CONSTRUCTION DOCUMENTS
CUPCCAA SCOPE OF WORK

Zaida Rodriguez Technology Infrastructure Project

SCOPE OF WORK
The Project is generally described as: Installation of new conduit pathways and low-voltage cabling for data and voice systems. Installation to include equipment racks and associated equipment, data, wireless, and voice drops as referenced in the design documents at both facilities: 2950 Mission Street and 421 Bartlett Street.

SCHEDULE: SPECIAL CONDITIONS SECTION INCLUDES MORE DETAIL

Contract Time and Milestone Schedule:
- Notice To Proceed (NTP): June 27, 2018
- Phase 1: June 27, 2018 to July 11, 2018
- Phase 2: July 12, 2018 to July 23, 2018
- Phase 3: July 24, 2018 to August 1, 2018
- Phase 4: August 2, 2018 to August 10, 2018
- Beneficial Occupancy: August 10, 2018
- Final Completion: August 25, 2018. 60 calendar days from Notice to Proceed. (15 calendar days from the end of the last phase.)

Description of Phase 1 (June 27, 2018 to July 11, 2018)
- Contractor to provide complete schedule of values prior to construction start date.
- Contractor to complete and provide Exhibit B, Total Bill of Materials prior to construction start date.
- Contractor to provide proposal for conduit pathways from MDF to termination points classrooms, offices and corridors.

Description of Phase 2: (July 12, 2018 to July 23, 2018)
- Bartlett Street Facility:
  - Complete installation of Rack and Cable Management System
  - Complete installation of conduit pathways
- Mission Street Facility:
  - Complete Installation of Rack and Cable Management System

Description of Phase 3: (July 24, 2018 to August 1, 2018)
- Bartlett Street Facility:
  - Complete installation of low-voltage cable systems and termination
- Mission Street Facility:
  - Begin installation of conduit pathways
Description of Phase 4:  (August 2, 2018 to August 10, 2018)

- Mission Street Facility:
  - Complete installation of conduit pathways
  - Complete installation of low-voltage cable systems and termination

PROJECT PLANS AND WORK SPECIFICATIONS

ZAIDA RODRIGUEZ TECHNOLOGY INFRASTRUCTURE PROJECT
VOICE AND DATA COMMUNICATION SYSTEMS

Work Under other Contracts

Separate Contract:  District will award a separate contract for performance of certain construction operations at Project site. This contract includes the following:

- **Installation of a new CCTV/surveillance system and a front entry intercom system.** This work is for both campuses of Zaida Rodriguez Early Education School (2950 Mission Street and 421 Bartlett Street).
- Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.
  - Notice To Proceed (NTP): June 27, 2018
  - Phase 1: Complete installation of Power/Plywood backboards/Grounding at Mission Street and Bartlett Street campuses by July 16, 2018
  - Phase 2: Complete pathway and termination for Security Cameras/Aiphone System at Bartlett Street Campus by July 30, 2018
  - Phase 3: Complete pathway and termination for Security Cameras/Aiphone System at Mission Street campus by August 14, 2018
  - Final Completion: August 31, 2018 (66 calendar days from Notice to Proceed).
PROJECT MANUAL
CUPCCAA SAN FRANCISCO UNIFIED SCHOOL DISTRICT
CONSTRUCTION STANDARDS

The following construction products, materials, and systems have been approved as a District Standard by the Board of Education or the Board of Education’s official designee. In accordance with the Public Contract Code, the products, materials, and systems listed below are specified to match others in use on District sites, either completed or in the course of construction. No substitutions will be allowed or permitted for these District construction standards unless approved in writing by the District. Substitutions from these standards will only be granted if the specific products, materials, or systems are no longer manufactured or are unavailable. District construction standards include the following:

DIVISION 0

None

DIVISION 1 - GENERAL REQUIREMENTS

None

DIVISION 2 - SITE WORK

None

DIVISION 3 - CONCRETE

None

DIVISION 4 - MASONRY

None

DIVISION 5 - METALS

None

DIVISION 6 - WOOD AND PLASTIC

CASEWORK
1. Cabinet door and drawer locks: National Cabinet Lock, C8173, C8174, C8175 for cabinets and C8177, C8178, and C8179 for drawers

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

None
DIVISION 8 - DOORS AND WINDOWS

DOOR HARDWARE
2. Locksets: Schlage Lock
   a. General Cylindrical Locksets: Schlage Lock ND Vandlgard Series, Rhodes Trim
   b. All instructional rooms and other rooms with 5 or more occupants without exit devices: ND95PD Vandlgard, Rhodes Trim
3. Privacy Lockset at Adult/Staff Single-Occupant Restrooms: Schlage L9496
4. Exit Devices:
   a. Interior Single Door Rim Exit Devices:
      Unrated – Von Duprin 99L-2 / 20-057
      Fire-rated – Von Duprin 99L-F-2 / 20-057
   b. Interior Pair of Doors Rim Exit Devices with Mullion:
      Unrated – Von Duprin 99L-2 x 4954 Mullion / 20-057
      Fire-rated – Von Duprin 99L-F-2” x 4954 Mullion / 20-057
   c. Exterior Single Door Rim Exit Devices:
      Unrated – Von Duprin CD99NL Series x VR 900 Series Trim
      Fire-Rated – Von Duprin 99L-F-2 x VR 900 Series Trim
   d. Exterior Pair of Doors Rim Exit Devices:
      Unrated – Von Duprin CD99NL x 98EO Series x VR 900 Series Trim x 4954 Mullion
      Fire-rated – Von Duprin 99L-F-2 x 98EO Series x VR 900 Series Trim x 4954 Mullion
5. Surface Closers: LCN 4040XP x EDA x ST3596
6. Floor Closers and Offset Pivots: Rixson 27 Series @ 90º, 25 Series @ 180º
7. Automatic Door Openers: LCN 4800
8. Rated Hold-Open Electromagnetic Holders: LCN SEM 7800 Series

WINDOW HARDWARE
1. Window Handles:
   a. Cam Handles: Bronze Craft
   b. Project-Out Vent (Awning Type): Bronze Craft #162-001-4504 (right handle) #162-003-4504 (left handle) in conjunction with #282 series strikes
   c. Project-In Vent (Hopper Type):
      i. Hand-Operated Handles: Bronze Craft #156-001-4504 (right handle) #156-003-4504 (left handle)
      ii. Pole-Operated Handles: Bronze Craft #158-001-4504 (right handle) #158-003-4504 (left handle) in conjunction with #210 series keepers
2. Window Hinges: Bronze Craft 851 Series stainless steel storm hinges
3. Pole:
   a. Pole Ring: Bronze Craft #233-005-4504 (aluminum bronze)
b. Pole Hook Assembly (aluminum tube with rubber end): Bronze Craft #234-007-4504 (7 feet long)
c. Pole Hanger: Bronze Craft #231-002-0125
d. Pole Tip: Bronze Craft #232-004-0125

DIVISION 9 - FINISHES

None

DIVISION 10 - SPECIALTIES

TOILET ACCESSORIES

1. Paper Towel Dispensers:
   a. EES, Elementary, Middle and High Schools, all locations: Georgia Pacific SofPull Dispenser Model #59010 (Black)

2. Toilet Paper Dispensers:
   a. Georgia Pacific Rollmastr 3000 Vertical 2 Roll High Capacity Bathroom Tissue Dispenser model 56716/01 for standard (not accessible) toilet stall locations
   b. Multi-roll toilet paper dispensers for accessible toilet stalls:
      i. Recessed, wall-mounted: Bobrick B-3888
      ii. Recessed, wall-mounted: Bobrick B-6977 (Pre-K restrooms)

3. Soap Dispensers: Bobrick B-2111 (vertical) or B-2112 (horizontal) 40 oz. stainless steel tank liquid soap dispenser

4. Grab Bars: Bobrick B-6806 – 42” long at rear and 48” long at side

DIVISION 11 - EQUIPMENT

EVACUATION CHAIRS

1. Garaventa Evacu-Trac CD7 with manufacturer-supplied storage cabinet and manufacturer-provided labeling

DIVISION 12 - FURNISHINGS

None

DIVISION 13 - SPECIALTIES

None

DIVISION 14 - CONVEYING SYSTEMS

HYDRAULIC ELEVATORS

1. Control Manufacturers: Motion Control Engineering
2. Motion 2000 Hydraulic Elevator Control as manufactured by Motion Control Engineering, Inc.
3. Door Operating Equipment: G.A.L. Manufacturing Corporation

5. Lock box keyed to the San Francisco Fire Department standards from E.M. Hundley Hardware, 617 Bryant St., San Francisco, (415) 777-5050

DIVISION 15 - MECHANICAL

MECHANICAL EQUIPMENT
1. Domestic Hot Water Circulating Pumps: Grundfos
2. In-Line Circulators: Grundfos Pump UP Series100
3. Hot Water Boilers: Cast iron by Peerless Heater Company
4. Expansion Tanks: Bell & Gossett
5. Chemical Feeder: J.L. Wingert
6. Energy Management System: Vykon JACE-545 router, as manufactured by Tridium
7. Controls: Any upgrade or new addition to the existing system shall be fully integrated with the graphical user interface of the existing Circon controls system and the Wide Area Network of the San Francisco Unified School District.

PLUMBING FIXTURES
1. Drinking Fountains:
   a. Exterior and Interior Wall-Mounted Fixture: Haws 1117L with lead filter for interior and exterior wall-mounted installations and Envirogard bubbler for exterior installations
   b. Free-Standing Fixture: Haws 3150 adjustable-height pedestal fountain with exposed aggregate finish, or Haws 3300, pedestal fountain with powdercoat finish; Envirogard bubbler, and lead filter when no building wall surfaces are available
2. Eyewashes: HAWS 7460BT with acid-resistant drains and dust cover 9102 for middle school and high school science labs that use chemicals
3. Emergency Showers: Combination Unit HAWS 8300-8309 with emergency test kit 9010 and dust cover 9102
4. Faucets:
   a. Single-Temperature Metering: Chicago 3400-ABCP (ECAST) (3-hole, 4” centers, 4¾” spout)
   b. Single-Temperature Metering for retrofits at existing single-hole lavatories only: Chicago 333-665PSHVPAAACBP (ECAST) (single-hole, 3-3/8” spout) for use at existing single-hole lavatory retrofits only
   c. Single wrist blade handle, single-hole, deck-mounted gooseneck: Chicago 350-317VPAAACBP (ECAST)
   d. Dual wrist blade handles, single-hole, deck-mounted gooseneck: Chicago 50-317VPAAACBP (ECAST)
   e. Dual wrist blade handles, 2-hole, 8” centers, deck-mounted gooseneck: Chicago 1100-GN2AE3-317ABCP (ECAST)
5. **Service Sinks:**
   a. **Fixture:** Fiat MSB-2424 24"x24"x10" molded stone mop service basin with 3" drain
   b. **Faucet:** Lever style handles with hot and cold indicators, vacuum-breaker spout with garden hose thread, wall bracket, backflow preventer, chrome finish (at service sinks-custodial closets): Moen M-Dura 8124

6. **Encased/Recessed Narrow Wall Hydrant:** Zurn Z1350VB encased narrow wall hydrant type keyed hose bib

7. **Floor or Shower Drains:** Jay R. Smith 2005Y floor drain with adjustable strainer heads, vandal proof screws, nickel bronze strainer

8. **Toilets, Wall-Hung – Elementary (K-5), Middle, and High School student restrooms, adult/staff restrooms:**
   a. **Fixtures** – white vitreous china, elongated bowl, 1.28-gallon, 1½” top spud:
      i. New construction or full restroom remodel: American Standard Afwall FloWise 3351.128
      ii. Retrofit in existing wall: American Standard Afwall FloWise ADA Retrofit 3355.128
   b. **Toilet Seats** – 1” total thickness including bumper, stainless steel hinge, concealed check, solid plastic, open front: Bemis 1955SSCT-047 black
   c. **Flush valve:** Sloan Royal 111-1.28
   d. **Carrier:** Jay R. Smith for siphon jet toilets. Waste 4", vent 2", CW 1"

9. **Toilets, Floor-Mounted:**
   a. **Fixtures** – white vitreous china, elongated bowl, 1.28-gallon, 1½” top spud
      i. Pre-K (EES): American Standards “Baby Devoro” – Flowise: 2282.001
      ii. Elementary student restrooms (K-5): American Standards “Madera Youth” – Flowise: 2599.001 14
      iii. Middle and High School student restrooms, adult/staff restrooms: American Standard Madera FloWise 3461.128
   b. **Toilet Seats** – 1¼” total thickness including bumper, stainless steel hinge, concealed check, solid plastic, open front:
      i. Pre-K (EES): Bemis 126-CC white
      ii. Elementary (K-5), Middle, and High Schools, adult/staff toilets: Bemis 1955SSCT-047, black
   c. **Flush valve:** Sloan Royal 111-1.28. Waste 4", vent 2", CW 1”

10. **Urinals:**
    a. **Fixtures** – 1/8-gallon (1-pint)
       i. Elementary student restrooms (K-5, new construction or full restroom remodel only): Zurn Z5738.207 “The Small Pint”
       ii. Middle and High School student restrooms, adult/staff restrooms (new construction or full restroom remodel only): American Standard Washbrook FloWise 6590.125
    b. **Flush valve (manual):** Sloan Royal 186-0.125
c. Carrier: Manufactured by Jay R. Smith, waste 2”, vent 2”, CW ¾”

11. Water Heaters:
   a. Local Instantaneous Type: AO Smith, electric 10 gallon, 110 volt.
   b. Local Gas Type Heaters: AO Smith BT Series water heater.

12. Plaster Trap (for art classrooms): Zurn solid interceptor Z-1181

13. Differential Pressure Switches: Honeywell

**DIVISION 16 - ELECTRICAL**

**CLOCK/BELL/PUBLIC ADDRESS**

1. Integrated Clock/Bell/PA: Simplex 5110 Building Communication System (BCS), wired, low-voltage, with Valcom 24V round analog clocks

2. Wireless Clocks: American Time and Signal SiteSync IQ round analog clocks

**FIRE ALARM SYSTEM**

1. Fire Alarm Control Panel Simplex 4100ES and related addressable components:
   a. Smoke Detectors – 4098 Series
   b. Heat Detectors – 4098 Series
   d. Monitoring Modules – 4090 Series
   e. Control Modules – 4090 Series
   f. Horn/Strobe Units – 4906 Series
   g. Strobe Only Units – 4906 Series
   h. Remote Power Supplies – 4009 Series
   i. Remote Annunciator Panels – 4603 Series

**SECURITY SYSTEM**

1. Security Integration, Inc. Camera System
   a. Software Package SI-VI.76
   b. Digital Video Recording Management and Network Software
   c. DVR Hardware
   d. Camera models 3895IR and SI-PTZ-DN-MT

2. Door Contacts: Sentrol 2505A by GE

3. Control Panels: Ademco Vista 50P by Honeywell

4. Keypads: Ademco Alpha #6160 by Honeywell

**END OF SECTION**
CUPCCAA Release of Any and All Claims

This agreement and release of claims ("Agreement and Release") is made and entered into this ______ day of __________, 20___ by and between the San Francisco Unified School District ("District") and __________________________ _________ ("Contractor"), whose place of business is ______________________________.

RECITALS:

1. District and Contractor entered into PROJECT/CONTRACT NO.: ______________ _________________ in the County of San Francisco, California.

2. The work under <Phase __ of the> OR <the Project> Contract has been completed.

NOW, THEREFORE, it is mutually agreed between District and Contractor as follows:

AGREEMENT

3. Contractor will only be assessed liquidated damages as detailed below:

   Original Contract Sum $________________________
   Modified Contract Sum $________________________
   Payment to Date $________________________
   Liquidated Damages $________________________
   Payment Due Contractor $________________________

4. Subject to the provisions hereof, District shall forthwith pay to Contractor the undisputed sum of $______ (_______________Dollars and _______ Cents) under the Contract, less any amounts represented by any notice to withhold funds on file with District as of the date of such payment.

5. Contractor acknowledges and hereby agrees that there are no unresolved or outstanding claims in dispute against District arising from the performance of work under the Contract, except for the claims described in Paragraph 6 and continuing obligations described in Paragraph 8. It is the intention of the parties in executing this Agreement and Release that this Agreement and Release shall be effective as a full, final and general release of all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities of Contractor against District, its respective agents, employees, inspectors, assignees and transferees except for the Disputed
Claim set forth in Paragraph 6 and continuing obligations described in Paragraph 8 hereof.

6. The following claims are disputed (hereinafter, the "Disputed Claims") and are specifically excluded from the operation of this Agreement and Release:

<table>
<thead>
<tr>
<th>Claim No.</th>
<th>Description of Claim</th>
<th>Amount of Claim</th>
<th>Date Claim Submitted</th>
</tr>
</thead>
</table>

[Insert information, including attachment if necessary]

7. Consistent with California Public Contract Code section 7100, Contractor hereby agrees that, in consideration of the payment set forth in Paragraph 4 hereof, Contractor hereby releases and forever discharges District, all its agents, employees, inspectors, assignees, and transferees from any and all liability, claims, demands, actions, or causes of action of whatever kind or nature arising out of or in any way concerned with the Work under the Contract.

8. Guarantees and warranties for the Work, and any other continuing obligation of Contractor, shall remain in full force and effect as specified in the Contract Documents.

9. To the furthest extent permitted by California law, Contractor shall defend, indemnify, and hold harmless the District, its agents, representatives, officers, consultants, employees, trustees, and volunteers (the "indemnified parties") from any and all losses, liabilities, claims, suits, and actions of any kind, nature, and description, including, but not limited to, attorneys' fees and costs, directly or indirectly arising out of, connected with, or resulting from the performance of the Contract unless caused wholly by the sole negligence or willful misconduct of the indemnified parties.

10. Contractor hereby waives the provisions of California Civil Code section 1542 which provides as follows:

A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM MUST HAVE MATERIALLY AFFECTED HIS SETTLEMENT WITH THE DEBTOR.

11. The provisions of this Agreement and Release are contractual in nature and not mere recitals and shall be considered independent and severable. If any such provision or any part thereof shall be at any time held invalid in whole or in part under any federal, state, county, municipal, or other law, ruling, or regulations, then such provision, or part thereof, shall remain in force and
effect to the extent permitted by law, and the remaining provisions of this Agreement and Release shall also remain in full force and effect, and shall be enforceable.

12. All rights of District shall survive completion of the Work or termination of Contract, and execution of this Release.

* * * CAUTION: THIS IS A RELEASE - READ BEFORE EXECUTING * * *

SAN FRANCISCO UNIFIED SCHOOL DISTRICT

TITLE: ____________________________

NAME: ____________________________

SIGNATURE: _______________________

CONTRACTOR

TITLE: ____________________________

NAME: ____________________________

SIGNATURE: _______________________

END OF SECTION
CUPCCAA CERTIFICATE OF GUARANTEE / WARRANTY

We, (name of company or contractor), guarantee to maintain all Systems and warrant all Work performed under this CUPCCAA Contract at the school(s) and/or building(s) listed below for full period of time as indicated herein.

Owner of Building:  San Francisco Unified School District

School Name: ______________________________________________________________

Project Name: __________________________________________________________________

Street Address: ______________________________________________________________

City:  San Francisco  State:  California

This GUARANTEE/WARRANTY is effective this ___________________________ day of _________________, ____ for term of two (2) year(s) from this date, provided any defects result from defective material or workmanship and are not caused by other mechanics, fire, accidents or by acts of Providence over which we have no control.

For fire and life safety related work which includes but is not limited to fire alarm, fire sprinkler, emergency lighting, exit lighting, and exiting pathway systems such as: (elevator, wheelchair lifts, etc.) the subcontractor and General Contractor shall adhere to following statement, “in the event of our failure to respond and act within 3 hours after being notified in writing by the District, we authorize the District to proceed to have the defects repaired or replaced and made whole, together with any other adjacent work which may be displaced or damaged by so doing, at our expense, and we will honor and pay the costs and charges therefore upon demand. This work shall not invalidate any and all warranties and guarantees.”

_______________________________________
(Signature)

_______________________________________
(Title)

_______________________________________ CSLB # _____________________________
(Company Name)

_______________________________________
(Date)
ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of _____________________________)

On _________________________ before me, ________________________________
(insert name and title of the officer)

personally appeared ______________________________________________________________,

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature ______________________________ (Seal)
CUPCCAA SPECIAL CONDITIONS

1.1 Application of Special Conditions. These Special Conditions are a part of the Contract Documents for the Work generally described as: Zaida Rodriguez Technology Infrastructure Project

1.2 Contract Time/Milestone Schedule and Description of Phases

All Phase times indicated are from start of Contractor’s access to work area to Beneficial Occupancy for each Phase. All punch list work shall be completed within 30 days of Beneficial Occupancy for each phase.

Contract Time and Milestone Schedule:

- Notice To Proceed (NTP): June 27, 2018
- Phase 1: June 27, 2018 to July 11, 2018
- Phase 2: July 12, 2018 to July 23, 2018
- Phase 3: July 24, 2018 to August 1, 2018
- Phase 4: August 2, 2018 to August 10, 2018
- Beneficial Occupancy: August 10, 2018
- Final Completion: August 25, 2018. 60 calendar days from Notice to Proceed. (15 calendar days from the end of the last phase.)

Description of Phase 1 (June 27, 2018 to July 11, 2018)
The work includes, but is not limited to:
- Contractor to provide complete schedule of values prior to construction start date.
- Contractor to complete and provide Exhibit B, Total Bill of Materials prior to construction start date.
- Contractor to provide proposal for conduit pathways from MDF to termination points classrooms, offices and corridors.

Description of Phase 2: (July 12, 2018 to July 23, 2018)
The work includes, but is not limited to:
- Bartlett Street Facility:
  - Complete installation of Rack and Cable Management System
  - Complete installation of conduit pathways
- Mission Street Facility:
  - Complete installation of Rack and Cable Management System

Description of Phase 3: (July 24, 2018 to August 1, 2018)
The work includes, but is not limited to:
- Bartlett Street Facility:
  - Complete installation of low-voltage cable systems and termination
- Mission Street Facility:
  - Begin installation of conduit pathways
Description of Phase 4: (August 2, 2018 to August 10, 2018)
The work includes, but is not limited to:

**Mission Street Facility:**
- Complete installation of conduit pathways
- Complete installation of low-voltage cable systems and termination

1.3 Description of General Phasing Requirements:

A. These descriptions of the phases are general in nature and in no way offer the complete and concise description of all the work required by the Contract Documents.

B. The start dates represented in the milestone schedule are preliminary and the District reserves the right to modify these dates based on when the Notice to Proceed is issued.

C. The Contractor is responsible for providing the manpower and scheduling the shifts necessary to complete the work in accordance with the Contract Time and Milestone Schedule.

D. The School will remain open during the academic year. The Work of this project must take into account that the site will be occupied by students and staff and will be phased as generally described above and in other contract documents.

E. Non-School hours are defined as hours before **<7:00 AM, and after 6:00 PM>** on days when school is in session.

F. Hazmat work prohibited between **7:00 AM and 6:00 PM**. Haz-Mat Abatement cannot be performed while students or school staff is on site.

G. Follow City of San Francisco Noise Ordinance.

H. Work that is hazardous, noisy, or that causes vibration may not be performed in the buildings or on the site during school hours, without written approval from the District Representative. This includes but is not limited to the following work activities:
   1. Haz-Mat Abatement
   2. Concrete bushing, chipping, grinding, jack hammering.
   3. The use of Powder-Actuated (PAT’s)
   4. Floor grinding to remove adhesive.
   5. Chemicals used in quantities that cause excessive odor and can not be effectively ventilated. As determined by the Owners Representative.
   6. Wall tile removal. Hand scraping or chipping may be acceptable as approved by the Owners Representative.
   7. Electric Tile Cutter, may be used if isolated in a temporary sound deadening room constructed by the Contractor as approved by the Owners Representative.
   8. Large impact drills for use in concrete.
   9. Smaller Bulldog type impact drills for ¼" holes or less.
   10. Operation of cranes in occupied areas, including drilling rigs, and concrete pump trucks unless the occupants can be sufficiently isolated from the swing zone.
   11. Chop Saws for metal studs or other metal cutting. These may be used if isolated in a temporary sound deadening room constructed by the Contractor as approved by the Owner’s representative.
12. The use of abrasive or “hot” saws to cut steel decking.
13. Earthwork compaction, including the operation of vibratory compaction equipment.

I. School Academic Testing: No work which creates noise or a vibration in the structure which can be heard and/or felt in occupied classrooms may be done on the following dates between 7:00 a.m. and 12:30 p.m. due to academic testing. These dates are approximate and Contractor shall confirm each school with the District during the school year NOT APPLICABLE
   1. English Learners: 3 days between September and October.
   2. Student Testing: 15 days between April and May.
   3. Other Testing: To be verified with the District

J. All work remaining on a phase after the Beneficial Occupancy date of that phase shall be done during non-school hours.

K. Temporary hard barriers as necessary for each phase shall be constructed prior to the start of each phase of work. On a site plan indicate lay down areas, pedestrian walkways, and contractor parking areas Snow fencing is not acceptable as hard fencing. The Contractor shall submit diagrams for each phase one week prior to start of construction of that phase, indicating the construction zone, and barricades and access for students and School Personnel, for approval by the District Representative. The Contractor must provide and maintain access and code compliant egress to and from all occupied spaces. Contractor shall post temporary signage (appropriate and secure) shall be posted to redirect students and staff for emergency exiting.

L. The Contractor shall diligently maintain all construction zone barricades and fencing. Fence panels shall be secured with two fence clamps per joint. The Contractor shall secure end panels in a manner acceptable to the District Representative. The use of tie wire will not be an acceptable method for securing fence panels. Construction zone gates shall be secured with chains and District provided padlocks.

M. When school is in session any work that occurs in the building and cannot be safely segregated from students must be performed during non-school hours.

N. The existing fire alarm system shall remain operational twenty four (24) hours/day, seven (7) days/week. If at any time during the Project the existing fire alarm system is not fully operational, the Contractor, at its own expense, shall provide a “Fire Watch” acceptable to the District Representative and San Francisco Fire Department or install temporary devices including smoke and/or heat detectors and horn/strobes. Temporary devices shall be no less than 25 feet from an exit door and no further than 75 feet between devices and shall be programmed into the Fire Alarm Control Panel. Wiring for temporary devices may be secured/fastened to the wall and/or ceiling and is not required to be in conduit. All temporary devices shall be removed from programming when permanent fire alarm system is in place, tested, and accepted as fully operational.

O. Liquidated damages are assessed per phase.

P. The Contractor’s Construction Schedule shall reflect the work sequence and time period for each phase of the Project.

Q. Contractor to verify the dates and obtain approval for the timing, demolition, and construction of the Work in each area and phase with the District.
R. The Work of each phase shall include the building or buildings indicated (if applicable) and the adjacent site work required for safe access and egress for District Occupancy at Beneficial Occupancy of each phase.

S. The Contractor shall carefully review the Drawings and other Contract Documents to fully understand the interdependency of the phases, the buildings, and the site work.

T. Work on weekends, evenings or holidays may be required to meet the project phasing schedules. Provide 72 hours notification to the District representative to ensure necessary inspections, monitoring, testing, etc. are provided during these work hours.

U. The District may withhold payments for late submittals. The District is willing to consider alternate means of phasing the project proposed by the Contractor. The acceptance of any alternate means of phasing is at the sole discretion of the District.

V. The District may withhold payments for late submittals.

1.4 Liquidated Damages

A. **Beneficial Occupancy:** The delayed Beneficial Occupancy of any phase of the Work will result in the assessment and withholding of Liquidated Damages for each day of delayed Beneficial Occupancy beyond the Contract Time for Beneficial Occupancy of that phase of the Work in the amount of $500 per day. **Final Completion.** The delayed Final Completion of the Work will result in the assessment and withholding of Liquidated Damages for each day of delayed Final Completion beyond the Contract Time for Final Completion of the Work in the amount of $250 per day until all punch list items are completed.

1.5 Prevailing Wages: Contractor shall pay and shall cause to be paid each worker engaged in Work on the Project not less than the general prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations ("DIR") ("Director"), regardless of any contractual relationship which may be alleged to exist between Contractor or any Subcontractor and such workers. Companies that manufacture and deliver ready-mixed concrete directly to construction sites using their own drivers, are not subject to this requirement pending the final adjudication of *Allied Concrete & Supply Co., v. Edmund Gerald Brown Jr., et al.*, United State District Court, Central District of California, Case. No. 2:16-CV-04830-RGK (FFM).

1.6 Building Access. Access to the school buildings and entry to buildings, classrooms, restrooms, mechanical rooms, electrical rooms, or other rooms, for construction purposes, must be coordinated with District and onsite District personnel before Work is to start.

A. Upon request, the District may, at its own discretion, provide a master key to the...
school site for the convenience of the Contractor. The Contractor agrees to pay all expenses to re-key the entire school site and all other affected District buildings if the master key is lost or stolen or if any unauthorized party obtains a copy of the key or access to the school.

1.7 Utility Work.

A. The Contractor is advised that Work is to be performed in spaces regularly scheduled for instruction. Interruption and/or periods of shutdown of public access, electrical service, water service, lighting, or other utilities shall be only as arranged in advance with the District. Contractor shall provide temporary services to all facilities interrupted by Contractor’s Work.

B. The Contractor shall maintain in operation during duration of Contract, drainage lines, storm drains, sewers, water, gas, electrical, steam, irrigation systems and other utility service lines (including but not limited to low voltage systems and fire sprinkler systems) within working area.

1.8 Weather Days. Delays due to adverse weather conditions will only be permitted in compliance with the number of days of adverse weather exceeds the following parameters and only if Contractor can verify that adverse weather caused delays exceeds the following number of working days:

January, [11]; February [10]; March [10]; April [6]; May [3]; June [1]; July [0]; August [0]; September [1]; October [4]; November [7]; December [10].

1.9 Standardized Forms. Each and every document generated and/or submitted by the Contractor relating to cost breakdowns, applications for payment, change order requests, requests for information, submittals, verified reports, progress reports, and all other matters relating to the administration of the Work as set forth in the General Conditions, shall be prepared by the Contractor on such forms as may be directed by the District. Unless otherwise expressly provided for in the Contract Documents, all such documents shall be submitted to the District with such frequency as the District may require in its sole reasonable discretion.

1.10 District Tests/Inspections. Pursuant to section "Testing and Inspection", within fourteen (14) calendars days of the date of award of the Contract, the Contractor, the District, and the Architect shall meet and confer to establish, by mutual agreement, the specific tests/inspections to be conducted by or on behalf of the District and to establish limits on costs incurred by the District to complete such test/inspections. If mutual agreement is not reached as to tests/inspections to be completed by or on behalf of the District or the limitations on the District’s costs to complete such tests/inspections, the Architect shall issue a final binding determination. The Contractor shall be responsible for all costs of tests/inspections exceeding those established pursuant to the provisions of Title 24, Part 1, Section 4-355(b).

1.11 Allowed Number of Hazardous Material Abatement Shifts. Within the overall construction schedule, the total allotted time for completion of all identified
hazardous material abatement work of the Project shall be limited to the number of work shifts (of stated duration) specified in Appendix A. The Contractor shall be responsible for all additional Environmental Consultant and analytical laboratory costs associated with exceeding the specified total number of work shifts allowed.

1.12 Identification Vests/Badges.

A. The District reserves the right to require the Contractor to do the following:

No employee or independent contractor to the Contractor or any Subcontractor, of any tier, shall be permitted access to the Site at any time unless such individual wears, in a prominent visual manner, a photographic identification badge issued by the District. The identification badge shall be prominently worn at all times while at the Site. Any person performing any Work at the Site without wearing a duly issued District photographic identification badge will be immediately removed from the Site. The District will issue photographic identification badges only to those individuals who are identified on a Fingerprinting Certification of the Contractor or a Subcontractor. The photographic identification badges are the sole and exclusive property of the District. The Contractor shall promptly return to the District each photographic identification badge once an employee or independent contractor to the Contractor or any Subcontractor of any tier has completed his Work at the Site or is absent from the Site for a period of thirty (30) consecutive days, whichever first occurs.

All cost associated with this requirement are at the Contractors expense.

B. No employee or independent contractor to the Contractor or any Subcontractor, of any tier, shall be permitted access to the Site at any time unless such individual wears, in a prominent visual manner, a safety vest that has been approved by the District. All vests must include the General Contractors company logo, with an area is at least 144 square inches. Any person performing any Work at the Site without wearing an approved safety vest will be immediately removed from the Site.

C. The Contractor’s compliance with the requirements of this Paragraph and/or the District’s enforcement of the requirements of this Paragraph shall not result in adjustment of the Contract Time or the Contract Price.

1.13 Parking: The Contractor is responsible for off-site parking for their personnel. The Contractor is not permitted to park any vehicles on campus. Catering Trucks: No catering trucks are permitted on District property.

1.14 Systems Survey. In the presence of the District Representative the contactor will perform a survey of all the fire alarm, phone, data, power outlets, P/A system (public address system) clocks/bells, thermostats, building management system controls, and security systems in each room prior to the start of each phase. Any testing that might affect other portions of the school must be completed during non-school hours. Each outlet and/or device is to be checked and tested to verify
that they are working. The survey will be submitted and reviewed by the District Representative prior to the start of demolition for each phase.

1.15 **Emergency Shut off Survey.** Before construction begins Contractor shall field survey the building/buildings and site and contact the appropriate SFUSD personnel to develop an Emergency Shut-off Plan. The plan will show graphically all shut-off locations for utilities clearly identified along with any special instructions and contact procedures. The plan will include an emergency contact list for the Contractor, SFUSD Project Manager, Construction Manager, Building and Grounds, Fire Department, PUC, PG & E and Water District. The Contractor shall assemble any specialty tools required and keys for any locked areas. The Emergency Shut-off Plan shall be posted in Contractor’s construction office with a copy of all items to be located in the CM office.

1.16 **Theatrical Equipment and Furnishings.** The Contractor is prohibited from using any existing theatrical equipment and furnishings in the auditorium and/or multi-purpose room during construction. The Contractor is required to protect and/or remove theatrical equipment and furnishings as directed by the District and at their own expense. The Contractor, at its own expense will provide any and all temporary lighting necessary to accomplish the work.

1.17 **District Standards.** In accordance with California Public Contract Code a designee of the District has made a finding that particular materials, products, things, and/or services are to be designated in the Contract Documents by specific brand or trade name for the following purpose: in order to match other products in use on a particular public improvement either completed or in the course of completion ("District Standards"). The District Standards are set forth in Section 00 01 13 San Francisco Unified School District Construction Standards. The particular materials, products, things, and/or services designated in the District Standards shall be used in the Work.

1.18 **Web-Based Project Management Software (PMS).**

A. Purpose
PMS will be used to facilitate communication and track project documentation among the SFUSD Team Members and the Contractor. The Contractor shall utilize the collaborative tool as directed by the District. The Contractor shall participate in all required training as needed to assure the tool is used as intended.
B. Scope
Communications not pertaining to the job established over the provided internet connection are not permitted. This includes but is not limited to the use of internet radio, streaming audio/video, personal instant messaging software, and other similar chat programs.

PMS will be used to log and track project related documents that include but are not limited to; Contractor request for information (RFI), Architect’s supplemental instructions (ASI), submittals, change orders, project transmittals, Contractor daily logs, Daily sign-in sheets, meeting notes, and request for inspections.

C. General Guidelines and Use
PMS program may only be used by individuals who are members of SFUSD Team, and only for purposes that are consistent with the requirements and objectives of the SFUSD project. Use of the site is contingent upon compliance with the following rules of usage:

- Members must protect their login account and password information from unauthorized disclosure.

- Members may only use PMS for legitimate purposes related to this project. Members may not use the site for non-project commercial purposes or personal purposes.

- Members shall abide by the Guidelines in this document. Specifically, members shall not alter the organization or structure of the site without first consulting with the website Coordinator.

- Members may not send harassing, offensive, unlawful, fraudulent, abusive, libelous or threatening messages in any form to another member or outside party using the site. Use of vulgar language and obscenities, and the uploading or viewing or distributing of pornographic materials through the site is strictly prohibited.

1.19 The Environmental Protection Agency (EPA) regulation 40 CFR Part 745 became fully effective June 23, 2008 which requires all firms, including sub-contracted firms who impact lead-based paint (LBP) at Child Occupied Facilities to be EPA certified; have an EPA “Certified Renovator”; provide “on-the-job” training for workers; conduct pre-renovation notifications; follow specific work practice procedures for containment, disturbance and final clean-up; and inspection requirements. Renovation is defined as the modification to any existing structure or portion that results in the disturbance of LBP surfaces, unless the activity is performed as part of an abatement. This regulation includes all work and/or construction activities that disturb LBP surfaces. **Mitigation Measures** Contractor shall comply will all applicable mitigation measures, if any, adopted by any public agency with respect to this Project pursuant to the California Environmental Quality Act. (Public Resources Code section 21000 et. seq.)
1.20 **Storm Water Permits**

(1) Contractor shall perform the Work of the Project related to being District’s Qualified SWPPP (Storm Water Pollution Prevention Plan) Practitioner (“QSP”).

(2) As District’s QSP, Contractor shall be responsible for storm water and non-storm water visual observations, sampling, and analysis per the District’s SWPPP.

(3) Contractor shall strictly follow the requirements to implement all the provisions of the SWPPP including, without limitation, preparation of monitoring and recording reports and providing those to District.

(4) Contractor’s indemnity obligations are applicable to any damages, penalties, fees, charges, or related expenses assessed or charged to the District by any water boards or agencies with jurisdiction related to compliance with the Storm Water Permits.

**END OF SECTION**
PART 1 - GENERAL

1.1 SUMMARY:

A. Section Includes: Testing laboratory services and inspections required during the course of construction and per the requirements of the Division of the State Architect.

B. Related Documents: The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 TESTS:

A. General: Refer to the General Conditions Article 13.05.

B. The District will select a qualified independent testing laboratory to perform tests and special inspections. Material required to be tested will be selected by the laboratory or the District's Project Inspector and not by the Contractor.

C. The Contractor shall notify the District's Project Inspector a minimum of 5 working days in advance of the manufacture of material to be supplied by him under the Contract Documents, which must by terms of the Contract be tested, in order that the District may arrange for the testing of such material at the source of supply.

D. Material shipped by the Contractor from the source of supply before having satisfactorily passed such testing and inspection or before the receipt of notice from said Inspector that such testing and inspection will not be required, shall not be incorporated in the Project.

E. The District will select and pay testing laboratory costs for all tests and inspections, but may be reimbursed by the Contractor for such costs under the Contract conditions. Any direct payments by the Contractor to the testing laboratory on this project is prohibited.

F. The Contractor, at its own expense, is responsible to make all repairs necessary related to destructive testing.

1.3 TESTING LABORATORY/TESTING AGENCY:

A. Testing and inspections will be performed by an independent testing laboratory selected and employed by the District and approved by the
Division of the State Architect (DSA). Qualification of a testing agency or laboratory will be under the jurisdiction of the DSA Structural Safety Section (SSS). Procedural and acceptance criteria are set forth in the 2013 California Building Code (CBC).

B. Testing and inspection services that are performed shall be in accordance with requirements of the 2013 CBC, and as specified herein. Testing and inspection services shall verify that work meets the requirements of the Contract Documents.

C. In general, tests and inspections for structural materials shall include, as a minimum, all items enumerated on the Structural Tests and Inspections list for this project as prepared and distributed by the Architect.

D. Test reports shall be signed by a Registered Civil Engineer licensed in the State of California.

1.4 PAYMENTS:

A. Costs of initial testing and inspection, except as specifically modified herein, or specified otherwise in technical sections, will be paid for by the District, providing such testing and inspection indicates compliance with Contract Documents. Initial tests and inspections are defined as the first tests and inspections as herein specified.

B. In the event a test or inspection indicates failure of a material or material placement to meet requirements of Contract Documents, the Contractor shall bear costs of correcting the rejected Work, including additional testing, inspections, and compensation for the Project Inspector’s or the Architect’s services and expenses made necessary thereby. All costs will be paid by the District and back charged to the Contractor.

C. Additional tests and inspections not herein specified but requested by District or Architect, will be paid for by District, unless results of such tests and inspections are found to be not in compliance with Contract Documents, in which case the District will pay all costs for initial testing as well as retesting and reinspection and back charge the Contractor.

D. Costs for additional tests or inspections required because of change in materials being provided or change of source or supply will be paid by District and back charged to the Contractor.

E. Costs for tests or inspections which are required to correct deficiencies will be paid by the District and back charged to the Contractor.

F. Cost of testing and cost of salaried District employee’s working day or night, which is required solely for the convenience of Contractor in his scheduling
and performance of work, will be paid by the District and back charged to the Contractor.

G. Overtime costs for testing and inspections performed and District employees required to work outside the regular work day hours, including weekends and holidays, will be paid for by the District and back charged to the Contractor. Such costs include overtime costs for the District's employees and Project Inspector and Testing Agency personnel.

H. Testing Laboratory will separate and identify on the invoices, the costs covering all testing and inspections that are to be back charged to the Contractor as specified above.

I. Testing Laboratory will furnish to District a cost estimate breakdown covering initial tests and inspections required by Contract Documents. Estimate will include number of tests, man-hours required for tests, field and plant inspections, travel time, and costs.

1.5 TEST AND INSPECTION REPORTS:

A. Testing Laboratory will certify in writing that all work specified or required to be tested and inspected conforms to drawings, specifications and applicable building codes.

B. Each and every test or inspection report shall bear the official File Number and Application Number assigned to this project by the DSA.

C. The Testing Laboratory will make the following distribution of test and inspection reports:

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>School District</td>
<td>1</td>
</tr>
<tr>
<td>Architect</td>
<td>2</td>
</tr>
<tr>
<td>District’s Representative</td>
<td>1</td>
</tr>
<tr>
<td>Structural Engineer</td>
<td>1</td>
</tr>
<tr>
<td>General Contractor</td>
<td>1</td>
</tr>
<tr>
<td>District Project Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Division of the State Architect</td>
<td>1</td>
</tr>
</tbody>
</table>

D. Test reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations as required shall also be reported. The reports shall show that the material or materials were sampled and tested in accordance with the requirements of the CBC, and with the approved specifications. They shall also state definitely whether or not the material or materials tested comply with requirements.
1.6 FINAL VERIFIED REPORTS:

A. Each testing agency shall submit to the DSA a verified report covering all tests that are required to be made by that agency during the progress of the project. Such report shall be furnished each time that work on the project is suspended, covering the tests up to that time, and at the completion of the project. In addition, each special inspector, approved by DSA for such inspection as structural steel/welding and masonry shall submit a Final Verified Report to DSA.

1.7 REPORTING TEST FAILURES:

A. Immediately upon determination of a test failure, the Laboratory will telephone the results of test to Architect. On the same day, Laboratory will send written test results to those named on above distribution list.

1.8 AVAILABILITY OF SAMPLES:

A. Contractor shall make materials required for testing available to Laboratory and assist in acquiring these materials as directed by the District's Project Inspector. The samples shall be taken under the immediate direction and supervision of the Testing Laboratory or Inspector.

B. If work that is required to be tested or inspected is covered up without prior notice or approval, such work may be uncovered at the discretion of Architect at no additional cost to the District. Refer to paragraph "Payments" herein.

C. Unless otherwise specified, Contractor shall notify Project Inspector a minimum of 10 working days in advance of all required tests, and a minimum of 2 working days in advance of all required inspections. All extra expenses resulting from a failure to notify the Laboratory will be paid by the District and back charged to the Contractor.

D. Contractor shall give sufficient advance notice to Project Inspector in the event of cancellation or time extension of a scheduled test or inspection. Charges due to insufficient advance notice of cancellations or time extension will be paid for by the District and back charged to the Contractor.

1.9 REMOVAL OF MATERIALS:

A. Unless otherwise directed, materials not conforming to the requirements of Contract Documents shall be promptly removed from the Project site.
1.10 INSPECTION BY THE DISTRICT:

A. The District's Inspector shall at all times have access for the purpose of inspection to all parts of the work and to the shops wherein the work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.

B. The District shall have the right to reject materials and workmanship that are defective, or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the District. If the Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the District may correct such rejected work and charge the expense to the Contractor.

C. Should it be considered necessary or advisable by the District at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out the completed work, the Contractor shall on request promptly furnish necessary facilities, labor and materials. If such work is found to be defective in any respect due to fault of the Contractor or his subcontractor, he shall defray all expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the additional cost of labor and material necessarily involved in the examination and replacement shall be allowed the Contractor.

1.11 DISTRICT'S PROJECT INSPECTOR:

A. A Project Inspector employed by the District in accordance with the requirements of the California Building Code will be assigned to the work. His duties are specifically defined in CCR Title 24 Part 1.

B. The Contractor shall notify the Project Inspector a minimum of 2 working days in advance of execution of all work that requires inspection.

C. The work of construction in all stages of progress shall be subject to the personal continuous observation of the Project Inspector. He shall have free and safe access to any or all parts of the work at any time. The Contractor shall furnish the Project Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION

3.1 TESTS AND INSPECTIONS:

A. All tests and inspections required in accordance with the DSA approved structural testing and inspection form (SS-103), or as required by the Division of the State Architect during the course of the work. All tests and inspections shall also conform to the edition of the California Building Code applicable to this contract.

3.2 EARTHWORK:

A. The Geotechnical Engineer of record or a Geotechnical Engineer selected by the District will provide continuous inspection of fill and will field test fill and earth backfill as placed and compacted, and inspect excavations and subgrade before concrete is placed and provide periodic inspection of open excavations, embankments, and other cuts or vertical surfaces of earth. The Geotechnical Engineer will submit a report indicating that he has observed and tested fills and that in his opinion the fills were placed in accordance with the project specifications.

B. Contractor shall remove unsatisfactory material, re-roll, adjust moisture, place new material, or in the case of excavations, provide proper protective measures, perform other operations necessary, as directed by the Geotechnical Engineer whose decisions and directions will be considered final.

C. Soils Test and Inspection Procedure:

1. Allow sufficient time for testing, and evaluation of results before material is needed. The Geotechnical Engineer shall be sole and final judge of suitability of all materials.

2. Laboratory compaction tests to be used will be in accordance with the latest ASTM standards.

3. Field density tests will be made in accordance with the latest ASTM standards.

4. Number of tests will be determined by Geotechnical Engineer. Materials in question may not be used pending test results.

5. Excavation and embankment inspection procedure. Geotechnical Engineer will visually or otherwise examine such areas for bearing values, cleanliness and suitability.
6. **Earthwork Test Reports:** In order to avoid misinterpretations by the reviewing agencies, all retest results shall be reported on the same sheet, immediately following the previous failure test to which it is related. Retests shall be clearly noted as such.

3.3 **PILE DRIVING INSPECTION:**

A. The District’s Geotechnical Engineer will provide continuous inspection of pile operations and shall maintain a record for each pile. Records shall include the following information for each pile:

1. Project name and location.
2. Contractors name.
3. Piling installers’ name.
4. Actual pile location and code identification number.
5. Pile dimensions and actual depths.
6. Pile deviations.
7. All unusual occurrences during pile installation.
8. Concrete tests.

3.4 **TESTING OF CONCRETE:**

A. **Concrete Mix Design:**

1. The District will pay for the sampling of aggregate and preparation of mix design one time for each strength and aggregate size specified. Testing cost for additional mix designs will be paid by the District and back charged to the Contractor. Continuous plant inspection and all tests of materials will be paid by the District, but the Contractor will be back charged for all tests performed on materials that do not meet specification requirements. Two copies of the mix designs shall be filed with the Architect for record purposes only, not for review or approval.

2. Test concrete aggregates for mix design only.

3. Deliver samples of approved aggregate to Project for comparison with material delivered, if job mixed concrete is used.

4. Test suitability of aggregates in accordance with latest ASTM standards if material is under suspicion and if so directed by Architect or DSA.

B. If compressive test of core specimens fail to show compressive strength specified, remove and replace concrete or adequately strengthen in a manner acceptable to Architect and DSA.
C. Make all tests, take samples, and prepare samples in accordance with the latest adopted standards by American Society for Testing and Materials, referred to as ASTM.

D. Concrete mixed at certified automatic concrete batch plants shall have quality control as follows:
   1. Laboratory designed mixes using adequate cement factors.
   2. Continuous batch plant inspection (unless waived).
   3. The batch plant shall provide legible compliance certificate for all batches for the days concrete supplied.
   4. Legible weighmaster’s certificates shall be provided the Project Inspector for all structural and nonstructural concrete in accordance with DSA.

E. Concrete mixed at non-certified plants shall have quality control as follows:
   1. Laboratory designed mixes using adequate cement factors.
   2. Continuous batch plant inspection.
   3. Measure all water, including wash water, so total on truck does not exceed 95 percent maximum allowed in mix design.
   4. Legible weighmaster's certificates shall be provided the Project Inspector for all structural and nonstructural concrete in accordance with DSA.
   5. The batch plant shall provide legible compliance certificate for all batches for the days concrete supplied.
   6. At end of job, furnish affidavit to DSA on form provided, certifying that all concrete furnished conforms to requirements of the CBC.

F. Waiver of Batch Plant Inspection: Continuous batch plant inspection may be waived if the concrete plant fully complies and meets the requirements of the CBC and has been certified to comply with the requirements of the National Ready Mixed Concrete Association. The plant must be equipped with an automatic batcher in which the total batching cycle, except for the measuring and introduction of an admixture, is completed by activating a single starter device.

G. District's Project Inspector will do the following:
   1. Inspect placing of reinforcing steel and concrete at Project.
2. Obtain weighmaster’s certificate and identify mix before accepting each load. Keep daily record of concrete placement, identifying each truck load, time of receipt, and location of concrete in structure. Keep record until completion of Project and make available for inspection by DSA field engineer.

   a. Obtain the batch’s compliance certificate for the day from the last batch.

3. During progress of work, take reasonable number of test cylinders as directed by Architect, but at least one set of cylinders for each 50 cubic yards or fractional part thereof for each class of concrete and at least one set from each day's placing or placement. Test cylinders need not be made for concrete used in walks.

4. One set of cylinders shall consist of 4 samples and 1 spare all taken from same batch, one to be tested at age of 7 days and two at 28 days.

5. Make and store cylinders according to the latest ASTM standards.

6. Store cylinders in a suitable protected environment for pick up by laboratory personnel.

7. Make slump test of wet concrete according to test for slump of portland cement concrete, latest ASTM standard, at least at the same frequency that the cylinders are taken. Measure ambient and concrete temperatures.

3.5 REINFORCING STEEL:

A. Tests:

1. Tests shall be performed from the steel at the Project site upon delivery. Steel not meeting specifications shall be returned to the supplier.

2. Testing procedure shall conform to the latest ASTM standards.

3. Sample at the Jobsite: Make one tensile test and one bending test from samples out of 10 tons, or fraction thereof, of each size and kind of reinforcing steel, where taken from bundles as delivered from the mill and properly identified as to heat numbers. Mill analysis shall accompany report. Where identification number cannot be ascertained, or where random samples are taken, make one series of tests from each 2-1/2 tons, or fraction thereof, of each size and kind of reinforcing steel. Tests on unidentified reinforcing steel will be paid by the District and backcharged to the Contractor. Samples shall
include not fewer than 2 pieces, each 18 inches long, of each size and kind of reinforcing steel. Inspection of welding of reinforcing steel shall be done by a specially qualified laboratory inspector and tested in accordance with the latest AWS standards.

B. District's Project Inspector will inspect all reinforcement for concrete work for size, dimensions, locations and proper placement. Special inspector shall be present during welding of all reinforcing steel.

1. The mill certification papers shall be delivered with each load of steel. If this procedure is not followed the steel will be rejected and shall be returned to the supplier.

3.6 MASONRY:

A. Inspection:

1. Masonry work shall be continuously inspected during laying and grouting by a Project Inspector specially approved for that purpose by the DSA. The Project Inspector shall make test specimens and perform such tests as are required.

2. The Project Inspector shall check masonry materials, details of construction and construction procedure. The Project Inspector shall furnish a verified report that of his own personal knowledge the work covered by the report has been performed and materials used and installed are in accordance with and in conformance to, the duly approved drawings and specifications.

B. Masonry Tests:

1. Concrete Masonry Units: Test each type of unit for strength in accordance with the CBC; for absorption in accordance with the latest ASTM standards; for drying shrinkage in accordance with the latest ASTM standards; and for staining materials in lightweight masonry concrete in accordance with the latest ASTM standards.

2. Mortar and Grout Tests: At the beginning of all masonry work, at least one test sample of the mortar and grout shall be taken on 3 successive working days and at least at one week intervals thereafter. The samples shall be continuously stored in moist air until tested. They shall meet the minimum strength requirement given in the CBC Title 24. Additional samples shall be taken whenever any change in materials or Project conditions occur or whenever in the judgment of the Architect or the DSA, such tests are necessary to determine the quality of the material. Test specimens for mortar and grout shall be made as set forth in accordance with the CBC. In making the mortar test specimens the mortar shall be taken from the unit soon after
spreading. After molding, the molds shall be carefully protected by a covering that shall be kept damp for at least 24 hours, after which the specimens shall be stored and tested as required for concrete cylinders. In making grout test specimens, an absorbent paper liner shall be used and the mold left in place until the specimen has hardened. The prisms shall be stored as required for concrete cylinders. They shall be tested in the vertical position.

3. Masonry Core Tests: In accordance with California Building Code. Shear testing apparatus shall be of a design approved by DSA. Visual examination of all cores shall be made to ascertain if the joints are filled. The District’s Project Inspector or testing agency shall inspect the coring of the masonry walls and shall prepare a report of coring operations for general distribution. Such reports shall include the total number of cores cut, the location, and the condition of all cores cut on the Project regardless of whether or not the core specimens failed during cutting operation. All cores shall be submitted to the laboratory for examination.

3.7 STRUCTURAL STEEL:

A. Mill certificates or affidavits and manufacturers' certification shall be supplied to the Testing Laboratory and Project Inspector for verification of steel materials. Testing Laboratory shall be notified at least 2 working days in advance of fabrication and supplied with the reports so the Special Inspector can make a shop inspection of the steel material identification.

B. Tests of Steel Materials: If structural steel cannot be identified by heat or melt numbers, or if its source is questionable, not less than one tension test and one bend test will be made for each 5 tons or fractional part thereof. Such testing shall be paid for by the District and backcharged to the Contractor. Structural steel identified by heat or melt numbers marked at the mill need not be tested, except testing is required of steel with Fy greater than 36 ksi.

C. General Inspection:

1. Testing Laboratory will visit the fabricator's plant to verify that materials used check with the mill tests, affidavits of test reports, and that fabrication and welding procedures meet specifications.

2. Testing Laboratory will visually check fabricated steel against the contract drawings and reviewed shop drawings for compliance, and will make physical tests and measurements as required to meet the specifications. Single pass fillet welds may be visually checked.

3. Inspection of Shop Fabrication: Continuous or periodic inspection of shop fabrication may be required for important work if so designated.
on the Structural Tests and Inspections list. This inspection shall be made by a qualified inspector approved by the DSA. He shall furnish the Architect and the DSA a report duly verified by him that the materials and workmanship conform to the approved plans and specifications.

4. Fabricators: In addition to welding inspection, fabrication inspection will be required for all work done on the premises of a steel fabricator who does not hold a currently valid certificate CCR Title 24 Part 2, Approved Fabricators. The cost of the fabrication inspection will be paid by the District and backcharged to the Contractor.

5. Inspection of welding shall be in accordance with the requirements of all applicable codes in accordance with the latest AWS standards, and FEMA Guidelines.

6. Erection Inspection: If so designated on the Structural Tests and Inspections list, Testing Laboratory will visually inspect bolted and field welded connections, perform such additional tests and inspections of field work as are required by the Architect and prepare test reports for the Architect's review. Field inspection will be continuous or periodic per project requirements.

7. Shop Fabrication Inspection Outside of Area: The added cost of shop fabrication inspection, and material testing outside the nine (9) San Francisco Bay Area Counties will be paid by the District and backcharged to the Contractor.

8. Special inspection for high strength bolting will be provided by the Testing Laboratory. Inspection shall be in accordance with AISC Specification for Structural Joints Using the latest ASTM standard.

9. Ultrasonic Testing: All complete joint penetration and partial penetration multi-pass groove welds shall be subject to ultrasonic testing in accordance with the latest AWS standards.
   a. Defective welds shall be repaired and retested with ultrasonic equipment.
   b. Initially, all multi-pass groove field welds shall be tested at the rate of 100 percent of each individual welder. If rejectable defects occur in less than 5 percent of the welds tested, the frequency of testing may be reduced to 25 percent. If the rate of rejectable defects increases to 5 percent or more, 100 percent testing shall be reestablished until the rate is reduced to less than 5 percent. The percentage of rejects shall be calculated for each welder independently.
c. When ultrasonic indications arising from the weld root can be interpreted as either a weld defect or the backing strip itself, the backing strip shall be removed at the expense of the Contractor, and if no root defect is visible, the weld shall be retested. If no defect is indicated on this retest, and no significant amount of the base and weld metal have been removed, no further repair or welding is necessary. If a defect is indicated, it shall be repaired at the Contractor's expense.

10. The ultrasonic instrumentation shall be calibrated by the technician to evaluate the quality of the welds in accordance with the latest AWS standards.

11. Should defects appear in welds tested, repairs shall be similarly inspected at the Contractor's expense and at the direction of the Architect until satisfactory performance is assured.

12. Other methods of inspection, for example, X-ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if felt necessary by the Architect.

D. Inspection and Tests for End Welded Studs:

1. Inspection of all the shop and field welding operations for the automatic end welded studs shall be made in accordance with the 2010 CBC Title 24 Part 2, by a qualified welding inspector approved by the DSA. The type and capacity of the welding equipment shall be in accordance with the manufacturer's recommendations and shall be checked and approved by the welding inspector.

2. At the beginning of each day's work, a minimum of 2 test stud welds shall be made with the equipment to be used on metal that is the same as the actual work piece. The test studs shall be subjected to a 90-degree bend test by striking them with a heavy hammer. After the above test, the weld section shall not exhibit any tearing out or cracking.

E. Corrections:

1. Correct deficiencies in structural steel work which inspections and test reports indicate to be not in compliance with the specified requirements.

2. Perform additional tests required to reconfirm noncompliance of the original work and to show compliance of corrected work. Costs for all additional tests will be paid for by the District and backcharged to the Contractor per Title 24, Part 1, Section4-335(b).
3.8 METAL DECKING:

A. Mill certificates or affidavits and manufacturers' certification shall be supplied to the Project Inspector for verification of steel materials. Testing Laboratory shall be notified at least 2 working days in advance of fabrication and supplied with the reports so that he can make a shop inspection of the metal deck.

B. Tests of Steel Materials:

1. Metal decking identified by heat or melt numbers and accompanied by mill analysis and test reports do not require additional testing.

2. If metal decking cannot be identified or its source is questionable, not less than one tension and elongation test and one bend test will be made for each 5 tons, or fractional part thereof, of each gage. Such testing shall be paid for by the District and backcharged to the Contractor.

C. General Inspection:

1. Testing Laboratory will visually check metal decking delivered to the Project against the working and reviewed shop drawings for compliance and he will make physical tests and measurements, as required to meet the specifications.

2. Inspection of welding shall be in accordance with the requirements of the latest AWS standards.

D. Metal Deck Welding:

1. Continuous inspection of all deck welding will be made. The Contractor shall supply samples and test pieces and provide facilities for inspection without extra charges.

2. Inspection of welding shall be made to insure that all welding such as seam welds and arc spot welds are made in accordance with these plans and project manual. Inspection shall insure that proper electrodes, current, travel speed and melt rates are used and that no cracks, serious undercutting, overlap, surface holes or slag inclusions occur.

3.9 PREFABRICATED PLYWOOD WEB JOISTS:

A. Testing specified herein will not be required for TJI joists manufactured by Trusjoist/MacMillan.
B. Inspector: Joist fabrication shall be continuously inspected by an inspector specifically approved for that purpose by the DSA. To be eligible for approval, the inspector shall be examined as to his knowledge and experience in glued construction.

C. Cost of inspection will be paid for by the District and backcharged to the Contractor.

D. Each member shall be stamped with an identifying mark. The inspector shall make a verified report identifying the members by mark and including pertinent data such as certification of flange material and species, type of glue, and other information, as may be required. The inspector's report shall show that the work performed and the materials used conform in all respects to the plans and specifications approved by the DSA; and that the foregoing is based on the inspector's own personal knowledge. The verified report shall be mailed to the Architect and DSA upon completion of fabrication.

E. Flange material shall be stamped by an independent agency certified and visually checked for knots, slope of grain and other unacceptable wood defects. Defects as noted shall be cause for rejection. Tests on the material are to be performed at the plant a minimum of 2 times per shift in order to verify species, and establish modulus of rupture. The sample shall be third point loaded in a flatwise simple span bend test over a 21 by T span where "T" is the thickness of the flange. Calculated M.O.R.'s shall show a minimum of 7,500 P.S.I.

F. Verify glue bond adequacy to a chisel test on each glue line of a specimen 3 inches long of the chord material being used with an 80 percent minimum wood failure. The results shall be included with the above-mentioned verified report.

G. Every tenth bundle of plywood for webs of the joists shall be especially checked for grade, squareness, and thickness per standards on file at DSA. A specimen at the top, near the middle and near the bottom of the bundle shall be checked. Plywood webs shall be checked for squareness and width after each change in saw setting and at least one every 4 hours by measuring 5 specimens across the width at 3 points and diagonals, and visually check on the long edge for curvature.

H. The inspector shall continuously check the assembly process to assure proper open time, glue spread, and glue tackiness for the butt joint as well as a visual check for quality of the plywood edge. He shall check the glue in the rout for placement of the bead and for glue squeeze out. He shall verify push up and alignment of the webs to assure a tight joint. The inspector shall check the finished product for full web flange joint penetration, joist depth, and straightness.
I. Three test specimens of the finished product shall be randomly selected throughout a shift and tested as follows. Specimens shall be 8 feet long and contain a butt joint one foot from one end. Record name of mill supplying the plywood. Specimens shall be cured with the production run and tested approximately one hour after removal from the oven. Test by applying a concentrated load corresponding to one and one-half times rated joist capacity for each joist depth at mid-span through a six-inch long plate. If the specimen fails at a center span loading, two more specimens shall be tested. If either of them fail to meet these minima, the entire production run shall be set aside.

3.10 GLUE LAMINATED WOOD:

A. Glue laminated construction shall be continuously inspected by an Inspector approved by the DSA.

B. The Inspector shall check the materials, details of construction and construction procedures, and shall furnish a verified report that to his own personal knowledge, the construction covered by the report has been performed and materials used and installed are in every way in accordance with and in conformance to, the duly approved drawings and specifications. Particular attention shall be provided to assure that compliance is provided for the compression zone notching detail shown on the Drawings.

3.11 ASPHALTIC CONCRETE PAVING:

A. Asphaltic concrete mix design proposed by the Contractor shall be submitted to the District for review. Proposed mix shall be tested for conformance with the specifications, including grading, asphalt content and stability.

B. One sample of the mix shall be taken during each day's paving operation and tested for asphalt content and gradation.

C. Continuous inspection of the paving operation shall be provided. Testing Laboratory shall check for proper thickness, proper mix temperatures, proper rolling procedures and general workmanship.

3.12 WATERPROOFING:

A. The District's Inspector will check wall surfaces and approve before application of membrane materials and verify that substrate surfaces are in satisfactory condition to receive membrane materials and furnish continuous inspection during application of membrane.
B. Check minimum specified thickness of membrane waterproofing. For fluid-applied membrane check thickness every 100 square feet during application with a mil-thickness gage especially manufactured for the purpose.

END OF SECTION
Project Plans and Work Specifications

Zaida Rodriguez Technology Infrastructure Project
Voice and Data Communications Systems
## ZAIDA RODRIGUEZ TECHNOLOGY INFRASTRUCTURE PROJECT

### VOICE AND DATA COMMUNICATION SYSTEMS

#### Table of Contents

1. General ........................................................................................................................................... 3
   1.1 GENERAL SUMMARY ............................................................................................................... 3
   1.2 GENERAL REQUIREMENTS ....................................................................................................... 3
   1.3 INCORPORATED DOCUMENTS .................................................................................................. 4
   1.4 CONTRACTOR QUALIFICATIONS .................................................................................................. 5
   1.5 DEFINITION - STRUCTURED CABLELING SYSTEM .............................................................. 6
   1.6 STRUCTURED CABLELING SYSTEM AND EQUIPMENT WARRANTY .................................. 7
   1.7 SPECIAL REQUIREMENTS FOR CABLE ROUTING AND INSTALLATION .......................... 9
   1.8 WORK EXTERNAL TO THE BUILDING ..................................................................................... 10
   1.9 SUBMITTALS .............................................................................................................................. 10
   1.10 PRODUCT DELIVERY, STORAGE AND HANDLING ............................................................... 11
   1.11 CONTRACT DAMAGES ............................................................................................................ 11
   1.12 PENETRATIONS OF WALLS FLOORS AND CEILINGS ..................................................... 11
   1.13 ON SITE MOVE DAY SUPPORT ............................................................................................ 12
   1.14 PROJECT DIRECTION ............................................................................................................. 12

2. Materials and Design Requirements ............................................................................................ 13
   2.1 SYSTEM COMPONENTS ............................................................................................................ 13
   2.2 DESIGN CRITERIA - Quantities and Locations ....................................................................... 14
   2.3 OTHER DESIGN CRITERIA ........................................................................................................ 17
   2.4 OPERATION REQUIREMENTS ................................................................................................ 18
   2.5 MATERIALS .............................................................................................................................. 18

3. Installation ....................................................................................................................................... 26
   3.1 CABLE AND WIRE INSTALLATION ......................................................................................... 26
   3.2 GROUNDING SYSTEM AND CONDUCTORS ......................................................................... 31
   3.3 FIRE AND SMOKE PARTITION PENETRATIONS ...................................................................... 32
   3.4 CABLE RUNWAY .................................................................................................................... 32
3.5 PLYWOOD BACKBOARDS ........................................................................................................... 33
4 Testing, Documentation and Inspection .......................................................................................... 33
  4.1 COPPER CABLE TESTING AND DOCUMENTATION ............................................................... 33
  4.2 ACCEPTANCE AND INSPECTION ............................................................................................. 35
5 Exhibit A – Zaida Rodriquez Design Drawings ............................................................................. 37
6 Exhibit B – Zaida Rodriquez – TOTAL BOM .............................................................................. 49
1 GENERAL

1.1 GENERAL SUMMARY

A. New voice and data cabling system shall be provided in 2950 Mission Street and 421 Bartlett Street buildings.

B. Reference drawing ZR-1 and ZR-2 for location, quantity of data, wireless and voice drops.

C. Install equipment racks and associated equipment in each telecommunications room or location as referenced in drawing ZR-3, ZR-4 & ZR-5 for the 2950 Mission Street facility and ZR-7, ZR-8 & ZR-9 for the 421 Bartlett Street facility.

D. Reference Exhibit B for all material quantities.

1.2 GENERAL REQUIREMENTS

A. All materials, labor, equipment, services, and incidentals necessary to install a complete and functional video, voice, and data communication system shall be provided by the contractor as part of this work, including all necessary active and passive components, to allow full operation of the wiring infrastructure system upon completion.

B. All passive (non-active) components to be provided by the contractor may include fiber patch panel, copper patch panel, voice patch panel, cable management, connectors, horizontal cabling (both copper and fiber), Power Distribution Units (PDUs) and Uninterrupted Power Supply (UPS) and other equipment as required by the District.

C. The installation shall include all cable (optical fiber and twisted-pair copper), inner-duct, conduit, interconnect / patching equipment (fiber and copper), connectors / adapters (fiber and copper), splices, patch cords and jumpers (optical fiber and twisted-pair copper), wiring blocks, data and voice outlets, racks, ladders, grounding systems, wireless communications system antenna connections and all other components to complete a functional system.

D. Upon completion of the installation, the contractor shall test all fiber and copper and record the test results and provide pathway maps for the District’s review and approval.

E. Contractor shall be in compliance with all district standards, industry standards, laws, codes, ordinances, safety inspections and technology inspections.
F. Contractor shall perform, at its own cost and expense and without reimbursement from the District, any work necessary to correct errors or omissions that are identified by the District and communicated in writing.

G. Contractor shall examine the site and certifies that it accepts all measurements, specifications and conditions affecting the work to be performed at the site. No claim for allowances of time or money will be allowed as to any undiscovered condition on the site.

H. All projects are turnkey and the responsibility of the contractor until Acceptance of Work Product (AWP) is signed by the District.

I. Debris shall be removed by contractor from the site. The site shall be in order at all times when work is not actually being performed and shall be maintained in a reasonably clean condition at all times.

J. Unless a longer warranty is called for elsewhere in the contract or this document, contractor, manufacturer, or their assigned agents shall guarantee the workmanship, product or services performed against defective workmanship, defects or failures or materials for a minimum period of one (1) year from District’s written Acceptance of Work Product (AWP).

K. It shall be the responsibility of the contractor to account for all additional power loads and make the necessary power system upgrades as part of the scope of work. All networked, power related devices shall be connected and configured to the network.

L. All equipment shall be completely installed and configured. Completeness of installation shall be determined by the technology inspector assigned by the District.

M. All design documents shall be delivered to the District in an editable format. The latest version of Microsoft Visio or AutoCAD is the preferred format.

N. All applications of this document shall be in the jurisdiction, discretion and judgment of the technology inspector assigned by the District.

1.3 INCORPORATED DOCUMENTS

A. Published specifications, standard tests or recommended methods of trade, industry or government organizations shall apply to work of this section where cited by abbreviations noted below, unless modified herein.

1. California Building Standards Code (California Code of Regulations, Title 24)
4. Underwriters’ Laboratories, Inc. (UL), UL 1459, UL 1863.
5. TIA/EIA-569-C “Commercial Building Standard for Telecommunications Pathways and Spaces.”
6. TIA/EIA-568-B. “Commercial Building Telecommunications Standard”.
8. TIA/EIA-455-61 “FOTP-61, Measurement of Fiber or Cable Attenuation using an OTDR”.
9. IEEE 802.3 “Carrier Sense Multiple Access With Collision Detection”
10. TIA / EIA-568-B.2-1 for 250 MHz frequency range transmission over Category 6 cabling system.
12. TIA/EIA-568-C.3 Optical Fiber Cabling Components Standard
14. TIA / EIA – 606-B “Labeling and marking standards for cables and pathways.”
15. Underwriter Laboratories, Inc. (UL), UL 969 Standard for Marking and Labeling Systems

1.4 CONTRACTOR QUALIFICATIONS

A. Manufacturer

1. The products shall be supplied by a single manufacturer, with the exception of equipment data racks and other hardware that is not defined as part of the channel test configuration by ANSI/TIA/EIA 568-B. Manufacturer shall have a minimum of seven (7) years’ experience and shall be ISO 9001 Certified.
B. Installing contractor for data and fiber must possess a valid and current California C-7 License and must prove to the satisfaction of the District that it has significant experience in the installation of copper and optical fiber cable systems. Experience must include the installation of copper and optical fiber cable, copper and fiber termination, knowledge of interconnect equipment, and a thorough knowledge of testing procedures. The installing contractor must have successfully performed at least three projects of similar scope, within the two years of prior to the date of the bid. Proof of performance shall be provided by the Contractor in the form of reference sheets, which shall include a brief description of the project, the beginning and ending contract price, the project foreman or superintendent’s name, and the name, address, and telephone number, and email address of a project contact. Documentation must be included with the bid documents submitted.

1. If contractor is only performing electrical and/or uninterruptible power supply (UPS) scope of the project, the contractor MUST possess a valid and current C-10 license and must have successfully performed at least three projects of similar scope, within two years prior to the date of this bid.

C. A signed and dated twenty (20) or more year warranty certification for cable system performance on manufacturer letterhead must be provided as a deliverable to close any cabling project. Refer to section 1.8 for Structured Cable System Warranty details.

1.5 DEFINITION - STRUCTURED CABLELING SYSTEM

A. Structured Cabling Systems (SCS) wiring is defined as all required equipment and cabling including hardware, termination blocks, cross connect wire or cordage, patch panels, patch cords, telecommunication outlets, work area cords, UTP and Zaida Rodriguez light guide cable installed and configured to provide computer data and voice connectivity from each data or voice device to the network file server or voice network/switch designated as the service point of the local area network.

B. The scope of the Zaida Rodriguez Project does not require the installation or termination of any fiber cabling.
1.6 STRUCTURED CABLING SYSTEM AND EQUIPMENT WARRANTY

A. The entire cabling system (jacks, cabling, and interconnect equipment) shall meet the performance requirements of the ANSI/TIA/EIA-568-B standard. The warranty on the material, services, and operation of the entire cabling system must be for a period of at least twenty (20) years. The warranty must be signed and certified by the manufacturer on their letterhead.

B. The warranty must include the following statements regarding the cabling system: “Will be free from defects in material or faulty workmanship for the entire warranty period”.

C. Extended Product Warranty

1. The Extended Product Warranty covers product defects for all passive manufactured structured cabling components. Passive components are defined as those exhibiting no gain or contributing no energy. The manufacturer warrants, from the date a Registration Certificate is issued by structured cabling manufacturer to the end-user, the following:

   a. that the passive products that comprise the registered structured cabling solution will be free from manufacturing defects in material or workmanship under normal and proper use;

   b. that all approved passive cabling products that comprise the registered structured cabling solution exceed the specification of ANSI/TIA/EIA-568B standards and will conform to the performance specifications of the associated manufacturer product data sheets in effect at the time the Registration Certificate is issued;

   c. that the installation will exceed the insertion and return loss, attenuation and near end crosstalk (NEXT) requirements of TIA 568-B and the ISO/IEC 11801 standards for cabling links/channel configurations specified in these standards.

2. This extended Product Warranty is applicable to the installed structured cabling solution only on the original site of installation. Under the Extended Product Warranty, the manufacturer will either repair or replace the defective product itself at the manufacturers cost. In addition, the manufacturer will pay an Authorized Reseller for the
cost of labor to repair or replace any such defective product on behalf of the installed cabling manufacturer.

D. Application Assurance

1. Application Assurance covers failure of the installed structured cabling to operate the applications which the system was designed to support, as well as additional application(s) defined below. The manufacturer shall warrant that the registered structured cabling solution will be free from failures which prevent operation of the specific applications for which the original structured cabling solution was designed.

2. The Application Assurance Program also covers the following additional applications:
   a. those identified in the current (at the time of installation) structured cabling performance specifications; and
   b. in accordance with application standards specifications, any applications introduced in the future by recognized standards or user forums that use TIA/EIA 568-B components and link/channel specifications for cabling.

E. Term of Warranty

1. For twenty years from the date of issuance of the Registration Certificate or installation, whichever is earlier.

F. Persons / Entity Covered

1. This Limited Warranty shall be for the benefit of the person or entity to whom the Cabling Registration Certificate is issued and any successor (Transferable) in interest to the site in which such System was originally installed by an approved or an Authorized Manufacturer Reseller.

2. If the manufacturer repairs the product, it may use new or reconditioned replacement parts. If the manufacturer chooses to replace the product, the manufacturer may replace it with a new or reconditioned one of the same or similar design. Any such repair or replacement will be warranted for either (a) 90 days or (b) the remainder of the original 20-year warranty period, whichever is longer.
1.7 SPECIAL REQUIREMENTS FOR CABLE ROUTING AND INSTALLATION

A. Cabling

1. All communications cabling used throughout this project shall comply with the requirements as outlined in the National Electric Code (NEC®) Articles 725, 760, 770, and 800 and the appropriate local codes. All copper cabling shall bear CMP (Plenum Rated), CM/CMR (Riser Rated) and/or appropriate markings for the environment in which they are installed.

B. Cable Pathway

1. In suspended ceiling and raised floor areas where duct, cable trays or conduit are not available, the Contractor shall bundle, in bundles of 50 or less, station wiring with cable ties snug, but not deforming the cable geometry. Cable bundles shall be supported via "J" hooks attached to the new building structure and framework at a maximum of five (5) foot intervals. Plenum rated cable ties will be used in all appropriate areas. The contractor shall adhere to the manufacturers’ requirements for bending radius and pulling tension of all data and voice cables.

2. Cables shall not be attached to lift out ceiling grid supports or laid directly on the ceiling grid.

3. Cables shall not be attached to or supported by fire sprinkler heads or delivery systems or any environmental sensor located in the ceiling air space.

C. Fire Stopping

1. Sealing of openings between floors, through rated fire and smoke walls, existing or created by the contractor for cable pass through shall be the responsibility of the contractor. Sealing material and application of this material shall be accomplished in such a manner which is acceptable to the local fire and building authorities having jurisdiction over this work. Creation of such openings as are necessary for cable passage between locations as shown on the drawings shall be the responsibility of the contractor’s work. Any openings created by or for the contractor and left unused shall also be sealed as part of this work.
SFUSD Project Number: 11982

D. Contractor Responsibility

1. The contractor shall be responsible for damage to any surfaces or work disrupted as a result of his work. Repair of surfaces, including painting, shall be included as necessary.

1.8 WORK EXTERNAL TO THE BUILDING

1. Any work external to the confines of this building as shown on the drawings shall be governed by the provisions of this specification and the applicable drawings.

1.9 SUBMITTALS

A. Submittals shall include all items called for in this section and manufacturers cut sheets for the following:

1. All wire and cable: to include patch cords, cross-connect wire and cross connect cordage.

2. All connectors and required tooling.

3. All termination system components for each cable type.

4. All ER and TR equipment frame types, hardware and LAN equipment.

5. All grounding and surge suppression system components.

6. All data equipment being contractor furnished shown on the plan.

7. All test equipment to be used for fiber and copper channels.

B. Contractor’s proposal should include a proposal determining the best pathways between the MDF and the classrooms, offices and hallways.

C. Contractor to complete and provide Exhibit B, Total Bill of Materials prior to construction start date.

D. Contractor to provide complete schedule of values prior to construction start date.

E. Contractor to provide proposal for conduit pathways from MDF to termination points classrooms, offices and corridors.

F. Ensure conformance with all Contract provisions or to allow time for District IT department to review and approve the submittals.
1.10 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver vibration isolators and seismic restraints in factory-fabricated water-resistant wrapping.

B. Handle all material carefully to avoid damage to components, enclosures and finishes.

C. Store all material in clean, dry space and protect from the weather.

D. Upon project completion, all unused equipment and supplies will be returned to District.

1.11 CONTRACT DAMAGES

A. The Contractor will be held responsible for any and all damages to portions of the building caused by it, its employees or subcontractors; including but not limited to:

1. Damage to any portion of the building caused by the movement of tools, materials or equipment.

2. Damage to any component of the construction of spaces "turned over" to the Contractor.

3. Damage to the electrical distribution system and/or other space "turned over" to the Contractor.

4. Damage to the electrical, mechanical and/or life safety or other systems caused by inappropriate operation or connections made by the Contractor or other actions of Contractor.

5. Other damage to the materials, tools and/or equipment of SFUSD, its consultants, General Contractor, subcontractors, Architect, other contractors, agents and leasees.

1.12 PENETRATIONS OF WALLS FLOORS AND CEILINGS

A. Prior consent

1. The Contractor shall make no penetration of floors, walls or ceiling without the prior consent of the Architect and General Contractor.

B. Sealing penetrations

1. Where penetrations through acoustical walls or other walls for cableways have been provided for the Contractor, such penetrations shall be sealed by the Contractor in
compliance with applicable code requirements and as directed by SFUSD's Architect or General Contractor.

2. Where penetrations through fire-rated walls for cableways have been provided for the Contractor, such penetrations shall be sealed by the Contractor as required by code and as directed by SFUSD's Architect or General Contractor.

3. Contractor shall, prior to the commencement of on-site activities, submit to SFUSD for review by its Architect, details of any special systems to be used.

1.13 ON SITE MOVE DAY SUPPORT

A. Technical Support

1. Contractor will provide technical support on a per/hour basis at such levels and at such times as SFUSD deems necessary during the physical move to the site.

B. The personnel providing technical support will intimate knowledge of the System.

1. Material

   a. Be skilled at all equipment and materials used under the Contract.

2. Troubleshooting

   a. Be competent to troubleshoot and fix problems associated with Contractor provided materials.

1.14 PROJECT DIRECTION

1. Single Point of Contact

3. Contractor will provide a single point of contact, i.e., Project Manager, to speak for the Contractor and to provide the following functions:

   a. Initiate and coordinate tasks with SFUSD, its General Contractor, Architect, and others as specified by SFUSD.

   b. Provide day-to-day direction and on-site supervision of Contractor personnel:
2 MATERIALS AND DESIGN REQUIREMENTS

2.1 SYSTEM COMPONENTS

A. The voice and data communications system shall consist of three components:

1. A copper twisted-pair backbone
   a. Fifty (50) pair or twenty-five (25) pair from telephone MPOE location to each rack, Category 5E or greater

2. A copper twisted pair copper endpoint termination cable
   a. Category 6A Enhanced-cable from IDF/MDF to each station, endpoint, termination is capable of 600 MHz and 100 watts at 100 meters, utilizing small outside diameter cable.

B. All copper cables for network data or voice use shall be terminated into network rack patch panels. Copper patch panels shall be loadable, accepting keystone connectors.

C. **Copper MPOE – MDF/IDF:** Provide a minimum of 2x 25-pair or a single 50 pair Category 5E or greater cables from the MPOE to the MDF/IDF for voice only. Terminate cables into network racks. Confirm the quantity of pairs with the SFUSD Department of Technology for each school. All cables shall terminate on a Leviton Patch Panel, 48- port, 2RU, 8P4C Jacks, 110 style termination. Leviton part number: 49013-48P or Leviton Patch Panel, 48- port, 2RU, 8P4C Jacks, 110 style termination. Leviton part number: 49013-24P

D. **Copper IDF or MDF to end point termination:** From each IDF or MDF, one or more twisted-pair copper cables shall be routed to each data and voice outlet location in quantities as outlined herein:

1. The wiring system for all wireless access connectivity shall be provided and installed per TIA / EIA-568-B star wiring topology and shall be Category 6A rated capable of 600 MHz at 100W at 100 meters. Belden part number 10GXS33, Category 6A Enhanced (625MHz), 4 Bonded-Pairs, U/UTP, CMP

2. Unshielded twisted pair (UTP) cable, shall not exceed 295 feet in length between patch panel in network rack and equipment outlet.
E. **Terminations:**

1. All data and voice network connections shall be terminated on Belden 10GX REVConnect-Modular Jacks.

F. MDF and IDF’s will house active data distribution equipment, which may include but is not limited to local area network switches, optical fiber transceivers, wireless communication systems base stations, routers, and servers. The Contractor shall coordinate with the District’s Department of Technology network integrator to ensure that data rack and cabinet layouts fully accommodate all equipment required for each project.

### 2.2 DESIGN CRITERIA - Quantities and Locations

A. The following provides guidance in the placement of data communications jacks in a typical school modernization or new building project. A/E’s must meet with District Department of Technology during the design stage of work to establish exact locations and quantities. For floor plans showing all spaces and associated data/phone connections, please consult with District Department of Technology for exact location.

B. **Copper cable for endpoint termination:** This section is for general guidance as described below, and there will be exceptions based on the number of walls in a room, or unique space configurations, size of the space, or use of the space. For example, some Janitor closets or broom closets may need data and voice as they are sometimes converted to small instructional spaces. Also, voice and data is often needed in gyms, auditoriums, (or multi-purpose room combinations of cafeteria/auditoriums). Consult District Department of Technology.

C. **Classrooms:**

1. Teacher desk: Two (2) cables per teacher, located within fifteen (15) feet of the center of the desk such that a patch cable does not exceed fifteen (15) feet and does not present a trip hazard when installed:

   a. Horizontal cable color: Blue
   b. Jack color: Blue

2. Wall phone: One (1) data cable, located adjacent to the main entrance of the room
a. Horizontal cable color: Blue
a. Jack color: White

3. Refer to section 1.5.Q for location of access point cables.

4. 421 Bartlett Street Facility
a. Please refer to drawing ZR-1 for all teacher locations and quantities

5. 2950 Mission Street Facility
a. Please refer to drawing ZR-2 for all teacher locations and quantities

D. **Office(s) workstation:** Three (3) cables per staff member, located within fifteen (15) feet of the center of the desk such that a patch cable does not exceed fifteen (15) feet and does not present a trip hazard when installed.

1. Horizontal cable color: Blue

2. Jack color: Blue

3. 421 Bartlett Street Facility
a. Please refer to drawing ZR-1 for all office locations and quantities

4. 2950 Mission Street Facility
a. Please refer to drawing ZR-2 for all office locations and quantities

E. **Wireless Access Point cable:**

1. Classroom(s): A connection for wireless access points as close to the center of each classroom shall be installed

2. Other indoor space(s): A minimum of two (2) connections for wireless access points shall be installed in all offices, multi-purpose rooms, cafeterias, lunch rooms, speedlines, large classrooms, large spaces, library, etc.

3. Outdoor spaces: A connection for wireless access points shall be installed at all locations where space has been provided for sitting including but not limited to benches, bleachers, stadiums, fields, etc. All outdoor wireless applications shall be rated to withstand at least IP67 enclosure standards. Installed at locations high enough to
minimize damage from kids, balls, theft, etc. Installation must include cage over equipment to protect from physical damage.

a. District Department of Technology to be consulted for outdoor Point of Sale applications.

4. **NOTE: THIS PROJECT DOES NOT REQUIRE ANY OUTDOOR WIRELESS ACCESS POINTS.**

5. Wireless access points will be installed with twelve (12) inch clearance from all other electric powered devices.

6. Spacing between any access point(s), in all locations described above, shall not exceed one hundred (100) feet without design consideration for adding additional access points. If there is another access point within fifty (50) feet, the District Department of Technology should be consulted.

5. A service loop of ten (10) feet within six (6) feet of access point shall be installed for all access point locations or within pathway as an alternative if needed.

6. Two jacks shall be installed for each wireless access point. Color designations:

   a. Horizontal cable color: Blue

   b. Jack color: Orange

   c. Patch cables to each wireless access point shall not exceed twelve (12) inches. Patch cables shall be hidden from plain view at all times.

7. **421 Bartlett Street Facility Requirements**

   a. Please refer to drawing ZR-1 for all wireless access point locations and quantities.

8. **2950 Mission Street Facility Requirements**

   a. Please refer to drawing ZR-2 for all wireless access point locations and quantities.
2.3 OTHER DESIGN CRITERIA

A. Department of Technology requires that Classrooms and Corridors Ceilings use a Suspended Ceiling System to allow above ceiling access for future technology upgrades. If partial renovation, this requirement should be reviewed at design milestones.

B. Consult with the mechanical engineer for each project and insure that adequate ventilation is provided for all equipment closets to insure a maximum ambient temperature of 70 degrees F in both the MDF and all IDF’s as per ASHRAE TC 9.9.

1. NOTE: THIS PROJECT DOES NOT REQUIRE ANY HVAC SYSTEM.

C. Refer to equipment rack specifications below and provide with power distribution units as noted (for connection of all active equipment). Rack mounted UPS at bottom of rack and horizontal PDU(s) sufficient to provide power to all rack installed equipment.

D. Provide sufficient rack mounted UPS equipment with internal surge protection (APC) to provide a minimum of 1 hour of run time at each equipment room to support all District provided network equipment. Coordinate KVA size for each location based on program requirements (to be coordinated with the District for each project and location). Typical installation will include a 2500VA rated UPS with a 30A, 120V twist lock receptacle power input requirement. Rack mounted PDU(s) to must be connected to the output of the UPS system.

6. Each location will utilize APC UPS model Smart-UPS SRT 3000 RM, part number SRT3000RMLA-NC, with sufficient battery backup as defined in drawings ZR-6 and ZR-10.

E. Provide sufficient labeling to allow the District to identify and utilize the wiring infrastructure after construction is completed. Refer to labeling section below and provide at all faceplates, behind faceplates (on cable). All passive and active network components such as Ethernet switches, routers, access points, racks, patch panels / terminal blocks, and wiring closets as per TIA/EIA-606-B. All labeling should be confirmed with the District Department of Technology.
F. The contractor shall provide and install all patch cables (fiber and copper). All copper patch cables will be Belden 10GX, Cat 6A Enhanced, and solid core and bonded 24 AWG, 2 feet (0.6 meter) length, Belden part number: CAD1106002 and 1 foot (0.3 meter) in length, Belden part number: CAD1106001.

G. Design the physical size and layout of the MDF and IDF’s at each project in compliance with the SFUSD Information Technology Utility Guidelines documentation and standard accepted design practice. Rooms to include all required infrastructure, including power, lighting, ventilation/cooling, equipment racks/cabinets, cable tray, fire-rated plywood backboards, raceway stub-outs, grounding bus, and all related construction.

2.4 OPERATION REQUIREMENTS

A. The function of the data communications cable system is to transmit data signals from a central location to multiple individual data outlet locations. Upon completion of the work outlined in this specification, the entire cable system, including cable, and communications outlets shall be tested to (and meet) Category 6A compliance for data and voice connections.

2.5 MATERIALS

A. Copper Cable:

1. Category 6A for all Data and Voice Access

   a. Horizontal distribution cable (for both data and voice) where not installed in conduit in plenum spaces, or installed in conduit shall be plenum-CMP rated consisting of 23 AWG, four unshielded bonded twisted pairs. Cable will meet the following specifications:

      (1). Belden 10GXS33 Small Diameter Cable, 10 Gigabit Ethernet, Category 6A, Bonded-Pair Cable.

      (2). Belden part number: 10GXS33 D151000

      (3). Capable of at least 600 MHz and 100 Watts over 328 feet
b. Data Equipment Interconnect Patch Cords: shall be Belden 10GX Pre-Terminated, Category 6A, 24 AWG solid copper conductors. Manufacturer terminated on each end with 8-position modular plug to be pinned as per EIA / TIA 568 B. Connector plug shall be polarized to prevent polarity reversal or split pairs, and shall be factory-marked to indicate top of connector. Inter-connect cord shall be UL listed.

(1). **NOTE: THIS PROJECT DOES NOT REQUIRE ANY PATCH CORDS other than what is mentioned in subsection 2 of this section.**

(2). The Contractor shall provide all patch cords as part of the bid price, equal to 100% of rack ports installed and 100% of workstation ports installed on the project.

(3). The Contractor shall complete data interconnects between patch panels and District-provided active network electronics as part of the bid price.

(4). Minimum performance specifications:

(5). The data equipment interconnect cable must meet the impedance, attenuation and NEXT requirements for Category 6A Horizontal Cable of EIA / TIA 568 B.

(6). Minimum length shall be 1 feet (MDF/IDF Patch cords) and the maximum length shall be 15 feet (end station equipment connection cable). Exact lengths to be approved by SFUSD Department of Technology prior to ordering.

(7). Patch cords will be Blue, Belden Part number: CAD1106xxx (xxx = length in feet) at both the patch location in the MDF/IDF and the end station equipment connection.

2. The only patch cord that will be different will be the UPS patch cords and PDU patch cords, which will Belden part number: CAT1102010, 10GX Traceable Patch Cord, Bonded-Pair, 4-Pair, 24 AWG Solid, 10 ft, Red

B. Wireless, Data and Voice Outlets

1. All wireless, voice and data jacks will be in accordance with the following color code:

   a. All jacks will be Belden 10GX REVConnect style jacks or similar.

   b. Refer to Exhibit B for all applicable colors and quantities
c. Blue – General data only, Belden part number: RVAMJKUTB-S1 (Cat 6A)
d. Orange – Wireless Access Points, Belden part number: RVAMJKUTO-S1 (Cat 6A)
e. White – Legacy Telephone, Belden part number: RVAMJKUEW-S1 (Cat 6A)
d. Green – Lighting, Belden part number: RVAMJKUTG-S1 (Cat 6A)
e. Gray – Security Camera, Belden part number: RVAMJKUGY-S1 (Cat 6A)
f. Purple – Electronic Signage, Belden part number: RVAMJKUTP-S1 (Cat 6A)
g. Black – Power management, Belden part number RVAMJKUBK-S1 (Cat 6A)

2. The color of all jacks will be identical at both the MDF/IDF Patch Panel and the end equipment location.

3. The color of all faceplates and blank inserts or visible mounting plates shall match the adjacent power or signal outlet covers on the project.

4. The devices at outlets and the devices in the patch panels shall be of the same manufacturer and same type. Any unused jack shall be plugged using a manufacturer made blank for the application.

5. All Data and Voice

a. Cable termination hardware shall be individual; Category 6A Channel rated Belden 10GX Modular REVConnect jacks for both data and voice. The listed product shall have the following characteristics:

(1). One eight-position, eight-conductor jack (non-keyed), TIA/EIA-568-B Compliant, wired to T568B, Belden 10GX Category 6A REVConnect Style.

(2). The cover of the information outlet shall be labeled above the jack. The number on the outlet jacks shall coincide with the identification requirements listed herein.

6. All terminations and jacks shall be labeled in accordance with TIA/EIA 606-B and UL 969 standards. All labeling should be confirmed with the District Department of Technology.

C. Termination Hardware at MDF / IDF’s (Voice Trunks)
1. All trunk cables installed for voice application shall be terminated on patch panels with
1 or 2 pairs per port. Verify with SFUSD Department of Technology prior to installation.
   a. Provide a minimum of 25-pair pair Category 5E or greater cables from the MPOE to
      the MDF/IDF for voice only. Terminate cables into network racks. Belden part
      number IBDN25R 0081000 (25-pair cable)
   b. Leviton Cat 5e 110-Style Wiring Block, Wall-Mount, with Legs. Leviton part number
      41AW1-50.
   c. Leviton 48-port, 2RU, 8P4C RJ45 Jacks, 110 style termination patch panel with 25
      pair color code on rear. Leviton part number 49013-48P.
   d. Leviton 24-port, 2RU, 8P4C RJ45 Jacks, 110 style termination patch panel with 25
      pair color code on rear. Leviton part number 49013-24P.
   e. Refer to Exhibit B for all applicable quantities.
2. Labeling at wire troughs and for all cable, jacks, and other elements of the voice/data
   cabling system shall follow TIA/EIA-606-B and UL 969 Standards. All labeling should be
   confirmed with the District Department of Technology. Provide color-coded labels for
   all wiring blocks as follows:
   a. Interface to Site Cabling – Brown
   b. Interface to Equipment Cabling -Purple
   c. Interface to Horizontal Cabling -Blue
   d. Interface to Telephone Company -Green

D. Termination Hardware at MDF / IDF’s (Voice and Data Station Cabling)
   1. All station cables installed for voice and data application shall be terminated on rack-
      mounted modular patch panels and the entire installation shall be in compliance with
      TIA/EIA-568-B Category 6A and Category 6 requirements.
   2. Data patch panels shall be Belden KeyConnect Modular Patch Panel. Port panels shall
      be certified by the manufacturer as suitable for 10 Gbps data transmission.
3. Wire management hardware shall be Leviton Versi-Duct 49265 Series, or equal, installed at both the top and the bottom and between each patch panel and along the sides of the rack for patch cable routing and management. The maximum initial fill capacity will be 50% for all cable managers.

4. Wire managers shall be of sufficient width and depth to permit orderly routing of all patch cables at one hundred (100) percent utilization.

5. Patch Panels, all Patch Panels will be 24 Port 1 RU or 48 Port 2 RU panels, installed as per manufacturer’s installation guidelines and conform to the following specifications:
   a. 48 Port Patch Panel will be Belden KeyConnect Patch Panel, 48-port, 2U, Black (Empty), part number: AX103115.
   b. 24 Port Patch Panel will be Belden KeyConnect Patch Panel, 24-port, 1U, Black (Empty), part number: AX103114.
   c. Refer to Exhibit B for all applicable quantities.
   d. All patch panel jacks will be in accordance with the following color code and be matched to the associated end station jack color:
      1. All jacks will be Belden 10GX REVConnect style jacks or similar.
      2. Refer to Exhibit B for all applicable colors and quantities.
      3. Blue – General data only, Belden part number: RVAMJKUTB-S1 (Cat 6A)
      4. Orange – Wireless Access Points, Belden part number: RVAMJKUTO-S1 (Cat 6A)
      5. White – Legacy Telephone, Belden part number: RVAMJKUEW-S1 (Cat 6A)
      6. Green – Lighting, Belden part number: RVAMJKUTG-S1 (Cat 6A)
      7. Gray – Security Camera, Belden part number: RVAMJKUGY-S1 (Cat 6A)
      8. Purple – Electronic Signage, Belden part number: RVAMJKUTP-S1 (Cat 6A)
      9. Black – Power management, Belden part number RVAMJKUBK-S1 (Cat 6A)
   c. The color of all jacks will be identical at both the MDF/IDF Patch Panel and the end equipment location.
d. All unused or unconnected ports in each patch will have a Blue – General data only, Belden part number: RVAMJKUTB-S1 installed.

E. Equipment Racks – Floor Mounted

1. All equipment racks shall be APC NetShelter SX 42U 600mm Wide by 1070mm Deep Enclosure with Black Sides, front and rear doors or equal and support the following specifications:
   a. APC NetShelter Model SX, part number: AR3100
   b. Shall include vented front and rear doors.
   c. APC NetShelter SX high seismic region bolt-down kit, part number: AR7701-S.

2. When sound proofing or noise reduction is required, all racks will APC NetShelter CX 38U Secure Soundproof Server Room in a Box Enclosure and support the following specifications:
   a. APC NetShelter Model SX, part number: AR4083A
   b. APC NetShelter CX Bolt Down Kit, part number: AR4601.

3. Provide APC horizontal PDU, part number: AP7802B per rack to accommodate all installed equipment with expansion of 30%. Any exceptions to be approved by SFUSD-IT network Operations.

4. All racks shall be APC NetShelter SX 42U or NetShelter CX 38U racks. Any exceptions to be approved by SFUSD-IT Networking Operations before specification or ordering.

5. Floor mounted communication cabinets shall be utilized wherever communications equipment is located, either inside or outside of dedicated voice/data or communication equipment rooms, or wherever requested by the District, to provide adequate mounting space for patch panels, wire managers, fiber optic distribution panels, and network integration equipment.

6. All communications cabinets will support and provide numbered U-space positions
7. A full height structure suitable for 19" mountings shall be provided in each communication cabinet. Communication cabinets shall have the following physical characteristics:
   a. 1991 mm (78.4") high, depth suitable for mounting of equipment up to 24" deep.
   b. 1070 mm (42.1") deep
   c. Self-supporting, with levelers included.
   d. High seismic region bolt-down kits.
   e. Cabinet shall be supplied with front and rear equipment mounting rails.
   f. Finish shall be black powder coat finish.
   g. Locking and vented front door.
   h. Locking and vented rear door
   i. Removable side Panels.

8. Floor mounted communication cabinet shall be APC NetShelter SX or CX Cabinet Series, or equal.

9. All APC equipment racks will be secured to the floor utilizing APC approved mounting hardware and installed according to manufacturers recommendations and specifications. Any deviations must be approved by District Department of Technology.

10. All APC/Schneider Electric communications cabinets will include all required vertical and horizontal cable management items to insure a proper installation.
   a. Vertical cable management will be APC/Schneider Electric NetShelter SX Cable Management will include but are not limited to the following:
      (1). Vertical Zero (0) U accessory channel, APC/Schneider Electric part number: AR7502
      (2). Vertical cable organizer eight cable rings, APC/Schneider Electric part number: AR8442
b. Horizontal cable management will be APC/Schneider Electric NetShelter SX Cable Management will include the following:

(1). 2U horizontal cable manager, single sided with cover, APC/Schneider Electric part number: AR8600A

(2). 1U horizontal cable manager, single sided with cover, APC/Schneider Electric part number: AR8602A

F. All APC Uninterruptable Power Supplies (UPS) and Batteries will meet and support the following specifications:

1. APC Smart-UPS SRT 3000VA RM 120V with Network Management Card 2
   a. Part Number: SRT3000RMLA-NC

2. Smart-UPS SRT 96V 3kVA and 6kVA RM Battery Pack
   a. Part Number: SRT96RMBP

G. Cable runway:

1. All cable runways will be Chatsworth, UL Classified Cable Runways support the following features:

2. Construction:
   a. Made of 3/8” x 1-1/2” x .065” (9.53 mm x 38 mm x 1.65 mm) wall rectangular steel tubing
   b. Cross members welded at 12” (300 mm) intervals
   c. Underwriters Laboratory Classified for suitability as an equipment grounding conductor only (must remove paint or use ground straps)
   d. Widths: 12 inch and 24 inch
   e. Color: Black

3. Refer to drawing ZR-3 & ZR-4 for ladder requirements and locations.
3 INSTALLATION

3.1 CABLE AND WIRE INSTALLATION

A. The contractor shall be responsible for the provision and installation of all data and voice cables including all supports, hangers, and hardware necessary for a complete installation. Under no circumstances shall cables be laid on the suspended ceiling. The contractor shall be responsible for providing and installing all necessary cable support hardware to meet Category 6A requirements.

1. T-Bar Suspended Ceilings: Copper station cabling may be run outside of conduits when routed above T-Bar suspended ceilings. Cables installed in this fashion are to be run horizontally in bundles and tied down neatly suspended from J-hooks, and well clear of any light fixtures or other electrical appliances that may affect data transmissions.
   a. J-hook type cable supports shall be installed in accordance with manufacturer’s installation requirements.
   b. Support J-hooks from structure. Do not support from ceiling grid, conduit or other trades work.
   c. Space J-hook cable supports every 4 ft or in accordance with cable manufacturer’s specifications, whichever distance is shorter.
   d. J-hook fill capacities shall be per manufacturer’s recommendations and shall consider diameter of cable type(s) being installed.

B. Surface mounted raceways and conduits to individual teacher, office, wireless AP and all other locations:

1. Communication outlets that require surface mounting shall be mounted in non-metallic or metallic backboxes with surface raceways/conduits. Surface raceways/conduits may be omitted where access into existing walls is available.
   a. Backboxes shall be mounted at power receptacle height.
b. Metallic and Non-metallic Raceways shall be secured at a maximum of every 16 inches with screws and anchors or according manufacturer recommendations whichever is more stringent.

c. Metallic (rigid aluminum) and Non-metallic (rigid PVC) Conduit shall be secured according to NEC Article 344 for rigid aluminum (metallic) conduit or NEC Article 352 for rigid PVC conduit (non-metallic) or according manufacturer recommendations whichever is more stringent.

d. All surface mount conduits or raceways which are visible to the public must be painted to match the surface to which they are attached.

e. Raceway Faceplates – Contractor shall use Belden KeyConnect faceplates and accessories to install Belden REVConnect RJ45 modules.

f. All cable installation in all raceways and conduit will not exceed the initial 40% fill rate for the corresponding size of the raceways or conduit.

C. At each voice/data closet, cables shall be segregated by type, neatly tied together and routed to the patch panels. All cables shall be labeled and tagged.

D. Cabling may be installed without conduits, please refer to the SFUSD Department of Technology for reference in these instances.

E. Cable distances from patch panels to data outlet shall not exceed 295 feet, this includes all service loops. The contractor is responsible to ensure the distance specified is not exceeded.

F. Care shall be exercised in routing both station and backbone/tie cables so as to avoid areas where sources of high levels of EMI (such as electric motors, transformers and fluorescent lighting fixtures) may exist. Maintain a minimum distance of 12 inches from these sources when run parallel. Cross at 90-degree angles where crossing must occur.

G. Each station cable MUST be “home run” (no splices or cross connection points) between jacks and patch panels.

H. All openings or raceway transitions through firewalls and floors shall utilize UL listed fire-rated penetrations.
I. All raceway transitions, ladder transitions and conduit openings shall utilize waterfalls to reduce cable stress and maintain cable bend radii.

J. The fiber optical cable manufacturer’s installation instructions shall be followed in order to avoid damage during placement within the facility. All fiber optic cable shall be placed within innerduct to provide mechanical protection and to provide visual warning or caution when handling or other work operations are performed adjacent to the installed fiber cable.

K. No more than (2) 90-degree bends shall be allowed on all conduit runs for the horizontal voice/data cabling system, without an intermediate pull-box or junction box.

L. Multi-Pair Riser Cable: All riser cables will be “punched down” on terminating blocks in the telecommunications rooms. Cables running on cable tray within the telecommunications rooms throughout the building shall be neatly placed and lashed to the horizontal and vertical cable trays at 2-foot intervals, not to exceed every other rung, plus all locations where the cable changes direction.

1. Do not bend Category 6A & Category 5E copper riser cables to a radius of less than 10 times the cable diameter.

2. Please refer to drawings ZR-1 and ZR-2 for 25-pair Multi-pair riser cable punch down terminating block locations. 110-Style punch down blocks should be located as close as possible to existing telephone punch down blocks. Opposite end of 25-pair cable should be terminated on 110-style patch panels located with MDF or IDF equipment racks (reference drawings ZR-5 and ZR-9).

3. Contractor shall use only equipment designed for placing ARMM copper riser cables in telephone conduits, sleeves and cable trays.

M. Riser and OSP cable terminations.

1. Twisted pair metallic cables: Cable pair twists shall be maintained up to within ½-inch of the point of termination for Category 6A riser distribution cables. For other riser distribution cables, maintain twists as close as practicable to the point of termination.
Under no circumstances shall cable pairs be untwisted or otherwise altered prior to termination.

N. Station cable terminations.

1. All station cable jack terminations will be terminated on Belden REVConnect jacks in accordance with manufacturer's guidelines and recommendations.

2. Do not bend Category 6A station cables to a radius of less than 10 times the cable diameter of the cable.

3. Allow slack in Category 6A Cable bundles at entrances and exits of conduit sleeves and at transitions from “J” hooks to cable trays. Never pull cables tight at cable tray transitions; doing so may damage the cables by crimping them on the cable tray side of the bundles.

4. Keep the cable evenly distributed within the cable tray. Do not allow the cables or bundles to be pulled tight against the splines or to be unevenly balanced on one side of the tray.

5. Bundles of station cable in floor slots shall not exceed 2.5 inches in diameter, and shall be spaced 4 inches apart for proper fire stopping of the floor slot.

6. Bundles of station cable in 4-inch floor sleeves shall not exceed a 39 percent fill.

O. Patch Panel Terminations

1. All Category 6A patch panel cable jack terminations will be terminated on Belden 10GX REVConnect jacks in accordance with manufacturer's guidelines and recommendations.

2. Do not bend Category 6A or Category 6 station cables to a radius of less than 10 times the cable diameter of the cable.

3. Allow slack in Category 6A Cable bundles at entrances and exits of conduit sleeves and at transitions from “J” hooks to cable trays. Never pull cables tight at cable tray transitions; doing so may damage the cables by crimping them on the cable tray side of the bundles.
P. Keep the cable evenly distributed within the cable tray. Do not allow the cables or bundles to be pulled tight against the splines or to be unevenly balanced on one side of the tray.

Q. Where fiber or copper cable enters an equipment room or voice/data closet, it shall be affixed to the backboard via reclosable storage rings of no less than twenty-four (24) inch diameter, Leviton part number 48900-OFR. All cable shall be neatly bundled, combed, and tied. All exposed cable runs shall be horizontal or vertical, and bends shall comply with manufacturer required minimum cable bending radii.

R. All copper service loops will placed in a figure 8 pattern using two close-able storage rings, while all fiber service loops will be place in circular patterns using a single close-able storage ring.

S. Provide one (1) patch cable for each terminated jack. Lengths shall be 1 ft. minimum or as required for the MDF or IDF design and according to the build of materials.

T. Equipment racks and Frames.
   1. Provide seismic support and bracing for all equipment racks and fiber distribution frames installed under this work. Equipment racks and distribution frames must be structurally designed to accommodate cable loads. No other support mechanism will be supplied. Provide seismic design calculations and seismic design drawings prepared by the contractor’s structural engineer for coordination and approval by District’s Representative prior to fabricating or installing any supports. In general, provide support only from floor slabs, beams, columns, or structural walls, (such as shear walls). Do NOT use existing or new partitions to provide either vertical or lateral support UNLESS the seismic design calculations and drawings demonstrate that the partition, either with or without reinforcement, is able to support the seismic and other loads. Any proposed reinforcement to be the responsibility of the Contractor.

U. Labeling:
   1. All labeling shall be in accordance with TIA/EIA 606-B, class 4 and UL 969 standards.
   2. All labeling should be confirmed with the District Department of Technology.
Warning Tags:  At each location where fiber cable is exposed, it shall be marked with warning tags.

These tags shall be yellow or orange in color, and shall contain the warning: “CAUTION FIBER OPTIC CABLE”. The text shall be permanent, black, block characters, and at least 3/16 high. A warning tag shall be permanently affixed to each exposed cable or bundle of cables, at intervals of not more than five (5) feet. Any section of exposed cable, which is less than five (5) feet in length, shall have at least one warning tag affixed to it.

3.2 GROUNDING SYSTEM AND CONDUCTORS

A. Bonding and Grounding:

1. Communication bonding and grounding shall be in accordance with the NEC and NFPA. Horizontal cables shall be grounded in compliance with ANSI/NFPA 70 and local requirements and practices. Horizontal equipment includes cross connect frames, patch panels and racks, active telecommunication equipment and test apparatus and equipment.

2. Grounding and bonding shall comply with ANSI J-STD-607-A. A contiguous cable must be installed from busbar to each rack utilizing an antioxidant compound to the connection point with two (2) hole compression lugs. A mechanical grounding connection is required at each joint of a ladder system.

B. Telecommunications Bonding Backbone:

1. Provide a Telecommunications Bonding Backbone utilizing a minimum #6 AWG bonding conductor that provides direct bonding between equipment rooms and telecommunications closets. Connect this bonding backbone cable to the main grounding electrode system at the electric service switchboard.

2. Provide a copper ground bar at each tele/data equipment room or rack location, connected to the bonding backbone.

3. Provide a #6 AWG stranded copper cable from each ground bar to each adjacent rack or cable trays system.

4. Install grounding busbar and rack grounding according to the following:
a. 421 Bartlett Street – Drawing ZR-7 & ZR-8

b. 2950 Mission Street – Drawing ZR-3 & ZR-4

### 3.3 FIRE AND SMOKE PARTITION PENETRATIONS

A. Conduit sleeves shall be provided as part of this contract as a means of routing cables through fire-rated walls and floors. Openings in sleeves and conduits used for system cables and those that remain (empty) spare shall be sealed with an approved fireproof, removable sagging material at completion. Sleeves, which pass vertically from floor to floor, shall be sealed in a similar manner using an approved re-enterable system. Additional penetrations through rated assemblies, necessary for passage of voice/data wiring, shall be made using an approved method and permanently sealed after installation of cables.

### 3.4 CABLE RUNWAY

A. Cable runway shall be installed in the MDF and IDFs above each rack.

B. All cable runways shall be level and installed per manufacturer’s recommendations.

C. All cable runways shall be installed per manufacturer specifications and recommendations.

1. Corner clamp brackets shall be used to join sections of ladder rack that are perpendicular to each other.

2. Ladder rack stringers shall be attached to steel grid with angle brackets and ‘J’ bolts.

3. Cable runway shall be supported at a maximum of 4-feet on center from structure above using trapeze assemblies.

4. Open-ended stringer segments shall be closed with corner clamps and end bars.

5. Mounting plates and ‘J’ bolts shall be used to attach the ladder racking to the equipment.

D. All field cut cable ladders shall be deburred and dressed prior to placement.

E. Coordinate the placement of cable ladder runs with the placement of fiber guide downspouts to insure an unobstructed path for fiber optic patch cables.
A. Install cable runways according to the following:
   1. 2950 Mission Street – Drawing ZR-3 & ZR-4

3.5 PLYWOOD BACKBOARDS
B. Provide backboards shall be fire-rated, ¾-inch A-B grade plywood, 8 feet high, capable of supporting attached equipment, and painted with a minimum of 2 coats of fire retardant off-white semi gloss paint. Manufacturer’s stamps visible from the front side of the plywood backboard shall be masked to painting. Install plywood on all four walls of a MDF or IDF or as designated by site drawings.
C. Plywood backboards shall be fastened to the structural members of the building only using an approved fastener. Plywood backboards shall not be anchored to GBW.
D. Plywood shall be mounted from +6-inches above finished floor to +8 feet.
E. Plywood backboards shall be cut to fit in width. All outlets, switches and other equipment will be mounted flush to the plywood.
F. Install plywood according to the following:
   1. 421 Bartlett Street – Drawing ZR-7 & XR-8
   2. 2950 Mission Street – Drawing ZR-3 & ZR-4

4 TESTING, DOCUMENTATION AND INSPECTION
4.1 COPPER CABLE TESTING AND DOCUMENTATION
A. Recommended test equipment (obtain approval of District’s Representative prior to using substitute test equipment):
   1. Metallic cable pair tester.
      a. The Contractor shall utilize a FLUKE Versiv Kit with DSX-8000 Cable Analyzer Modules test instrument with latest firmware version Category 6A Field Tester.
B. Four-pair Category 6A station cables testing and submittal process:
   1. Submit cable schedule and testing schedule to District’s Representative.
2. After terminating both ends of all UTP cables, test all UTP Category 6A data and voice station cables. Conduct tests with a 110 to 8-pin 568A patch cable in place on both ends.

3. Each jack in each outlet shall be tested for TIA/EIA-568-B Category 6A data and voice compliance, using an appropriate Level 2 testing instrument, to verify both the integrity of all conductors and correctness of the termination sequence. Testing shall be performed between modular jacks at the outlets and the modular jacks at the patch panels.

4. Test Criteria: The system shall be tested to TIA/EIA-568-B Category 6A. The test path shall include jacks, station cables, jack panels, and adapter cables.

C. Documentation – Copper Cabling:

1. Maintain accessible documentation of the following test results and cable records. This documentation shall be formatted and maintained systematically in accordance with the requirements stated in ANSI/TIA/EIA-6, “Administration Standard for the Telecommunications Infrastructures of Commercial Buildings”.

2. Documentation of all cable testing is required. The contractor shall provide a table of test results in a 3-ring binder submitted with the as-built drawings. The table shall include:

   a. 100 MHz sweep test, polarity checks, Near End Crosstalk, Signal Attenuation, Noise, DC loopback resistance, pair-by-pair continuity, and the installed length for all Data / Voice station cables and pairs.

   The report shall indicate all defective pairs and test results of all pairs listed above. Cables not complying with TIA/EIA-568-B Category 6A tests shall be identified to the District for corrective action, which may include replacement at no additional expense to the District.

3. Utilize Fluke’s LinkWare Live cloud-based software service which provides project management of cable installation, test results, and tester management capabilities for job visibility and job control with visibility from anywhere at any time.
4.2 ACCEPTANCE AND INSPECTION

A. All installations shall be inspected by the technology inspector of record assigned by the District to do such tasks.

B. All equipment shall be completely installed and configured. Completeness of installation shall be determined by the technology inspector.

C. All applications of this document shall be in the jurisdiction, discretion and judgment of the technology inspector.

D. Prior to acceptance all the following conditions must be met:
   1. All required Contractor submittals and deficiencies or rejected submittals shall be corrected.
   2. All specified cable management devices including cable ladder, steel wire cable tray, 2-sided vertical rack cabling sections, and horizontal ring panels shall be installed as indicated and specified. All parts not installed shall be inventoried and provided to the District in the manufacturer's packaging.
   3. All seismic bracing shall be in place.
   4. All specified station cabling with associated termination components, labeling and fire stopping shall be installed properly. Any component not installed shall be inventoried and provided to the District in the manufacturer's packaging; loose miscellaneous parts shall not be accepted.
   5. Terminal blocks shall be clean and free of trimmed or cut-off copper pairs, sheaths, armors, cable lubricants or any other disposables used in the installation of the station cables.
   6. All station cables shall be neatly dressed behind the terminal blocks in the IDF.
   7. All as-built documentation and Visio or AutoCAD shall be complete, reviewed and provided to the District. All such documents shall be delivered in the latest versions of these applications.
   8. The following documents are required to close out a project...
a. As-built drawings
   b. Cable pathway map on a floor plan for any installed cabling
   c. Rack elevation for any installed equipment in racks
   d. Endpoint connection map with labeling for all terminations
   e. Exact placement of wireless access point on a map for wireless installations
   f. All configurations documented including but not limited to district approved final design, mac address, IP address, VLAN address, security settings, etc.
   g. Inventory of all installed components including but not limited to Make, Model, Description, manufacturer specification sheet, serial number, port number, port label, hostname, etc.
   h. Manufacturer’s certification of warranty for all installed cabling
   i. List of start and end dates for all equipment and component warranties
5 EXHIBIT A – ZAIDA RODRIGUEZ DESIGN DRAWINGS
Mission Street Rack Equipment Layout

<table>
<thead>
<tr>
<th>RU Position</th>
<th>Side</th>
<th>Description</th>
<th>Part Number</th>
<th>Side</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Front</td>
<td>Horizontal SR Cable Management T12</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Front</td>
<td>Horizontal Switch</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Front</td>
<td>Horizontal SR Cable Management T12</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Front</td>
<td>Horizontal Switch</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Front</td>
<td>Horizontal Switch</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Front</td>
<td>2950 Key/Cement Patch Panel, 24 pairs</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Front</td>
<td>Horizontal SR Cable Management T12</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Front</td>
<td>Horizontal Switch</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Front</td>
<td>Horizontal SR Cable Management T12</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Front</td>
<td>Horizontal Switch</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Front</td>
<td>Video Keyboard and Fan Screen</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Front</td>
<td>Video Patch Panel</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Front</td>
<td>Video Server</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Front</td>
<td>Blank Panel Empty Stand</td>
<td>ARB001A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Front</td>
<td>3000W UPS 5V 1080VA AC 120V</td>
<td>STP0300W12V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Front</td>
<td>Battery Pack</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Front</td>
<td>SmartUPS UT 1500VA</td>
<td>UT500WBMP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Front</td>
<td>Battery Pack</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Front</td>
<td>SmartUPS UT 1500VA</td>
<td>UT500WBMP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Front</td>
<td>Battery Pack</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Front</td>
<td>Battery Pack</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Front</td>
<td>Battery Pack</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Front</td>
<td>Battery Pack</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Front</td>
<td>Battery Pack</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Front</td>
<td>Battery Pack</td>
<td>SUPPLIED BY OTHERS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- 2 RU = 1.75" high
- All parts shown are for planning purposes only
- Actual parts may differ

**Dimensions:**
- 7'-2-1/2" (2.18 m) high
- 1'-0" (0.30 m) deep
- 6'-11-3/4" (2.12 m) wide

**Scale:** 1/8" = 1'-0"
Power Consumption Caveat – Video Server and Video Matrix Switch Power Consumption based on average across numerous manufacturers

<table>
<thead>
<tr>
<th>UPS</th>
<th>Rack</th>
<th>RU Position</th>
<th>Switch</th>
<th>Rack</th>
<th>RU Position</th>
<th>Power Supply</th>
<th>Typical Power Use</th>
<th>Access Points</th>
<th>30W Power Required</th>
<th>Cisco 78xx Phones</th>
<th>~7W Power Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRT3000RMXLT-NC</td>
<td>1</td>
<td>37-42</td>
<td>Catalyst 3550-120S</td>
<td>1</td>
<td>3</td>
<td>350</td>
<td>110</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Catalyst 3900-10U-A</td>
<td>1</td>
<td>13</td>
<td>1100</td>
<td>125</td>
<td>4</td>
<td>122</td>
<td>9</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Video Server</td>
<td>1</td>
<td>27-28</td>
<td>1000</td>
<td>600</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Video Matrix Switch</td>
<td>1</td>
<td>31-34</td>
<td>400</td>
<td>200</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Power by Switch, AP and iPhone Breakout

<table>
<thead>
<tr>
<th>Total Power Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1035</td>
</tr>
<tr>
<td>120</td>
</tr>
<tr>
<td>63</td>
</tr>
<tr>
<td>1218</td>
</tr>
</tbody>
</table>

Runtime Graph

APC Smart-UPS SRT 3000VA RM 120V Network Card (SRT3000RMXLA-NC)
### Power Consumption Caveat – Video Server and Video Matrix Switch Power Consumption based on average across numerous manufacturers

<table>
<thead>
<tr>
<th>UPS/Model</th>
<th>Rack</th>
<th>RU Position</th>
<th>Switch</th>
<th>Rack</th>
<th>RU Position</th>
<th>Power Supply</th>
<th>Typical Power Use</th>
<th>Access Points</th>
<th>30W Power Required</th>
<th>Cisco 780x Phones</th>
<th>~7w Power Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRT3000RMXLA-NC</td>
<td>1</td>
<td>1-6</td>
<td>Catalyst 3850-12KS</td>
<td>1</td>
<td>36</td>
<td>350</td>
<td>110</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Catalyst 9300-48U-A</td>
<td>1</td>
<td>26</td>
<td>1100</td>
<td>125</td>
<td>3</td>
<td>90</td>
<td>7</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Video Server</td>
<td>1</td>
<td>15-15</td>
<td>1000</td>
<td>600</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Video Matrix Switch</td>
<td>1</td>
<td>9-12</td>
<td>400</td>
<td>200</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Power by Switch, AP and Phone Breakout</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1035</td>
<td>90</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL POWER REQUIRED</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1174</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Runtime Graph

**APC Smart-UPS SRT 3000VA RM 120V Network Card (SRT3000RMXLA-NC)**

- **Curve A**: SRT3000RMXLA-NC
- **Curve B**: SRT3000RMXLA-NC + (1)SRT96MRBP
- **Curve C**: SRT3000RMXLA-NC + (2)SRT96MRBP
- **Curve D**: SRT3000RMXLA-NC + (3)SRT96MRBP
- **Curve E**: SRT3000RMXLA-NC + (4)SRT96MRBP
- **Curve F**: SRT3000RMXLA-NC + (5)SRT96MRBP
- **Curve G**: SRT3000RMXLA-NC + (6)SRT96MRBP
- **Curve H**: SRT3000RMXLA-NC + (7)SRT96MRBP
- **Curve I**: SRT3000RMXLA-NC + (8)SRT96MRBP
CABLE DESIGN — CAT 6A

Customer Requirement:

Cat 6A

Category 6A end-to-end performance to enable Ethernet connections to provide up to 10Gbps connections to all data and voice drops over a maximum 100 m (328 ft) channel length.

Category 6A Enhanced, UTP, 600MHz, 4 Bonded-Pair, Plenum-CMP, Premise Horizontal Cable, 23 AWG, Solid Bare Copper Conductors, FEP Insulation PVC Support for up to 100 meters for PVC Type 1 (15 W), PVC Type 2 (30 W), PVC Type 3 (60 W), PVC Type 4 (100 W)

Proposed Design:

Two-connector topology - Telecommunications Outlet or Multi-User Telecommunications Outlet Assembly in Work Area and interconnect patch panel in Telecommunications Room.

Notes:

1. Cat 6A, UTP, Bonded & Solid 24 AWG Equipment Connect Cable, maximum length 5 meters (16.4 feet)
2. 10GX KeyConnect Modular Face Plate Utilizing REVConnect outlet hardware with unshielded modular jacks
3. 1 Foot Service Loop
4. Cat 6A UTP Bonded solid Core 23 AWG cable, maximum length 90 meters (295 feet), including service loops
5. 10 Foot Service Loop
6. Belden 10GX Cat 6A Flat KeyConnect Modular Patch Panels Utilizing RevConnect unshielded modular jacks
7. Cat 6A, UTP, Bonded & Solid 24 AWG Patch Cable, length .6 meter (2 feet) or .3 meter (1 foot)
CONDUIT INSTALLATION

CONDUIT FILL RATIO

<table>
<thead>
<tr>
<th>size</th>
<th>qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;</td>
<td>6</td>
</tr>
<tr>
<td>1.25&quot;</td>
<td>8</td>
</tr>
<tr>
<td>1.5&quot;</td>
<td>12</td>
</tr>
<tr>
<td>2&quot;</td>
<td>22</td>
</tr>
<tr>
<td>2.5&quot;</td>
<td>40</td>
</tr>
<tr>
<td>3&quot;</td>
<td>60</td>
</tr>
<tr>
<td>3.5&quot;</td>
<td>79</td>
</tr>
<tr>
<td>4&quot;</td>
<td>101</td>
</tr>
</tbody>
</table>

INITIAL FILL RATIO FOR CONDUITS SHALL NOT EXCEED 40% AS PER NEC®

PULL STRING SHALL BE VISIBLE AT ALL TIMES

CONDUIT WATERFALL

ALL CONDUITS CONTAINING NETWORK CABLE SHALL UTILIZE WATERFALL DEVICE

FIRE STOP

ALL CONDUITS SHALL BE FIRE STOPPED AS PER NEC®
# EXHIBIT B – ZAIDA RODRIQUEZ – TOTAL BOM

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
<th>Extended Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REVConnect Jacks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>RVAMJKUEW-S1</td>
<td>REVConnect 10GX Modular Jack, Electric White</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>RVAMJKUTB-S1</td>
<td>REVConnect 10GX Modular Jack, TIA Blue</td>
<td>111</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>RVAMJKUTO-S1</td>
<td>REVConnect 10GX Modular Jack, TIA Orange</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>RVAMJKUTG-S1</td>
<td>REVConnect 10GX Modular Jack, TIA Green</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>RVAMJKUTP-S1</td>
<td>REVConnect 10GX Modular Jack, TIA Purple</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>RVAMJKUBK-S1</td>
<td>REVConnect 10GX Modular Jack, Black</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cat 6A Cables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>IBDN25R 0081000</td>
<td>Backbone Indoor Cable, Category 5e, 25-pair Nonbonded-Pair, CMR, 1000 ft spool</td>
<td>0.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>10GXS33</td>
<td>Category 6A Enhanced (625MHz), 4 Bonded-Pairs, U/UTP, CMP, 1000 ft spool</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>CAT1102010</td>
<td>10GX Traceable Patch Cord, Bonded-Pair, 4-Pair, 24 AWG Solid, 10 ft, Red</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>CAD1106002</td>
<td>10GX modular Cord, Blue, 2 ft in length</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>CAD1106001</td>
<td>10GX modular Cord, Blue, 1 ft in length</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Patch Panels</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>AX103114</td>
<td>10GX KeyConnect Patch Panel, 24-port, 1U, Black (Empty)</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>AX103115</td>
<td>10GX KeyConnect Patch Panel, 48-port, 2U, Black (Empty)</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wall Plates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## EXHIBIT B - Zaida Rodriguez - TOTAL BOM

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
<th>Extended Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belden</td>
<td>AX102660</td>
<td>KeyConnect 1-port, with ID Windows, Single-gang, Electric White</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>AX102655</td>
<td>KeyConnect 2-port, with ID Windows, Single-gang, Electric White</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>AX102249</td>
<td>KeyConnect 4-port, with ID Windows, Single-gang, Electric White</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belden</td>
<td>AX102902</td>
<td>KeyConnect Elec. White Plastic, Recessed Port, Wall Phone Mount</td>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Grounding Bus

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
<th>Extended Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chatsworth</td>
<td>40153-012</td>
<td>Grounding busbar will be 1/4” thick by 4” wide by 12” long</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Cable Ladders and Accessories

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
<th>Extended Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chatsworth</td>
<td>40164-001</td>
<td>Cable Runway Grounding Strap Kit</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>40164-025</td>
<td>Cable Runway Ground Strap Kit; #6 AWG Ground Strap with hardware; Package of 25 Kits</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>16299-701</td>
<td>Heavy-Duty Butt-Splice Kit; 1.5&quot;H x 5&quot;L; Black</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>11959-715</td>
<td>Cable Runway Corner Bracket; 15&quot;W x 1.5&quot;H x 15.48&quot;L; Black</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>11309-701</td>
<td>Cable Runway Foot Kit; 6&quot;H; Black</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>11421-724</td>
<td>Wall Angle Support Kit 3/16&quot;; 26&quot;W x 2&quot;H x 2&quot;D; Black</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>11421-712</td>
<td>Wall Angle Support Kit 3/16&quot;; 14&quot;W x 2&quot;H x 2&quot;D; Black</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>10608-701</td>
<td>Vertical Wall Bracket Pair; Cable Runway; 1.7 in H x 2.2 in D x 1.5 in W; Black</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>16302-701</td>
<td>Heavy-Duty Junction-Splice Kit; 0.38&quot;W x 1.5&quot;H x 2&quot;L; Black</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>11310-001</td>
<td>Threaded Ceiling Kit, 5/8” Rod</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Part Number</td>
<td>Description</td>
<td>Qty</td>
<td>Extended Price</td>
<td>Cost</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----</td>
<td>----------------</td>
<td>------</td>
</tr>
<tr>
<td>Chatsworth</td>
<td>11275-724</td>
<td>U.L. Classified Cable Runway; 24&quot;W x 1.5&quot;H x 9.71'L; Black; Cable Capacity - 1894</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>10250-712</td>
<td>U.L. Classified Cable Runway; 12&quot;W x 1.5&quot;H x 9.71'L; Black; Cable Capacity - 947</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatsworth</td>
<td>12100-712</td>
<td>Cable Runway Radius Drop; Cross Member; 11&quot;W; Black</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>APC/Schneider</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sound Proof Rack</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR4038A</td>
<td>NetShelter CX 38U Secure Soundproof Server Room in a Box Enclosure</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR4601</td>
<td>NetShelter CX Bolt Down Kit</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>42U Rack</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR3100</td>
<td>NetShelter SX 42U 600mm Wide by 1070mm Deep Enclosure with Black Sides, front and rear doors</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR7701-S</td>
<td>NetShelter SX high seismic region bolt-down kit</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blanking Panels</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR8136BLK</td>
<td>1U 19&quot; Black Modular Toolless Airflow Management Blanking Panel - Qty 10</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rack Cable Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR8600A</td>
<td>NetShelter SX Cable Management 2U horizontal cable manager, single sided with cover</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR8602A</td>
<td>NetShelter SX Cable Management 1U horizontal cable manager, single sided with cover</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR8186</td>
<td>NetShelter Cable Ladder Attachment Kit, Enclosures, Troughs, Zone Cabling 4U Patch Frame</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR7502</td>
<td>Vertical Zero U Accessory Channel, 42U</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR8442</td>
<td>Vertical cable organizer eight cable rings, Zero U</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# EXHIBIT B - Zaida Rodriguez - TOTAL BOM

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
<th>Extended Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>APC</td>
<td>AR8444</td>
<td>Vertical Fiber Organizer, Spools Only</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AR8443A</td>
<td>Vertical Fiber Organizer</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>UPS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>SRT3000RMLA-NC</td>
<td>Smart-UPS SRT 3000VA RM 120V</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>SRT3KRMLXLTN-NC</td>
<td>Smart-UPS SRT 3000VA RM 208V</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>SRT5KRMLXLTN-NC</td>
<td>APC Smart-UPS SRT 5000VA RM 208V</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AP9631</td>
<td>UPS Network Management Card 2 with Environmental Monitoring</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Batteries</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>SRT96RMBP</td>
<td>Smart-UPS SRT 96V 3kVA and 6kVA RM Battery Pack</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>SRT192RMBP</td>
<td>Smart-UPS SRT 192V 5kVA and 6kVA RM Battery Pack</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PDU</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AP8841</td>
<td>Rack PDU 2G, metered, Zero U, 30A, 200/208V, (36) C13 and (6) C19 Outlets, with 3 meter (9.84 ft) cord &amp; NEMA L6-30P</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AP8858NA3</td>
<td>Rack PDU 2G, metered, Zero U, 20A, 208V, (18) C13 and (2) C19 Outlets, with 3 meter cord &amp; NEMA L6-20P</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td>AP7802B</td>
<td>Rack PDU, 2U, 30A, 120V. (16) 5-20 outlets, with 3.66 meter (12 ft) cord &amp; NEMA 6L-30P</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Custom AV Rack</strong></td>
<td><a href="https://www.customavrack.com">https://www.customavrack.com</a></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IronBox</td>
<td>IBX-4903-02</td>
<td>2 Foot C14 to C13 Power Cord - 15 Amps, 250V</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IronBox</td>
<td>IBX-4903-03</td>
<td>3 Foot C14 to C13 Power Cord - 15 Amps, 250V</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IronBox</td>
<td>IBX-4903-05</td>
<td>5 Foot C14 to C13 Power Cord - 15 Amps, 250V</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IronBox</td>
<td>IBX-4903-10</td>
<td>10 Foot C14 to C13 Power Cord - 15 Amps, 250V</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IronBox</td>
<td>IBX-4920-01</td>
<td>IEC C14 to 5-15R Power Cords</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Platt Supply & Panduit (Reference Only)**

**Grounding Cable & Supplies**
# EXHIBIT B - Zaida Rodriguez - TOTAL BOM

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
<th>Extended Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platt</td>
<td>6THHNCSTRGREX1000</td>
<td>6AWG THHN/THWN-2 Stranded Copper, Green</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Panduit</td>
<td>LCC6-14A-L</td>
<td>Panduit LCC6-14A-L Copper Two-hole Long-barrel Lug</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Platt</td>
<td>MBBZ14112</td>
<td>Dottie MBBZ14112 Hex Head Cap Screw, Silicon Bronze, 1/4 X 1-1/2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Platt</td>
<td>HNBZ14</td>
<td>Dottie HNBZ14 Hex Nut, 1/4&quot;, Silicon Bronze</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Platt</td>
<td>FWBZ14</td>
<td>Dottie FWBZ14 Flat Washer, Silicon Bronze, 1/4&quot;</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Platt</td>
<td>LWBZ14</td>
<td>Dottie LWBZ14 Split Lock Washer, 1/4&quot;, Silicon Bronze</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

## Leviton

### Fiber Enclosures & Splice Modules

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
<th>Extended Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leviton</td>
<td>SR4UH-S12</td>
<td>4RU Enclosure, empty, with sliding tray</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leviton</td>
<td>SR2UH-S06</td>
<td>2RU Enclosure, empty, with sliding tray</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leviton</td>
<td>SR2UH-S03</td>
<td>1RU Enclosure, empty, with sliding tray</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leviton</td>
<td>SPLCS-24L</td>
<td>Opt-X SDX Pigtail Fusion Splice Module pre-loaded with quad LC adapters (Blue) and 24-fiber LC/UPC individual pigtails. Includes 40mm splice sleeve</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Copper Cat 5E Cables and Patch Panels

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
<th>Extended Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leviton</td>
<td>41AW1-50</td>
<td>Cat 5e 110-Style Wiring Block, Wall-Mount, with Legs</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leviton</td>
<td>49013-24P</td>
<td>Leviton 24-port, 2RU, 8P4C RJ45 Jacks, 110 style termination patch panel with 25 pair color code on rear</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leviton</td>
<td>49013-48P</td>
<td>Leviton 48-port, 2RU, 8P4C RJ45 Jacks, 110 style termination patch panel with 25 pair color code on rear</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

## Fiber Patch Cables
<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
<th>Extended Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leviton</td>
<td>FPC-S2PR1VV-002MAB</td>
<td>FOCA, SM 8.3/125um (OS2), Plenum, Round 2 fiber 2.4mm, 2 meters, A-B Polarity, LC Uni-Boot Connector, LC Uni-Boot Connector</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leviton</td>
<td>FPC-S2PR1VV-005MAB</td>
<td>FOCA, SM 8.3/125um (OS2), Plenum, Round 2 fiber 2.4mm, 5 meters, A-B Polarity, LC Uni-Boot Connector, LC Uni-Boot Connector</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leviton</td>
<td>FPC-M4PR1VV-002MAB</td>
<td>FOCA, MM 50/125um (OM4), Plenum, Round 2 fiber 2.4mm, 2 meters, A-B Polarity, LC Uni-Boot Connector, LC Uni-Boot Connector</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leviton</td>
<td>FPC-M4PR1VV-005MAB</td>
<td>FOCA, MM 50/125um (OM4), Plenum, Round 2 fiber 2.4mm, 5 meters, A-B Polarity, LC Uni-Boot Connector, LC Uni-Boot Connector</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CUPCAA APPENDIX ‘A’

Hazardous Materials Specification
Bid Submittal

Technology Infrastructure Project
At
Zaida Rodriguez Early Education Center
HAZARDOUS MATERIALS SPECIFICATIONS
BID SUBMITTAL

SAN FRANCISCO UNIFIED SCHOOL DISTRICT
TECHNOLOGY INFRASTRUCTURE PROJECT
ZAILA RODRIGUEZ EARLY EDUCATION SCHOOL

421 BARTLETT STREET
SAN FRANCISCO, CA 94110

and

2950 MISSION STREET
SAN FRANCISCO, CA 94110

Prepared For:

San Francisco Unified School District
135 Van Ness Avenue
San Francisco, CA 94102

Prepared By:

Sensible Environmental Solutions Inc.
1116 Willow Pass Court
Concord, CA 94520

May 17, 2018

SES Project No. 18-022
# HAZARDOUS MATERIALS ABATEMENT

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Number of Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 31 27</td>
<td>Existing Hazardous Materials Conditions</td>
<td>6</td>
</tr>
<tr>
<td>01 11 00</td>
<td>Summary of Hazardous Materials Work</td>
<td>4</td>
</tr>
</tbody>
</table>

EXISTING SITE CONDITIONS

- Section 00 31 27
  - Existing Hazardous Materials Conditions
    - Page 6

DIVISION 01

- GENERAL REQUIREMENTS
  - Section 01 11 00
    - Summary of Hazardous Materials Work
      - Page 4
SECTION 00 31 27
EXISTING HAZARDOUS MATERIALS CONDITIONS

PART 1 – GENERAL

1.01 SUMMARY

A. This section provides a list of known and assumed hazardous materials that may be impacted during renovation, demolition, repair, custodial and/or maintenance activities. The hazardous materials information has been provided through existing surveys conducted by the San Francisco Unified School District (District) and the District’s environmental consultants.

B. Some materials and items found at the Site either contain or may contain materials known to the State of California to be either hazardous, carcinogenic or reproductive toxins. These include but are not limited to asbestos, lead, PCB’s, silica, and other materials.

C. The Contractor shall hold the District and its consultants harmless for claims, damages, losses, and expenses, including attorney’s fees arising out of the Contractor’s hazardous materials related work including releases from any incidental disturbance of existing hazardous materials, on-site or off-site spills of hazardous materials, or from non-compliance with the Contract Documents and regulatory requirements.

1.02 HAZARD COMMUNICATION

A. The District may have conducted previous hazardous materials abatement projects at the site. The hazardous materials abatement oversight information is available for review by appointment only through the District’s Asbestos Control Program at (415) 241-6226.

B. Copies of previous hazardous materials report(s) and the AHERA Management Plan for the site are available for review by appointment only through the District’s Asbestos Control Program at (415) 241-6226.

C. Asbestos Hazards at 421 Bartlett Street

1. Asbestos has been identified or shall be treated as containing asbestos at concentrations greater than one percent (>1%) in the following materials:

   a. Floor tile (12” x 12” red) (1-5% Chrysotile asbestos) at the First Floor at Main Office 002, Teacher Faculty Lounge 008, Corridor and Classrooms 014 and 020.

   b. Sheet flooring backing and mastic (15-40% Chrysotile asbestos) at the Kitchen.
2. The following sampled suspect materials had results that reported NO asbestos detected by PLM analysis:
   a. Floor tile mastic below asbestos containing 12” x 12” red floor tile (2% Chrysotile asbestos) at the First Floor at Main Office 002, Teacher Faculty Lounge 008, Corridor and Classrooms 014 and 020.
   b. Ceramic wall tile (white), grout and glue / mortar at the First Floor at the Boys, Girls, Men and Women Toilets.
   c. Gypsum board and taping compounds throughout.
   d. Acoustical ceiling tiles (12”x12” white) (all types) throughout.
   e. Cove base (black) and mastics throughout.
   f. Wall coverings / papers and glues throughout.
   g. Exterior stucco / plaster and paints.

D. Lead Hazards at 421 Bartlett Street

1. Lead has been detected in individual painted surfaces and surface coatings in concentrations greater than 5,000 parts per million (ppm) lead or 1.0 milligram of lead per square centimeter (mg/cm²). Where ranges of lead levels are indicated, Contractor shall presume the highest level is typical. These lead containing surfaces include, but are not limited to the following:
   a. Glazings on ceramic wall and base tile at Toilets (>9.9 mg/cm²).

2. Lead has been identified in individual painted surfaces and surface coatings in concentration less than 5,000 ppm lead or 1.0 mg/cm². Where ranges of lead levels are indicated, Contractor shall presume the highest level is typical. These lead containing surfaces include, but are not limited to the following surfaces:
   a. Paints, glazings and /or stains on ALL of the following building materials:
      1) Gypsum board walls and ceilings (-0.2 to 0.1 mg/cm²).
      2) 12”x12” and 2’x4’ acoustic ceiling tiles (-0.1 to 0.1 mg/cm²).
      3) Metal door casings / framing (-0.1 to 0.0 mg/cm²).
      4) Wood doors (-0.3 to -0.1 mg/cm²).
      5) Wood window sills and trim (-0.1 to -0.1 mg/cm²).
      6) Ceramic floor tile at Toilets (-0.1 to 0.0 mg/cm²).
      7) Vinyl wall coverings (-0.1 mg/cm²).

E. Asbestos Hazards at 2950 Mission Street

1. Asbestos has been identified or shall be treated as containing asbestos at concentrations greater than one percent (>1%) in the following materials:
   a. Cement underground sewer, water and drain piping (assumed) located throughout the entire site.
   b. All roofing materials (assumed).
   c. Taping compound (2-3% Chrysotile asbestos) on gypsum board walls throughout interiors (Note: For disposal purposes only, the overall gypsum board / taping compound matrix is 0.209% Chrysotile asbestos).
2. The following sampled suspect materials had results that reported NO asbestos detected by PLM analysis:

   a. All paints at exterior of building.
   b. Stucco at exterior building walls.
   c. All paints at interior of building.
   d. Floor tile (12”x12” gray / blue) and yellow glue located throughout interiors.
   e. Cove base (multiple colors) and mastics throughout interiors.
   f. Gypsum board on walls throughout (Note: the taping compound was identified to contain asbestos at concentrations >1%).
   g. Gypsum board ceiling (2’ x 4’) at Kitchen 5.
   h. Fiberboard ceiling tiles (2’ x 4’) throughout interiors.
   i. Canvas wall coverings and glues throughout interiors.
   j. Ceramic floor tiles (2”x2” blue and gray), grout and mortars at Toilets.
   k. Ceramic base tile (4” x 6” black), grout and mortar at Toilets and the Janitor Closet.
   l. Masonite and FRP wall paneling glues throughout interiors.

F. Lead Hazards at 2950 Mission Street

1. Lead has been detected in individual painted surfaces and surface coatings in concentrations greater than 5,000 parts per million (ppm) lead or 1.0 milligram of lead per square centimeter (mg/cm²). Where ranges of lead levels are indicated, Contractor shall presume the highest level is typical. These lead containing surfaces include, but are not limited to the following:

   a. Paints, glazings and /or stains on ALL of the following building materials:
      1) Exterior metal gutters (5.8 mg/cm²).
      2) Exterior wood soffit and wood soffit beams at the building (5.3 mg/cm²).
      3) Interior canvas wall coverings (1.0 to 1.0 mg/cm²).

   b. Paints on wood window sills at Children’s Toilet T3 (1.6 mg/cm²).

2. Lead has been identified in individual painted surfaces and surface coatings in concentration less than 5,000 ppm lead or 1.0 mg/cm². Where ranges of lead levels are indicated, Contractor shall presume the highest level is typical. These lead containing surfaces include, but are not limited to the following surfaces:

   a. Paints, glazings and /or stains on ALL of the following building materials:
      1) Exteriors:
         a) Wood covered walkway ceilings (-0.1 to -0.1 mg/cm²).
         b) Wood doors, wood door framing / casings / trim and transom windows (-0.2 to -0.1 mg/cm²).
         c) Metal downspouts and drain pipes (-0.1 to -0.1 mg/cm²).
         d) Metal and wood fascia (-0.2 to -0.1 mg/cm²).
         e) Stucco walls (-0.3 to -0.1 mg/cm²).
         f) Striping at front and rear Play Yards (-0.4 to -0.1 mg/cm²).
         g) Wood benches (-0.3 to -0.2 mg/cm²).
h) Metal tables at the rear Play Yard (-0.2 to 0.0 mg/cm²).
i) Plastic sand box (-0.1 mg/cm²).
j) Gazebo (-0.2 mg/cm²).
k) Metal and plastic play structure components (-0.5 to -0.1 mg/cm²).
l) Metal shed (-0.3 mg/cm²).

2) Interiors:

a) 4”x6” black ceramic base tile at Toilets and the Janitor Closet (-0.6 to 0.2 mg/cm²).
b) 2”x2” blue and gray ceramic floor tile at Toilets and the Janitor Closet (-0.5 to -0.2 mg/cm²).
c) Gypsum board walls and ceilings (-0.3 to 0.2 mg/cm²).
d) Wood beams (-0.1 to 0.0 mg/cm²).
e) Wood cabinets and casework (-0.3 to -0.1 mg/cm²).
f) 2’x4’ ceiling tiles (-0.2 to 0.2 mg/cm²).
g) Wood chair rail (-0.1 mg/cm²).
h) Wood doors, wood and metal door framing / casings / trim and wood transom windows (-0.3 to 0.5 mg/cm²).
i) Metal heater covers (-0.3 to -0.1 mg/cm²).
j) Metal water heater (-0.1 mg/cm²).
k) Wood window sash, jamb and casings (-0.4 to 0.0 mg/cm²).
l) Wood and FRP wall paneling (-0.3 to -0.1 mg/cm²).

b. Paints on wood window sills throughout excluding at Children’s Toilet T3 (-0.1 to -0.1 mg/cm²).

G. The Contractor shall assume that all paints and surface coatings contain detectable quantities of lead requiring compliance with CAL/OSHA lead regulation in the absence of objective data to the contrary. Additionally, the Contractor shall assume that, at a minimum, lead is “present” in all of these materials at levels that have a potential, until proven otherwise, to create a lead hazard.

H. The District has not verified that any paints, coatings, dusts, or materials are “lead free” or below 600 ppm. The Contractor shall treat all paints, coatings, dusts or materials as having a lead content greater than 600 ppm requiring dust controls and personal protective procedures for construction activities in conformance with the Cal/OSHA Lead Construction Standard, 8 CCR 1532.1 lead. Any paint, varnish, or other coating or finish not listed above shall be considered to be lead-based paint with lead levels at or exceeding 5000 ppm lead or 1.0 mg/cm² for this contract.

I. All firms, including sub-contracted firms who impact lead-based paint (LBP) (5,000 ppm lead or 1.0 mg/cm² or greater) at Child Occupied Facilities shall conduct all work in accordance with 40 CFR Part 745. This includes but is not limited to being an EPA certified firm; having an EPA “Certified Renovator”; providing “on-the-job” training for workers; conducting pre-renovation notifications; following specific work practice procedures for containment, disturbance and final clean-up; and inspection requirements. Renovation is defined in 40 CFR Part 745 as the modification to any existing structure or portion that results in the disturbance of LBP surfaces, unless the activity is performed as part of an abatement. In essence this regulation includes all work activities that disturb LBP surfaces.
J. The EPA certified Contractor or Sub-contractor(s) “Certified Renovator” shall be responsible for identifying the specific job activities which impact lead-based paint (LBP) during renovation that requires the use of “containment” as described in 40 CFR Part 745. Work also includes but is not limited to provide “on-the-job” training for workers; conduct pre-renovation notifications; follow specific work practice procedures for containment, disturbance and final clean-up; and inspection requirements as defined by regulation.

K. In addition to lead-containing paints and coatings, the Contractor shall assume that lead is present at detectable levels over 600 ppm in existing plumbing components and solders, glazing compounds, roof jacks, and surficial soils.

L. Metallic Mercury and mercury compounds are present at these sites in fluorescent lighting tubes, high intensity discharge lamps, mercury switches and mercury thermostats. All demolition and disposal of these items shall be conducted in accordance with applicable safety and environmental regulation and the requirements of the Contract Documents.

M. Polychlorinated biphenyl (PCB)-containing fluorescent lighting ballasts. These sites contains fluorescent lighting fixtures manufactured or installed prior to 1979. All fixtures known or presumed to have been installed prior to 1979 shall be considered to contain PCB ballasts unless otherwise noted in the contract documents. Removal, handling and disposal of PCB ballasts is subject to applicable regulation and requirements of the Contract Documents.

N. Refrigerant gasses. These sites contains HVAC units and refrigerators with refrigerant gasses. Recycling of these gasses is subject to applicable regulation and requirements of the Contract Documents.

O. These sites are presumed to contain smoke detectors with low level radioactive materials. Removal, handling and disposal of smoke detectors with low level radioactive materials is subject to applicable regulations and requires coordination with the manufacturer for proper disposal.

P. These sites are presumed to contain self-luminating exit signs with low level radioactive tritium (i.e. tritium-tubes). Removal, handling and disposal of self-luminating exit signs with low level radioactive tritium (i.e. tritium-tubes) is subject to applicable regulations and requires coordination with the manufacturer for proper disposal.

Q. These sites are presumed to contain emergency exit signs with back-up emergency light fixtures with lead back-up batteries and back-up emergency light fixtures with lead back-up batteries. Removal, handling and disposal and / or recycling of lead batteries are subject to applicable regulation and requirements of the Contract Documents.

R. Crystalline Silica is presumed present in all concrete, plaster, ceramic tile, grouts, and other cementitious materials at this site as well as soils. Worker protection and control of air dust during cutting, drilling, demolition and other construction operations is the responsibility of the Contractor.
Sensible Environmental Solutions Inc.  
ZAIDA RODRIGUEZ EARLY EDUCATION SCHOOL  
TECHNOLOGY INFRASTRUCTURE PROJECT  
SAN FRANCISCO UNIFIED SCHOOL DISTRICT  

May 17, 2018 00 31 27 - 6  
Existing Hazardous Materials Conditions  

S. The Contractor shall take into consideration all existing known and presumed hazardous materials that may be disturbed or otherwise impacted by the Work of this project. All work of this project that disturbs or otherwise impacts hazardous material shall be considered included in the Work of the project and shall be conducted in accordance with all applicable regulations and the Contract Documents. The Contractor shall use appropriately trained and qualified personnel to conduct all hazardous material related work and shall adhere to the requirements for handling, removal, clean-up, and disposal in accordance with the Contract Documents and all applicable Cal/OSHA, Cal/EPA, Department of Health Services (DHS), and Bay Area Air Quality Management District (BAAQMD) regulations.

1.03 RELATED DOCUMENTS  
A. Contract Documents including hazardous material-related specifications and all other project construction documents.

1.04 USE OF HAZARDOUS MATERIALS INFORMATION  
A. Hazardous material information identified herein was obtained for the use of the District and its Consultants for planning and design stages of the Project. The above mentioned survey data and reports are not, as a whole, part of the Contract Documents, but can be relied upon by the Contractor to characterize general site conditions, although quantities, friability and other factors may have changed or altered since the published report dates.

B. All statements, findings and interpretations in the above mentioned reports are those of the Survey or Environmental Consultant. The District makes no representation, either expressed or implied, as to the completeness or adequacy of the above mentioned reports. Bidders are advised that the limited testing of components allows for generalizations in describing the extent of hazardous materials. Contractors may visit the site and investigate to identify locations of hazardous materials identified herein. Specific components or materials, should be checked against the referenced survey reports and the Contract Documents, or be tested at affected locations, prior to disturbance of such components.

PART 2 – PRODUCTS: NOT USED

PART 3 – EXECUTION: NOT USED

END OF SECTION
SECTION 01 11 00

SUMMARY OF HAZARDOUS MATERIALS WORK

1.01 GENERAL

A. The San Francisco Unified School District (SFUSD) is soliciting proposals for conducting asbestos and lead related related work to support the Technology Infrastructure Project at Zaida Rodriguez School sites located at 2950 Mission Street and 421 Bartlett Street, San Francisco, California.

1.02 HAZARDOUS COMMUNICATION

A. Hazardous materials present in the building(s) and structures at this site include: asbestos containing materials (ACMs); assumed asbestos containing materials; asbestos containing construction materials (ACCMs); lead-based paint (LBP); lead-containing coatings and materials; mercury containing fluorescent lighting tubes, switches, and thermostats. Refer to Section 00 31 27 “Existing Hazardous Materials Conditions” for a list of known and assumed hazards at the site.

1.03 SCOPE OF WORK

A. The Contractor(s) work includes the removal, drilling, coring and attachment to finishes containing asbestos, lead-based paints and/or lead-containing paints to the extent required to support the Technology Infrastructure Project. The Contractor is responsible for coordination with the General Contractor for the completion of the work of the project. All work shall be to the extent necessary to properly complete the full scope of work of the project. All work that disturbs the existing finishes (removal, drilling, coring and attachment) shall be conducted using tools and equipment equipped with a shroud and attached to a functioning DOP tested HEPA vacuum during operation. Where use of shrouded tools is not possible, the Contractor shall conduct asbestos and lead related work operations within negative pressure enclosures.

B. The Contractor shall utilize plastic drop sheets at all locations where disturbance of finishes will occur. At completion of work, contractor shall thoroughly clean all surfaces in the areas of work using HEPA vacuums and wet wiping in preparation for final visual inspection (interior and exterior areas) and dust wipe sampling (interior areas only) by the District’s Environmental Consultant.

C. The Contractor shall capture and contain all waste streams generated during the course of the project. Waste streams shall be properly segregated (plastic, disposable PPE, rags, HEPA vacuum bags, bulk debris, etc.) to minimize hazardous waste disposal. The District’s Environmental Consultant will conduct waste characterization sampling for disposal purposes. For bidding purposes, the Contractor shall assume that all rags, HEPA vacuum bags and bulk debris will require disposal as a Non-RCRA Hazardous Waste.

1.04 WORK SCHEDULE

A. Within the overall construction schedule, the total allotted time allowed for completion of all hazardous materials abatement work required by the Contract Documents is as follows:
1. Two (2) eight-hour shifts after 6:00 pm on a weekday, weekend, holiday, or when students and staff are not present. Contractor shall comply with local noise ordinance requirements.

1.05 RELATED DOCUMENTS

A. Project Plans and Specifications

B. Section 00 31 27 Existing Hazardous Materials Conditions

1.06 SUBMITTALS

A. Pre-start Submittals. Submit a minimum of one (1) copy of the following hazardous materials submittals to the Environmental Consultant at the site prior to the start of hazardous materials work. Additionally, the Contractor shall maintain one (1) copy at the site at all times during hazardous materials related work.

1. Licensing and Registration: Submit copies of current and valid certificates for the following:

   a. Contractor’s license and Contractor’s asbestos certificate issued by the California State Licensing Board (CSLB);

   b. Registration for asbestos-related work from OSHA in accordance with 8 CCR, Article 2.5 (asbestos abatement contractors only).

   c. Contractor’s certification to conduct lead-based paint renovation, repair and paint activities pursuant to 40 CFR 745.90 (i.e. EPA RRP).

2. Notifications, Communications and Postings. Provide copies of all required notifications including the following:

   a. Division of Occupational Safety and Health
      Local Office
      (Temporary work site notification- asbestos and lead)

   b. California Department of Public Health
      Childhood Lead Poisoning Prevention Branch
      850 Marina Bay Parkway
      Building P, Third Floor
      Richmond, CA 94804-6403
      (Abatement of Lead Hazards Notification (For any LBP related work)

   c. Where local police and fire departments have jurisdiction, provide required notifications.

3. Personnel Qualifications: Personnel documents required by this section shall be organized by individual employees and must be current and valid. All workers who will be performing work at the site will be required to show photo documentation prior to approval of their personnel documents. Workers who do not have all the required documentation present at the site, including photo documentation, will be denied access to the type of hazardous material Work Areas for which they are lacking full valid documentation.
a. Training Certificates for Asbestos: Submit proper documentation that Competent Person(s) and Workers scheduled for this project have successfully completed Cal/OSHA approved courses for asbestos abatement.

b. California Department of Public Health (CDPH) Training Certificates for Lead: Submit proper documentation that Competent Person(s) and Workers scheduled for this project have a valid and current card issued by CDPH. Course completion forms are not acceptable forms of documentation. The CDPH supervisor must be on-site whenever lead-related work is being conducted.

c. Contractor’s Certified Lead Renovator Certification; Submit proper documentation that the Certified Renovator on staff scheduled for this project has valid and current certificates.

d. Medical Examination: Submit proper documentation, in the form of the physician’s written opinion, showing that all hazardous materials abatement personnel scheduled for this project have had the appropriate medical examinations applicable to their assignments. Exams must be in accordance with 8 CCR 1532.1 for lead and 8 CCR 5144 for respiratory protection. All exams must have been conducted within the last 12 months. Respiratory use evaluation exams alone do not suffice for asbestos and lead related work. Do not submit actual medical exam results. The written physician’s opinion should indicate what exam(s) were provided and limitations on the worker.

e. Respirator Fit Tests: Submit proper documentation that personnel who will be entering Regulated Areas have had a qualitative respirator fit test performed within the last 12 months for all face fitting respirators.

f. Baseline blood lead testing performed in accordance with CAL/OSHA 8 CCR 1532.1 Lead and Federal OSHA 29 CFR 1926.62 Lead. The baseline blood lead shall have been within the past 90 days.

4. Calibration Data: Submit calibration data for the secondary standard (rotometer) that will be used on this project to calibrate personal air sampling pumps. The secondary standard must be calibrated to a primary standard within the last (6) six months.

5. HEPA Filtration Certifications:

a. Provide third party test certificates for all Differential Pressure Equipment and HEPA Vacuums to be used on this project. Such Certificates shall document that each item of equipment has been tested on-site prior to start-up and that the results have demonstrated that each HEPA equipment assembly meets the efficiency requirement for HEPA filtration as an installed system or unit of equipment.

b. All HEPA filtration testing must be conducted by challenging the installed filter system with 0.3 micrometer diameter particles using a dioctyl phthalate (DOP) particle generator & appropriate aerosol measurement test equipment designed for this purpose. Alternate test methods may be accepted if demonstrated to be equivalent and approved by the Environmental Consultant.
c. Test certificate stickers shall be placed on each machine tested and a copy of the testing certification shall be provided to the Environmental Consultant. The test result, date and time of testing, testing firm, and signature of qualified test technician shall be included on each certification along with equipment identification information.

END OF SECTION