specifications of TIA 568C and Addenda for fiber link/channels and copper components, for a minimum twenty (20) year period. The warranty shall apply to all passive components, including both cable and connecting hardware as a combined system (channel). Any claims cover replacement costs on any defective product, both material and labor. Extended warranties beyond twenty (20) years will be considered.

2. System Assurance: The System Assurance shall cover the failure of the wiring system to support the application which it was designed to support as well as additional application(s) introduced in the future by recognized standards or user forums that use the TIA 568C component and link/channel specifications for cabling, for a twenty (20) year period.

3. System Certification: Upon successful completion of the installation and subsequent inspection, the owner shall be provided with a numbered certificate, from the manufacturing company, registering the installation.

B. Installer shall guarantee workmanship for a period of two years from date of final acceptance of the installation by the Owner, during which time any deficiency in installation shall be repaired or replaced at no additional cost to the owner. Any cable which has a penetrated sheath or is, in the owner's opinion, damaged, mangled, stretched, crimped, knotted or

otherwise mishandled, shall be replaced at no additional cost to the owner. Contractor must respond within 2 business days of written notification.

PART 2 - PRODUCTS

2.1 HORIZONTAL CABLE

A. Category 6A (WAPS)

1. General: Each WAP will get two (2) Category 6A 100-ohm, 4-Pair, UTP CMP cables with transmission characteristics specified from 1 to 500 Mhz per ANSI/TIA 568-C.2.
   a. Conductors: Insulated conductors, 22-AWG to 24-AWG solid-copper fully-insulated with a flame retardant thermoplastic material. All 4-Pairs shall be insulated with FEP providing maximum .023-inch diameter of insulated conductor. Insulated color code shall be per ANSI/TIA 568-C.2 Section 5.3.3.
   b. Cable Sheath: All cable sheaths shall be CMP rated. The cable shall be unshielded. Outer jacket shall be seamless applied to and completely covering the internal components. Cable shall be imprinted with the manufacturer's name or identifier, flammability rating, gauge of conductor, transmission performance rating (category designation), and length marking in feet at regular intervals not to exceed 2 feet.
      1) Flame Rating: Per NEC (Article 800) rated as CMP, and Underwriter's Laboratories (UL) listed as CMP.
      2) Listed and labeled by an NRTL acceptable to an AHJ as complying with UL 444 and NFPA 70.
   c. Electrical Performance and Transmission Performance: Meet or exceed ANSI/TIA-568-C Series for CAT6A UTP cabling.
   d. Mechanical Performance: Shall comply with ANSI/CEA S-102-732-2009.

2. Physical Characteristics
   a. Cable Diameter: The maximum cable outer diameter shall be less than 7.5 mm (.295 in).
   b. Wireless Access Point cable shall be orange in color.

3. Manufacturers: Subject to compliance with requirements, provide the following Manufacturers' cable or "equal" as approved:
   a. Commscope
   b. TE
   c. Siemon
   d. Approved equals by COR

B. Category 6 (Station Cables)

1. General: Category 6 100-ohm, 4-Pair, UTP CMP cable with transmission characteristics specified from 1 to 250 Mhz per ANSI/TIA 568-C.2.
   a. Conductors: Insulated conductors, 22-AWG to 24-AWG solid-copper fully-insulated with a flame retardant thermoplastic material. All 4-Pairs shall be insulated with FEP providing maximum .023-inch diameter of insulated conductor. Insulated color code shall be per ANSI/TIA 568-C.2 Section 5.3.3.
   b. Cable Sheath: All cable sheaths shall be CMP rated. The cable shall be unshielded. Outer jacket shall be seamless applied to and completely covering the internal components. Cable shall be imprinted with the manufacturer's name or identifier, flammability rating, gauge of conductor, transmission

performance rating (category designation), and length marking in feet at regular intervals not to exceed 2 feet.
1) Flame Rating: Per NEC (Article 800) rated as CMP, and Underwriter's Laboratories (UL) listed as CMP.
2) Listed and labeled by an NRTL acceptable to an AHJ as complying with UL 444 and NFPA 70.

c. Electrical Performance and Transmission Performance: Meet or exceed ANSI/TIA-568-C Series for CAT6 UTP cabling.
d. Mechanical Performance: Shall comply with ANSI/CEA S-102-732-2009

2. Physical Characteristics
a. Cable Diameter: The maximum cable outer diameter shall be less than 6 mm (.23 in).
b. The category 6 cable shall be blue in color.

3. Manufacturers: Subject to compliance with requirements, provide the following Manufacturers' cable or "equal" as approved:
a. Commscope
b. TE
c. Siemon
d. Approved equals by COR

2.2 CONNECTORS / MODULAR JACKS

A. Category 6A Connectors (WAPS)

1. The Category 6A cable will be terminated on Category 6A connectors. Connectors shall be 8-position 8-conductor non-keyed RJ45 style modular type, Category 6A, and shall be intended for the termination of 4-pair UTP cables. The connector shall meet IEC 60603-7-1 thru IEC 60603-7-5 modular interface requirements and ANSI/TIA-570-B marking and mounting requirements.

2. All connectors shall be T568B wired. Modular jack shall be the same manufacturer as the patch panel.

3. Dust covers shall be installed in all outlets.

4. Modular jacks shall be the following colors, based upon usage. Location, number, and type of outlets are provided on the drawings.
a. Wireless Access Point Jack - Orange

5. Basis of Design: Hubbell #HJ6AOR

6. Manufacturers: Subject to compliance with requirements, provide the following Manufacturers' connectors or "equal" as approved:
a. Hubbell
b. Ortronics
c. TE
d. Approved equals by COR

B. Category 6 Connectors (Station)

1. Connectors shall be 8-position 8-conductor non-keyed RJ45 style modular type, Category 6, and shall be intended for the termination of 4-pair UTP cables. The connector shall meet IEC 60603-7-1 thru IEC 60603-7-5 modular interface requirements and ANSI/TIA-570-B marking and mounting requirements.

2. All connectors shall be T568B wired. Modular jack shall be the same manufacturer as the patch panel.

3. Dust covers shall be installed in all outlets.

4. Modular jacks shall be the following colors, based upon usage. Location, number, and type of outlets are provided on the drawings.
   a. Horizontal Station Jack – Blue

5. Basis of Design: Hubbell #HXJ6B

6. Manufacturers: Subject to compliance with requirements, provide the following Manufacturers' connectors or "equal" as approved:
   a. Hubbell
   b. Ortronics
   c. TE
   d. Approved equals by COR

2.3 WORKSTATION FACEPLATES

A. General: Faceplate shall have the following:

1. The color shall match the electrical devices/wall plates. The color must be approved by the COR before the faceplates are provided.

2. Faceplates shall have a clear plastic window for labeling at the top and bottom.

3. Ports shall be slanted downward at approximately 45-degree angle.

4. Ports shall accept inserts for Ethernet, Video, Fiber Optic, Video.

5. Color matching blank covers shall be provided for all unused ports.

B. Refer to drawings for faceplate port quantity required at each location.

C. Wall Phone Outlets: Faceplate for wall phone outlets shall come equipped with one Category 6A 8-position modular jack and two mounting studs.

D. Wireless Access Points- Jacks shall be housed in 2-Port Surface mount boxes. The box has to be plenum rated.

E. Manufacturer: Shall match the manufacturer of the termination connectors and patch panels. The basis of design is the Hubbell IMF Modular Faceplate.

2.4 PATCH PANEL

A. Category 6A Patch Panel (WAPS)

1. General: Wireless Access Points shall be terminated on WAP Patch Panels. Patch panels shall be a standard Category 6A 8-position, RJ-45-style, non-keyed, FCC compliant receptacles, in 24-, 48-, and 96-Port configurations. Patch panel shall meet or exceed TIA 568-C and ISO Category 6A component performance requirements. Patch panel shall be horizontally oriented for a 19-inch rack-mounted configuration.

2. Physical Characteristics: Patch panels shall be modular panels housing multiple-numbered jack units with 110 termination IDC-type connectors at each jack for permanent termination of pair groups of installed cables. In addition,
   a. Panels shall accommodate 24 Ports for each rack mount unit (1RMU).
   b. Panel frames shall be black powder coated 14-gauge steel with rolled edges top and bottom for proper stiffness.
   c. All connectors shall be T568B wired. Patch panel shall be the same manufacturer as the connectors.
   d. Panels shall have attached wiring instruction labels to permit either T568A or T568B termination configurations.
   e. Panels shall have individual port identification numbers on the front and rear of the panel.
   f. Panels shall have the Category 6A designation, visible from the front when I nstalled.
   g. Panels shall contain the number of termination ports required to terminate all LAN jacks plus have a 20% spare capacity.
   h. Patch panel shall provide port labeling abilities, icon compatibility, and rear cable management support.

3. Basis of Design: Hubbell Ascent Category 6A Patch Panel HP6AXX.

4. Manufacturers: Shall match the manufacturer of the connectors and faceplates. Subject to compliance with requirements, provide the following Manufacturers' connectors or "equal" as approved:
   a. Hubbell
   b. Ortronics
   c. TE
   d. Approved equals by COR

B. Category 6 Patch Panel (Station)

1. General: Station cables shall be terminated on station Patch Panels. Patch panels shall be a standard Category 6 8-position, RJ-45-style, non-keyed, FCC compliant receptacles, in 24-, 48-, and 96-Port configurations. Patch panel shall meet or exceed TIA 568-C and ISO Category 6 component performance requirements. Patch panel shall be horizontally oriented for a 19-inch rack-mounted configuration.

2. Physical Characteristics: Patch panels shall be modular panels housing multiple-numbered jack units with 110 termination IDC-type connectors at each jack for permanent termination of pair groups of installed cables. In addition,
   a. Panels shall accommodate 24 Ports for each rack mount unit (1RMU).
   b. Panel frames shall be black powder coated 14-gauge steel with rolled edges top and bottom for proper stiffness.
   c. All connectors shall be T568B wired. Patch panel shall be the same manufacturer as the connectors.
   d. Panels shall have attached wiring instruction labels to permit either T568A or T568B termination configurations.
   e. Panels shall have individual port identification numbers on the front and rear of the panel.
   f. Panels shall have the Category 6 designation, visible from the front when installed.
   g. Panels shall contain the number of termination ports required to terminate all LAN jacks plus have a 20% spare capacity.

h. Patch panel shall provide port labeling abilities, icon compatibility, and rear cable management support.

3. Basis of Design: Hubbell Nextspeed Category 6 Patch Panel HP648.

4. Manufacturers: Shall match the manufacturer of the connectors and faceplates. Subject to compliance with requirements, provide the following Manufacturers' connectors or "equal" as approved:
   a. Hubbell
   b. Ortronics
   c. TE
   d. Approved equals by COR

2.5 MODULAR PATCH CORDS

A. Category 6A Patch Cord (WAP)

1. General: Category 6A Factory terminated and tested, four-pair UTP cable terminated with eight position unkeyed RJ45 modular plug on each end. Plug dimensions and function shall comply with FCC 47, Part 68.5.
   a. Cordage: Insulated conductors, 22-AWG to 28-AWG stranded copper, fully insulated with a flame retardant thermoplastic material. Sheath shall be unshielded, flame-retardant polyvinyl chloride (PVC) jacketed. Insulated conductor color code shall be per ANSI/TIA 568-C.2 Section 5.8.2 Table 3 Option 1.
      1) Flame Rating for IDF: NEC CM (or higher) rated and UL listed as CM.
      2) Flame Rating for Ceiling locations: NEC CMP rated and UL listed as CMP.
   b. Electrical Performance: Comply with ANSI/TIA 568-C Series for CAT6A UTP patch cords requirements (minimum).
   c. Mechanical Performance: Shall comply with ANSI/CEA S-102-732-2009

2. Physical Characteristics
   a. Patch cords shall be orange in color with boots.
   b. Patch cords shall be manufactured using a T568B wiring format straight thru.
   c. Patch cords shall be UL Listed 1863.

3. Requirement
   a. Contractor shall provide a minimum of two (2) 3' patch cables per WAP location. One patch cable shall be a Category 6A UTP CMR patch cable, and one patch cord shall be a Category 6A UTP CMP patch cable. 4-Pair stranded, and factory terminated. Before ordering, the Contractor shall verify specific quantities, lengths, and colors which shall be determined by Owner.

4. Manufacturers: Patch cord shall match the manufacturer of the connectors and faceplates. Subject to compliance with requirements, provide the following Manufacturers' connectors or "equal" as approved:
   a. Hubbell
   b. Ortronics
   c. TE
   d. Approved equals by COR

B. Category 6 Patch Cord (Station)

1. General: Category 6 Factory terminated and tested, four-pair UTP cable terminated with eight position unkeyed RJ45 modular plug on each end. Plug dimensions and function shall comply with FCC 47, Part 68.5.
   a. Cordage: Insulated conductors, 22-AWG to 28-AWG stranded copper, fully insulated with a flame retardant thermoplastic material. Sheath shall be unshielded, flame-retardant polyvinyl chloride (PVC) jacketed. Insulated conductor color code shall be per ANSI/TIA 568-C.2 Section 5.8.2 Table 3 Option 1.
      1) i. Flame Rating: NEC CM (or higher) rated and UL listed as CM.
   b. Electrical Performance: Comply with ANSI/TIA 568-C Series for CAT6 UTP patch cords requirements (minimum).
   c. Mechanical Performance: Shall comply with ANSI/CEA S-102-732-2009

2. Physical Characteristics
   a. Patch cords shall be black in color with boots.
   b. Patch cords shall be manufactured using a T568B wiring format straight thru.
   c. Patch cords shall be UL Listed 1863.

3. Requirement
   a. Contractor shall include in their quotation a minimum of one (1) 3’ and one (1) 9’ patch cable per Station location. Patch cords shall be Category 6 CMR stranded patch cords which are factory terminated. Before ordering, the Contractor shall verify specific quantities, lengths, and colors which shall be determined by Owner.

4. Manufacturers: Patch cord shall match the manufacturer of the connectors and faceplates. Subject to compliance with requirements, provide the following Manufacturers’ connectors or “equal” as approved:
   a. Hubbell
   b. Ortronics
   c. TE
   d. Approved equals by COR

2.6 MISCELLANEOUS COMPONENTS

A. Velcro Cable Ties: Velcro cable ties shall be 3/4-inch wide and the color black.

B. Identification Products: Labels for patch panels, faceplates, and each end of the cable shall comply with TIA 606 and UL 969 for a system of labeling materials.

PART 3 - EXECUTION

3.1 PRE-CABLING CONFERENCE

A. A pre-cabling conference shall be conducted prior to the start of the project that will include Contractor and Owner’s Representatives. It is the Contractor’s responsibility to schedule this meeting with the Owner’s Construction Manager prior to submitting the Development Submittals for the project.

3.2 EXAMINATION

A. Pathways: Prior to installation, verify that pathways are complete and ready for cables.

B. Equipment and Telecommunication Rooms: Prior to cable termination, verify that ERs and TRs are complete and ready for cables. Complete and ready for installation requires the room to be dust free with the proper antistatic flooring installed. The rooms shall be complete with no additional mechanical, electrical, drywall, or plumbing work required.

3.3 INSTALLATION

A. Install products, components, accessories, hardware, etc, according to the manufacturer's written instructions.

B. Horizontal Copper Cable: Copper cables shall be loosely bundled in orderly dressed groups of up to, but not more than, 48 individual cables from the point of entry into the TR to the termination point.

1. Cable runs shall have continuous sheath continuity, homogenous in nature. Splices are not permitted anywhere.

2. Maintain maximum cable length of 295-feet from the termination in the TR to the termination at the outlet.

3. Installation: Place cables with no kinks, twists, or damage to the sheathing. Protect cables during installation. Replace cable if sheath is damaged during installation.
   a. The cables shall be supported in the ceiling using J Hooks. The J hooks shall be compatible with Category 6A cable. J Hook spacing shall be no more than 5' between J hooks.
   b. Maintain a minimum bend radius of six times the cable diameter during and after installation.
   c. Maintain pulling tension within manufacturer's written recommendation or 110 N (25 lbf) maximum.
   d. Place and suspend cables in a manner to protect them from physical interference or damage.
   e. Secure all horizontal cables within ceiling cavities to permanent building structure. Do not support cables from ceiling grid T-Bars, grid wire supports, or bridle rings. Do not allow cables to touch ceiling grid or tiles.

4. Routing: Cable paths shall be down hallways and in areas with accessible ceilings. Cable paths shall not be installed in rooms unless to get around non-accessible ceilings. When routing horizontally within TR, utilize the overhead cable tray. When routing vertically within TR, fasten the cable bundles using approved cable ties to the wall-mounted vertical cable support every 24-inches on center.
   a. All wiring above ceilings or below access floors shall be installed in cable tray or Category 6A approved J Hooks.
   b. All exposed cables below the ceiling shall be installed
   c. All penetrations through slabs, new and/or existing walls shall be sleeved. Minimum sleeve size shall be ¾". All sleeves shall be bushed with rubber bushings on both sides. Sleeves and conduits should not exceed 40% fill ratio.
   d. All sleeves/penetrations shall be fire stopped using a fire stop system rated to bring the wall back to the proper fire rating.
   e. Sleeves in floor slabs shall be sleeved at a minimum of 6" above and below the slab.
   f. Route cables a minimum of 6-inches away from power sources to reduce interference from electromagnetic interference (EMI). When routing cables in the space outside of the TR, cables should be laid randomly in the pathway. This will help mitigate "Alien Crosstalk."

g. Do not install cable trunks in wet areas, or in proximity to hot water pipes or boilers. Do not install cable trunks through Mechanical or Electrical rooms.
h. Do not route through an adjacent space if a corridor borders at least one wall of the room.
i. Provide a minimum 10-foot sheathed cable slack loop at each end of the runs and 1-foot of slack left in the work area backbox after termination. In the TR, place the slack in the overhead cable support. At the workstation, store the slack using J hooks in the ceiling space before the conduit stub for the device. Contractor shall not secure service loop in coils, but route in such a manner as to minimize EMI.
j. At the equipment bay in the TR where wall-mounted racks are used, route the horizontal cables down the hinged side of the equipment rack.

5. Termination: Per the manufacturer's written instructions and ANSI/TIA-568-C standard installation practices, strain relieve cables at termination points, and terminate pairs on the specified connecting hardware.
   a. The maximum pair untwist at the termination point shall be 13 mm (.5 in).
   b. The maximum distance of unsheathed cable after termination shall be 25mm (1").
   c. All connectors shall be terminated T568B modular jack pin/pair assignment.
   d. Cable terminations shall have no tensile or bending strain on IDC connectors after assembly of faceplate or housing to the wall outlet.
   e. Communications outlets shall be located no more than 6' from an electrical outlet at the workstation. Coordinate with the electrical trade in the field.

C. Patch Panels: Install the discrete patch panels and horizontal management panels in the configuration as shown on the Elevation Drawings.

1. For all cable termination patch panels, provide strain relief bars utilizing Velcro cable ties that are approved by the manufacturer for Category 6A cabling. Patch panels should use a strain relief bar.

D. Outlet Faceplates: Install faceplates plumb, square, and at the same level as adjacent device faceplates. For surface raceway, color shall match electrical device and/or coverplate.

E. Outlet Modular Connectors: In accordance with manufacturer's written instructions and ANSI/TIA-568-C standard installation practices, terminate pairs on the specified modular connector.

F. Wall Mounted Telephones: Install telephone to height noted on the Drawings and per the manufacturer's written instructions and in compliance with codes.

G. Wireless LAN Access Point Enclosures: Refer to Drawings for enclosure cabling service and installation requirements. If the outlet for the WAP is installed in a plenum space, use plenum rated surface mount boxes.

3.4 IDENTIFICATION AND LABELING

A. Permanently identify all system components following TIA/EIA-606A "Administration Standard for Commercial Telecommunications Infrastructure" with identification format:

1. All drops will be labeled with a four part designation:

Closet: A/B/C/D ...

Drop Location on Box Number:	1/2/3 ...
Service Designation:	D/V (Data or Voice)
Drop Quantity Enumeration	1/2/3/4

For example: The resulting designators for a Type “D” drop (2 Data/1 Voice) that was located at box/outlet location 123 and was home run back to closet “B” would read:

B-123-V1 B-123-D1 B-123-D2

2. Each cable within one (1) foot of its termination points on each end shall have a machine generated wrap around label with the above designation.

3. The faceplate and patch panel ports shall be use the above designation and shall be labeled above each port with a machine generated label.

4. Faceplate jack order begins with the upper left jack as #1 and read left to right, then down (like a book).

5. All labels and nameplates shall be placed so as to be both physically and visually accessible at all times.

6. With permanent pen, mark the interior of each outlet box with the outlet number. This is to ease outlet location in case of label removal.

7. Designation strips shall be provided for all termination hardware. Provide clear plastic holder over designation strips subsequent to installation.

3.5 TESTING

A. The Contractor shall test and certify all WAP cables for Category 6A compliance “Permanent Link” and all Station cables for Category 6 compliance “Permanent Link” using a Level IV tester per TIA 568-C. All relevant test data, including documentation of failed tests, the corrective procedures performed, and the results of re-tests, are to be documented and submitted to the Owner’s Representative in both hard copy and digital format with five (5) working days of test completion.

B. The owner reserves the right to observe all tests of the telecommunications infrastructure. The contractor shall notify the Owner one week in advance of any testing. The Owner may require testing to be repeated, at no additional cost, when one week’s notice is not given. In addition, the Owner reserves the right to require a re-test, at no additional cost to the Owner, of all cables not tested in accordance with the test procedures outlined.

C. The Owner reserves the right to conduct additional testing of the voice and data cabling system and its’ components prior to Final Acceptance. The contractor shall promptly correct any deficiencies discovered by these tests.

D. Prior to each day of testing, test equipment batteries shall be fully charged and test set self diagnostics run. The tester should be referenced each day before testing begins. The tester shall have had a calibration done within the last 6 months and a certificate of calibration shall be included in the test report.

E. All cables shall show a PASS result to be accepted by APS. A PASS* result or FAIL result are not acceptable and shall be fixed or repulled until a PASS result is obtained. Remove all defective cables completely from the pathways.

F. All cables exceeding the 90 meter maximum will need to be replaced. Complete all cable rerouting for compliance at no additional cost to the Owner.

G. At a minimum, each collection of cable test reports shall contain the following general information: Project name, contractors name, type of test data included, date of test, date of report preparation, make, model, and serial number of test equipment used, date of last calibration, and names of test crew.

3.6 FINAL REVIEW

A. Provide final as-built documentation per the contract including numbered drawings, final test results, and manufacturer's warranty. This documentation is required for the contractor to be considered substantially complete.

B. Review installed products and work in conjunction with the COR. Develop a punchlist for items needing correction.

C. Issue punchlist to the COR for review prior to performing punchlist walk.

D. Repair defects prior to system acceptance.

E. Review installed products and work in conjunction with the COR for sign-off.

END OF SECTION 27 15 00

SECTION 27 51 17

SOUND AND INTERCOMMUNICATIONS SYSTEM

PART 1 - GENERAL

1.1 REQUIREMENTS

A. The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this Section.

1.2 SCOPE

A. The scope of work covered under this Section shall include furnishing and installing all components necessary to extend the existing sound and intercommunication system to the new areas of the building.

1. The work covered under this Section shall also include furnishing and installing speaker assemblies, microphone outlets, outlet boxes, conduit, and low voltage field wiring only for (an) auxiliary sound reinforcement system(s) as shown on the Drawings.

2. Existing school sound system shall stay in operation. Contractor shall field coordinate all necessary work to be done in the field to ensure proper system operation.
   a. Local sound systems shall be muted when pages are made from the Rauland Telecenter

3. Modifications shall be made to the existing Telecenter V system as required to support the additional new devices.

1.3 QUALITY ASSURANCE

A. All equipment shall be listed with Underwriter's Laboratories, Inc. The installation shall be certified by the manufacturer.

B. A list of five (5) similar system installations providing satisfactory service within a thirty (30) mile radius of Arlington, Virginia shall be provided with the contractor/supplier submittal.

C. NEC Compliance: Comply with the applicable requirements pertaining to radio equipment and signal distribution systems.

D. EIA Compliance: Comply with applicable requirements of the Electronic Industries Association standard pertaining to sound systems.

E. FCC registration number for direct intercommunication to utility services under part 68 of the FCC rules and regulations.

1.4 SUBMITTALS

A. The communications system shall be a standard product produced by a single manufacturer of known reputation and a minimum of ten (10) years experience in the industry. The manufacturer shall be a producer of equipment, designed for school communications, both intercommunications and telephone communications. The communications contractor/supplier shall have attended the manufacturer's installation and service schools. A

certificate of this training shall be provided with the communications contractor/supplier submittal. Failure to supply the training certificate(s) could result in rejection of the offered system.

1. Note: Shop Drawing submittals are required per SECTION 260500 and shall include the following for review. Submittals not containing all of the information listed below will be rejected.

B. Intercommunications Field Devices

1. A complete list of equipment shall be furnished indication the specific quantities to be furnished by the manufacturer. The catalog or model number for each module of the system shall be listed next to the quantities. This shall be provided in the front of the submittal.

2. A specific description of the system shall be furnished describing each module and how it shall function in the system.

3. A detailed set of floor plans for the complete building shall be furnished showing the locations of all equipment, loudspeakers, and devices and their required interconnections. The interconnections shown shall indicate the number, size, and type of wires as described in this Specification. Loudspeakers shall be zoned as shown on the Drawings. The layout of all sound and intercommunications system equipment and devices shall closely follow that shown on the Drawings. Electronic microdisks or disquettes containing the building's background will not be available for the purpose.

1.5 DOCUMENTATION

A. The electrical Contractor shall furnish to the Owner one (1) set of "As-Built" Drawings depicting the complete field wiring.

1.6 WARRANTY AND TRAINING

A. The communications contractor/supplier shall provide two (2) year, job site warranty on all systems furnished. The warranty shall include all labor, travel and required parts and/or component replacements as required at no additional cost to the owner.

B. The communications contractor/supplier shall provide two (2) training classes to the maintenance department in the programming and service of the systems being supplied under the specifications. The training classes shall be conducted at the school site.

C. A printed directory, indicating the classroom numbers and dial telephone numbers for these class rooms shall be provided to the school Principal within two (2) weeks of the installation completion.

D. 'In-Service' training of the system operation shall be provided to the school operating personnel i.e., Principal, Vice Principal, Office Secretaries and others that have requirements for operating the intercommunications system. The 'In-Service' training shall be scheduled with the Principal.

E. All training specified herein shall be performed by a factory certified technician. Part 2 - Products

PART 2 - PRODUCTS

2.1 GENERAL

A. Catalog numbers specified herein are those of Rauland-Borg, and constitute type and operation characteristics of the equipment to be furnished. All equipment and installation material shall be furnished whether or not enumerated herein, or shown on the drawings and shall be as manufactured by Rauland-Borg. Field devices as manufactured by Bogen and Dukane are acceptable, provided all of the features, functions, performance requirements and specifications, outlined herein, are met or exceed. Manufacturer product acceptance as meeting these specifications shall be determined by the architect/engineer and owner. Their decision shall be final.

B. The installation of field devices shall include all speakers, callback switches, microphones, remote amplification systems, antenna, volume controls, cable wiring etc., all ready for the installation of rack by owner. Speaker home run cables shall be without splices and with no less than twenty (20) feet of extra conductors at the designated rack location.

2.2 INTERCOMMUNICATIONS FIELD DEVICES:

A. All field devices i.e., speakers, callback switches, cable, conduit, antenna(s), enclosures (back boxes), horns, and multi-purpose room sound system as outlined on the drawings shall be furnished and installed by the Electrical Contractor. Multi-purpose room sound system is specified in a separate section.

B. Interior Ceiling Speakers and Enclosures:

1. The ceiling speakers shall be the Rauland-Borg ACC1400 assembly consisting of a speaker, baffle, and a 25/70 volt transformer. The baffle shall be white baked epoxy paint. The speaker shall be an 8” speaker with whizzer cone for extended high frequency reproduction. The speaker shall have a five (5) ounce magnet. The frequency range shall be 85 to 17,000 Hz, a power rating of eight (8) watts RMS and a sensitivity of 93dB at four (4) feet with one watt input. All speakers shall be connected to the 0.5 watt tap and connected to the 25 volt line. Note speakers without the 25/70 volt transformer will not be considered.

2. In dropped tile ceiling areas, provide and install Rauland Baf-Kit pre-assembled speaker.

3. The ceiling speaker enclosure (back box) shall be the Rauland-Borg ACC1101, shall be round, welded 22 gauge steel recessed back box. The flange diameter shall be 11.75” with a body diameter of 9.875” and 4.125” deep.

4. The speaker/baffle/enclosure support bridge shall be the Rauland-Borg ACC1104. Each ceiling speaker shall be equipped with the speaker assembly support bridge.

C. Call Back Switches:

1. The call back switches shall be the Rauland-Borg 2305CS call switch. The switch shall be a momentary contact switch and “Call” identification shall be on switch. The call in switch shall be mounted on a single gang stainless wall plate.

D. Speaker Cable:

1. Cable for the horn/speakers (Rauland-Borg 3607) in the intercommunications system shall be West Penn #293 for non-plenum applications or West Penn 25293 for plenum applications. The cable shall have one stranded, number 18 shielded pair. All outside horns must have a home run cable for each horn or group of horns covering separate sides of the building i.e., north side of the building, east side etc. Under no circumstances shall outside horns be connected to any classroom, office or corridor speakers, each horn or group of horns shall provide sound and tone to separate zones.

E. The interconnections system shall require home run cable from the classroom call switch to the main Telecenter V rack location. The cable shall be the West Penn 358 for non plenum applications or West Penn 25358 for plenum applications. The cable shall have three (3) number 20 stranded cable. The cable consists of a shielded pair and one (1) unshielded conductor with an overall insulated jacket. The shield shall provide 100% coverage with aluminum polyester foil and have a number 22 stranded drain wire. The cable from the classroom call switch to the ceiling speaker shall be the West Penn 292 cable for non-plenum applications and 25292 for plenum applications. The West Penn 292 cable has one pair of number 20 stranded cable with an overall shield and outer jacket.

PART 3 - EXECUTION

3.1 RACK MOUNTED EQUIPMENT

A. Rack mounted equipment shall be installed with the proper adapters, rack mounting kits, brackets, and closure panels for unused spaces. All interconnecting wiring shall be labeled, bundled, secured, and terminated in a neat and professional manner.

3.2 SPEAKER MOUNTING

A. Flush mounted ceiling speaker support bridges shall be supported by Contractor from the building structure with a minimum of two (2) steel wires. Ceiling baffles shall be finished flush with the ceiling.

B. Surface mounted speakers shall be securely fastened to the building structure by Contractor with threaded rod or bolts as appropriate for the application.

3.3 CALL-BACK SWITCHES

A. Call-back switches shall be installed by electrical Contractor at mounting heights and locations as shown on the Drawings, in outlet boxes appropriate for the location and wire ready for operation.

3.4 FIELD WIRING

A. All vertical low voltage field wiring shall be installed by Electrical Contractor in conduit and/or surface metal raceway as shown on the Drawings. Conduit fill shall not exceed the conduit space capacity.

B. All horizontal low voltage field wiring to be installed in areas without a ceiling or in areas without an accessible ceiling shall be installed by Electrical Contractor in ½ inch conduit.

C. All horizontal low voltage field wiring to be installed in areas with accessible ceilings shall be installed by Electrical Contractor bundled together and run exposed above the ceilings. Bundles shall be supported by “J” hooks mounted not more than four (4) feet on center.

1. All horizontal low voltage field wiring shall be run at right angles to the building structure.

2. All horizontal low voltage field wiring penetrations through new and/or existing walls shall be sleeved. Minimum sleeve size shall be ¾ inch. All sleeves shall be bushed both sides.

D. All low voltage field wiring shall be installed, terminated, and labeled by Electrical Contractor as shown on the Drawings. Cables shall not be nicked, strained, or damaged during the pulling operation. Splices shall be permitted at equipment enclosures and junction boxes only. All splices shall utilize U.L. listed insulated crimp type connectors. All junction box covers shall be stenciled for distinct identification.

E. Microphone cabling shall be installed by Electrical Contractor in accordance with requirements for special cables, however, terminations at connectors shall be solder connected.

F. All low voltage wiring shall be checked and tested by Electrical Contractor to insure the system is free from grounds, opens, and shorts.

G. The installation and final connections of all components and devices shall be performed under the direct supervision of the system manufacturer’s technical staff.

H. This contractor shall provide interconnections as required to all auxiliary sound systems to activate page muting function.

I. The quantitiy of gym speakers per circuit shall be limitedsuch that there will be 5 watts miximum per switch bank.

END OF SECTION 27 51 17

SECTION 27 51 30

DISTRIBUTED SYSTEMS (CATV)

PART 1 GENERAL

1.1 GENERAL PROVISIONS

A. Drawings and general provisions of the Contract, including General and Supplementary

B. Conditions and Division 1 Specification Sections, apply to this Section.

1.2 RELATED SECTIONS

A. Division 26 Sections for conduits, boxes and pathways for low voltage communications.

1.3 SCOPE

A. The work covered under this section shall include an empty raceway system for CATV cabling.

PART 2 PRODUCTS

2.1 CATV SYSTEM

A. The wall CATV outlet shall consist of a minimum size of a 4-inch square by 2-1/8 inch deep galvanized steel box, single gang wall flush extension and a one inch conduit back to the room accessible ceiling space, unless otherwise noted. The cover plate shall be type 302 stainless steel with bushed hole. Unused outlets shall have matching blank cover plates.

B. Existing CATV service shall remain in-use.

PART 3 EXECUTION

3.1 INSTALLATION

A. The contractor shall install an empty raceway system as shown on the drawings, specified herein and as recommended by the CATV Company.

B. All empty conduits shall have a pull wire.

END OF SECTION 27 51 30

SECTION 27 53 14

MASTER CLOCK AND PROGRAM SYSTEM

PART 1 - GENERAL

1.1 REQUIREMENTS

A. The general provisions of the Contract, including General and Supplementary Conditions and General requirements, apply to the work specified in this Section.

1.2 SCOPE

A. The work covered under this Section shall include furnishing and installing clocks as indicated on the drawings. The Contractor shall be responsible for providing all system components necessary to add the new clocks to the existing master clock and program system.

1.3 QUALITY ASSURANCE

A. All equipment for this system shall be listed by Underwriters Laboratories, Inc. (UL), bear the UL label, and shall be installed in accordance with all requirements of the National Electrical Code (NEC), all state and local codes , and these Specifications.

B. The entire master clock and program system installation shall be performed under the direct supervision of a factory trained service specialist.

1.4 SUBMITTALS

A. Product Data: A data sheet shall be furnished for each component and device. The information shall be highlighted that applies to the module or device.

B. Shop drawing submittals are required and shall include the following for review. Submittals not containing all of the informa tion listed below will be rejected.

1. A complete list of equipment shall be furnished indicating the specific quantities to be furnished by the manufacturer. The catalog or model number for each module of the system shall be listed next to the quantities. This shall be provided in the front of the submittal.

2. A specific description of the system shall be furnished describing each module and how it shall function in the system.

3. A detailed set of floor plans for the complete building shall be furnished showing the locations of all equipment and devices and their required interconnections. The interconnections shown shall indicate the number, size, and type of wires as described in the Specification. The layout of all master clock and program system equipment, devices, and conduit routings shall closely follow that shown on the Drawings.

4. A data sheet shall be furnished for each component and device. The information shall be highlighted that applies to the module or device.

5. A detailed diagram on how to connect each device shall be furnished showing exact hook- up information.

1.5 DOCUMENTATION

A. This Contractor shall furnish to the Contractor one (1) set of "As Built" drawings depicting the complete field wiring system and component interconnections.

B. This Contractor shall furnish to the Contractor four (4) sets of factory service manuals. These manuals shall include factory service manuals with complete parts lists, wiring and component schematics including circuit diagrams, and other information necessary for the proper operation and service maintenance of the system.

1.6 TRAINING

A. This Contractor shall furnish eight (8) hours of technical service training to the OWNER'S technical staff using the factory service manuals previously specified.

B. This contractor shall furnish twenty-four (24) hours of operating and programming training to the Owner's operating staff which shall be delivered in six (6) four (4) hour sessions to be scheduled at the Owner's convenience over the two (2) year warranty period.

C. All training specified herein shall be performed by a factory certified technician.

1.7 DESCRIPTION OF OPERATION

A. This Contractor shall furnish and install a master clock and program system with all low voltage wiring and equipment as shown on the Drawings and as herein specified to furnish a complete system in the building, as an extension of the existing master clock and program system.

1. All clocks shall be Simplex and shall operate from the existing synch-wired system.

1.8 SYSTEM TEST AND ACCEPTANCE

A. Prior to the final site visitation, this Contractor shall conduct an operating test of the complete master click and program system. The system shall test free from grounds, shorts, and other faults. All connections shall be thoroughly checked for mechanical and electrical connections. All equipment shall be demonstrated to operate in accordance with the requirements set forth in these Specifications and as shown on the Drawings.

B. This Contractor shall perform all tests in the presence of the Owner's Representative and Owner. This Contractor shall furnish all personnel and test instruments for use in the test.

C. When the work on the entire master clock and program system has been completed and is ready for final review, this Contractor shall demonstrate that the requirements of the Contract as it applies to this work have been carried out and that the system has been adjusted and operated in accordance therewith.

1.9 WARRANTY

A. This Contractor shall deliver the work described herein in a first-class operating condition in every respect. This Contractor shall also warrant that the material, equipment, and workmanship furnished shall be entirely free from defects. This Contractor shall repair or replace at NO additional expense to the Owner any material, equipment, or workmanship in

which defects may develop within two (2) years after date of final acceptance of the installation by Owner.

B. The manufacturer shall be prepared to offer a service contract for the maintenance of the system after the warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. All clocks shall be furnished by the manufacturer of the master clock and program system.

B. New clock systems shall be as an extension of the existing Simplex master clock system.

2.2 CLOCKS

A. This Contractor shall furnish and install where shown on the Drawings, semi-flush mounted, 120vac., round clocks complete with: hourly (1) and twelve (12) hourly correction; flush mounted back box; shatterproof plastic lens; twelve (12) hour format; white dial; black numerals, hour and minute hands; a red sweep second hand; a black shatterproof plastic housing; and where noted on the drawings, a wire guard. These clocks shall be compatible with the type of master time center and correction method specified. A clock which meets this specification is Simplex Series 6310.

1. Provide 12 inch (12") diameter clocks, unless noted otherwise.

2. Clocks to be Simplex #6310-9231 with SImplex #2975-9038 back box.

PART 3 - EXECUTION

3.1 FIELD WIRING

A. All wiring for program system clocks shall be minimum No. 12 AWG installed by this Contractor in minimum 3/4 inch conduit as herein specified and as shown on the Drawings. Junction Box covers shall be painted green to properly identify the Master Clock System wiring. All conduits, device mounting boxes and junction boxes shall be securely fastened with appropriate fittings to insure a positive ground throughout the entire system.

1. Each circuit shall consist of four conductors as follows:
   a. Black - Positive Conductor
   b. White - Neutral Conductor
   c. Green - Ground Conductor
   d. Red - Correction conductor

2. Circuits may be wired in MC Cable (with prior approval from APS) with outer sheath painted green to properly identify the master clock system wiring.

3. All junction boxes added shall be clearly labeled to indicate clock system wiring.

B. All clocks system connection and wiring shall be made by this Contractor as directed by the equipment manufacturer. Splices for circuits shall be made only in junction poxes.

C. All clock system wiring shall be checked and tested by this Contractor to insure the system is free from grounds, opens, and shorts.

3.2 CLOCK INSTALLATION

A. All program system clocks shall be semi-flush mounted over a flush mounted backbox furnished by the clock manufacturer.

B. Wire Guards shown on the Drawings to be installed over clocks shall be furnished and installed by this Contractor. Wire guards shall not be anchored into acoustical wall panels. This Contractor shall insure that wood blocking is installed behind the wall panels. The wire guards shall be anchored through the wall panels and into the wood blocking.

END OF SECTION 27 53 14

PLAN LEGEND

REFERENCE SYMBOLS

NIC - DASHED LINES ON FLOOR PLAN INDICATES FURNITURE OR EQUIPMENT NOT IN CONTRACT

ALIGN FACES OF MATERIALS

INDICATES AREA OF NO WORK

1 HOUR EXISTING FIRE WALL

1 HOUR NEW FIRE WALL

C1/ A711 — SECTION REFERENCE

TV — SPECIALTY EQUIPMENT TAG SEE SHEET A132

DOOR SWING INDICATOR

NEW DOOR/FRAME

EXISTING DOOR/FRAME TO REMAIN

WALL INDICATION

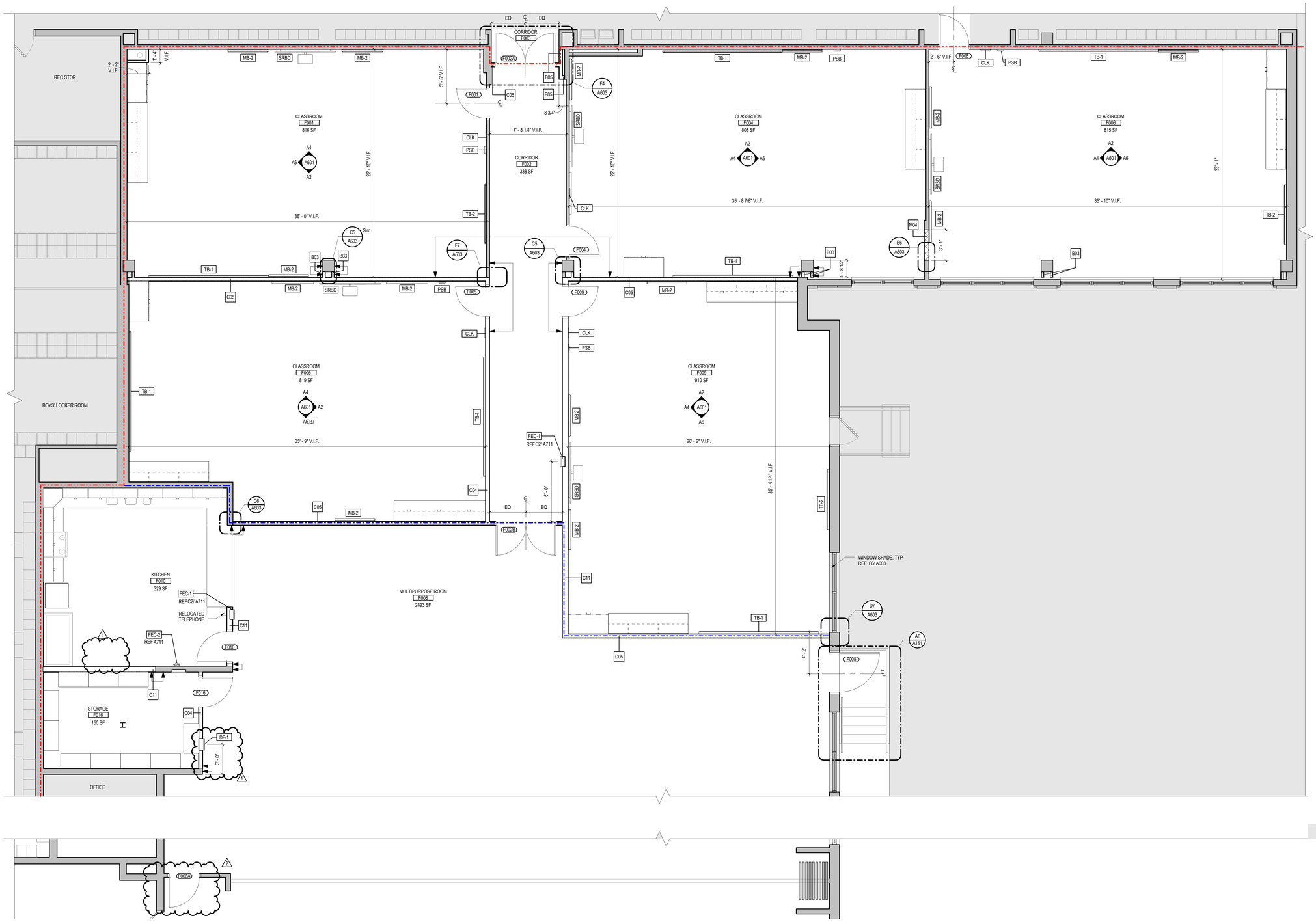
NEW

EXISTING

GENERAL PLAN NOTES

1. GROUND FLOOR REFERENCE ELEVATION 100' - 0"
2. UNLESS NOTED OTHERWISE, ALL DIMENSIONS ARE TO
   - FACE OF GWB
   - FACE OF MASONRY
   - FACE OF CONCRETE

   ALL EXTERIOR DIMENSIONS ARE TO FACE OF BRICK UON.
3. HINGE SIDE OF DOOR OPENINGS TO BE LOCATED 6" FROM FACE OF PERPENDICULAR INTERIOR WALL UON.
4. DRAWINGS SHALL NOT BE SCALED FOR INFORMATION.
5. SEE MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION AND AV/ IT DRAWINGS FOR EXTENT OF WORK REQUIRED, BUT NOT INDICATED HERE, TYP.
6. MAINTAIN AIR / VAPOR BARRIER CONTINUITY THROUGHOUT EXTERIOR ENVELOPE. SEAL ALL AIR BARRIER / VAPOR RETARDER SEAMS, JOINTS, PENETRATIONS & TERMINATIONS TO OTHER SUBSTRATES AND / OR OTHER AIR / BARRIER / VAPOR RETARDER SYSTEM.
7. FILL ALL VOIDS AROUND GLAZING SYSTEM PERIMETER WITH MINERAL WOOL INSULATION.
8. EXTERIOR STEEL (I. E. RELIEF ANGLES, PLATES, LINTELS, ETC), ARE TO BE GALVANIZED.
9. REFER TO CODE DRAWINGS (G000 SERIES) FOR LOCATIONS & EXTENT OF RATED ASSEMBLIES. IF PARTITION DESIGNATION DISCREPANCY OCCURS BETWEEN THE CODE DRAWING & THE FLOOR PLANS, PROVIDE THE PARTITION TYPE INDICATED WITH THE MOST STRINGENT REQUIREMENTS.
10. SEE SHEET A602 FOR WALL TERMINATION DETAILS. DETAIL TO BE USED IF DETERMINED BY EXISTING CONSTRUCTION CONDITIONS.



F1 A101 **BASE BID - GROUND FLOOR PLAN**
1/4" = 1'-0"

0' 2' 4' 8' 16'

Stantec

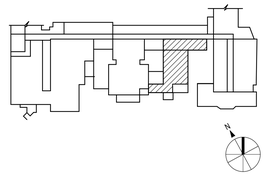
Stantec Architecture Inc.
11415 Isaac Newton Square
Reston, VA 20190-5005
Tel: (571) 521-7510
www.stantec.com

Consultants

100% CONSTRUCTION DOCUMENTS
05.11.17

Arlington Public Schools

Key Plan (NTS)



Revision	By	Appd	YYYY.MM.DD
2 ADDENDUM 3			05.31.17
1 ADDENDUM 1			05.25.17

Issued	By	Appd	YYYY.MM.DD
100% CONSTRUCTION DOCUMENTS			05.11.17
100% SCHEMATIC DESIGN			02.17.17

Permit-Seal

COMMONWEALTH OF VIRGINIA
ROBERT K. SHERRILL
No. 007475
5·11·17
ARCHITECT

Client/Project
GUNSTON MIDDLE SCHOOL RENOVATION

Title
BASE BID - GROUND FLOOR PLAN

Project No.

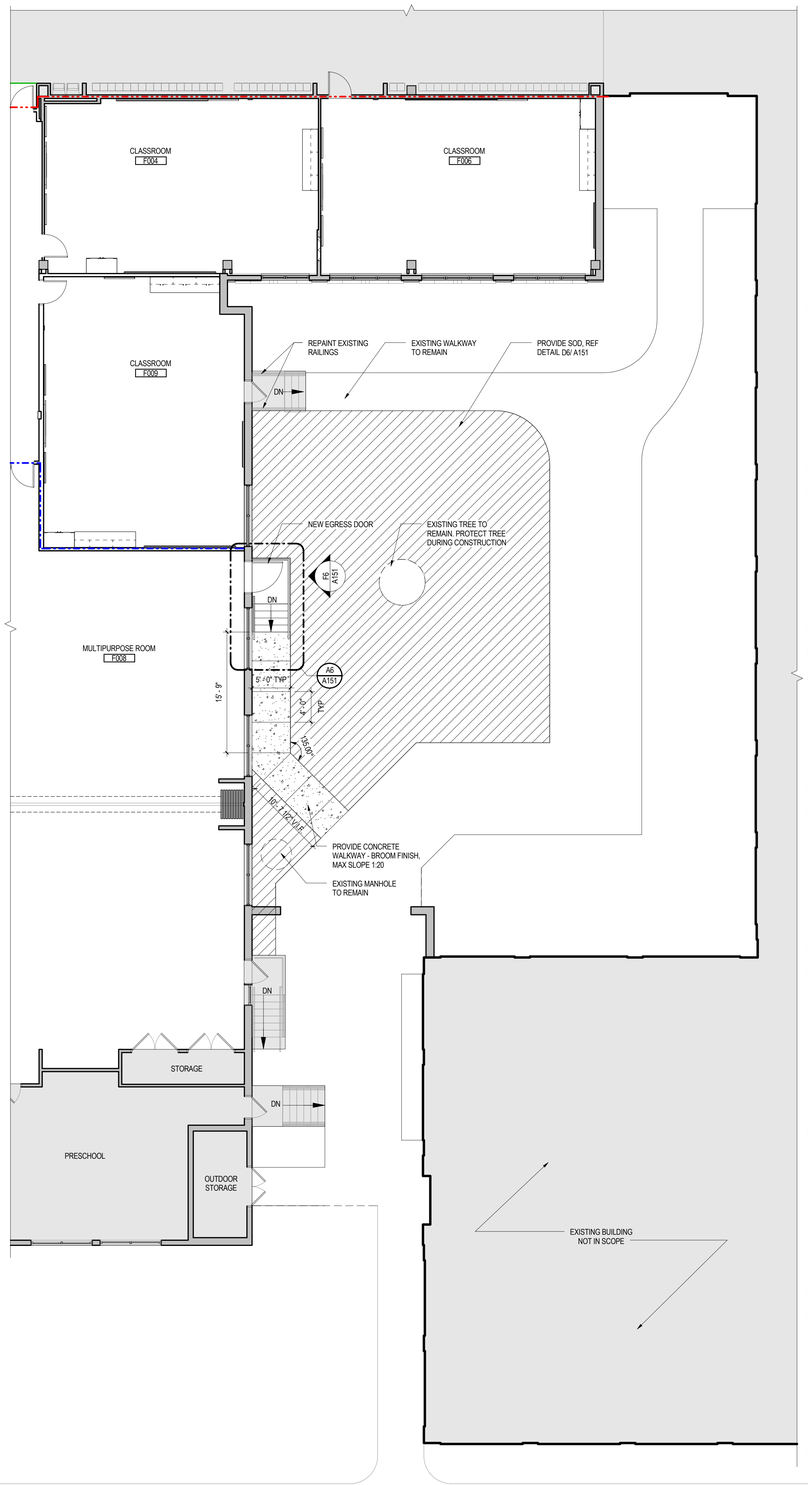
Scale
1/4" = 1'-0"

Revision
2

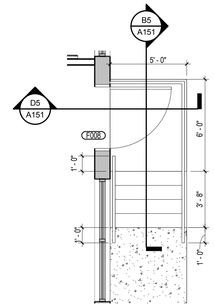
Drawing No.
A101

C:\Users\Public\Documents\Local_Revit_Files\rfn_arch_Gunston MS 2014_2018320166_gouverlamp.rvt
5/31/2017 2:32:11 PM

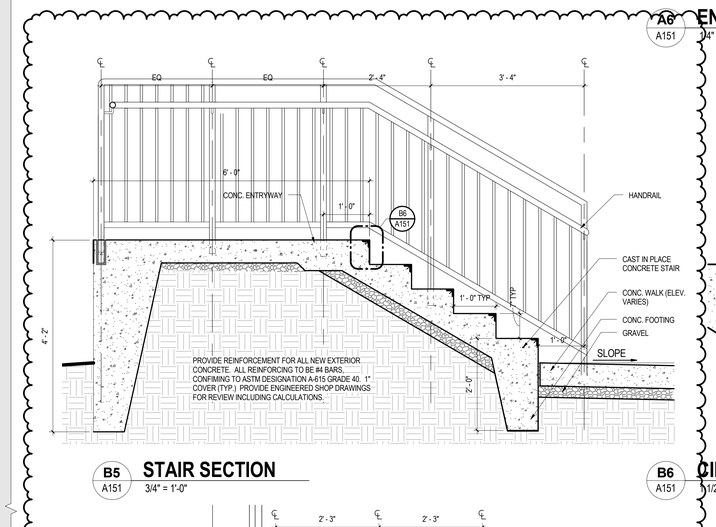
ORIGINAL SHEET - ARCH E1 (30"x42")



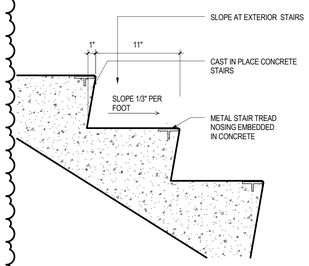
F1 A151 **PARTIAL GROUND FLOOR PLAN**
1/8" = 1'-0"



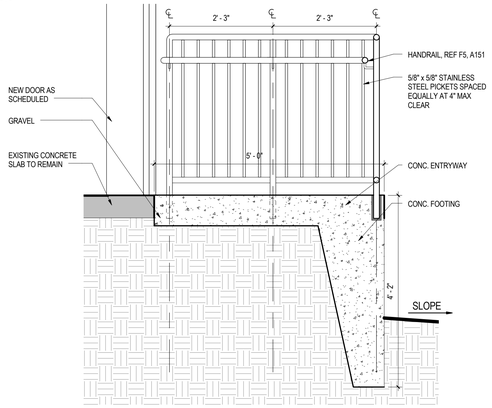
A6 A151 **ENLARGED PLAN**
1/4" = 1'-0"



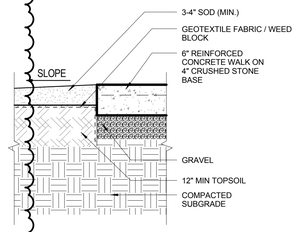
B5 A151 **STAIR SECTION**
3/4" = 1'-0"



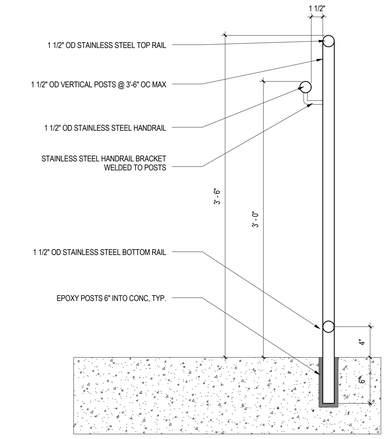
B6 A151 **CIP STAIR**
1 1/2" = 1'-0"



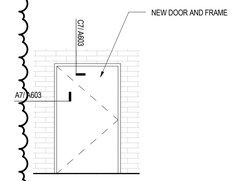
D5 A151 **STAIR SECTION**
3/4" = 1'-0"



D6 A151 **SOD TO CONCRETE DETAIL**
1" = 1'-0"



F5 A151 **EXTERIOR HANDRAIL DETAIL**
1 1/2" = 1'-0"



F6 A151 **EXTERIOR ELEVATION**
1/4" = 1'-0"

GENERAL ELEVATION NOTES

1. MAINTAIN AIR/VAPOR BARRIER CONTINUITY THROUGHOUT EXTERIOR ENVELOPE. SEAL ALL AIR BARRIER/VAPOR RETARDER SEAMS, JOINTS, PENETRATIONS & TERMINATIONS TO OTHER SUBSTRATES & OR OTHER AIR / BARRIER / VAPOR RETARDER SYSTEM.

2. FILL ALL VOIDS AROUND GLAZING SYSTEM PERIMETER WITH MINERAL WOOL INSTULATION.

3. WHERE TREATED WOOD BLOCKING OR PLYWOOD MEETS STEEL CONSTRUCTION, CONTRACTOR SHALL PROVIDE ISOLATION MEMBRANE.

4. UNLESS NOTED OTHERWISE, DIMENSIONS ON DRAWINGS ARE REFERENCED FROM FACE OF FINISHED EXTERIOR WALL ASSEMBLY.

5. REFER TO FINISH SCHEDULE ON SHEET A122.

ELEVATION LEGEND

ALIGN SYMBOL

Stantec

Stantec Architecture Inc.
11415 Isaac Newton Square
Reston, VA 20190-5005
Tel: (571) 521-7510
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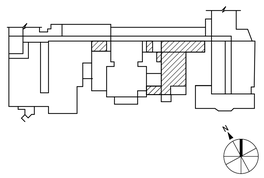
Consultants

100% CONSTRUCTION DOCUMENTS
05.11.17

Arlington Public Schools

Key Plan (NTS)



Revision	By	Appd	YYYY.MM.DD
1 ADDENDUM 3			05.31.17

Issued	By	Appd	YYYY.MM.DD
100% CONSTRUCTION DOCUMENTS			05.11.17
100% SCHEMATIC DESIGN			02.17.17

Permit-Seal

COMMONWEALTH OF VIRGINIA
ROBERT K. SHERRILL
No. 007475
5·11·17
ARCHITECT

Client/Project
GUNSTON MIDDLE SCHOOL RENOVATION

Title
EXTERIOR ELEVATIONS, SECTIONS AND DETAILS

Project No.

Scale
As indicated

Revision
1

Drawing No.
A151

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ORIGINAL SHEET - ARCH E1 (30"x42")

HARDWARE LIST

SET 01

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	CLASSROOM SECURITY	ND75TD SPA XN12-035	626	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	OH STOP	90S J	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

SET 02

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	CLASSROOM SECURITY	ND75TD SPA XN12-035	626	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

SET 03

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	224HD	628	IVE
2	EA	FIRE EXIT HARDWARE	9827-L-F-LBR-17-499F-SLM	626	VON
2	EA	RIM CYLINDER	20-057-ICX	626	SCH
2	EA	FSIC CORE	23-030	626	SCH
2	EA	SURFACE CLOSER	4040XP EDA MC TBSRT	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
2	EA	FIRE/LIFE WALL MAG	FURNISHED BY ELECTRICAL SECTION	689	LCN
1	EA	GASKETING	188S-BK	S-Bk	ZER
1	EA	MEETING STILE	8217S-BK	S-Bk	ZER

DOOR OPERATION:
1. Door held open by wall magnets connected to fire alarm system.

SET 04

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	224HD	628	IVE
2	EA	FIRE EXIT HARDWARE	9827-L-F-LBR-17-499F-SLM	626	VON
2	EA	RIM CYLINDER	20-057-ICX	626	SCH
2	EA	FSIC CORE	23-030	626	SCH
2	EA	SURFACE CLOSER	4040XP CUSH MC TBSRT	MTLPC	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
1	EA	GASKETING	188S-BK	S-Bk	ZER
1	EA	MEETING STILE	8217S-BK	S-Bk	ZER

DOOR OPERATION:
1. Door held open by wall magnets connected to fire alarm system.

SET 04A

QTY		DESCRIPTION	CATALOG NUMBER	FINIS	MFR
1	EA	CONT. HINGE	224HD	628	IVE
1	EA	FIRE EXIT HARDWARE	9827-L-F-LBR-17-499F-SLM	626	VON
1	EA	RIM CYLINDER	20-057-ICX	626	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	4040XP CUSH MC TBSRT	MTLP	LCN
1	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
1	EA	GASKETTING	188S-BK	S-Bk	ZER

SET 05

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HWSC 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	CD-XP-99-EO	626	VON
1	EA	RIM CYLINDER	20-057-ICX	626	SCH
1	EA	MORTISE CYLINDER	20-061-ICX	626	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	DOOR PULL	VR910 NL	630	IVE
1	EA	SURFACE CLOSER	4040XP SCUSH MC TBSRT	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	GASKETING	188S-BK	S-Bk	ZER
1	EA	THRESHOLD	568A-MSLA-10	A	ZER
1	EA	RAIN DRIP	142A	A	ZER

SET 06

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	CLASSROOM SECURITY	ND75TD SPA XN12-035	626	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

SET 07

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ND80TD SPA	626	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

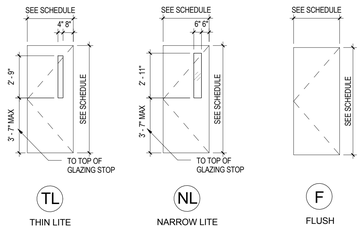
SET 08

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	ND80TD SPA	626	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	1461 CUSH DS TBSRT	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

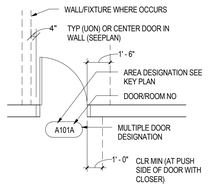
SET 09

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	CLASSROOM LOCK	ND70TD SPA	626	SCH
1	EA	FSIC CORE	23-030	626	SCH
2	EA	OH STOP	450S	630	GLY
2	EA	SILENCER	SR64	GRY	IVE

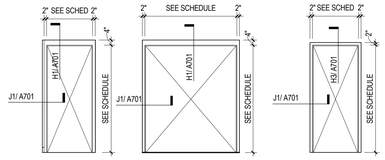
DOOR TYPES



DOOR MARK KEY



HOLLOW METAL FRAMING TYPES



GENERAL DOOR AND WINDOW NOTES

1. COORDINATE AND PROVIDE HARDWARE AS DETAILED IN THE SPECIFICATIONS OR, IF NOT SPECIFIED, PROVIDE HARDWARE (EQUAL QUALITY TO THAT SPECIFIED, AND MOST SIMILAR IN FUNCTION TO TYPE OF DOOR) REQUIRED FOR DOORS TO OPERATE AND APPEAR AS INTENDED ON DRAWINGS.
2. PROVIDE BRUSHED STAINLESS STEEL KICK PLATES ON PUSH SIDE OF DOORS WITH PUSH BARS AND/OR CLOSER DEVICES. KICK PLATE SHALL BE INSET 1/2" FROM EACH SIDE OF DOOR, AND MAXIMUM 8" HIGH OR 1/2" BELOW EDGE OF GLASS LIGHT (IF PRESENT)
3. PROVIDE EXPOSED HARDWARE WITH BRUSHED-IN FINISH AND "SILVER" METALLIC IN COLOR.
4. WHEN EXPOSED CLEAR FINISHED WOOD DOORS ARE PAIRED, PROVIDE MATCHING GRAIN TYPE AND COLOR FOR EACH DOOR IN PAIR.
5. IF CONFLICT EXISTS BETWEEN DOOR RATING AS SCHEDULED AND WALL/PARTITION TYPE FIRE RATING AS SHOWN ON PLANS, PROVIDE DOORS WITH THE GREATER FIRE RATING OF THE TWO.
6. GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES, AND COORDINATE UNDERCUTTING REQUIRED TO CLEAR ADJACENT FLOOR MATERIALS.
7. ALL EXTERIOR DOORS SHALL RECEIVE CONTINUOUS WEATHERSTRIPPING & DOOR BOTTOM SEALS.
8. ALL HOLLOW METAL FRAMES TO HAVE A 2" FACE DIMENSION UON WITH A 5/8" STOP. 3/4" STOP REQUIRED FOR FIRE RATED FRAMES.
9. HOLLOW METAL FRAME DEPTHS INDICATED IN DETAILS ARE NOMINAL. PROVIDE THROAT OPENING SIZED TO FIT WALL THICKNESS PER DESIGNATED WALL TYPE.
10. FIELD VERIFY DIMENSION PRIOR TO FABRICATING FRAMES.
11. FLOOR MATERIAL TRANSITIONS BETWEEN ROOMS TO BE CENTERED UNDER DOOR.
12. REFERENCE FINISH SCHEDULE ON A122 FOR INTERIOR AND EXTERIOR DOOR FINISHES

HEAD, JAMB & SILL NOTES

1. ALL HEAD, JAMB, AND SILL DETAILS ARE SCALED AT 1 1/2" = 1'-0"

2. ALL INTERIOR HOLLOW METAL GLAZING TO BE 1/4" TEMPERED GLASS UNLESS OTHERWISE NOTED OR REQUIRED BY APPLICABLE BUILDING CODES. REFER TO FRAME TYPES FOR ADDITIONAL GLAZING DESIGNATION.

3. ALL INTERIOR ALUMINUM STOREFRONT / ENTRANCE SYSTEMS TO BE 1/4" FLOAT GLASS UNLESS OTHERWISE NOTED OR REQUIRED BY APPLICABLE BUILDING CODES. REFER TO FRAME TYPES FOR ADDITIONAL GLAZING DESIGNATIONS.

GENERAL GLAZING NOTES

1. GLASS THICKNESS DESIGNATION INDICATED ARE MINIMUMS & ARE FOR DETAILING ONLY. GLAZING TRADE CONTRACTOR TO DETERMINE SAFETY GLAZING REQUIREMENTS & TO CONFIRM GLASS THICKNESSES BY ANALYZING PROJECT LOADS, IN-SERVICE CONDITIONS & GLASS LOCATIONS. PROVIDE GLASS LITES / UNITS IN THE THICKNESS DESIGNATIONS INDICATED ABOVE FOR VARIOUS SIZE OPENINGS, BUT NOT LESS THAN THICKNESSES & IN STRENGTH (ANNEALED, TEMPERED OR HEAT TREATED) REQUIRED TO MEET OR EXCEED CODE & PERFORMANCE CRITERIA. RE: SPECIFICATION SECTION 08 8000.

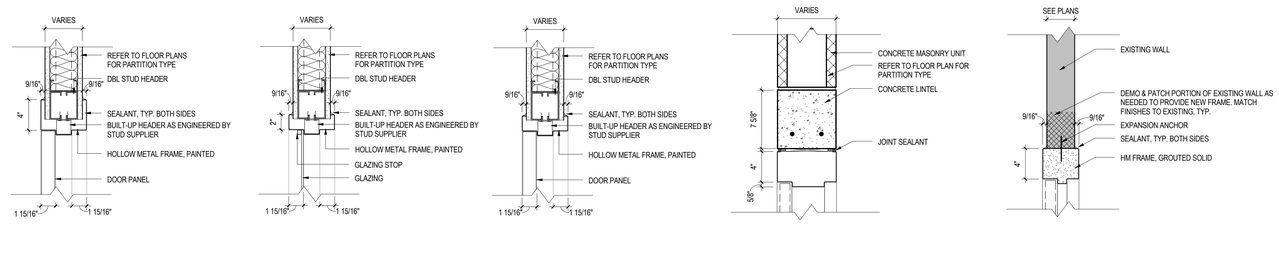
GLAZING LEGEND

IGU-1 = INSULATED TEMPERED GLASS

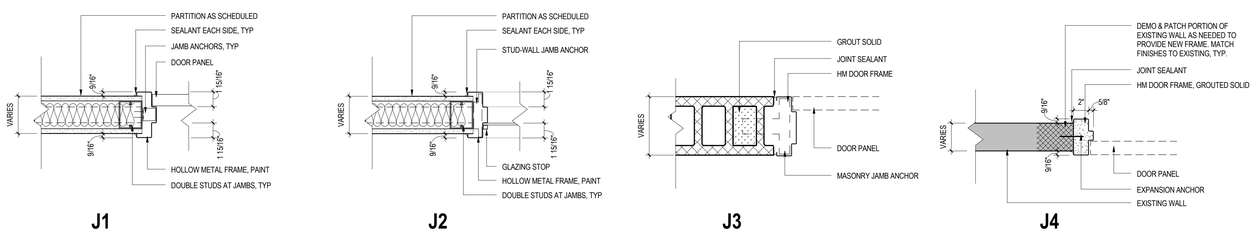
GL-1 = FIRE RATED GLASS

GL-2 = TEMPERED GLASS

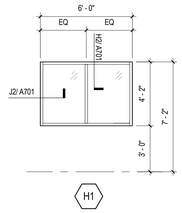
HEAD DETAILS



JAMB DETAILS



FRAME TYPE ELEVATION



DOOR SCHEDULE

No.	Door: Clear Dim. Width	Door: Clear Dim. Height	Door: Type	Door: Mat'l	Door: HDWR Set	Frame: Type	Frame: Mat'l	Frame: Finish	Frame: Details Head	Frame: Details Jamb	Frame: Details Sill	Opening: Fire Label	Opening: Glaz	Comments
F001	3' - 0"	7' - 0"	NL	WD	01	A1	HM	PTD	H5	J4	-	-	GL2	
F002A	6' - 0"	7' - 0"	TL	WD	03	A1	HM	PTD	H1	J1	-	45 MIN	GL-1	
F002B	6' - 0"	7' - 0"	TL	WD	04	A1	HM	PTD	H1	J1	-	45 MIN	GL-1	
F004	3' - 0"	7' - 0"	NL	WD	01	A1	HM	PTD	H5	J4	-	-	GL2	
F005	3' - 0"	7' - 0"	NL	WD	02	A1	HM	PTD	H1	J1	-	-	GL2	
F006	3' - 0"	7' - 0"	NL	WD	02	A1	HM	PTD	H5	J4	-	-	GL-2	
F008	4' - 0"	7' - 0"	NL	HM	08	A1	HM	PTD	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
F008A	3' - 0"	7' - 0"	F	WD	04A	A1	HM	PTD	H5	J4	-	-	-	
F009	3' - 0"	7' - 0"	NL	WD	02	A1	HM	PTD	H1	J1	-	-	GL2	
F010	3' - 0"	7' - 0"	NL	WD	02	A1	HM	PTD	H1	J1	-	-	GL2	
F016	3' - 0"	7' - 0"	F	WD	07	A1	HM	PTD	H2	J2	-	-	-	
F020	3' - 0"	7' - 0"	NL	WD	02	A3	HM	PTD	H3	J1	-	-	GL-2	
F030	3' - 0"	7' - 0"	F	WD	07	A1	HM	PTD	H5	J4	-	-	-	
F035	3' - 0"	7' - 0"	F	WD	05	A1	HM	PTD	H5	J4	-	-	-	
F035A	3' - 0"	7' - 0"	F	HM	08	A1	HM	PTD	H5	J4	-	-	-	
F036	6' - 0"	7' - 0"	F	WD	09	A2	HM	PTD	H4	J3	-	-	-	

Stantec

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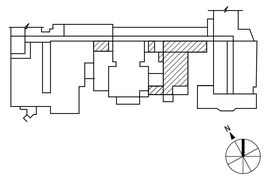

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1 ADDENDUM 3			05.31.17

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Permit-Seal

COMMONWEALTH OF VIRGINIA
ROBERT K. SHERRILL
No. 007475
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ARCHITECT

Client/Project
GUNSTON MIDDLE SCHOOL RENOVATION

Title
DOOR SCHEDULE, FRAME TYPES, GLAZING, HEAD, JAMB, & SILL DETAILS

Project No.

Scale
As indicated

Revision
1

Drawing No.
A701

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ORIGINAL SHEET - ARCH E1 (30"x42")