RUHNAU CLARKE ARCHITECTS

April 30, 2021

ADDENDUM NO. 2

TO THE CONTRACT DOCUMENTS

FOR

PACIFIC HIGH SCHOOL – NEW ADMINISTRATION BUILDING

FOR THE
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT
777 North F Street
San Bernardino, CA 92410

DSA No. 04-119637 File No. 36-H7 RCA Job No. 1-78-28

NOTICE TO BIDDERS

This Addendum forms a part of the Contract and modifies the original documents DSA Approved on February 25, 2021. It is intended that all work affected by the following modifications shall conform with related provisions and general conditions of the contract of the original drawings and specifications. Modify the following items wherever appearing in any drawing or sections of the specifications. Acknowledge receipt of Addendum No. 2 in the space provided on the Bid Form. Failure to do so may subject bidder to disqualification.

GENERAL

Item No. 2.1 General Items:

2.1.1 Construction duration is listed as "360 calendar days from receipt of NTP". See Agreement Form, Page 46 in Bid Specs.

2.1.2 NTP is anticipated 1-2 weeks after the Board Meeting. Therefore, tentative construction start date is week of June 14, 2021.

2.1.3 Reference Front End Bid Documents, a revised **Attachment 1 – Bid Form** will be available for bidder reference at Crisp Imaging public plan room website www.crispimg.com

2.1.4 Reference Front End Bid Documents, a revised **Agreement Form** will be available for bidder reference at Crisp Imaging public plan room website www.crispimg.com

2.1.5 Reference Front End Bid Documents, a revised **Supplementary General Conditions** will be available for bidder reference at Crisp Imaging public plan room website www.crispimg.com

2.1.6 Reference Front End Bid Documents, new document **Exhibit 'A' – Phasing Plan of Site Work** will be available for bidder reference at Crisp Imaging public plan room website www.crispimg.com

2.1.7 Contractor's Pre-Qualification List as of 4/29/2021, is available for bidder reference at District's website https://sbcusdfacilities.com/transforming-schools/bid-opportunities/

CHANGES TO THE SPECIFICATIONS

Item No. 2.2 Reference Section 07 26 16 – Under-Slab Vapor Retarder:
2.2.1 Replace in its entirety per attached revised Section 07 26 16.

Item No. 2.3 Reference Section 07 54 00 – Thermoplastic Membrane Roofing:
2.3.1 Replace in its entirety per attached revised Section 07 54 00.

Item No. 2.4 Reference Section 27 10 00 – Voice Data Infrastructure:
2.4.1 Replace in its entirety per attached revised Section 27 10 00.

Item No. 2.5 Reference New Section 27 21 00 – Networking Electronics:
2.5.1 Add new section in its entirety per attached Section 27 21 00.

CHANGES TO THE DRAWINGS

Item No. 2.6 Reference Sheet AS-1.0:
2.6.1 Revise per clouded areas of attached revised Sheet AS-1.0

Item No. 2.7 Reference Sheet AS-1.4
2.7.1 Revise per clouded areas of attached revised Sheet AS-1.4

\Item No. 2.8 Reference Sheet A-1.1:
2.8.1 Add new room signage per clouded area of attached Sketch **ASK-2.1**

Item No. 2.9 Reference Sheet A-4.1:
2.9.1 Revise per clouded area of attached Sheet A-4.1:
a. Revise window mullion pattern
b. Revise plaster control joints

Item No. 2.10 Reference Sheet A-8.1:
2.10.1 Revise windows per clouded area of attached Sheet A-8.1.

Item No. 2.11 Reference Sheet AD-5.1:
2.11.1 Revise casework edge details per clouded areas of added revised Sheet AD-5.1

Item No. 2.12 Reference Sheet M-0.2:
2.12.1 Revise per clouded areas of attached revised Sheet M-0.2:
a. Package gas-electric AC unit schedule: added notes 16 and 17 on the remarks and included it in areas where it applied. Revised note 15 to only be a temperature sensor.
b. Exhaust fan schedule: added note 8 on the remarks and included it in areas where it applied.
c. Zone damper schedule: added note 2 and 3 on the remarks and included it in areas where it applied.
d. By-pass damper schedule: added note 1 on the remarks and included it in areas where it applied.

Item No. 2.13 Reference Sheet M-1.2:
2.13.1 Revise per clouded areas of attached revised Sheet M-1.2:
a. Added construction note #6.
b. Located control panel (CP-4) for hot water circulating pump in Cust. 119.

Item No. 2.14 Reference Sheet M-1.3:
2.14.1 Revise per clouded areas of attached revised Sheet M-1.3:
a. Added construction note #6.
b. Located control panel (CP-1, CP-2 and CP-3) for EMS router, exterior lighting and exhaust fan in Data 122.

Item No. 2.15 Reference Sheet MD-2.1:
2.15.1 Add new Wiring Diagram Details 8 & 9, per clouded areas of attached revised Sheet MD-2.1

Item No. 2.16 Reference Sheet MD-3.1:

2.16.1 Revise EMS per clouded areas of attached revised Sheet MD-3.1:

a. Revised EMS BACS riser diagram to include the 3 additional control panels and revised their actual location.
b. Revised VVT zone damper EMS detail to include note for when a temperature/CO2 sensor is required.
c. Included sequences of operations for zone dampers that include CO2.
d. Included sequences of operations for VVT rooftop occupied mode. Revised set points to District's standards
e. Removed set points tables as they are shown within the diagrams.

Item No. 2.17 Reference Sheet MD-3.2:

2.17.1 Revise EMS per clouded areas of attached revised Sheet MD-3.2:

a. Included sequences of operations for 3-cool/2-heat stage rooftop occupied mode. Revised set points to District's standards
b. Included sequences of operations for 2-cool/1-heat stage rooftop occupied mode. Revised set points to District's standards
c. Removed set points tables as they are shown within the diagrams.
d. Removed CO2 portion of sequences of operations for both units since it does not apply.
e. Added circulating pump and exterior lighting controls details. Revised exhaust fan control detail.

Item No. 2.18 Reference Sheet P-0.2:

2.18.1 Revise per clouded areas of attached revised Sheet P-0.2:

a. Circulating pump schedule: added note 1 on the remarks.

Item No. 2.19 Reference Sheet P-7.1:

2.19.1 Revise per clouded areas of attached revised Sheet P-7.1:

a. Added construction note #8.
b. Included location of circulating pump control panel in Cust 119.

Item No. 2.20 Reference Sheet PD-1.2:

2.20.1 Revise per clouded areas of attached revised Sheet PD-1.2:

a. Detail 1, revised EMS detail callout for circulating pump to 2/MD-3.2.

Item No. 2.21 Reference Sheet E3.1:

2.21.1 Revise power for mechanical & plumbing panels, per clouded areas of attached revised Sheet E3.1

Item No. 2.22 Reference Sheet E4.1:

2.22.1 Revise per clouded areas of attached revised Sheet E4.1:

a. Added Keynote #10, for data connection to "Aiphone" camera/receiver
b. Revised quantity of data ports in offices

Item No. 2.23 Reference Sheet E4.2:

2.23.1 Revised riser diagram to remove OFOI note for Network switches, per clouded areas of attached revised Sheet E4.2

Item No. 2.24 Reference Sheet E4.4:

2.24.1 Revised Communications details to remove horizontal wire managers and WAPs to be CFCI, per clouded areas of attached revised Sheet E4.4

Item No. 2.25 Reference Sheet E6.1:

2.25.1 Added power connections to all zone/bypass dampers, per clouded areas of attached revised Sheet E6.1

Item No. 2.26 Reference Sheet E6.2:

2.26.1 Added zone and bypass dampers to schedule, per clouded areas of attached revised Sheet E6.2

Item No. 2.27 Reference Sheet E9.1:
2.27.1 Revised Panel Schedule AB, per clouded areas of attached revised Sheet E9.1

ATTACHMENTS

Exhibits	N/A
General	N/A
Specifications	07 26 16, 07 54 00, 27 10 00, 27 21 00
Sketches	ASK-2.1
Sheets	AS-1.0, AS-1.4, A-4.1, A-8.1, AD-5.1, M-0.2, M-1.2, M-1.3, MD-2.1, MD-3.1, MD-3.2, P-0.2, P-7.1, PD-1.2, E3.1, E4.1, E4.2, E4.4, E6.1, E6.2, E9.1

END OF ADDENDUM NO. 2

_____

Roger Clarke, Principal
#C-21340

Attachment 1 - Bid Form

SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

Project: PACIFIC HIGH SCHOOL – NEW ADMINISTRATION

Project Address: Pacific High School, 1020 Pacific Street, San Bernardino CA

Bid No. F21-03

CONTRACTOR NAME: _____

DIR REGISTRATION NUMBER: _____

ADDRESS: _____

_____

TELEPHONE: ( ) _____

FAX: ( ) _____

EMAIL: _____

TO: SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT, acting by and through its Governing Board, herein called "DISTRICT".

1. Pursuant to and in compliance with your Notice Inviting Bids and other documents relating thereto, the undersigned bidder, having familiarized himself with the terms of the contract, the local conditions affecting the performance of the contract, the cost of the work at the place where the work is to be done, with the drawings and specifications, and other contract documents, hereby proposes and agrees to perform within the time stipulated, the contract, including all of its component parts, and everything required to be performed, including its acceptance by the DISTRICT, and to provide and furnish any and all labor, materials, tools, expendable equipment, and utility and transportation services necessary to perform the contract and complete all of the work in a workmanlike manner required in connection with the construction of:

Bid No. F21-03 PACIFIC HS - NEW ADMINISTRATION

In the DISTRICT described above, all in strict conformance with the drawings and other contract documents on file at the Purchasing Office of said DISTRICT for amounts set forth herein.

2. Bidder acknowledges the following Addenda:

Addenda Number:	Addenda Number:	Addenda Number:	Addenda Number:	Addenda Number:
A (Inc. in Bid Set)				

3. Total Base Bid

A. Base Bid ($_____)

B. Allowance **#1 General** ($ 200,000.00)

C. Allowance #2 Solar Carport Removal **($ 460,000.00)**

TOTAL PRICE – ENTIRE JOB (Base Bid A + Allowance B **+ Allowance C**)

TOTAL CASH PURCHASE PRICE IN WORDS & NUMBERS:

_____

_____DOLLARS

($ _____)

4. Alternate Bids: N/A

5. Time for Completion:

The DISTRICT may give a notice to proceed within ninety (90) days of the award of the bid by the DISTRICT. Once the CONTRACTOR has received the notice to proceed, the CONTRACTOR shall complete the work in the time specified in the Agreement. By submitting this bid, CONTRACTOR has thoroughly studied this Project and agrees that the time period for this Project was adequate for the timely and proper completion of the Project. Further, CONTRACTOR has included in the analysis of the time required for this Project, Rain Days, Governmental Delays, and the requisite time to complete Punch List.

In the event that the DISTRICT desires to postpone giving the notice to proceed beyond this ninety (90) day period, it is expressly understood that with reasonable notice to the CONTRACTOR, giving the notice to proceed may be postponed by the DISTRICT. It is further expressly understood by the CONTRACTOR, that the CONTRACTOR shall not be entitled to any claim of additional compensation as a result of the postponement of giving the notice to proceed.

If the CONTRACTOR believes that a postponement will cause a hardship to it, the CONTRACTOR may terminate the contract with written notice to the DISTRICT within ten (10) days after receipt by the CONTRACTOR of the DISTRICT's notice of postponement. Should the CONTRACTOR terminate the contract as a result of a notice of postponement, the DISTRICT shall have the authority to award the contract to the next lowest responsible bidder, if applicable.

It is understood that the DISTRICT reserves the right to reject any or all bids and/or waive any irregularities or informalities in this bid or in the bid process. The CONTRACTOR understands that it may not withdraw this bid for a period of ninety (90) days after the date set for the opening of bids.

6. Bid Security:

Attached is bid security in the amount of not less than ten percent (10%) of the total bid:

Bid bond (10% of the Bid), certified check, or cashier's check (circle one)

7. Designated Subcontractors:

The required List of Designated Subcontractors is attached hereto.

8. Non-Collusion Declaration

The required is attached hereto.

9. Substitution Request Form:

The Substitution Request Form, if applicable, is attached hereto.

10. Acceptance:

It is understood and agreed that if written notice of the acceptance of this bid is mailed, telegraphed, or delivered to the undersigned after the opening of the bid, and within the time this bid is required to remain open, or at any time thereafter before this bid is withdrawn, the undersigned will execute and deliver to the DISTRICT a contract in the form attached hereto in accordance with the bid as accepted, and that he will also furnish and deliver to the DISTRICT the Performance Bond and Payment Bond, all within **five (5) calendar days** after award of contract, and that the work under the contract shall be commenced by the undersigned bidder, if awarded the contract, by the start date provided in the DISTRICT's Notice to Proceed, and shall be completed by the CONTRACTOR in the time specified in the contract documents.

11. Notices:

All notices or other correspondence should be addressed to the undersigned at the address stated below:

The names of all persons interested in the foregoing proposal as principals are as follows:

_____

_____

_____

_____

_____

(IMPORTANT NOTICE: If bidder or other interested person is a corporation, state the legal name of such corporation, as well as the names of the president, secretary, treasurer, and manager thereof; if a co-partnership, state the true names of the firm, as well as the names of all individual co-partners comprising the firm; if bidder or other interested person is an individual, state the first and last names in full.)

12. Protest Procedures:

If there is a bid protest, the grounds shall be submitted as set forth in the Instructions to Bidders.

13. CONTRACTOR's License:

a. The undersigned bidder shall be licensed and shall provide the following California CONTRACTOR's license information:

License Number: _____

License expiration date: _____

Name on License: _____

Class of License: _____

DIR Registration Number: _____

b. If the bidder is a joint venture, each member of the joint venture must include the above information.

14. Time is of the Essence:

Time is of the essence regarding this contract, therefore, in the event the bidder to whom the Contract is awarded fails or refuses to post the required bonds and return executed copies of the Agreement form within **five (5) calendar days** from the date of receiving the Notice of Award, the DISTRICT may declare the bidder's bid deposit or bond forfeited as damages.

15. Declaration:

The bidder declares that he/she has carefully examined the location of the proposed work, that he/she has examined the Contract Documents, including the Plans, General Conditions of the

contract, Supplemental Conditions, Addenda~~,~~ and Specifications, all other documents issued to bidders and read the accompanying instructions to bidders, and hereby proposes and agrees, if this proposal is accepted, to furnish all materials and do all work required to complete the said work in accordance with the Contract Documents, in the time and manner therein prescribed for the unit cost and lump sum amounts set forth in this Bid Form.

16. Debarment:

In addition to seeking remedies for False Claims under Government Code Section 12650 et seq. and Penal Code Section 72, the DISTRICT may debar a CONTRACTOR pursuant to Article 15 of the General Conditions if the Board or the Board may designate a hearing officer who, in his or her discretion, finds the CONTRACTOR has done any of the following:

a. Intentionally or with reckless disregard, violated any term of a contract with the DISTRICT;

b. Committed an act or omission which reflects on the CONTRACTOR's quality, fitness or capacity to perform work for the DISTRICT;

c. Committed an act or offense which indicates a lack of business integrity or business honesty; or,

d. Made or submitted a false claim against the DISTRICT or any other public entity (See Government Code Sections 12650, et. seq., and Penal Code Section 72)

17. Designation of Subcontractors:

In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code Sections 4100 et. seq.) and any amendments thereof, each bidder shall list subcontractors on the DISTRICT's form Subcontractor list. This subcontractor list shall be submitted with the bid and is a required form.

18. Bid Certification

I agree to receive service of notices at the e-mail address listed below.

I, the below-indicated bidder, declare under penalty of perjury that the information provided and representations made in this bid are true and correct.

_____

Proper Name of Company

_____

Name of Bidder Representative

_____

Street Address

_____

City, State, and Zip

_____ _____

Phone Number Fax Number

_____

E-mail

_____ _____

Signature of Authorized Bidder Representative Date

_____

Signatory Name & Title (Printed)

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of authorized officers or agents and the document shall bear the corporate seal; if bidder is a partnership, the true name of the firm shall be set forth above, together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership; and if bidder is an individual, his signature shall be placed above.

All signatures must be made in blue ink

AGREEMENT FORM

THIS AGREEMENT, entered into this **INSERT DATE (DAY AFTER BOARD APPROVAL)** 20__ in the County of San Bernardino of the State of California, by and between the SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT, hereinafter called the "DISTRICT", and **INSERT COMPANY NAME**, hereinafter called the "CONTRACTOR".

WITNESSETH that the DISTRICT and the CONTRACTOR for the consideration stated herein agree as follows:

ARTICLE 1 - SCOPE OF WORK: The CONTRACTOR shall furnish all labor, materials, equipment, tools, and utility and transportation services, and perform and complete all work required in connection with **F21-03 PACIFIC HIGH SCHOOL – NEW ADMINISTRATION** ("Project") in strict accordance with the Contract Documents enumerated in Article 7 below. The CONTRACTOR shall be liable to the DISTRICT for any damages arising as a result of a failure to comply with that obligation, and the CONTRACTOR shall not be excused with respect to any failure to so comply by an act or omission of the Architect, Engineer, Inspector, Division of the State Architect (DSA), or representative of any of them, unless such act or omission actually prevents the CONTRACTOR from fully complying with the Contract Documents and the CONTRACTOR protests, in accordance with the Contract Documents, that the act or omission is preventing the CONTRACTOR from fully complying with the Contract Documents. Such protest shall not be effective unless reduced to writing and filed with the DISTRICT office within seven (7) days of the date of occurrence of such act or omission preventing the CONTRACTOR from fully complying with the Contract Documents.

ARTICLE 2 - TIME OF COMPLETION: The DISTRICT may give notice to proceed within ninety (90) days of the award of the bid by the DISTRICT. Once the CONTRACTOR has received a notice to proceed, the CONTRACTOR shall reach Substantial Completion (See Article 1.1.46) of the Work within **360 calendar days** from receipt of the Notice to Proceed. This shall be called Contract Time. (See Article 8.1.1). It is expressly understood that time is of the essence.

CONTRACTOR has thoroughly studied the Project and has satisfied itself that the time period for this Project was adequate for the timely and proper completion of the Project within each milestone and within the Contract time. Further, CONTRACTOR has included in the analysis of the time required for this Project, items set forth in General Conditions Article 8.3.2.1, Submittal Schedules, Rain Day Float, and Governmental Delay Float.

In the event that the DISTRICT desires to postpone giving the notice to proceed beyond this ninety (90) day period, it is expressly understood that with reasonable notice to the CONTRACTOR, giving the notice to proceed may be postponed by the DISTRICT. It is further expressly understood by the CONTRACTOR, that the CONTRACTOR shall not be entitled to any claim of additional compensation as a result of the DISTRICT's postponement of giving the notice to proceed.

If the CONTRACTOR believes that a postponement will cause hardship to it, the CONTRACTOR may terminate the Contract with written notice to the DISTRICT within ten (10) days after receipt by the CONTRACTOR of the DISTRICT's notice of postponement. It is further understood by the CONTRACTOR that in the event that the CONTRACTOR terminates the Contract as a result of postponement by the DISTRICT, the DISTRICT shall only be obligated to pay the CONTRACTOR for the work performed by the CONTRACTOR at the time of notification of postponement. Should the CONTRACTOR terminate the Contract as a result of a notice of postponement, the DISTRICT shall have the authority to award the Contract to the next lowest responsible bidder.

ARTICLE 3 - LIQUIDATED DAMAGES: It being impracticable and infeasible to determine the amount of actual damage, it is agreed that the CONTRACTOR will pay the DISTRICT the sum of **one thousand five dollars ($1,500.00)** per calendar day for each and every day of delay beyond the Contract Time set forth in Article 2 of this Agreement (inclusive of Milestones that are critical on the critical path or noted as critical to the DISTRICT) based on scheduling required pursuant to Article 8 of the General Conditions, among other contract clauses, for completing each milestone and said work as liquidated damages and not as a penalty or forfeiture. In the event Liquidated Damages are not paid, the CONTRACTOR further agrees that the DISTRICT may deduct such amount thereof from any money due or that may become due the CONTRACTOR under the Contract (See Article 9.6 and 2.2 of the General Conditions). This Article shall not be construed as preventing the DISTRICT from the recovery of damages under provisions of the contract documents.

ARTICLE 4 - CONTRACT PRICE: The DISTRICT shall pay to the CONTRACTOR as full consideration for the faithful performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, the sum of **INSERT AMOUNT** DOLLARS **($XXX,XXX.00),** said sum being the total amount stipulated in the proposal submitted. Payment shall be made as set forth in the General Conditions.

Should any Change Order result in an increase in the Contract Price, the cost of such Change Order shall be agreed to in advance by the CONTRACTOR and the DISTRICT, subject to the monetary limitations set forth in Public Contract Code section 20118.4. In the event that the CONTRACTOR proceeds with a Change in work without an agreement between the DISTRICT and CONTRACTOR regarding the cost of a Change Order, the CONTRACTOR waives any Claim of additional compensation for such additional work.

ARTICLE 5 - HOLD HARMLESS AGREEMENT: CONTRACTOR shall defend, indemnify and hold harmless DISTRICT, Architect, Inspector, the State of California and their officers, employees, agents and independent CONTRACTORs from all liabilities, claims, actions, liens, judgments, demands, damages, losses, costs or expenses of any kind arising from death, personal injury, property damage or other cause based or asserted upon any act, omission, or breach connected with or arising from the progress of Work or performance of service under this Agreement or the Contract Documents. As part of this indemnity, CONTRACTOR shall protect and defend, at its own expense, DISTRICT, Architect, Construction Manager, Inspector, the State of California and their officers, employees, agents and independent CONTRACTORs from any legal action including attorney's fees or other proceeding based upon such act, omission, breach or as otherwise required by this Article.

Furthermore, CONTRACTOR agrees to and does hereby defend, indemnify and hold harmless DISTRICT, Architect, Construction Manager, Inspector, the State of California and their officers, employees, agents and independent CONTRACTORs from every claim or demand made, and every liability, loss, damage, expense or attorney's fees of any nature whatsoever, which may be incurred by reason of:

(a) Liability for (1) death or bodily injury to persons; (2) damage or injury to, loss (including theft), or loss of use of, any property; (3) any failure or alleged failure to comply with any provision of law or the Contract Documents; or (4) any other loss, damage or expense, sustained by any person, firm or corporation or in connection with the Work called for in this Agreement or the Contract Documents, except for liability resulting from the sole or active negligence, or the willful misconduct of the DISTRICT.

(b) Any bodily injury to or death of persons or damage to property caused by any act, omission or breach of CONTRACTOR or any person, firm or corporation employed by CONTRACTOR, either directly or by independent contract, including all damages or injury to or death of persons, loss (including

theft) or loss of use of any property, sustained by any person, firm or corporation, including the DISTRICT, arising out of or in any way connected with Work covered by this Agreement or the Contract Documents, whether said injury or damage occurs either on or off DISTRICT property, but not for any loss, injury, death or damages caused by the sole or active negligence or willful misconduct of the DISTRICT.

(c) Any dispute between CONTRACTOR and CONTRACTOR's subcontractors/suppliers/sureties, including, but not limited to, any failure or alleged failure of the CONTRACTOR (or any person hired or employed directly or indirectly by the CONTRACTOR) to pay any Subcontractor or Material man of any tier or any other person employed in connection with the Work and/or filing of any stop notice or mechanic's lien claims.

(d) Any claims, allegations, penalties, assessments, or liabilities to the extent caused by the CONTRACTOR's failure or the failure of any Subcontractor of any tier, to fully comply with the DIR registration requirements under Labor Code section 1725.5 at all times during the performance of any Work on the Project and shall reimburse the DISTRICT for any penalties assessed against the DISTRICT arising from any failure by the CONTRACTOR or any Subcontractor of any tier from complying with Labor Code sections 1725.5 and 1771.1. Nothing in this paragraph, however, shall require the CONTRACTOR or any Subcontractor to be liable to the DISTRICT or indemnify the DISTRICT for any penalties caused by the DISTRICT in accordance with Labor Code section 1773.3 (g).

CONTRACTOR, at its own expense, cost, and risk, shall defend any and all claims, actions, suits, or other proceedings that may be brought or instituted against the DISTRICT, its officers, agents or employees, on account of or founded upon any cause, damage, or injury identified herein Article 5 and shall pay or satisfy any judgment that may be rendered against the DISTRICT, its officers, agents or employees in any action, suit or other proceedings as a result thereof.

The CONTRACTOR's and Subcontractors' obligation to defend, indemnify and hold harmless the Owner, Architect, Inspector, the State of California and their officers, employees, agents and independent CONTRACTORs hereunder shall include, without limitation, any and all claims, damages, and costs for the following: (1) any damages or injury to or death of any person, and damage or injury to, loss (including theft), or loss of use of, any property; (2) breach of any warranty, express or implied; (3) failure of the CONTRACTOR or Subcontractor(s) to comply with any applicable governmental law, rule, regulation, or other requirement; (4) products installed in or used in connection with the Work; and (5) any claims of violation of the Americans with Disabilities Act ("ADA").

ARTICLE 6 - PROVISIONS REQUIRED BY LAW: Each and every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein, and this Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not inserted correctly, then upon application of either party the contract shall forthwith be physically amended to make such insertion or correction.

ARTICLE 7 - COMPONENT PARTS OF THE CONTRACT: The Contract entered into by this Agreement consists of the following Contract Documents, all of which are component parts of the contract as if herein set out in full or attached hereto.

- Notice Inviting Bids
- Instructions to Bidders
- Bid Cover Sheet
- Bid Form (attachment 1 Bid Package)
    - Request for Substitution (if applicable) (attachment 2 Bid Package)
    - Non-Collusion Declaration (attachment 3 Bid Package)
    - Site Visit Certification (attachment 4 Bid Package)
    - Certification of Compliance with DVBE Policy (attachment 5 Bid Package)

    - Designation of Subcontractors (attachment 6 Bid Package)
    - Bid Bond Form (or Bid Guarantee Form) (attachment 7 or 8 Bid Package)
    - Bidder References & Responsibility Information (attachment 9 Bid Package)
    - Contractors Certificate Regarding Worker's Compensation Form / Bid Guarantee Form (attachment 10 Bid Package)
    - Acknowledgment of Bidding Practices Regarding Indemnity (attachment 11 Bid Package)
    - Local Business Outreach Program (LBOP) Form (attachment 12 Bid Package)
    - Covid-19 Safety Plan (attachment # 13 Bid Package)
- Agreement
    - Attachment #1 - Certificate Regarding Workers' Compensation
    - Attachment #2 - Insurance Documents & Endorsements
    - Attachment #3 - Contractor's Certificate Regarding Drug-Free Workplace
    - Attachment #4 - Contractor's Certificate Regarding Alcoholic Beverage and Tobacco-Free Campus Policy
    - Attachment #5 - Disabled Veterans Business Enterprise (DVBE) Participation Statement
    - Attachment #6 - Payment Bond
    - Attachment #7 - Performance Bond
    - Attachment #8 - Prime/General Contractor Information
    - Attachment #9 - W-9 Vendor Tax Information
    - Attachment #10 - Vendor Application
    - Attachment #11 - Certification of Non-Utilization of Asbestos Material
    - Attachment #12 - Contractor Prevailing Wage Compliance Certification
    - Attachment #13 - Guarantee
    - Attachment #14 - Contractor Certification Regarding Background Checks
    - Attachment #15 - Escrow Agreement for Security Deposit In Lieu of Retention (Optional)
    - Attachment #16 - Disabled Veterans Business Enterprise (DVBE) Contractor Close-Out Statement
- Requirements, Reports, Specifications and/or Documents in the Project Manual or Other Documents Issued to Bidders
- Project Drawings

All of the above-named Contract Documents are intended to be complementary. Work required by one of the above-named Contract Documents and not by others shall be done as if required by all.

ARTICLE 8 - PREVAILING WAGES: Wage rates for this Project shall be in accordance with the general prevailing rate of holiday and overtime work in the locality in which the work is to be performed for each craft, classification, or type of work needed to execute the contract as determined by the Director of the Department of Industrial Relations. Copies of schedules of rates so determined by the Director of the Department of Industrial Relations are on file at the administrative office of the DISTRICT and are also available from the Director of the Department of Industrial Relations. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

The following are hereby referenced and made a part of this Agreement and CONTRACTOR stipulates to the provisions contained therein.

1. Chapter 1 of Part 7 of Division 2 of the Labor Code (Section 1720 et seq.)

2. California Code of Regulations, Title 8, Chapter 8, Subchapters 3 through 6 (Section 16000 et seq.)

Effective January 1, 2015:

3. No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

4. No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

5. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

ARTICLE 9 - RECORD AUDIT: In accordance with Government Code section 8546.7(and Davis Bacon, if applicable) and Article 13.11 of the General Conditions, records of both the DISTRICT and the CONTRACTOR shall be subject to examination and audit for a period of five (5) years after a Final Retention Payment or the Recording of a Notice of Completion, whichever occurs first.

ARTICLE 10 - CONTRACTOR'S LICENSE: The CONTRACTOR must possess throughout the Project a **Class B** Contractor's License, issued by the State of California, which must be current and in good standing.

(Continued next page)

IN WITNESS WHEREOF, this Agreement has been duly executed by the above-named parties, on the day and year first above written.

San Bernardino City Unified School DISTRICT

By:_____

By: _____
Purchasing Director

Dated: _____

CONTRACTOR:

_____
Typed or Printed Name

_____
Title

_____
Signature

_____
Type or Printed Name

_____
Title (Authorized Officers or Agents)

_____
Signature

(CORPORATE SEAL)

SUPPLEMENTARY GENERAL CONDITIONS

The following supplements modify the General Conditions. Where a portion of the General Conditions is modified and or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

Drawings Scope of Work: Contractor shall coordinate with the District during construction for specific locations of the new door buzzer camera phone on counter(s).

Coordination: In addition to coordination indicated in the contract documents. Provide coordination as may be needed for the removal of the existing solar carport required for the construction of the new parking lot.

Packing/Moving of Site Furniture and Belongings: Contractor shall be responsible for coordinating with the District school site for the packing and moving of furniture and belongings to New Administration Building once project is complete. After construction is completed, the contractor also coordinate the packing and moving of individual site furniture and belongings back into the New Administration areas/spaces. Contractor shall provide all materials (moving boxes / supplies) and labor, as needed for the moving of office furniture/belongings from the existing area/areas within the current school property.

ARTICLE 3 – THE CONTRACTOR

Article 3.10.4 Add the following: The CONTRACTOR shall require all Subcontractors to prepare and submit to the CONTRACTOR, within *fifteen (15)* days of execution of the Subcontract, comprehensive lists, in quadruplicate, of the manufacturers and products proposed for the Project, including information on materials, equipment, and fixtures required by the Contract Documents, as may be required for the CONTRACTOR's or Architect's approval.

ARTICLE 8 – TIME

Article 8 Schedule Inclusion Requirements –The Baseline Schedule shall include the following Milestone Schedule:

Parking Lot Completion	Contractor to coordinate with District and School on completion of parking lot work.
Refer to Exhibit 'A' Phasing Plan of Site Work	AREA OF WORK to be completed first and coordinated with CTE and/or CLASSROOM MODERNIZATION contractors who are currently performing work on this campus. Refer to Exhibit 'A' that indicates the utility installation that shall commence at the start of construction activities, including but not limited to MAIN DOMESTIC WATER LINE, MAIN ELECTRICAL & COMM. LINES, MAIN GAS LINE, MAIN IRRIGATION LINE & PORTION OF STORM DRAIN LINE.

Solar Carport Removal	Allowance #2 has been increased from $420,000 to $460,000. The additional amount is to cover and include the removal of the solar array footings (Total of 5) that will need to be removed by the winning Bid Contractor. The solar array lease company will only remove the existing footings down to a couple of inches below the existing surface/asphalt. The winning Bid Contractor shall coordinate with and contract out directly with the following (2) Solar Array Lease companies who will perform the removal of the Solar Array at Pacific HS immediately after award of project in order to avoid project delays. The District is currently leasing the solar arrays at Pacific HS with these companies, requiring that any / all related work be coordinated with and performed through them. Solar Array Lease Companies: **ARC Alternatives** Simon Olivieri, P.E., Senior Engineer (510) 852-4840 simon@arc-alternatives.com **Brookfield Renewable US** Douglas Hooper, Sr. Project Manager (410) 916-8357 douglas.hooper@brookfieldrenewable.com

Article 8.2.2 Performance During Working Hours – delete this Article and replace with the following:

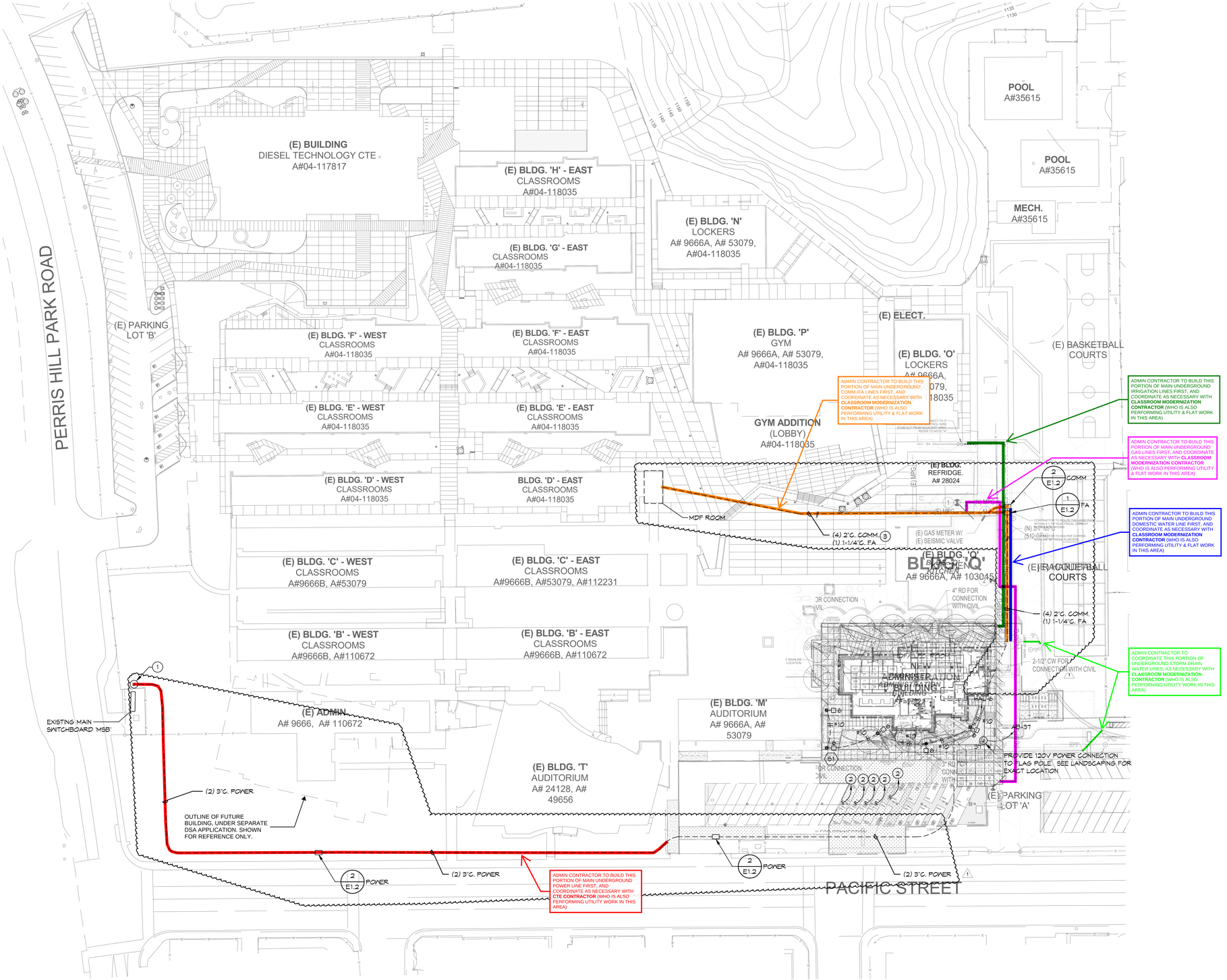
8.2.2 Where a single shift is worked, eight (8) consecutive hours between **7am** and **5pm** shall constitute a work day at the applicable prevailing wage rate(s).

Article 8.2.2 Performance During Working Hours – delete this Article and replace with the following:

8.2.2 Forty (40) hours between **Monday, 7am** and **Friday, 5pm** shall constitute a work week at the applicable prevailing wage rate(s);

ARTICLE 11 – INSURANCE AND BONDS

Article 11.10 Performance and Payment Bonds – The number of executed copies of the Performance Bond and the Payment Bond required is three (3).



OVERALL SITE PLAN | SCALE: 1" = 40'-0" | REF.: / | 1

PROJECT No. :Project Number
3/31/2021 3:55:08 PM

DRAWN BY: CHECKED BY:
ISSUE No.____ DATE____ DESCRIPTION____
ISSUE No.____ DATE____ DESCRIPTION____
ISSUE No.____ DATE____ DESCRIPTION____
ISSUE No.____ DATE____ DESCRIPTION____

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NEW ADMINISTRATION BUILDING
1020 PACIFIC STREET, SAN BERNARDINO, CA 92404
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

EXHIBIT 'A'
PHASING PLAN OF SITE WORK

SECTION 07 26 16

UNDER-SLAB VAPOR RETARDER

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Sheet vapor retarder under concrete slabs on grade.

1.02 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories: Forms and accessories for formwork.

B. Section 03 20 00 - Concrete Reinforcing: Coordination of placement of reinforcement with vapor retarder/barrier.

C. Section 03 30 00 - Cast-in-Place Concrete: Preparation of subgrade, granular fill, placement of concrete.

D. Section 31 22 00 - Grading: Preparation of building pad and base placed beneath vapor barrier.

1.03 REFERENCE STANDARDS

A. ACI 302.1R - Guide to Concrete Floor and Slab Construction.

B. ACI 302.2R - Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

C. ASTM D1709 - Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method.

D. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

E. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

F. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturers product data identifying specific product to be utilized.

C. Shop Drawings: Indicate the following:

1. Seaming Layout
2. Penetration and termination details.

D. Samples: Submit six material samples, 6 x 6 inch in size, illustrating actual materials to be installed.

E. Specimen Warranty.

F. Certificate: Certify that products of this section meet or exceed specified requirements.

G. Test Reports: Indicate compliance with requirements listed in this section.

1. Independent laboratory test results showing compliance with ASTM and ACI Standards.

H. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction.

I. Manufacturer's Field Reports: Indicate Manufacturers review of field conditions at 50% installation and after installation of reinforcing, prior to placement of concrete..

J. Warranty: Submit manufacturer warranty and ensure that forms have been completed in District's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Preinstallation Meeting: Convene a preinstallation meeting 2 weeks before start of installation of reinforced vapor retarders. Require attendance of parties directly affecting work of this section, including Manufacturer's Representative, Contractor, Architect, and installer. Review installation, protection, and coordination with other work.

B. Coordination: Coordinate installation timing and sequence to maintain required moisture content in prepared subgrade.

C. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers and Products:

1. Fortifiber Building Products Systems; Moistop Ultra 15, 15 mils thick (0.010 max. permeance), Class A, unreinforced polyolefin: www.fortifiber.com.

2. ISI Building Products; Viper VaporCheck II 15-mil (Class A): www.isibp.com/#sle..

~~2~~**3**. Raven Industries; VaporBlock VB15, 15 mils thick (0.01 perms), Class A, unreinforced polyolefin: ravenefd.com,

~~3~~**4**. Reef Industries, Inc.; Vaporguard, 15 mil (E-96 0.000 perms), Class B: www.reefindustries.com

~~4~~**5**. Stego Industries LLC; Stego Wrap Vapor Barrier, 15 mils: www.stegoindustries.com.

~~5~~**6**. W.R. Meadows; Perminator, 15 mils thick (0.0063 perms, puncture resistant) Class A: www.wrmeadows.com..

~~6~~**7**. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Comply with ACI 302.1R and ACI 302.2R.

B. Water Vapor Permeance: Not more than 0.010 perms, maximum.

1. Permeance as tested after conditioning (ASTM E1745).

C. Comply with ASTM E1745 Class A.

D. Puncture Resistance, ASTM D1709: 2,300 gms.

2.03 MATERIALS

A. Reinforced Vapor Barrier:

1. Minimum Thickness ACI 302.1R: 15 mil.
2. Material: Multi-ply laminate/extrusion of Polyolefin.

B. Sheet polyethylene membrane not acceptable.

2.04 ACCESSORIES

A. General: Ensure accessories are from same manufacturer as reinforced vapor retarders.
   1. Vapor barrier manufacturer's recommended tape, adhesive, mastic, etc., for sealing seams and penetrations in vapor barrier.

B. Adhesive Mastic: Adhesive compatible with sheet retarder/barrier and substrate materials, water vapor transmission rate of 0.3 perms or lower per ASTM E96/E96M. Membrane manufacturer's recommended elastomeric sealant.

C. Adhesive Tape for Sheet Joint Sealing and Repair and Sealing of Miscellaneous Penetrations: Membrane manufacturer's recommended double sided tape with water vapor transmission rate of 0.03 perms or lower per ASTM E96/E96M.
   1. Mastic Tape: Manufacturer's system tape.
   2. Self-Adhesive Repair Tape: Manufacturer's system tape.

D. Pipe and Conduit Boot:
   1. Manufacturers factory fabricated pipe boots.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive reinforced vapor retarders. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

B. Subbase: Per ACI 302.1R.
   1. As indicated on Drawings and approved by the Geotechnical Engineer.
      a. Minimum 4 inch thick (or larger) base of 1/2 inch or larger clean aggregate, per CA Green Code 4.505.2.1 and CBC 1907.1A.

C. Preparation: Ensure that crushed rock or sand base is tamped or rolled and level.

D. Ensure subgrade beneath vapor retarder is smooth, level, and compacted with no sharp projections.

E. Beginning installation shall indicate acceptance of conditions.

3.02 UNDERSLAB VAPOR RETARDER / BARRIER INSTALLATION

A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E1643.

B. Location: Provide vapor retarder/barrier under building slabs on grade to limits indicated on Drawings.

C. Installation: Place sheet over crushed rock, as detailed on Drawings, without damaging sheeting.
   1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement.

a. Install vapor retarders in largest practical widths.

2. Place sheets continuous between footings or foundation walls, without voids.
3. Lap vapor barrier over footings and/or seal to foundation walls.
4. Lap all joints 6 inches minimum. Seal seams as noted below.
5. Turn down sheeting 12 inches minimum along inside face of perimeter grade beams and/or continuous perimeter footings.
6. Fit sheeting tightly around column, pipe and conduit penetrations. Install standard pipe boot where possible, following manufacturer's instructions.
   a. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.

D. Seam and Lap Sealing: With adhesive mastic and adhesive sealing tape, seal all seams, edges and penetrations of vapor retarder/barrier.
   1. For adhesive mastic seal, apply adhesive to both surfaces, allow approximately 10 minutes to set up and then press together smoothly and evenly, without gaps or fishmouths, for full contact bond.
   2. For adhesive tape seal, comply with manufacturer's instructions and recommendations.
   3. Seal all penetrations with both adhesive sealing tape and adhesive mastic.
   4. Seal sheets to concrete footing faces and penetrating components with adhesive mastic or double sided tape as recommended by membrane manufacturer.

E. Ensure there is no moisture entrapment by vapor retarder due to rainfall or ground water intrusion.

F. Immediately repair holes in vapor retarder with self-adhesive repair tape.

G. Remedial Work: Inspect sheeting installation prior to placing fill materials. Repair all apparent and suspected damaged areas.
   1. Clean surface of sheeting.
   2. Cut patch from new sheeting material, overlapping damaged area 6 inches minimum, and apply over damaged area sealing in place with adhesive and tape.

3.03 PROTECTION

A. Protect reinforced vapor retarders from damage during installation of reinforcing steel and utilities and during placement of concrete slab or granular materials.

B. Immediately repair damaged vapor retarder in accordance with manufacturer's instructions

END OF SECTION

SECTION 07 54 00

THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Adhered system with thermoplastic roofing membrane.

B. **Insulation, tapered**~~Deck sheathing~~.

C. Cover boards.

D. Flashings.

E. Roofing cant strips, stack boots, and walkway pads

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Wood nailers**, cant strips,** and curbs.

B. Section 07 62 00 - Sheet Metal Flashing and Trim: Counterflashings, reglets.

C. Section 07 72 00 - Roof Accessories: Roof-mounted units; prefabricated curbs.

D. Division 22 -Plumbing: Roof drains.

E. Division 26 - Electrical: Conduit penetrating roofing membrane.

1.03 REFERENCE STANDARDS

A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

~~A~~**B**. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

1. Use 2013 as indicated in 2019 CBC Ch. 35 Referenced Standards.

~~2. Use 2006 as indicated in 2013 CBC Ch. 35 Referenced Standards.~~

~~B~~**C**. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

1. Use 2015 as indicated in 2019 CBC Ch. 35 Referenced Standards.

~~C~~**D**. ASTM D4434/D4434M - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing.

1. Use 2012 as indicated in 2019 CBC Ch. 35 Referenced Standards.

E. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

~~D~~**F**. FM DS 1-28 - Wind Design.

~~E~~**G**. NRCA (RM) - The NRCA Roofing Manual.

~~F~~**H**. NRCA (WM) - The NRCA Waterproofing Manual.

I. UL (FRD) - Fire Resistance Directory.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

1. Review preparation and installation procedures and coordinating and scheduling required with related work.
2. Notification: Two weeks prior to pre-application conference, inform District and Architect of scheduled roofing beginning and completion dates, such that District may arrange for independent inspection of roofing Work, and presence of independent testing and inspection agency at pre-application conference.
3. Attendance: Require attendance by Contractor's superintendent and other supervisory and quality control personnel having responsibility for roofing, supervisory personnel of roofing applicator and, if required for warranty provisions, representative of roofing products manufacturer.
    a. Construction Manager, Architect's insurer, independent testing and inspection agency and Architect, if authorized by District, will attend.
    b. Require attendance of installers of each component of related Work, including deck or substrate construction, rigid insulation, metal flashing, rooftop equipment, penetrations of roof deck, and other Work integral with or adjacent to roofing may attend.
    c. If required, attendance shall include authorities having jurisdiction. Contractor shall verify requirement with authorities having jurisdiction and arrange for attendance.
    d. Agenda:
        1) Meeting purpose is to review Drawings and Specifications for suitability for application of roofing system.
        2) Review application procedures and coordination required with related Work. Discuss changes and deviations from Drawings and Specifications, if any, recommended or required.
        3) Walk roof areas to review and discuss substrate preparation including repair of unacceptable surfaces, roof drainage, penetrations, equipment curbs, and work performed by other trades, which require coordination with roofing system.
        4) Review contract document requirements and submittals for roofing system, including roofing schedule, inspection and testing, and environmental conditions. Identify which governing regulations or insurance requirements will affect roofing system installation.
        5) Discuss anticipated weather, as well as procedures for responding to unacceptable weather, including using temporary roofing. Temporary roofing, if necessary, will be added to scope of the Work by contract modification (change order or construction change directive), with acceptable adjustment in Contract Time and Contract Sum.
        6) Document discussions in writing, including actions required, and distribute copy of report to each meeting participant.
        7) Attendance by Construction Manager, Architect and independent testing and inspection agency shall not relieve Contractor of sole responsibility for means, methods, techniques and sequence of construction, in accordance with provisions of the Conditions of the Contract.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, ~~vapor retarder, surfacing,~~ and fasteners.

1. Material Safety Data Sheet: For all products submitted. For Contractor's use only.

C. Shop Drawings: Submit drawings that indicate joint or termination detail conditions, conditions of interface with other materials, and paver layout.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Specimen Warranty: For approval.

1. Applicator's(Contractor) Specimen Warranty: For approval.

I. Warranty Documentation:

1. Submit manufacturer warranty and ensure that forms have been completed in District's name and registered with manufacturer.

2. Submit installer's certification that installation complies with warranty conditions for waterproof membrane.

3. Applicator Warranty: Submit applicators/ contractor’s warranty and ensure forms have been completed in District's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum twenty-five years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section with at least five years of documented experience and approved by manufacturer.

C. Industry Standards:

1. Conform to manufacturer's product data and application instructions.

2. Perform work in accordance with NRCA (RM) and NRCA (WM) and and Western States Roofing Contractors Association (WSRCA).

a. Maintain one copy on site.

D. Testing and Inspection:

1. District's independent inspection and testing agency will perform inspections and tests of roofing work.

2. Costs of this service will be paid for by District.

3. Contractor shall cooperate with independent testing and inspection agency.

4. Refer to general requirements specified in Section 01 40 00 - Quality Requirements and 01 45 33 - Code-Required Special Inspections.

E. Private label and third-party-manufactured membranes are not permitted.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

B. Store materials in weather protected environment, clear of ground and moisture.

C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

D. Protect foam insulation from direct exposure to sunlight.

1.08 FIELD CONDITIONS

A. Do not apply roofing membrane during unsuitable weather.

B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 95 degrees F.

C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

E. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1. Provide temporary roof membrane if necessary to protect portions of the Work before final roofing can be installed.
    a. Record by way of change order the District's agreement to proceed with temporary roofing, along with additional costs and other changes (if any) to Contract Documents.
    b. Remove temporary roofing before starting installation of final roofing system.

F. Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage.

1. Provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas.
2. Provide a substantial protection layer consisting of plywood over felt or plywood over insulation board for all new and existing roof areas that receive rooftop traffic during construction.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace manufacturer supplied roofing system components that leak or are damaged due to wind or other natural causes. Include contractor labor in system warranty.

1. Warranty Term: 20 years, Non-Prorated and no dollar limit (NDL).
    a. Provide a written guarantee signed by the manufacturer's authorized official, agreeing to correct failures in product and installation, with no dollar limit on such corrections, for the noted warranty term from date established in Notice of Completion.

2. Include insulation and flashing as part of the roofing system and all other manufacturer supplied system components to be used as part of the roofing assembly..
3. For repair and replacement include costs of both material and labor in warranty.
4. Exceptions are not Permitted:
    a. Damage due to roof traffic.
    b. Damage due to wind speed up ~~60~~ **90** mph.
    c. Damage due to ponding water; assign no time limit for any such ponding water during the warranty period.
    d. Roof system maintenance.

C. Applicator/Roofing Contractor Warranty:
1. Applicator to supply the District with a separate five-year workmanship warranty.
2. In the event any work related to roofing, flashing, or associated metal is found to be within the Applicator warranty term, defective or otherwise not in accordance with the Contract Documents, the Applicator shall repair that defect at no cost to the District.
3. The Applicator's warranty obligation shall run directly to the District, and a copy shall be sent to the manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

~~A. Thermoplastic Polyolefin (TPO) Membrane Roofing Materials:~~

~~1. Carlisle Roofing Systems, Inc; Sure-Weld TPO: www.carlisle-syntec.com/#sle.~~

~~2. Firestone Building Products, LLC: www.firestonebpco.com/#sle.~~

~~3. GAF; EverGuard Extreme TPO 60 mil: www.gaf.com/#sle.~~

~~4. Johns Manville; JM TPO - 45 mil: www.jm.com/#sle.~~

~~5. Substitutions: See Section 01 60 00 - Product Requirements.~~

~~B~~**A**. Thermoplastic Polyvinyl Chloride (PVC) Membrane Roofing Materials:

1. Basis of Design Product: G-410 ES as manufactured by Sika Sarnafil, a Division of Sika Corporation, or approved equal.

~~2. Basis of Design Product: Decor Roof Systems as manufactured by Sika Sarnafil, a Division of Sika Corporation, or approved equal.~~

~~3. Carlisle Roofing Systems, Inc; Sure-Flex PVC KEE: www.carlisle-syntec.com/#sle.~~

~~4~~**2**. Johns Manville; JM PVC Fleece Backed ES (Energy Saving), 80 mil, SP8PA: www.jm.com/#sle.

~~5~~**3**. Sika Corporation Roofing; Sarnafil PVC: usa.sika.com/sarnafil/#sle.

~~6. Sika Corporation Roofing; Decor Roof Systems: usa.sika.com/sarnafil/#sle.~~

~~7. Tremco, Inc.; TPA: www.tremco.com.~~

~~8. Versico Roofing Systems; VersiFleece PVC Polyester Reinforced Membrane: www.versico.com/#sle.~~

~~9~~**4**. Substitutions: See Section 01 60 00 - Product Requirements.

C. Insulation:

1. Insulation manufacturer as part of the tested and warrantable roofing system membrane assembly.
2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

2.03 ROOFING - UNBALLASTED APPLICATIONS

A. Thermoplastic Membrane Roofing: One ply membrane, fully adhered, over insulation.

B. Roof Assembly: (from the top down)

1. Typical assembly:
   a. Roofing Membrane
   b. Cover Board - Glass mat gypsum panel.
   ~~c. Insulation - Rigid board. R-30~~
   ~~d~~**c**. Tapered Insulation layers for crickets.
   ~~e. Deck Sheathing.~~
   ~~f~~**d**. Roof deck.

C. Roofing Assembly Requirements:

1. Solar Reflectance Index (SRI): 78, minimum, calculated in accordance with ASTM E1980.

a. Field applied coating may not be used to achieve specified SRI.

2. Roof Covering External Fire Resistance Classification: UL (FRD) Class A.

3. Roofing System Design: Provide a roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE 7.

a. Safety Factor: As required by code; minimum 2.0

4. Factory Mutual Classification: Class 1 and windstorm resistance of 1-90, in accordance with FM DS 1-28.

~~C. Acceptable Insulation Types - Constant Thickness Application: Any type that meets requirements and is approved by membrane manufacturer for application.~~

~~1. Minimum 2 layers of polyisocyanurate board.~~

~~a. Use two layers if total thickness is over 2-1/2 inches.~~

~~2. Bottom layer of polyisocyanurate board covered with single layer of polyisocyanurate board.~~

D. Acceptable Insulation Types - Tapered Application: Any type that meets requirements and is approved by membrane manufacturer for application.

1. Tapered polyisocyanurate board.

2.04 MEMBRANE ROOFING AND ASSOCIATED MATERIALS

A. Membrane Roofing Materials:

1. PVC: Polyvinyl chloride (PVC) complying with ASTM D4434/D4434M, Type II, sheet contains reinforcing fibers or reinforcing fabrics.
   a. Thickness: 80 mil, 0.080 inch, minimum.
   b. Backing: 9 oz. Feltback fabricated as part of the membrane.
2. Sheet Width: Factory fabricated into largest sheets possible.
~~3. Solar Reflectance: 0.75, minimum, initial, and 0.65, minimum, 3-year, certified by Cool Roof Rating Council.~~
4. Thermal Emissivity: 0.80, minimum, initial, and 0.79, minimum, 3-year, certified by Cool Roof Rating Council.
5. **Color, Integral: White**

B. Seaming Materials: As recommended by membrane manufacturer.

C. Flexible Flashing Material: Same material as membrane.

~~**2.05 DECK SHEATHING**~~

~~A. Deck Sheathing: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.~~

~~1. Thickness: 1/4 inch, fire-resistant.~~

~~2. Thickness at Parapets: 1/2 inch, fire-resistant.~~

~~3. Products:~~

~~a. Georgia-Pacific; DensDeck Prime with EONIC Technology: www.densdeck.com/#sle.~~

~~b. National Gypsum Company; DEXcell FA Glass Mat Roof Board: www.nationalgypsum.com/#sle.~~

~~c. USG Corporation; Securock Ultralight Glass-Mat Roof Board: www.usg.com/#sle.~~

~~d. Substitutions: See Section 01 60 00 - Product Requirements.~~

2.~~06~~05 COVER BOARDS

A. Cover Boards: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.

1. Thickness: 1/4 inch, fire-resistant.
2. Products:
   a. Georgia-Pacific; DensDeck Prime with EONIC Technology: www.densdeck.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

2.07 INSULATION

A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.

1. Classifications:
   a. Type II:

1) Class 1 - Faced with glass fiber reinforced cellulosic felt facers on both major surfaces of core foam.
2) Compressive Strength: Classes 1-2-3, Grade 3 - 25 psi (172 kPa), minimum.
3) Thermal Resistance, R-value: At 1-1/2 inches thick; Class 1, Grades 1-2-3, 8.4 (1.48) at 75 degrees F.

2. Board Size: 48 by 96 inches**, maximum**.
3. Board Thickness: 4.0 inch**, maximum**.
4. Tapered Board: Slope as indicated; minimum thickness 1/2 inch; fabricate of fewest layers possible.
5. Board Edges: Square.
6. Products:
   a. Basis of Design Product: Sarnatherm (ACFoam®-II) as manufactured by Atlas Roofing, or approved equal.
   b. Dow Chemical Company: www.dowbuildingsolutions.com.
   c. GAF; EnergyGuard Polyiso Insulation: www.gaf.com/#sle.
   d. Rmax Inc.; ECOMAXci: www.rmax.com.
   e. Versico Roofing Systems; SecurShield Insulation: www.versico.com/#sle.
   f. Substitutions: See Section 01 60 00 - Product Requirements.

2.08 ACCESSORIES

A. Clad Metal Flashing:
   1. Description: Membrane-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles.
   2. Materials: 24 gauge, G90 galvanized metal sheet with a 20 mil unsupported roofing membrane laminated on one side.
   3. Color: Clad metal to match roofing membrane.
   4. Product: Sarnaclad manufactured by Sarnafil.

B. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.

C. Sheathing Joint Tape: Two-sided butyl rubber type type, 6 inch wide, self-adhering.

D. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.

E. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
   1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.

F. Membrane Adhesive: As recommended by membrane manufacturer.

G. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.

H. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.

I. Insulation Adhesive: As recommended by insulation manufacturer.

J. Strip Reglet Devices: Galvanized steel, maximum possible lengths per location, with attachment flanges.

K. Insulation Perimeter Restraint: Stainless steel edge device configured to restrain insulation boards in position and provide top flashing over ballast.

L. Sealants: As recommended by membrane manufacturer.

M. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.

1. Composition: Asphaltic with mineral granule surface or Roofing membrane manufacturer's standard.
2. Size: Manufacturers standard size.
3. Surface Color: **Manufacturer's standard**~~White or yellow~~.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 PREPARATION - WOOD DECK

A. Composition:

1. Non-FM Approved Wood Deck: Minimum 1-1/2 inch thick lumber or 15/32 inch thick plywood.
   a. Install deck according to local code requirements.
   b. Contact Manufacturer’s Technical support for fastening patterns and methods.

B. Verify flatness and tightness of joints of wood decking. Fill knot holes with latex filler.

C. Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.03 INSTALLATION, GENERAL

A. Perform work in accordance with manufacturer's instructions, NRCA (RM), and NRCA (WM) applicable requirements.

B. Do not apply roofing membrane during cold or wet weather conditions.

C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.

D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

F. Coordinate this work with installation of associated counterflashings installed by other sections as the work of this section proceeds.

3.04 INSTALLATION - ~~VAPOR RETARDER AND~~ INSULATION, UNDER MEMBRANE

A. Attachment of Insulation:

1. Mechanically fasten **first layer of tapered** insulation to deck in accordance with roofing manufacturer's instructions and FM DS 1-28 Factory Mutual requirements.

2. If required; Embed second layer of insulation into full bed of adhesive in accordance with roofing and insulation manufacturers' instructions

B. Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions.

C. Lay subsequent layers of insulation with joints staggered minimum 6 inches from joints of preceding layer.

D. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.

E. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

F. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.

G. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.

H. Do not install more insulation than can be covered with membrane in same day.

3.05 INSTALLATION - MEMBRANE

A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

B. Shingle joints on sloped substrate in direction of drainage.

C. Fully Adhered Application: Install adhesive to substrate at rate of 0.69 gal/sq ft. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.

D. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.

E. At intersections with vertical surfaces:

1. Extend membrane over cant strips and up a minimum of 8 inches onto vertical surfaces.

2. Fully adhere flexible flashing over membrane and up to nailing strips.

3. Secure flashing to nailing strips at 4 inches on center.

4. Insert flashing into reglets and secure.

F. At gravel stops, extend membrane under gravel stop and to the outside face of the wall.

G. Around roof penetrations, seal flanges and flashings with flexible flashing.

H. Coordinate installation of roof drains and sumps and related flashings.

3.06 BUILDING IDENTIFICATION

A. Face the numbering/lettering toward the street. Locate as close to center of roof as possible.

B. Numbers/Letters Character Shape: Block type.

1. Character height: 72 inches, minimum.
2. Stroke Width: 6 inches, minimum.

C. Provide the same roofing product specified to stencil building numbers and building description at each roof.

D. Coating Thickness: Minimum 25 mils dry. Color: Black.

E. Color: Black.

3.07 TEMPORARY CUT OFF

A. Install flashings concurrently with the roof membrane in order to maintain a watertight condition as the work progresses.

1. Construct all temporary waterstops to provide a 100% watertight seal.
2. Make staggered insulation joints even by installing partial panels of insulation.
3. Carry new membrane into the waterstop.
4. Seal waterstop to the deck and/or substrate so that water will not be allowed to travel under the new or previous roofing.
5. Seal the edge of the membrane in a continuous heavy application of sealant as described in Part 2 above.
6. When work resumes, cut out the contaminated membrane.
   a. Remove all sealant, contaminated membrane, insulation fillers, etc.; from the work area and properly disposed of off site.
   b. Do not use these materials in the new work.

B. If inclement weather occurs while a temporary waterstop is in place, provide the labor necessary to monitor the situation to maintain a watertight condition.

C. If any water is allowed to enter under the newly-completed roofing, remove and replace the affected area at Applicator's expense

3.08 FIELD QUALITY CONTROL

A. District will provide testing services in accordance with Section 01 40 00 - Quality Requirements. Contractor to provide temporary construction and materials for testing.

B. Provide daily on-site attendance of roofing and insulation manufacturer's representative during installation of this work.

1. Provide regular daily written reports to the Contractor and Architect for every day of roofing installation work.
2. Provide to Architect a written on-site approval by the roofing system manufacturer and sign-off on pre-roofing deck, insulation installation, membrane installation, flashing details and completed assembly.
3. Provide to Architect a Project Closeout Report by the roofing system manufacturer upon delivery of the project warranty. This report shall include the following sections:

a. Project Specifications.
b. Project Summary.
c. Progress reports as a result of roof inspections.
d. Job progress photos.
e. Warranty document with Maintenance Manual describing maintenance and emergency repair.

C. Roofing Inspection and Testing Services by Independent Agency: District's independent agency will provide inspection and testing services during application of roofing system.

1. Unless otherwise directed, inspection, including test cuts and evaluation procedures, will be performed in accordance with Chapter V, "Quality Control," of The NRCA Low-Slope Roofing Manual.
2. Independent agency will provide reports of inspections and tests to Construction Manager and Architect. Copies of reports will also be provided to Contractor.
3. Water Test: Conduct simulated rain storm test by indirect spray of water for 15 minutes over entire roof surface. Check area below roofing for leaks and check top surface for standing water.
    a. Record test and inspection by video tape or digital recording.
4. Remedial Work: Correct all defects and irregularities reported from inspections and tests, at no change in Contract Sum or Contract Time.

3.09 CLEANING

A. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

B. Remove bituminous markings from finished surfaces.

C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

D. Repair or replace defaced or damaged finishes caused by work of this section.

3.10 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

SECTION 27 10 00
VOICE / DATA/ IP INFRASTRUCTURE

PART 1 – GENERAL

1.1 Include all labor, equipment, and materials necessary for providing a complete networking infrastructure system as described herein and/or as indicated on the drawings.

1.2 Related specification sections:

1.2.1 Section 26 01 00 – General Provisions
1.2.2 Section 26 05 19 – Conductors
1.2.3 Section 26 05 33 – Conduit and Fittings
1.2.4 Section 26 05 34 – Outlet and Junction Boxes

1.3 Contractors working on SBCUSD work projects shall possess as a minimum the following qualifications. Proof of qualification for each item shall be submitted with the project response. Failure to submit proper proof of compliance with each qualification may result in project disqualification. Provide documentation with the project response confirming the following qualifications:

1.3.1 A manufacturer's Certified Installer/Contractor agreement in force at the time of submittal and throughout the entire construction process. A current support document shall be included in the Contractor's response.

1.3.2 Certified to provide factory warranties including a product component warranty and a system performance warranty. The factory warranty period shall not be less than 20 years. Provide current Manufacturer Certificate with response.

1.3.3 Have a Registered Communications Distribution Designer (RCDD®) directly employed by the vendor who will be ultimately responsible for this project. Submit current RCDD Certificate with response.

1.3.4 The contractor shall ensure that 100% of the technicians installing a copper system have received a manufacturer's training certificate for copper systems. Submit current certifications for each technician with response.

1.3.5 The contractor shall ensure that 100% of the technicians installing a fiber optic system have received a manufacturer's training certificate for fiber optic systems. Submit current certifications for each technician with response.

1.3.6 The contactor shall have copies of the technicians' certificates available for inspection by the SBCUSD IT Representative upon request.

1.3.7 Vendor shall hold in good standing a California C-10 license and a valid California C-7 license. A copy of the license(s) is/are to be included in the vendor's response.

1.3.8 Employ Technicians with current Voice Data Video certification by State of California Department of Industrial Relations. Submit proof with response.

1.3.9 Employ technicians with minimum of 10 hours of Construction Safety and Health training as provided by Cal/OSHA. Submit with response.

1.3.10 The Vendor must have completed a minimum of five projects of similar size and scope for public School District entities within the past three years, and have a successful history of sales, installation, service, and support. Provide references of similar projects with response.

1.3.11 All Low Voltage and High Voltage work shall be done "in-house", no sub-contractors for this type of work.

1.3.11.1 Any subcontractors for any work outside of Low Voltage/High Voltage work must be included in the response or that subcontractor will not be allowed to be utilized later (i.e., trenching subcontractor). Vendor must act as prime.

1.4 Supporting Codes and Standards Documents

It is not possible to list all of the applicable Codes and Standards documents. A non-inclusive list of key documents is presented below as a minimum:

1.4.1 ANSI/EIA/TIA-568-B: Commercial Building Telecommunications Cabling Standard

1.4.2 ANSI/EIA/TIA-569-A: Commercial Building Standard for Telecom Pathways and Spaces

1.4.3 ANSI/EIA/TIA-606: Administration Standard for the Telecommunications Infrastructure of Commercial Buildings

1.4.4 ANSI/EIA/TIA-607: Commercial Building Grounding/Bonding Requirements

1.4.5 NFPA 70: National Electrical Code

1.4.6 ISO/IEC 11801: Generic Cabling for Customer Premises

1.4.7 BICSI :Telecommunications Distribution Methods Manual (TDDM)

1.5 The latest revision of each document, and other related documents, is to be considered the one in force at the time of system construction and delivery to SBCUSD. The vendor is required to comply with the applicable documents in content and intent as well.

1.6 If any applicable documents are in conflict, then the more stringent requirement shall apply. The Contractor is required to advise the SBCUSD Information Technology (IT) Representative of any conflict that could result in work deficiencies.

1.7 Cabling System

All copper and fiber optic components of the cabling system are either to be of a single manufacturer, or of a manufacturer partnership under a system trade name offering a single point of contact for SBCUSD in the event of a warranty claim. The SBCUSD has chosen the Panduit TX6A 10 Gig UTP Copper Cabling solution as the baseline for all equivalents to be measured.

1.7.1 **Panduit/General Cable**

1.7.1.1 Installing Contractor must be NetKey Certified Installer certified to install this system.

1.7.1.2 Warranty provision and training must be for the Panduit Certification Plus System Warranty – 25-Year Performance program.

1.7.2 Warranty shall be to the District, for the period as defined by the Network Infrastructure System selected for installation, after District acceptance and sign-off of the completed system. The Contractor must provide documentation from one of the approved manufacturers, as indicated in Section 1.4, indicating their qualifications for installation of this system in compliance with the manufacturer/s warranty period requirements as warranted Contractor.

1.7.3 Equipment qualifications: It is the intent of these specifications that each bidder provides all hardware, components and installation services that are necessary to ensure a fully operational wiring system including warranties, as shown in the EIA/TIA Category-6 and the Augmented Category-6 (6A) guidelines.

1.7.4 Copper System: SBCUSD requires a high performing Category 6A system that meets the following system performance guaranteed headroom as a minimum based on worst pairs:

Electrical Value	TIA/EIA Category 6A	ISO Class EA
Insertion Loss	3%	3%
NEXT	3.5 dB	2.5 dB
PSNEXT	5 dB	4 dB
PSACR-F	10 dB	10 DB
Return Loss	3 dB	3 dB
PSACR-N	6.5 dB	6.5 dB
PSANEXT	2 dB	2 dB
PSAACR-F	10 dB	10 dB

1.7.5 All components, parts, infrastructure, patch cables, termination panels and cables must be classified by the manufacturer or manufacturers as a part of the "Extended Warranty" program. Contractor may not mix in components from other certified programs or materials that are not considered part of the "Lifetime" warranty.

1.7.6 Systems or components as manufactured by any other manufacturer which, are not specifically listed in ~~1.4~~ **1.7.1** are **not** approved for use on this project.

1.8 **Installing Contractor qualifications**: Firms and their personnel must be regularly engaged in the installation of data networking cabling and equipment for systems of similar type and scope. The Contractor must have a full-service office able to respond to emergency callouts during the warranty period. The Contractor must also provide complete installation of all wiring and devices or equipment. **Subcontractors with Electrical Contractors or other warranted or non-warranted Contractors for supervised installation of any part of this system are not approved.**

1.8.1 Contractor shall have on staff a minimum of (1) BICSI RCDD as full-time employees.

1.8.2 The successful Contractor shall be a California licensed C7 or C10 Premise Wiring Contractor as defined in this specification.

1.8.3 All work shall be performed under the supervision of a company accredited and trained by the Manufacturer of the components and cable and such accreditation must be presented with the bid submittal. All personnel performing work on this project must have successfully completed the manufacturer's training courses to completely comply with the extended warranty requirements prior to performance of any work on this project. Accreditation will consist of individual employee certifications issued by the manufacturer or manufacturers.

1.8.4 All personnel engaged in the testing of premises fiber optic and copper UTP cable systems must have successfully completed the test equipment manufacturer's training courses. Certification of such training must be presented with the bid submittal. Cut sheets of the test equipment to be utilized shall be provided with Phase I project material submittals.

1.8.5 This project shall employ Augmented Catefory-6 cabling ONLY. The Contractor shall install the related components in relation to the performance requirements for the type of cable installed.

1.8.6 If Contractor routes cable and/or associated pathways in another route than indicated on the drawings, they shall maintain all maximum cable installation distances as required by the manufacturer's distance limitations.

1.9 In order to ensure project cohesion, a single point of contact is required to provide a "TURNKEY" solution. The work covered under this section of the specification consists of furnishing all: labor, cabling, equipment, supplies, materials, and training.

1.10 The drawings indicate a schematic routing of cables above-ceiling cable prior to bid. Where cables penetrate through walls a conduit sleeve shall be provided. Where cables pass through fire rated walls, the conduit sleeve shall be sealed to maintain the rating of wall assembly.

1.11 Unless otherwise noted in the project drawings or these specifications, the Division 26 Contractor shall provide the installation of all conduits, outlet and junction boxes, trenching and pull box installation.

1.12 General Submittal Requirements

1.12.1 **Phase I Submittal** shall be made in electronic format within (20) working days after the award of the contract by the District. This submittal shall include the following:

1.12.1.1 Complete Bill of Materials in Excel Spreadsheet format with bills of quantities, including all materials, components, devices, and equipment required for the work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each Section listed:

1.12.1.2 Description and quantity of each product.

1.12.1.3 Manufacturer's Name and Model Number.

1.12.1.4 Manufacturer's Specification Sheet or Cut Sheet.

1.12.1.5 Specification Item Number reference for each required product or if not shown in the specification, Drawing Detail Number being referenced (i.e. Spec 2710000 Item 2.1 or DWG E4.15/#1).

1.12.1.6 Include with submittals all warranty information and a description of support and maintenance services to be provided. Also include all licenses and maintenance agreements required for continued operation of the equipment.

1.12.2 **Phase II Submittal** shall be provided with (20) working days after the approval of the Phase I submittals and prior to any fabrication of field conduit installations. All shop drawings shall be engineered in a CAD Software. Submission shall include electronic print copies to match the contract drawings, and Phase II submittals drawings shall include the following:

1.12.2.1 MDF and IDF equipment rack or cabinet elevations will be required to be provided including cable routing, grounding, support, UPS, network electronics, etc. and position of all components in the rack or cabinet.

1.12.2.2 Provide labeling plan which identifies the proposed scheme for identifying all components including racks, patch panels (fiber and copper), site distribution feed cables, horizontal station cables and site conduit systems (handholes, pullboxes, etc.).

1.12.2.3 Provide shop drawings showing all end device locations, tap values, paging zones and amplifier sizing for each zone for analog speakers and horns, including devices connected to IP-Based zone controllers.

1.12.3 Common submittal mistakes which will result in submittals being rejected:

1.12.3.1 Not including the qualifications of the installing Contractor Company and Contractor's Staff.

1.12.3.2 Not including all items listed in the above itemized description.

1.12.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlights, underlining or clouding the items to be reviewed (provided for the project) or crossing out the items which are not applicable.

1.12.3.4 Not including actual manufacturer's cut sheets or catalog information of proposed products.

1.12.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

1.12.4 The Contractor shall make a written request directly to Johnson Consulting Engineers for electronic drawing files (CAD). As a part of the written request, please include the following information:

1.12.4.1 Clearly indicate Project Name and Client, Johnson Consulting Job Number (located in the bottom left corner of JCE Engineering Stamp) and each drawing Sheet Number required (i.e. E1.1, E2.1, E4.1 etc.)

1.12.4.2 Identify the Name, Company, Title, phone number, mailing address and e-mail address of the person to receive the files.

1.12.4.3 Detail or Riser diagram sheet, System Schematic drawings or any other drawings other than floor plans or site plans, will not be made available to the Contractor.

1.12.4.4 Files will only be provided in the AutoCAD format in which they were created (i.e. version 2015 or version 2016). Files will not be made available in REVIT format.

1.12.4.5 Requests for files will be processed as soon as possible; a minimum of (7) working days should be the normal processing time. The Contractor shall be completely responsible for requesting the files in time for their use and delays in requesting files will not alleviate the Contractor from submitting required documents within the required timeline.

1.13 Copper Cable Color Standards for Horizontal Cabling, Jack Inserts and Patch Cords:

The following colors are the District Standards for the specific network devices and services listed below:

1.13.1 Yellow: The Default color to be utilized when the project to install cabling has no specific device/service usage already determined, or will be used for general Data services (i.e. Internet Access by wired classroom drops) or is not specified to be one of the other color definitions. The District has standardized on the color Yellow for horizontal cabling and jack inserts and patch cables on both ends of the horizontal cabling must also be Yellow in color if the devices/services are still not identified at the time of installation. Otherwise, at any point prior to the installation of the cabling, inserts or patch cables, if the device types and services become known, the color is to be switched to the identified color standard in support of those now identified devices and services listed below.

1.13.2 Red: To be utilized when the project to install cabling has determined that the devices and services are in support of Alarms, Energy Management Systems (EMS), and Environmental monitoring. The District has standardized on the color Red for horizontal cabling and jack inserts and patch cables on both ends of the horizontal cabling must also be Red in color.

1.13.3 Orange: To be utilized when the project to install cabling has determined that the devices and services are in support of Wireless Access Points (internal and external). The District has standardized on the color Orange for horizontal cabling and jack inserts and patch cables on both ends of the horizontal cabling must also be Orange in color.

1.13.4 Green: To be utilized when the project to install cabling has determined that the devices and services are in support of IP Cameras for Video Surveillance. The District has standardized on the color Green for horizontal cabling and jack

inserts and patch cables on both ends of the horizontal cabling must also be Green in color.

1.13.5 Blue: to be utilized when the project to install cabling has determined that the devices and services are in support of Audio/Visual displays and devices that connect clients to those projectors/TVs. This includes all Wi-Di devices, Projectors and Apple TVs. The District has standardized on the color Blue for horizontal cabling and jack inserts and patch cables on both ends of the horizontal cabling must also be Blue in color

1.13.6 Purple: To be utilized when the project to install cabling has determined that the devices and services are in support of VOIP/Voice Phones/VOIP Hardware. The District has standardized on the color Purple for horizontal cabling and jack inserts and patch cables on both ends of the horizontal cabling must also be Purple in color.

1.13.7 Black: To be utilized when the project to install cabling has determined that the devices and services are in support of IP-based Bells and Paging. The District has standardized on the color Black for horizontal cabling and jack inserts and patch cables on both ends of the horizontal cabling must also be Black in color.

1.14 Cable

SBCUSD requires all cabling being installed within a building to be plenum rated in all environments. Even though quite desirable, SBCUSD is not aware of a Category 6A indoor/outdoor plenum-rated cable. As a result, SBCUSD is willing to accept an indoor/outdoor CM rated cable as long as the NEC termination and pathway requirements are met. Regardless of environment, the cabling shall be of the same electrical performance as Category 6A and be warranted by the same cabling system manufacturer, as Panduit or equivalent.

1.14.1 Ethernet patch cords must be made of 100% pure bare copper wire, as opposed to copper clad aluminum (CCA) wire, to be fully compliant with UL Code 444 and National Electrical Code TIA-568-C.2 fire and safety standards, which require pure bare copper wire in communications cable.

1.14.2 Installation of cabling shall be of continuous length from each termination point.

1.14.3 No length of cable shall exceed 285 feet (tested length)

1.14.4 The bend radius of any cable shall not exceed 4 times the diameter of the cable.

1.14.5 Should the cable become kinked while being installed, the contractor shall not attempt to repair the cable, but shall remove and replace the entire run. All cable runs are potential inspection items for the SBCUSD IT Representative.

1.14.6 The cable jacket shall be maintained as close to the point of termination as possible.

1.14.7 The cable pairs shall not be untwisted more than 1/2" from the termination point.

1.14.8 All cabling is to be installed in its own pathway and fully supported.

1.14.9 Cabling shall be installed with no more than a 4-foot space between supports.

1.14.10 Cabling can be installed in pathways such as cable tray and ladder racking, as long as the pathway is low-voltage cabling only, the pathway is appropriately bonded to the building grounding system, and the Data System cables are bundled separately from other low voltage cabling

1.14.11 Underground cabling can be installed inside buildings to the ultimate termination point without transition as long as the cabling is rated for such applications.

1.14.12 Industry Standard cable waste varies between 7% and 10% per project and the District will not accept final invoices for cabling where cable waste exceeds 10%

1.15 Terminations

1.15.1 Jack modules shall be of insulation-displacement termination construction and may offer mass termination of all four pairs simultaneously. In addition, a jack module must be available as part of the cabling system, and facilitate the same system performance and warranties, that can be utilized in existing workstation outlet faceplates from other manufacturers. The most common situation is the Avaya (Lucent) system. Another common situation is Wiremold 5400 raceway.

1.15.2 In an effort maximize space, SBCUSD has standardized on a discrete modular patch panel system. The system must allow the following:

1.15.2.1 Presentation of 48 individual module ports in a 1U (1.75") rack height, preferred.

1.15.2.2 Presentation of 24 individual module ports in a 1U (1.75") rack height.

1.15.2.3 Presentation of 12 individual module ports to be mounted in an 89B type wall bracket.

1.15.2.4 Category 6A connectivity

1.15.3 Cabling shall be dressed cleanly and fully supported via hook & loop straps and cabinet/rack supports. All cabling bundles are to be loosely secured with hook & loop straps only. Cable ties are not to be utilized. In addition, hook & loop straps must not be spaced at regular intervals but must vary between 4-6 inches at random over the length of the secured cable section.

1.15.4 Cabling slack can be placed in the cabinet/rack area as well as the ceiling areas if fully supported by the proper pathway device. No more than 4 feet per horizontal run shall be stored.

1.15.5 It is preferred that horizontal cabling does not bypass a patch panel and be terminated and directly plugged into a switch. Any cases would need to be signed off by SBCUSD IT Representative(s).

1.15.6 No particular order is required between workstation cabling terminations or Access Point cabling terminations, though there are instances where AP cabling must be on a specific patch panel associated with an AP supporting edge switch and other existing AP cabling.

1.15.7 The patch panel ports are to be populated beginning with port one in sequence (left to right), leaving no open ports. The only exception will be with 24-port switches that have their ports only on the right side of the faceplate and will require patch panel ports to be populated from right to left to allow for the desired patch cord lengths to work.

1.15.8 Provide a minimum of 20% spare ort capacity for future use.

1.15.9 Any new copper cabling to patch panels should be patched into an open switchport if available. If no ports are available, do not unplug any existing connectivity. Notify SBCUSD IT Representative(s) that a new switch is needed.

1.15.10 Fiber optic cabling shall be terminated in a fiber enclosure of appropriate size for the cabling being terminated. Unused adaptor panel ports shall be filled with blank panels

1.15.11 Provide a spreadsheet indicating what drops are cabled to the active switch port to be turned over to the SBCUSD IT Representative.

PART 2 – PRODUCTS

2.1 Equipment racks have been detailed on the drawings and additional component information requirements have been described in the following sections and on the drawings. The following is a list of approved manufacturers for each type of rack to be furnished.

2.1.1 Alternate equipment manufacturers other than those indicated will not be reviewed or approved for use on this project.

2.1.2 (Open Frame – 4-Post) shall be manufactured by Southwest Data Products , Chatsworth CPI Quadrarack #50120-703 or Middle Atlantic R4 Series. Reference drawing details and specifications for complete requirements.

2.2 Open Frame 4-Post Racks, 19” mounting Width by 84” High by 29” Deep with #12-24 mounting holes as shown in the MDF of IDF Room layouts. Contractor shall be responsible for providing all racks and accessories. Furnish and install with the following:

2.2.1 The racks shall be provided with structural seismic bracing using cable runway to the top of the rack.

2.2.2 Universal 12” cable runway shall be as manufactured by Southwest Data Products or CPI. The cable runway shall be furnished with the additional adapters, connectors, support components, bends and offsets and extensions as required to fit the room and layout.

2.2.3 Anchor the cable runway to the wall with the appropriate width angle bracket and bolts as manufactured by Southwest Data Products or CPI.

2.2.4 The cable runway shall also be attached to the top of the rack with the appropriate adapter panel. Cable runway shall be directly attached to the 4-Post racks with J-Hooks.

2.2.5 Cable runway routed along walls, shall be offset from the wall a minimum of 6” and shall be supported with cantilevered wall mount brackets.

2.2.6 Floor mounted racks shall be structurally anchored to the floor with the anchors and bolts.

2.2.7 Provide full length vertical wire managers, CPI Double-Sided Narrow Vertical Manager, Part #12096-703, on each side of each rack. Vertical managers between racks may be substituted with the CPI #11729-703 6” wide double-sided manager. Single narrow vertical managers shall be provided on each end of the group of racks.

2.2.8 Provide Middle Atlantic Model #VDC-6-45-DC vertical managers when installing the Middle Atlantic R4 Series racks.

2.2.9 Provide (1) adjustable full depth vented shelf for each 4-Post equipment rack as manufactured by Southwest Data Products or CPI #12700-719.

2.2.10 **Patch panels and switches must be directly adjacent to each other, and patch cords shall be 8".** ~~Provide horizontal wire managers between each patch panel or (1) manager per patch panel. Provide (1) spare manager per rack. Provide 2RMU height managers for each 48-Port patch panel and 1RMU height managers for 24-Port patch panels. CPI part #30130-719 and #30139-719.~~

2.2.11 Provide (1) minimum or more where detailed on drawings. Rack mounted surge arrest style power distribution unit per rack. 1 rack unit in height. TrippLite Model #PDUMH15NET2 with (8) NEMA 5-15R outlets, built-n SNMP Ethernet interface and NEMA L5-15P input with 5-20P adapter or approved equal by APC. Provide with minimum 10-foot cord for the PDU.

2.2.12 Contractor shall be responsible for neatly routing, storing and connecting the power cords from the PDUs to the electrical outlet or UPS as directed by the District. Power cords shall be dressed separately from the UTP cables or any other low voltage cable and shall be secured to the back of the rack or cable runway with Velcro ties.

2.2.13 Furnish grounding to each rack. Each rack shall be provided with a grounding terminal block, #6 Ground wire from the rack to the bus bar and a compression lug on the end of the ground wire at the bus bar. Provide grounding components as manufactured by CPI #40167-001 terminal block and #40162-901 compression lug or approved equal.

2.2.14 Provide (1) ground bus bar kit per MDF Room. Ground Bus Bar Kit as manufactured by CPI #40158-012 or approved equal. Ground Bus Bar and all bonding conductors to the bus bar shall be labeled. Grounding conductors shall be routed to the equipment racks, cable runway and electrical panel.

2.2.15 All fiber optic feed cables routed to the MDF Room shall be provided with 20-feet of slack for a service loop mounted on the backboard behind the racks. Contractor shall provide a 24" diameter wall mounted service loop manager for the fiber optic feed cables as manufactured by Leviton #48900-FR. Maximum of (3) fiber feed cables per manager. Provide quantity of managers as required to manage all service loops.

MDF Room Requirements

2.3 The main Distribution Frame (MDF) Room shall be the central wiring and equipment location for the network infrastructure systems. This room is existing for this project.

2.4 Provide Fiber Optic Feed Cable Patch Panels – Fiber optic termination equipment (rack mounted), including all associated installation hardware. The equipment must have a sufficient number of ports to connect all fibers in every cable terminated at this location. Provide 25% spare capacity for future wiring requirements, including bulkheads in the fiber patch panel. Provide blank fillers for all used portions of the panel. All fiber feed cables shall be terminated in a single fiber optic patch panel up to 144 strands. Additional strands shall be terminated in the largest size required to continue the remaining fibers.

2.4.1 Contractor shall provide a minimum of 6-feet of slack on the fiber feed cable in the fiber optic patch panel. The first 48" of a tight buffered cable or the first 24" of a loose tube cable shall not be stripped back in the patch panel. Each type of cable shall have a minimum of 24" of stripped slack within the patch panel. Total slack within the patch panel shall not be less than 6-feet in length.

2.4.2 All fiber cables shall be secured to the patch panel with the Kevlar strength members at the manufacturer provided anchor point at the rear of the panel.

IDF Location Requirements

2.5 The Intermediate Distribution Frame (IDF) Room shall be a secondary wiring and equipment location for the data networking system. The Contractor shall include the following items at this location:

2.5.1 Provide backboard 8'-0" high x ¾" thick, with a minimum 48" width with minimum 2 coats of fireproof paint(not over labels).Refer to the floorplans for the actual layout of the backboard coverage. Plywood mounting backboard shall be flame resistant, painted with fire resistant paint "white" or color to match the room finish. Contractor shall provide minimum one side finish grade plywood. Backboard shall be mounted with finish side out, regardless of location of fire rating stamp. Show proof of fire rating stamp to IOR on Inspector prior to installation.

2.6 Provide Fiber Optic Feed Cable Patch Panels – Fiber optic termination equipment (rack mounted), including all associated installation hardware. The equipment must have a sufficient number of ports to connect all fibers in every cable terminated at this location. Provide 25% spare capacity for future wiring requirements. Provide blank fillers for all used portions of the panel. All fiber feed cables shall be terminated in a single fiber optic patch panel.

2.6.1 Each IDF location shall be furnished with a minimum 24-Port patch panel, fully loaded with bulkheads. Type of connectors in the bulkheads shall be determined by the type of connectors used for termination of the fiber feed cables.

2.6.2 Contractor shall provide a minimum of 6-feet of slack on the fiber feed cable in the fiber optic patch panel. The first 48" of a tight buffered cable or the first 24" of a loose tube cable shall not be stripped back in the patch panel. Each type of cable shall have a minimum of 24" of stripped slack within the patch panel. Total slack within the patch panel shall not be less than 6-feet in length.

2.6.3 All fiber cables shall be secured to the patch panel with Kevlar strength members at the manufacturer provided anchor point at the rear of the panel.

2.7 Augmented Category-6 Patch Panels (rack mounted) with RJ45 style connectors, for terminating all twisted pair cable from each Voice/Data/IP outlet served from this location. Provide 25% spare capacity for future wiring requirements. All patch panels shall be 24 or 48-ports maximum. Provide cable support bars at the rear of each patch panel. All cable shall be secured to bars with Velcro straps.

2.8 All fiber optic feed cables routed to the IDF locations shall be provided with 20-feet of slack for a service loop mounted on the backboard behind the racks, or stored in the back of the wall mounted cabinets. Contractor shall provide a 24" diameter wall mounted service loop manager for the fiber optic feed cables as manufactured by Leviton #48900-FR. Maximum of (3) fiber feed cables per manager as required to manage all service loops. Provide a 12" diameter service loop manager in the rear of wall mount IDF cabinets by Leviton #48900-FR.

2.9 Cabinets/Racks Redressing Requirements

In compliance the SBCUSD efforts to maximize space, equipment shall be placed as follows:

2.9.1 Incoming IDF/LDF Fiber Tray at the top.

2.9.2 The 1U 48-port discrete modular patch panel to be positioned below the fiber tray(s).

2.9.3 The first switch to be positioned next.

2.9.4 The second 1U 48-port modular patch panel follows the first switch.

2.9.5 The second switch next.

2.9.6 The third 1U 48-port modular patch panel next.

2.9.7 Another switch next.

2.9.8 And so forth.

IDF UPS Requirements

2.10 General UPS Requirements – The Contractor shall coordinate with the Division 26 Contractor to properly locate the power outlet connection for the UPS in the IDF Room or Cabinet. The location shown on the floor plans is diagrammatical and does not give the Division 26 Contractor an exact placement. In addition, all UPSs must be furnished with heavy duty mounting bracket kits. A UPS installed in a wall mounted IDF Cabinet must be furnished with a 2-Post kit that can support the full weight of the unit.

2.11 Final location for the UPS, within the equipment racks or IDF locations with multiple racks, must be verified by the District IT Director or District Construction Project Manager prior to the installation of the UPS or the electrical outlet for the UPS.

2.12 UPS Requirement for an IDF location with (1) 2 or 4-Post equipment racks being installed at the IDF closet:

2.12.1 Provide with a minimum of Four 5-15R and four 5-15/20R outlets.

2.12.2 Provide with Two independently switched single-outlet load banks (one 5-15R and one 5-15/20R)

2.12.3 Provide network interface card – Model Optional WEBCARDLX Network Interface option in UPS. Software shall be included with the UPS.

2.12.4 Provide (1) environmental sensor/monitor in each IDF cabinet location. Provide TrippLite Model #ENVIROSENSE monitor unit and connect it to the UPS.

2.12.5 Provide TrippLite Model # SMART2000RMXL2U 120V 2000VA 1920W Line-Interactive UPS with 8 Outlets (or approved equal by APC).

Fiber Optic Patch Cords

2.13 Fiber optic patch cords shall be furnished and installed by the Contractor.

2.14 All fiber optic patch cords furnished by the Contractor shall match the grade and glass of the fiber optic feed cable installed for the network infrastructure cabling system. The Contractor shall confirm with the District IT Department the type of connector required at the network equipment prior to ordering or installing the patch cords.

2.15 Multimode Fiber Optic Patch Cords – Parch cords shall be duplex 50/125um, laser-optimized, OM4 (OM4+) grade multimode optical glass. Fiber optic patch cords shall be furnished with LC connectors at the network switch port end and LC connectors at the fiber optic patch panel end. Fiber patch cords shall be furnished with ceramic ferrules. All Multimode patch cords shall be Aqua (Lt. Blue) in color. Patch cords shall be 6-feet (2-meters) 3-feet (1 meter) in length. Provide adequate patch cords to patch all strands of the fiber cables.

2.16 Contractor shall be responsible for confirming the network switch connections with the District IT Director prior to ordering or installing the patch cords.

Copper Patch Cords

2.17 Copper patch cords shall be furnished and installed by the Contractor.

2.18 Provide **Augmented Category-6** (Patch Panel End) patch cords with pre-molded boot; provide quantity equal to:

2.18.1 Provide 100% of the total Category-6A cable ports provided on the patch panels.

2.18.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be ~~(4) feet~~ **(8")** in length.

2.19 Provide **Augmented Category-6** (Workstation End) patch cords with pre-molded boot, provide quantify equal to:

2.19.1 Provide 100% of the total Category-6A cable drops provided on the patch panels.

2.19.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (10) feet in length, unless otherwise noted.

2.19.3 Patch cords installed at WAP (Wireless Access Point) locations, IP Camera and IP Intercom locations shall be (2) feet in length.

2.20 Requirements for all copper patch cords furnished:

2.20.1 Color of patch cords shall be determined by the color code indicated above.

2.20.2 Patch cords shall as manufactured by Panduit, based on the network infrastructure system furnished by the Contractor.

2.20.3 Patch cords furnished must be in compliance with the manufacturer's "Channel" warranty requirements. Patch cords not warranted through the selected manufacturer Channel warranty program will not be approved for use with the network infrastructure.

2.20.4 Provide all other items as detailed on the drawings.

Campus Indoor/Outdoor Fiber Optic Feed Cable

2.21 Provide one continuous 12 strand fiber optic cable routed from the Main Distribution Frame fiber patch panel to each intermediate Distribution Frame fiber patch panel, and/or other locations as shown on the drawings.

2.22 SBCUSD would like to utilize no less than Laser Optimized OM4-rated (defined in TIA-492-AAAD) graded-index Multi Mode Fiber with 850 nm VCSELs (vertical- cavity surface-emitting lasers) for all backbone cabling where the distance run is 400m or less which is capable of 10Gb/s connectivity from end-to-end. For all distances exceeding 400m, then Single Mode Fiber is to be utilized to achieve 10Gb/s connectivity end-to-end.

2.23 Innerduct pathway, as manufactured by Carlon (or approved equivalent) shall be utilized as specifically located on the construction drawings. Plenum rated innerduct for exclusive indoor use shall be required. OSP rated innerduct for exclusive outdoor use shall be required and for instances where the innerduct enters a building for no more than 50'. Indoor/outdoor rated innerduct shall be required for instances where the innerduct will enter a building for more than 50'.

2.24 Outdoor Fiber Feed Cable Applications – Fiber optic cable shall be rated for indoor/outdoor Plenum rated applications. Construction shall consist of, all dielectric, tight buffer with central strength member, flame retardant PVC or PE jacket, rated OFNR, dry water-blocking compound only, and blank fillers are required. Central tube type fiber will not be considered equal.

2.25 Fiber optic feed cables for the data infrastructure must be installed as follows:

2.25.1 Multimode Fiber Optic feed cable runs – Fiber optic feed cable containing only Multimode strands shall be installed as a single feed cable. Provide a 12-strand of multimode fiber optic feed cable in a single jacket, as shown on the riser diagram, to the IDF locations.

2.25.2 Feed cables shall be clearly defined and labeled for each system. Provide color coding designations with a different color marker for the multimode and/or single mode fiber feed terminations in the fiber patch panels.

2.26 Cable shall contain one or all types of fibers listed below:

2.26.1 Provide Multimode 50/125-micron fiber optic glass, (minimum OM4+ laser-optimized grade, extended distance) for dual mode operation at 850 nm and 1300 nm wave lengths.

2.26.1.1 Maximum attenuation at 3.0dB/km @ 850nm and 1.0dB/km @ 1310nm. Minimum 1-gigabit Ethernet distance guarantee of 1110 meters @ 850nm and 600 meters @ 1300nm. Minimum 10-gigabit Ethernet distance guarantee of 550 meters @ 850nm/1300nm. Fiber shall be ISO-TIA OM4 plus rated.

2.26.2 Refer to drawings for cable types required. Refer to acceptable cables section for additional information and approved manufacturers.

2.27 Each fiber optic cable shall contain the quantity of strands of optical fibers as detailed on the drawings.

2.28 All fibers in a multi-fiber cable shall be fully operational within the required performance characteristics. If any individual fiber does not meet the minimum standards, the entire cable must be replaced, end to end, including connectors, without any additional expense to the customer.

2.29 Acceptable cables shall be:

General Cable Multimode – NextGen OM4+ (Type BM)

Above glass types are an example of product names per manufacturer. Confirm requirements for indoor/outdoor, riser and plenum rated cable with riser drawings and site plans. Part numbers for composite style cable will vary greatly. Confirm part numbers with manufacturer.

Augmented Category-6 Station Cable

2.30 Contractor shall provide one Augmented Category-6 UTP cable to each Data, Voice, IP Page, Audio-Visual Data Connection, or any other location as indicated on the drawings and specifications. Provide quantity of cables as indicated on the drawings at each location. IP Camera, Wireless Access Points shall require a total of (2) Augmented Category 6 cable to each location unless otherwise noted.

2.31 Provide one Augmented Category-6, 4-pair unshielded twisted pair (UTP) cable from the nearest MDF or IDF location to each RJ45 data outlet port indicated on the drawings. Dual port outlets will require two such cables. Four port outlets will require four cables. Refer to the drawing details for jacket color requirements for each type of connections. Color of cable jacket for each type of connection shall be determined by the drawing

details. Confirm color of cable jacket prior to ordering with the District IT Director. Contractor shall be responsible for providing the correct jacket color per the drawings per District Standards.

2.32 Unless otherwise shown in drawing details, the color of the Augmented Category 6 UTP cables shall be per District Standard, individually insulated and color coded.

2.33 The cable shall be UL or ETL rated and UL verified in compliance with Augmented Category7-6 EIA/TIA standards. Approved cables for Network Infrastructure System:

General Cable– GenSPEED® 10 MTP™ Small Diameter Category 6A Cable (or approved equal)

2.34 On projects requiring plenum rated cabling, provide the plenum jacketed version of the type of cable shown in the specifications. Refer to the contract drawing for areas requiring plenum rated cabling.

2.35 Where data cables are indicated to run underground, Contractor shall use an Augmented Category-6 OSP-rated cable. Approved cables for Network Infrastructure System:

GenSPEED® 10 UTP Indoor/Outdoor Plenum Category 6A Cable

2.36 Contractor shall provide shielded termination products for all drop locations and terminations panels and shall ground all products per manufacturer's instructions and warranty requirements.

IDF to MDF Voice Feed Cables

2.37 Provide multi-pair UTP Category-5E cable from each IDF to the MDF, unless otherwise shown on the drawings. Cable must be 24 AWG, 22 AWG conductors will not be approved as an acceptable equal. Refer to the Riser Diagram for size of feed cables to be provided. Cables shall be 25-Pair to each of the IDF locations.

2.38 The outside plant cable shall have an aluminum shield, conductors surrounded by FLEXGEL III filling compound (or other water-blocking compound), and have a black polyethylene jacket.

2.39 For voice feed cables, terminate all pairs on both ends of the cable on building entrance protectors on the termination blocks. Follow standard voice color codes for termination. Building entrance protectors shall be furnished with a ground wire to the local ground bus in the MDF/IDF Room.

2.40 Plug in Surge Protection Modules shall be provided for each pair terminated on the protector chassis. Protector module shall be solid state type unless otherwise noted:

2.40.1 240VDC/300VDC solid state protector modules shall provide transient and power fault protection for standard telephone line applications. The modules shall be fast acting, self-resetting current limiters to protect against sneak current type faults. These modules shall be UL Listed with int30VDC/75VDC solid state.

2.40.2 30VDC/75FCD solid state protector modules shall provide transient and power fault protection for digital and data line applications. The modules shall be fast acting, self-resetting current limiters to protect against sneak current type faults. These modules shall be UL Listed with integrated test points and Red in color.

2.40.3 In the event that protector modules are not called out in the drawings, Contractor shall include all costs in base bid to provide the 75v solid state modules w/sneak current protection. Confirm module color with District's Engineer prior to ordering. In all cases, Contractor is responsible to coordinate appropriate module with District prior to ordering material.

2.40.4 Approved manufacturers shall include: Circa, Emerson and Marconi.

2.41 All voice feed cables will be tagged on the incoming cable with a typed permanent label with information as to its origin, house pair count, and cable destination. All termination blocks shall be labeled with type written labels that fit between the termination blocks (e.g. clear snap-on covers, adhesive labels and holders). Pairs shall be identified a minimum of every 5 pair on the block.

2.42 Provide distribution rings for the termination blocks and entrance protectors mounted at the MDF and IDF locations.

2.43 Ground and bond feed cables at one end of cable to aluminum shield with approved "bullet bond" type ground lug and #10 AWG green ground wire. Connect ground wire to closet ground buss bar.

2.44 Acceptable manufacturers shall be: Superior Essex or equal, for outdoor riser cable applications.

2.45 Data Contractor is responsible for providing the District with detailed feed cable documentation as well as identifying all of the physical cable in the MDF and IDF locations. Contractor shall have all installation, termination and documentation of voice feed cable completed and released to the telephone equipment vendor, a minimum of three weeks prior to the cut-over date set by the District.

2.46 Data Contractor is responsible for testing port connectivity from the punch blocks in the IDF closets to the main feed cable blocks in the MDF Room. Test all pairs for continuity and polarity. All testing must be completed a minimum of three weeks prior to the cut-over date set by the District.

Augmented Category-6 Outlets

2.47 Unshielded twisted pair Augmented Category-6A outlets shall be an RJ45 Enhanced performance type 8-position / 8 conductor modular jacks, and shall comply with Category-6 performance requirements. Provide single port, dual port, four port or quantity as indicated on the floor plans at each outlet location. All outlets shall be wired in an EIA/TIA 568B configuration.

2.48 Provide Category-6 inserts, wired for EIA 568B. Provide installation kits for all locations furnished with Category-6 UTP cabling.

2.49 Refer to the detail drawings for color of the Category-6 outlets required. Contractor shall be responsible for confirming all color requirements prior to ordering.

2.50 Provide the following Category-6 UTP data connector per Network infrastructure warranty requirements:

2.50.1 Panduit MiniCom TX6 Plus Series CJ688TG

2.51 Unshielded twisted pair Augmented Category-6 outlets shall be an RJ45 Enhanced performance type 8-position / 8 conductor modular jacks, and shall comply with Augmented Category-6 performance requirements. Provide single port, dual port, four port or quantity as indicated on the floor plans at each outlet location. All outlets shall be wired in an EIA/TIA 568B configuration.

2.52 Provide unshielded Augmented Category-6 inserts, wired for EIA 568B. Provide unshielded installation kits for all locations furnished with Augmented Category-6 UTP cabling.

2.53 For outlet locations cabled with OSP-rated Augmented Category-6 wire, provide shielded Augmented Category-6 inserts, wired for EIA 568B. Provide shielded installation kits for all locations furnished with OSP-rated Augmented Category-6 UTP cabling. Cable connections must be grounded at the patch panel location.

2.54 Refer to the detail drawings for color of the Category-6 outlets required. Contractor shall be responsible for confirming all color requirements prior to ordering.

2.55 Provide the following unshielded Augmented Category-6 UTP data connector per Network infrastructure warranty requirements:

2.55.1 Panduit MiniCom TX6 Plus Series CJ688TG(or approved equal by Panduit/Gen Cable).

2.56 Provide the following shielded Augmented Category-6 UTP data connector for OSP-rated cable ports per Network Infrastructure warranty requirements.

2.56.1 Panduit MiniCom TX6A 10Gig Shielded Series CJ6X88TG

Outlet Faceplates

2.57 Provide a two-port faceplate for all one and two port outlet locations. Provide blanks for all unused openings. All Faceplates must be white in color to adhere to SBCUSD standards.

2.58 Provide a four-port faceplate for all three and four port outlet locations. Provide blanks for all unused openings.

2.59 Provide a six-port faceplate for all five and six port outlet locations. Provide blanks for all unused openings.

2.60 All fax/modem locations shall be provided as single port outlets. Requirements shall be the same as a single port data outlet as shown on the Technology Legend.

2.61 For single port voice outlet locations intended for wall telephone connections, a wall telephone type faceplate with attachment studs shall be provided. The wall telephone jack shall be 8-pin, RJ45 type and use IDC wire terminations only. Provide Category-6A insert, within stainless steel wall plate faceplate. Provide faceplate from the approved manufacturers listed in the specifications.

2.62 Provide single port or dual port Surface mount small surface mounted outlet box for IP Speaker data outlets. Provide surface mount box by Leviton QuickPort Series 41089-xxx or equal by one of the approved manufacturers. Provide Category-6A series insert, in surface box for IP Speaker data locations mounted in the backcan for the speaker as shown in the detail drawings.

2.63 Provide single port or dual port Surface mount small surface mounted outlet box for IP Camera data outlets in the J-Box for the camera location. Provide surface mount box by Leviton QuickPort Series 41089-xxx or equal by one of the approved manufacturers. The location shall also be furnished with a blank weather-tight faceplate to protect the data termination until the cameras are installed.

2.64 All faceplates and surface mount outlet boxes shall be furnished with label windows. All labeling shall be installed within the label window.

2.65 Confirm color of all faceplates prior to ordering. All data outlet faceplates shall have a unique sequential identification number applied to faceplate. Hand written labels are not permitted. All color schemes shall be approved by the customer prior to installation.

2.66 Colored inserts are required for this project. Refer to the detail drawings for the exact color scheme to be provided. Inserts submitted that do not follow the color and identification requirements will be rejected. Inserts installed that do not follow the color coding as shown in the detail drawings will be replaced at the Contractor's expense.

2.67 All labels will be installed under label window. Labels adhered to the surface of the faceplate will not be accepted. Contractor must provide clear laminating type of cover material over the surface mounted labels where used.

2.68 Reference the drawings for special outlet configurations or plate requirements.

PART 3 – IP NETWORK COMPATIBLE INTERCOM (IX SYSTEM) GENERAL

3.1 SECTION INCLUDES

3.1.1 IP Video Intercom. (Aiphone IX Series s system)

3.2 REFERENCES

3.2.1 Standards Institute (ANSI/TIA/EIA) 568 - Commercial Building Telecommunications Cabling Standard.

3.2.2 International Organization for Standards (ISO) 9001:2000 - Quality Management Systems - Requirements.

3.3 SYSTEM DESCRIPTION

3.3.1 IP Network Compatible Video Intercom System: A network-based communication and security system featuring video entry security, internal communication, emergency stations, and paging. All units and app in the systems shall be able to view and assist onsite visitors from an offsite location, broadcast emergency announcements, and communicate using a PoE network.

3.3.1.1 Power Source: Power over Ethernet (802.3af).

3.3.1.2 Network Interface: 10 BASE-T / 100 BASE-TX Ethernet CAT 6a (RJ-45).

3.3.1.3 Network Protocols: IPv4, IPv6, TCP, UDP, SIP, HTTP, HTTPS, MJPEG, RTSP, RTP, RTCP, IGMP, MLD, SMTP, DHCP, NTP, DNS.

3.3.2 Bandwidth Usage:

3.3.2.1 G.711: 64Kbps x 2 per video call.

3.3.2.2 64Kbps per monitor.

3.3.2.3 H.264: 24Kbps ~ 2,048Kbps.

3.3.3 Communication: Hands-free (VOX), push-to-talk (simplex), or handset (full-duplex).

3.3.4 Video Display: 7 inches color LCD.

3.3.5 Camera: Type:

3.3.5.1 1/4 inch (6 mm) color CMOS.

3.3.5.2 View Area: 2 feet 2 inches (660 mm) vertical x 3 feet 1 inch (940 mm) horizontal at 20 inches (508 mm).

3.3.5.3 Resolution: VGA or higher

3.3.6 Video Stream: ONVIF Profile S.

3.3.7 Power Source for electric strike: Atop AD1048-24FS 48W/24DIN-Rail 24V DC.

3.3.8 Wire Type: CAT-6a. (District standard: Panduit)

3.3.9 Distance:

3.3.9.1 Base Bid to include up to 100 l. f. of cabling

3.3.9.2 Maximum allowable to any station to Network Node: not to exceed 330 feet (100 meters).

3.4 SUBMITTALS

3.4.1 Submit under provisions of Section 01 30 00 - Administrative Requirements.

3.4.2 Product Data: Manufacturer's data sheets on each product to be used, including:

3.4.2.1 Preparation instructions and recommendations.

3.4.2.2 Storage and handling requirements and recommendations.

3.4.2.3 Installation methods.

3.5 Shop Drawings: Submit the following:

3.5.1 Wiring Diagrams: Indicate wiring for each item of equipment and interconnections between items of equipment.

3.5.2 Include manufacturer's names, model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.

3.5.3 Installation and Operation Manuals:

3.5.3.1 Submit manufacturer's installation and operation manual, including operation instructions and component wiring diagrams.

3.5.3.2 Provide detailed information required for Owner to properly operate equipment.

3.6 Warranty: Submit manufacturer's standard warranty.

3.7 QUALITY ASSURANCE

3.7.1 Manufacturer Qualifications: ISO 9001:2008 certified company.

3.7.2 Installer Qualifications: Factory trained and experienced with system installations of scope and size required for the Project.

3.7.3 Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

3.7.4 Storage: Store materials in clean, dry area indoors in accordance with manufacturer's instructions.

3.7.5 Handling: Protect materials during handling and installation to prevent damage.

3.8 PROJECT CONDITIONS

3.8.1 Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

3.9 MANUFACTURERS

3.9.1 IP Video Intercom System: IX Series Intercom System as manufactured by Aiphone Corporation. Web site: www.aiphone.com

3.9.2 Requests for substitutions will be considered in accordance with provisions of Document 00 43 25 - Substitution Request Form - During Procurement.

3.10 SYSTEM DESIGN

3.11 Master Station(s): Provide one master station at each campus.

3.12 Aiphone Model IX-MV7-HW Provide one per campus at designated location.

3.13 Audio Video Door Stations:

3.14 Model IX-DA - Surface Mount: Provide one per campus at designated location.

or

3.15 Model IX-DF - Flush Mount: Provide one per campus at designated location.

3.16 Option: Model IX-DV - Surface Mount.

3.17 Signage:

3.17.1 At each Door Station/Wall Box Contractor shall provide weatherproof signage Signage: “ASSISTANCE” (English) and “ASISTENCIA” (Spanish).

3.18 Functional Components: As indicated on the drawings or as required to complete system.

3.18.1 Video Master Station Model IX-MV7-HW:

3.18.1.1 An IP addressable video master station with a 7 inch color LCD monitor. It can be wall or desk mounted (desk stand included. This station requires a 802.3af compliant Power-over-Ethernet network.

3.18.2 Audio/Video Door Station: Model IX-DA, IX-DF, or IX-DV

3.18.2.1 Station connects to a PoE network using CAT-6a cable.

3.19 Optional Components (Unit price items to be used at District option):

3.19.1.1 RY-IP44 IP Programmable Relay Adaptor:

3.19.1.2 45 Degree Mullion Mounting Bracket Model KMB-45:

3.19.1.3 Stainless Steel Security Lock Box Model LB-SDVF: for IX-DF, IX-DF-HID, & IX-DF-RP10.

3.19.1.4 Stainless Steel Enclosure Model SBX-ISDVF:

3.19.1.5 18-Guage stainless steel enclosure designed for surface mounting the IX-DF door stations.

3.20 EXECUTION

3.20.1 Examine areas to receive integrated security and communication system.

3.20.2 Notify District of conditions that would adversely affect installation or subsequent use.

3.20.3 Do not begin installation until unacceptable conditions are corrected.

3.21 PREPARATION

3.21.1 Verify the following compliance before starting installation.

3.21.2 The unit turns inoperative during power failure.

3.21.3 Keep the intercom wires at least 1 foot (30 cm) away from strong electrical wiring (AC 100-240 V) including, in particular, wiring for inverter electrical appliances. Noise and malfunction could result.

3.21.4 If a strong light shines on the main unit screen, the picture may turn white or only silhouettes will be visible.

3.21.5 Other manufacturer's devices (such as sensor, detectors) used with this system, comply with the manufacturer's installation requirements.

3.21.6 The LCD panel is manufactured with very high precision techniques, inevitably will have a very small portion of its picture elements always lit or not lit at all. This is not considered a unit malfunction. Please be aware of this in advance.

3.22 INSTALLATION

3.22.1 Install integrated security and communication system in accordance with manufacturer's instructions at locations indicated on the Drawings.

3.22.2 Mount equipment plumb, level, square, and secure. For video entrance stations and video door stations, comply with manufacturer's design requirements to provide optimum picture quality of station monitoring.

3.23 SET-UP AND ADJUSTING

3.23.1 Adjust integrated security and communication system for proper operation in accordance with manufacturer's instructions.

3.24 DEMONSTRATION AND TRAINING

3.24.1 Demonstration:

3.24.1.1 Demonstrate that integrated security and communication system functions properly.

3.24.1.2 Perform demonstration at final system inspection by qualified representative of manufacturer.

3.24.2 Instruction and Training:

3.24.2.1 Provide instruction and training of Owner's personnel as required for operation of integrated security and communication system.

3.24.2.2 Provide hands-on demonstration of operation of system components and complete system, including user-level program changes and functions.

3.24.2.3 Provide instruction and training by qualified representative of manufacturer.

3.24.2.4 Provide DVD copy of video recorded training session(s)

3.25 PROTECTION

3.25.1 Protect installed integrated security and communication system from damage during construction.

PART 4 – Video Security Systems

4.1 (2) Augmented Category-6 UTP cables shall be provided from the IDF closet to each camera location. All cables installed in underground conduit shall be rated for Wet Location.

4.2 Provide ~~(Ornage)~~ **(Green)** Category-6 patch cords with pre-molded boot, provide quantity equal to 100% of the total camera cable drops or ports provided. All patch cords to be installed by Contractor. Provide a total of 100% of the patch cords 36 inches in length. Patch cords shall be in compliance with the manufacturer's "Link" warranty requirements. Provide patch cords for both ends of the cable.

PART 5 – WIRELESS ACCESS POINTS (WAP)

5.1 The Contractor will provide all Cisco manufactured wireless access points that will be purchased from the network Electronics allowance; programming will be completed by the District IT Department. The Contractor shall install each Wireless access point where indicated on the floorplans and provide patch cord installation at the WAP. The Contractor shall provide a list including the room number, location, and MAC address of each device installed to the District IT Department.

5.2 (2) Augmented Category-6 UTP cables shall be provided from the IDF closet to each WAP location. All cables installed in underground conduit shall be rated for Wet Location.

5.3 Interior wall mounted Access Points shall be installed on hard surface walls. In these instances a wall mount Access Point bracket, such as manufactured by Precision Enclosure Solutions (PES) (or approved equivalent) or wall mount enclosure, such as manufactured by TerraWave (or approved equivalent) shall be utilized.

5.4 Refer to drawing details for installation requirements for WAP locations.

5.5 Contractor shall provide all WAPS and antennas for all Exterior WAP locations shown on the drawings. Antennas and mounting brackets such as manufactured by TerraWave (or approved equivalent) by Cisco

PART 6 – INSTALLATION

6.1 Upon completion of 10% of the cabling installation, the Contractor shall notify the Project Engineer for an inspection of the methods and types of materials used on the project. The Contractor shall give a minimum of 72 hours notification to the Project Engineer for the scheduling of the inspection. The Contractor will be given a written review of the findings, so if adjustments are required, they can be done before the project proceeds. The Contractor shall be responsible for adhering to the findings and a follow-up inspection will not be provided.

6.2 Pull strings shall be provided with all cable runs including but not limited to: conduit stub ups, conduit sleeves, cable trays, open wiring routes, innerduct and point-to-point conduits. Pull strings shall be free from cable bundles in open wiring routes. Pull strings shall not be substituted for pull ropes for the exterior site conduits.

6.3 Velcro cable management straps are required on all Category-6 cable bundles, the last 20 feet or upon entry into equipment closet, a maximum of 12” apart. Cable bundles shall also be routed through cable managements or “D” rings in the equipment closet.

6.4 Data Contractor shall supply protective bushings or slide on rings at the ends of all exposed conduits used for data system cabling. This is to include all conduits installed for any future data cabling requirements. Contractor shall submit planned protection bushings prior to installation of cabling for approval.

6.5 Velcro cable management straps are required on the cabling in the rear section of the vertical managers in the equipment racks. Straps shall be a maximum of 12” apart. At a minimum, Velcro straps shall be provided at each point the cables are routed to the patch panels from the main bundle.

6.6 Every fiber in every fiber optic cable must be terminated at both ends of a fiber patch panel in the MDF/IDF closet or cabinet location. Termination shall be accomplished using the correct style of connectors as directed by the District with a strain relief boot. All connectors shall be of the same manufacture to ensure compatibility. Polarity of fiber strands must be observed at all times.

6.7 Labeling

6.7.1 Each cable run shall be permanently labeled at each end with a unique sequential number which corresponds to a similar number provided for each data outlet and patch panel point. A printed label shall be placed at each of the following locations:

6.7.1.1 On the cable at the rear of the patch panel or termination block. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTALE EQUAL).

6.7.1.2 On each cable in the j-box behind the faceplate location. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTALE EQUAL).

6.7.1.3 On the cable at the terminal strip prior to termination point. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTALE EQUAL).

6.7.1.4 On the face of the patch panel, provide a ¾" by ¾" label with a letter or number identifying the patch panel designation. For special purpose data connections such as WAP, Audio-Visual, IP Page and IP Camera ports, the label shall be designated with colored label icon or marker.

6.7.1.5 On the face of the faceplate in the label holder window. The label shall be clearly defined with a minimum #10 font size.

6.7.2 Handwritten labels are not permitted. Where cable ID includes room number identification, the Contractor shall obtain written verification of final room numbers prior to beginning labeling (numbers on plans do not always match final room numbers). Cable pulling cross reference lists will not be accepted with final documentation.

6.7.3 Each patch panel port shall be identified with a unique sequential labeling scheme. Port identification labeling pattern shall be consistent throughout the project.

6.7.4 All faceplates shall be identified with permanent printed labels. Labels must not be subject to removal by incidental contact. Contractor shall be responsible for replacing defective labeling for a period of one year from date of final sign-off of project.

6.7.5 All fiber optic and UTP feed cables shall be identified with permanent, water resistant, printed labels. Labeling information shall include closet identifications, quantity of conductors (UTP) or strands (fiber) and house pair designations (UTP). Cables shall be labeled in the IDF/MDF closets at the site conduit entrance point, riser conduit entrance point and prior to entering either punch blocks or patch panels. Labels for fiber and copper feeds shall include both the name of the origination point and the destination point, house pair or house fiber strand count, cable composition (i.e., 12-Strand MM 50/125 LO; 6-Stand SM). See details for additional requirements.

6.7.6 Labeling will follow recommended EIA/TIA standards or as requested by the customer. Contractor will confirm labeling pattern prior to final identification or testing. All test results will be identified by the final labeling scheme. Contractor shall be required to have the labeling scheme approved in writing by the District IT Director prior to manufacture or installation of the labeling.

6.7.7 All fiber optic cables and/or innerduct shall be tagged with fiber optic warning tags in every manhole or pullbox. Fiber warning tags shall also be placed at each end of the cable in the termination closets in clear view. A minimum of (3) tags are required at each end, with a label tag on each cable in the service loop. Fiber warning tags shall be placed on fiber optic cable and/or innerduct routed through open ceiling environments at increments no less than 15 feet apart.

6.7.8 Refer to detail drawings for additional labeling requirements.

6.8 Where open wiring cables are run through the ceiling space (only permitted where specifically noted on the drawings), the wire shall be bundled together and supported above the ceiling.

6.9 All cables must be fastened to the building structure via “j-hooks” or an approved Category 6 suspension system, and not directly in contact with ceiling system. For “j-hooks” maximum fill capacity is as follows: 1-5/16” hooks – 35 cables; 2” hooks – 60 cables; 4” hooks – 120 cables. For quantities beyond 120 cables, use a sling support system such as “Erico Cable Cat” or equal. Maximum fill capacity 200 cables. D-rings, “Caddy #WMX cable hangar”, “Caddy Bridle Rings”, drive rings or any other type of wire ring support is not allowed.

6.10 Where cables pass through a fire-resistant portion of the structure, conduit sleeves shall be provided to maintain the rating of wall penetrated. Sealing of all penetrations with an approved fire barrier is required. Conduits and sleeves must remain accessible for future use. Permanent sealants may not be used to seal sleeves and conduits.

6.10.1 The 27 10 00 Contractor shall be responsible for fire-stopping all unused conduit sleeves in the ceiling or through rated walls. The Electrical Contractor shall be responsible for fire-stopping around the conduit or sleeve, unless the sleeve is installed by the 27 10 00 Contractor, in which case, the 27 10 00 Contractor shall be responsible for all fire-stopping requirements.

6.10.2 Expanding foam is not an acceptable sealant for any conduit opening. Contractor shall be responsible for complete replacement of the conduit and cabling in any conduit filled with expanding foam used as a sealant.

6.11 Fiber optic feed cables connecting to equipment racks from the MDF Room or from an adjacent IDF location, shall be installed with not less than a 20-foot service loop between the rack and mounted on the backboard. See drawings for fiber optic service loop requirements.

6.12 Provide 6 inches of cable slack at computer data system outlets inside conduit box.

6.13 In an accessible ceiling area, provide a 10-foot (stored in a Figure-8 configuration) service loop above the all data/voice outlet locations. Service loop must be securely tied up off of ceiling tiles or ceiling surface and supported at two opposite points. Neatly coil cable without exceeding minimum bend radius limitations. Do not provide length in excess of 15 feet, as it may cause improper test results and errors.

6.14 Do not provide a service loop in the MDF/IDF Room on the UTP cables, unless otherwise noted. Cables shall be neatly routed around the perimeter of the room to the cable runway from the point of entrance into the room.

6.15 The minimum bending radius for all cables and the maximum pulling tension shall not exceed manufacturer's recommendations.

6.16 Cables installed in manholes and pullboxes shall be supported with Velcro ties or loosely fitted UV rated tie wraps, on wall mounted cable support racks. The cables shall be clearly labeled in the manhole or pullbox.

6.17 Provide a full 360-degree loop of slack cable around manhole and pullbox interiors. Cables entering handholes from the bottom, shall not be allowed to touch the bottom of the cover when closed and shall not be pinched or crushed in any way.

6.18 Cable pulling shall use a split mesh grip over the cable jacket. Connection directly to optical fibers and copper wire conductors shall not occur.

6.19 When pulled through conduits, cable pulling lubricants shall be continuously applied to all cables and be specifically approved by the manufacturer.

6.20 Where cables are pulled through or pulled from a center run, pull without splices or terminations, lead out the cables at all manholes, pullboxes, and conduits, taking care to feed them in again by hand for the next run.

6.21 For each cable pull where a cable direction change is required, flexible feed-in tubes, pullout devices, multi-segmented sheaves, etc., shall be used to ensure proper cable pulling tension and side wall pressures. Cables shall not be pulled directly around a short right-angle bend. Any device or surface the cable comes in contact with when under pull-in tension shall have a minimum radius 50% greater than the final specified minimum installed cable bending radius. The maximum possible size radius sheaves and feed-in tubes, usable in the available working space shall be provided in all situations, to ensure the minimum possible cable sidewall pulling pressure. Do not use devices with multi-segment "roller" type sheaves.

6.22 Cable lengths over 250 feet shall be machine pulled, not hand pulled. Cables shall be pulled in a continuous, smooth operation without jerking or stop-start motion after initiation of pull. Maximum cable pulling speed shall be less than 50 feet per minute. Minimum pulling speed shall be greater than 15 feet per minute.

6.23 A pull string shall be placed with all UTP and paging station cables at the time of installation. Conduit runs and surface raceway for station cabling shall be furnished with a minimum 2-Ply spiral wrap style, pull string rated for 240 ft/lbs. pulling strength, such as manufactured by Greelee #431 or approved equal. Includes all conduit stubs and cables routed through open ceiling and cable trays. Pull strings shall be tied off in the junction box and in the ceiling. Provision for the installation of the pulls string shall apply to all empty and spare conduits as well. Single ply type pull string will not be accepted as a substitute for the 2-ply pull string.

6.24 A measuring pull tape shall be placed with all feed cables at the time of installation. Indoor riser and outdoor conduit runs between buildings designated for feed cabling, in excess of 150 feet shall be provided with a minimum ½" polyaramid style, measuring true tape pull string annotated with footage increments rated for 2500 ft/lbs. pulling strength, such as manufactured by Greenlee #39245 or approved equal. Conduit runs less than 150 feet shall be furnished with a ¼" polyaramid style, measuring true tape pull string annotated with footage increments rated for 1250 ft/lbs. pulling strength, such as manufactured by Greenlee #39243 or approved equal. Provision for the installation of the measuring pull tape shall apply to all empty and spare conduits as well. Standard twine style pull strings and standard nylon or polypropylene style pull ropes will not be accepted as a substitute for the polyaramid measuring tape pull string.

6.25 When pulling cable through conduit, cables shall be pulled straight into or out of the raceway without bends at the raceway entrance or exit. Pull in cable from the end having the sharpest bend (i.e., bend shall be closest to the reel). Keep pulling tension to minimum by liberal use of lubricant, hand turning of reel, and slack feeding of cable into duct entrance. Employ not less than one man at reel and one at manhole or pullbox during this operation. Cables shall be pulled directly from cable reels.

6.26 All cables shall be new and extend continuous from each MDF or IDF backboard or rack to all outlet locations.

6.27 Where cables are not installed in a conduit or other raceway system, they shall not be routed parallel with other line voltage equipment or wiring (120 volt and above) with 36" or within 12" of line voltage equipment or wiring where crossing.

6.28 Where OSP-Rated UTP cables or OSP-Rated fiber optic cables are routed exposed through ceiling for more than 50'-0", Contractor shall install the cable in innerduct or EMT conduit in the ceiling. Innerduct installed in the accessible ceiling space shall be a minimum of riser rated and minimum of 1" in diameter. Innerduct shall be supported minimum of every 3-feet to the structural members.

PART 7 - TESTING

7.1 All Category-6 cables shall be point to point (link) tested after installation/termination and verified to operate at minimum 1000Mbps. Performance of installed cables shall satisfy all current addendums to the EIA/TIA 568A standard for Category-6 wiring. In

addition, testing shall satisfy all proposed amendments to the existing ISO/IEC requirements. The wiring shall support all specified communication protocols. Testing shall support the Category-6 requirements by the EIA/TIA.

7.2 Upon completion of testing cable links for both copper and fiber optic cabling, the Contractor shall supply a copy of the original database files downloaded from the tester in original format on a USB Flash Drive. Contractor shall provide with the testing database files, an original copy of the tester's manufacturer software program (included in original cost) for record management and archiving, in a Windows format (i.e., Fluke Linkware software program).

7.2.1 The manufacturer's software program will be used by the Project Engineer to review all test results, and then turned over to the District to keep as their record copy with the final approved test results. Provide (3) copies of tests on USB Flash Drives. Do not submit test results for review in Excel or PDF file formats, as the submittal will be rejected and not reviewed.

7.3 Contractor will repair or replace cable runs or connecting hardware that do not meet specified criteria.

7.4 Upon completion of submittal of original test results, and after review and approval of those results, the Contractor shall provide testing equipment and personnel to randomly re-test 10% or 20 drops minimum, whichever is greater, of all UTP cable locations on the campus in the presence of the designated District Representative and Project Engineer. The District Representative shall choose which cables are to be re-tested. If 10% of the re-tested cables fail to match the previously submitted original tests, the Contractor must hire an independent testing firm to re-test all UTP cable on the campus, at no cost the customer. All cables which do not meet the specifications criteria as determined by the independent test report, shall be replaced and re-tested by the Contractor at no cost the District. Final sign-off of the testing shall be approved after receipt of all other documentation.

7.5 Multimode fiber optic cables shall be tested bi-directionally at 850nm and 1300nm. Single mode fiber optic cable shall be tested bi-directionally at 1310nm and 1500nm. All fiber strands shall be tested with an OTDR (Optical Time Domain Reflectometer). All fiber test results shall contain final source and destination information that matches IDF or MDF labeling shown on the fiber optic patch panels and final documentation. OTDR tests results shall be included with the copper test results and submitted with the tester's software for review. Do not submit test results for review in Excel or PDF file formats, as the submittal will be rejected and not reviewed.

7.6 Test procedures shall comply with EIA/TIA 526-14 Method B. Test results shall meet the minimum following criteria:

7.6.1 Fiber optic test results shall not exceed 2db total attenuation loss in addition to inherent loss published by manufacturer tested at minimum 2000 Mhx for 805nm and 500 Mhz for 1300nm for the fiber optic cable.

7.7 End to end attenuation Fiber Optic feed cabling testing shall be performed with a temporary test jumper cable at each end of the installed fiber cable. The test jumper utilized shall be the same fiber core size and grade of glass as the installed cable. The measured attenuation of the test jumpers, test connectors, and test interconnection sleeve between the two test jumpers shall be less than 1dB as calibrated at the time of the test at indicated wave lengths and frequencies. Test jumpers shall be "zeroed out" before testing of fiber stands begins.

7.8 Final As-Built Drawing Submittals – Provide (1) hard bound copy of "E-size" As-Built drawings and (3) copies on USB Flash Drive in AutoCad (2014 or newer version) format. A Hand marked-up copy of the original construction drawings will not be accepted as the final As-Built drawing submittal. Final As-Builts shall include copies of the floor plan drawings of each building, detailed elevations of each MDF or IDF locating all equipment, quantities outlets and speaker locations, locations of all sleeves and identification of all final cable routes. In addition, the drawings shall include all outlet locations with cable identification numbers.

END OF SECTION

SECTION 27 21 00

NETWORKING ELECTRONICS

PART 1 – GENERAL

1.1 Include all labor, equipment and materials necessary for providing a complete data networking system as described therein.

1.2 Quality Assurance

1.2.1 Manufacturers' qualifications: All components shall be manufactured by a single manufacturer. **Acceptable manufacturers shall be "Cisco."**

Systems or components as manufactured by 3 Com, HP, Asante or any other manufacturer's which are not specifically listed in 1.2.1, are **not** approved for use on this project.

1.2.2 Installing contractor qualifications: Firms and their personnel must be regularly engaged in the installation of networking electronics equipment for systems of similar type and scope. The contractor must have a full-service office able to respond to emergency callouts during the warranty period. **The contractor must provide documentation from "Cisco" indicating their qualifications for installation of this system in compliance with the manufacturers warranty requirements as a warrantied contractor.** The contractor must also provide complete installation of all wiring and devices or equipment. Subcontracts with Division 26 contractors or other warranted contractors for supervised installation of any part of this system are not approved.

1.2.3 Equipment qualifications: It is the intent of these specifications that each bidder provide all hardware, components and installation services that are necessary to ensure a fully operational networking system. These are K-12 EDU SKUs specific for school districts, and will include SmartNet Support.

1.2.4 Warranty: All components, installation, shall be warranted by the contractor to the school district for a period of 2 years after District acceptance and sign-off of the completed system.

1.3 In order to ensure project cohesion, a single point of contact is required to provide a "TURNKEY" solution. The work covered under this section of the specification consists of furnishing all labor; equipment; software; supplies; materials; and training. The Contractor will perform all operations necessary for the "TURNKEY" and fully completed installation in accordance with the specifications herein. As such, the successful contractor must be factory trained on all aspects of system hardware.

1.4 Submittal shall be made **within (10) working days** after the award of the contract by the District. This submittal shall include the following:

1.4.1 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:

1.4.1.1 Description and quantity of each item.
1.4.1.2 Manufacturer's Name and Model Number.
1.4.1.3 Manufacturer's Specification Sheet.

1.4.2 Include with submittals all warranty information and a description of support and maintenance services to be provided. Also include all licenses and maintenance agreements required for continued operation of the equipment.

1.5 <u>Common submittal mistakes which will result in submittals being rejected:</u>

1.5.1 Not including the qualifications of the installing contractor.

1.5.2 Not including all items listed in the above itemized description.

1.5.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.

1.5.4 Not including actual manufacturer's catalog information of proposed products.

1.5.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

2.1 All termination Wireless Access Points and Switches with Transceivers.

Intermediate Distribution Frame (IDF)

2.2 The following equipment items shall be provided complete with all management modules, connection hardware, software and all other accessories including mounting hardware to provide a complete and operational system.

APs:

2.3 Provide (8) Indoor AP with Mgig for School with the following for each:

2.3.1 AIR-AP3802I-B-K9 - 802.11ac W2 AP w/CA; 4x4:3; Mod; Int Ant; mGig B Domain

2.3.2 AIR-AP-T-RAIL-R- Ceiling Grid Clip for Aironet APs - Recessed Mount (Default)

2.3.3 AIR-AP-BRACKET-1 - 802.11 AP Low Profile Mounting Bracket (Default)

2.3.4 SW3802-CAPWAP-K9- Cisco Aironet 3800 Series CAPWAP Software Image

2.3.5 NETWORK-PNP-LIC Network Plug-n-Play License for zero-touch device

2.4 Provide (3) Outdoor AP for School with the following for each:

2.4.1 AIR-AP1542D-B-K9- 802.11ac W2 Value Outdoor AP, Direct. Ant, B Reg Dom.

2.4.2 SWAP1540-MESH-K9- Cisco 1540 Series Unified Mesh Mode Software

2.4.3 AIR-ACC1530-PMK1- Standard Pole/Wall Mount Kit for AP1530/1560 Series

Edge Switches:

2.5 Provide (1) 24 port Access Switches for School Sites (10G uplink, 10G mGig) with the following for each:

2.5.1 C9300-24UX-EDU- Catalyst 9300 24-port mGig and UPOE, K12

2.5.2 C9300-NW-A-24-EDU- C9300 Network Advantage, 24-port license K12

2.5.3 S9300UK9-168 UNIVERSAL

2.5.4 PWR-C1-1100WAC 1100W AC Config 1 Power Supply

2.5.5 PWR-C1-1100WAC/2 1100W AC Config 1 Secondary Power Supply

2.5.6 C9300-NM-8X Catalyst 9300 8 x 10GE Network Module

2.5.7 CAB-TA-NA North America AC Type A Power Cable

2.5.8 STACK-T1-50CM 50CM Type 1 Stacking Cable

2.5.9 CAB-SPWR-30CM Catalyst Stack Power Cable 30 CM

2.6 Provide (3) 48 port Access Switches for School Sites (10G uplink, 10G mGig) with the following for each:

2.6.1 C9300-48UXM-EDU- Catalyst 9300 48-port(12 mGig&36 2.5Gbps), K12

2.6.2 C9300-NW-A-48-EDU- C9300 Network Advantage, 48-port license K12

2.6.3 S9300UK9-168- UNIVERSAL

2.6.4 PWR-C1-1100WAC- 1100W AC Config 1 Power Supply

2.6.5 PWR-C1-1100WAC/2- 1100W AC Config 1 Secondary Power Supply

2.6.6 C9300-NM-8X- Catalyst 9300 8 x 10GE Network Module

2.6.7 CAB-TA-NA- North America AC Type A Power Cable

2.6.8 STACK-T1-50CM- 50CM Type 1 Stacking Cable

2.6.9 CAB-SPWR-30CM- Catalyst Stack Power Cable 30 CM

PART 3 – INSTALLATION

3.1 Each piece of electronic equipment must be securely fastened into the equipment rack, connected to all networking and power sources per manufacturer's recommendations.

3.2 The installation shall include all software configuration of all electronic components. The owner's representative shall be present to supervise the software installation and configuration.

PART 4 - TESTING AND TRAINING

4.1 All electronic equipment shall be tested to comply with the manufacturer's instructions. Upon completion, the contractor shall provide written verification that all components have been installed and are operating per the manufacturer's instructions.

4.2 The contractor shall provide (2) training sessions for two to four employees from School District. Contact the district Information Systems Manager to determine the attendees for this training. The training shall be for all equipment and devices furnished in this section of the specifications. The training shall be provided by the manufacturer of the equipment or authorized dealer, and shall include all instruction, tools, and equipment necessary for installation service maintenance and programming of the equipment and devices. Provide name and verification that the individual performing the training.

4.3 Manuals: Three copies of an operation manual must be supplied with each piece of equipment.

4.4 Three (3) two-hour visits shall be conducted by the contractor, at four (4) month intervals during the warranty period or when requested by the district, in order to verify that each system component and the complete system is functioning correctly. The inspection visits shall be conducted at times which shall be during the normal school day. The contractor shall be required to reprogram any equipment or functions as requested by the district Information Systems Manager.

END OF SECTION

ROOM SIGNAGE SCHEDULE

ROOM NUMBER	DOOR NO.	ROOM NAME	SIGN TYPE	SIGN TEXT **
101	101B	LOBBY	ROOM ID W/ ISA	ADMINISTRATION
101	103A	LOBBY	ROOM ID	FINANCE OFFICE
101	101A	LOBBY	ROOM ID W/ ISA	ADMINISTRATION
103	104A	FINANCE / SHIPPING & RECEIVING	ROOM ID	STORAGE
105	105B	HALLWAY	ROOM ID W/ ISA	ADMINISTRATION
105	105A	HALLWAY	ROOM ID	OFFICES
105	123A	HALLWAY	ROOM ID	SIDE A: COUNSELING SIDE B: ADMINISTRATION
106	106A	CONFERENCE ROOM	ROOM ID	CONFERENCE ROOM
107	107B	PRINCIPAL	ROOM ID	PRINCIPAL
107	107A	PRINCIPAL	ROOM ID	PRINCIPAL
108	108A	ASSISTANT PRINCIPAL	ROOM ID	OFFICE
109	109A	ASSISTANT PRINCIPAL	ROOM ID	OFFICE
110	110A	ASSISTANT PRINCIPAL	ROOM ID	OFFICE
113	114A	COPY	ROOM ID	STORAGE
115	115A	UNISEX RESTROOM	RESTROOM WALL	STAFF RESTROOM
116	116A	HALLWAY	ROOM ID	SIDE A: STAFF RESTROOMS SIDE B: ADMINISTRATION
116	116B	HALLWAY	ROOM ID	SIDE A: STAFF RESTROOMS SIDE B: WORKROOM
117	117A	REGISTRAR STORAGE	ROOM ID	STORAGE
118	118A	MEN'S RESTROOM	RESTROOM WALL	MEN'S RESTROOM
119	119A	CUST.	ROOM ID	CUSTODIAN
120	120A	WOMEN'S RESTROOM	RESTROOM WALL	WOMEN'S RESTROOM
121	122A	STAFF WORKROOM	ROOM ID	DATA ROOM
121	121A	STAFF WORKROOM	ROOM ID W/ ISA	WORKROOM
123	123B	HALLWAY	ROOM ID W/ ISA	COUNSELING
125	125A	ASB OFFICE	ROOM ID	ASB
126	126A	ITINERANT	ROOM ID	OFFICE
127	127A	COUNSELING	ROOM ID	OFFICE
128	128A	DEAN OFFICE	ROOM ID	OFFICE
129	129A	COUNSELING	ROOM ID	OFFICE
130	130A	CONFERENCE ROOM	ROOM ID	CONFERENCE ROOM A
131	131A	CONFERENCE ROOM	ROOM ID	CONFERENCE ROOM B
132	132A	COUNSELING	ROOM ID	OFFICE
133	133A	PSYCHOLOGIST	ROOM ID	OFFICE
134	134A	COUNSELING	ROOM ID	OFFICE
135	135A	COUNSELING	ROOM ID	OFFICE
136	136B	HEALTH	ROOM ID	SIDE A: SHOWER ROOM SIDE B: HEALTH AIDE
136	139A	HEALTH	RESTROOM WALL	STUDENT RESTROOM
136	138A	HEALTH	ROOM ID	EXAM ROOM
136	136A	HEALTH	ROOM ID W/ ISA	HEALTH AIDE
136	137A	HEALTH	ROOM ID	OFFICE
140	139B	ATLAS	RESTROOM WALL	STUDENT RESTROOM
140	141A	ATLAS	ROOM ID	SHOWER ROOM
140	140A	ATLAS	ROOM ID W/ ISA	-
142	146A	SECURITY	ROOM ID	STORAGE
142	142A	SECURITY	ROOM ID W/ ISA	SECURITY OFFICE
147	147A	ELECTRICAL	ROOM ID	ELECTRICAL ROOM

NOTE:

** CONTRACTOR TO VERIFY WITH DISTRICT PRIOR TO FABRICATION.

2

Description :

REFERENCE A-1.1 NEW ROOM SIGNAGE SCHEDULE

Scale:

PACIFIC HIGH SCHOOL

NEW ADMINISTRATION BUILDING
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

4/20/2021 1:56:45 PM

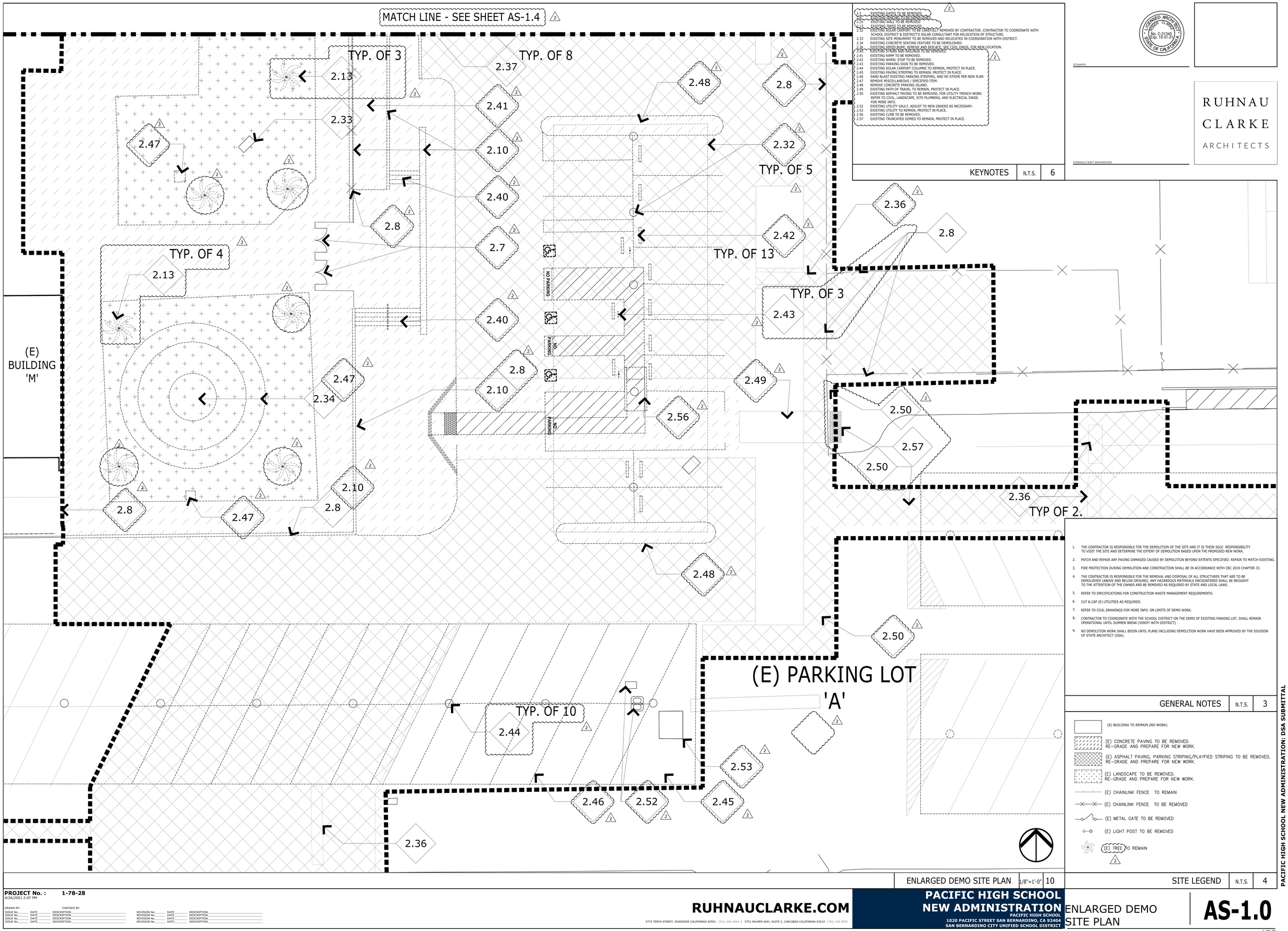
DSA APN #: 04-119637
DSA File #: 36-H7
Date: 4-20-2021
Project #: 1-78-28
Sheet #: **ASK-2.1**

Stamp:

LICENSED ARCHITECT * ROGER CLARKE * No. C-21340 Exp. 10-31-21 STATE OF CALIFORNIA

RUHNAUCLARKE.COM
3775 TENTH STREET, RIVERSIDE CALIFORNIA 92501 (951) 684 4664
5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 92010 (760) 438 5899

RUHNAU CLARKE ARCHITECTS



2.1 EXISTING GATES TO BE REMOVED.
2.10 EXISTING WALL TO BE REMOVED.
2.13 EXISTING TREES TO BE REMOVED.
2.32 EXISTING SOLAR CARPORT TO BE DEMOLISHED REMOVED BY CONTRACTOR. CONTRACTOR TO COORDINATE WITH SCHOOL DISTRICT & DISTRICT'S SOLAR CONSULTANT FOR RELOCATION OF STRUCTURE.
2.33 EXISTING SITE MONUMENT TO BE REMOVED AND RELOCATED IN COORDINATION WITH DISTRICT.
2.34 EXISTING CONCRETE SEATING FEATURE TO BE DEMOLISHED.
2.36 EXISTING SPEED BUMP, REMOVE AND REPLACE. SEE CIVIL DWGS. FOR NEW LOCATION.
2.40 EXISTING STAIRS AND RAILINGS TO BE REMOVED.
2.41 EXISTING RAMP TO BE REMOVED.
2.42 EXISTING WHEEL STOP TO BE REMOVED.
2.43 EXISTING PARKING SIGN TO BE REMOVED.
2.44 EXISTING SOLAR CARPORT COLUMNS TO REMAIN, PROTECT IN PLACE.
2.45 EXISTING PAVING STRIPING TO REMAIN, PROTECT IN PLACE.
2.46 SAND BLAST EXISTING PARKING STRIPING, AND RE-STRIPE PER NEW PLAN
2.47 REMOVE MISCELLANEOUS / SPECIFIED ITEM.
2.48 REMOVE CONCRETE PARKING ISLAND.
2.49 EXISTING PATH OF TRAVEL TO REMAIN, PROTECT IN PLACE.
2.50 EXISTING ASPHALT PAVING TO BE REMOVED, FOR UTILITY TRENCH WORK. REFER TO CIVIL, LANDSCAPE, SITE PLUMBING, AND ELECTRICAL DWGS. FOR MORE INFO.
2.52 EXISTING UTILITY VAULT, ADJUST TO NEW GRADES AS NECESSARY.
2.53 EXISTING UTILITY TO REMAIN, PROTECT IN PLACE.
2.56 EXISTING CURB TO BE REMOVED.
2.57 EXISTING TRUNCATED DOMES TO REMAIN, PROTECT IN PLACE.

KEYNOTES | N.T.S. | 6

1. THE CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION OF THE SITE AND IT IS THEIR SOLE RESPONSIBILITY TO VISIT THE SITE AND DETERMINE THE EXTENT OF DEMOLITION BASED UPON THE PROPOSED NEW WORK.
2. PATCH AND REPAIR ANY PAVING DAMAGED CAUSED BY DEMOLITION BEYOND EXTENTS SPECIFIED. REPAIR TO MATCH EXISTING.
3. FIRE PROTECTION DURING DEMOLITION AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH CBC 2019 CHAPTER 33.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL STRUCTURES THAT ARE TO BE DEMOLISHED (ABOVE AND BELOW GROUND). ANY HAZARDOUS MATERIALS ENCOUNTERED SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND BE REMOVED AS REQUIRED BY STATE AND LOCAL LAWS.
5. REFER TO SPECIFICATIONS FOR CONSTRUCTION WASTE MANAGEMENT REQUIREMENTS.
6. CUT & CAP (E) UTILITIES AS REQUIRED.
7. REFER TO CIVIL DRAWINGS FOR MORE INFO. ON LIMITS OF DEMO WORK.
8. CONTRACTOR TO COORDINATE WITH THE SCHOOL DISTRICT ON THE DEMO OF EXISTING PARKING LOT, SHALL REMAIN OPERATIONAL UNTIL SUMMER BREAK (VERIFY WITH DISTRICT)
9. NO DEMOLITION WORK SHALL BEGIN UNTIL PLANS INCLUDING DEMOLITION WORK HAVE BEEN APPROVED BY THE DIVISION OF STATE ARCHITECT (DSA).

GENERAL NOTES | N.T.S. | 3

(E) BUILDING TO REMAIN (NO WORK)
(E) CONCRETE PAVING TO BE REMOVED. RE-GRADE AND PREPARE FOR NEW WORK.
(E) ASPHALT PAVING, PARKING STRIPING/PLAYFIED STRIPING TO BE REMOVED. RE-GRADE AND PREPARE FOR NEW WORK.
(E) LANDSCAPE TO BE REMOVED. RE-GRADE AND PREPARE FOR NEW WORK.
(E) CHAINLINK FENCE TO REMAIN
(E) CHAINLINK FENCE TO BE REMOVED
(E) METAL GATE TO BE REMOVED
(E) LIGHT POST TO BE REMOVED
(E) TREE TO REMAIN

SITE LEGEND | N.T.S. | 4

ENLARGED DEMO SITE PLAN | 1/8"=1'-0" | 10

LICENSED ARCHITECT ROGER CLARKE No. C-21340 Exp. 10-31-21 STATE OF CALIFORNIA

STAMPS

RUHNAU CLARKE ARCHITECTS

CONSULTANT BRANDING

PACIFIC HIGH SCHOOL NEW ADMINISTRATION: DSA SUBMITTAL

PROJECT No. : 1-78-28
4/26/2021 2:07 PM

DRAWN BY: CHECKED BY:

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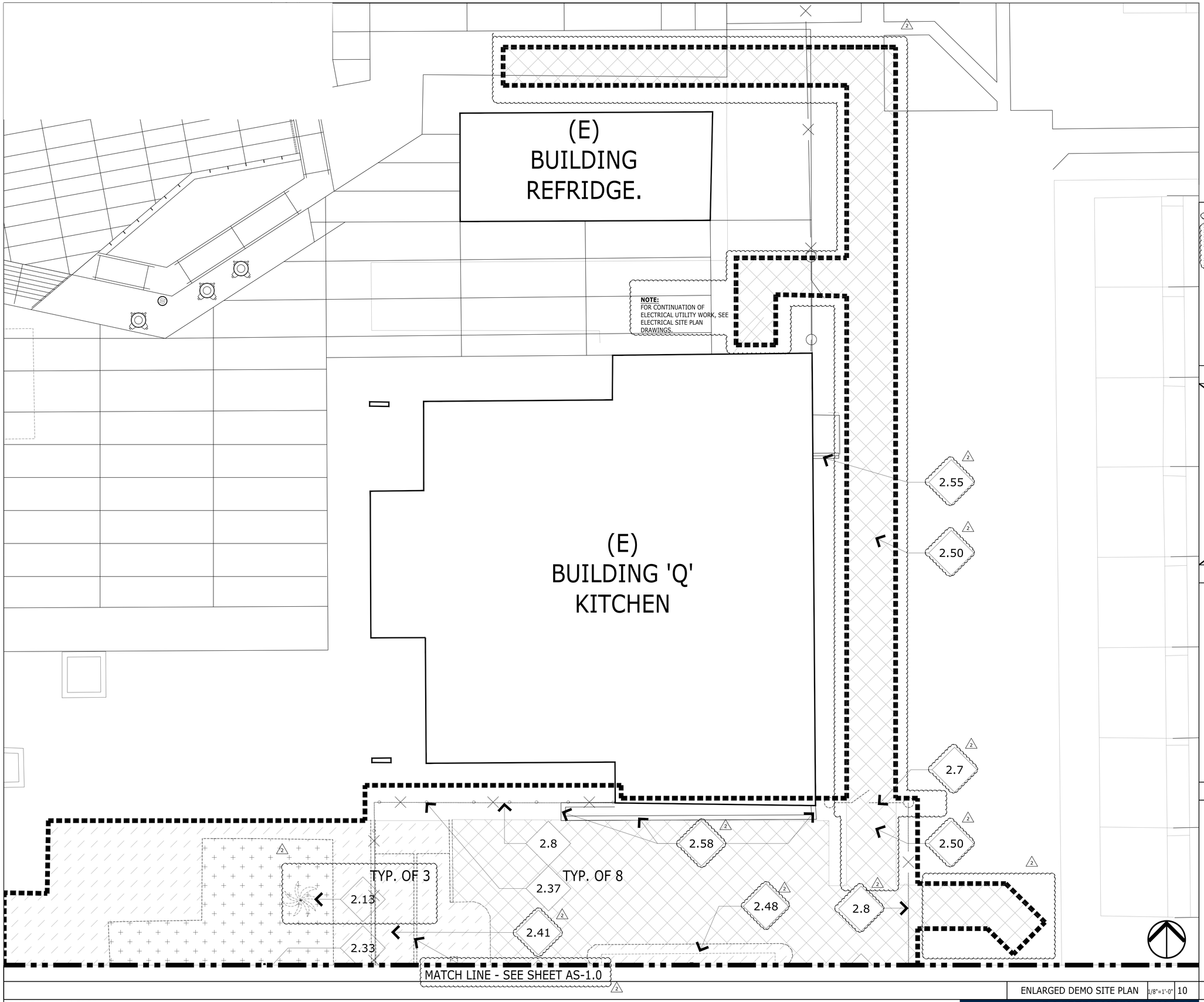
PACIFIC HIGH SCHOOL NEW ADMINISTRATION
PACIFIC HIGH SCHOOL
1020 PACIFIC STREET SAN BERNARDINO, CA 92404
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

ENLARGED DEMO SITE PLAN

AS-1.0

1-78-28



ENLARGED DEMO SITE PLAN | 1/8"=1'-0" | 10

STAMPS

LICENSED ARCHITECT
ROGER CLARKE
No. C-21340
Exp. 10-31-21
STATE OF CALIFORNIA

CONSULTANT BRANDING

RUHNAU
CLARKE
ARCHITECTS

2.1 EXISTING GATES TO BE REMOVED
2.12 EXISTING CHAINLINK FENCE TO BE REMOVED
2.13 EXISTING TREES TO BE REMOVED.
2.37 EXISTING BUILDING COLUMN TO REMAIN, PROTECT IN PLACE
2.41 EXISTING RAMP TO BE REMOVED.
2.48 REMOVE CONCRETE PARKING ISLAND.
2.50 EXISTING ASPHALT PAVING TO BE REMOVED, FOR UTILITY TRENCH WORK. REFER TO CIVIL, LANDSCAPE, SITE PLUMBING, AND ELECTRICAL DWGS. FOR MORE INFO.
2.55 EXISTING STAIRS TO REMAIN, PROTECT IN PLACE.
2.58 EXISTING WALL TO REMAIN, PROTECT IN PLACE.

KEYNOTES | N.T.S. | 1

NOT USED

1. THE CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION OF THE SITE AND IT IS THEIR SOLE RESPONSIBILITY TO VISIT THE SITE AND DETERMINE THE EXTENT OF DEMOLITION BASED UPON THE PROPOSED NEW WORK.
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5. REFER TO SPECIFICATIONS FOR CONSTRUCTION WASTE MANAGEMENT REQUIREMENTS.
6. CUT & CAP (E) UTILITIES AS REQUIRED.
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GENERAL NOTES | N.T.S. | 3

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(E) ASPHALT PAVING, PARKING STRIPING/PLAYFIED STRIPING TO BE REMOVED. RE-GRADE AND PREPARE FOR NEW WORK.
(E) LANDSCAPE TO BE REMOVED. RE-GRADE AND PREPARE FOR NEW WORK.
(E) CHAINLINK FENCE TO REMAIN
(E) CHAINLINK FENCE TO BE REMOVED
(E) METAL GATE TO BE REMOVED
(E) LIGHT POST TO BE REMOVED
(E) TREE TO REMAIN

SITE LEGEND | N.T.S. | 4

PACIFIC HIGH SCHOOL NEW ADMINISTRATION: DSA SUBMITTAL

PROJECT No. : 1-78-28
4/26/2021 2:30 PM

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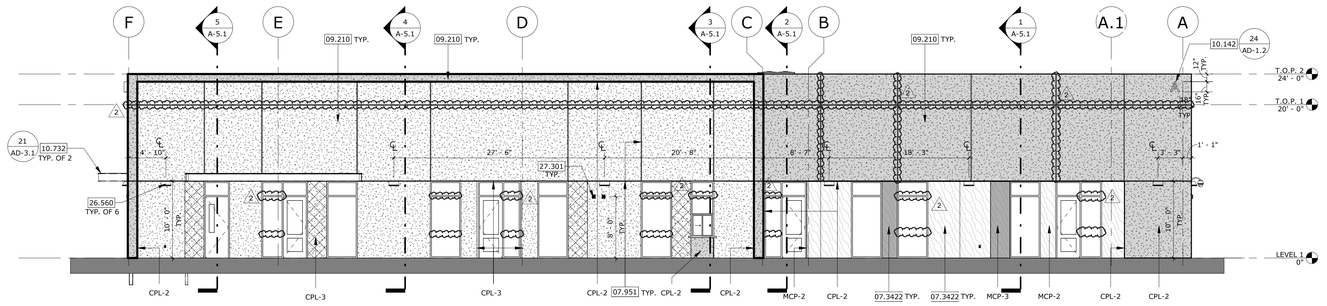
PACIFIC HIGH SCHOOL
NEW ADMINISTRATION
PACIFIC HIGH SCHOOL
1020 PACIFIC STREET SAN BERNARDINO, CA 92404
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

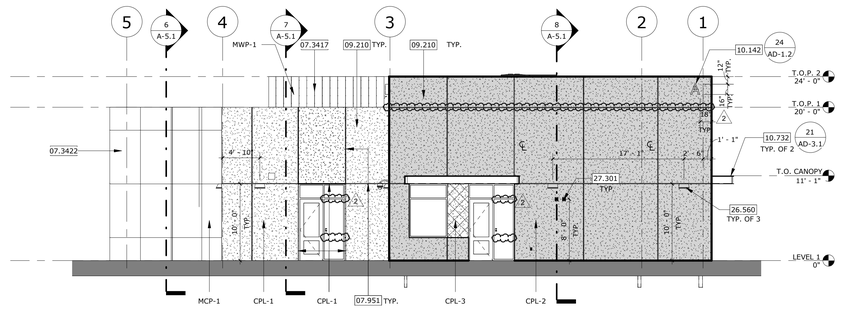
ENLARGED DEMO SITE PLAN

AS-1.4

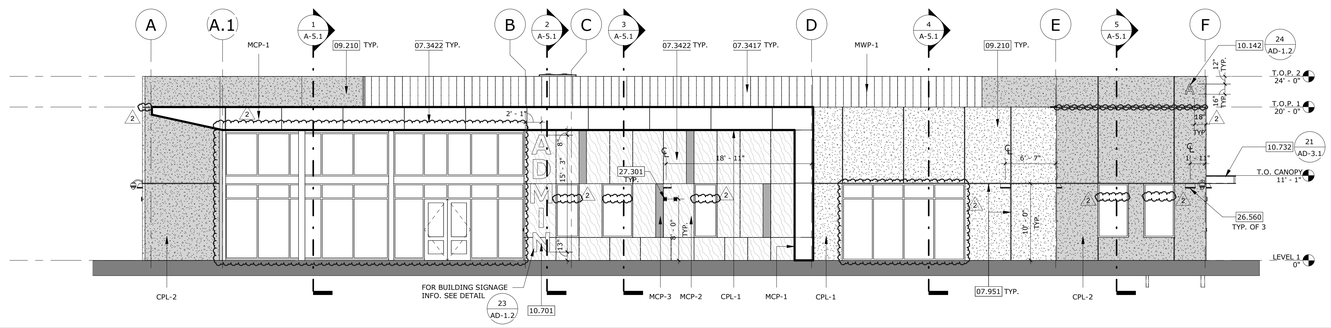
1-78-28



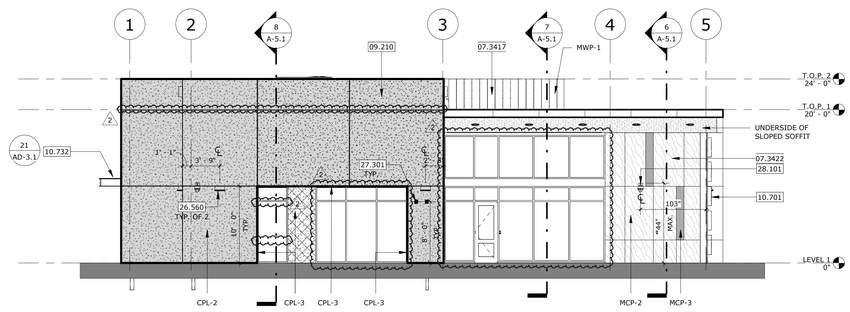
NORTH ELEVATION | SCALE: 1/8" = 1'-0" | 1



EAST ELEVATION | SCALE: 1/8" = 1'-0" | 2



SOUTH ELEVATION | SCALE: 1/8" = 1'-0" | 3



WEST ELEVATION | SCALE: 1/8" = 1'-0" | 4

GENERAL ELEVATION NOTES

1. SEE DETAIL 27 / AD-2.2 FOR TYPICAL EXTERIOR PLASTER CONTROL JOINT AND TYPICAL EXTERIOR PLASTER CORNER

KEYNOTES

07.951	CONTROL JOINT
07.3417	METAL WALL PANEL SYSTEM, PER EXTERIOR ELEVATIONS
07.3422	METAL COMPOSITE PANEL SYSTEM
09.210	PLASTER ASSEMBLY
10.142	16" TALL BUILDING IDENTIFICATION SIGNAGE
10.701	30" TALL DECORATIVE METAL LETTER SIGNAGE
10.732	CANOPY
26.560	EXTERIOR LIGHTING, PER ELECTRICAL DRAWINGS
27.301	VOICE COMMUNICATIONS SYSTEM, SEE ELEC. DWG. FOR ADDITIONAL INFO
28.101	WALL MOUNTED SECURITY DOOR BUZZER & CAMERA REFER TO ELECTRICAL DWGS. & SPECS FOR MORE INFO.

LEGEND - ELEVATIONS

- METAL COMPOSITE PANEL **(MCP-1)** *SPEC SECTION 07 41 13.23*
- METAL COMPOSITE PANEL **(MCP-2)** *SPEC SECTION 07 41 13.23*
- METAL COMPOSITE PANEL **(MCP-3)** *SPEC SECTION 07 41 13.23*

29 / AD-2.1 TYPICAL ATTACH. DETAIL

- MECHANICAL SCREEN **(MWP-1)** *SPEC SECTION 07 42 13* — 27 / AD-2.1
- CEMENT PLASTER - PAINT FINISH **(CPL-1)** *SPEC SECTION 09 24 00*
- CEMENT PLASTER - PAINT FINISH **(CPL-2)** *SPEC SECTION 09 24 00*
- CEMENT PLASTER - PAINT FINISH **(CPL-3)** *SPEC SECTION 09 24 00*

NOTE:

1. FOR ADDITIONAL INFO ON COLOR, MATERIAL & FINISHES, SEE SHEET **ID-1.1**

LICENSED ARCHITECT ROGER CLARKE No. C-21340 Exp. 10-31-21 STATE OF CALIFORNIA

STAMPS

AGENCY APPROVAL
File No: 36-H7 Ltr04-119637

RUHNAU CLARKE ARCHITECTS

CONSULTANT BRANDING

NEW ADMINISTRATION BUILDING; DSA SUBMITTAL

PROJECT No. :1-78-28
4/13/2021 4:03:58 PM

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ISSUE No.:_____	DATE:_____	DESCRIPTION:_____		REVISION No.:1	DATE:3-07-2021	DESCRIPTION:Revision 1	
ISSUE No.:_____	DATE:_____	DESCRIPTION:_____		REVISION No.:2	DATE:4-16-2021	DESCRIPTION:Revision 2	
ISSUE No.:_____	DATE:_____	DESCRIPTION:_____		REVISION No.:_____	DATE:_____	DESCRIPTION:_____	
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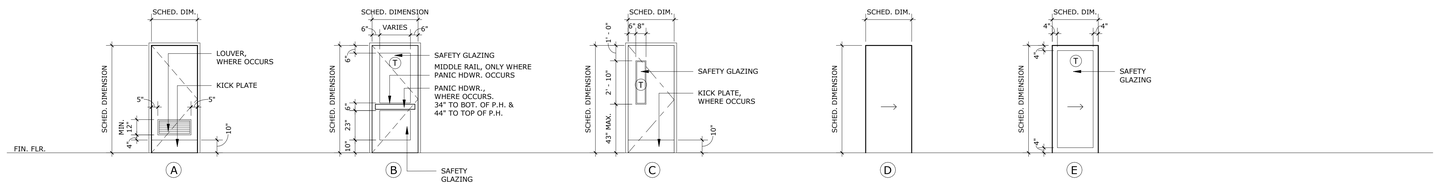
NEW ADMINISTRATION BUILDING
PACIFIC HIGH SCHOOL
1020 PACIFIC STREET, SAN BERNARDINO, CA 92404
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

BUILDING ELEVATIONS | **A-4.1**

1-78-28

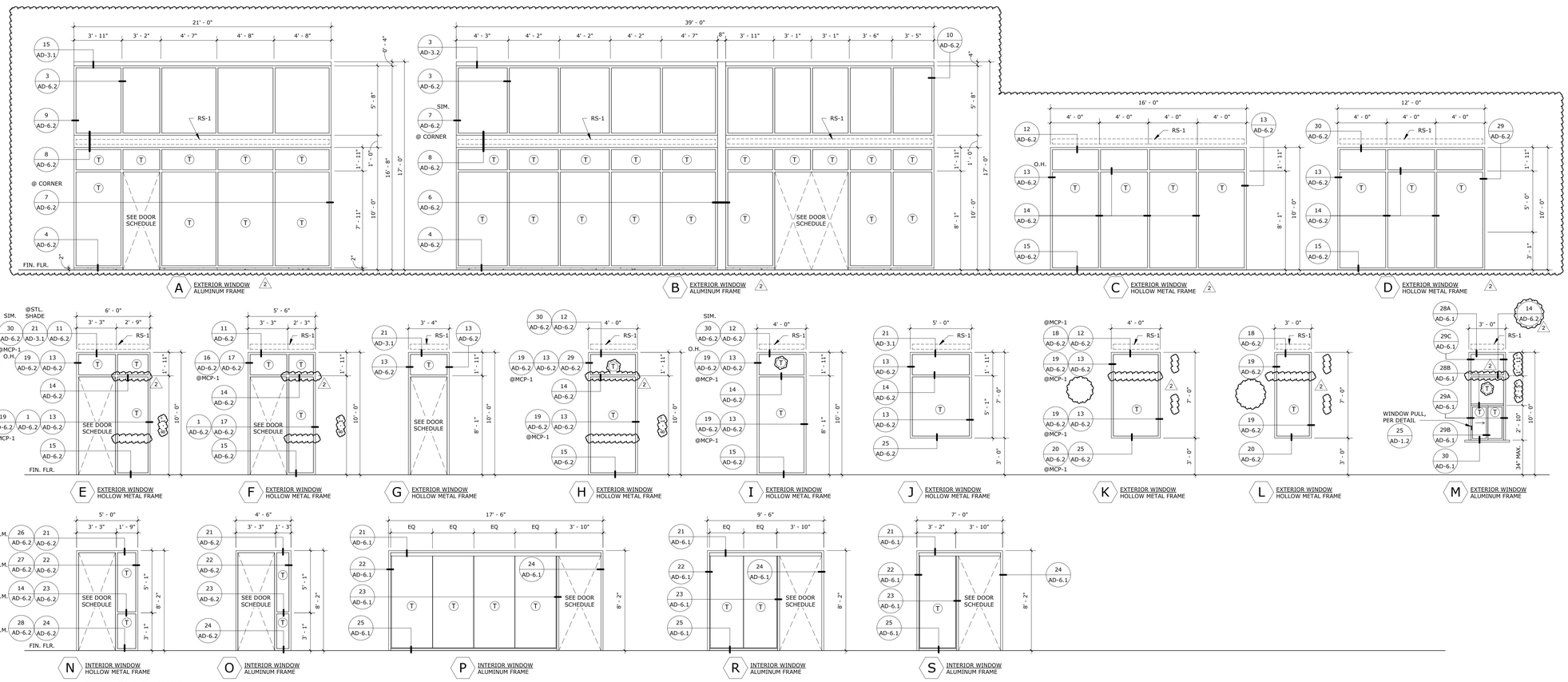
DOOR SCHEDULE

DOOR NO.	ROOM NAME	DOOR								FRAME							GLAZING TYPE	CLOSER	HARDWARE GROUP	PANIC HARDWARE	FIRE RATING	ELECTRONIC ACS. CTRL.	SECURITY HARDWARE	DOOR NO.	REMARKS
		DOOR TYPE	EXTERIOR	WIDTH	HEIGHT	THICKNESS	MATERIAL	FINISH	COLOR	MATERIAL	FINISH	COLOR	HEAD	JAMB 1	JAMB 2	SILL/THRESHOLD									
101A	LOBBY	B	YES	6' - 0"	8' - 0"	2"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	2/AD-6.1	2/AD-6.1	2/AD-6.1	6/AD-6.1	2	Yes	1	PH	N/A	YES	N/A	101A	
101B	LOBBY	B	YES	3' - 0"	8' - 0"	2"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	2/AD-6.1	2/AD-6.1	2/AD-6.1	6/AD-6.1	2	Yes	2	PH	N/A	YES	N/A	101B	
103A	LOBBY	C	NO	3' - 6"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15/AD-6.1	15/AD-6.1	18/AD-6.1	1	Yes	3	-	N/A	NO	CLASSROOM SECURITY LOCK	103A	
104A	FINANCE / SHIPPING & RECEIVING	C	NO	3' - 6"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15/AD-6.1	15/AD-6.1	18/AD-6.1	1	No	3	-	N/A	NO	N/A	104A	
105A	HALLWAY	B	NO	3' - 0"	8' - 0"	2"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15/AD-6.1	8/AD-6.1	18/AD-6.1	1	Yes	4	-	N/A	NO	CLASSROOM SECURITY LOCK	105A	
105B	HALLWAY	B	YES	3' - 0"	8' - 0"	2"	HM	PSG	P-4	HM	PSG	P-3	2/AD-6.1	16/AD-6.1	2/AD-6.1	11/AD-6.1	2	Yes	12	PH	N/A	NO	N/A	105B	
106A	CONFERENCE ROOM	E	NO	3' - 1 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	1	No	7	-	N/A	NO	CLASSROOM SECURITY LOCK	106A	
107A	PRINCIPAL	B	NO	3' - 0"	8' - 0"	2"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	3/AD-6.1	9/AD-6.1	9/AD-6.1	18/AD-6.1	1	Yes	6	-	N/A	NO	CLASSROOM SECURITY LOCK	107A	
107B	PRINCIPAL	B	YES	3' - 0"	8' - 0"	2"	HM	PSG	P-4	HM	PSG	P-3	8/AD-6.1	8/AD-6.1	19/AD-6.1	11/AD-6.1	2	Yes	5	PH	N/A	NO	CLASSROOM SECURITY LOCK	107B	
108A	ASSISTANT PRINCIPAL	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	108A	
109A	ASSISTANT PRINCIPAL	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	109A	
110A	ASSISTANT PRINCIPAL	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	110A	
114A	COPY	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15/AD-6.1	15/AD-6.1	18/AD-6.1	N/A	No	3	-	N/A	NO	N/A	114A	
115A	UNISEX RESTROOM	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	13/AD-6.1	13/AD-6.1	18/AD-6.1	N/A	Yes	15	-	N/A	NO	N/A	115A	PROVIDE LOUVER, PER MECHANICAL DRAWINGS
116A	HALLWAY	B	NO	3' - 0"	8' - 0"	2"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15/AD-6.1SIM	8/AD-6.1	18/AD-6.1	1	Yes	8	-	N/A	NO	CLASSROOM SECURITY LOCK	116A	
116B	HALLWAY	B	NO	3' - 0"	8' - 0"	2"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15-AD-6.1SIM	8/AD-6.1	18/AD-6.1	1	Yes	8	-	N/A	NO	CLASSROOM SECURITY LOCK	116B	
117A	REGISTRAR STORAGE	C	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15-AD-6.1	15/AD-6.1	18/AD-6.1	1	Yes	3	-	N/A	NO	N/A	117A	
118A	MEN'S RESTROOM	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	13/AD-6.1	13/AD-6.1	18/AD-6.1	N/A	Yes	9	-	N/A	NO	N/A	118A	PROVIDE LOUVER, PER MECHANICAL DRAWINGS
119A	CUST.	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15/AD-6.1	15/AD-6.1	18/AD-6.1	N/A	No	3	-	N/A	NO	N/A	119A	PROVIDE LOUVER, PER MECHANICAL DRAWINGS
120A	WOMEN'S RESTROOM	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	13/AD-6.1	13/AD-6.1	18/AD-6.1	N/A	Yes	9	-	N/A	NO	N/A	120A	
121A	STAFF WORKROOM	B	YES	3' - 0"	8' - 0"	2"	HM	PSG	P-4	HM	PSG	P-3	8/AD-6.1	12/AD-6.1	28/AD-6.1	11/AD-6.1	2	Yes	10	PH	N/A	YES	N/A	121A	
122A	STAFF WORKROOM	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15/AD-6.1	15/AD-6.1	18/AD-6.1	N/A	Yes	11	-	N/A	NO	N/A	122A	
123A	HALLWAY	B	NO	3' - 0"	8' - 0"	2"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	2/AD-6.1	15/AD-6.1	18/AD-6.1	1	Yes	8	-	N/A	NO	CLASSROOM SECURITY LOCK	123A	PROVIDE MAGNETIC HOLD OPEN & CONNECT TO FIRE ALARM SYSTEM
123B	HALLWAY	B	YES	3' - 0"	8' - 0"	2"	HM	PSG	P-4	HM	PSG	P-3	8/AD-6.1	8/AD-6.1	10/AD-6.2SIM	11/AD-6.1	2	Yes	12	PH	N/A	NO	N/A	123B	
125A	ASB OFFICE	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	125A	
126A	ITINERANT	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	126A	
127A	COUNSELING	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	127A	
128A	DEAN OFFICE	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	128A	
129A	COUNSELING	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	129A	
130A	CONFERENCE ROOM	E	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	3/4"	No	7	-	N/A	NO	CLASSROOM SECURITY LOCK	130A	
131A	CONFERENCE ROOM	B	NO	3' - 0"	8' - 0"	2"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	3/AD-6.1	9/AD-6.1	9/AD-6.1	18/AD-6.1	1	Yes	13	-	N/A	NO	CLASSROOM SECURITY LOCK	131A	
132A	COUNSELING	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	132A	
133A	PSYCHOLOGIST	B	NO	3' - 0"	8' - 0"	2"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	3/AD-6.1	9/AD-6.1	9/AD-6.1	18/AD-6.1	1	Yes	6	-	N/A	NO	CLASSROOM SECURITY LOCK	133A	
134A	COUNSELING	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	134A	
135A	COUNSELING	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	135A	
136A	HEALTH	B	YES	3' - 0"	8' - 0"	2"	HM	PSG	P-4	HM	PSG	P-3	8/AD-6.1	8/AD-6.1	10/AD-6.1	11/AD-6.1	2	Yes	12	PH	N/A	NO	N/A	136A	
136B	HEALTH	C	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15/AD-6.1	15/AD-6.1	18/AD-6.1	1	Yes	13	-	N/A	NO	CLASSROOM SECURITY LOCK	136B	
137A	HEALTH	D	NO	3' - 4 1/2"	7' - 9"	1 3/4"	ALUM	FF	ALUM-1	ALUM	FF	ALUM-1	21/AD-6.1	23/AD-6.1	24/AD-6.1	25/AD-6.1	N/A	No	7	-	N/A	NO	N/A	137A	
138A	HEALTH	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15/AD-6.1	15/AD-6.1	18/AD-6.1	N/A	Yes	13	-	N/A	NO	CLASSROOM SECURITY LOCK	138A	
139A	HEALTH	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	13/AD-6.1	13/AD-6.1	18/AD-6.1	N/A	Yes	15	-	N/A	NO	N/A	139A	
139B	ATLAS	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	13/AD-6.1	13/AD-6.1	18/AD-6.1	N/A	Yes	15	-	N/A	NO	N/A	139B	
140A	ATLAS	C	YES	3' - 0"	8' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	8/AD-6.1	10/AD-6.1	10/AD-6.1	11/AD-6.1	2	Yes	12	PH	N/A	NO	N/A	140A	
141A	ATLAS	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	13/AD-6.1	13/AD-6.1	18/AD-6.1	N/A	Yes	15	-	N/A	NO	N/A	141A	
142A	SECURITY	B	YES	3' - 0"	8' - 0"	2"	HM	PSG	P-4	HM	PSG	P-3	8/AD-6.1	8/AD-6.1	10/AD-6.1SIM	11/AD-6.1	2	Yes	12	PH	N/A	YES	N/A	142A	
146A	SECURITY	A	NO	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	14/AD-6.1	15/AD-6.1	15/AD-6.1	18/AD-6.1	N/A	No	3	-	N/A	NO	N/A	146A	PROVIDE LOUVER, PER MECHANICAL DRAWINGS
147A	ELECTRICAL	A	YES	3' - 0"	7' - 0"	1 3/4"	HM	PSG	P-4	HM	PSG	P-3	4/AD-6.1	10/AD-6.1	10/AD-6.1	11/AD-6.1	N/A	Yes	14	-	N/A	NO	N/A	147A	PROVIDE 180 DEGREE HINGE



DOOR TYPES

SCALE: 1/4" = 1'-0" | 1



WINDOW SCHEDULE

SCALE: 1/4" = 1'-0" | 2

GENERAL NOTES

1. SEE SHEETS **AD-6.1** & **AD-6.2** FOR ALUMINUM & HOLLOW METAL FRAME DETAILS
2. SET DOORS ADJACENT TO WALLS A MIN. OF 4" AWAY FROM WALL U.N.O.
3. ALL GLAZING IN DOORS, AND WINDOWS BELOW 8'-0" A.F.F., ARE TEMPERED OR AS REQUIRED BY SECTION 2406 OF THE 2019 CBC
4. PROVIDE DOOR STOPS AT ALL INTERIOR DOORS. PROVIDE METAL STUD BACKING PER DETAIL 11/S0-2.6
5. ALL EXTERIOR DOORS ARE TO SWING OUT AND OPEN TO A MIN. OF 110 DEGREES FROM ITS CLOSED POSITION WHERE POSSIBLE, U.N.O.

   - EXCEPTION: WHERE TACTILE SIGNAGE IS LOCATED ON HINGE SIDE OF DOOR, DOORS TO HAVE A 90 DEGREE SWING LIMIT
6. ALL EXTERIOR DOORS SHALL HAVE A POLYSTYRENE CORE (THERMAL RESISTANCE)
7. PROVIDE AIR SEALS/WEATHER STRIPPING AT ALL EXTERIOR DOORS TO CONDITIONED SPACES.
8. ALL FLOOR MATERIAL CHANGE SHALL BE LOCATED UNDER THE CENTERLINE OF DOOR WHERE OCCURS, TYP.
9. ALL EXTERIOR DOORS SHALL BE OPERABLE FROM THE INTERIOR WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. DEAD BOLTS ARE ONLY PERMITTED WHEN OPERABLE WITH A SINGLE EFFORT LEVER TYPE HARDWARE.
10. HAND ACTIVATED DOOR OPENING HARDWARE SHALL BE MOUNTED 34"-44" A.F.F.
11. ALL DOORS SHALL BE LOCKABLE FROM THE INTERIOR SIDE
12. PER SECTION 1008.1.10 IN THE CBC 2019, DOOR SERVING ROOMS OR SPACES WITH AN OCCUPANT LOAD OF 50 OR MORE ARE REQUIRED TO HAVE PANIC HARDWARE OR FIRE EXIT HARDWARE.
13. PER CBC 2019 11B-404.2.5, THRESHOLDS SHALL BE 1/2" HIGH MAX., SEE DETAILS 6/AD-6.1, 11/AD-6.1, 18/AD-6.1
14. THE BOTTOM 10" OF ALL DOORS EXTENDING THE FULL WIDTH SHALL HAVE A SMOOTH UNINTERRUPTED SURFACE TO ALLOW THE DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION. CBC 2019 11B-404.2.10
15. MAXIMUM EFFORT TO OPERATE ALL DOORS SHALL NOT EXCEED 5 LBS FOR BOTH EXTERIOR AND INTERIOR DOORS. FIRE DOORS SHALL NOT EXCEED 15 LBS. CBC 2019 11B-404.2.9
16. REFER TO SPECIFICATION SECTION 08 71 00 FOR DOOR HARDWARE INFORMATION

ABBREVIATIONS

ALUM	ALUMINUM
AN	ANODOZIED
HM	HOLLOW METAL
HC	HOLLOW CORE
GALV	GALVANIZED
STL	STEEL
PSG	PAINT: SEMI-GLOSS
RS-1	ROLLER WINDOW SHADES - SPEC. SECTION - 12 24 00

GLAZING NOTES

GLAZING TYPES

1. TYPE S-1: SINGLE VISION GLAZING, COLOR PER CMF LEGEND
2. TYPE IG: SEALED INSULATED GLASS UNIT, COLOR PER CMF LEGEND

GENERAL GLAZING NOTES

1. VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION
2. ALL EXTERIOR GLAZED DOORS AND WINDOWS TO RECEIVE TYPE (2) GLAZING, U.N.O.
3. GLAZING TO BE TEMPERED (T) SHALL INCLUDE:
   - ALL GLAZING IN DOORS
   - ALL DOOR SIDELIGHTS WITHIN 24" OF DOOR FRAME
   - ALL DOOR TRANSOMS
   - ALL WINDOW GLAZING WITHIN A DISTANCE OF 36" HORIZONTALLY FROM A WALKING PATH AND UP TO 60" FROM GRADE
   - ALL GLAZING WITHIN THE SWING OF A DOOR
4. ALL INTERIOR DOORS AND WINDOWS TO RECEIVE TYPE (1) GLAZING, U.N.O.
5. ALL GLAZING SHALL MEET THE MIN. GLAZING REQUIREMENTS LISTED IN 2019 CBC TABLE 2403.2.1 TABLE 2406.2(1)

STAMPS

LICENSED ARCHITECT — ROBERT CLARKE — No. C-21340 — Exp. 10-31-21 — STATE OF CALIFORNIA

AGENCY APPROVAL
File No: 36-H7 (-)DA-119637

CONSULTANT BRANDING

RUHNAU CLARKE ARCHITECTS

NEW ADMINISTRATION BUILDING: DSA SUBMITTAL

PROJECT No. :1-78-28
4/19/2021 11:47:44 AM

DRAWN BY: CHECKED BY: JC

ISSUE No.____ DATE____ DESCRIPTION____
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REVISION No.2 DATE4-16-2021 DESCRIPTIONRevision 2
REVISION No.____ DATE____ DESCRIPTION____
REVISION No.____ DATE____ DESCRIPTION____
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RUHNAUCLARKE.COM
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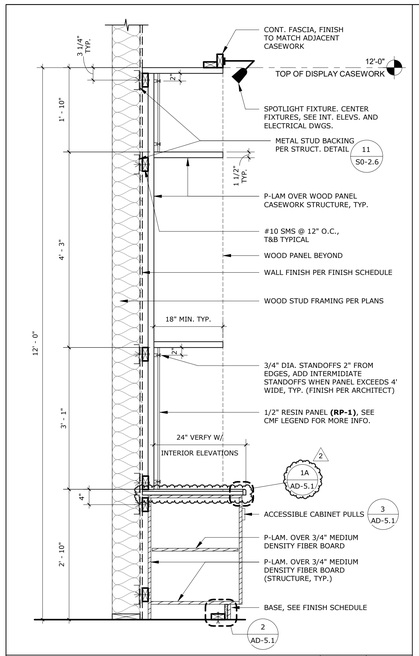
NEW ADMINISTRATION BUILDING
PACIFIC HIGH SCHOOL
1020 PACIFIC STREET, SAN BERNARDINO, CA 92404
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

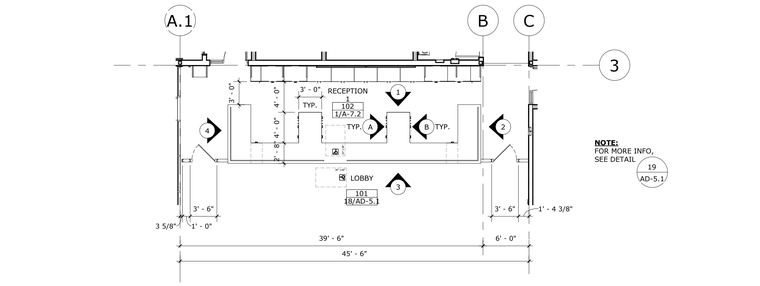
DOOR & WINDOW SCHEDULE

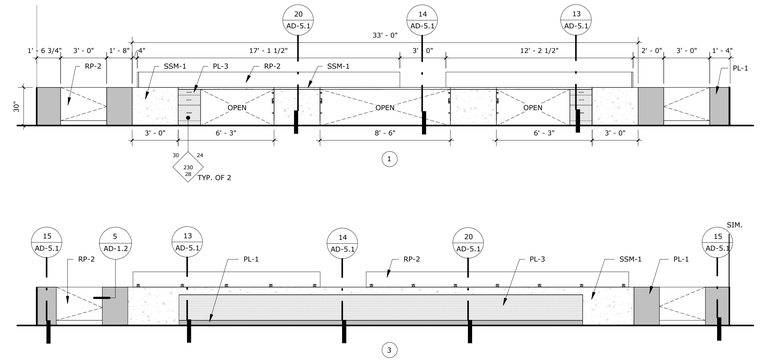
A-8.1

1-78-28

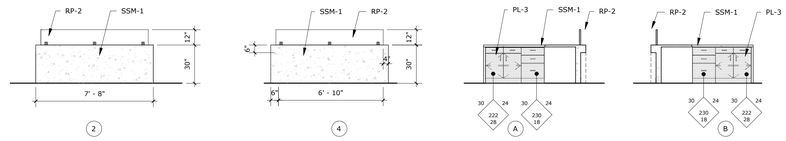


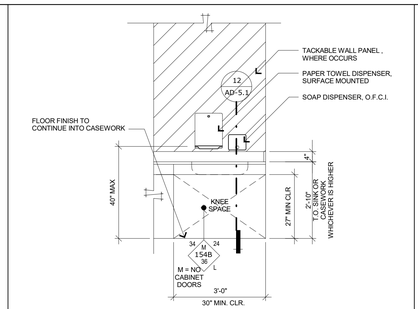
LOBBY CASEWORK@CABINETS — SCALE: 3/4" = 1'-0" — 27



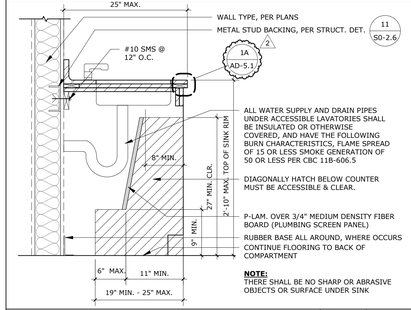


LOBBY/RECEPTION DESK — SCALE: 1/8" = 1'-0" — 18

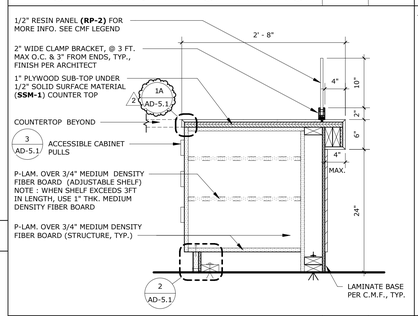




ACCESS. SINK & BASE CABINET — SCALE: 1/2" = 1'-0" — 11

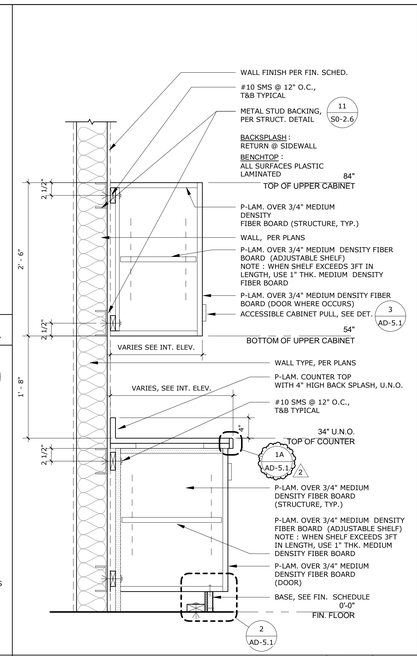


SINK CABINET CLEARANCE — SCALE: 1" = 1'-0" — 12



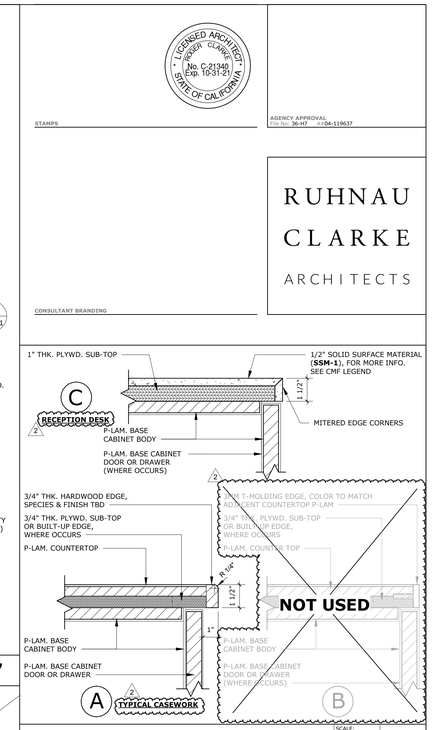
RECEPTION DESK @ CABINET — SCALE: 1" = 1'-0" — 13

RECEPTION DESK - SECTION — SCALE: 1" = 1'-0" — 14



UPPER & BASE CABINET — SCALE: 1" = 1'-0" — 7

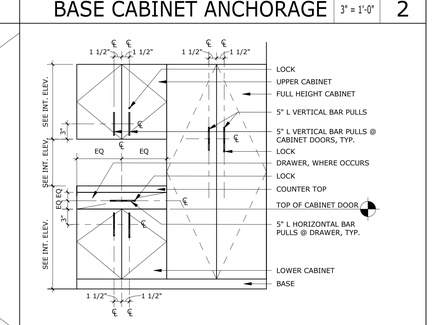
NOT USED



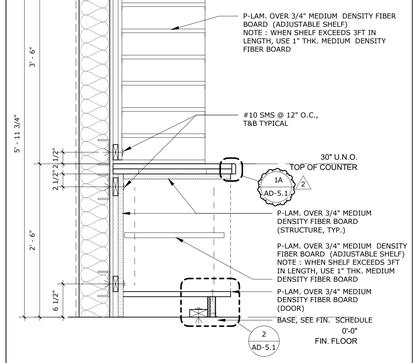
CASEWORK DETAIL — SCALE: 3" = 1'-0" — 1

NOT USED

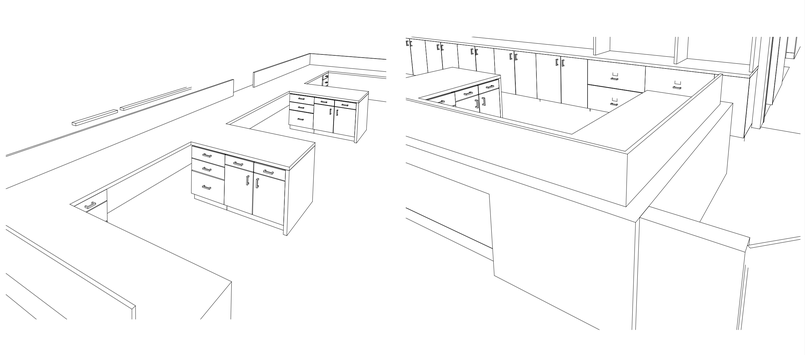
BASE CABINET ANCHORAGE — SCALE: 3" = 1'-0" — 2



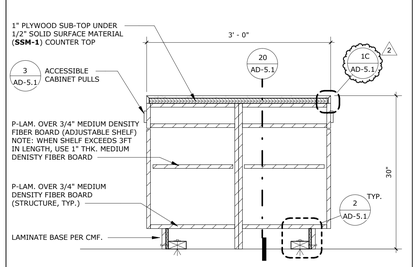
TYP. CABINET PULLS — SCALE: NTS — 3



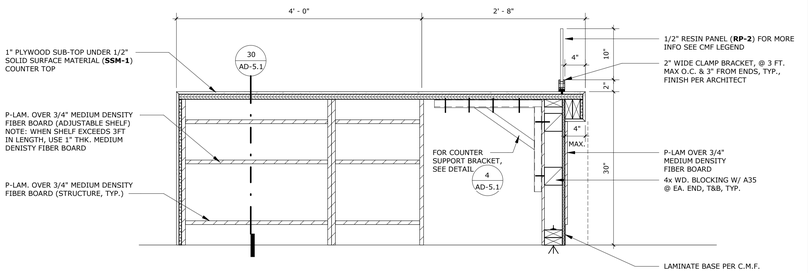
STAFF MAIL CASEWORK — SCALE: 1" = 1'-0" — 29



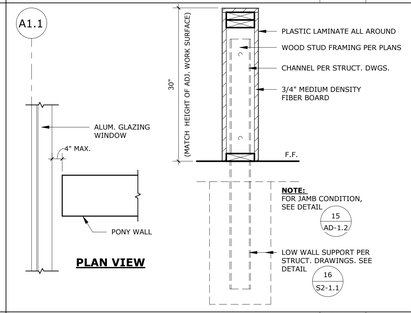
LOBBY #101 - 3D DESK ELEVATIONS — SCALE: N.T.S. — 19



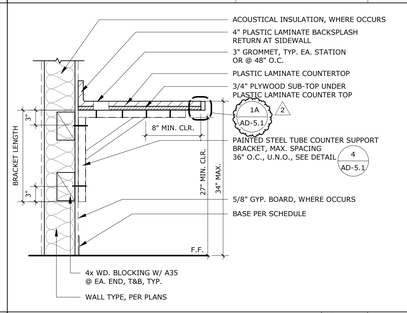
RECEPTION DESK - SECTION — SCALE: 1" = 1'-0" — 30



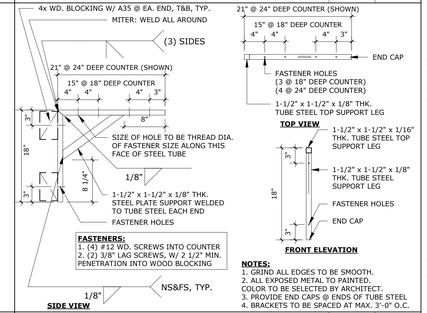
RECEPTION DESK - SECTION — SCALE: 1" = 1'-0" — 20



LOW WALL DETAIL — SCALE: 1" = 1'-0" — 15



COUNTERTOP & BRACKET — SCALE: 1" = 1'-0" — 10



COUNTER SUPPORT BRACKET — SCALE: 1" = 1'-0" — 4

RUHNAU CLARKE ARCHITECTS
CONSULTANT BRANDING
LICENSED ARCHITECT ROBERT CLARKE No. C-21340 Exp. 10-31-21 STATE OF CALIFORNIA
STAMPS
AGENCY APPROVAL File No: 36-HP 11-DSA-119637

PROJECT No. :1-78-28
4/19/2021 11:11:32 AM

DRAWN BY: CHECKED BY: JC

ISSUE No.____ DATE____ DESCRIPTION____
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REVISION No.2 DATE 4-16-2021 DESCRIPTION Revision 2
REVISION No.____ DATE____ DESCRIPTION____
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NEW ADMINISTRATION BUILDING
PACIFIC HIGH SCHOOL
1020 PACIFIC STREET, SAN BERNARDINO, CA 92404
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

CASEWORK & EQUIPMENT DETAILS

AD-5.1

NEW ADMINISTRATION BUILDING: DSA SUBMITTAL

1-78-28

PACKAGE GAS-ELECTRIC A/C UNIT SCHEDULE

TAG	MANUFACTURER & MODEL NO.	AREA SERVED	FAN SYSTEM						DESIGN COOLING CONDITION						HEATING CAPACITY (MBH)				UNIT ELECTRICAL		POWER EXHAUST ELECTRICAL (3)			CONVENIENCE OUTLET ELECTRICAL		AREA SMOKE DETECTOR FOR SHUTDOWN	WEIGHT (LBS.)	FILTER	REFRIG TYPE	ANCHORAGE DETAIL REFERENCE	CURB DETAIL REFERENCE	REMARKS (SEE EQUIPMENT NOTES BELOW)
			CFM	ESP	RPM	DRIVE	BHP	OSA	AMBIENT DB/WB	ENTERING DB/WB	LEAVING DB/WB	SENSIBLE (MBH)	TOTAL (MBH)	EFFICIENCY	AMB. TEMP.°F	INPUT	OUTPUT	EFFICIENCY	V-PH-HZ	AMPS	V-PH-HZ	AMPS	HP	CFM	V-PH-HZ	FLA						
AC 1	CARRIER 48GCGM06A2M6-3A2D0	105, 106, 107, 108, 109, 110, 111, 112, 113, 114 & 115	2,200	1.0"	2,368	DIRECT	1.42	370	106.0 / 75.0	80.0 / 64.0	57.7 / 55.3	48.74	52.96	12.5 EER 16.00 SEER	27.0	60.0	49.0	81.0%	460-3-60	15.0 MCA 20.0 MOCP	460-3-60	3.5 MCA 6.3 MOCP	1.0	2,200	120-1-60	2.2	YES	UNIT: 659 / CURB: 347	ECONO/ PWR EXH: 178 **TOTAL: 1,184**	MERV 13	R-410a	1 / MD-1.1/	9 / MD-1.1/	1 2 4 5 6 7 8 9 11 12 13 16 2
AC 2	CARRIER 48LCD007A2M6-4A2D0	101 & 102	2,620	1.0"	817	BELT	1.32	155	106.0 / 75.0	77.0 / 58.0	55.3 / 48.3	57.64	62.77	13.0 EER 20.5 IEER	27.0	72.0	59.0	82.0%	460-3-60	22.0 MCA 25.0 MOCP	460-3-60	3.5 MCA 6.3 MOCP	1.0	2,620	120-1-60	2.2	YES	UNIT: 1,120 / CURB: 446	ECONO/ PWR EXH: 285 **TOTAL: 1,851**	MERV 13	R-410a	1 / MD-1.1/	5 / MD-2.1/	1 2 4 5 6 7 8 10 12 13 14 15 17 2
AC 3	CARRIER 48GCGM04A2M6-3A2D0	125, 126, 127, 135, 136, 137 & 138	945	1.0"	1,824	DIRECT	0.44	140	106.0 / 75.0	79.0 / 63.0	56.8 / 53.0	21.40	26.15	12.5 EER 16.00 SEER	27.0	60.0	49.0	81.0%	460-3-60	12.0 MCA 15.0 MOCP	460-3-60	1.9 MCA 3.4 MOCP	0.5	945	120-1-60	2.2	NO	UNIT: 568 / CURB: 347	ECONO/ PWR EXH: 178 **TOTAL: 1,093**	MERV 13	R-410a	1 / MD-1.1/	9 / MD-1.1/	1 2 4 5 6 7 8 9 11 12 13 16 2
AC 4	CARRIER 48GCGM05A2M6-3A2D0	123, 124, 128, 129, 130, 131, 132, 133 & 134	1,540	1.0"	2,078	DIRECT	0.97	365	106.0 / 75.0	83.0 / 65.0	58.3 / 55.6	38.22	41.26	12.0 EER 16.00 SEER	27.0	60.0	49.0	81.0%	460-3-60	13.0 MCA 15.0 MOCP	460-3-60	1.9 MCA 3.4 MOCP	0.5	1,540	120-1-60	2.2	NO	UNIT: 610 / CURB: 347	ECONO/ PWR EXH: 178 **TOTAL: 1,135**	MERV 13	R-410a	1 / MD-1.1/	9 / MD-1.1/	1 2 4 5 6 7 8 9 11 12 13 16 2
AC 5	CARRIER 48GCGM04A2M6-3A2D0	103, 104, 116, 117, 118 & 119	900	1.0"	1,802	DIRECT	0.43	325	106.0 / 75.0	87.0 / 66.0	59.5 / 55.4	25.47	28.01	12.5 EER 16.00 SEER	27.0	60.0	49.0	81.0%	460-3-60	12.0 MCA 15.0 MOCP	460-3-60	1.9 MCA 3.4 MOCP	0.5	505	120-1-60	2.2	NO	UNIT: 568 / CURB: 347	ECONO/ PWR EXH: 178 **TOTAL: 1,093**	MERV 13	R-410a	1 / MD-1.1/	9 / MD-1.1/	1 2 4 5 6 7 8 9 12 13 15 17 2
AC 6	CARRIER 48GCGM04A2M6-3A2D0	139, 140, 141, 142, 143, 144, 145 & 146	855	1.0"	1,783	DIRECT	0.41	150	106.0 / 75.0	79.0 / 63.0	56.0 / 52.1	20.06	25.53	12.5 EER 16.00 SEER	27.0	60.0	49.0	81.0%	460-3-60	12.0 MCA 15.0 MOCP	460-3-60	1.9 MCA 3.4 MOCP	0.5	855	120-1-60	2.2	NO	UNIT: 568 / CURB: 347	ECONO/ PWR EXH: 178 **TOTAL: 1,093**	MERV 13	R-410a	1 / MD-1.1/	9 / MD-1.1/	1 2 4 5 6 7 8 9 11 12 13 16 2
AC 7	CARRIER 48GCGM04A2M6-3A2D0	120 &121	965	1.0"	1,834	DIRECT	0.45	360	106.0 / 75.0	85.0 / 64.0	58.4 / 54.0	27.76	28.30	12.5 EER 16.10 SEER	27.0	60.0	49.0	81.0%	460-3-60	12.0 MCA 15.0 MOCP	460-3-60	1.9 MCA 3.4 MOCP	0.5	605	120-1-60	2.2	NO	UNIT: 568 / CURB: 347	ECONO/ PWR EXH: 178 **TOTAL: 1,093**	MERV 13	R-410a	1 / MD-1.1/	9 / MD-1.1/	1 2 4 5 6 7 8 9 12 13 15 17 2
AC 8	CARRIER 48GCGM04A2M6-3A2D0	122 & 147	1,170	1.0"	1,938	DIRECT	0.53	N/A	106.0 / 75.0	75.0 / 62.0	57.9 / 53.5	20.04	27.24	12.5 EER 16.00 SEER	27.0	60.0	49.0	81.0%	460-3-60	12.0 MCA 15.0 MOCP	460-3-60	1.9 MCA 3.4 MOCP	0.5	1,170	120-1-60	2.2	NO	UNIT: 568 / CURB: 347	ECONO/ PWR EXH: 178 **TOTAL: 1,093**	MERV 13	R-410a	1 / MD-1.1/	9 / MD-1.1/	1 2 4 5 6 7 8 9 12 13 15 17 2

1. MICROMETL MODULATING ECONOMIZER AND MODULATING POWER EXHAUST.
2. VERTICAL DISCHARGE.
3. POWER EXHAUST TO RECEIVE SEPARATE POWER.
4. MICROMETL 21" TALL VIBRATION ISOLATION CURB
5. ECONOMIZER QUTSIDE AIR TEMPERATURE SENSOR TO BE LOCATED AWAY FROM DIRECT SUNLIGHT.
6. THRU-THE-BASE CONNECTIONS.
7. ULTRA LOW NOx COMPLIANT UNITS.
8. COMPLETE WITH FACTORY-INSTALLED CONVENIENCE OUTLET.
9. DIRECT DRIVE- ECOBLUE- MEDIUM STATIC MOTOR.
10. 2-SPEED FAN MOTOR.
11. COMPLETE WITH VVT CONTROLLERS.
12. COMPLETE WITH LOUVERED HAIL GUARDS.
13. RTU OPEN CONTROLS.
14. MEDIUM STATIC BELT DRIVE WITH VFD CONTROLLER. 2
15. EMS SPACE SENSOR TO BE TEMPERATURE SENSOR ONLY. SEE EMS DRAWINGS.
16. FOR EMS DETAIL, SEE MECHANICAL DRAWING 2/MD-3.1.
17. FOR EMS DETAIL, SEE MECHANICAL DRAWING 1/MD-3.2. 2

EXHAUST FAN SCHEDULE

TAG	MANUFACTURER & MODEL NO.	AREA SERVED	TYPE	FAN SYSTEM							SONES	OPER. WT. W/ ACCESSORIES (LBS)	ANCHORAGE DETAIL REFERENCE	REMARKS (SEE EQUIPMENT NOTES BELOW)
				CFM	ESP	RPM	HP	WATTS	TIP SPEED	V-PH-HZ				
EF 1	COOK 80 ACEB	MEN RESTROOM 118 CUST. 119	ROOF MOUNTED DOWN BLAST	395	0.400	1,322	.167	-	3,460	120-1-60	3.3	42	6 / MD-1.1/	1 2 3 5 6 2
EF 3	COOK 101C10D	WOMEN RESTROOM 120	ROOF MOUNTED DOWN BLAST	360	0.250	996	0.40	-	2,607	120-1-60	3.7	52	6 / MD-1.1/	1 2 3 5 6
EF 4	COOK GC-168	UNISEX RESTROOM 115	CEILING MOUNTED	135	0.125	940	0.013	46	1,877	120-1-60	2.0	14	3 / MD-1.1/	1 3 4 5 6 7 8 2
EF 5	COOK GC-186	UNISEX RESTROOM 139	CEILING MOUNTED	150	0.125	760	0.013	63	1,518	120-1-60	2.5	15	3 / MD-1.1/	1 3 4 5 6 7 8 2
EF 6	COOK 70C15DH	STORAGE 146	ROOF MOUNTED DOWN BLAST	100	0.250	1,550	0.05	65	2,580	120-1-60	3.1	48	6 / MD-1.1/	1 2 3 5 6 2

1. COMPLETE WITH BACKDRAFT DAMPER.
2. COMPLETE WITH SLOPED-TYPE ROOF CURB.
3. COMPLETE WITH BIRD SCREEN.
4. COMPLETE WITH FAN SPEED CONTROLLER.
5. EXHAUST FAN TO BE CONTROLLED THRU EMS CONTROLS SYSTEM TO RUN DURING OCCUPIED HOURS.
6. COMPLETE WITH CEILING CAP BY FAN MANUFACTURER. SEE RELIEF ROOF VENTILATOR SCHEDULE.
7. COMPLETE WITH WHITE CEILIING GRILLE.
8. FOR EMS DETAIL, SEE MECHANICAL DRAWING 2/MD-3.2. 2

RELIEF ROOF VENTILATOR SCHEDULE

TAG	MANUFACTURER & MODEL NO.	UNIT SERVED	CFM	ESP. (INCHES)	OPER. WT. W/ ACCESSORIES (LBS)	ANCHORAGE DETAIL REFERENCE	REMARKS (SEE EQUIPMENT NOTES BELOW)
RV 1	COOK 8 PR	EF 4	135	0.05"	34	2 / MD-1.1/	1 2
RV 2	COOK 8 PR	EF 5	150	0.05"	34	2 / MD-1.1/	1 2

1. COMPLETE WITH SLOPED-TYPE ROOF CURB.
2. COMPLETE WITH BIRD SCREEN.

BY-PASS DAMPER SCHEDULE

TAG	UNIT SERVED	MAX. CFM	DAMPER DATA			REMARKS (SEE EQUIPMENT NOTES BELOW)
			MAKE	MODEL	INLET SIZE	
BD 1-1	AC 1	1,830	CARRIER	35JN14	14"	1
BD 3-1	AC 3	805	CARRIER	35JN10	10"	1
BD 4-1	AC 4	1,175	CARRIER	35JN10	10"	1
BD 6-1	AC 6	705	CARRIER	35JN10	10"	1 2

1. FOR EMS DETAIL, SEE MECHANICAL DRAWING 2/MD-3.1. 2

ZONE DAMPER SCHEDULE

TAG	AREA SERVED	MIN. CFM	MAX. CFM	DAMPER DATA			REMARKS (SEE EQUIPMENT NOTES BELOW)
				MAKE	MODEL	INLET SIZE	
AC-1							
ZD 1-1	PRINCIPAL 107	95	315	CARRIER	35JN08	8"	2 3 2
ZD 1-2	ASSISTANT PRINCIPAL 110	55	180	CARRIER	35JN06	6"	2 3
ZD 1-3	ASSISTANT PRINCIPAL 108	50	165	CARRIER	35JN06	6"	2 3
ZD 1-4	ASSISTANT PRINCIPAL 109	50	170	CARRIER	35JN06	6"	2 3
ZD 1-5	CONFERENCE ROOM 106	185	610	CARRIER	35JN10	10"	1 3 2
ZD 1-6	HALLWAY 105, PRINCIPAL SECRETARY 111 & SECRETARY 112	170	565	CARRIER	35JN10	10"	2 3 2
ZD 1-7	COPY 113, OFFICE STORAGE 114 & UNISEX RESTROOM 115	60	195	CARRIER	35JN06	6"	2 3
AC-3							
ZD 3-1	ASB OFFICE 125	45	150	CARRIER	35JN06	6"	2 3
ZD 3-2	ITINERANT 126	45	140	CARRIER	35JN06	6"	2 3
ZD 3-3	COUNSELING 127	45	140	CARRIER	35JN06	6"	2 3 2
ZD 3-4	NURSE 137	45	150	CARRIER	35JN06	6"	2 3
ZD 3-5	HEALTH 136 & SECURE STORAGE/EXAM 138	70	235	CARRIER	35JN06	6"	2 3
ZD 3-6	COUNSELING 135	45	140	CARRIER	35JN06	6"	2 3
AC-4							
ZD 4-1	DEAN OFFICE 128	50	170	CARRIER	35JN06	6"	2 3
ZD 4-2	COUNSELING 129	40	135	CARRIER	35JN06	6"	2 3
ZD 4-3	COUNSELING 134	40	135	CARRIER	35JN06	6"	2 3
ZD 4-4	COUNSELING 132	40	135	CARRIER	35JN06	6"	2 3
ZD 4-5	PSYCHOLOGIST 133	65	210	CARRIER	35JN06	6"	2 3 2
ZD 4-6	WAITING AREA 124 & HALLWAY 123	99	325	CARRIER	35JN08	8"	2 3
ZD 4-7	CONFERENCE ROOM 131	90	300	CARRIER	35JN08	8"	1 3
ZD 4-8	CONFERENCE ROOM 130	90	300	CARRIER	35JN08	8"	1 3 2
AC -6							
ZD 6-1	HOLDING 2 145 & RESOURCE OFFICER 143	75	245	CARRIER	35JN08	8"	2 3
ZD 6-2	ATLAS 140 & CHANGING ROOM/SHOWER 141	60	195	CARRIER	35JN06	6"	2 3
ZD 6-3	SECURITY 142	60	200	CARRIER	35JN06	6"	2 3 2
ZD 6-4	HOLDING 1 144 & UNISEX RESTROOM 139	65	215	CARRIER	35JN06	6"	2 3

1. EMS SPACE SENSOR TO BE COMBINATION TEMPERATURE/CO2 SENSOR. SEE EMS DRAWINGS.
2. EMS SPACE SENSOR TO BE TEMPERATURE SENSOR ONLY. SEE EMS DRAWINGS 2
3. FOR EMS DETAIL, SEE MECHANICAL DRAWING 2/MD-3.1.

STAMPS

REGISTERED PROFESSIONAL ENGINEER — No. 33209 — EXP. 9-30-2021 — MECHANICAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — ROGER CLARKE — No. C-21349 — Exp. 10-31-21 — STATE OF CALIFORNIA

AGENCY APPROVAL
File No: 4-4

CONSULTANT BRANDING

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RUHNAU CLARKE ARCHITECTS

PACIFIC HIGH SCHOOL NEW ADMINISTRATION: DSA SUBMITTAL

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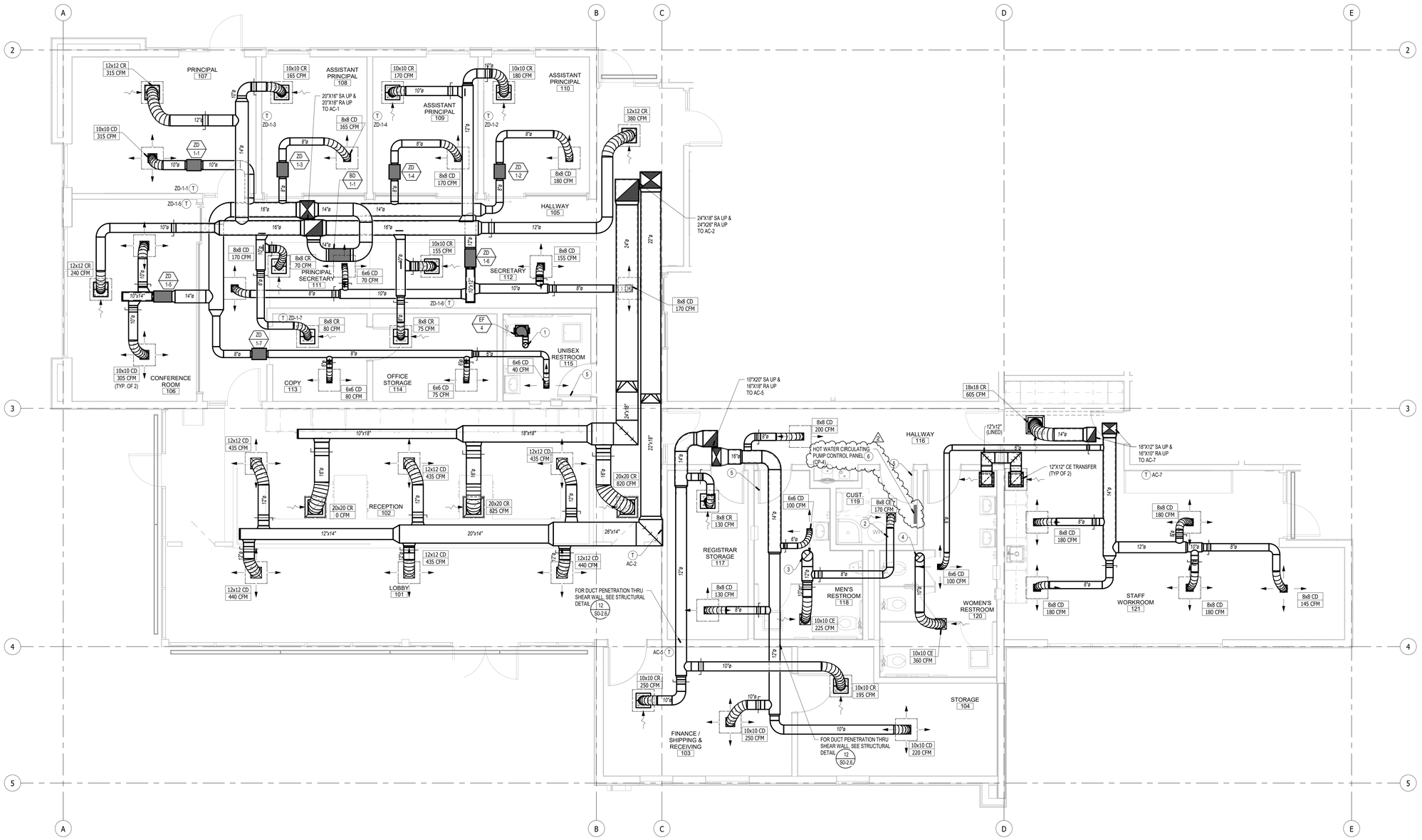

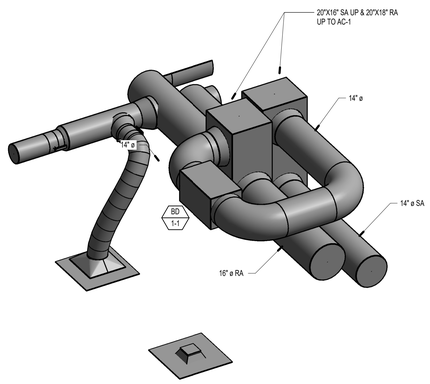

2 BD-1-1 (AC-1)

MECHANICAL ENLARGED FLOOR PLAN - WEST | 1/4" = 1'-0" | 1

REGISTERED PROFESSIONAL ENGINEER No. 33209 EXP. 9-30-2021 MECHANICAL STATE OF CALIFORNIA

LICENSED ARCHITECT ROGER CLARKE No. C-21340 Exp. 10-31-21 STATE OF CALIFORNIA

STAMPS

AGENCY APPROVAL
File No: 4-4

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DESIGN WEST ENGINEERING
MECHANICAL - ELECTRICAL - ENERGY CONSULTANTS

CONSULTANT BRANDING

RUHNAU CLARKE ARCHITECTS

GENERAL NOTES

1. FOR LINE TYPES, SYMBOLS & ABBREVIATIONS SEE LEGEND ON SHEET M-0.1.
2. FOR EQUIPMENT REFERENCES, SEE EQUIPMENT SCHEDULES ON SHEET M-0.2.
3. FOR WIRING DIAGRAMS, SEE SHEET MD-2.1.
4. FOR EMS DIAGRAMS, SEE SHEETS MD-3.1 AND MD-3.2.
5. FOR CEILING MOUNTED EXHAUST FAN MOUNTING, SEE MECHANICAL DETAIL #3 ON SHEET MD-1.1.
6. FOR AIR DISTRIBUTION - FLEX, SEE MECHANICAL DETAIL #4 ON SHEET MD-1.1.
7. FOR AIR DISTRIBUTION - RIGID, SEE MECHANICAL DETAIL #5 ON SHEET MD-1.1.
8. FOR DUCT SUPPORT - ROUND, SEE MECHANICAL DETAIL #7 ON SHEET MD-1.1.
9. CONTRACTOR TO LINE 10'-0" OF SUPPLY AND RETURN DUCT MAINS.
10. WHERE MORE THAN ONE HEATING, COOLING, VENTILATING, OR REFRIGERATING SYSTEM IS INSTALLED ON THE ROOF OF A BUILDING OR WITHIN A BUILDING, IT SHALL BE PERMANENTLY IDENTIFIED AS TO THE AREA OR SPACE SERVED BY THE EQUIPMENT (CMC 303.6).

CONSTRUCTION NOTES

1. 6" ø EXHAUST DUCT UP THRU ROOF FOR CONNECTION TO RV-2.
2. EXHAUST DUCT EXPOSED IN ROOM.
3. 12" ø EXHAUST DUCT UP THRU ROOF FOR CONNECTION TO EF-1.
4. 10" ø EXHAUST DUCT UP THRU ROOF FOR CONNECTION TO EF-3.
5. 12"X12" DOOR LOUVER, SEE ARCHITECTURAL DRAWINGS.
6. SEE MECHANICAL DETAIL #9 ON SHEET MD-2.1 FOR WIRING DIAGRAM AND MD-3.2 FOR EMS.

PACIFIC HIGH SCHOOL NEW ADMINISTRATION: DSA SUBMITTAL

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ISSUE No.:_____	DATE:_____	DESCRIPTION:_____	REVISION No. 2	DATE:04-23-2021	DESCRIPTION:ADDENDUM 2
ISSUE No.:_____	DATE:_____	DESCRIPTION:_____	REVISION No.:_____	DATE:_____	DESCRIPTION:_____
ISSUE No.:_____	DATE:_____	DESCRIPTION:_____	REVISION No.:_____	DATE:_____	DESCRIPTION:_____

RUHNAUCLARKE.COM
3775 TENTH STREET, RIVERSIDE CALIFORNIA 92501(951) 684 4664 / 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 92010(760) 438 5899

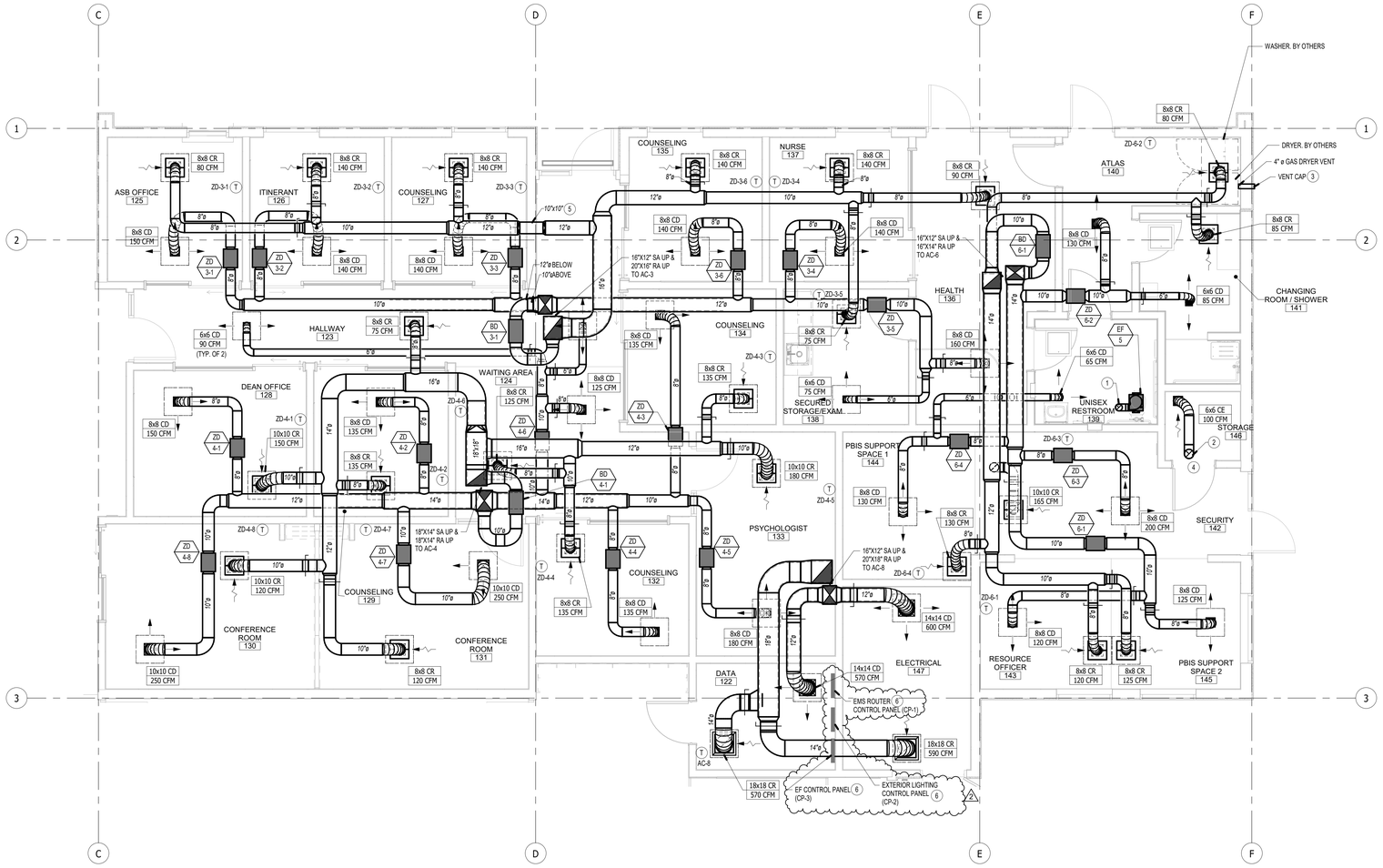
PACIFIC HIGH SCHOOL NEW ADMINISTRATION
PACIFIC HIGH SCHOOL
1020 PACIFIC STREET SAN BERNARDINO, CA 92404
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

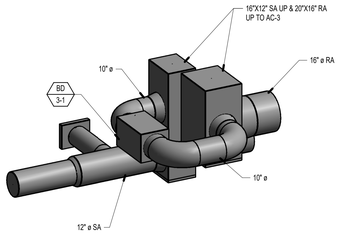
MECHANICAL ENLARGED PLANS

M-1.2

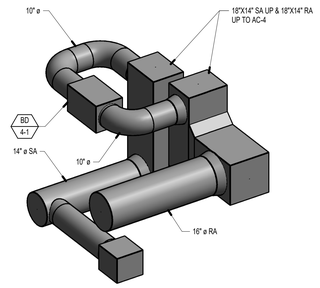
1-78-28

20-178

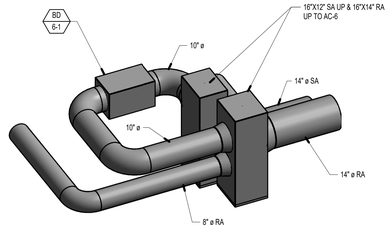




2 BD-3-1 (AC-3)



3 BD-4-1 (AC-4)



4 BD-6-1 (AC-6)

MECHANICAL ENLARGED FLOOR PLAN - EAST | 1/4" = 1'-0" | 1

REGISTERED PROFESSIONAL ENGINEER BENJAMIN M. CLARKE No. M33209 EXP. 9-30-2021 MECHANICAL STATE OF CALIFORNIA

LICENSED ARCHITECT BENJAMIN MEYER CLARKE No. C-21340 Exp. 10-31-21 STATE OF CALIFORNIA

STAMPS

AGENCY APPROVAL
File No: 4-9

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DESIGN WEST ENGINEERING
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CONSULTANT BRANDING

RUHNAU CLARKE ARCHITECTS

GENERAL NOTES

1. FOR LINE TYPES, SYMBOLS & ABBREVIATIONS SEE LEGEND ON SHEET M-0.1.
2. FOR EQUIPMENT REFERENCES, SEE EQUIPMENT SCHEDULES ON SHEET M-0.2.
3. FOR WIRING DIAGRAMS, SEE SHEET MD-2.1.
4. FOR EMS DIAGRAMS, SEE SHEETS MD-3.1 AND MD-3.2.
5. FOR CEILING MOUNTED EXHAUST FAN MOUNTING, SEE MECHANICAL DETAIL #3 ON SHEET MD-1.1.
6. FOR AIR DISTRIBUTION - FLEX, SEE MECHANICAL DETAIL #4 ON SHEET MD-1.1.
7. FOR AIR DISTRIBUTION - RIGID, SEE MECHANICAL DETAIL #5 ON SHEET MD-1.1.
8. FOR DUCT SUPPORT - ROUND, SEE MECHANICAL DETAIL #7 ON SHEET MD-1.1.
9. CONTRACTOR TO LINE 10'-0" OF SUPPLY AND RETURN DUCT MAIN.
10. WHERE MORE THAN ONE HEATING, COOLING, VENTILATING, OR REFRIGERATING SYSTEM IS INSTALLED ON THE ROOF OF A BUILDING OR WITHIN A BUILDING, IT SHALL BE PERMANENTLY IDENTIFIED AS TO THE AREA OR SPACE SERVED BY THE EQUIPMENT (CMC 303.6).

CONSTRUCTION NOTES

1. 6" ø EXHAUST DUCT UP THRU ROOF FOR CONNECTION TO RV-2.
2. 6" ø EXHAUST DUCT UP THRU ROOF FOR CONNECTION TO EF-6.
3. VENT CAP APPROVED FOR DRYER GAS VENTS.
4. UNDERCUT DOOR.
5. 10"X10" RA DUCTWORK CROSSING SHEAR WALL. SEE STRUCTURAL DETAIL #12 ON SHEET S0-2.6.
6. SEE MECHANICAL DETAIL #9 ON SHEET MD-2.1 FOR WIRING DIAGRAM AND MD-3.2 FOR EMS.

PACIFIC HIGH SCHOOL NEW ADMINISTRATION: DSA SUBMITTAL

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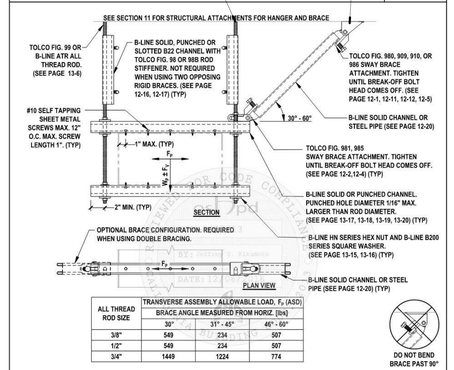
ISSUE No.:_____ DATE:_____ DESCRIPTION:_____
ISSUE No.:_____ DATE:_____ DESCRIPTION:_____
ISSUE No.:_____ DATE:_____ DESCRIPTION:_____

REVISION No. 1 DATE 04-02-2021 DESCRIPTION ADDENDUM 1
REVISION No. 2 DATE 04-23-2021 DESCRIPTION ADDENDUM 2
REVISION No.:_____ DATE:_____ DESCRIPTION:_____
REVISION No.:_____ DATE:_____ DESCRIPTION:_____

TRANSVERSE RIGID BRACING FOR TRAPEZE SUPPORTED RECTANGULAR DUCT — DETAIL 7



ALL THREAD ROD SIZE	TRANSVERSE ASSEMBLY ALLOWABLE LOAD, F_T (ASD) BRACE ANGLE MEASURED FROM HORIZ. [lbs]		
	30°	31° - 45°	46° - 60°
3/8"	549	234	507
1/2"	549	234	507
3/4"	1449	1224	774

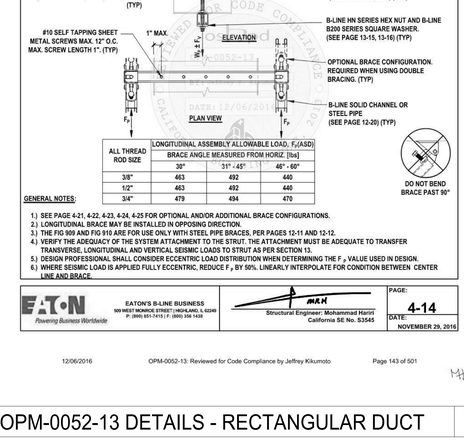
GENERAL NOTES:

1.) SEE PAGE 4-21, 4-22, 4-23, 4-24, 4-25 FOR OPTIONAL AND/OR ADDITIONAL BRACE CONFIGURATIONS.
2.) TRANSVERSE BRACE MAY BE INSTALLED IN OPPOSING DIRECTION.
3.) THE FIG 909 AND FIG 910 ARE FOR USE ONLY WITH STEEL PIPE BRACES, PER PAGES 12-11 AND 12-12.
4.) VERIFY THE ADEQUACY OF THE SYSTEM ATTACHMENT TO THE STRUT. THE ATTACHMENT MUST BE ADEQUATE TO TRANSFER TRANSVERSE, LONGITUDINAL AND VERTICAL SEISMIC LOADS TO STRUT AS PER SECTION 13.

EATON'S B-LINE BUSINESS, 509 WEST MONROE STREET | HIGHLAND, IL 62249, P: (866) 851-7415 | F: (800) 356 1438
Structural Engineer: Mohammad Hariri, California SE No. 53545
PAGE: 4-13 | DATE: NOVEMBER 29, 2016

12/06/2016 OPM-0052-13: Reviewed for Code Compliance by Jeffrey Kikumoto Page 142 of 501

LONGITUDINAL RIGID BRACING FOR TRAPEZE SUPPORTED RECTANGULAR DUCT — DETAIL 8



ALL THREAD ROD SIZE	LONGITUDINAL ASSEMBLY ALLOWABLE LOAD, F_L (ASD) BRACE ANGLE MEASURED FROM HORIZ. [lbs]		
	30°	31° - 45°	46° - 60°
3/8"	463	492	440
1/2"	463	492	440
3/4"	479	494	470

GENERAL NOTES:

1.) SEE PAGE 4-21, 4-22, 4-23, 4-24, 4-25 FOR OPTIONAL AND/OR ADDITIONAL BRACE CONFIGURATIONS.
2.) LONGITUDINAL BRACE MAY BE INSTALLED IN OPPOSING DIRECTION.
3.) THE FIG 909 AND FIG 910 ARE FOR USE ONLY WITH STEEL PIPE BRACES, PER PAGES 12-11 AND 12-12.
4.) VERIFY THE ADEQUACY OF THE SYSTEM ATTACHMENT TO THE STRUT. THE ATTACHMENT MUST BE ADEQUATE TO TRANSFER TRANSVERSE, LONGITUDINAL AND VERTICAL SEISMIC LOADS TO STRUT AS PER SECTION 13.
5.) DESIGN PROFESSIONAL SHALL CONSIDER ECCENTRIC LOAD DISTRIBUTION WHEN DETERMINING THE F_T VALUE USED IN DESIGN.
6.) WHERE SEISMIC LOAD IS APPLIED FULLY ECCENTRIC, REDUCE F_T BY 50%. LINEARLY INTERPOLATE FOR CONDITION BETWEEN CENTER LINE AND BRACE.

EATON'S B-LINE BUSINESS, 509 WEST MONROE STREET | HIGHLAND, IL 62249, P: (866) 851-7415 | F: (800) 356 1438
Structural Engineer: Mohammad Hariri, California SE No. 53545
PAGE: 4-14 | DATE: NOVEMBER 29, 2016

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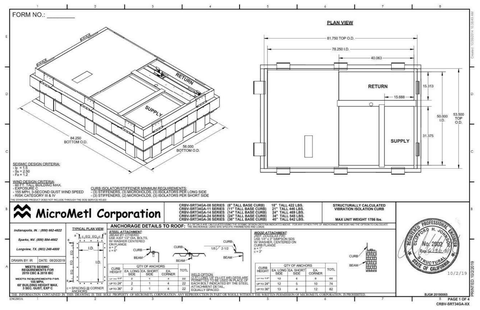
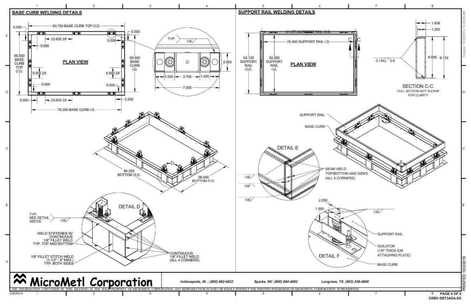
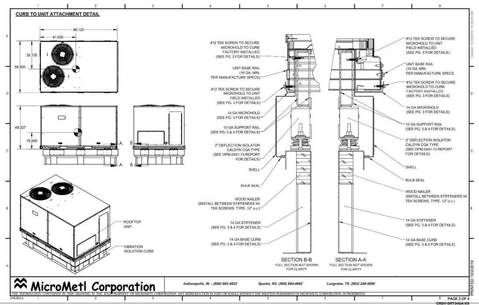
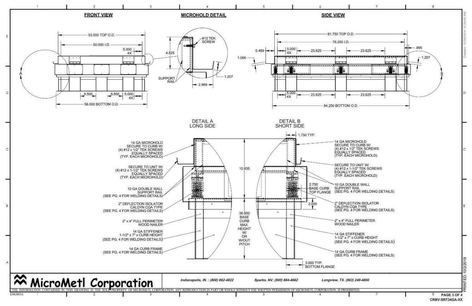
OPM-0052-13 DETAILS - RECTANGULAR DUCT — 7





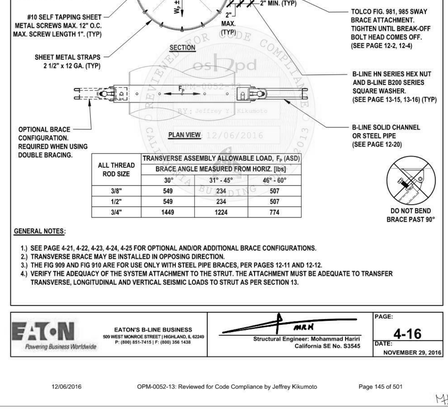




MICROMETL CURB - AC-2 — 5

FOR CONNECTION TO STRUCTURE SEE STRUCTURAL DETAIL 10 S0-2.8 16 S0-2.6
FOR CONNECTION TO STRUCTURE SEE DETAIL 10 MD-1.1

TRANSVERSE RIGID BRACING FOR STRAP SUPPORTED ROUND DUCT — DETAIL 9



ALL THREAD ROD SIZE	TRANSVERSE ASSEMBLY ALLOWABLE LOAD, F_T (ASD) BRACE ANGLE MEASURED FROM HORIZ. [lbs]		
	30°	31° - 45°	46° - 60°
3/8"	549	234	507
1/2"	549	234	507
3/4"	1449	1224	774

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PAGE: 4-16 | DATE: NOVEMBER 29, 2016

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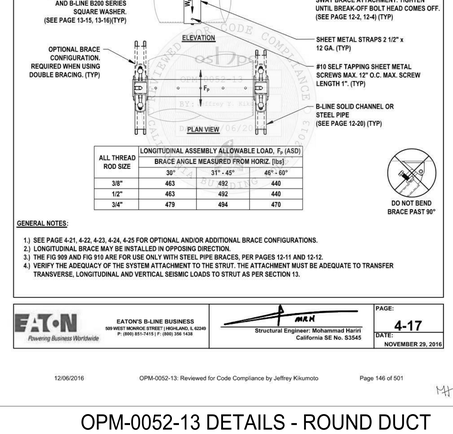
LONGITUDINAL RIGID BRACING FOR STRAP SUPPORTED ROUND DUCT — DETAIL 10



ALL THREAD ROD SIZE	LONGITUDINAL ASSEMBLY ALLOWABLE LOAD, F_L (ASD) BRACE ANGLE MEASURED FROM HORIZ. [lbs]		
	30°	31° - 45°	46° - 60°
3/8"	463	492	440
1/2"	463	492	440
3/4"	479	494	470

GENERAL NOTES:

1.) SEE PAGE 4-21, 4-22, 4-23, 4-24, 4-25 FOR OPTIONAL AND/OR ADDITIONAL BRACE CONFIGURATIONS.
2.) LONGITUDINAL BRACE MAY BE INSTALLED IN OPPOSING DIRECTION.
3.) THE FIG 909 AND FIG 910 ARE FOR USE ONLY WITH STEEL PIPE BRACES, PER PAGES 12-11 AND 12-12.
4.) VERIFY THE ADEQUACY OF THE SYSTEM ATTACHMENT TO THE STRUT. THE ATTACHMENT MUST BE ADEQUATE TO TRANSFER TRANSVERSE, LONGITUDINAL AND VERTICAL SEISMIC LOADS TO STRUT AS PER SECTION 13.

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PAGE: 4-17 | DATE: NOVEMBER 29, 2016

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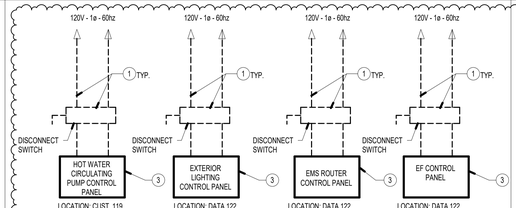
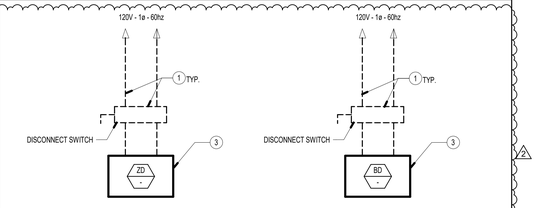
OPM-0052-13 DETAILS - ROUND DUCT — 6



EMS CONTROL PANELS — 9

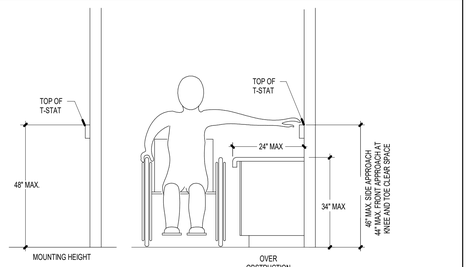


ZONE & BYPASS DAMPER — 8

WIRING NOTES — 1

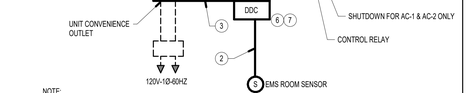
1. ALL WIRING AND EQUIPMENT SHOWN DASHED SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
2. LOW-VOLTAGE WIRING FOR TEMPERATURE CONTROLS SHALL BE FURNISHED AND INSTALLED BY THE CONTROLS CONTRACTOR. IF THERE IS NO SEPARATE CONTROLS CONTRACT, CONDUIT FOR LOW-VOLTAGE WIRING SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AND ALL LOW-VOLTAGE WIRING SHALL BE INSTALLED BY MECHANICAL CONTRACTOR.
3. ALL EQUIPMENT NOT SHOWN DASHED SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
4. CONTROL RELAY CONNECTED TO FIRE ALARM SYSTEM.
5. ENERGY MANAGEMENT DDC CONTROLLERS SHALL BE COMPLETE WITH INTEGRAL 120V/24VAC CONTROL POWER TRANSFORMERS.
6. FIELD INSTALL EMS CONTROLLER. BUILDING EMS CONTROLLERS SHALL BE FURNISHED, INSTALLED, FIELD WIRED, AND TESTED BY SECTION 23 09 23.

THERMOSTAT MOUNTING — 2

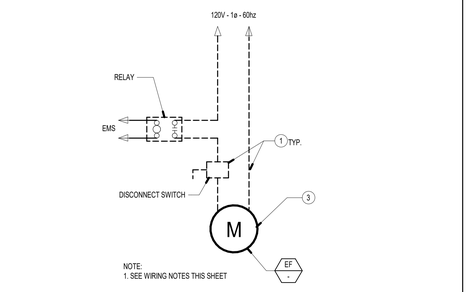


NOTE:
PROVIDE A 30"W x 27"H x 19"D MIN. TOE/KNEE CLEARANCE FOR FRONT APPROACH OVER OBSTRUCTION

AC UNIT WITH NEW CONTROLS — 3



EXHAUST FAN - EMS — 4



RICHARD CLARKE, REGISTERED PROFESSIONAL ENGINEER, No. 33209, EXP. 9-30-2021, MECHANICAL, STATE OF CALIFORNIA
LICENSED ARCHITECT, ROGER CLARKE, No. C-21349, Exp. 10-31-21, STATE OF CALIFORNIA
STAMPS

AGENCY APPROVAL
File No: A-0

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PACIFIC HIGH SCHOOL NEW ADMINISTRATION: DSA SUBMITTAL

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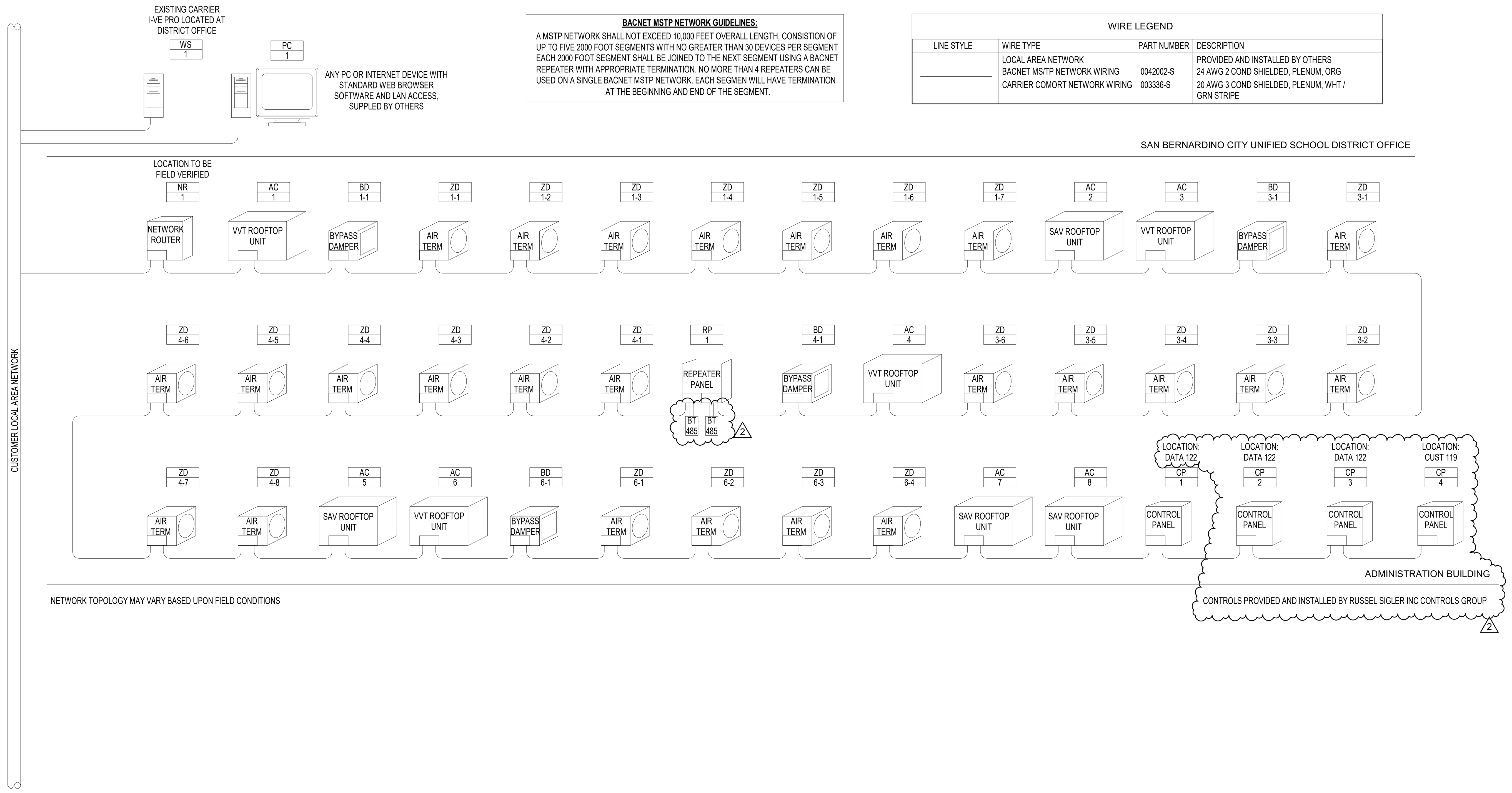
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

MECHANICAL WIRING DIAGRAMS

MD-2.1

1-78-28

20-178



BACNET MSTP NETWORK GUIDELINES:

A MSTP NETWORK SHALL NOT EXCEED 10,000 FEET OVERALL LENGTH, CONSISTION OF UP TO FIVE 2000 FOOT SEGMENTS WITH NO GREATER THAN 30 DEVICES PER SEGMENT EACH 2000 FOOT SEGMENT SHALL BE JOINED TO THE NEXT SEGMENT USING A BACNET REPEATER WITH APPROPRIATE TERMINATION. NO MORE THAN 4 REPEATERS CAN BE USED ON A SINGLE BACNET MSTP NETWORK. EACH SEGMEN WILL HAVE TERMINATION AT THE BEGINNING AND END OF THE SEGMENT.

WIRE LEGEND

LINE STYLE	WIRE TYPE	PART NUMBER	DESCRIPTION
———	LOCAL AREA NETWORK		PROVIDED AND INSTALLED BY OTHERS
———	BACNET MS/TP NETWORK WIRING	0042002-S	24 AWG 2 COND SHIELDED, PLENUM, ORG
– – – –	CARRIER COMORT NETWORK WIRING	003336-S	20 AWG 3 COND SHIELDED, PLENUM, WHT / GRN STRIPE

BACS RISER DIAGRAM 1

SEQUENCES OF OPERATION:

UNOCCUPIED MODE
THE UNIT WILL MAINTAIN AN UNOCCUPIED COOLING SETPONT OF 95°F AND AN UNOCCUPIED HEATING SETPOINT OF 45°F. DURING THE UNOCCUPIED TIME, EACH PRESS OF THE OVERRIDE BUTTON LOCATED ON THE ROOM SPACE SENSOR WILL ADD 30 MINS (ADJ.) OF OCCUPIED TIME FOR UP TO 4 HOURS (ADJ.). AFTER TIME HAS EXPIRED THE UNIT WILL RETURN TO THE UNOCCUPIED MODE.

2

OCCUPIED MODE
THE UNIT WILL MAINTAIN AN OCCUPIED COOLING SETPONT OF 74°F AND AN OCCUPIED HEATING SETPOINT OF 68°F.

INDOOR FAN
DURING OCCUPIED PERIODS, THE FAN SHALL OPERATE CONTINUOUSLY. DURING UNOCCUPIED PERIODS, THE FAN SHALL OPERATE WHEN THE SPACE TEMPERATURE EXCEEDS THE UNOCCUPIED HEATING OR COOLING SETPOINTS. THE FAN OPERATES AT A VARIABLE SPEED TO MEET THE LOAD CONDITIONS AND SAT SAFETY REQUIREMENTS TO PROVIDE MAXIMUM ENERGY SAVINGS BY MINIMIZING FAN HORSEPOWER CONSUMPTION. FAN SPEED IS NOT CONTROLLED TO MAINTAIN DUCT STATIC PRESSURE.

HEATING MODE
WHEN SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT OF 68°F, UNIT SHALL OPERATE IN THE HEATING MODE. UNIT SHALL STAGE AVAILABLE HEAT STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE. EACH STAGE OF HEATING HAS A FIXED 1 MINUTE MINIMUM ON-TIME, AND 1 MINUTE OFF TIME.

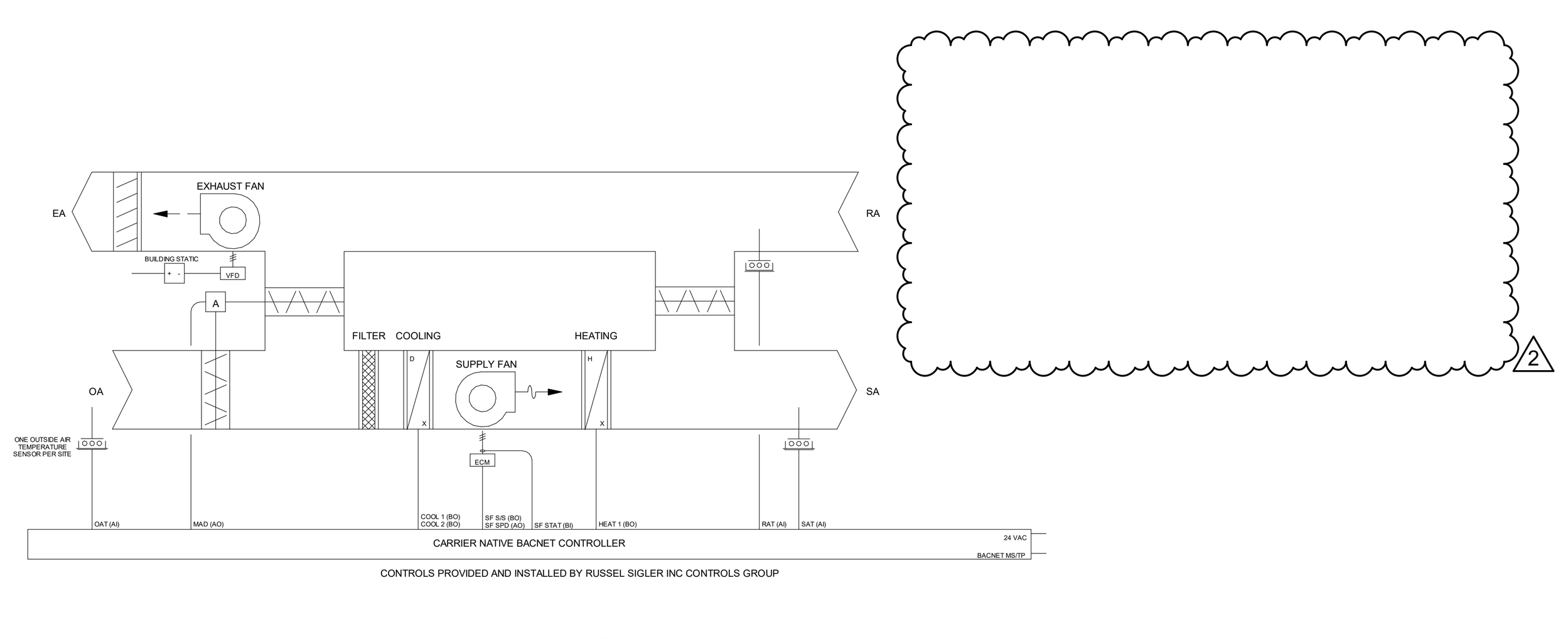
COOLING MODE
WHEN SPACE TEMPERATURE IS ABOVE OCCUPIED COOLING SETPOINT OF 74°F, 2 UNIT SHALL OPERATE IN THE COOLING MODE. UNIT SHALL ENABLE AVAILABLE MECHANICAL COOLING STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE. EACH COMPRESSOR OUTPUT HAS A FIXED 3 MINUTE MINIMUM ON-TIME, AND 5 MINUTE OFF TIME.

ECONOMIZER
ECONOMIZER SHALL CLOSE WHEN FAN IS OFF OR DURING A LOSS OF POWER. DURING OCCUPIED HOURS WHEN FAN IS ENERGIZED IN LOW SPEED THE ECONOMIZER SHALL OPEN TO ITS LOW FAN MINIMUM POSITION OF 33% (ADJ.). WHEN THE FAN IS RUNNING IN HIGH SPEED THE ECONOMIZER SHALL RESET TO ITS HIGH SPEED MINIMUM POSITION OF 20% (ADJ.). DAMPER MINIMUM POSITIONS TO BE DETERMINED BY AIR BALANCER.

WHEN OUTSIDE AIR TEMPERATURE IS BELOW THE HIGH LIMIT OF 75°F (ADJ.), BELOW SPACE TEMPERATURE, AND OCCUPIED SPACE REQUIRES COOLING, ECONOMIZER SHALL OPEN. IF ECONOMIZER AIR IS NOT SUFFICIENT TO MEET THE DEMAND IN THE OCCUPIED SPACE, UNIT SHALL ENABLE AVAILABLE COOLING STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE. IF ENTHALPY STATUS IS HIGH, THE ECONOMIZER IS DISABLED AND THE OUTSIDE AIR DAMPER GOES TO ITS MINIMUM POSITION. AN ENTHALPY STATUS THAT IS LOW ENABLES THE ECONOMIZER IF THERE IS A CALL FOR COOLING.

THE FOLLOWING FAULT DETECTION AND DIAGNOSTIC (FDD) ALARMS SHALL BE SENT THROUGH THE I-VU SERVER.
- A. AIR TEMPERATURE SENSOR FAILURE
- B. FAILS TO CLOSE
- C. FAILS TO OPEN
- D. STUCK FULLY OPEN
- E. FAILS TO FULLY OPEN

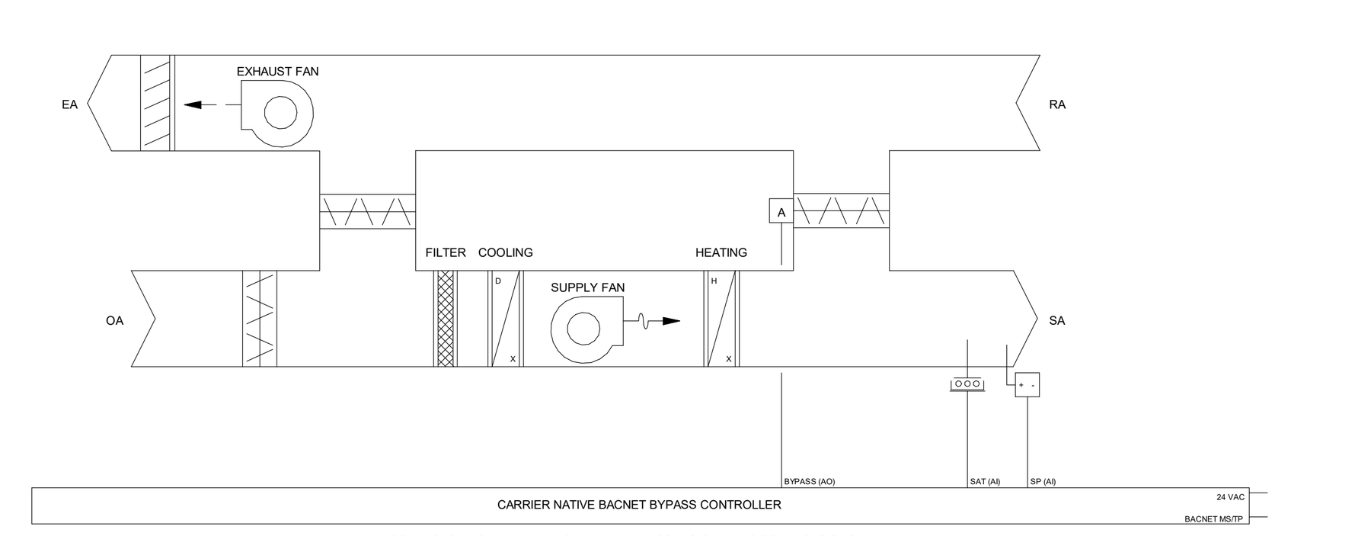
POWER EXHAUST
THE EXHAUST FAN SHALL BE ENABLED ANYTIME THE SUPPLY FAN IS RUNNING. THE POWER EXHAUST VFD WILL MODULATE BASED ON ITS OWN CONTROLS TO MAINTAIN THE ROOM PRESSURE SETPOINT (AS DETERMINED BY AIR BALANCER). PRESSURE SETPOINT AND VFD SPEED NOT CONTROLLED THROUGH EMS.



VVT ROOFTOP UNIT DETAIL (AC-1, AC-3, AC-4 & AC-6)

SEQUENCES OF OPERATION:

VVT BYPASS DAMPER
WHILE THE INDOOR FAN RUNS, THE BYPASS SHALL MODULATE TO MAINTAIN DUCT PRESSURE AT A CONFIGURABLE SETPOINT. IF THE STATIC PRESSURE IS BELOW THE STATIC PRESSURE SETPOINT THE BYPASS DAMPER WILL MODULATE CLOSE TO BUILD DUCT STATIC PRESSURE UNTIL THE STATIC PRESSURE IS AT SETPOINT. IF THE STATIC PRESSURE IS ABOVE THE STATIC PRESSURE SETPOINT THE BYPASS DAMPER WILL MODULATE OPEN TO RELIEVE DUCT STATIC PRESSURE UNTIL THE STATIC PRESSURE IS AT SETPOINT.



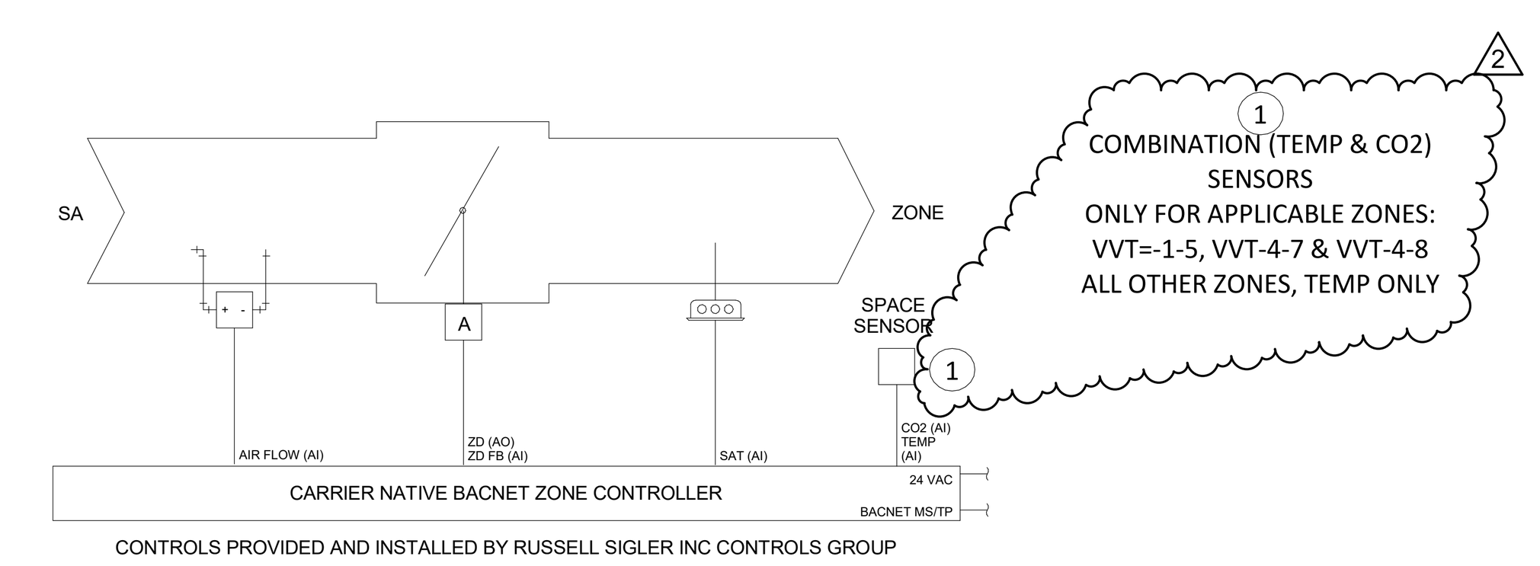
VVT BYPASS DAMPER DETAIL (BD-1, BD-3, BD-4 & BD-6)

SEQUENCES OF OPERATION:

VVT ZONE DAMPER
DURING OCCUPIED PERIODS, THE ZONE CONTROLLER WILL OPEN AND CLOSE TO MAINTAIN SPACE TEMPERATURE WITHIN SETPOINTS. IF THE MODE OF THE UNIT MATCHES THE DEMAND OF THE ZONE, THE DAMPER WILL OPEN PROPORTIONALLY TO SPACE TEMPERATURE. IF THE ZONE IS AT SETPOINT AND THE DUCT TEMPERATURE IS NEUTRAL, THE DAMPER WILL OPEN FOR VENTILATION. OTHERWISE, THE ZONE DAMPER WILL GO TO ITS MINIMUM POSITION.

DEMAND CONTROLLED VENTILATION (ONLY APPLICABLE ZONES) [ZD/1-5, ZD/4-7 & ZD/4-8]
THE ZONE CONTROLLER MONITORS THE CO2 SENSOR AND CAN OVERRIDE THE TEMPERATURE CONTROL TO RESPOND TO INCREASING CO2 LEVELS WHEN THE ZONE IS OCCUPIED. IF THE SENSOR'S VALUE EXCEEDS THE CO2 SETPOINT THE CONTROLLER INCREASES AIRFLOW TO THE ZONE AT A BASE RATE, AND THEN PROPORTIONALLY INCREASES VENTILATION IF THE CO2 LEVEL CONTINUES TO INCREASE. 2

LINKAGE
THE CONTROL SYSTEM USES LINKAGE TO EXCHANGE DATA BETWEEN THE ZONE TERMINALS AND THEIR AIR SOURCE TO FORM A COORDINATED HVAC SYSTEM. THE SYSTEM'S AIR SOURCE CONTROLLER, ZONE CONTROLLERS, AND BYPASS CONTROLLER ARE LINKED SO THAT THEIR DATA EXCHANGE CAN BE MANAGED BY ONE ZONE CONTROLLER CONFIGURED AS THE VVT MASTER. THE VVT MASTER GATHERS THE FOLLOWING INFORMATION FROM THE SLAVE ZONE CONTROLLERS: OCCUPANCY STATUS, SETPOINTS, ZONE TEMPERATURE, RELATIVE HUMIDITY, CO2 LEVEL, DAMPER POSITION, AND OPTIMAL START DATA (ALL IF APPLICABLE).



VVT ZONE DAMPER DETAIL
(ZD/1-1 THRU ZD/1-7, ZD/3-1 THRU ZD/3-6, ZD/4-1 THRU ZD/4-8 & ZD/6-1 THRU ZD/6-4)

VVT RTU-BD-ZD DETAILS 2

STAMPS

AGENCY APPROVAL
File No: A#

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PACIFIC HIGH SCHOOL NEW ADMINISTRATION: DSA SUBMITTAL

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EMS DRAWINGS

MD-3.1

1-78-28
20-178

SEQUENCE OF OPERATION:

UNOCCUPIED MODE
THE UNIT WILL MAINTAIN AN UNOCCUPIED COOLING SETPOINT OF 95°F AND AN UNOCCUPIED HEATING SETPOINT OF 45°F. DURING THE UNOCCUPIED TIME, EACH PRESS OF THE OVERRIDE BUTTON LOCATED ON THE ROOM SPACE SENSOR WILL ADD 30 MINS (ADJ.) OF OCCUPIED TIME FOR UP TO 4 HOURS (ADJ.). AFTER TIME HAS EXPIRED THE UNIT WILL RETURN TO THE UNOCCUPIED MODE.

OCCUPIED MODE
THE UNIT WILL MAINTAIN AN OCCUPIED COOLING SETPOINT OF 74°F AND AN OCCUPIED HEATING SETPOINT OF 68°F.

INDOOR FAN
DURING OCCUPIED PERIODS, THE FAN SHALL OPERATE CONTINUOUSLY. DURING UNOCCUPIED PERIODS, THE FAN SHALL OPERATE WHEN THE SPACE TEMPERATURE EXCEEDS THE UNOCCUPIED HEATING OR COOLING SETPOINTS. THE FAN OPERATES AT A VARIABLE SPEED TO MEET THE LOAD CONDITIONS AND SAT SAFETY REQUIREMENTS TO PROVIDE MAXIMUM ENERGY SAVINGS BY MINIMIZING FAN HORSEPOWER CONSUMPTION. FAN SPEED IS NOT CONTROLLED TO MAINTAIN DUCT STATIC PRESSURE.

HEATING MODE
WHEN SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT OF 68°F, UNIT SHALL OPERATE IN THE HEATING MODE. UNIT SHALL STAGE AVAILABLE HEAT STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE. EACH STAGE OF HEATING HAS A FIXED 1 MINUTE MINIMUM ON-TIME, AND 1 MINUTE OFF TIME.

COOLING MODE
WHEN SPACE TEMPERATURE IS ABOVE OCCUPIED COOLING SETPOINT OF 74°F, UNIT SHALL OPERATE IN THE COOLING MODE. UNIT SHALL ENABLE AVAILABLE MECHANICAL COOLING STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE. EACH COMPRESSOR OUTPUT HAS A FIXED 3 MINUTE MINIMUM ON-TIME, AND 5 MINUTE OFF TIME.

ECONOMIZER
ECONOMIZER SHALL CLOSE WHEN FAN IS OFF OR DURING A LOSS OF POWER. DURING OCCUPIED HOURS WHEN FAN IS ENERGIZED IN LOW SPEED THE ECONOMIZER SHALL OPEN TO ITS LOW FAN MINIMUM POSITION OF 33% (ADJ.). WHEN THE FAN IS RUNNING IN HIGH SPEED THE ECONOMIZER SHALL RESET TO ITS HIGH SPEED MINIMUM POSITION OF 20% (ADJ.). DAMPER MINIMUM POSITIONS TO BE DETERMINED BY AIR BALANCER.

WHEN OUTSIDE AIR TEMPERATURE IS BELOW THE HIGH LIMIT OF 75°F (ADJ.), BELOW SPACE TEMPERATURE, AND OCCUPIED SPACE REQUIRES COOLING, ECONOMIZER SHALL OPEN. IF ECONOMIZER AIR IS NOT SUFFICIENT TO MEET THE DEMAND IN THE OCCUPIED SPACE, UNIT SHALL ENABLE AVAILABLE COOLING STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE. IF ENTHALPY STATUS IS HIGH, THE ECONOMIZER IS DISABLED AND THE OUTSIDE AIR DAMPER GOES TO ITS MINIMUM POSITION. AN ENTHALPY STATUS THAT IS LOW ENABLES THE ECONOMIZER IF THERE IS A CALL FOR COOLING.
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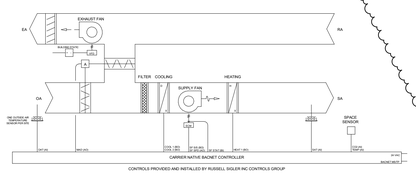
A. AIR TEMPERATURE SENSOR FAILURE
B. FAILS TO CLOSE
C. FAILS TO OPEN
D. STUCK FULLY OPEN
E. FAILS TO FULLY OPEN

POWER EXHAUST
THE EXHAUST FAN SHALL BE ENABLED ANYTIME THE SUPPLY FAN IS RUNNING. THE POWER EXHAUST VFD WILL MODULATE BASED ON ITS OWN CONTROLS TO MAINTAIN THE ROOM PRESSURE SETPOINT (AS DETERMINED BY AIR BALANCER). PRESSURE SETPOINT AND VFD SPEED NOT CONTROLLED THROUGH EMS.



2-COOL/1-HEAT STAGED AIR VOLUME ROOFTOP UNIT (AC-5, AC-7 & AC-8)

SEQUENCE OF OPERATION:

UNOCCUPIED MODE
THE UNIT WILL MAINTAIN AN UNOCCUPIED COOLING SETPOINT OF 95°F AND AN UNOCCUPIED HEATING SETPOINT OF 45°F. DURING THE UNOCCUPIED TIME, EACH PRESS OF THE OVERRIDE BUTTON LOCATED ON THE ROOM SPACE SENSOR WILL ADD 30 MINS (ADJ.) OF OCCUPIED TIME FOR UP TO 4 HOURS (ADJ.). AFTER TIME HAS EXPIRED THE UNIT WILL RETURN TO THE UNOCCUPIED MODE.

OCCUPIED MODE
THE UNIT WILL MAINTAIN AN OCCUPIED COOLING SETPOINT OF 74°F AND AN OCCUPIED HEATING SETPOINT OF 68°F.

INDOOR FAN 2 SPEED
DURING OCCUPIED PERIODS, THE FAN SHALL OPERATE CONTINUOUSLY. DURING UNOCCUPIED PERIODS, THE FAN SHALL OPERATE WHEN THE SPACE TEMPERATURE EXCEEDS THE UNOCCUPIED HEATING OR COOLING SETPOINTS. THE FAN OPERATES AT 1 OF 2 SPEEDS DEPENDING ON THE MODE OF OPERATION AND LOAD CONDITIONS. DURING VENT ONLY MODE AND LOW LOAD CONDITIONS, THE FAN OPERATES AT LOW SPEED. IF LOAD CONDITIONS INCREASE OR IF THERE IS A CALL FOR HEATING, THE FAN OPERATES AT HIGH SPEED. FAN SPEED IS NOT CONTROLLED TO MAINTAIN DUCT STATIC PRESSURE.

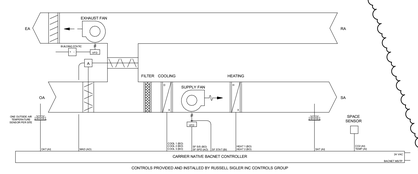
HEATING MODE
WHEN SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT OF 68°F, UNIT SHALL OPERATE IN THE HEATING MODE. UNIT SHALL STAGE AVAILABLE HEAT STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE. EACH STAGE OF HEATING HAS A FIXED 1 MINUTE MINIMUM ON-TIME, AND 1 MINUTE OFF TIME.

COOLING MODE
WHEN SPACE TEMPERATURE IS ABOVE OCCUPIED COOLING SETPOINT OF 74°F, UNIT SHALL OPERATE IN THE COOLING MODE. UNIT SHALL ENABLE AVAILABLE MECHANICAL COOLING STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE. EACH COMPRESSOR OUTPUT HAS A FIXED 3 MINUTE MINIMUM ON-TIME, AND 5 MINUTE OFF TIME.

ECONOMIZER
ECONOMIZER SHALL CLOSE WHEN FAN IS OFF OR DURING A LOSS OF POWER. DURING OCCUPIED HOURS WHEN FAN IS ENERGIZED IN LOW SPEED THE ECONOMIZER SHALL OPEN TO ITS LOW FAN MINIMUM POSITION OF 33% (ADJ.). WHEN THE FAN IS RUNNING IN HIGH SPEED THE ECONOMIZER SHALL RESET TO ITS HIGH SPEED MINIMUM POSITION OF 20% (ADJ.). DAMPER MINIMUM POSITIONS TO BE DETERMINED BY AIR BALANCER.

WHEN OUTSIDE AIR TEMPERATURE IS BELOW THE HIGH LIMIT OF 75°F (ADJ.), BELOW SPACE TEMPERATURE, AND OCCUPIED SPACE REQUIRES COOLING, ECONOMIZER SHALL OPEN. IF ECONOMIZER AIR IS NOT SUFFICIENT TO MEET THE DEMAND IN THE OCCUPIED SPACE, UNIT SHALL ENABLE AVAILABLE COOLING STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE. IF ENTHALPY STATUS IS HIGH, THE ECONOMIZER IS DISABLED AND THE OUTSIDE AIR DAMPER GOES TO ITS MINIMUM POSITION. AN ENTHALPY STATUS THAT IS LOW ENABLES THE ECONOMIZER IF THERE IS A CALL FOR COOLING.
THE FOLLOWING FAULT DETECTION AND DIAGNOSTIC (FDD) ALARMS SHALL BE SENT THROUGH THE I-VU SERVER.
A. AIR TEMPERATURE SENSOR FAILURE
B. FAILS TO CLOSE
C. FAILS TO OPEN
D. STUCK FULLY OPEN
E. FAILS TO FULLY OPEN

POWER EXHAUST
THE EXHAUST FAN SHALL BE ENABLED ANYTIME THE SUPPLY FAN IS RUNNING. THE POWER EXHAUST VFD WILL MODULATE BASED ON ITS OWN CONTROLS TO MAINTAIN THE ROOM PRESSURE SETPOINT (AS DETERMINED BY AIR BALANCER). PRESSURE SETPOINT AND VFD SPEED NOT CONTROLLED THROUGH EMS.



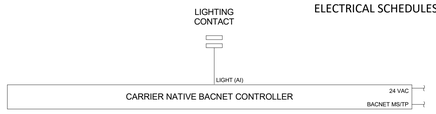
3-COOL/2-HEAT STAGED AIR VOLUME ROOFTOP UNIT (AC-2)

SAV RTU DETAILS | 1

TABLE 1: CONTROL RELAY SCHEDULE

CONTROL RELAY LOCATION	ELECTRICAL PANEL - CIRCUITS	LIGHTING FUNCTION
BUILDING A - ADMINISTRATION	HAL-2	BUILDING MOUNTED EXTERIOR LIGHTING
	HAL-4	BUILDING MOUNTED EXTERIOR LIGHTING
	HAL-6	SITE WALKWAY LIGHTING

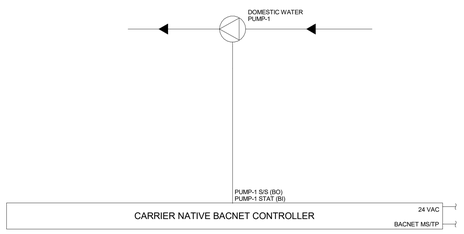
VERIFY NUMBER OF NECESSARY LIGHTING CONTACTS FROM ELECTRICAL SCHEDULES



CONTROLS PROVIDED AND INSTALLED BY CARRIER CONTROLS EXPERT DEALER
CONTROL PANEL SHALL CONFORM TO UL 508A STANDARDS

SEQUENCE OF OPERATION:

PUMP-1
DOMESTIC WATER PUMP WILL RUN AS THEY ARE SCHEDULED BY THE BACS. THE STATUS OF THE PUMP WILL BE MONITORED. IF THE STATUS SHOWS INCORRECT OPERATION, THEN AN ALARM WILL BE GENERATED TO THE I-VU WEB SERVER.

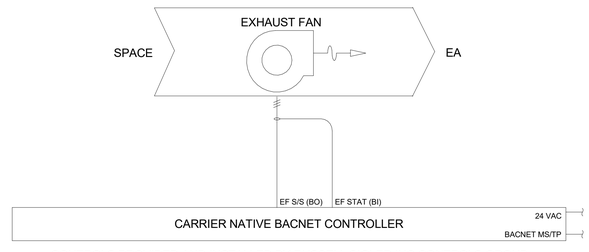


CONTROLS PROVIDED AND INSTALLED BY CARRIER CONTROLS EXPERT DEALER
CONTROL PANEL SHALL CONFORM TO UL 508A STANDARDS

NOTES:
- FOR CIRCULATING PUMP SCHEDULE SEE PLUMBING DRAWING P-0.2.
- FOR CIRCULATING PUMP LOCATION, SEE PLUMBING DRAWING! P-7.1.
- FOR CIRCULATING PUMP DETAIL, SEE PLUMBING DRAWING 1!PD-1.2.

SEQUENCE OF OPERATION:

EXHAUST FANS
EXHAUST FAN SHALL RUN BASED ON AN OCCUPIED TIME SCHEDULE (CONFIGURABLE)
EXHAUST FAN STATUS WILL BE MONITORED THROUGH A CURRENT SENSING SWITCH. IF THE CURRENT SWITCH DOES NOT DETECT FAN STATUS AFTER A START COMMAND HAS BEEN SENT TO THE ASSOCIATED EXHAUST FAN, AN ALARM WILL BEGENERATED TO THE I-VU WEB SERVER.



CONTROLS PROVIDED AND INSTALLED BY RUSSELL SIGLER INC CONTROLS GROUP
CONTROL PANEL SHALL CONFORM TO UL 508A STANDARDS

EXHAUST FAN, CIRCULATING PUMP & EXTERIOR LIGHTING CP DETAIL | 2

REGISTERED PROFESSIONAL ENGINEER
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EXP. 9-30-2021
MECHANICAL
STATE OF CALIFORNIA

LICENSED ARCHITECT
ROGER CLARKE
No. C-21349
Exp. 10-31-21
STATE OF CALIFORNIA

STAMPS

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RUHNAU CLARKE ARCHITECTS

PACIFIC HIGH SCHOOL NEW ADMINISTRATION: DSA SUBMITTAL

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SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

EMS DRAWINGS CONT. | MD-3.2

1-78-28

20-178

ELECTRIC WATER HEATER SCHEDULE

TAG	MANUF. & MODEL NO.	LOCATION	GAL	RECOVERY	ELECTRICAL					OPERATING WEIGHT (LBS)	ANCHORAGE DETAIL REFERENCE	REMARKS
					FLA	WATTS	VOLTAGE	PHASE	HZ			
WH 1	AO SMITH DSE-30A	CUST. 119	30	41 GPH @ 60° TEMP RISE	28.8	6,000	208	1	60	468	1 PD-1.2	1

NOTES: 1 WEIGHT INCLUDES EQUIPMENT AND WATER CAPACITY.

EXPANSION TANK SCHEDULE

TAG	SYSTEM	MANUFACTURER & MODEL NO.	LOCATION	CAPACITY (GAL)	MAX PRESS. (PSI)	MAX TEMP (°F)	OPERATING WEIGHT (LBS)	ANCHORAGE DETAIL REFERENCE	REMARKS
ET 1	WH 1	AMTROL ST-5C	CUST. 119	2.1	250	200	25	1 PD-1.2	1

NOTES: 1 WEIGHT INCLUDES EQUIPMENT AND WATER CAPACITY.

CIRCULATING PUMP SCHEDULE

TAG	SYSTEM	MANUFACTURER & MODEL NO.	LOCATION	CAPACITY	CONSTRUCTION	MOTOR (HP)	ELECTRICAL		WEIGHT (LBS)	DETAIL	REMARKS
							AMPS	V-P-HZ			
CP 1	WH 1	TACO 008	CUST. 119	5 GPM @ 10' TDH	ALL BRONZE	1/25	0.84	120V-1ø-60Hz	8	1 PD-1.2	1 2

NOTES: 1 FOR EMS DETAIL, SEE MECHANICAL DRAWING 2/MD-3.1 2

PLUMBING FIXTURE SCHEDULE

TAG	SPECIFICATION	CONNECTION SIZE:					
		WASTE	TRAP	VENT	CW RISER	HW RISER	ELEC.
WC 1	WATERCLOSET: (ADA) AMERICAN STANDARD "MADERA" 3043.001, 16-1/2" HIGH RIM, (1.28 GPF), FLOOR MOUNTED, ELONGATED BOWL, SIPHON JET, 1-1/2" TOP SP.ID, WHITE VITREOUS CHINA. SLOAN WES 111-1 6/1.1, (1 6/1.1 GPF), MANUAL REDUCE AND DUAL FLUSH, POLISHED CHROME FINISH, INCLUDES ANGLE STOP WITH BACK-FLOW PROTECTION. BEMIS PLASTIC SEAT MODEL 2L2155T, ELONGATED, OPEN FRONT, STAIN & CHEMICAL RESISTANT.	3"	INT.	2"	1"	-	-
WC 2	WATERCLOSET: (STANDARD) AMERICAN STANDARD "MADERA" 3451.001, 15" HIGH RIM, (1.28 GPF), FLOOR MOUNTED, ELONGATED BOWL, SIPHON JET, 1-1/2" TOP SP.ID, WHITE VITREOUS CHINA. SLOAN WES 111-1 6/1.1, (1 6/1.1 GPF), MANUAL REDUCE AND DUAL FLUSH, POLISHED CHROME FINISH, INCLUDES ANGLE STOP WITH BACK-FLOW PROTECTION. BEMIS PLASTIC SEAT MODEL 2L2155T, ELONGATED, OPEN FRONT, STAIN & CHEMICAL RESISTANT.	3"	INT.	2"	1"	-	-
U 1	URINAL: (ADA) AMERICAN STANDARD "WASHBROOK" 6590.001, 17" HIGH RIM, VITREOUS CHINA, WALL HUNG, WALL BRACKET WITH ANCHORS INCLUDED, 3/4" TOP SP.ID. SLOAN ROYAL 186-0.125-DBP, (0.125 GPF). MANUAL SINGLE FLUSH, POLISHED CHROME FINISH, DUAL-FILTERED BYPASS.	2"	INT.	1-1/2"	1"	-	-
L 1	LAVATORY: AMERICAN STANDARD "LUCERNE" 0355.012, WALL MOUNTED, WHITE VITREOUS CHINA, 4" CENTERS, FRONT OVERFLOW, SELF-DRAINING DECK, CONCEALED ARM SUPPORT. CHICAGO FAUCETS MODEL 802-V666ABCP, DECK MOUNTED MANUAL FAUCET, 4" CENTERS, ECONO-FLO NON-AERATING 0.5 GPM. PROVIDE ASSE 1070 APPROVED TMV SET TO 115°, ON ADA COMPLIANT PROVIDE TRUEBRO LAV GUARD PER ADA CODE 4.19.4. 1/4 TURN 1/2" LOOSE KEY ANGLE STOPS W/ 1/2" O.D. BRASS FLEXIBLE SUPPLIES AND BRASS WALL SCUTCHEONS.	2"	1-1/2"	1-1/2"	1/2"	1/2"	-
S 1	SINK: (KITCHEN) ELKAY LUSTERTONE MODEL LRAD191865PD, STAINLESS STEEL, DROP-IN MOUNT, 6-1/2" DEPTH, SINGLE COMPARTMENT, SINGLE HOLE, PERFECT DRAIN AT REAR CENTER. CHICAGO FAUCET MODEL 50-TE35ABCP WITH 1.5 GPM PRESSURE COMPENDATING AERATOR, SINGLE HOLE, 5-1/4" RIGID SWING NECK. PROVIDE ASSE 1070 APPROVED TMV SET TO 115°, ON ADA COMPLIANT PROVIDE TRUEBRO LAV GUARD PER ADA CODE 4.19.4. 1/4 TURN 1/2" LOOSE KEY ANGLE STOPS W/ 1/2" O.D. BRASS FLEXIBLE SUPPLIES AND BRASS WALL SCUTCHEONS.	2"	1-1/2"	1-1/2"	1/2"	1/2"	-
S 2	SINK: (HEALTH) ELKAY LUSTERTONE MODEL LRAD191865PD, STAINLESS STEEL, DROP-IN MOUNT, 6-1/2" DEPTH, SINGLE COMPARTMENT, SINGLE HOLE, PERFECT DRAIN AT REAR CENTER. CHICAGO FAUCET MODEL 50-E280S-SABCP WITH 0.5 GPM AERATOR, SINGLE HOLE, 5-1/4" RIGID SWING NECK. PROVIDE ASSE 1070 APPROVED TMV SET TO 120°, ON ADA COMPLIANT PROVIDE TRUEBRO LAV GUARD PER ADA CODE 4.19.4. 1/4 TURN 1/2" LOOSE KEY ANGLE STOPS W/ 1/2" O.D. BRASS FLEXIBLE SUPPLIES AND BRASS WALL SCUTCHEONS.	2"	1-1/2"	1-1/2"	1/2"	1/2"	-
DF 1	DRINKING FOUNTAIN: ELKAY "EZH20" LZWS-EDFP217K, BOTTLE FILLING W/INTEGRAL SOFT SIDES FOUNTAIN. FILTERED, NON-REFRIGERATED, LAMINAR FLOW, ANTIMICROBIAL, FLEXI-GUARD SAFETY BUBBLER. WALL MOUNTED WITH INWALL FRAME/PLATE. INSTALL WITH WATERSENTRY PLUS FILTER SYSTEM. CONTRACTOR TO PROVIDE FILTER.	2"	-	1-1/2"	1/2"	-	120V-1ø-60HZ 4.2 FLA 370 W
FD 1	FLOOR DRAIN: JAY R SMITH MODEL 2010 FLOOR DRAIN , CAST IRON BODY W/ FLASHING COLLAR AND ADJUSTABLE STRAINER HEAD. PROVIDE WITH TRAP PRIMER CONNECTION FOR TP-1.	2"	2"	1-1/2"	1/2" TP	-	-
TP 1	TRAP PRIMER: (PRESSURE) MIFAB M-500 PRESSURE ACTIVATED TRAP PRIMER, 1/2" INLET AND 1/2" OUTLET WITH OPTIONAL DISTRIBUTION UNIT, MAY BE LOCATED AS INDICATED ON DRAWINGS OR AS REQUIRED BY CODE. UPC LISTED. PROVIDED WITH 12" X 12" ACCESS PANEL OR LARGER DEPENDING ON THE REQUIRED ACCESS TO THE EQUIPMENT AND SHUT-OFF VALVE.	-	-	-	1/2"	-	-
WHA 1	WATER HAMMER ARRESTOR: MIFAB MWH-A INSTALLED ON ALL QUICK CLOSING VALVES AND ALL VALVES WHICH CLOSE WITH THE FLOW OF FLUID, OR ON HEADERS SERVING MORE THAN ONE FIXTURE, PROVIDED WITH 12" X 12" ACCESS PANEL.	-	-	-	-	-	-
RD 1	ROOF DRAIN: JAY R SMITH MODEL 1310 COATED CAST IRON ROOF DRAIN WITH COMBINED FLASHING CLAMP AND GRAVEL STOPS WITH POLYETHYLENE DOME, BOTTOM OUTLET. SEE PLANS FOR SIZE.	-	-	-	-	-	-
OD 1	OVERFLOW DRAIN: JAY R SMITH MODEL 1310-E COATED CAST IRON ROOF DRAIN WITH COMBINED FLASHING CLAMP AND GRAVEL STOPS WITH POLYETHYLENE DOME, 4" HIGH SOLID OVERFLOW CLAMP COLLAR, BOTTOM OUTLET. SEE PLANS FOR SIZE.	-	-	-	-	-	-
HB 1	HOSE BIBB: (RECESSED WALL) WOODFORD B24 RECESSED NARROW WALL HYDRANT BOX W/ LOCKING DOOR. CHROME FINISH WITH VACUUM BREAKER, METAL WHEEL HANDLE AND LOOSE TEE KEY OPERATED CONTROL VALVE.	-	-	-	3/4"	-	-
HB 2	HOSE BIBB: (ROOF) WOODFORD RHMC-MS WITH MOUNTING, HOSE CONNECTION BACKFLOW PREVENTER, WHEEL HANDLE, 1" NPT MALE INLET CONNECTION, 1" GALVANIZED PIPE. MAX. WORKING PRESSURE: 125 PSI. MAX.	-	-	-	1"	-	-
JS 1	JANITOR SINK: AMERICAN STANDARD "FLORWELL" MODEL 7741.00, ENAMELED CAST IRON, CORNER MOP SINK. CHICAGO FAUCETS 897-RCF WALL MOUNTED 8" BODY, SERVICE SINK FAUCET W/ VACUUM BREAKER, HOSE THREADED OUTLET, PAIL HOOK, INTEGRAL STOPS AND WALL BRACE.	3"	3"	1-1/2"	1/2"	1/2"	-
SH 1	SHOWER: CHICAGO FAUCETS MODEL SH-PB1-13-031 WALL MOUNTED PRESSURE BALANCING SHOWER VALVE WITH SHOWER HEAD. 1.5 GPM @ 80 PSI SHOWER HEAD AND HAND SPRAY, WITH SHOWER HEAD ARM AND WALL FLANGE. PROVIDE ASSE 1070 APPROVED TMV SET TO 115°. COMPLETE WITH FD-1.	-	-	-	1/2"	1/2"	-
WMB 1	WASHING MACHINE BOX: OATEY MODEL 38913 OFFSET DRAIN, SUPPLY COLD AND HOT WATER VALVES WITH WATER HAMMER ARRESTOR. RIGHT SIDE DRAIN CONNECTION	2"	1-1/2"	1-1/2"	1/2"	1/2"	-

REGISTERED PROFESSIONAL ENGINEER — No. 33209 — EXP. 9-30-2021 — MECHANICAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — ROGER CLARKE — No. C-21349 — Exp. 10-31-21 — STATE OF CALIFORNIA

STAMPS

AGENCY APPROVAL
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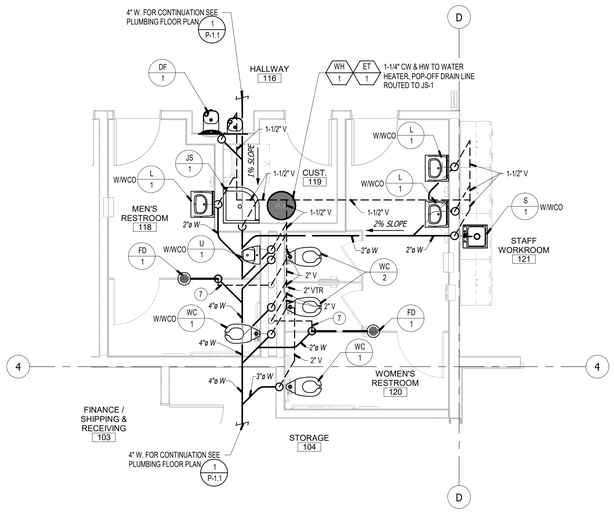

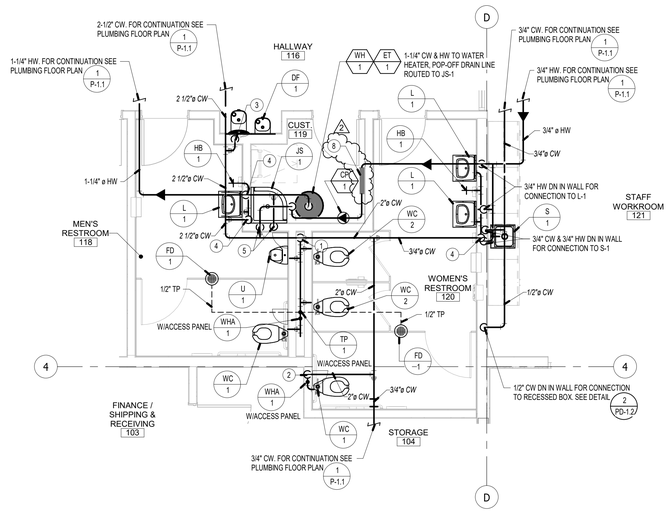

PLUMBING ENLARGED PLAN (116, 118, 119, 120 &121) - WASTE & VENT | 1/4" = 1'-0" | 2

PLUMBING ENLARGED PLAN (116, 118, 119, 120 &121) - DOMESTIC WATER | 1/4" = 1'-0" | 1

NORTH

NORTH

GENERAL NOTES

1. FOR LINE TYPE, SYMBOLS AND ABBREVIATIONS SEE PLUMBING LEGEND ON P-0.1.
2. ONCE INSTALLATION IS COMPLETE, CONTRACTOR TO PROVIDE AS-BUILTS TO MEOR.
3. NEW OR REPAIRED POTABLE WATER SYSTEMS SHALL BE DISINFECTED PRIOR TO USE ACCORDING TO THE METHOD SET IN SECTION G09.9 OF THE CPC.
4. FOR PIPE SUPPORT, SEE PLUMBING DETAIL #1 ON SHEET PD-1.1.
5. FOR TRAP PRIMER, SEE PLUMBING DETAIL #2 ON SHEET PD-1.1.
6. FOR VENT THRU ROOF, SEE PLUMBING DETAIL #3 ON SHEET PD-1.1.
7. FOR CLEAN OUT, SEE PLUMBING DETAIL #6 ON SHEET PD-1.1.
8. FOR WATER HAMMER ARRESTOR, SEE PLUMBING DETAIL #7 ON SHEET PD-1.1.
9. FOR INTERIOR HOSEBIBB, SEE PLUMBING DETAIL #13 ON SHEET PD-1.1.
10. FOR WATER HEATER SUPPORT, SEE PLUMBING DETAIL #1 ON SHEET PD-1.2.
11. FOR RECESSED BOX, SEE PLUMBING DETAIL #2 ON SHEET PD-1.2.

CONSTRUCTION NOTES

1. 2-1/2" CW DOWN IN CHASE TO FULL SIZE HEADER WITH SOV ON RISER BEHIND ACCESS PANEL.
2. 2" CW DOWN IN WALL WITH SOV ON RISER BEHIND ACCESS PANEL.
3. 1/2" CW DOWN IN WALL FOR CONNECTION TO DF-1.
4. 3/4" CW DOWN IN WALL FOR CONNECTION TO L-1 AND HB-3.
5. 3/4" CW & 3/4" HW DOWN IN WALL FOR CONNECTION TO JS-1 AND 3/4" CW EXPOSED IN ROOM FOR CONNECTION TO WH-1.
6. 1/2" HW DN IN WALL FOR CONNECTION TO L-1.
7. 1-1/2" VENT BELOW GRADE.
8. HOT WATER CIRCULATING PUMP CONTROL PANEL (CP-4). SEE MECHANICAL DRAWINGS 2/A

STAMPS

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LICENSED ARCHITECT — ROGER CLARKE — No. C-21349 — Exp. 10-31-21 — STATE OF CALIFORNIA

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1020 PACIFIC STREET SAN BERNARDINO, CA 92404
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

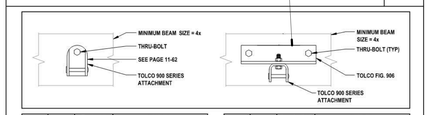
PLUMBING ENLARGED PLANS

P-7.1

1-78-28

FOR CONNECTION TO STRUCTURE SEE STRUCTURAL DETAIL 10 S0-2.8 / 16 S0-2.6

SINGLE PIPE HANGER BRACE SPACING CHART FOR THRU-BOLT ATTACHMENT TO WOOD — 0.75 "G"



Pipe Diameter	Max. Weight Per Ft.	Transverse Max Spacing @ 0.75 "G"	Thru-Bolts Brace Qty.	Thru-Bolts Bolt Qty.	Thru-Bolts Min. Diameter
1	2.9	40	1	1	1/2"
1-1/4	3.7	40	1	1	1/2"
1-1/2	4.6	40	1	1	1/2"
2	6.2	40	1	1	1/2"
2-1/2	9.2	40	1	1	3/4"
3	12.2	40	1	2	(2) 1/2"
4	18.1	40	1	2	(2) 3/4"
5	26.6	40	*2	2	(2) 1/2"
6	33.8	40	*2	2	(2) 5/8"
8	55	34	*2	2	(2) 5/8"
10	80.1	26	*2	2	(2) 3/4"
12	109	19	*2	2	(2) 3/4"

Pipe Diameter	Max. Weight Per Ft.	Longitudinal Max Spacing @ 0.75 "G"	Thru-Bolts Brace Qty.	Thru-Bolts Bolt Qty.	Thru-Bolts Min. Diameter
1	2.9	80	1	1	1/2"
1-1/4	3.7	80	1	1	5/8"
1-1/2	4.6	80	1	1	3/4"
2	6.2	80	1	2	(2) 1/2"
2-1/2	9.2	80	1	2	(2) 3/4"
3	12.2	80	1	2	(2) 1/2"
4	18.1	80	1	2	(2) 3/4"
5	26.6	80	*2	2	(2) 3/4"
6	33.8	63	*2	2	(2) 3/4"
8	55	29	*2	2	(2) 3/4"
10	80.1	26	*2	2	(2) 3/4"
12	109	19	*2	2	(2) 3/4"

NOTES:
1.) SPACING ABOVE IS FOR WELDED STEEL PIPE, RIGID CONDUIT, OR GROOVED PIPING WITH UL 213 LISTED CONNECTIONS. FOR OTHER PIPE TYPES CONSTRUCTED OF NON-DUCTILE MATERIAL (CAST IRON, NO HUB, PLASTIC, ETC.) SPACING SHALL NOT EXCEED 1/2 OF THAT LISTED IN THE ABOVE TABLES.
2.) BRACE SPACING FOR ANY HORIZONTAL FORCE FACTOR CAN BE DETERMINED BY DIVIDING THE SPACING GIVEN FOR 1.00 BY THE ACTUAL HORIZONTAL FORCE FACTOR. FOR EXAMPLE, IF THE ALLOWABLE SPACING IS 21FT FOR 1.00, THE ALLOWABLE SPACING FOR 0.75 WILL BE: 21FT / 0.75 = 28FT (NOT TO EXCEED MAXIMUM ALLOWABLE SPACING FROM GENERAL NOTES SECTION).
3.) WEIGHTS ARE BASED ON WATER FILLED SCH. 40/30/20 STEEL PIPE WITH INSULATION. SEE PAGE 1-4 FOR DETAILS.
4.) *HALF THE NUMBER OF BRACES MAY BE USED AT EVERY OTHER SPACING, 3"-10" NO SPACING CHANGE REQUIRED, 12"-48" DIVIDE SPACING BY 2.0.
5.) *HALF THE NUMBER OF BRACES MAY BE USED AT HALF THE SPACING LISTED.
6.) THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THAT THE APPLIED LOADS ARE ACCEPTABLE.
7.) THE ADEQUACY OF OTHER SUPPORT COMPONENTS AND THE OVERALL SUPPORT SYSTEM FOR THE APPLIED LOADS, IF NOT INCLUDED IN THIS OPM, ARE TO BE VERIFIED BY THE RESPONSIBLE DESIGN PROFESSIONAL.
8.) WHEN USING TRANSVERSE BRACE AS "DUAL USE" BRACE, USE BRACE QUANTITY, BOLT QUANTITY AND BOLT DIAMETER PER THE LONGITUDINAL BRACE TABLE.
9.) SPACING LISTED ABOVE SHALL BE REDUCED IF THE APPLICABLE SPACING LISTED IN SECTION 14 IS LESS THAN THE SPACING LISTED ABOVE BASED ON PIPE MATERIAL, CONSTRUCTION, JOINTS AND DIAMETER.

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California SE No. S3545

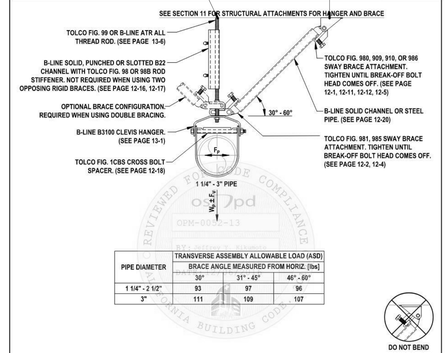
PAGE: 3-26
DATE: NOVEMBER 29, 2016

OPM-0052-13 - CONNECTION TO STRUCTURE — 7

FOR CONNECTION TO STRUCTURE SEE STRUCTURAL DETAIL 10 S0-2.8 / 16 S0-2.6

FOR CONNECTION TO STRUCTURE SEE DETAIL 7 -

TRANSVERSE RIGID BRACING FOR SINGLE HUNG PIPE OR CONDUIT WITH CLEVIS HANGER — DETAIL 1



PIPE DIAMETER	TRANSVERSE ASSEMBLY ALLOWABLE LOAD (ASD) BRACE ANGLE MEASURED FROM HORIZ. [lbs] 30°	31° - 45°	46° - 60°
1 1/4" - 2 1/2"	93	97	96
3"	111	109	107

GENERAL NOTES:
1.) LOADS LISTED ABOVE ARE FOR SCHEDULE 10 AND BETTER PIPING. THE FOLLOWING REDUCTIONS SHALL APPLY FOR OTHER PIPING AND SYSTEMS:
a.) THIN WALL PIPING - REDUCE LOADS BY 0%
b.) CONDUITS EXCLUDING EMT - REDUCE LOADS BY 0%
2.) PIPES WITH INSULATION SHALL NOT BE USED.
3.) THE FIG 909 AND FIG 910 ARE FOR USE ONLY WITH STEEL PIPE BRACES, PER PAGES 12-11 AND 12-12.

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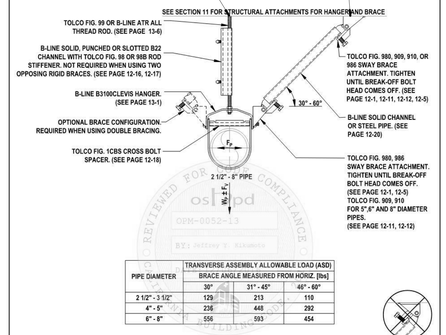
PAGE: 2-1
DATE: NOVEMBER 29, 2016

FOR CONNECTION TO STRUCTURE SEE STRUCTURAL DETAIL 10 S0-2.8 / 16 S0-2.6

FOR CONNECTION TO STRUCTURE SEE DETAIL 7 -

TRANSVERSE RIGID BRACING FOR SINGLE HUNG PIPE OR CONDUIT WITH CLEVIS HANGER — DETAIL 1A



PIPE DIAMETER	TRANSVERSE ASSEMBLY ALLOWABLE LOAD (ASD) BRACE ANGLE MEASURED FROM HORIZ. [lbs] 30°	31° - 45°	46° - 60°
2 1/2" - 3 1/2"	129	213	110
4" - 5"	236	448	292
6" - 8"	556	593	454

GENERAL NOTES:
1.) LOADS LISTED ABOVE ARE FOR SCHEDULE 10 AND BETTER PIPING. THE FOLLOWING REDUCTIONS SHALL APPLY FOR OTHER PIPING AND SYSTEMS:
a.) THIN WALL PIPING - REDUCE LOADS BY 0%
b.) CONDUITS EXCLUDING EMT - REDUCE LOADS BY 0%
2.) PIPES WITH INSULATION SHALL NOT BE USED.
3.) THE FIG 909 AND FIG 910 ARE FOR USE ONLY WITH STEEL PIPE BRACES, PER PAGES 12-11 AND 12-12.

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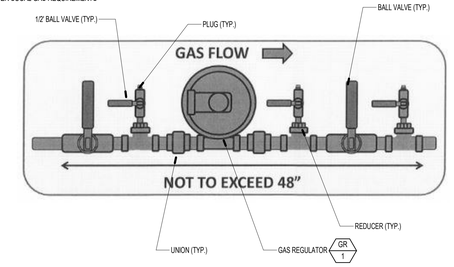
California SE No. S3545

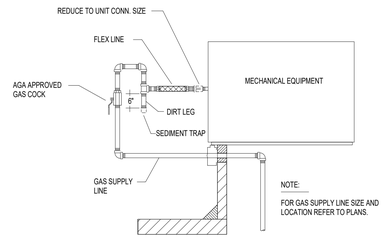
PAGE: 2-2
DATE: NOVEMBER 29, 2016

OPM-0052-13 DETAILS - PIPE SUPPORT — 6

NOTE:
CONTRACTOR TO INSTALL STEP DOWN REGULATOR MANIFOLD PER SOCAL GAS REQUIREMENTS



GAS REGULATOR INSTALLATION — 4

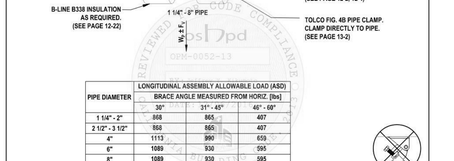


GAS CONNECTION W/FLEX - AC UNITS — 5

FOR CONNECTION TO STRUCTURE SEE STRUCTURAL DETAIL 10 S0-2.8 / 16 S0-2.6

FOR CONNECTION TO STRUCTURE SEE DETAIL 7 -

LONGITUDINAL RIGID BRACE FOR SINGLE HUNG PIPE OR CONDUIT WITH PIPE CLAMP — DETAIL 2B



PIPE DIAMETER	LONGITUDINAL ASSEMBLY ALLOWABLE LOAD (ASD) BRACE ANGLE MEASURED FROM HORIZ. [lbs] 30°	31° - 45°	46° - 60°
1 1/4" - 2"	868	865	407
2 1/2" - 3 1/2"	868	865	407
4"	1113	990	659
6"	1089	930	595
8"	1089	930	595

GENERAL NOTES:
1.) LOADS LISTED ABOVE ARE FOR SCHEDULE 10 AND BETTER PIPING. THE FOLLOWING REDUCTIONS SHALL APPLY FOR OTHER PIPING AND SYSTEMS:
a.) PIPING WITH INSULATION - REDUCE LOADS BY 0%
b.) THIN WALL PIPING - REDUCE LOADS BY 0%
c.) CONDUITS EXCLUDING EMT - REDUCE LOADS BY 0%
2.) FIG. 986 MUST BE USED WITH 1/2" OR LARGER ALL THREAD ROD
3.) THE FIG 909 AND FIG 910 ARE FOR USE ONLY WITH STEEL PIPE BRACES, PER PAGES 12-11 AND 12-12.

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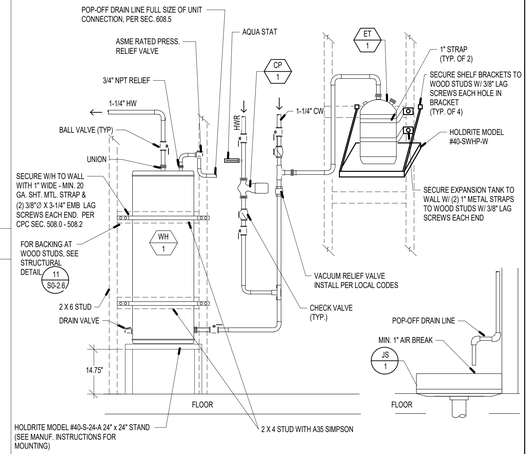
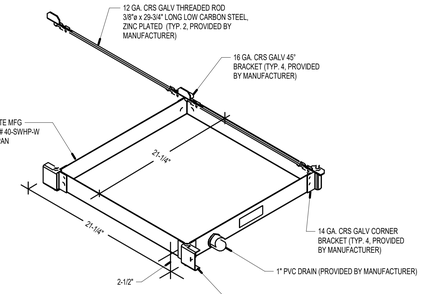
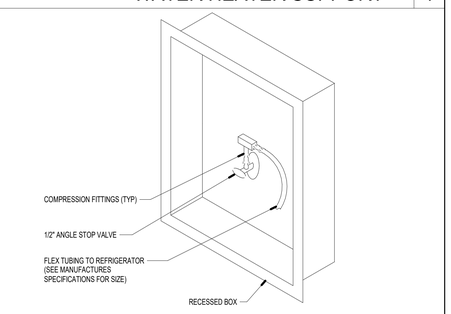
PAGE: 2-10
DATE: NOVEMBER 29, 2016

NOTE:
CIRCULATING PUMP TO BE CONTROLLED BY EMS. SEE MECHANICAL EMS DIAGRAM 2 MD-3.07 / 2

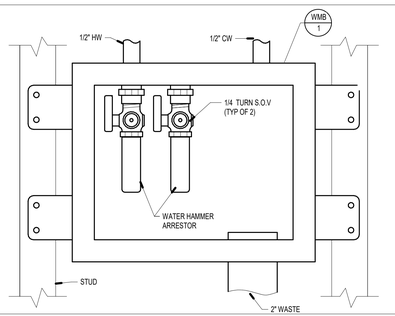




WATER HEATER SUPPORT — 1



RECESSED BOX — 2



WASHING MACHINE BOX — 3

STAMPS

REGISTERED PROFESSIONAL ENGINEER — No. M33209 — EXP. 9-30-2021 — MECHANICAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — No. C-21340 Exp. 10-31-21 — STATE OF CALIFORNIA

AGENCY APPROVAL
File No: n.a

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PACIFIC HIGH SCHOOL NEW ADMINISTRATION: DSA SUBMITTAL

PRINTED: 4/22/2021 11:11:12 AM
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PROJECT No. :1-78-28
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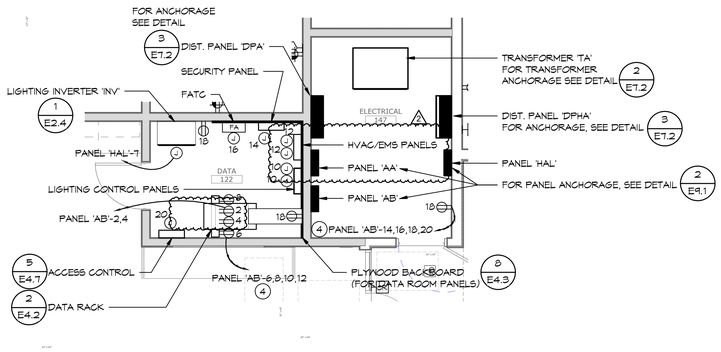
NEW ADMINISTRATION
PACIFIC HIGH SCHOOL
1020 PACIFIC STREET SAN BERNARDINO, CA 92404
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

PLUMBING DETAILS CONT.

PD-1.2

1-78-28

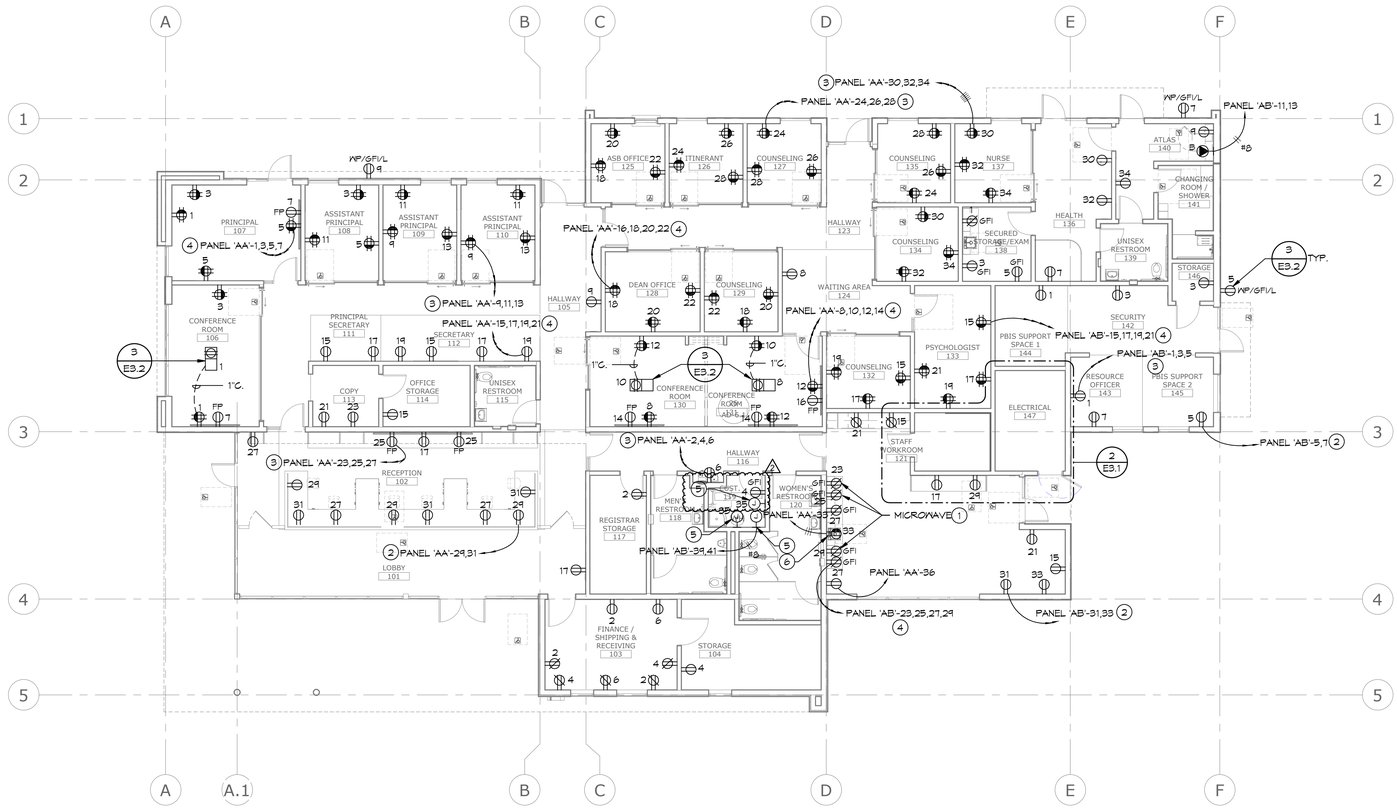
20-178



ENLARGED PLAN - ELECTRICAL & IDF ROOM

NO SCALE

2 E3.1



LEVEL 1 FLOOR PLAN - POWER

SCALE: 1/8" = 1'-0" | REF.: / | 1

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AGENCY APPROVAL
File No.: 3.0

GENERAL NOTES:

1. REFERENCE ARCHITECTURAL INTERIOR ELEVATIONS FOR EXACT LOCATION OF ALL WALL MOUNTED POWER DEVICES WHERE INDICATED AT MOUNTING HEIGHTS OTHER THAN +18".
2. REFERENCE SHEET E6 SERIES SHEETS FOR MECHANICAL EQUIPMENT SCHEDULE.
3. REFERENCE E3 AND E8 SERIES SHEETS FOR TYPICAL CONDUIT AND BACKBOX INSTALLATION DETAILS.
4. NUMBERS ADJACENT TO EACH POWER DEVICE INDICATES THE CIRCUIT NUMBER TO WHICH THE DEVICE IS TO BE CONNECTED.
5. CIRCUIT HOMERUNS ARE INDICATED TO SHOW THE LOCATION AND NUMBER OF CIRCUITS TO BE GROUPED TOGETHER.
6. PROVIDE MINIMUM 3/4" CONDUIT AND #12 CIRCUIT CONDUCTORS AS REQUIRED TO CONNECT EACH POWER DEVICE TO THEIR INDICATED CIRCUIT (U.O.N.).
7. FIELD VERIFY EXACT ROUTING LOCATION FOR CONCEALED CONDUITS AND RECEPTACLES PRIOR TO ROUGH-IN.

KEY NOTES:

1. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
2. 2 #12 (HOT), 1 #10 (NEUTRAL), 1 #12 (GND), 3/4"C.
3. 3 #12 (HOT), 1 #10 (NEUTRAL), 1 #12 (GND), 3/4"C.
4. 4 #12 (HOT), 2 #10 (NEUTRAL), 1 #12 (GND), 3/4"C.
5. VERIFY EXACT LOCATION OF CIRC. PUMP CONTROL PANEL AND WATER HEATER WITH PLUMBING PRIOR TO ROUGH-IN.
6. PROVIDE CONTROLLED DUPLEX RECEPTACLE BELOW SINK FOR FUTURE GARBAGE DISPOSAL. PROVIDE 3/4"C. FROM RECEPTACLE TO BOX WITH EMPTY FACE PLATE TO THE RIGHT OF THE SINK FOR FUTURE SWITCH.

PROJECT No. :Project Number
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REVISION No. 1 DATE 04/02/202 DESCRIPTION Addendum 1
REVISION No. 2 DATE 04/23/2021 DESCRIPTION Addendum 2
REVISION No.____ DATE____ DESCRIPTION____
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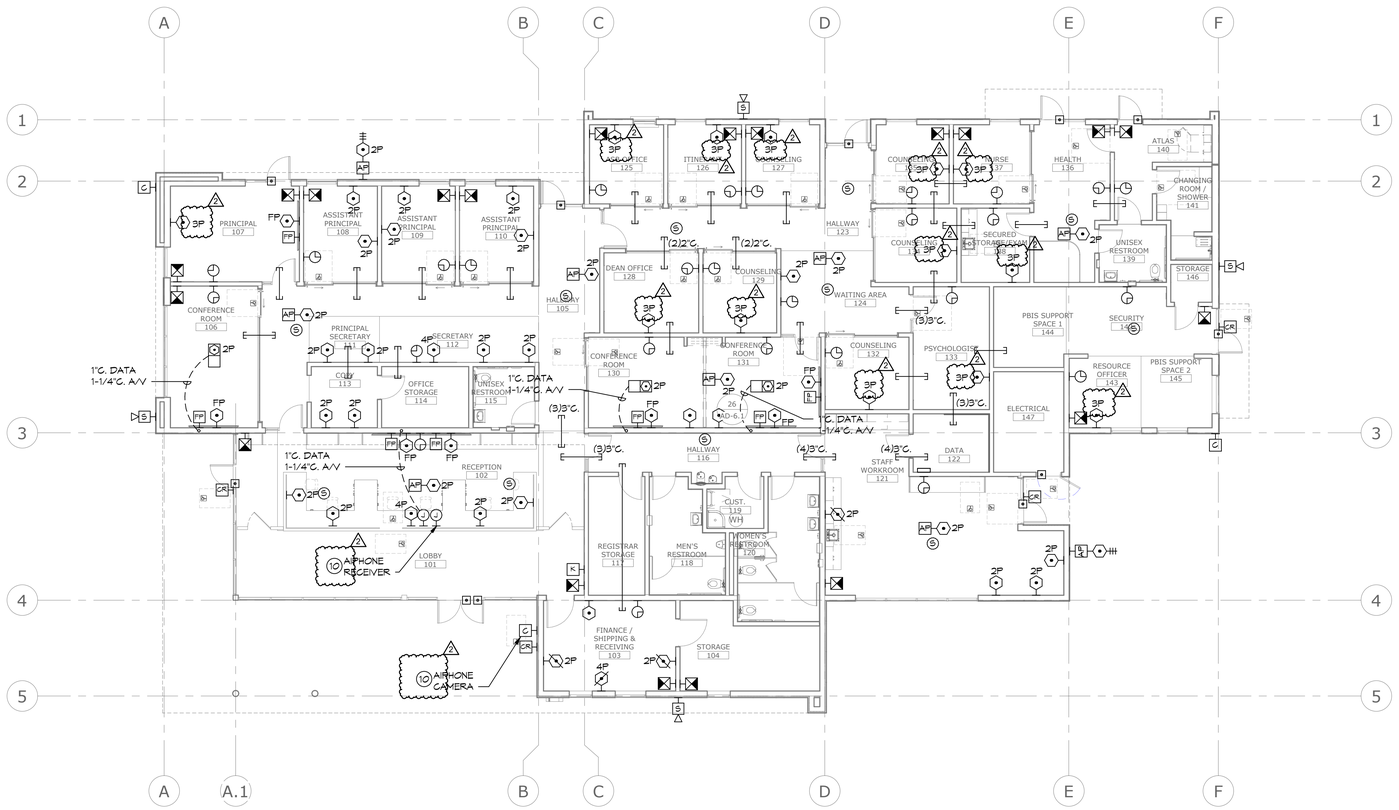
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

POWER FLOOR PLAN

E3.1

Project Number

NEW ADMINISTRATION BUILDING:



LEVEL 1 FLOOR PLAN - COMMUNICATIONS

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

REF.: /

PROJECT No. :Project Number
4/23/2021 11:11:36 AM

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ISSUE No.:_____ DATE:_____ DESCRIPTION:_____
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REVISION No.:2 DATE:04/23/2021 DESCRIPTION:Addendum 2
REVISION No.:_____ DATE:_____ DESCRIPTION:_____
REVISION No.:_____ DATE:_____ DESCRIPTION:_____
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NEW ADMINISTRATION BUILDING
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SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

REGISTERED PROFESSIONAL ENGINEER — Mark Ruhnau — No.E 14781 — Exp. 6-30-2021 — ELECTRICAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — ROGER CLARKE — No. C-21340 — Exp. 10-31-21 — STATE OF CALIFORNIA

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File No: 5.0

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GENERAL NOTES:

1. REFERENCE ARCHITECTURAL INTERIOR ELEVATIONS FOR EXACT LOCATION OF ALL WALL MOUNTED DEVICES.
2. REFERENCE E4 AND E8 SERIES SHEETS FOR TYPICAL CONDUIT AND BACKBOX INSTALLATION DETAILS.
3. REFERENCE E4 SERIES SHEETS FOR TYPICAL COMMUNICATION SYSTEMS RISER DIAGRAM.
4. REFERENCE RISER DIAGRAMS FOR TYPICAL CONDUIT SIZES AND ROUTINGS.
5. LOCATION OF PROJECTOR AND OTHER AUDIO-VISUAL EQUIPMENT IS DIAGRAMMATICAL. EXACT LOCATION OF EQUIPMENT TO BE FIELD VERIFIED PRIOR TO INSTALLATION. LOCATION OF PROJECTOR AND PROJECTOR MOUNT TO BE COORDINATED WITH LOCATION OF SCREEN.
6. REFER TO AUDIO-VISUAL SYSTEM DIAGRAMS FOR ADDITIONAL REQUIREMENTS, FOR JUNCTION BOX LOCATIONS, TYPES AND SIZES.

KEY NOTES:

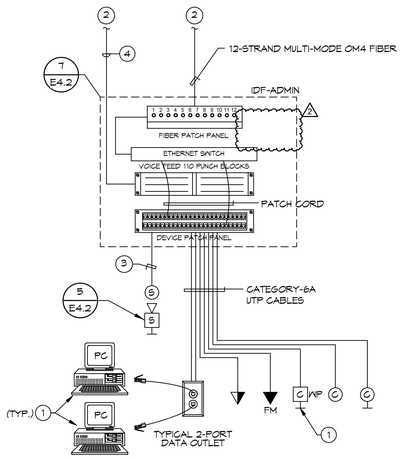
1. 3/4"C. TO BUILDING COMMUNICATIONS CABINET.
2. 1"C. TO BUILDING COMMUNICATIONS CABINET.
3. 1 1/4"C. TO BUILDING COMMUNICATIONS CABINET.
4. 3/4"C. TO BUILDING 'IDF' LOCATION.
5. 1"C. TO BUILDING 'IDF' LOCATION.
6. 1 1/4"C. TO BUILDING 'IDF' LOCATION.
7. 3/4"C. TO SOUND SYSTEM EQUIPMENT RACK.
8. 1"C. TO SOUND SYSTEM EQUIPMENT RACK.
9. 1 1/4"C. TO SOUND SYSTEM EQUIPMENT RACK.
10. PROVIDE DATA CONNECTION AT AIPHONE EQUIPMENT.

NEW ADMINISTRATION BUILDING:

COMMUNICATIONS FLOOR PLAN

E4.1

Project Number



GENERAL NOTES:

1. UNLESS OTHERWISE NOTED ALL ITEMS ARE CONTRACTOR FURNISHED AND INSTALLED.

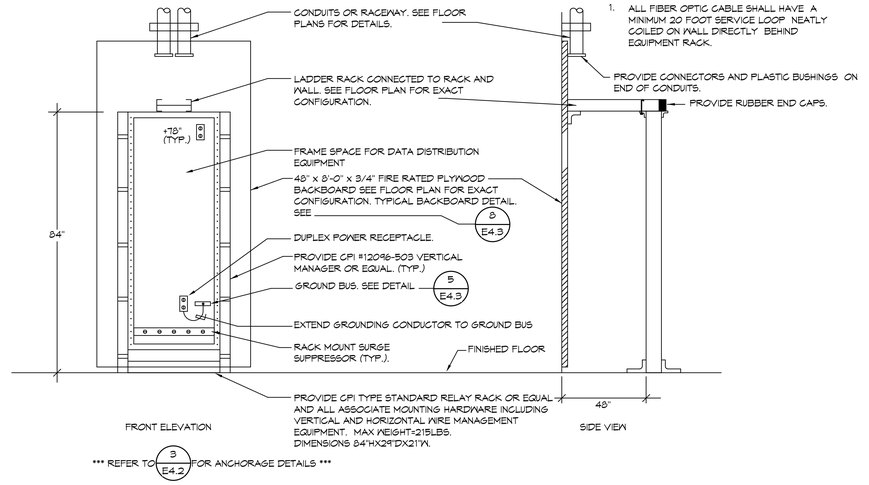
KEY NOTES:

1. OWNER FURNISHED AND INSTALLED.
2. CONNECT TO OLD ADMIN BUILDING MDF ROOM SYSTEMS AS REQUIRED. SEE SITE PLAN FOR CONDUIT ROUTES AND REQUIREMENTS.
3. PROVIDE CAT-6A UTP CABLE TO INTERCOM SPEAKER LOCATIONS. ALL RUNS MUST BE HOME RUN TO IDF CLOSET.
4. PROVIDE 25-PAIR VOICE FEED CABLE FROM IDF RACK MOUNTED TERMINATION BLOCKS TO MDF ROOM. SEE SPECIFICATIONS FOR CABLE REQUIREMENTS.

COMMUNICATIONS/DATA NETWORKING RISER DIAGRAMS

1 / E4.2

NO SCALE



GENERAL NOTE:

1. ALL FIBER OPTIC CABLE SHALL HAVE A MINIMUM 20 FOOT SERVICE LOOP NEATLY COILED ON WALL DIRECTLY BEHIND EQUIPMENT RACK.

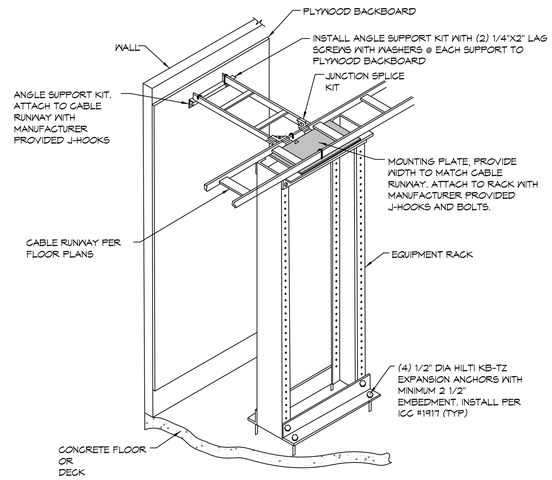
PROVIDE CONNECTORS AND PLASTIC BUSHINGS ON END OF CONDUITS.

PROVIDE RUBBER END CAPS.

DATA DISTRIBUTION FRAME DETAIL

2 / E4.2

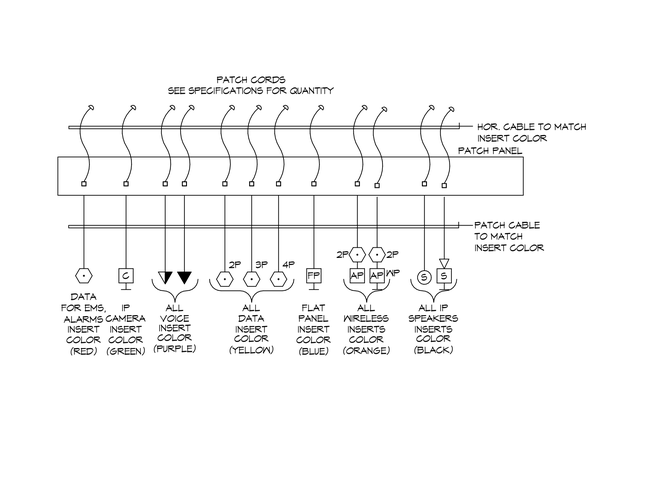
NO SCALE



2 POST EQUIPMENT RACK ANCHORAGE

3 / E4.2

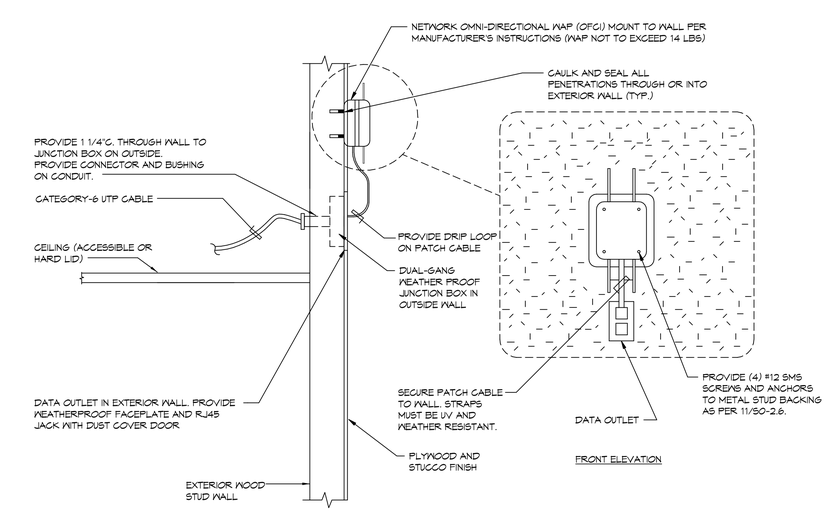
NO SCALE



TYPICAL CABLE/INSERT COLOR SCHEME DETAIL

4 / E4.2

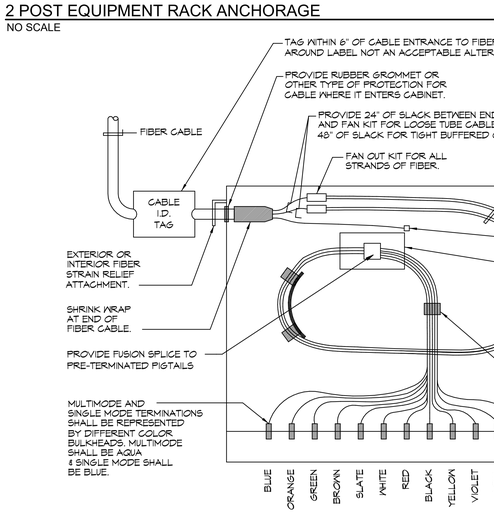
NO SCALE



EXTERIOR WIRELESS ACCESS POINT MOUNTING DETAIL

5 / E4.2

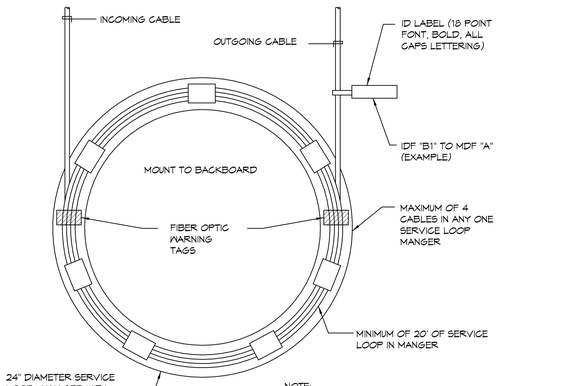
NO SCALE



FIBER TERMINATION DETAIL

6 / E4.2

NO SCALE



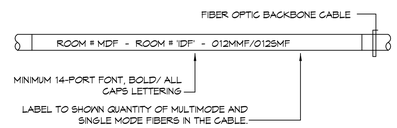
NOTE:

PROVIDE FIBER SERVICE LOOP MANAGER IN ALL MDF AND IDF ROOMS. MANAGER NOT REQUIRED AT SMALL WALL MOUNT IDF CABINET (48"H OR LESS)

TYPICAL FIBER OPTIC FEED SERVICE LOOP DETAIL

7 / E4.2

NO SCALE



NOTES:

1. LABEL BOTH ENDS OF BACKBONE CABLES AND IN EACH ROOM IN WHICH THE CABLE ROUTES THROUGH.
2. ROOM DESIGNATIONS SHOWN IN DETAIL ARE AN EXAMPLE AND MAY NOT REFLECT ACTUAL ROOM INFORMATION.

TYPICAL BACKBONE LABELING DETAIL

8 / E4.2

NO SCALE

*20046
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File No.: 4.0

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RUHNAU CLARKE ARCHITECTS

NEW ADMINISTRATION BUILDING:

PROJECT No. :Project Number
4/23/2021 11:11:38 AM

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REVISION No.:2 DATE:04/23/202 DESCRIPTION:Addendum 2
REVISION No.:_____ DATE:_____ DESCRIPTION:_____
REVISION No.:_____ DATE:_____ DESCRIPTION:_____
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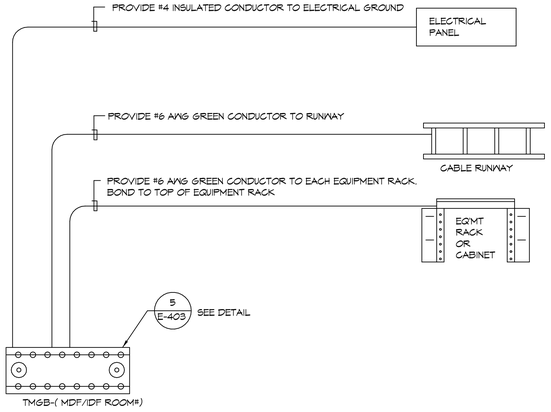
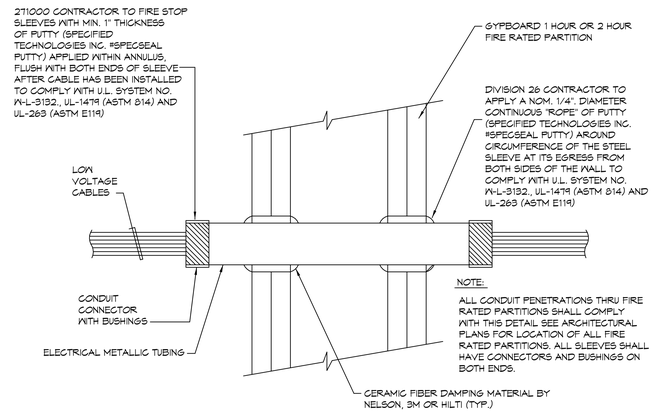


TYPICAL MDF/IDF ROOM GROUNDING DETAIL

NO SCALE

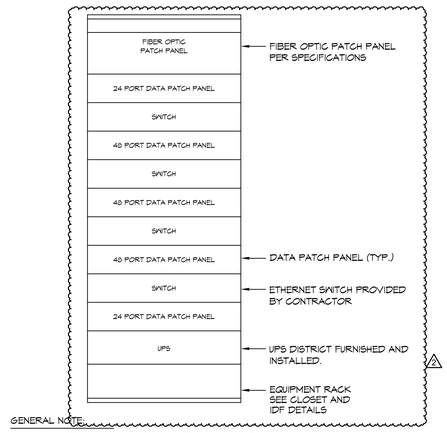
1 / E4.4



VOICE/DATA SLEEVE PENETRATION THRU FIRE RATED PARTITIONS

NO SCALE

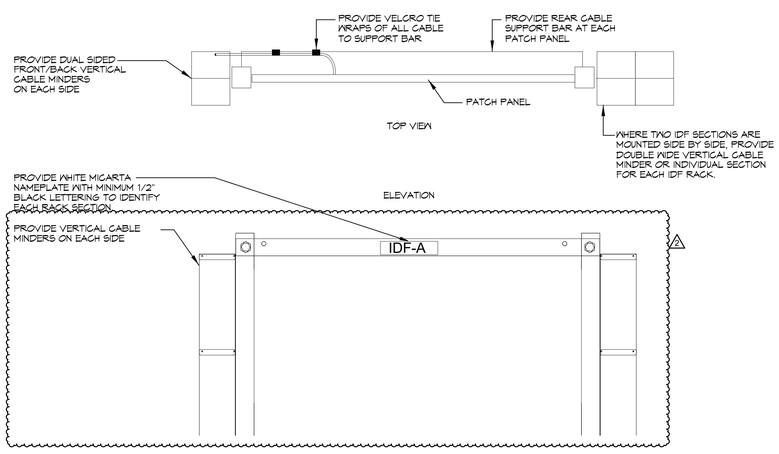
2 / E4.4



MAXIMUM EQUIPMENT RACK POPULATION DETAIL

NO SCALE

3 / E4.4



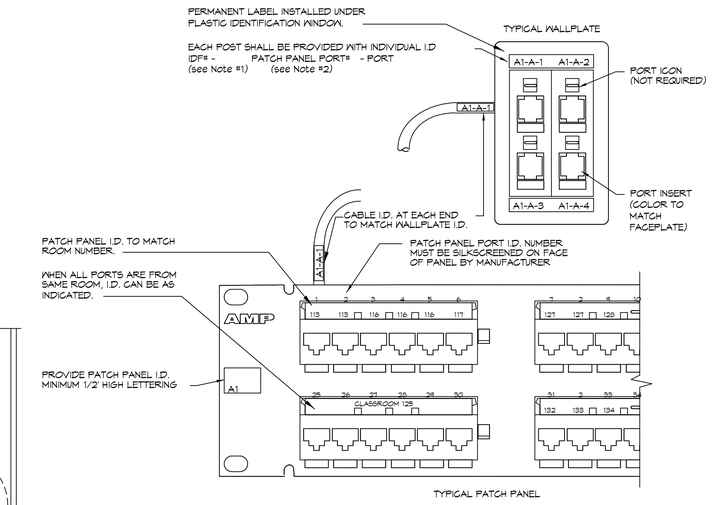
TYPICAL IDF/MDF LABELING AND CABLE SUPPORT DETAIL

NO SCALE

4 / E4.4

NOTE:
1. EACH IDF SHALL BE NUMBERED TO MATCH THE BUILDING NAME (IDF-A or IDF-100, FOR BUILDINGS WITH MULTIPLE IDF'S (IDF-A1, A2 or IDF-100A, 100B)
2. NUMBER TO MATCH MANUFACTURER'S PREPRINTED NUMBERS 1-48 ON PATCH PANEL
3. BOTH ROOM NUMBER AND PATCH PANEL PORT ASSIGNMENT MUST BE SHOWN ON PATCH PANEL.

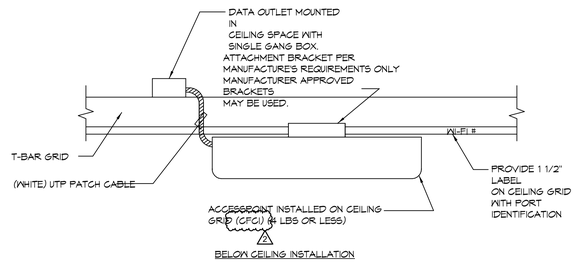
GENERAL NOTES:
1. ALL IDENTIFICATIONS SHALL BE MACHINE MADE, NO HAND WRITTEN LABELS, SEE SPECIFICATIONS. VERIFY IN WRITING ALL ROOM IDENTIFICATIONS WITH ARCHITECT PRIOR TO MAKING ANY LABELS.
2. ALL LABELING FORMATS ARE SUBJECT TO APPROVAL BY THE DISTRICT IT DEPARTMENT. CONTRACTOR MUST CONFIRM ALL LABELING FORMATS PRIOR TO INSTALLATION OF ANY LABELS AND MUST HAVE WRITTEN APPROVAL.

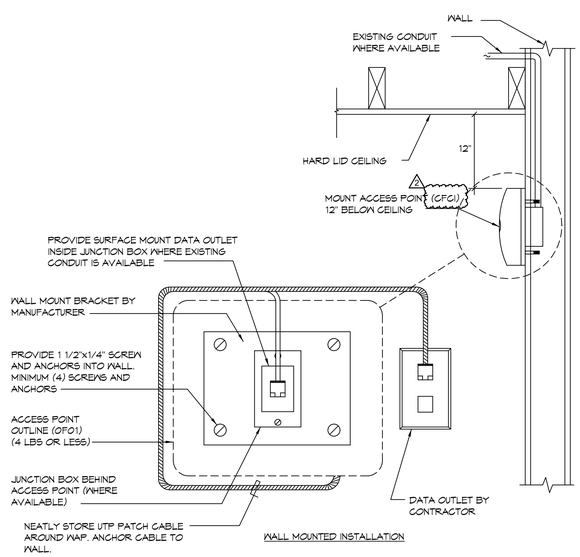


TYPICAL DATA NETWORKING LABELING REQUIREMENT

NO SCALE

5 / E4.4





WIRELESS ACCESS POINT ANTENNA MOUNTING DETAILS

NO SCALE

6 / E4.4

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RUHNAU CLARKE ARCHITECTS

REGISTERED PROFESSIONAL ENGINEER — MICHAEL JOHNSON — No.E 14781 — Exp. 6-30-2021 — ELECTRICAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — ROBERT CLARKE — No. C-21349 — Exp. 10-31-21 — STATE OF CALIFORNIA

*20048
STAMPS

AGENCY APPROVAL
File No.: 4.4

NEW ADMINISTRATION BUILDING:

PROJECT No. :Project Number
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REVISION No.____ DATE____ DESCRIPTION____
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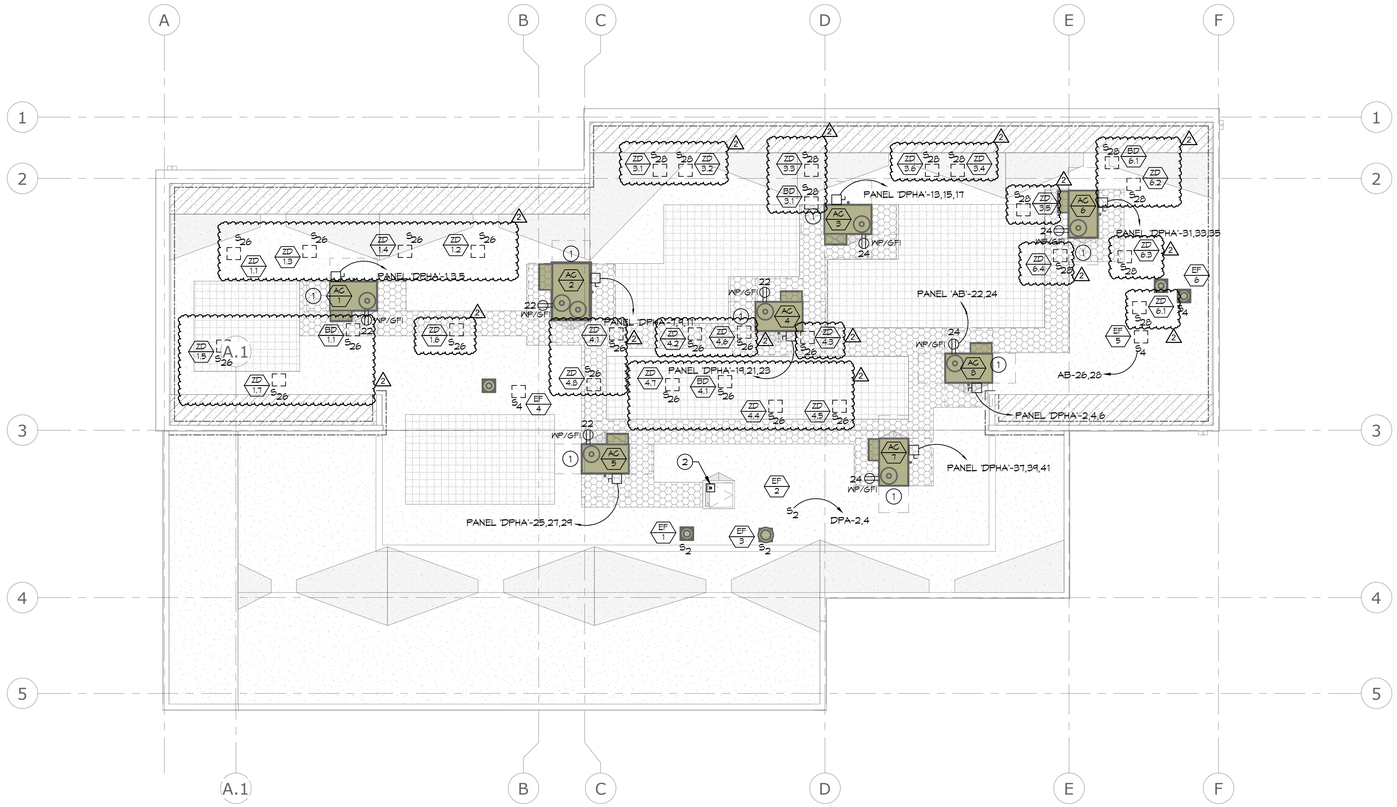

ROOF PLAN — SCALE: 1/8" = 1'-0" — REF.: / — 1

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RUHNAU CLARKE ARCHITECTS

REGISTERED PROFESSIONAL ENGINEER — Matthew Ryan — No. E 14781 — Exp. 6-30-2021 — Electrical — STATE OF CALIFORNIA

LICENSED ARCHITECT — ROBERT CLARKE — No. C-21340 — Exp. 10-31-21 — STATE OF CALIFORNIA

*20046
STAMPS

AGENCY APPROVAL
File No.: n.a.

GENERAL NOTES:

1. REFERENCE MECHANICAL PLANS FOR EXACT EQUIPMENT LOCATIONS PRIOR TO ROUGH-IN.
2. DASHED EQUIPMENT INDICATES THAT EQUIPMENT IS LOCATED WITHIN CEILING SPACE. ALL OTHER EQUIPMENT IS ROOF MOUNTED (U.O.N.).
3. ALL CONDUIT FEEDERS TO ROOF MOUNTED EQUIPMENT SHALL BE RUN CONCEALED IN CEILING SPACE WHERE EQUIPMENT CURBS ARE PROVIDED. ROUTE FEEDER UP THROUGH CURB TO EQUIPMENT DISCONNECT.
4. REFERENCE SHEET E6 SERIES MECHANICAL EQUIPMENT SCHEDULE FOR CONDUIT, WIRE AND DISCONNECT REQUIREMENTS.
5. REFERENCE E5. SERIES SHEETS FOR UNITS WHICH REQUIRE DUCT TYPE SMOKE DETECTOR CONNECTIONS.

KEY NOTES:

(1) MECHANICAL TO PROVIDE RECEPTACLE WITH UNIT. PROVIDE 120V POWER TO RECEPTACLE.

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NEW ADMINISTRATION BUILDING
1020 PACIFIC STREET, SAN BERNARDINO, CA 92404
SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

NEW ADMINISTRATION BUILDING:

ROOF PLAN

E6.1

Project Number

MECHANICAL EQUIPMENT SCHEDULE

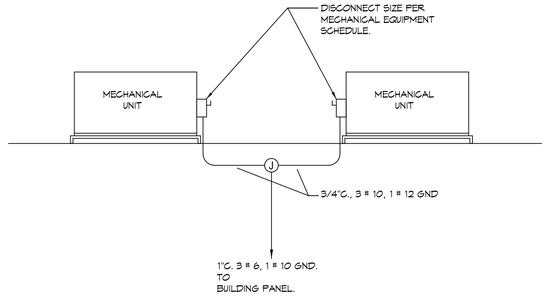
MARK	VOLTAGE/ PHASE	CONDUIT/ WIRE	FUSE	DISC. SWITCH	PANEL	REMARKS
ZD	120V / 1PH	3/4"C. 3#12, 1#12GND	N/A	MAN. MTR STARTER	SEE PLANS	14 WATTS (3)
BD	120V / 1PH	3/4"C. 3#12, 1#12GND	N/A	MAN. MTR STARTER	SEE PLANS	14 WATTS (3)
EF 1	120V / 1PH	1"C. 3#10, 1#10GND	N/A	MAN. MTR STARTER	SEE PLANS	60 WATTS
EF 2	120V / 1PH	1"C. 3#10, 1#10GND	N/A	MAN. MTR STARTER	SEE PLANS	74 WATTS
EF 3	120V / 1PH	1"C. 3#10, 1#10GND	N/A	MAN. MTR STARTER	SEE PLANS	0.4 HP (8.6 FLA)
EF 4	120V / 1PH	1"C. 2#10, 1#10GND	N/A	MAN. MTR STARTER	SEE PLANS	46 WATTS
EF 5	120V / 1PH	1"C. 2#10, 1#10GND	N/A	MAN. MTR STARTER	SEE PLANS	63 WATTS
EF 6	120V / 1PH	1"C. 2#10, 1#10GND	N/A	MAN. MTR STARTER	SEE PLANS	65 WATTS

MECHANICAL EQUIPMENT SCHEDULE

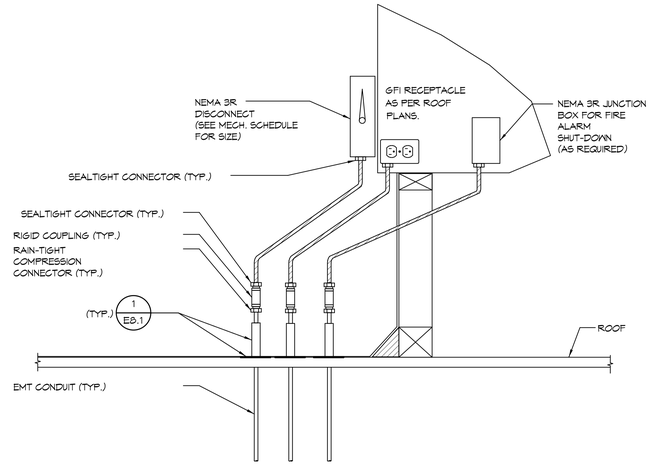
MARK	VOLTAGE/ PHASE	CONDUIT/ WIRE	FUSE	DISC. SWITCH	PANEL	REMARKS
AC 1	480V / 3PH	1"C. 3#10, 1#10GND	20	30A / 3P / 3R	SEE PLANS	15 MCA (2)
AC 2	480V / 3PH	1"C. 3#10, 1#10GND	25	30A / 3P / 3R	SEE PLANS	22 MCA (2)
AC 3	480V / 3PH	1"C. 3#10, 1#10GND	15	30A / 3P / 3R	SEE PLANS	12 MCA (1)
AC 4	480V / 3PH	1"C. 3#10, 1#10GND	15	30A / 3P / 3R	SEE PLANS	13 MCA (1)
AC 5	480V / 3PH	1"C. 3#10, 1#10GND	15	30A / 3P / 3R	SEE PLANS	12 MCA (1)
AC 6	480V / 3PH	1"C. 3#10, 1#10GND	15	30A / 3P / 3R	SEE PLANS	12 MCA (1)
AC 7	480V / 3PH	1"C. 3#10, 1#10GND	15	30A / 3P / 3R	SEE PLANS	12 MCA (1)
AC 8	480V / 3PH	1"C. 3#10, 1#10GND	15	30A / 3P / 3R	SEE PLANS	12 MCA (1)

KEY NOTES:

1. PROVIDE SEPARATE 30A/3P/3R DISCONNECT FUSED AT 5 AMPS FOR POWER EXHAUST. PROVIDE 3#12,#12GND FROM LINE SIDE OF A/C UNIT DISCONNECT TO FEED POWER EXHAUST
2. PROVIDE SEPARATE 30A/3P/3R DISCONNECT FUSED AT 10 AMPS FOR POWER EXHAUST. PROVIDE 3#12,#12GND FROM LINE SIDE OF A/C UNIT DISCONNECT TO FEED POWER EXHAUST
3. PROVIDE 120V POWER CONNECTION AND MOTOR RATED DISCONNECT SWITCH FOR EACH ZONE AND BYPASS DAMPER. SEE MECHANICAL FOR EXACT LOCATIONS.



TYPICAL MECHANICAL UNIT COMBINATION FEEDER DETAIL — 2 / E6.2
NO SCALE



A/C UNIT CONNECTION DETAIL — 3 / E6.2
NO SCALE

REGISTERED PROFESSIONAL ENGINEER — Michael Ruhnau — No. E 14781 — Exp. 6-30-2021 — ELECTRICAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — ROGER CLARKE — No. C-21340 — Exp. 10-31-21 — STATE OF CALIFORNIA

*20046
STAMPS

AGENCY APPROVAL
File No.: 5.0

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RUHNAU CLARKE ARCHITECTS

NEW ADMINISTRATION BUILDING:

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REVISION No._____ DATE_____ DESCRIPTION_____
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120/208	120/208 3PH, 4WIRE			200 AMP		Main	Breaker		ENCLOSURE TYPE	ENCLOSURE NOTE
	200% Neutral Bus						Lug	X	X NEMA TYPE 1	
	(INTEGRAL)TVSS Protection	X				Enclosure	Recessed		NEMA TYPE 3R	
AA	(REMOTE)TVSS Protection						Surface	X	NEMA TYPE 4X	
	Service Entrance Rated		GENERAL DISTRIBUTION		PROVIDE LOCK ON BREAKER DEVICES FOR ALL EMERGENCY LIGHTING,					
	Load Side Feed thru Lugs		BREAKER REQUIREMENTS :		MOTORS, AND FIRE ALARM EQUIPMENT SERVED FROM THIS PANEL					

LCL	NHL	CIRCUIT DESCRIPTION	AMP	POLE	NO	PHASE A	PHASE B	PHASE C	NO	AMP	POLE	CIRCUIT DESCRIPTION	LCL	NHL
	X	RECEPTACLES	20	1	1	900			2	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	3		600		4	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	5			600	6	20	1	RECEPTACLES		X
	X	FLAT PANEL TV	20	1	7	1000			8	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	9		600		10	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	11			600	12	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	13	600			14	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	15		600		16	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	17			600	18	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	19	600			20	20	1	RECEPTACLES		X
	X	COPY MACHINE	20	1	21		800		22	20	1	RECEPTACLES		X
	X	COPY MACHINE	20	1	23			800	24	20	1	RECEPTACLES		X
	X	FLAT PANEL TV	20	1	25	1000			26	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	27		600		28	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	29			600	30	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	31	600			32	20	1	RECEPTACLES		X
		SPARE	20	1	33		600		34	20	1	RECEPTACLES		X
		SPARE	20	1	35				36	20	1	SPARE		
		SPARE	20	1	37				38	20	1	SPACE		
		SPARE	20	1	39				40	20	1	SPACE		
		SPARE	20	1	41				42	20	1	SPACE		
SPECIAL PANEL		PROVIDE 54 CIRCUIT PANEL							NOTE #1					
NOTE									NOTE #2					

NHL= Non Harmonic Load	TOTAL LOAD PER PHASE	8200	7000	6400	
LCL= Long Continuous Load	25% LONG CONTINUOUS LOADS	0	0	0	
	SUB PANEL				
Max. Neut. Load	SUB PANEL				
0 AMPS	TOTAL CONNECTED LOAD	8200	7000	6400	

HIGH PHASE 8200 / 0.9pf = VA @ 120V **75.9 AMPS**
ALL PHASES 21600 / 0.9pf = VA @ 208V/3PH **66.7 AMPS**
DEMAND PER CEC 220-86 **AMPS**

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120/208	120/208 3PH, 4WIRE			200 AMP		Main	Breaker		ENCLOSURE TYPE	ENCLOSURE NOTE
	200% Neutral Bus						Lug	X	X NEMA TYPE 1	
	(INTEGRAL)TVSS Protection	X				Enclosure	Recessed		NEMA TYPE 3R	
AB	(REMOTE)TVSS Protection						Surface	X	NEMA TYPE 4X	
	Service Entrance Rated		GENERAL DISTRIBUTION		PROVIDE LOCK ON BREAKER DEVICES FOR ALL EMERGENCY LIGHTING,					
	Load Side Feed thru Lugs		BREAKER REQUIREMENTS :		MOTORS, AND FIRE ALARM EQUIPMENT SERVED FROM THIS PANEL					

LCL	NHL	CIRCUIT DESCRIPTION	AMP	POLE	NO	PHASE A	PHASE B	PHASE C	NO	AMP	POLE	CIRCUIT DESCRIPTION	LCL	NHL
	X	RECEPTACLES	20	1	1	180			2	20	1	DATA RACK RECEPT.		X
	X	RECEPTACLES	20	1	3	1000			4	20	1	DATA RACK RECEPT.		X
	X	RECEPTACLES	20	1	5			600	6	20	1	DATA RACK RECEPT.		X
	X	RECEPTACLES	20	1	7	600		1000	8	20	1	DATA RACK RECEPT.		X
	X	WASHER	20	1	9		1200		10	20	1	LTG CONTROL		X
	X	DRYER	50	2	11		3500		12	20	1	HVAC EMS PANEL		X
	X	"			13	3500			14	20	1	SECURITY PANEL		X
	X	RECEPTACLES	20	1	15		400		16	20	1	FATC (NOTE1)		X
	X	RECEPTACLES	20	1	17			600	18	20	1	RECEPTACLES		X
	X	RECEPTACLES	20	1	19	600			20	20	1	ACCESS CONTROL		X
	X	COPY MACHINE	20	1	21		800		22	20	1	ROOF RECEPTACLES		X
	X	MICROWAVE	20	1	23			1200	24	20	1	ROOF RECEPTACLES		X
	X	MICROWAVE	20	1	25	1200			26	20	1	ZONE/BYPASS DAMPERS		
	X	RECEPTACLES	20	1	27		800		28	20	1	ZONE/BYPASS DAMPERS		
	X	MICROWAVE	20	1	29			1200	30	20	1	SPARE		
	X	COPY MACHINE	20	1	31	1000			32	20	1	SPARE		
	X	COPY MACHINE	20	1	33		1000		34	20	1	SPARE		
		CIRC. PUMP/CONTROL PNL	20	1	35			200	36	20	1	SPARE		
		FLAG POLE	20	1	37				38	20	1	SPARE		
		WH-1	60	2	39		4500		40	20	1	SPARE		
		"	-	-	41			4500	42	20	1	SPARE		
SPECIAL PANEL		PROVIDE 54 CIRCUIT PANEL							NOTE #1			PROVIDE RED LOCK-ON BREAKER DEVICE		
NOTE									NOTE #2					

NHL= Non Harmonic Load	TOTAL LOAD PER PHASE	10844	12044	14200	
LCL= Long Continuous Load	25% LONG CONTINUOUS LOADS	0	0	0	
	SUB PANEL				
Max. Neut. Load	SUB PANEL				
67 AMPS	TOTAL CONNECTED LOAD	10844	12044	14200	

HIGH PHASE 14200 / 0.9pf = VA @ 120V **131.5 AMPS**
ALL PHASES 37088 / 0.9pf = VA @ 208V/3PH **114.5 AMPS**
DEMAND PER X CEC 220-86 **86 AMPS**

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120/208	120/208 3PH, 4WIRE			400 AMP		Main	Breaker		ENCLOSURE TYPE	ENCLOSURE NOTE
	200% Neutral Bus						Lug	X	X NEMA TYPE 1	
	(INTEGRAL)TVSS Protection	X				Enclosure	Recessed		NEMA TYPE 3R	
DPA	(REMOTE)TVSS Protection						Surface	X	NEMA TYPE 4X	
	Service Entrance Rated		GENERAL DISTRIBUTION		PROVIDE LOCK ON BREAKER DEVICES FOR ALL EMERGENCY LIGHTING,					
	Load Side Feed thru Lugs		BREAKER REQUIREMENTS :		MOTORS, AND FIRE ALARM EQUIPMENT SERVED FROM THIS PANEL					

LCL	NHL	CIRCUIT DESCRIPTION	AMP	POLE	NO	PHASE A	PHASE B	PHASE C	NO	AMP	POLE	CIRCUIT DESCRIPTION	LCL	NHL
		EF-1,2,3	20	1	1	500			2			SPARE		
		EF-4,5,6	20	1	3		500		4			SPARE		
		SPARE	20	1	5				6			SPARE		
		SPARE	20	1	7				8			SPARE		
		SPARE	20	1	9				10			SPARE		
		SPARE	20	1	11				12			SPARE		
		SPARE	20	1	13				14			SPARE		
		SPARE	20	1	15				16			SPARE		
		SPARE	20	1	17				18			SPARE		
		SPARE	20	1	19				20			SPARE		
		SPARE	20	1	21				22			SPARE		
		SPARE	20	1	23				24			SPARE		
		SPARE	20	1	25				26			SPARE		
		SPARE	20	1	27				28			SPARE		
		SPARE	20	1	29				30			SPARE		
		SPACE	20	1	31				32			SPACE		
		SPACE	20	1	33				34			SPACE		
		SPACE	20	1	35				36			SPACE		
	X	PANEL 'AA'	200	3	37	8200			38	200	3	PANEL 'AB'		X
	X	"	-	-	39		7000		40	-	-	"		X
	X	"	-	-	41		11500		42	-	-	"		X
SPECIAL PANEL									NOTE #1					
NOTE									NOTE #2					

NHL= Non Harmonic Load	TOTAL LOAD PER PHASE	18800	19000	20200	
LCL= Long Continuous Load	25% LONG CONTINUOUS LOADS	0	0	0	
	SUB PANEL				
Max. Neut. Load	SUB PANEL				
7 AMPS	TOTAL CONNECTED LOAD	18800	19000	20200	

HIGH PHASE 20200 / 0.9pf = VA @ 120V **187.0 AMPS**
ALL PHASES 58000 / 0.9pf = VA @ 208V/3PH **179.0 AMPS**
DEMAND PER CEC 220-86 **AMPS**

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277/480	277/480 3PH, 4WIRE			400 AMP		Main	Breaker		ENCLOSURE TYPE	ENCLOSURE NOTE
	200% Neutral Bus						Lug	X	X NEMA TYPE 1	
	(INTEGRAL)TVSS Protection					Enclosure	Recessed		NEMA TYPE 3R	
DPHA	(REMOTE)TVSS Protection						Surface	X	NEMA TYPE 4X	
	Service Entrance Rated	X	GENERAL DISTRIBUTION		PROVIDE LOCK ON BREAKER DEVICES FOR ALL EMERGENCY LIGHTING,					
	Load Side Feed thru Lugs		BREAKER REQUIREMENTS :		MOTORS, AND FIRE ALARM EQUIPMENT SERVED FROM THIS PANEL					

LCL	NHL	CIRCUIT DESCRIPTION	AMP	POLE	NO	PHASE A	PHASE B	PHASE C	NO	AMP	POLE	CIRCUIT DESCRIPTION	LCL	NHL
	X	AC-1	40	3	1	3850.3			2			SPACE		
	X	-	-	-	3		3850.3		4			SPACE		
	X	-	-	-	5			3850.3	6			SPACE		
	X	AC-2	40	3	7	7063.5			8	20	1	SPARE		
	X	-	-	-	9		7063.5		10	20	1	SPARE		
	X	-	-	-	11			7063.5	12	20	1	SPARE		
	X	AC-3	30	3	13	3850.3			14	20	1	SPARE		
	X	-	-	-	15		3850.3		16	20	1	SPARE		
	X	-	-	-	17			3850.3	18	20	1	SPARE		
	X	AC-4	30	3	19	4127.3			20	20	1	SPARE		
	X	-	-	-	21		4127.3		22	20	1	SPARE		
	X	-	-	-	23			4127.3	24	20	1	SPARE		
	X	AC-5	30	3	25	3850.3			26	20	1	SPARE		
	X	-	-	-	27		3850.3		28	20	1	SPARE		
	X	-	-	-	29			3850.3	30	20	1	SPARE		
	X	AC-6	30	3	31	3850.3			32	20	1	SPACE		
	X	-	-	-	33		3850.3		34	20	1	SPACE		
	X	-	-	-	35			3850.3	36	20	1	SPACE		
	X	AC-7	30	3	37	3850.3			38	20	1	SPACE		
	X	-	-	-	39		3850.3		40	20	1	SPACE		
	X	-	-	-	41			3850.3	42	20	1	SPACE		
		SPARE	30	3	43				44	20	1	SPACE		
		-	-	-	45				46	20	1	SPACE		
		-	-	-	47				48	20	1	SPACE		
		TRANSFORMER 'TA'	175	3	49				50	100	3	PANEL 'HAL'		
		"	-	-	51				52	-	-	"		
		"	-	-	53				54	-	-	"		
XX									NOTE #1					
NOTE									NOTE #2					

NHL= Non Harmonic Load	TOTAL LOAD PER PHASE	35567	35567	35567	
LCL= Long Continuous Load	25% LONG CONTINUOUS LOADS	0	0	0	
	SUB PANEL				
Max. Neut. Load	SUB PANEL				
195 AMPS	TOTAL CONNECTED LOAD	35567	35566.8	35567	

HIGH PHASE 35566.8 / 0.9pf = KVA @ 277/ **142.7 AMPS**
ALL PHASES 150705 / 0.9pf = KVA @ 480V/3PH **142.8 AMPS**
DEMAND PER CEC 220-86 0 sq. ft. **AMPS**

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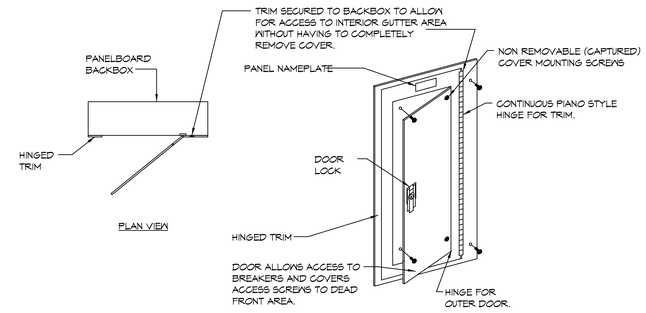
277/480	277/480 3PH, 4WIRE			100 AMP		Main	Breaker		ENCLOSURE TYPE	ENCLOSURE NOTE
	200% Neutral Bus						Lug	X	X NEMA TYPE 1	
	(INTEGRAL)TVSS Protection					Enclosure	Recessed		NEMA TYPE 3R	
HAL	(REMOTE)TVSS Protection						Surface	X	NEMA TYPE 4X	
	Service Entrance Rated		GENERAL DISTRIBUTION		PROVIDE LOCK ON BREAKER DEVICES FOR ALL EMERGENCY LIGHTING,					
	Load Side Feed thru Lugs		BREAKER REQUIREMENTS		MOTORS, AND FIRE ALARM EQUIPMENT SERVED FROM THIS PANEL					

LCL	NHL	CIRCUIT DESCRIPTION	AMP	POLE	NO	PHASE A	PHASE B	PHASE C	NO	AMP	POLE	CIRCUIT DESCRIPTION	LCL	NHL
		LIGHTING	20	1	1	1200			2	20	1	EXTERIOR LIGHTING		
		LIGHTING	20	1	3	500	1000		4	20	1	EXTERIOR LIGHTING		
		LIGHTING	20	1	5		500	1300	6	20	1	SITE LIGHTING		
		LIGHTING INVERTER	20	1	7	1000		600	8	20	1	SPARE		
		SPARE	20	1	9				10	20	1	SPARE		
		SPARE	20	1	11				12	20	1	SPARE		
		SPARE	20	1	13				14	20	1	SPARE		
		SPARE	20	1	15				16	20	1	SPARE		
		SPARE	20	1	17				18	20	1	SPARE		
		SPARE	20	1	19				20	20	1	SPARE		
		SPACE	20	1	21				22	20	1	SPACE		
		SPACE	20	1	23				24	20	1	SPACE		
		SPACE	20	1	25				26	20	1	SPACE		
		SPACE	20	1	27				28	20	1	SPACE		
		SPACE	20	1	29				30	20	1	SPACE		
		SPACE	20	1	31				32	20	1	SPACE		
		SPACE	20	1	33				34	20	1	SPACE		
		SPACE	20	1	35				36	20	1	SPACE		
		SPACE	20	1	37				38	20	1	SPACE		
		SPACE	20	1	39				40	20	1	SPACE		
		SPACE	20	1	41				42	20	1	SPACE		
SPECIAL PANEL									NOTE #1					
NOTE									NOTE #2					

NHL= Non Harmonic Load	TOTAL LOAD PER PHASE	2700	1500	1900	
LCL= Long Continuous Load	25% LONG CONTINUOUS LOADS	0	0	0	
	SUB PANEL				
Max. Neut. Load	SUB PANEL				
17 AMPS	TOTAL CONNECTED LOAD	2700	1500	1900	

HIGH PHASE 2700 / 0.9pf = VA @ 277V **10.8 AMPS**
ALL PHASES 6100 / 0.9pf = VA @ 480V/3PH **8.2 AMPS**
DEMAND PER CEC 220-86 **AMPS**

M:\Panel Schedule\2020\20048 Pacific HS Admin\HAL.xls 12:03 PM11/17/2020



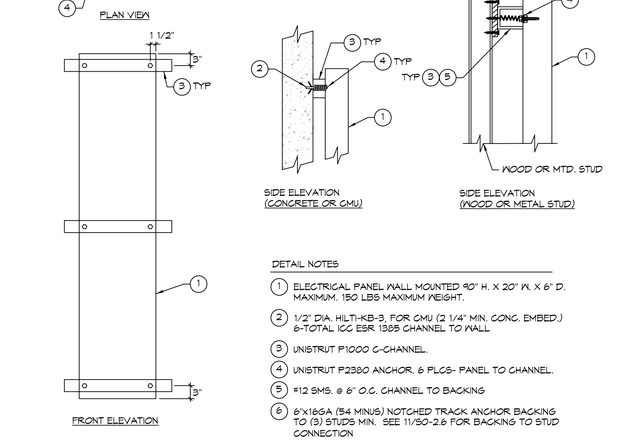
DETAIL GENERAL NOTES

1. PROVIDE FOR ALL PANELBOARDS FOR THIS PROJECT - SURFACE, RECESSED NEMA 1, OR NEMA 3R CONFIGURATION.
2. SEE REFERENCE ONE LINE DIAGRAM FOR ALL PANELBOARD AIC RATINGS.

TYPICAL PANELBOARD DOOR/TRIM DETAIL

NO SCALE

1 / E9.1



DETAIL NOTES

1. ELECTRICAL PANEL WALL MOUNTED 90" H. X 20" W. X 8" D. MAXIMUM. 150 LBS MAXIMUM WEIGHT.
2. 1/2" DIA. HILTI-KB-3, FOR CMU (2 1/4" MIN. CONC. EMBED.) 6-TOTAL ICC ESR 1385 CHANNEL TO WALL
3. UNISTRUT P1000 C-CHANNEL.
4. UNISTRUT P2380 ANCHOR. 6 PLCS- PANEL TO CHANNEL.
5. #12 SMS. @ 6" O.C. CHANNEL TO BACKING
6. 6"X16GA (54 MINUS) NOTCHED TRACK ANCHOR BACKING TO (3) STUDS MIN. SEE 11/S0-2.6 FOR BACKING TO STUD CONNECTION

SURFACE WALL MOUNTED ELECTRICAL PANEL DETAIL

NO SCALE

2 / E9.1

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RUHNAU CLARKE ARCHITECTS

REGISTERED PROFESSIONAL ENGINEER — No.E 14781 — Exp. 6-30-2021 — ELECTRICAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — No. C-21340 — Exp. 10-31-21 — STATE OF CALIFORNIA

*20048 STAMPS

AGENCY APPROVAL File No. 4.4

NEW ADMINISTRATION BUILDING:

PROJECT No. :Project Number
4/23/2021 11:11:43 AM

DRAWN BY: CHECKED BY:
ISSUE No._____ DATE_____ DESCRIPTION_____
ISSUE No._____ DATE_____ DESCRIPTION_____
ISSUE No._____ DATE_____ DESCRIPTION_____
ISSUE No._____ DATE_____ DESCRIPTION_____
REVISION No.2 DATE04/23/202 DESCRIPTION Addendum 2
REVISION No._____ DATE_____ DESCRIPTION_____
REVISION No._____ DATE_____ DESCRIPTION_____
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NEW ADMINISTRATION BUILDING
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SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT

PANEL SCHEDULES

E9.1

Project Number