

## **ADDENDUM NO. 1**

### **Rowland Unified School District Northam Elementary School Partial Modernization**

HWA Proj. No.108RSD16

DSA No. 03-112764

The following changes, omissions, and/or additions to the Specifications and/or drawings shall apply to proposals made for and to the execution of the various parts of the Work affected thereby, and all other conditions shall remain the same.

Careful note of Addendum shall be taken by all parties of interest so that the proper allowances may be made in strict accordance with the Addendum, and that all trades affected shall be fully advised in the performance of the Work which will be required of them.

In case of conflict between Drawings, Specifications, and this Addendum, this Addendum shall govern.

### **ADDM. ITEMS**

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#### **GENERAL**

1. At "Wonder of Reading" Library, patch and repair interior wall finish as required to match existing after the reinstallation of wall mounted HVAC units.
2. All (N) Walk-Off Mat shall be Owner Furnished Contractor Installed items.
3. For dissimilar metals, contractors shall provide permanent means of material isolation, such as applying min. 6 mil. emulsion paint, or using high quality self-adhering waterproofing membrane, or heavy duty nylon shim. Provide product submittal for Architect's review prior to application.
4. (N) Fire Extinguisher shall be mounted at 48" high max to top of handle. (Typ.)

#### **SPECIFICATIONS**

##### **SECTION 01010 - SUMMARY OF WORK**

5. REVISE: *At Part 1, 1.02 Paragraph A. 2*  
"2. Site  
  
Provide replacement of site utilities, path of travel upgrade for accessibility and new roof for walkway cover (**ALTERNATE No. 1**)"
- TO READ: "2. Site
- a. Provide replacement of site utilities, path of travel upgrade for accessibility.
  - b. All items associated with new roofing and replacement of existing fascia for walkway cover (**ALTERNATE No. 1**)"

##### **SECTION 06120 - PARALLEL STRAND LUMBER (PSL)**

6. ADD: This section in its entirety. See attached, dated September 28, 2010.

##### **SECTION 10001 - MISCELLANEOUS ITEMS**

7. REPLACE: This section in its entirety. See attached, dated September 28, 2010.

SECTION 16111 - CONDUIT

8. REVISE: *At Part 3, 3.02*  
TO READ: Paragraph KK  
"KK. Wipe plastic conduit (PVC) clean before joining. Use an approved primer. Apply even coat of cement to entire area to be inserted into fitting. Let joint cure for 20 minutes minimum. Use approved solvent-weld cement specifically manufactured for purpose. Threading of PVC conduit is prohibited."

SECTION 16120 - WIRE AND CABLE RATED 600 VOLT

9. REPLACE: *At Part 2, 2.01*  
TO READ: Paragraph F  
"F. Wiring for fluorescent lighting fixtures mounted end to end: Type "THHN". Fixtures shall be approved for end to end feed through."
10. REPLACE: *At Part 2, 2.02*  
TO READ: Paragraph B  
"B. Isolated circuit ground: Insulated conductor green with yellow stripe in color."

SECTION 16440 - DISCONNECT SWITCHES

11. REVISE: *At Part 2, 2.01*  
TO READ: Paragraph B  
"B. Cutler Hammer."

SECTION 16770 - INTERCOMMUNICATIONS, PUBLIC ADDRESS, MASTER CLOCK & CLASS CHANGE SIGNALING SYSTEM

12. ADD: This section in its entirety. See attached, dated September 28, 2010.

**DRAWINGS**

**ARCHITECTURAL:**

On SHEET T-1

13. REVISE: *At Graphic Symbols*  
" 

XXX
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 Room Name Number"
- TO READ: " 

XXX
-----

 Room Name  

XXX
-----

 Room Number  

XXX
-----

 School Room Number"

On SHEET A-1.0

14. REVISE: *At Detail 4, (N) Accessible Parking Stalls*  
Per attached drawing AD1-A1, dated September 28, 2010.

On SHEET A-2.0 and A-2.1

15. ADD: *At Sheet Notes*  
"11. For (N) concrete landing pad at accessible classroom doors, remove (E) concrete paving sufficient enough to achieve 2% max. slope requirement for repaving per sheet A-2.2 and A-2.3 or to the nearest (E) joint whichever is more."

On SHEET A-7.0

16. REVISE: *At Detail 8B, Typ. Exterior Elevations*  
Per attached drawing AD1-A2, dated September 28, 2010.

On SHEET A-9.0

17. REVISE: *At Detail 4, Typ. Soffit Section*  
Per attached drawing AD1-A4, dated September 28, 2010.

On SHEET A-9.1

18. REVISE: *At Detail 2A, Typ. Framing for HVAC Unit*  
Per attached drawing AD1-A6, dated September 28, 2010.

**MECHANICAL:**

On SHEET M-1.0

19. REVISE:  
TO READ: *At Construction Notes*  
Construction Note #6  
"6. Reconnect all elec. power & controls. Test unit after installation. Calibrate (E) room thermostat for proper operation of heating, cooling and fan modes. The contractor shall operate each unit to meet original manufacturer's operating standards and submit air-balance and operating report for each unit."

**PLUMBING:**

On SHEET P-1.0

20. REVISE: *At Legend*  
Per attached drawing AD1-P1, dated September 28, 2010.

21. REVISE: *At Detail 4, Pressure Reducing Valve Assembly*  
Per attached drawing AD1-P2, dated September 28, 2010.

**ELECTRICAL:**

22. REPLACE: The following sheets with attached addendum #1 revision drawings, dated September 28, 2010:

- E-1.0 SYMBOL LIST, FIXTURE SCHEDULE AND NOTES
- E-1.3 DATA, TELEPHONE, PA, CLOCK, TV AND FIRE ALARM RISER DIAGRAM
- E-2.1 DEMOLITION SITE PLAN
- E-2.2 ELECTRICAL SITE PLAN
- E-2.3 SITE LIGHTING DEMOLITION PLAN
- E-2.4 SITE LIGHTING PLAN
- E-3.1 BUILDINGS C-1, C-2, C-3, C-4 & C-5 DEMOLITION FLOOR PLANS
- E-5.1 BUILDINGS C-1, C-2, C-3, C-4, C-5 & C-6 POWER FLOOR PLANS
- E-6.1 BUILDINGS C-1, C-2, C-3, C-4, C-5 & C-6 SIGNAL FLOOR PLANS

END OF ADDENDUM NO. 1



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**SECTION 06120  
PARALLEL STRAND LUMBER (PSL)**

**THE REQUIREMENTS OF THE GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, AND DIVISION 1 APPLY TO THIS SECTION.**

**PART 1 - GENERAL**

**1.01 Scope**

This work includes the complete furnishings and installation of all Parallel Strand Lumber (PSL) as shown on the drawings herein specified and necessary to complete the work.

**1.02 Requirements Of Regulatory Agencies:**

- A. All work and materials shall be governed by The 2007 Edition of the California Building Code.
- B. All Parallel Strand Lumber shall be fabricated by an I.C.C. approved fabricator;
- C. American Standard Testing Materials, ASTM D3737-02.

**1.03 Tests and Inspections:**

- A. All material shall be continuously inspected during gluing operations and shall be certified by an approved plant inspector, and identified by the inspector. Testing shall conform to California Building Code 2007 edition, and Title 24.

**1.04 Reference Standards:**

- A. WCLA: West Coast Lumber Inspection Bureau.
- B. AITC: American Institute of Timber Construction

**1.05 Code Approvals**

These products shall be designed and manufactured to the standards set forth in the International Code Council Evaluation Service (ICC-ES) Report Number ESR-1387.

**1.06 Related Work Specified Elsewhere**

- A. Section 06100 - Rough Carpentry

**1.07 Submittals**

- A. Shop drawings: Complete shop drawings are required on all work of this section. Such drawings shall show all required layout, dimensions, shapes, cuts, holes, and all details necessary for determining fit and placement in the project. Drawings showing layout and detail shall be provided by manufacturer or an authorized distributor.
- B. Design Calculations: As part of the submittal process, design calculations shall be prepared by product manufacturer.
- C. Production: Fabrication and/or cutting shall not proceed until the architect and/or engineer have approved

the submittal package.

## **PART 2 - PRODUCTS AND MATERIALS**

### **2.01 Materials**

Code Reports: Materials shall comply with ICC-ES Report Number ESR-1387.

A. Adhesives: Adhesives shall be of the waterproof type conforming to the requirements of ASTM D-2559.

### **2.02 Fabrication**

Parallel strand lumber shall be manufactured by iLevel of Weyerhaeuser in a plant listed in the reports referred to above and under the supervision of an approved third-party inspection agency. It shall be manufactured from strands of wood fiber in a continuous process with all strands oriented to the length of the member and then fed into a press in the desired lay-up pattern. All members are to be free of finger and scarf joints and mechanical connections in full-length members.

### **2.03 Identification**

Parallel strand lumber shall be identified by a stamp indicating the product type and grade, ICC-ES evaluation report number, manufacturer's name, plant number, and the independent inspection agency's written approval.

## **PART 3 - EXECUTION**

### **3.01 Installation**

Parallel strand lumber shall be protected from the sun and weather. It shall be erected and installed in accordance with the plans and any manufacturer's drawings and installation suggestions. Temporary construction loads that cause stresses beyond design limits are not permitted. Safety bracing is to be provided by the installer to keep the Parallel Strand Lumber straight and plumb as required, and to ensure adequate lateral support for the individual Parallel Strand Lumber members and the entire system until the sheathing material or other supporting material is applied.

### **3.02 Performance Standards**

Products shall be proven by testing and evaluation in accordance with the provisions of ASTM D-5456.

### **3.03 Fire Rating**

Fire and sound ratings are to be established in accordance with assemblies as detailed in ICC-ES Report No. ESR-1387 or the Directory of Listed Products, published by Intertek Testing Services. The fire-resistance of Parallel strand lumber is equivalent to that of sawn lumber of equal depth and width when used in heavy-timber construction.

### **3.04 Warranty**

The products delivered shall be free from manufacturing errors or defects in workmanship and material. The products, when installed and maintained in accordance with the manufacturer's recommendations and/or instructions, shall perform as designed for the normal and expected service life of the building.

END OF SECTION

**SECTION 10001  
MISCELLANEOUS ITEMS**

The requirements of the General Conditions, Supplementary General Conditions, and Division 1 apply to this section.

**PART 1 : GENERAL**

1.01 Scope:

- A. Furnish and install all Miscellaneous Items as indicated on the drawings and as specified in this section.

1.02 Submittal:

- A. Shop Drawings: Submit six (6) copies of product data for each item for the Architect's approval prior to commencement of work.

**PART 2 : PRODUCTS**

2.01 Materials:

- A. Fire Extinguisher (based on Badger Extra Fire Protection):

1. WALL MOUNTED (EXPOSED) EXTINGUISHER: Model 5MB-6H (5 lb.) extinguisher with factory supplied wall-mounting bracket.

- B. Detectable Warning Surfaces:

1. Cast-In-Place: Cast-In-Place Detectable/Tactile Warning Surface as manufactured by Armor-Tile, Engineered Plastics Inc., or accepted equal.

- a. Color: Yellow conforming to Federal Color No. 33538.

2. Surface Applied: Surface Applied Detectable/Tactile Warning Surface Tile as manufactured by Armor-Tile, Engineered Plastics Inc. or accepted equal.

- a. Color: Yellow conforming to Federal Color No. 33538.

- b. Fasteners: Color matched, corrosion resistant, flat head drive anchor: 1/4" diameter x 1 1/2" long as supplied by Engineered Plastics Inc.

- c. Adhesive: Armor-Bond as supplied by Engineered Plastics Inc.

- d. Sealant: Armor-Seal as supplied by Engineered Plastics Inc.

END OF SECTION

**SECTION 16770  
INTERCOMMUNICATIONS, PUBLIC ADDRESS,  
MASTER CLOCK & CLASS CHANGE SIGNALING SYSTEM**

**THE REQUIREMENTS OF THE GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, AND  
DIVISION 1 APPLY TO THIS SECTION.**

**PART 1: GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

**1.02 WORK INCLUDED**

- A. The contractor shall provide a combination public address, loud speaking intercom, master clock, class change and emergency tone signaling system. The system shall be a modular plug-in printed circuit board type, using HMOS Microprocessor, TTL Logic and HCMOS Memory and Sensing. System shall provide DTMF signaling, dial tone, ringing and busy signals to allow full integration with the PABX telephone system.
- B. The contractor shall provide interior and exterior loudspeakers, Administrative telephone, wall display as shown on the drawings and provide and connect all conductors and terminal strips in cabinets and backboards necessary to provide for the functions and the requirements specified herein.
- C. Complete UPS systems shall be provided to back-up the PA rack and the nodes. A minimum back up of 60 minutes is required.
- D. Provide all conduit, surface raceways, outlet boxes, junction boxes, pull boxes, terminal cabinets, and similar devices required for work under this section.
- E. Provide engineering, testing, materials components and supervision necessary to provide a complete operable installation. Authorized dealer to insure proper installation shall install systems.

**1.03 RELATED WORK**

- A. Section 16010 - Basis Materials and Methods.

**1.04 EQUIPMENT SUPPLIERS**

- A. Equipment and materials shall be provided and installed by a factory authorized distributor to ensure proper specification adherence, final connection, test, turnover, warranty compliance, and service.
- B. The specification is based on the equipment of manufacturers who have been approved by the district and the manufacturers herein named shall be considered as meeting the requirements of this specification. For all items which are identified by part number and manufacturer the performance specifications which are published in the most recent manufacturer's data sheet available at the time of bidding this project shall be applicable to the present work as though fully written out herein.

- C. The equipment shall be Bogen Quantum Multicom IP or Rauland Telecenter VOIP.
- D. Service Availability:
  - 1. The supplier shall maintain sufficient stock on hand and have a fully equipped service organization capable of guaranteeing response time within four (4) hours of service calls, 24 hours a day, 7 days a week to service completed systems.

#### 1.05 CODES

- A. Work shall be performed in accordance with all applicable requirements of all governing codes, rules, and regulations including the following minimum standards, whether statutory or not:
  - California Building Code (CBC)
  - California Electric Code (CEC)
  - National Fire Protection Association (NFPA)
  - City, State, and other codes and requirements
- B. All equipment must be registered with the FCC.
- C. All equipment must be listed by Underwriters Laboratories or a nationally recognized testing laboratory empowered by the United States Occupational Safety and Health Administration to issue listing names which are equal to U.L.

#### 1.06 TRAINING OF DISTRICT PERSONNEL ON MAINTENANCE OF SYSTEM

- A. The contractor shall provide training for two employees of the School District. The training shall be for all equipment and devices furnished in this section of the specifications.
- B. The training shall include all instruction, tools, and equipment necessary for installation service maintenance and programming of the equipment and devices. At completion of training the technicians shall be certified by the manufacturers.

#### 1.07 DOCUMENTATION AND SUBMITTAL

- A. Contractor Qualifications
  - 1. A copy of the contractor's valid State of California Contractor License.
  - 2. Proof that the contractor has been regularly engaged in the business of electronics contracting consisting of, but not limited to, engineering, fabrication, installation, and servicing of electronic systems of the type specified herein for at least the past ten- (10) consecutive years. Provide a statement summarizing any pending litigation involving any officer or principal of/or the bidding company, the nature of the litigation and what affect the litigation may carry as it relates to this work in the worst case scenario. Non-disclosure of this item, if later discovered may result, at the owner's discretion, in the contractor bearing all costs attendant with the transfer of the work to a new firm and any cost related to associated delays in the progress of the work.



3. A list containing at least ten (10) California installations comparable in scope and nature to that specified in the contract documents.
  4. Submit complete documentation indicating in detail that the contractor has competent engineering, installation, service and maintenance personnel and facilities with reasonable stock of service parts within fifty air miles of the job site. Contractor shall submit a warranty statement certifying that they are capable of conforming to specified warranty requirements.
  5. Contractor shall submit a letter from the public address system manufacturer stating that the contractor is an authorized distributor/contractor for the equipment he proposes to use on this project and is licensed to purchase and install the software required to provide the specified functions.
- B. Submittal shall be made within thirty (30) calendar days after the award of the contract or as required by other sections. Submit six (6) copies of the following:
1. Complete bills of quantities, including all materials, components, devices, and equipment required for this work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each item listed:
    - 1-a. Quantity
    - 1-b. Description
    - 1-c. Manufacturer's Name and Model Number
    - 1-d. Manufacturer's Specification Sheet
  2. A statement of franchises, distributorships, dealerships, arrangements and agreements with manufacturers of equipment to be used for this work as specified above.
- C. Submit shop drawings. All shop drawing shall be engineered and drawn on a vector/raster based CAD System. Approved software is AutoCAD 2002.
1. Complete floor plans, at scale of contract documents, showing the locations throughout the project of all receptacles, conduits, wire ways, tray, pull boxes, junction boxes, equipment racks, telephones, speakers and the PABX switch and other devices.
  2. Complete system riser diagrams, showing all elevations, room numbers, conduit sizes, types and fills, box sizes and types, devices, equipment and rack designations.
  3. Complete scaled (1/4" = 1") equipment rack elevation drawings, including equipment designation, manufacturer's name, and model number.
  4. Run sheets or field wiring drawings: clearly show at each terminal point, the type of connector to be used and include point to point wiring details of each connector. Note where shields are connected and where they will float to ensure the integrity of the grounding system. Call out wire types and color-codes where appropriate.
- D. Near completion of installation submit the following record drawings developed from the final "As-Built" systems:

1. Floor plans, diagrams, details and CAD drawing disks. All drawings shall be clearly labeled as "As-Built."
2. No less than thirty (30) days prior to jobsite acceptance testing, submit one (1) preliminary copy of each of the following manuals prior to, and as a requirement of, Owner acceptance of the work of this section.
  - a. Equipment operating instructions: complete comprehensive instructions for the operations of all contractor fabricated devices and equipment items provided as part of the work of this section.
  - b. Systems operating instructions: complete instructions for the operations of the systems provided as part of the work of this section.
  - c. Manufacturer's original operation instruction and service manuals. All brochures, manuals and service sheets published by the manufacturer(s) of the equipment for systems checkout and acceptance tests.
3. Provide on the job training in the operation of the electronics systems for personnel designated by the Owner, during the first thirty (30) calendar days of operation. In general, training must be able to start a minimum of five (5) working days prior to a system's completion date. Project training periods shall be scheduled to occur during the normal school day.

#### 1.08 DELIVERY, STORAGE AND HANDLING

- A. Contractor shall bear the costs of all shipping to the site, and of all unusual storage requirements. Make appropriate arrangements, and coordinate with authorized personnel at the site, for the proper acceptance, handling, protection, and storage of equipment so delivered.

#### 1.09 WARRANTY

- A. Warranty Period: Warrant all of the work of this section to be free from defects in materials and workmanship for period of twelve (12) months from the date of Owner acceptance or from the date of first usage of the work by Owner personnel. The first usage date shall be agreed to in writing by the owner and contractor within five (5) working days of first usage. Component warranty service shall apply to repairs only made necessary by normal component wear and proper component usage. The warranty service does not apply to any Owner furnished equipment and labor. Transportation of warranty substitutes, or test systems, equipment, devices, material, parts and personnel to and from the jobsite shall be at no expense to the Owner during the warranty period.
- B. Activate all manufacturers' equipment warranties in Owner's name to commence on the date of acceptance.
- C. Warranty operations: the electronic systems are absolutely vital to the operation of the communications - thus, special warranty service requirements will be required in excess of normal contract documents. Contractor shall provide the Owner with a local Southern California telephone number, which, during normal working hours, or during non-standard working hours will be answered by a professional telephone answering service. In the event of a malfunction, the pre-designated owner's representative(s) will call the contractor's warranty service telephone number and request service. The contractor will respond to the Owner's initial service request within (4) hour's time. The contractor's initial response shall consist of

qualified personnel arriving at the school and reviewing the Owner's service request. Contractor's service personnel shall then initiate a program of repair to start to correct the service problem as soon as possible.

- D. Three (3) separate visits shall be conducted by the contractor, at four (4) month intervals during the warranty period, in order to verify that each system component and the complete system are functioning correctly. The inspection visits shall be conducted at times, which shall be reasonably determined.
- E. Warranty service calls made by telephone to this Contractor or his designated representative shall hereby is defined as proper notification that warranty service is required.
- F. Inventory: Contractor shall maintain, within the fifty (50) air mile area, a reasonable inventory of all parts necessary to provide service according to the specified warranty requirements.

## **PART 2: PRODUCTS**

### **2.01 EQUIPMENT MANUFACTURERS**

- A. Public address, loud speaking intercom, class change signaling shall be:  
  
Bogen Quantum Multicom IP or Rauland Telecenter VOIP.

### **2.02 GENERAL REQUIREMENTS**

- A. All equipment shall be new and unused. All components and system shall be designed for uninterrupted duty. All equipment, materials, accessories, devices and their facilities covered by this specification or noted on contract drawings and installation specifications shall be the best suited for the intended use and shall be provided by a single manufacturer or if provided by different manufacturers, recognized as compatible by both manufacturers.
- B. The Integrated Communications System shall provide a comprehensive communication network between administrative and staff locations. The central processor and switching unit shall be of modular plug-in printed circuit board type, using HMOS microprocessor and TTL logic and HCMOS memory and sensing. HCMOS circuitry shall be protected with transient voltage surge suppression devices on all inputs and outputs. Non-volatile EPROM shall store permanent memory and non-volatile EEPROM shall store field-programmable memory. Systems, which use a battery to maintain system configuration information, shall not be acceptable.
- C. The system is to be designed and configured for maximum ease of service and repair. All major components of the system shall be designed as a standard component of one type of card cage. All internal connections of the system shall be with factory-keyed plugs designed for fault-free connection. The printed circuit card of the card cage shall be silk screened to indicate the location of each connection.
- D. Plug disconnect: All major equipment components shall be fully pluggable by means of multi-pin receptacles and matching plugs to provide for ease of maintenance and service.

### **2.03 SECTION INCLUDES**

- A. Integrated Communications System for School Application

1. Intercom System - Two way communication between any administrative phone and any classroom speaker.
  - a) Call initiation switches. (as shown on drawings)
2. Administrative telephone and wall display.
3. Public Address System
4. Master Clock functionality with bell schedules and timed events.
5. Public automated building exchange system (Passing Bells)
6. Voice over Internet Protocol (VoIP) communication modules.
7. Interface to Private Branch Exchange (PBX) or Voice over Internet Protocol (VoIP) system. Provide additional co trunk ports at existing Toshiba PABX Telephone switch for interface such that all existing telephones on the Toshiba existing can access the PA/Intercom system. Do all necessary reprogramming.

#### 2.04 SYSTEM SOFTWARE PARAMETERS

- A. The communication system shall be a Bogen Quantum Multicom IP or Rauland Telecenter VOIP, and shall provide a comprehensive communication network between administrative areas and staff locations throughout the facility. Nonvolatile memory shall store permanent memory and field-programmable memory. A system, which uses a battery to maintain system configuration information, shall not be acceptable. The system shall provide no less than the following features and functions:
1. Telephonic communication (complete with DTMF signaling, dial tone, ringing and busy signals, and data display) on administrative stations shall use two wires. Systems that use more than two wires for communication, tones and data display shall not be acceptable.
  2. Amplified-voice communication with loudspeakers shall use a shielded audio pair.
  3. The system shall be available in the following configurations (all catalog numbers are based on Bogen equipment):
    - a) MC2K Wall-mounted in a custom enclosure. Station capacity shall be from 24 to 130 stations. All stations shall have the ability to support displays.
    - b) MC2KR Rack-mounted. Station capacity shall be from 24 to 250 stations. All telephone stations shall have the ability to support displays.
    - c) QRC24 & QRC48 Compact Quantum Rack System. Station capacity shall be from 24 to 48 stations. All stations shall have the ability to support displays, with an option to add up to 8 Central Office phone lines.
  4. The system shall consist of any combination of the following: Administrative Display Phones, Administrative VoIP Phones, and Administrative Phones.

- a. Staff Classroom Stations shall consist of wall- or ceiling-mounted loudspeakers with call-in switches.
  - b. Administrative phone stations shall consist of either VoIP phones, display phones, or DTMF dialing 2500 analog-style telephone sets.
  - c. Administrative Display Phones shall be DTMF-dialing digital telephone sets with a 4x16 character LCD display panel. They shall be equipped with a standard 12-key push-button dialing keypad. Phones requiring external LCD displays shall not be accepted as an equal. Optionally, a loudspeaker may be connected at each administrative station location.
    1. Provide an Administrative Wall Display at the Administrative Station.
  - d. Administrative Display Phones and Administrative Phones shall have the option of including a loudspeaker.
  - e. All types of stations except administrative VoIP phones shall utilize the same type of field wiring. Future station alterations shall only require the station type to be changed and the proper software designation to be selected. Alterations shall not require field wiring or system head-end alterations. All field wiring and system head-end equipment shall support any type of station, at the time of installation. All contractor proposals shall reflect this capacity. Failure to submit and bid this project in this manner will be deemed as being in direct conflict of these specifications and will be rejected.
  - f. There shall be no limit to the number of administrative display stations within the total capacity of the system.
  - g. It shall be possible at any time to change the type of station at any location without equipment or wiring changes except for administrative VoIP phones that utilize existing LAN connections. Systems that limit the quantity of each station type or require future additional equipment and/or system expansion to provide additional administrative telephones shall not be accepted as an equal.
5. The system shall be a global switching system, providing up to 512 unrestricted simultaneous private telephone paths per facility. The system shall also be capable of providing up to 512 amplified intercom paths per facility. One amplified intercom path shall automatically be provided with each increment of 24 stations of system capacity. All hardware, etc., required to achieve the necessary number of amplified-voice intercom channels for this system shall be included in this submittal. Amplified-voice intercom channels shall provide voice-activated switching. Systems requiring the use of a push-to-talk switch on administrative telephones shall not be acceptable. There shall be an automatic level control for return speech during amplified-voice communications. The intercom amplifier shall also provide control over the switch sensitivity and delay times of the VOX circuitry.
  6. It is of utmost importance that emergency calls from staff stations receive prompt attention. Therefore, it is important that there be an alternate destination in case the emergency call does not get answered at the primary location. To this end:

- a) The system shall provide 911 Dial-Through with specific outside line(s) dedicated only for this function to ensure that the line is available all the time for 911 calls. The 911 Dial-Through is available to any station that can dial.
  - b) The 911 CO lines will be pre-configured and reserved. If the 911 reserved lines are busy, the normal CO lines will be connected to route the 911 calls. If all the normal CO lines are busy, the ongoing call shall be disconnected and the 911 call shall be placed.
  - c) Staff-generated Emergency calls shall be treated as the second highest system priority. Therefore, all Emergency calls shall announce at the top of the call queue of their respective administrative telephone(s). Should that emergency call go unanswered for 15 seconds, the call shall be re-routed to an alternate speaker station then prompt the caller to make a verbal call for help. During the transfer, the original administrative telephone shall continue to ring the distinctive Emergency Ring. Should the Emergency Transfer to Station have an associated administrative telephone, it too shall ring the distinctive Emergency ring.
  - d) The Emergency Transfer to Station shall be field programmable.
  - e) Should the original administrative telephone be engaged in a non-emergency conversation, its conversation shall be automatically terminated, indicated with an alert tone, and then reconnected to the station that generated the Emergency Call.
  - f) Should the administrative telephone be engaged in an emergency conversation, successive emergency calls shall log into the call queue as well as transfer to the Emergency Transfer Station for their verbal call for help. Upon termination of the initial emergency conversation, the next one shall immediately ring the administrative telephone.
  - g) Systems failing to transfer unanswered Emergency calls or failing to immediately connect to the administrative telephone shall not be deemed as equal.
7. There shall be a System-Wide Facility Emergency All-Call feature. The Emergency All-Call shall be accessed from designated administrative phones or by the activation of an external contact closure which shall give the third audio program input emergency status. The Emergency All-Call function shall have the highest system priority and shall override all other loudspeaker-related functions including Time Tone Distribution.
- a) Considering that emergency calls are to be treated with the highest level of concern. Systems which do not regard Emergency-All-Call page from an administrative telephone with the highest priority shall not be deemed as equal.
  - b) Upon picking up the receiver and dialing "9", a menu shall appear on the display prompting the user to enter each subsequent digit. In this way, the user shall not be required to memorize complicated key sequences in order to access emergency functions.
  - c) The Emergency All-Call shall capture complete system priority, and shall be transmitted over all speakers in the facility. It shall also activate an external relay, which can be used to automatically override volume controls and other systems.

- d) Systems without Emergency All-Call, or systems with All-Call that cannot be activated by external means, or which do not capture complete system priority or activate an external relay, shall not be acceptable.
8. There shall be at least four Dedicated Emergency Alarm Tones. Each may be accessed by dialing a three-digit number from designated administrative telephones. These emergency tones should be separate from the time tones. Systems using external alarm generators, or having less than four emergency alarm tones shall not be acceptable.
- a) Upon picking up the receiver and dialing "9", a menu shall appear on the display prompting the user to enter each subsequent digit. In this way, the user shall not be required to memorize complicated key sequences in order to access Emergency Alarm Tones.
9. There shall be four (4) External-Function Relay Driver Outputs, accessible from designated Quantum Commander Users or Administrative Display Telephones by dialing a four-digit number. These outputs remain set until accessed and reset at a later time. The user shall have the ability to review the status of each relay driver. A plain English menu, prompting the user through the fields without requiring the user to remember any dialing sequences shall support this feature. Systems that require the user to remember complicated dialing schemes or prompt the user via cryptic commands shall not be deemed equal.
- a) The stations shall be capable of being programmed for security contact relays for use with magnetic locks, motion detectors, cameras or any low-voltage, dry contact creating device. System using security stations for control of external functions shall not be acceptable.
  - b) Upon picking up the receiver and dialing "9", a menu shall appear on the display prompting the user to enter each subsequent digit. In this way, the user shall not be required to memorize complicated key sequences in order to access external relay functions.
10. There shall be a program-material interface included with each node, which shall accept up to four (4) Bogen Power Vector Series program modules. Systems requiring an external program source interface shall not be acceptable.
11. There shall be an outside line capability. The circuitry shall interface with the station ports of an external telephone system, and shall provide facilities for up to 960 incoming lines per facility which shall be designated by the user to ring "day" and "night" administrative display stations or administrative stations. Where an administrative display station is designated to receive outside line calls, the phone shall ring with a unique tone and the outside line number shall appear on the display panel. The option shall also provide the ability to make outside line calls from Administrative Display Stations or Administrative Stations. This ability shall be programmable for each phone and there shall be thirty-two Classes of Service available to any station. This feature shall be capable of supporting DID, DISA, and a Security DISA function.
- a) Cellular system access for Security is of the utmost concern. Wireless security page offers a password-protected Security DISA feature that shall be accessible only from authorized Police, Fire, Emergency personal or an off-premise security office, which

monitors the facility's security system. It shall function as follows: upon confirmation of the password DISA number, the system shall allow security personnel to dial access any station and monitor the activity without pre-announce tone or the privacy tone. This will then allow the security office to determine exactly what the conditions are in the station and the actions need to be taken.

12. The system shall provide for field-programmable three-, four-, five-, or six-digit architectural station numbers.
13. There shall be an automatic level control for return speech during amplified-voice communications.
14. Each station loudspeaker shall be assignable to any one, any combination, or all of the Multi-purpose zones.
15. There shall be thirty-two (32) Flexible Time-Signaling Schedules with a total of 1024 user-programmed events per facility. Each event shall sound one of user-selected tones or external audio. It shall be possible to assign each schedule to a day of the week, or manually change schedules from an authorized Quantum Commander User via Web browser. Systems, which do not provide a minimum of thirty-two (32) flexible time-signaling schedules or a choice of eight (8) time tones plus external audio, shall not be acceptable.
16. An internal program clock (with battery backup) shall be included, allowing a total of 1024 user-programmed events per facility. It shall be possible to synchronize the internal program clock with an external master clock. Systems, which do not provide an internal program clock and/or can not synchronize with an external master clock to meet these specifications, are not equal.
  - a) There shall be thirty-two (32) flexible time-signaling schedules. It shall be possible to assign each schedule to a day of the week, or manually change schedules from an authorized Quantum Commander User via Web browser on the LAN/WAN.
  - b) The built-in Master Clock corrects time by accessing the LAN/WAN NTP time server.
  - c) The Quantum Processor is capable of adjusting the Daylight Savings Time automatically.
  - d) Each event shall be able to be directed to any one or more of the sixty-four (64) Multi-purpose time-signaling zones.
  - e) Each of the 64 Multi-purpose zones shall have a programmable "tone duration" unique unto itself. For example: the gymnasium shall receive a time tone for ten (10) seconds while the rest of the facility receives a tone for five (5) seconds.
  - f) Each event shall sound one of eight (8) user-selected tones or external audio. Each event may utilize a different custom tone. It shall be utilized to send the gymnasium, shop classes, and pool (if necessary), a separate time tone to indicate "clean up." Minutes later the entire facility can then receive the same time tone to indicate class change.
  - g) Each of the eight (8) Distinct Time Tone Signals may be manually activated by selected Administrative Display Phones or from an authorized Quantum Commander User via web-browser. These tone signals shall remain active as long as the telephone remains off-hook, or until canceled from the keypad or Quantum Commander.



- 1) Upon picking up the receiver and dialing "9", a menu shall appear on the display prompting the user to enter the next digit. In this way, the user shall not be required to memorize complicated key sequences in order to access manual time-tone functions.
  - 2) Systems that do not provide at least thirty-two (32) flexible time signaling schedules or do not provide automatic activation of schedules shall not be acceptable.
17. There shall be a zone-page/all-page feature that is accessible by selected administrative VoIP phones and administrative phones.
- a) There shall be automatic muting of the loudspeaker in the area where a page is originating.
  - b) There shall be a pre-announce tone signal at any loudspeaker selected for voice paging.
18. There shall be a voice-intercom feature that is accessible by selected administrative phones, administrative VoIP phones and all administrative display phones.
- a) There shall be a periodic privacy tone signal at any loudspeaker selected for amplified-voice communication.
  - b) There shall be a pre-announce tone signal at any loudspeaker selected for voice-intercom communication.
  - c) Privacy and pre-announce tone signals shall be capable of being disabled during system initialization.
  - d) There shall be an automatic switchover to private telephone communication should the person at the loudspeaker pick up his handset.
  - e) By picking up the receiver and dialing the first digit of the number of the station to be called, that number shall appear on the display along with a loudspeaker symbol, prompting the user to enter the next digits. There shall be no confusion as to the type of conversation that is to be established.
19. There shall be a telephonic communication feature, which is accessible by all Administrative VoIP Phones, Administrative Phones, and Administrative Display Phones.
- a) There shall be an audible ring signal announcing that a call has been placed to that station.
  - b) Upon picking up the receiver and dialing \* (star), a telephone symbol shall appear on the display, prompting the user to enter the number of the station to be called. There shall be no confusion as to the type of conversation that is to be established.
  - c) There shall be an automatic disconnect of Staff Handsets left off-hook to prevent them from tying up communications channels. The station shall receive a busy signal and shall

automatically disconnect after 45 seconds. Systems shall also be capable of doing off hook emergency call-in.

- d) There shall be an automatic disconnect of Administrative Display Phones, Administrative VoIP Phones, and Administrative Phones to prevent them from tying up communications channels. When a phone goes off-hook and does not initiate a call within ten seconds, the station shall receive a busy signal and shall automatically disconnect after 45 more seconds.
- e) Staff and Administrative Phone Stations may be programmed to ring an Administrative Display Phone during day hours and another Administrative Phone during night hours. Day and Night Hours shall be user-programmable. Assignment of Staff Stations shall not be restricted to any particular Administrative Station. Systems that limit the number and assignment of staff call-in to particular Administrative Station of Administrative Stations shall not be acceptable.

20. Each staff call station shall be programmable for one of three call-in types, as follows:

- a) Normal / Emergency
  - b) Urgent / Emergency
  - c) Emergency
- 1) Staff Call Stations programmed for access Normal / Emergency or Urgent / Emergency shall be able to initiate an emergency call by repeated flashing of the hook switch or repeated pressing of the call-in switch. Systems, which require additional switches and/or conductors to initiate an emergency call, shall not be acceptable.
  - 2) Emergency Calls from Administrative VoIP Phones, Administrative Phones or Staff Call Switch Stations shall interrupt a non-emergency call in progress at the designated Administrative Display Phone. The administrator shall receive a warning tone and be connected to the emergency caller. The disconnected party shall receive a busy signal. Systems which do not provide emergency call interrupt shall not be acceptable.
  - 3) It shall be possible to connect a single push emergency call-in switch to any Administrative VoIP Phone or Administrative Phone, without effecting normal station operation.
  - 4) Normal and Urgent calls shall be logged into queue for the designated administrative display phones.
  - 5) Administrative Display Phones shall ring for a period of 45 seconds when they receive a call, and then stop ringing.
  - 6) Each queue shall first be sorted according to call priority (emergency calls, then urgent calls, and then normal calls). Calls are sorted within each priority level on a first-in, first-out basis. When a call is answered, it shall automatically be removed from the queue. Systems, which do not sort calls according to priority and order received, shall not be acceptable. 1) The display shall simultaneously

show up to four (4) Staff Call Switch Station Calls pending. Additional calls, beyond four (4), shall be indicated by an arrow pointing down thus prompting the user that additional calls are waiting.

- 7) It shall be possible to answer any incoming call simply by picking up the handset while it is ringing. It shall not be necessary to hit any buttons to answer a call unless the call has dropped into the queue.

21. Administrative VoIP Phones or Administrative Phones shall receive dial tone upon going off-hook. Outgoing calls are made by dialing the desired station. Incoming calls can be directed to the telephone or to the associated loudspeaker for a hands-free reply. There shall be an automatic switchover from loudspeaker to private telephone communication should the person pick up the handset.

- a) Administrative VoIP Phones or Administrative Phones shall be able to make a normal call to any Administrative Display Phone by dialing the number. They shall also be able to initiate an Emergency Call by flashing the hook switch. Emergency Calls shall ring the Designated Day/Night Administrative Display Phone and then their speaker will be connected to the emergency station if not answered within a predetermined time period. The system shall provide for selected administrators to have a PIN Numbers. By dialing the PIN at any system telephone, the administrator shall have access to emergency paging regardless of the restrictions on the particular phone being used.

22. Administrative Display Phones shall be equipped with a 4x16 character alphanumeric display panel.

- a) Administrative Display Phones shall receive dial tone upon going off-hook. Outgoing calls are made by dialing the desired stations. Incoming calls can be directed to the telephone or to the associated loudspeaker for a hands-free reply. There shall be an automatic switchover from loudspeaker to private telephone communication should the person pick up his handset.
- b) The display shall normally show the time of day and day of week, the current time signaling schedule, and the numbers of up to four stations calling in along with the call-in status of each station (normal, urgent, emergency). When dialing from the Administrative Display Phone, the display shall indicate the station number and type of station (loudspeaker or handset) being dialed.
- c) The display shall also provide user-friendly menu selections to assist the operator when paging and distributing program material. Displays shall be in English with internationally recognized symbols for maximum ease of use. Systems, which require the operator to memorize long lists of operating symbols or control codes, shall not be acceptable.
- d) Administrative Display Phones shall be programmable for one of 3 station types for system access, as follows:
  - 1) Shall permit dialing any station in the system; turn program material on/off at their location; scroll, erase and auto-dial call-waiting queue; make conference calls and transfer calls; call forward to other administrative stations; make all-

zone pages and emergency all-zone pages; have access to outside lines and be designated to receive outside line calls.

- 2) Select and distribute or cancel program material to any combination of stations, paging zones, or all zones; set/reset alarm/external functions and zone paging.
  - 3) Bump or join a conversation in progress, manually initiate time tones.
- e) Program selection, and its distribution or cancellation shall be accomplished from a designated administrative display telephone, with the assistance of the menu display system. Distribution and cancellation shall be to any one, or combination of speakers, or any zone(s), or all zones. It shall be possible to provide three program channels at the same time.
- f) It shall be possible, via an Administrative Display telephone, to manually initiate any of eight (8) tones or any of the emergency tones. The tones shall be separate and distinctly different from the emergency tones. The tone selected shall continue to sound until it is canceled, or until the administrative display phone is placed back on-hook.
- g) Each Administrative Phone shall maintain a unique queue of all stations calling that particular phone.
23. System programming shall be from an authorized Quantum Commander User via Web browser. All system programming data shall be stored in nonvolatile memory. A valid password shall be required to gain access to the following programmable functions:
- a) Station Initialization shall be accomplished from an authorized Quantum Commander User via web browser. All station initialization data shall be stored in nonvolatile memory. A password (separate from the password necessary for system programming) shall be required to gain access to the following station initialization parameters:
    - 1) Programming and diagnostics shall be built into the Quantum Commander web server browser and be accessible only by authorized personnel. Diagnostics shall indicate passes and failures of system memory, system clock, all audio busses, tone generators, DTMF generators and decoders and the integrity of the field wiring.
    - 2) The diagnostics feature shall be the Quantum Commander. It shall be possible to individually select the test and card, or all to run diagnostics on. This shall be a standard feature of the system and supplied at the time of installation. It shall be accessible only by authorized stations and personnel.
    - 3) Systems not capable of supporting web-based diagnostics and any computer interface for programming and diagnostics, nor supportive of built-in diagnostics for the end user shall not be deemed as equal.
24. Rollover EOL (End-Of-Line Device)
- a) This feature shall be supported for all the Stations (Staff/Enhanced/Admin/SIP) configured with a loudspeaker. Based on the dialed sequence, (\*xxx, xxx) the call will be connected

to the corresponding station/speaker. If the speaker/station is busy, the call is rolled over to the station/speaker corresponding to that station.

- b) If a handset station, configured with this feature, is busy when an Admin User calls the station, the call shall be rolled over to the associated speaker. If the speaker is also busy in this case, then the Admin call can bump the conversation.
- c) Rollover End-of-Line features not applicable with the Station with Call Switch or Station without the speaker.
- d) For calls initiated by a call switch or a non-dial handset, rollover to the admin speaker shall not happen.

25. Admin AAA Group (Always An Answer)

- a) This is an Administrative Phone feature. This feature shall be programmed from the Bogen Commander. A maximum of 10 Admin Phones will be supported in an Admin Group and there shall be a maximum of 32 Admin Groups per facility.
- b) Once the Admin Group is set:
  - 1) For normal calls, if the primary Day/Night Admin Phone is busy/no answer, all the phones in the Admin Group shall ring.
  - 2) For emergency calls, if the primary day/night phone does not answer, all the phones in the Admin Group shall ring.
  - 3) On no answer from any of the admin phones and if the emergency announce link is configured, the call shall be transferred to the emergency announce link as per the existing procedures.
  - 4) On answer from any of the Admin Phones, all the other phones shall stop ringing.

2.05 SYSTEM REQUIREMENTS

- A. The Integrated Communications System shall be a Bogen Quantum Multicom IP or Rauland Telecenter VOIP.
- B. The system shall provide no less than the following features and functions:
  - 1. Integration to public branch-exchange for a complete and integrated telephone intercommunication solution. All features and functionality's of the system shall be accessible from the Private Branch Exchange (PBX or phone switch) or Expansion Key Service Unit (EKSU), so as not to depend on the administrative phones for all functionality.
  - 2. The system shall be available in the following conguration:
    - a) Rack mount.

- b) Single rack (node) capacity from 24 to 250 stations per node.
  - c) All telephone stations shall have the ability to support displays.
3. The system shall consist of any combination of Administrative, Staff and Enhanced Staff Stations.
- a) A minimum of one (1) Administrative Telephone required per system.
  - b) The maximum number of Administrative Telephones with displays shall only be limited by the Station capacity of the system.
    - 1) Systems that limit the quantity of each type of Station or require rewiring or additional equipment and/or system expansion to provide additional Administrative Telephones shall not be accepted as equal.
  - c) Administrative Stations
    - 1) DTMF dialing telephone sets with a four (4) line by 16-character LCD display panel.
    - 2) Standard 12 key pushbutton dialing keypad
    - 3) Loudspeaker may be connected at each location
    - 4) Optional loudspeaker may be included
    - 5) Membrane-type keypads shall not be accepted as equal
    - 6) Special function keys to perform common functions shall not be accepted as equal
  - d) Staff Station
    - 1) Wall or ceiling mount loudspeaker with call-in switch
  - e) Enhanced Staff Station
    - 1) DTMF dialing telephone sets connected to the PBX or EKSU
    - 2) Systems that require telephones to be connected to the intercom system shall not be acceptable
    - 3) Optional loudspeaker may be included
  - f) All Station types shall utilize the same field wiring
    - 1) Future Station alterations shall require station type change only, not field wiring or head-end alterations. All field and system head-end equipment shall support any type of Station, at the time of installation. All proposed substitutions shall reflect this capacity.

4. The system shall be capable of providing up to four (4) simultaneously amplified-voice intercom paths. One amplified intercom path shall automatically be provided with each increment of 24 stations of system capacity.
  - a) All hardware, etc. required to achieve the maximum number of amplified-voice intercom channels for this system shall be included in this submittal.

C. Remote Access

1. The system shall be capable of remote access via LAN/WAN network.
  - a) Remote access features and functions shall include the following:
    - 1) Perform programming of the main processor including all system features and functions noted elsewhere in this specification.
    - 2) The capability to perform system diagnostics and access integral system report software regarding the current system status for the following:
      - (a) Processors
      - (b) Station Cards
      - (c) Amplifiers
      - (d) Speaker Outputs
      - (e) Call Switch Outputs
    - 3) Activation of bell schedules and programming of specific events, zones and action taken.
    - 4) Activation of all time tones, all calls, zone pages and call forwarding.
    - 5) Monitoring of unlimited areas for security purposes.
  - b) External Device Server
    - 1) Shall support RS-232, RS-422 and RS-485 serial connections
    - 2) Shall configure via HTTP, DHCP, Telnet or serial
    - 3) Shall be capable of Flash ROM upgrades
    - 4) Network Interface – (10Base-T or 10Base-T/100Base-TX) Ethernet
    - 5) Serial Interface – DB25F, RS-232/RS-422/Rs-485 serial port with DCE configuration.
    - 6) Shall be capable of modem emulation and accept modem AT commands on the serial port to establish a network connection to the system.

2. The contractor shall provide all active electronics, software and peripheral equipment for a complete and operable system.
3. Systems not capable of remote access requirements of this specification will not be considered acceptable.

D. Graphical Interface Emergency Response/Crisis Management

1. The intercom system shall be capable of interfacing with a web based emergency management system. The emergency management system shall offer two communications using the intercom speakers located throughout the campus.
  - a) Web based graphical interface
    - 1) System shall allow for graphical representations of the school site & floor plan showing locations of emergency exits, security cameras, emergency access points, hazardous material storage, utility connections and safe zones to be used by emergency personnel.
    - 2) System shall allow for web controlled password protected covert monitoring of any speaker location thru the intercom system in emergency situations by authorized emergency personnel.

2.06 SYSTEM COMPONENTS

A. CONSOLE

1. Rack-mounted equipment shall be Bogen Model TCPER
  - a) Rack-TCPER61 / TCPER77 (size rack as required)
2. MCRMP
  - a) Rack-mounting panel. Includes the following components:
    - 1) MC512A-Power Supply (1 per system)
    - 2) MC2626B-Power Supply (1 for up to 120 stations, 2 for more than 120 stations)
    - 3) MCAPI-Audio Program Module Interface Assembly (1 per system)
3. MCRMF
  - a) Rack mounting mainframe (1 per 120 stations). Includes built-in ventilation fans and the following circuit cards:
    - 1) QSPC1-Processor card (1 per system)
    - 2) MCACB-Analog card (1 per 24 stations)



- 3) MCSC-Station card (1 per 24 stations)
  - 4) MCJCA-Ribbon cable assembly (interconnects 2 MCRMF)
4. MCRM
- a) Relay module (1 per 24 stations). Mounts to:
    - 1) MCRRP-Stand-alone configuration.
5. Program Sources
- a) Marantz DRA-395P AM/FM Receiver
  - b) Marantz PMD-351 CD / Cassette Player
  - c) Provide indoor AM/FM Antenna at main rack
6. Power Amplifiers, in Main Rack and in Nodes quantities as required
- a) HTA-125A-125 watt
  - b) HTA-250A-250 watt

B. PERIPHERAL DEVICES

1. ADMINISTRATIVE DISPLAY PHONE MCDS3
  - a) Administrative display phone shall be Bogen Model MCDS3. The administrative telephone display panel shows the time of day and day of week, the current time signaling schedule, and the station numbers and call-in priority of staff stations that have called that particular administrative station. A 2-key response is used to scroll the display, and answer or erase normal and urgent calls. Depending upon the system access level, an administrative station can use display menus to activate zone pages, alarm signals and external functions, as well as select program sources and distribute or cancel a program to any or all speakers or zones.
    - 1) Administrative station has the option of dialing either the loudspeaker or phone at each station location. An automatic switch from phone-to-intercom to phone-to-phone communication is made when the staff handset is lifted.
    - 2) A built-in program clock, with battery backup, is included to automatically control class change or other signals. The clock may be synchronized with a master clock. 1024 events may be programmed into the system's eight time signaling schedules.
2. CALL IN SWITCHES
  - 1) Bogen CA21B or CA15C.

### 3. SPEAKERS

- a) Interior speakers ceiling mounted shall be Bogen S86T725PG8W with Lowell P8756 back box and SS24 tile support rails. Provide flush backboxes for recess wall mounted speakers. Speaker grille shall be Lowell JG86
- b) Interior speakers wall mount shall be Bogen MB8TSL. Provide flush backboxes for recess wall mounted speakers.
- c) Exterior speakers shall be Bogen FMH15T with Bogen SGHD8 Grille and FMHAR8 adapter kit. Speaker back box shall be Bogen BBFM6 for flush mount applications and Bogen BBSM6 for surface mount applications.
- d) All speaker cables shall be individually homerun back to the main intercom backboard. Speaker cable shall be Beldon or Westpenn, type per manufacturer's written instructions.
- e) Wiring shall be done per manufacturer's recommendation
- f) All #22AWG connections throughout the system shall be made by spring tension clip "punch block", Siemons type 66 terminals or equal. Conductors #20AWG and larger shall be terminated on barrier screw terminals.
- g) All communication system cable/wire shall be labeled at all points of termination. All labeling shall be based on the room numbers as provided by the Owner or his representative.

### 4. CLOCK SYSTEM

- a) Master Control Unit: Microprocessor based unit with solid-state switching circuits, program control and clock controls.
  - 1) The master clock shall be microprocessor based and programmable via the local onboard 12 button keypad or optional PC software. The master clock shall also provide field enable/disable daylight savings time. The programmable master clock shall be capable of storing, in a non-volatile memory, and controlling up to 512 events. The master clock shall have a ten-year battery backup for timekeeping, an RS232 computer interface port, and an input port to interface with other systems and WWVB/GPS interface capability.
- b) Clocks: Analog synchronous clocks, with minute and second hands. Secondary clock shall be 12" round. The secondary clock shall accept sync-wire communication protocols with hourly and daily correction. The clock shall have a low-profile/semi-flush smooth surface metal case. The clock shall have black hour and minute hands and a red second hand. Clocks shall be 24-volt. Clock cable shall be 4 #12 thhn/thwn. Clock conductor colors shall be red, black, white & green. Clock wire shall be installed its own conduit as required by applicable codes. Provide power supply for clock system and clock boosters in buildings where appropriate. Provide 120-volt circuits to power supplies and boosters.

## 2.07 WIRE AND CABLE

1. All wire and cables shall be new and unused. All wire and cable shall be enclosed in conduit unless otherwise noted. Wire not installed in equipment racks, not portable, or not installed in conduit shall meet all applicable codes.
2. Constant voltage (70-volt) speaker cable: West Penn stranded 16A WG twisted pair or approved equal.
3. Protection
  - a) The contractor shall provide all necessary transient protection on the AC power feed and on all station lines leaving or entering the building.
  - b) The contractor shall note in his system drawings, the type and location of these protection devices as well as all wiring information. Such devices are not to be installed above the ceiling.

## 2.08 TERMINAL CABINETS & JUNCTION BOXES

1. All terminal cabinet and junction boxes are to be provided and installed by the Division 16 Prime Contractor. This contractor and the prime contractor shall coordinate mounting locations prior to install.

2.09 Provide all modules and fiber optic cables to connect main rack to each Node.

## PART 3: EXECUTION

### 3.01 DIVISION OF WORK

- A. While all work included under this specification is the complete responsibility of the contractor, the division of actual work listed following shall occur.
  1. All conduits with pull cords, all electrical pull boxes, grounding rods, all outlet boxes, terminal cabinets, backboards, etc., which form part of the rough-in work shall be provided and installed completely by the Division 16 Contractor. Coordinate as necessary for proper installation.
  2. The balance of the system, including installation of initiating devices, notification appliances and equipment, making all connections, etc., shall be performed by the System Supplier/Installer.
  3. All 120VAC power conductors and conduits associated with power circuits to all low voltage system equipment locations shall be provided and installed by the Division 16 Contractor.
  4. An insulated stranded copper ground wire shall be provided from each equipment rack to the building grounding system, in compliance with CEC Article 250, by the Division 16 Contractor.
  5. Labeling of pullboxes and terminal cabinets shall be provided and installed by the Division 16 Contractor.

### 3.02 INSTALLATION

- A. All work shall be completed in strict accordance with all applicable codes and ordinances, by a qualified Manufacturer's Authorized Distributor.

B. Cable/Wire

1. All cable/wire for the communications system shall be new.
2. System cable/wire and equipment installation shall be in accordance with good engineering practices as established by the Electronics Industries Alliance (EIA) and the California Electrical Code (CEC). Wiring shall meet all applicable electrical codes. All cable/wire shall test free from all grounds and shorts.
3. All #22AWG and #24AWG connections throughout the system shall be made by spring tension clip "punch block", Siemon type 66 terminals or equal. Conductors #20AWG and larger shall be terminated on barrier screw terminals.
4. All communication system cable/wire shall be labeled at all points of termination. All labeling shall be based on the room numbers as provided by the Owner or his representative.
5. Protection and dressing of cables:
  - a) Cables mounted on backboards and within equipment racks, etc., shall be grouped and securely attached to the backboard or enclosure in horizontal and vertical bundles in a neat workmanlike manner using Thomas & Betts "Ty-Rap", Panduit cable mounts and Allen-Tel cable management or equal. Edge protection material ("cat-track") shall be installed on edges of holes, lips of ducts or any other point where cables or harnesses cross metallic edge.
6. Shielding:
  - a) Cable shielding shall be connected to common ground at point of lowest audio level and shall be free from ground at any other point. Cable shields shall be terminated in same manner as conductors.
7. Underground cables
  - a) Any cable/wire pulled through manholes or pullboxes located below grade shall be continuous with no splices. The cable/wire shall be intact with no cuts in the protective outer jacket.
  - b) Provide 15% spare pair capacity for multi-pair cabling to each building.

C. Cable/Wire Terminations

1. All splices in above ground junction boxes shall be made on terminal strips.

3.03 SYSTEM START-UP

- A. All start-up programming and system commissioning shall be performed by a manufacturer's trained and certified technician.

3.04 SYSTEM VERIFICATION

- A. Subsequent to system start-up the system installer shall, at a minimum, verify that the following features are functioning properly.
  - 1. Two way talk-back
  - 2. All call paging
  - 3. Emergency call-in
  - 4. Call switches
  - 5. Verification of call station identifications with room numbers provided by the Owner or his representative.

### 3.05 ACCEPTANCE TESTING

- 1. The system installer shall, in the presence of the Inspector of Record (IOR), perform 100% testing as noted in System Verification above.

### 3.06 DOCUMENTATION

- A. Provide the following directly to the Supervisor of Technology Service.
  - 1. Provide a printed copy of all field programming for all components in system.
  - 2. Provide one copy of all diagnostic software with copy of field program for each unit.
  - 3. Provide one copy of all service manuals, parts list, and internal wiring diagrams of each component of system.
  - 4. Provide one copy of all field wiring runs, location and end designation of system.

### 3.07 MANUFACTURER'S FIELD SERVICES

- A. The contractor shall, at the owner's request, make available a service contract offering continuing factory authorized service of this system after the initial warranty period.
- B. The system manufacturer shall maintain engineering and service departments capable of rendering advice regarding installation and final adjustment of the system.

### 3.08 IN SERVICE TRAINING

- A. In addition to training of District personnel for maintenance of system provide complete "in service" instructions of system operation to school personnel. Minimum duration shall be 8 hours.
- B. The Contractor shall instruct personnel designated by the Owner in the proper use, basic care and maintenance of the system beyond the warranty period.

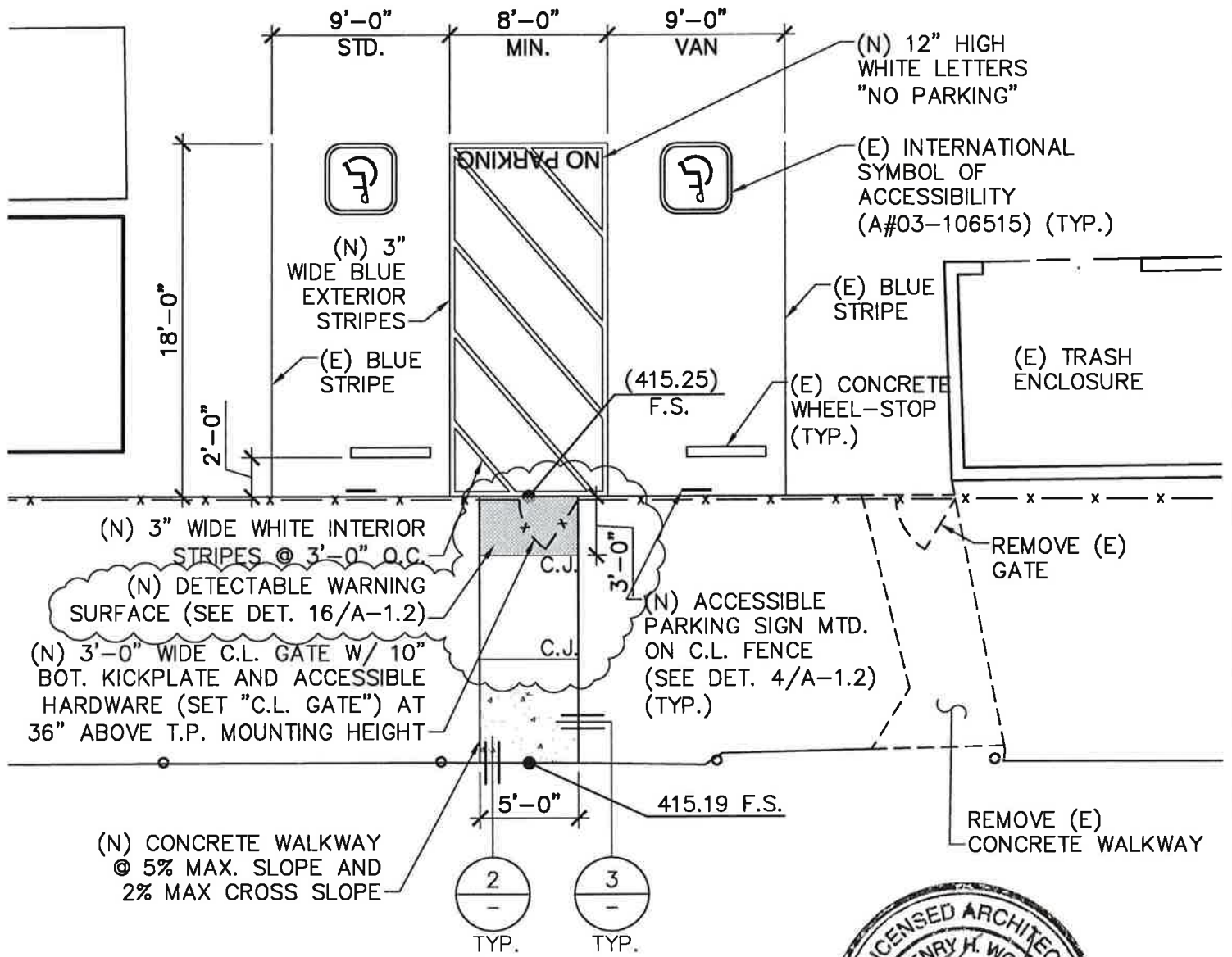
### 3.09 GUARANTEE AND WARRANTY

- A. Guarantee all parts, labor, and workmanship furnished under this contract for the minimum period of twelve months from the date of substantial completion, or first formal use by the Owner, whichever is last to occur. During the warranty period, report to the site and repair or replace any defective materials or workmanship without cost to the Owner. Non-emergency Warranty service shall be rendered within 24 hours after request by the Owner. Emergency service shall be provided within 8 hours of request by owner. Equivalent replacement equipment shall be temporarily provided when immediate on-site repairs cannot be made. Where warranties on individual pieces of equipment exceed twelve months, the guarantee period shall be extended to the warranty period of the particular items.
- B. After completion of the work the Contractor shall submit a Certificate of Warranty, stating commence and expiration dates and conditions of the warranty, for signature of both participating parties. Incremental warranties for completed portions of the work may be negotiated at the discretion of the Owner, if delays occur beyond the control of the Contractor.

### 3.10 EQUIPMENT MANUFACTURER'S REPRESENTATIVE

- A. All work described herein to be done by the manufacturer's authorized representative shall be provided by a documented factory authorized representative of the basic line of equipment to be utilized.
- B. As further qualification for bidding and participating in the work under this specification the manufacturer's representative shall hold a valid C-10 Contractor's License issued by the Contractor's State License Board of California. The manufacturer's representative shall have completed at least ten (10) projects of equal scope, giving satisfactory performance and have been in the business of furnishing and installing sound systems of this type for at least five (5) years. The manufacturer's representative shall be capable of being bonded to assure the owner of performance and satisfactory service during the guarantee period.
- C. The manufacturer's representative shall provide a letter with submittals from the manufacturer of all major equipment stating that the manufacturer's representative is an authorized distributor. This letter shall also state the manufacturer guarantees service performance for the life of the equipment, and that there will always be an authorized distributor assigned to service the area in which the system has been installed.
- D. The contractor shall furnish a letter from the manufacturer of the equipment, which certifies that the equipment has been installed according to factory intended practices, that all the components used in the system are compatible and that all new portions of the systems are operating satisfactorily. Further, the contractor shall furnish a written unconditional guarantee, guaranteeing all parts and all labor for a period of one (1) year after final acceptance of the project by the owner.

**END OF SECTION**



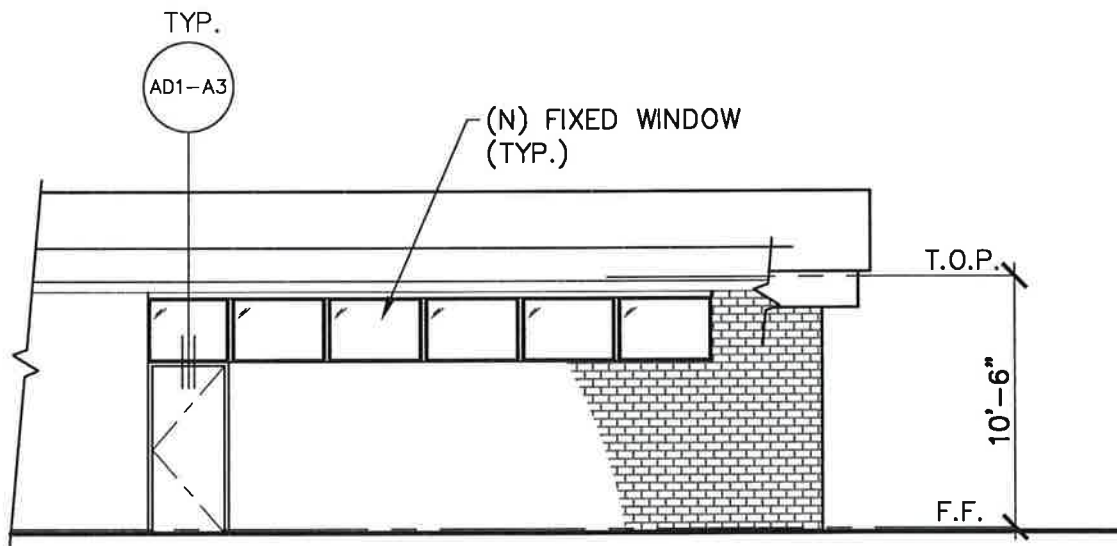
**(N) ACCESSIBLE PARKING STALLS**

**(REF. 4/A-1.0)**

SCALE: 1/8" = 1'-0"

PROJECT TITLE: <b>NORTHAM ES PARTIAL MODERNIZATION</b>	DSA NO.: <b>03-112764</b> FILE NO.: <b>19-92</b>
	PROJECT NO.: <b>108RSD16</b> HENRY WOOD ARCHITECTS, INC.

**AD1-A1**      DATE: 09/28/10



**(B) EXTERIOR ELEVATION "B"  
(PARTIAL)**



**TYP. EXTERIOR ELEVATIONS**

**(REF. 8/A-7.0)**

SCALE: 1/8" = 1'-0"

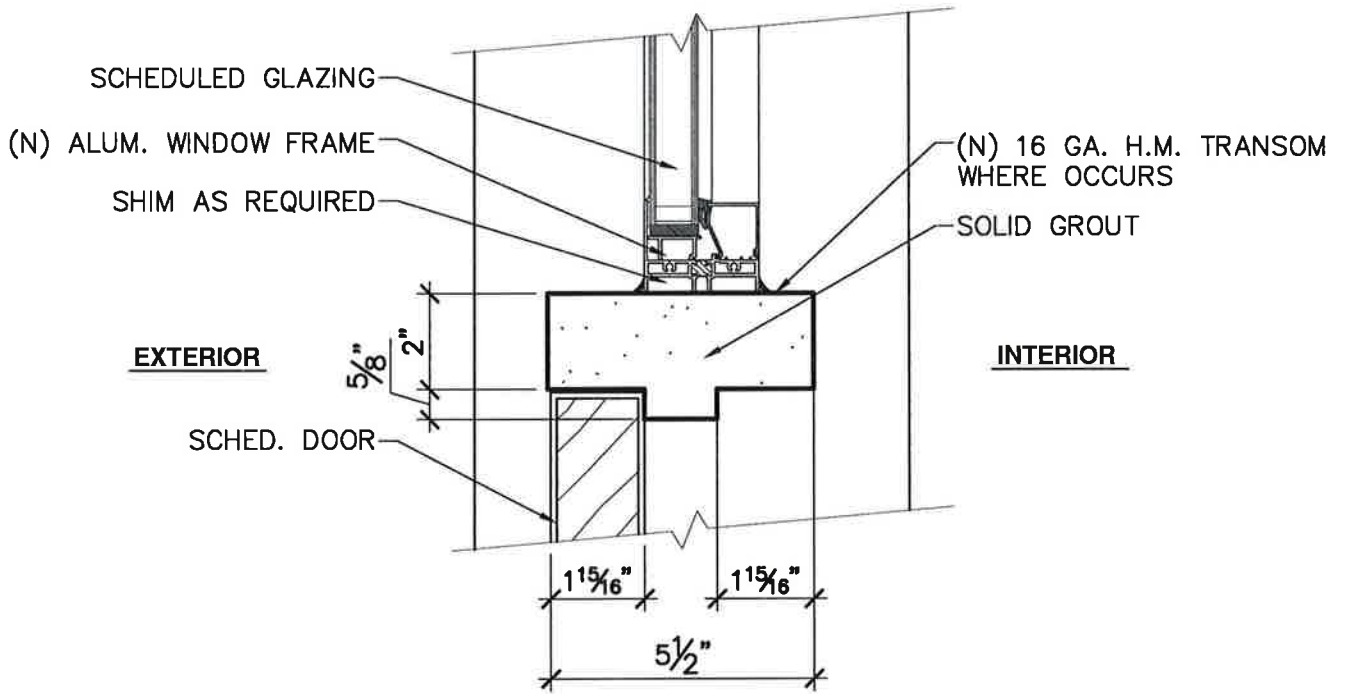
PROJECT TITLE:  
NORTHAM ES  
PARTIAL MODERNIZATION

DSA NO.: 03-112764 FILE NO.: 19-92  
PROJECT NO.: 108RSD16  
HENRY WOO ARCHITECTS, INC.

**AD1-A2**

DATE: 09/28/10





**TYP. TRANSOM**

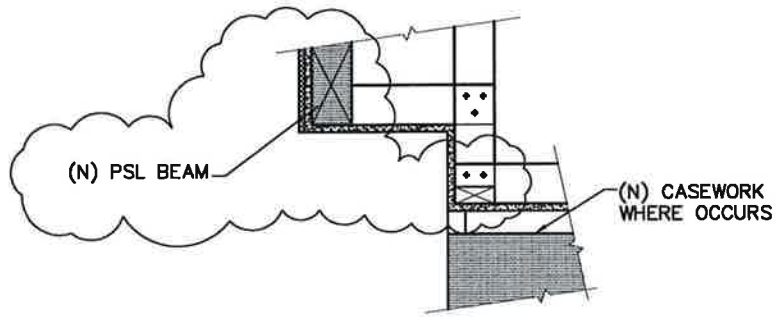
SCALE: 3" = 1'-0"

PROJECT TITLE:  
**NORTHAM ES  
 PARTIAL MODERNIZATION**

DSA NO.: 03-112764 FILE NO.: 19-92  
 PROJECT NO.: 108RSD16  
 HENRY WOO ARCHITECTS, INC.

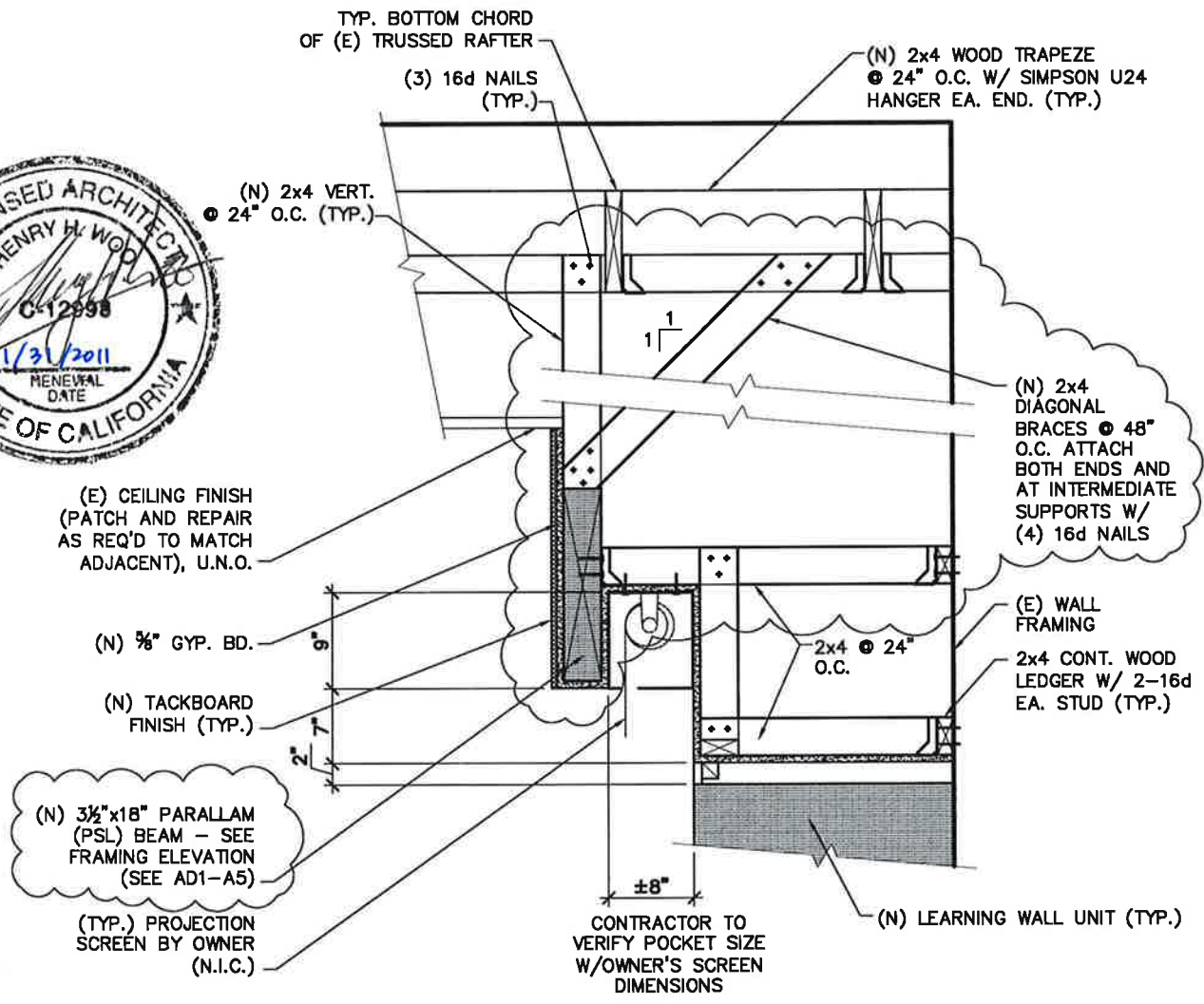
**AD1-A3**

DATE: 09/28/10



NOTE: SEE SECTION B FOR CONNECTION TO FRAMING

**A SECTION @ CABINET**



**B SECTION @ LEARNING WALL**

**TYP. SOFFIT SECTION**

(REF. 4/A-9.0)

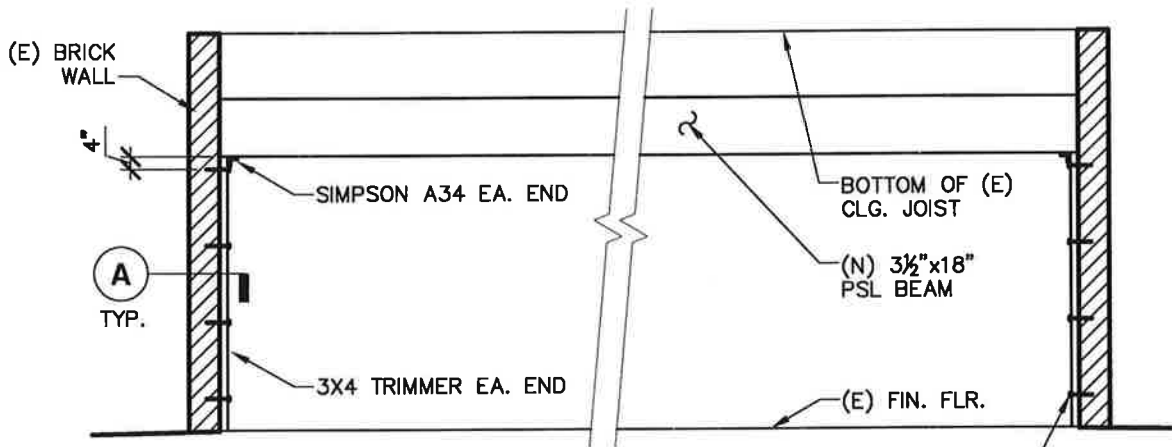
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PROJECT TITLE:  
NORTHAM ES  
PARTIAL MODERNIZATION

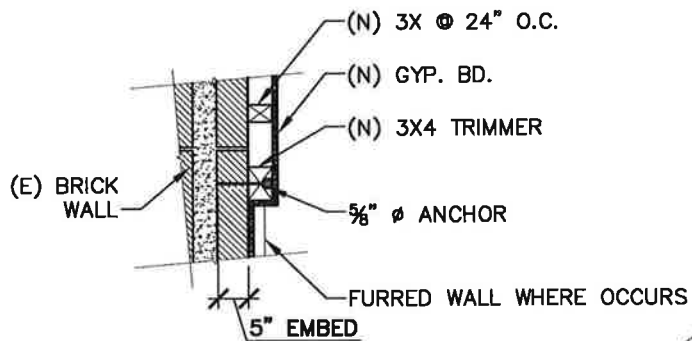
DSA NO.: 03-112650 FILE NO.: 19-92  
PROJECT NO.: 108RSD16  
HENRY WOO ARCHITECTS, INC.

**AD1-A4**

DATE: 09/28/10



5/8"  $\phi$  HILTI HIT-HY 20 ADHESIVE ANCHOR @ 24" O.C. AND 4" FROM EA. END (ICC# ESR-2659), 5" EMBED. DAP NUT 1" INTO 3X



A PLAN VIEW



**TYP. FRAMING ELEVATION OF (N) PSL BEAM ABOVE LEARNING WALL**

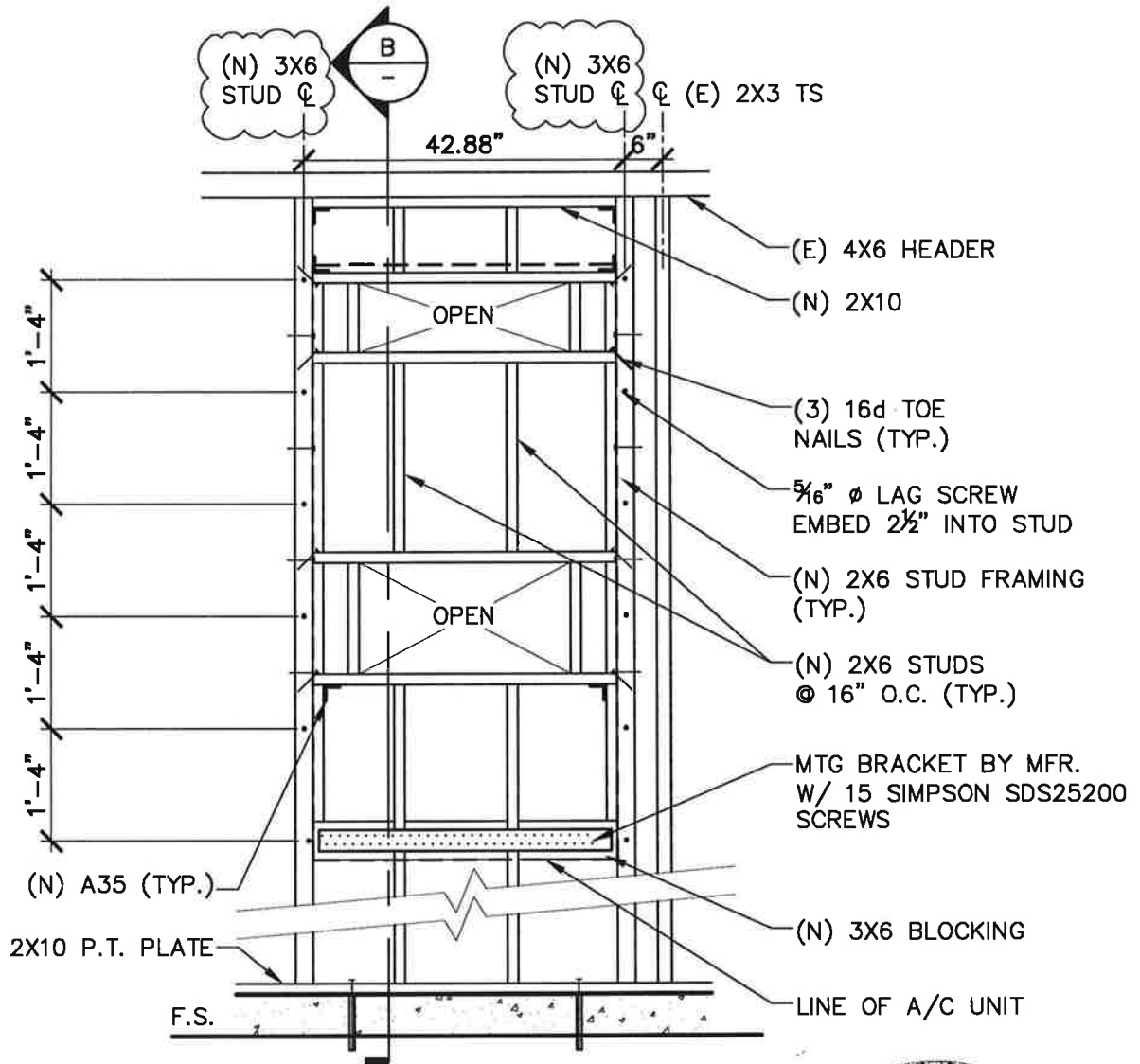
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PROJECT TITLE:  
NORTHAM ES  
PARTIAL MODERNIZATION

DSA NO.: 03-112764 FILE NO.: 19-92  
PROJECT NO.: 108RSD16  
HENRY WOO ARCHITECTS, INC.

**AD1-A5**

DATE: 09/28/10



**TYP. FRAMING ELEVATION FOR HVAC UNIT**

**(REF. 2A/A-9.1)**

SCALE: N.T.S.







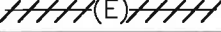






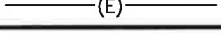



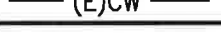
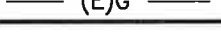

PROJECT TITLE:  
**NORTHAM ES  
 PARTIAL MODERNIZATION**

DSA NO.: **03-112764** FILE NO.: **19-92**  
 PROJECT NO.: **108RSD16**  
**HENRY WOO ARCHITECTS, INC.**

**AD1-A6**

DATE: 09/28/10

# LEGEND

SYMBOL	ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
	W	WASTE PIPING BEL. FLR. OR GRD.	ABV.	ABOVE
	W	WASTE PIPING ABV. FLR.	A.P.	ACCESS PANEL
	V	VENT PIPING	BEL.	BELOW
	CW	COLD WATER PIPING	CLG.	CEILING
	HW	HOT WATER PIPING	CONN.	CONNECT/CONNECTION
	HWR	HOT WATER RETURN	CONT.	CONTINUATION
	EXIST.	EXIST. PIPING TO BE REMOVED	DN.	DOWN
	POC	POINT OF CONNECTION	DF.	DRINKING FOUNTAIN
	UP	PIPING UP	FLR.	FLOOR
	DN	PIPING DOWN	FD	FLOOR DRAIN
	FCO	FLOOR CLEANOUT	GRD.	GRADE
	WCO	WALL CLEANOUT	H.B.	HOSE BIBB
	SCO	SURFACE CLEANOUT	MTD.	MOUNTED
	EXIST.	EXIST. PIPING	CFH.	CUBIC FEET PER HOUR
	C.V.	CHECK VALVE	TYP.	TYPICAL
	SOV	SHUT-OFF VALVE	VTR.	VENT THRU ROOF
	G	GAS PIPING	Y.B.	YARD BOX
	(E)CW	EXIST. COLD WATER PIPING	GALV.	GALVANIZED
	(E)G	EXIST. GAS PIPING	SHT.	SHEET
	(E)W	EXIST. WASTE PIPING	R.P.B.P.	REDUCED PRESSURE BACKFLOW PREVENTOR



**LEGEND**

(REF. P-1.0)

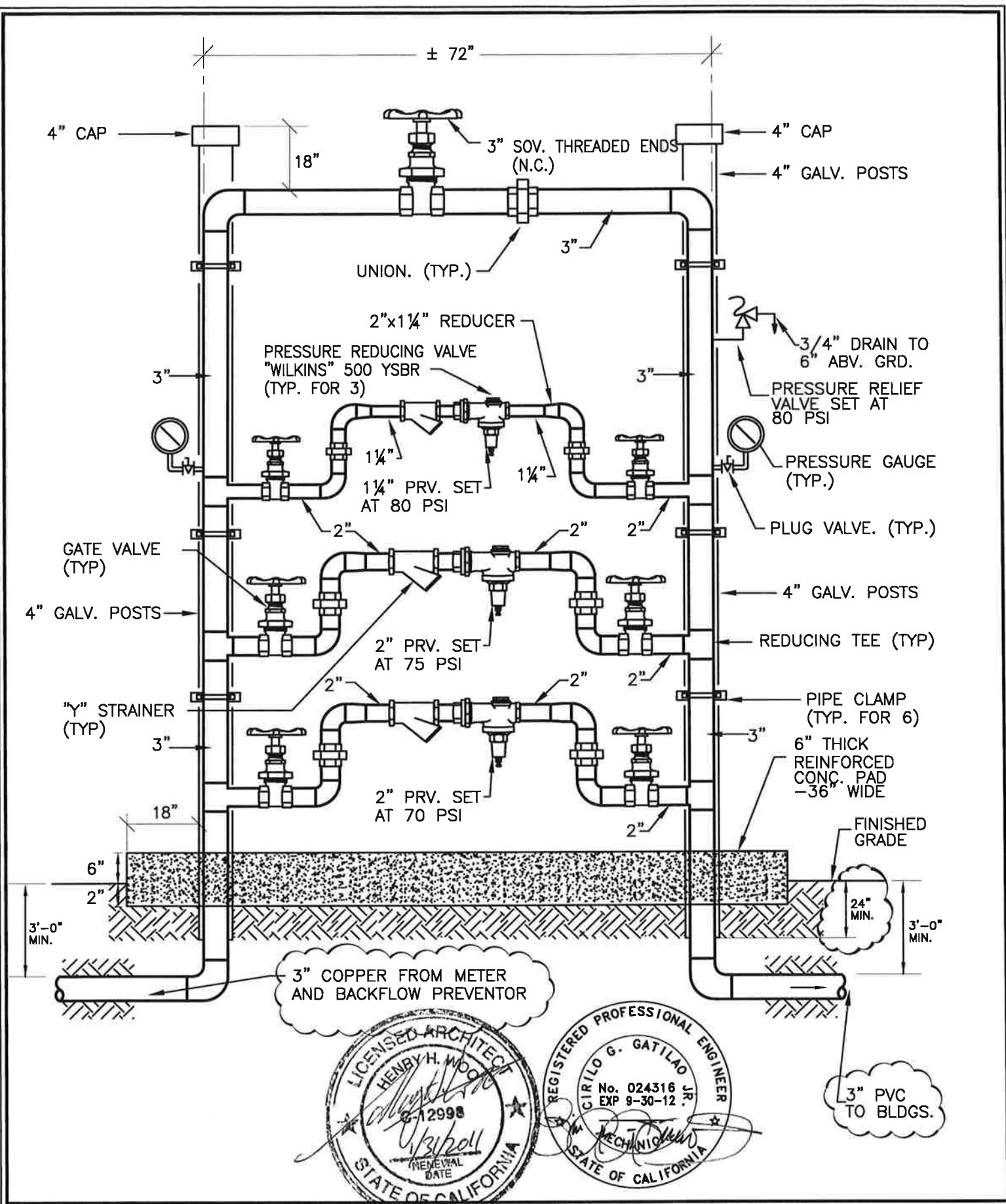
SCALE: N.T.S.

**PROJECT TITLE:**  
NORTHAM ES  
PARTIAL MODERNIZATION

**DSA NO.:** 03-112764 **FILE NO.:** 19-92  
**PROJECT NO.:** 108RSD16  
HENRY WOO ARCHITECTS, INC.

**AD1-P1**

DATE: 09/28/10



**PRESSURE REDUCING VALVE ASSEMBLY**

(REF. 4 / P-1.0) SCALE: N.T.S.

PROJECT TITLE:  
NORTHAM ES  
PARTIAL MODERNIZATION

DSA NO: 03-112764 FILE NO: 19-92  
PROJECT NO: 108RSD16  
HENRY WOO ARCHITECTS, INC.

**AD1-P2**

DATE: 09/28/10