ADDENDUM NO. 1

San Rafael City Schools
Glenwood Elementary School
Multi-Purpose Building

Date: 16 April 2018

Owner: San Rafael City Schools
310 Nova Albion Way
San Rafael, CA 94903

Project: Glenwood Elementary School
Multi-Purpose Room Building
25 West Castlewood Drive
San Rafael, CA 94901

Architect: Harley Ellis Devereaux
417 Montgomery Street, Suite 400
San Francisco, CA 94104

By: Michael J. Myers, AIA

This Addendum has been prepared to clarify, modify, delete, or add to the drawings and/or specifications for the above referenced project, and revisions to items listed here shall supersede description thereof prior to the above stated date. All conditions not specifically referenced here shall remain the same. It is the obligation of the Prime Contractor to make subcontractors aware of any items herein that may affect submitted bids.

Acknowledge receipt of this addendum by inserting its number and date in the Bid Form. Failure to do so may subject bidder to disqualification.

All addenda items refer to the drawings and specifications unless specifically noted otherwise.

TOTAL PAGES IN THIS ADDENDUM (excluding attachments): 4

PART A – CHANGES TO INTRODUCTORY INFORMATION

AD-1.A01 Document 00 01 08 – Deferred Approval Items. Delete Document 00 01 08 and replaced with attached Document 00 01 08.

PART B – CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS

AD-1.B01 Document 00 21 13 – Instruction to Bidders: the Mandatory Pre-Bid Conference Sign-In Sheets are attached titled “Site Walk – Pre-Bidders” for March 22, 2018 and March 29, 2018.

PART C – CHANGES TO SPECIFICATIONS

AD-1.C01 Section 06 16 00 – Sheathing. Modify paragraph 2.5.B to read as follows:
“B. Underlayment: Provide underlayment as specified in Section 09 64 30.”

AD-1.C02 Section 09 64 30 – Hardboard Stage Flooring Assembly. Delete Section 09 64 30 in its entirety, and insert attached revised Section 09 64 30 – Hardboard Stage Flooring Assembly into the Project Manual.

AD-1.C03 Section 08 41 13 – Aluminum-Framed Entrances and Storefront. Delete Section 08 41 13 in its entirety, and insert attached revised Section 08 41 13 – Aluminum-Framed Entrances and Storefront into the Project Manual.

AD-1.C04 Section 09 65 66 – Resilient Athletic Surfacing. Add Tarkett Omnisports 7.1 as an acceptable substitution subject to the minimum requirements of Section 09 65 66.

AD-1.C05 Section 07 42 93 – Soffit Panels. Delete Section 07 42 93 in its entirety, and insert attached revised Section 07 42 93 – Soffit Panels.

AD-1.C06 Section 08 71 00 – Door Hardware. Delete Section 08 71 00 in its entirety, and insert attached revised Section 08 71 00 – Door Hardware.

AD-1.C07 Section 08 74 00 – Access Control Hardware. Add Section 08 74 00 to the contract documents.

PART D – CHANGES TO DRAWINGS

AD-1.D01 Drawing M0.01 - MECHANICAL LEGENDS, GENERAL NOTES AND LEGENDS: Replace M0.01 with attached clouded M0.01. Add attached CHPS "Construction Indoor Air Quality Management" requirements to the contract requirements.

AD-1.D02 Drawing E0.1 - GENERAL NOTES, INDEX: Replace E0.1 with attached clouded E0.1.

AD-1.D03 Drawing E1.1 – ELECTRICAL SITE PLAN: Replace E1.1 with attached clouded E1.1.

AD-1.D04 Drawing E2.1 - LIGHTING PLAN: Replace E2.1 with attached clouded E2.1.

AD-1.D05 Drawing E3.1 - POWER PLAN: Replace E3.1 with attached clouded E3.1.

AD-1.D06 Drawing E4.1 - TECHNOLOGY PLAN: Replace E4.1 with attached clouded E4.1.

AD-1.D07 Drawing E5.2 - LIGHTING DETAILS: Replace E5.2 with attached clouded E5.2.

AD-1.D08 Drawing E5.4 PANEL SCHEDULES DETAILS: Replace E5.4 with attached clouded E5.4.

AD-1.D09 Drawing FA1.1 - FIRE ALARM SITE PLAN: Replace FA1.1 with attached clouded FA1.1.

AD-1.D10 Drawing C2.01 – GRADING AND DRAINAGE PLAN: Replace C2.01 with attached clouded C2.01. This drawing also modifies the plan on C2.02.

AD-1.D11 Add MMWD "FIRELINE, NEW & RENEW" details to the contract documents. The District will pay city permit fees, but the contractor is responsible for connecting and installing the new fire line and accessories to the city main per the attached details. Add MMWD document "PIPELINE SUBMITTALS" to include city required submittals by the contractor in addition to any submittals required in the contract documents.

AD-1.D12 Drawing A-501 Details 1 and 2: Platform floor assembly to be per details 1 and 2 on A-572 and specifications.

AD-1.D13 Drawing AS-104 – Enlarged Site Plan and Details: Note A09 to state "New Detectable Warning Mat per Detail 6." Detectable Warning Mat per Detail 6 to be installed by sawcutting asphalt and removing and replacing with a 4" concrete slab to anchor the mat to.

AD-1.D14 Drawing AS-103 – ENLARGED SITE PLAN AND DETAILS: Replace AS-103 with attached clouded AS-103.

AD-1.D15 Drawing A-201 – EXTERIOR ELEVATIONS / BUILDING SECTIONS: Replace A-201 with attached clouded A-201.

AD-1.D16 Drawing A-441 – INTERIOR ELEVATIONS: Replace A-441 with attached clouded A-441.

AD-1.D17 Drawing A-533 – ROOF DETAILS: Replace A-533 with attached clouded A-533.

AD-1.D18 Drawing A-564 – EXTERIOR ALUM. FRAMED STOREFRONT DETAILS: Replace A-564 with attached clouded A-564.

AD-1.D19 Drawing A-572 – INTERIOR FRAMING DETAILS: Replace A-572 with attached clouded A-572.

AD-1.D20 Drawing A-601 – DOOR AND FINISH SCHEDULE: Replace A-601 with attached clouded A-601.

AD-1.D21 Drawing A-571 – WALL PARTITION TYPES AND DETAILS: Delete detail 9.

AD-1.D22 Drawing A-532 – CANOPY/ROOF DETAILS: Replace A-532 with attached clouded A-532.

AD-1.D23 Drawing A-501 – WALL SECTIONS: Replace A-501 with attached clouded A-501.

ATTACHMENTS

Documents:

Document 00 01 08 – Deferred Approval Items
CHPS Construction Indoor Air Quality Management
Site Walk – Pre-Bidders Sign-In Sheet (March 22, 2018)
Site Walk – Pre-Bidders Sign-In Sheet (March 29, 2018)
MMWD FIRELINE, NEW & RENEW
MMWD PIPELINE SUBMITTALS

Specifications:

Section 09 64 30 – Hardboard Stage Flooring Assembly
Section 08 41 13 – Aluminum-Framed Entrances and Storefront
Section 07 42 93 – Soffit Panels
Section 08 71 00 – Door Hardware
Section 08 74 00 – Access Control Hardware

Drawings:

C2.01: ADDENDUM 1
M0.01: ADDENDUM 1
E0.1: ADDENDUM 1
E1.1: ADDENDUM 1
E2.1: ADDENDUM 1
E3.1: ADDENDUM 1
E4.1: ADDENDUM 1
E5.2: ADDENDUM 1
E5.4: ADDENDUM 1
FA1.1: ADDENDUM 1
AS-103: ADDENDUM 1
A-201: ADDENDUM 1
A-441: ADDENDUM 1
A-501: ADDENDUM 1
A-532: ADDENDUM 1

A-533: ADDENDUM 1
A-564: ADDENDUM 1
A-572: ADDENDUM 1
A-601: ADDENDUM 1

END OF ADDENDUM

DOCUMENT 00 01 08 (ADDENDUM 1)

DEFERRED APPROVAL ITEMS

1. Aluminum Storefront types AL1-AL6.
2. Indoor Basketball Backstops per A-100 and A-591.
3. Divider Curtain per A-201.
4. Roof Skylights per A-130.

For each of the above items, the Contractor, subcontractor or supplier shall provide specifications, specific details, drawings, descriptive materials, shop drawings and structural calculations.

Structural calculations shall be signed and stamped by a structural engineer registered in California.

Fabrication of the above listed items of work shall not be started until detail plans, specifications and engineering calculations have been approved by the Division of the State Architect. Upon receipt of the above material by the Architect, it will be reviewed by the Architect and Structural Engineer of Record for this project. If there are no comments, the Architect will administratively submit it to the Division of the State Architect for approval. Contractor shall furnish all additional calculations required if the Division of the State Architect requests such additional information.

Contractor shall schedule and give prompt attention to the preparation and submittal of these deferred approval items. Extension of contract time will not be given if project is delayed due to not making submittals in a timely manner or if the Division of the State Architect has comments that delay the approval of the submittals.

END OF DOCUMENT

04/12/18

Construction Indoor Air Quality Management

Intent
Achieve good indoor air quality to protect student and staff health and improve performance and attendance.
EQ 5.0 – Construction Indoor Air Quality Management
EQ 5.1 – Enhanced Construction Indoor Air Quality Management

A high level of indoor air quality starts during design, is implemented during construction, and is maintained during operation.

EQ 5.0 – Construction Indoor Air Quality Management	**Prerequisite**	
	7 points	
Applicability	**Verification**	
All projects.	Design Review	Construction Review

Requirement

Prerequisite	EQ 5.0	Mold Prevention – For all projects, building materials, especially gypsum wallboard, wood, porous insulation, paper, and fabric, must be kept dry to prevent the growth of mold and bacteria. Cover these materials to prevent rain damage, and if resting on the ground, use spacers to allow air to circulate between the ground and the materials. Water damaged materials shall be dried within 24 hours. Due to the possibility of mold and bacterial growth, materials susceptible to moisture that are damp or wet for more than 24 hours must be discarded. Immediately remove from the site materials showing signs of mold and mildew, including any with moisture stains, and properly dispose of them. Replace moldy materials with new, undamaged materials. Pollutant Control – For new schools, replacement schools, or new buildings on existing campuses, follow CALGreen Section 5.504.3. For all projects, if installing a new HVAC duct system, follow SMACNA guidelines for “Duct Cleanliness for New Construction Guidelines” according to advanced levels of cleanliness. Of specific importance are the following: • Specify that ductwork be sealed when transported to the construction site. • Store ductwork in clean, dry conditions and keep sealed while it is stored. • Wipe down internal surfaces of ductwork immediately prior to installation to remove dust.

- Seal open ends on completed ductwork and overnight work-in-progress.
- During installation, protect ductwork waiting to be installed with surface wrapping, etc.

During construction, seal HVAC supply and return openings to protect them from water and construction debris and dust infiltration (e.g., from drywall installation or wood floor sanding).

Ventilation – For new schools, replacement schools, or new buildings on existing campuses comply with CALGreen Section 5.505.1, as applicable.

Building Flush Out

The project team shall develop a plan, and include it in the specifications to flush out the building with outdoor air (no return air) based on the requirements and recommendations in the specifications to remove indoor pollutants prior to occupancy. The information should also be detailed in the projects TAB and control sequence of the specifications or project manual. The specifications at minimum must state that the maximum amount of outdoor air (the design outdoor air flow rate for maximum occupancy) must be provided during and after installation of VOC emitting materials for the maximum amount of time feasible, but not less than continuously (i.e. 24 hrs.) for seven days. It should be noted that the maximum amount of ventilation provided by an HVAC system may be limited not only by the system's capacity but also by the temperature and humidity of the outdoor air. The specifications should be developed utilizing the CHPS Best Practices Manual Volume II on Design guidelines for building flush out.

After construction ends, prior to occupancy, and with all interior finishes installed, flush out the building. Do this by supplying the ventilation rates over the specified time period per the plan developed in detail by the design engineer and provided in the specifications.

After flush out, replace air filters with new filters and provide two sets of additional replacement filters prior to occupancy.

For the case where a project has fallen behind schedule, the school may alternatively conduct the flush-out while the building is occupied provided all of the following measures to protect building occupants are taken prior to their use of the space. The square root of the total number of all classrooms must be tested for compliance with the following criteria. Any non-compliant rooms must be remedied and re-tested until they are compliant. Two additional classrooms per non-compliant classroom must also be tested in all items below in the event of non-compliance. Conduct IAQ testing using protocols consistent with the methods listed in Table 6. Use current versions of ASTM standard methods, EPA compendium methods, or ISO methods, as indicated. Laboratories that conduct the tests for chemical analysis of formaldehyde and volatile organic compounds must be accredited under ISO/IEC 17025 for the test methods they use. Demonstrate that contaminants do not exceed the concentration levels listed in Table 6.

Table 6. Maximum concentration levels, by contaminant and testing method

Contaminant	Maximum concentration	ASTM and U.S. EPA methods	ISO method
Formaldehyde	9 µg/m3	ASTM D5197; EPA TO-11 or EPA Compendium Method IP-6	ISO 16000-3

Particulates (PM10 & PM2.5)	PM10: 20 micrograms per cubic meter PM2.5: 12 micrograms per cubic meter	EPA Compendium Method IP-10	ISO 7708
Total volatile organic compounds (TVOCs)	500 micrograms per cubic meter	EPA TO-1, TO-15, TO-17, or EPA Compendium Method IP-1	ISO 16000-6
Target chemicals listed in CDPH Standard Method v1.1, Table 4-1, except formaldehyde	CDPH Standard Method v1.1–2010, Allowable Concentrations, Table 4-1	ASTM D5197; EPA TO-1, TO-15, TO-17, or EPA Compendium Method IP-1	ISO 16000-3,
Carbon monoxide (CO)	9 ppm; no more than 2 ppm above outdoor levels	EPA Compendium Method IP-3	ISO 4224

ppb = parts per billion; ppm = parts per million; µg/cm = micrograms per cubic meter

Conduct the flush out for 24 hours a day with continuous ventilation for the total number of days necessary with all supply fans at their maximum rate and position. Thermal comfort is maintained during occupied hours, per the criteria in ASHRAE Standard 55. Internal temperatures are maintained at the most energy efficient level above 60°F; relative humidity is maintained no higher than 60% during non-occupancy hours. Under conditions where the heating can't be met (60□) at that fan speed, then adjust the fan to achieve 60□.

All air handling unit dampers are at their maximum outdoor air position during the 14-day flush out. If the 60% relative humidity level cannot be achieved with maximum outdoor air position, reduce fan speed and/or outdoor air position as needed, but extend flush-out period beyond 14 days to accomplish roughly the same amount of total air throughput that would have occurred at maximum outdoor air position.

Classrooms shall not be "baked out". The temperature in the building space shall not be increased to attempt to bake out the built environment. (If continuous ventilation is not possible, flush out must total the equivalent of 14 days of maximum outdoor air.)

Post-occupancy ventilation

When the contractor is required to perform touch-up (including furniture after occupancy) work involving products with chemical emissions, provide temporary construction ventilation during application and extend the building flush out by a minimum of 4 days after touch-up application, with 100% tempered outdoor air for 24 hours each day.

Implementation

Construction activities can affect indoor air quality long after the building is occupied. Protecting building materials from moisture and removing water-damaged materials are important practices in the prevention of mold growth in new buildings.

Reference specification sections for protection of building materials from water damage, and designate the CSI number, section, and page number that highlight compliance with this requirement.

Provide photographs taken at various times during construction, with a narrative for each photo describing techniques for protecting building materials from mold and moisture damage.

EQ 5.1 – Enhanced Construction Indoor Air Quality Management	**Credit**	
	1 point	
Applicability	**Verification**	
All projects.	Design Review	Construction Review

Requirement

1 point	EQ 5.1.1	During construction, meet the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) *IAQ Guideline for Occupied Buildings Under Construction*, 2007, Chapter 3. Include the erosion and sedimentation control measures to minimize site dust during occupied renovations.

Implementation

EQ 5.0

Mold Prevention - Construction activities can affect indoor air quality long after the building is occupied. Protecting building materials from moisture and removing water-damaged materials are important practices in the prevention of mold growth in new buildings.

Reference specification sections for protection of building materials from water damage, and designate the CSI number, section, and page number that highlight compliance with this requirement.

Provide photographs taken at various times during construction, with a narrative for each photo describing techniques for protecting building materials from mold and moisture damage.

Pollutant Control - This construction practice will improve indoor air quality by minimizing the amount of indoor pollutants that are distributed and retained by the surface materials and ventilation systems during construction.

Reference specification sections the SMACNA guidelines for duct protection including specific references to SMACNA Duct Cleanliness Guidelines Advanced Levels. Designate the CSI number, section, and page number showing compliance with this requirement. Provide photographs taken at various times during construction, with a narrative for each photo describing compliance with SMACNA Duct Cleanliness advanced levels.

Duct insulation should be located on the outside of ductwork, unless it is being installed for the purpose of attenuating sound, and there is no other means of attenuation sound. Duct liners have been known to deteriorate over time and absorb moisture, leading to the release of particles in the ducts that can be blown into classrooms and offices. Ensure that the duct liners used for sound attenuation meet the ASTM standards for surface erosion resistance and water vapor sorption.

Designate the CSI number, section, and page number that highlight the requirements for ASTM standards C 1071 or UL 181 for surface erosion resistance and ASTM standards C 1104 or C 209 (at <0.5% absorption by volume for ASTM C 209) for water vapor sorption.

EQ 5.1.1

For new schools constructed next to occupied schools, the construction process (and demolition process if the existing school is later torn down) will create dust, fumes, and exhaust from activities such as site grading, pouring of the foundation, framing, enclosing the walls and roof, landscaping, installation of stormwater and utility systems, and paving. The construction team must have a communications plan in place to alert school occupants to potential exposures. Additionally, there must be an occupant complaint system in place when construction activities are creating nuisance dust, fumes, and exhaust. Furthermore, if warranted, the construction team should consider protecting the occupied school's outdoor air intakes to prevent entrainment of pollutants.

Reference specifications for a communication plan between the construction team and building occupants regarding complaints, concerns, and predicted changes to IAQ. The plan must consider communications from occupants as well as to occupants. And the plan must consider whether protection of outdoor air intakes is necessary for the project. Designate the CSI number, section, and page number that highlight compliance with this requirement.

For occupied renovations/modernizations, provide photographs (at least six) taken at various times during construction, with a narrative for each photo describing compliance with SMACNA guidelines as follows:

- Construction areas that were isolated from adjacent non-construction areas using temporary walls, plastic sheeting, or other vapor retarding barriers.
- Construction areas that were maintained at a negative air pressure compared to surrounding non-construction areas.
- Recirculating air ducts that were temporarily capped and sealed (appropriate filters may be used if nuisance particulates are the only contaminant of concern).
- Supply air systems that were operated with filters in place.

For occupied renovations, applicants must implement containment procedures for dusts, gases, fumes, and other pollutants created as part of any planned construction, addition to, or renovation/modernization of a school building. Containment procedures must follow the SMACNA *IAQ Guidelines for Occupied Buildings Under Construction.* All bids received for school construction or renovations/modernizations must include the cost of planning and execution of containment of construction pollutants consistent with the SMACNA guidelines. The plan must include a plan for communicating information about procedures, protective measures, and construction schedules from the construction team to the building occupants. Additionally, there must be an occupant complaint system in place when construction activities are creating nuisance dust, fumes, and exhaust.

Reference specifications for an Indoor Air Quality Management Plan that addresses SMACNA control measures for maintaining good indoor air quality on the job site. The specifications should indicate who is responsible for implementing the IAQ management plan, and the plan should address depressurizing work areas, ongoing housekeeping, scheduling of construction activity to lower impacts of IAQ problems on workers and building occupants, and the method of communication between construction team and building occupants regarding complaints, concerns, and predicted changes to IAQ. Designate the CSI number, section, and page number that highlight compliance with this requirement.

Documentation Requirements

Design Review

EQ 5.0 & 5.1 - Reference construction drawings and specifications and subsections which include Indoor Air Quality management features.

Construction Review

EQ 5.0 - Submit photos taken at various times during construction, with a narrative for each photo describing techniques for protecting building materials from mold and moisture damage.

EQ 5.0 & 5.1 - Submit photos, taken at various times during construction, with a narrative for each photo describing compliance with the various requirements.

EQ 5.0 - Submit a narrative describing implementation of the flush out option chosen, photos and sign-off from the Contractor or Inspector of Record that it took place.

Resources

- ANSI/ASHRAE Standard 62.1-2010, Ventilation for Acceptable Indoor Air Quality:
- ANSI/ASHRAE Standard 62.1-2010 User's Manual: https://www.ashrae.org/resources--publications/bookstore/62-1-users-manual
- ANSI/ASHRAE Standard 62.1-2010 Mechanical Ventilation Calculation Worksheet
- www.arb.ca.gov/research/indoor/aircleaners/certified.htm
- California Code of Regulations, Title 24, Part 11: http://codes.iccsafe.org/app/book/toc/2016/California/Green/index.html
- CHPS Best Practices Manual, Volume II: HVAC Chapter: www.chps.net/dev/Drupal/node/31
- ASHRAE Standard 62.1 Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings Under Construction, 2008.
- Sheet Metal and Air Conditioning Contractors' National Association, Inc., (SMACNA) Duct Cleanliness for New Construction Guidelines; ©SMACNA 2000 www.smacna.org/technical/index.cfm?fuseaction=papers
- Air Resources Board, Formaldehyde Alternative Technology Control Measure (ATCM): www.arb.ca.gov/toxics/compwood/compwood.htm

Post Construction Indoor Air Quality

Intent
Improve indoor air quality by minimizing the amount of indoor pollutants that are distributed and retained by the surface materials and ventilation systems during construction.
EQ 6.1 – Post Construction Indoor Air Quality

Carpet and other soft surfaces and ventilation systems are especially susceptible to the accumulation of construction dust. Effective vacuuming will reduce the accumulation and distribution of particulates.

EQ 6.1 – Post Construction Indoor Air Quality	**Credit**	
	1 point	
Applicability	**Verification**	
All projects.	Design Review	Construction Review

Requirement

1 point	EQ 6.1	Vacuum carpeted and soft surfaces with a certified vacuum or high-efficiency particulate air (HEPA) filter vacuum that meets or exceeds the CRI Seal of Approval/Green Label Vacuum Cleaner Program after construction is complete and prior to occupancy. For phased, occupied renovations, HEPA vacuum the carpet daily in occupied areas and in areas adjacent to those affected by construction activities.

Implementation

Reference specifications for vacuuming of carpeted floors prior to full building occupancy using a certified vacuum or high efficiency particulate air (HEPA) filter vacuum that meets or exceeds the CRI Seal of Approval/Green Label Vacuum Cleaner Program. For phased, occupied renovations, or adjacent areas that may be affected by construction activities, submit a signed letter from the Superintendent, or designee, stating that:

- Carpeting in occupied areas of the school shall be vacuumed on a daily basis
- Only certified Carpet & Rug Institutes Seal of Approval (CRI SOA) Program vacuums with manufacture model identification numbers listed on the Carpet & Rug Institutes Seal of Approval (CRI SOA) Program website List will be permitted to be used for daily vacuuming of carpet in the school.

- All maintenance and cleaning staff shall keep a written log reviewed by the schools Facility Manager annually verifying that each vacuum used in the school operated at all times with the proper filter defined for the specific vacuum in the Carpet & Rug Institutes Seal of Approval (CRI SOA) Program.

- Tracking labels shall be included and used documenting date of all past and next filter replacements.

Documentation Requirements

Design Review

Reference specifications for vacuuming of carpeted floors prior to full building occupancy using a certified vacuum or high efficiency particulate air (HEPA) filter vacuum that meets or exceeds the CRI Seal of Approval/Green Label Vacuum Cleaner Program and for phased, occupied renovations adjacent areas that may be affected by construction activities.

Construction Review

Submit a signed letter from the Superintendent, or designee, stating that carpeting in occupied areas of the school shall be vacuumed on a daily basis, and only certified CRI SOA vacuums with manufacture model identification numbers listed on the CRI SOA website List will be permitted to be used for daily vacuuming of carpet in the school.

All maintenance and cleaning staff shall keep a written log of proper filter use and use tracking labels.

Resources

- The Carpet and Rug Institute (CRI) Green Label Vacuum Seal of Approval Program: www.carpet-rug.org/commercial-customers/cleaning-and-maintenance/seal-of-approval-products/vacuums.cfm

San Rafael City Schools

SRCS Bond Measure A & B

Site Name:	Glenwood	Bid #:	18.1
Meeting Name:	Site Walk - Pre Bidders	Project #:	N/A
Date:	March 22,2018	Time:	10:00 AM

Print Name	Company Name	Phone	Email Address
Huan Truong	DL Falk Construction	(510) 887-6500	htruong@dlfalk.com
KARIN ROMEO	ALTEN CONSTRUCTION	(510) 234-4200	bids@altenconstruction.com
LUCAS SILVEIRA	EF BRETT	415-524-8359	lucas@efbrett.com
Pete Hoffmann	Murray Building Inc	(707) 939-9001	scott@murraybuildinginc.com
RON AHLERS	FRC INC.	(707) 837-5065	frank@frc.biz
SCOTT BERGE	HED ARCHITECTS		

San Rafael City Schools

Glenwood MPR Pre-Bid Meeting #2 - Site Walk - Pre Bidders
March 29, 2018
10:00 AM

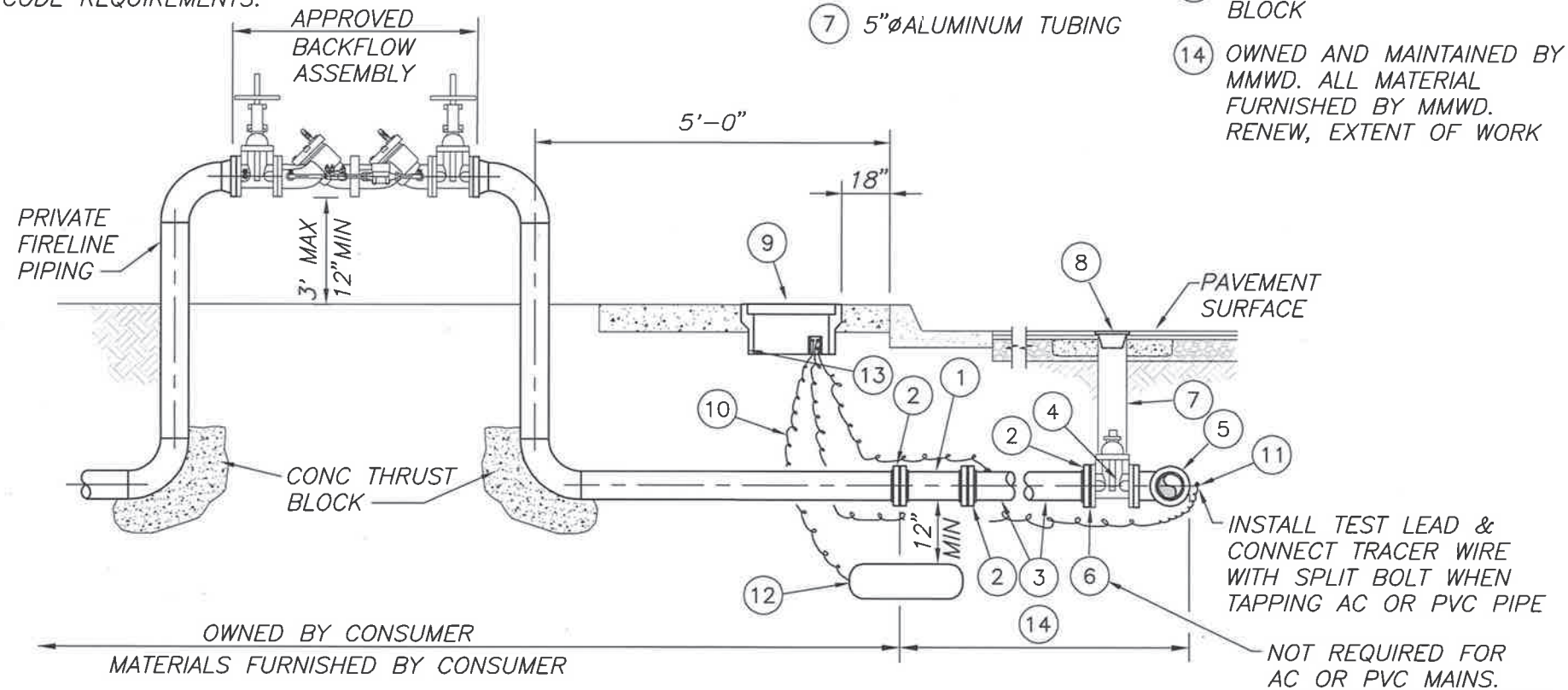
Print Name	Company	Phone	Email
SCOTT BERGE	HARLEY ELLIS DEVEREAUX		
KEN HOPSON	SAUSAL CORP.	925-568-2200	michelle@sausal.net
Bill Celia	Thompson Builders Corp	415-456-8472	dalian@tbcorp.com
APRIL KARSEMEYER	BHM CONSTRUCTION, INC	707-643-4580	BIDS@BHMCONSTRUCTION.com
LARRY HAYES	RODAN BUILDERS	650 508 1700	bids@rodanbuilders.com
Mike Hannegan	KCK Builders	415-559-9312	mikehannegancomcast.net

NOTES:

1. CONSUMER SHALL MARK LOCATION FOR PROPOSED ASSEMBLY FOR MMWD REVIEW & APPROVAL. ALL MMWD PIPING MUST BE IN THE PUBLIC EASEMENT. ASSEMBLY SHALL HAVE 12" CLEAR ALL AROUND. METER SHALL BE IN ACCESSIBLE LOCATION.
2. CONSUMER FURNISHED APPROVED BACKFLOW ASSEMBLY MUST BE ON SITE FOR MMWD INSPECTION PRIOR TO ANY MMWD PIPING INSTALLATION.
3. WRAP ALL BARE METAL BELOW GROUND.
4. CHLORINATE & TEST PRIOR TO CONNECTION.
5. TEST CORROSION SYSTEM PRIOR TO CONNECTION.
6. HOT TAP OF EX MAIN TO BE COORDINATED WITH MMWD.
7. MMWD WILL NOT TURN ON FIRELINE UNTIL FINAL PAVING & SIDEWALKS ARE COMPLETE.
8. CONSUMER PIPING DEPTH PER CALIFORNIA PLUMBING & NFPA CODE REQUIREMENTS.

MMWD FURNISHED MATERIAL

1. HDPE SPOOL KIT. SEE TORQUE SPEC.
2. SLIP-ON FLANGE
3. WELDED STEEL PIPE
4. GATE VALVE
5. TAPPING SLEEVE, TEE OR WELDED OUTLET
6. FLANGE INSULATING KIT
7. 5"øALUMINUM TUBING
8. CI VALVE CAP
9. B9 METER BOX
10. #8 TW STANDARD COPPER WIRE
11. #S8S SPLIT BOLT CONNECTOR
12. 32# MAGNESIUM ANODE WITH PACKAGED BACKFILL W/ WIRE.
13. 2 PIECE PHENOLIC TERMINAL BLOCK
14. OWNED AND MAINTAINED BY MMWD. ALL MATERIAL FURNISHED BY MMWD. RENEW, EXTENT OF WORK



FIRELINE, NEW & RENEW

NO SCALE	FILE NO. SD0029	APPROV. BY: EA	REV. DATE: APR '16

PIPELINE SUBMITTALS

Sub Date	Resp. Date	Status	SECTION, ITEM	DESCRIPTION	sub-section	page	Review by
			General Specifications				
			Shoring Plan		Article 11		CMG
			Safety manual (IIPP)		Article 51		CMG
			01000 Special Provisions				
			Encroachment permit	if applicable	(varies)		CMG
			Traffic control plan	if applicable	(varies)		CMG
			(other special)	(review for each project)			
			01300 Construction Submittals				
			Construction Schedule	items 1.1 - 1.6 are required before work may begin	1.1	p. 1	CMG
			Cost Breakdown	for partial payments of large lump sum bid items	1.2	p. 1	CMG
			List of Subcontractors		1.3	p. 1	CMG
			Certified Payroll		1.4	p. 1	CMG
			Emergency Contacts		1.5	p. 1	CMG
			Competent Person		1.6	p. 2	CMG
			Safety Manual (IIPP)		1.9	p. 4	CMG
			01700 Contract Closeout				
			completion of all submittals	as-builts required prior to closing contract	1.2	p. 1	CMG
			02200 Earthwork				
			Sheeting and shoring plan	for excavation > 5 feet, detailed plan for all shoring, include mfr info. for equipment	1.5.A, 3.5.F	p. 2,7	ENG
			samples of sand, AB, etc.	only if required by Engineer	1.5.B	p. 2	ENG
			soils test results	only if Engineer requires Contractor to test	1.5.B, 3.7.B	p. 2,8	ENG
			Class 2 AB	certification of gradation from supplier	2.1.A	p. 3	ENG
			Sand	certification of gradation from supplier	2.1.B	p. 3	ENG
			02500 AC Paving and Resurfacing				
			AC mix design	aggregate, asphalt, mix proportions, temperatures	1.3.A, 2.1.D	p. 1, 2	ENG
			cert. for asphalt binder	for compliance w/ material standards	1.3.B	p. 1, 2	ENG
			pavement reinf. fabric	sample and mfr. placement recommendations	1.3.C, 2.1.C	p. 1, 2	ENG
			sand or slurry seal	only if required	2.1.E,F	p. 2	ENG
			street marking materials	must meet local town, city requirements	2.2	p. 3	ENG
			03301 Misc. Concrete				
			concrete mix design	proportions, slump, list of admixtures	1.3.A, 2.1.D	p. 1, 2	ENG
			delivery tickets	per ASTM C94, w/ notes if water added at job	1.3.C	p. 1	CMG
			03302 Concrete Pavement				
			concrete mix design	proportions, slump, list of admixtures	1.4, 2.1,2.5	p. 2,3,6	ENG
			delivery tickets	per ASTM C94, w/ notes if water added at job	1.6.C	p. 1	CMG
			03400 Control Density Fill (CDF)				
			CDF mix design	proportions, slump, list of admixtures	1.3.A, 2.1	p. 1	ENG
			cement and aggregate	ASTM certificatation: cement, agg., fly ash	1.3.B	p. 1	ENG
			delivery tickets	per ASTM C94, w/ notes if water added at job	1.3.C	p. 1	CMG
			18000 Environmental protection				
			Enviromental Permits	if required: storm, wetlands, dust, noise, etc.	1.2.A	p. 1	CMG
			Proposed disposal sites	if requested by Engineer	1.2.B,C	p. 1	CMG
			Private agreements re: storage, fill, borrow, etc.	if requested by Engineer: copys of private agreements relevant to environmental protection	1.2.D	p. 1	CMG
			Site winterization plan	if requested by Engineer (depending on season)	1.2.E	p. 1	CMG

SECTION 09 64 30 (ADDENDUM 1)

HARDBOARD STAGE FLOORING ASSEMBLY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Tempered hardboard stage flooring system.

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

C. Related Sections:

1. Section 06 16 00 - Sheathing: Plywood subfloor.
2. Section 08 71 00 - Door Hardware: Door thresholds.
3. Section 09 90 00 - Painting: Field painting of hardboard stage finish flooring.

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 19 for information concerning availability and use of references.

APA-The Engineered Wood Association
ASTM International

1.3 ACTION SUBMITTALS

A. Submit under provisions of Section 01 33 00 – Submittal Procedures.

B. Shop Drawings: Submit drawings showing materials, method of construction and installation, dimensions, perimeter venting and other pertinent information.

C. Samples: Submit sample of vent base, minimum 12-inches long.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer. Submit Documentation showing compliance with installer qualifications specified in the Quality Assurance paragraph.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed flooring similar in material, design, and extent to that indicated for this Project and whose work has resulted in flooring installations with a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver flooring to the site until plaster and concrete work are dry and the relative humidity within the building is 50 percent or below.

B. Store materials in an area where temperature can be maintained at approximately 65 degrees F and relative humidity can be kept below 50 percent.

1.7 PROJECT CONDITIONS

A. Maintain the ambient air temperature at approximately 65 degrees F and the relative humidity at 50 percent or below for a period extending from 7 days before installation until completion of installation.

B. Do not start installation of flooring until HVAC system is operational and concrete has cured for 60 days and all painting, and finishing work is complete. Wood subfloor materials shall be acclimated in the space per standard industry procedures. Top layer hardboard shall be leafed out flat in single sheets laid in place unfastened for a period of 60 hours minimum before fastening.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Vapor Barrier: ASTM D4397, polyethylene sheeting not less than 6-mils thick.

B. Plywood Underlayment Subfloor: One layer of 23/32" structural rated sheathing, APA A-C grade, tongue and groove edges. Exterior exposure durability classification.

C. Top Layer: 1/4-inch thick double tempered hardboard. Meet or exceed Commercial Standard CS-251 and Fed. Spec. LLL-B-00810, smooth both sides.

D. Fasteners:

1. Subfloor Fasteners: 1-1/2" to 1-5/8" subflooring nails or 1-1/4" coated staples.
2. Flooring Fasteners: Phillips head screws.
3. Adhesive: Elastomeric subfloor adhesive.

E. Stage Finish: Flat black theatrical paint. Acceptable product, no substitutions:

1. Rosco; Toughprime

F. Perimeter Base: 3" x 4" heavy duty ventilating type base with pre-molded outside corners. Color as selected by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas and conditions, with installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of wood-flooring assembly.

B. Installer shall document all working conditions described in Article 1.6 and Article 1.7 prior to commencement of installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Vapor Barrier: Install polyethylene with joints lapped a minimum of 6” and turned up at walls 4”.

B. Sub-flooring: Apply one layer of plywood underlayment at 90-degree angle to the structural subfloor and offset 2-feet in each direction. Screw down to wood floor joists.

C. Top Layer: Install for simple individual sheet replacement in uncut 4’ by 8’ sheets, only cut to fit as required at sides of room. Fasten with nominal 1/16” gaps around all sides.

1. Layout: Lay out top layer with a seam on the centerline between the edges of the stage proscenium.
2. Fastening: Countersunk phillips head screws ±12” on center in the interior field, 6” on center around perimeter, 2-inches inside edges (except at walls) and on centerline of each sheet. Inset screws 4-inches at walls so they are not covered by the vent cove base. Use of glue for top layer is prohibited.
3. Finish: Finish top layer with 2 coats of flat black theatrical paint.

3.3 INSTALLATION OF WALL BASE

A. Install vent cove base anchored to walls with base adhesive or mechanical fastener. Use pre-molded outside corners and neatly mitered inside corner.

3.4 CLEANING AND PROTECTION

A. Remove rubbish, debris, and waste material from work area and legally dispose.

B. Immediately after all flooring work is completed, cover flooring with a protective paper supplemented with clean plywood or particleboard along traffic areas.

C. Just before final inspection, remove protective covering, repair all damage to the flooring, and clean the entire floor area.

END OF SECTION

04/04/18

SECTION 08 41 13 (ADDENDUM 1)

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Storefront framing, fixed window framing, and operable project-out vents.
2. Manual-swing entrance doors and door-frame units.
3. Window actuators.

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

C. Related Sections:

1. Document 00 01 08 “Deferred Approval Items.”
2. Section 05 40 00 “Cold-formed Metal Framing.”
3. Section 07 92 00 “Joint Sealants.”
4. Section 08 71 00 “Door Hardware.”
5. Section 08 80 00 “Glazing”.
6. Division 26 “Electrical” for electrical power to window actuators.

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 19 for information concerning availability and use of references.

Aluminum Association (AA)
ASTM International (ASTM)
Architectural Aluminum Manufacturers Association (AAMA)
The Society for Protective Coatings (SSPC)

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:

a. Joinery, including concealed welds.
b. Anchorage.

c. Expansion provisions.
d. Glazing.
e. Flashing and drainage.

3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

4. Show complete wiring diagram for window actuators, control panels, and key switches.

B. Structural Calculations: Along with the shop drawings, submit structural calculations prepared, signed and sealed by a structural engineer registered in California. Calculations shall show that storerfront framing and anchorage will withstand the wind, dead, seismic, and other loads specified herein. Design members in accordance with 2016 CBC Chapters 20 and 22A with allowable stresses not to exceed yield stresses stated therein. Show section property computations for all framing members.

C. Fabrication Sample: Of typical vertical-to-horizontal intersection of aluminum-framed systems, made from 12" lengths of full-size components and showing details of the following:

1. Joinery, including concealed welds.
2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

D. Installation Instructions: Provide complete diagrams, templates, and installation instructions as required for the installation of the storefront system, in sufficient time so that backing, framing, and formwork can be properly installed, and so that the work of other trades will not be delayed.

E. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

F. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.

1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

C. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by a qualified testing agency.

D. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.6 DIVISION OF STATE ARCHITECT DEFERRED APPROVAL

A. Deferred approval required for all storefront window units with spans greater than 10 feet.

B. After Architect has reviewed the shop drawings and materials prepared and provided by Contractor for the Deferred Approval item, Architect will forward those materials to Division of the State Architect (DSA) for their review and comment.

C. Contractor shall make all DSA required corrections, shall provide all DSA required documentation, and shall coordinate and resubmit those materials to Architect for forwarding to DSA.

D. If a second round of corrections and resubmittals is required by DSA, Contractor shall be responsible for all time and coordination with DSA, without further involvement by Architect, or Contractor shall compensate Architect for their time if Contractor chooses to continue to involve Architect in the process with DSA.

E. When Contractor has obtained DSA approval of the Deferred Approval materials, Contractor shall resubmit a copy of those same DSA approved materials to Architect for Record.

F. No work shall commence on a Deferred Approval item until all these requirements have been completed.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications: A manufacturer capable of providing aluminum framed storefront system that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.

C. Source Limitations: Obtain aluminum framed storefront system through one source from a single manufacturer.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum framed storefront system and are based on the specific system indicated. Do not modify size and dimensional requirements.

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup for type(s) of storefront elevation(s) as directed by Architect.

2. Notify Architect seven days in advance of dates and times when mockups will be constructed.

3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.

4. Demonstrate the proposed range of aesthetic effects and workmanship.

5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
   a. Allow seven days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

F. Accessible Entrances: Comply with Accessibility requirements.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver aluminum entrance and storefront components in the manufacturer's original protective packaging with identification labels intact.

B. Store entrance and storefront sections out of contact with the ground and under a weather tight covering. Do not cover storefront and entrance sections with polyethylene film or similar coverings that will create a humidity chamber. If factory coated aluminum is protected with a strippable plastic film, remove the film before exposing the materials to direct sunlight.

C. Protect factory-coated surfaces during shipping and handling to prevent scratching, gouging or other damage to the finish.

1.9 FIELD MEASUREMENTS

A. Secure accurate field measurements required for the manufacture and installation of aluminum entrance and storefront work. Consult with the various trades whose work adjoins this work and be responsible for all measurements and the working out of all details.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating aluminum-framed systems without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.10 WARRANTY

A. Provide an extended warranty under the provisions of Section 01 78 36.

B. Special Assembly Warranty: Manufacturer standard form in which manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Structural failures including, but not limited to, excessive deflection.
   b. Noise or vibration created by wind and thermal and structural movements.
   c. Deterioration of metals and other materials beyond normal weathering.
   d. Water penetration through fixed glazing and framing areas.
   e. Failure of operating components to function properly.

2. Warranty Period: Two years from date of Substantial Completion.

C. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

2. Warranty Period: Two years from date of Substantial Completion.

D. Warranty Period for Window Control Components: 3 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS - STOREFRONT

A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

    a. Thermal stresses transferring to building structure.
    b. Glass breakage.
    c. Noise or vibration created by wind and thermal and structural movements.
    d. Loosening or weakening of fasteners, attachments, and other components.
    e. Failure of operating units.

B. Structural Loads:

1. Wind Loads: As indicated on Structural Drawings.
2. Other Design Loads: As indicated on Structural Drawings.

C. Deflection of Framing Members:

1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane shall not exceed L/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.

D. Structural-Test Performance: ASTM E 330 as follows:

1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not fewer than 10 seconds.

E. Story Drift: Provide aluminum-framed systems that accommodate design displacement of adjacent stories indicated.

1. Design Displacement: As indicated on Drawings.

F. Test Performance: Meet criteria for passing, based on building occupancy type, when tested according to AAMA 501.4 at design displacement.

G. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 CFM psf at a static air pressure differential of 6.24 psf.

H. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 8 psf as defined in AAMA 501.

I. Condensation Resistance: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor of not less than 62 frame (Glass to Center) and 68 glass (low-e) when tested according to AAMA 1503.

J. Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than:

1. Glass to Center: 0.44 (low-e). (Based upon 1" clear insulating glass (1/4" clear with e = 0.035 Low E Coating on #2 Surface, 1/2" air space with warm edge spacer and 90% argon gas fill, 1/4" clear.)

K. Thermal Transmittance (U-factor): Provide aluminum-framed systems with fixed glazing and framing areas having U-factor of 0.44 Btu / sq. ft. x h x deg F or better when tested according to AAMA 1503, based on 1" clear insulating glass (1/4" clear glass with low e coating on #2 surface + 1/2" Air Space with 90% argon gas fill + 1/4" clear glass).

2.2 PERFORMANCE REQUIREMENTS – ENTRANCE DOORS

A. Wind loads: Provide aluminum-framed entrance system; include anchorage, capable of withstanding wind load design pressures as indicated on Structural Drawings.

B. Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 1.57 psf for single doors and pairs of doors. A single 3'-0" x 7'-0" entrance door and frame shall not exceed 1.0 cfm/ft^2. A pair of 6'-0" x 7'-0" entrance doors and frame shall not exceed 1.0 cfm/ft^2.

C. Structural Performance: Corner strength shall be tested per the Kawneer dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity. Testing procedure and certified test results available upon request.

2.3 PERFORMANCE REQUIREMENTS – PROJECT OUT VENTS

A. General Performance: Aluminum-framed window system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Window Performance Requirements:

1. Performance Requirements: Provide aluminum windows of performance indicated that comply with AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS).
   a. Performance Class and Grade: (P-HC40 – P-HC70) Project-Out Window
2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E283 at a minimum size of 60" x 36" Project-Out. Air infiltration rate shall not exceed 0.10 cfm/ft^2 at a static air pressure differential of 6.24 psf.
3. Water Resistance: The test specimen shall be tested in accordance with ASTM E547 and ASTM E331 at a minimum size of 60" x 36" Project-Out. There shall be no leakage as defined in the test method at a static air pressure differential of 15 psf.
4. Uniform Load Deflection: A minimum static air pressure difference of (40 psf (2 Locks)) or (70 psf (3 Locks)) shall be applied in the positive and negative direction in accordance with ASTM E330. There shall be no deflection in excess of L/175 of the span of any framing member.
5. Uniform Load Structural: A minimum static air pressure difference of (60 psf (2 Locks)) or (105 psf (3 Locks)) shall be applied in the positive and negative direction in accordance with ASTM E330. The unit shall be evaluated after each load with permanent set not to exceed 0.2% of span length.
6. Component Testing: Window components shall be tested in accordance with procedures described in AAMA/WDMA/CSA 101/I.S.2/A440 and AAMA 910.

   NOTE; THERMAL TRANSMITTANCE AND CONDENSATION RESISTANCE TEST RESULTS NOTED ARE BASED UPON 1" CLEAR INSULATING GLASS. (1/8" + 3/4" AS +1/8")

7. Thermal Transmittance (U-Factor): When tested to AAMA Specification 1503, the thermal transmittance (U-Factor) shall not be more than;
   a. Project-Out Windows: 0.68 BTU/hr/ft^2/°F. (NFRC – 0.62).

8. Condensation Resistance Test (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, the condensation resistance factor (CFR) shall not be less than; Frame 51, Glass 54.
9. Thermal Transmittance Test: (U-Factor): The conductive thermal transmittance (U-Factor) shall not be more than (____) BTU/hr/sf/°F per AAMA 507 or NFRC 100 when using project specified glass.
10. Temperature Index (I): Provide aluminum windows tested for thermal performance according to CSA-A440 with a Temperature Index (I) not less than: 47.7.
11. Forced Entry Resistance: All windows shall conform to ASTM F588, Grade 10.
12. Windborne-Debris-Impact-Resistance Performance: Shall be tested in accordance with ASTM E 1886 and information in ASTM E 1996 and TAS 201/203.
    a. Large – Missile Impact: For aluminum-framed systems located within 30 feet of grade.
    b. Small – Missile Impact: For aluminum-framed systems located within 30 feet above grade.

2.4 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   Kawneer Company Inc.; www.kawneer.com; Series: Tri-Fab VG 451T.
   Arcadia, Inc.; www.arcadiainc.com; Series: AG451T.
   U.S. Aluminum Corp.; www.usalum.com; Series: 451.
   Old Castle Building Envelope; www.oldcastlebe.com; Series: 3000 Thermal MultiPlane.
   Substitutions: Section 01 25 13 – Product Options and Substitutions.

B. Basis-of-Design Product:

1. Kawneer Company Inc.
2. Series: Trifab™ VG 451T (Thermal) Storefront System.
3. System Dimensions: Nominal 2” x 4-1/2”.
4. Glass: Center.
5. Framing Fabrication: (TBD: Screw Spline; Shear Block; or Stick Fabrication).
6. Windload Chart Performance: Based on composite properties of Kawneer profiles 451T-CG-540 and 451T-CG-010, which are calculated in accordance with AAMA TIR-A8 and AAMA 505.

2.5 MATERIALS

A. Aluminum:

1. Extruded Aluminum: 6063-T6 alloy or other alloy standard with the manufacturer having equivalent structural and corrosion resistance properties and as recommended by the manufacturer for required finish meeting the requirements of ASTM B221; not less than 0.070-inch wall thickness at any location for the main frame.
2. Sheet Aluminum: 5055 aluminum alloy meeting the requirements of ASTM B209.
3. Provide exposed materials free from defects and other surface blemishes.

B. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

C. Fasteners: Provide nuts, screws, washers, bolts, clips, miscellaneous fastening devices, and internal components of aluminum, nonmagnetic stainless steel, or other non-corrosive materials compatible with the aluminum.

D. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

E. Glass and Glazing Materials: Comply with the requirements of Section 08 80 00.

1. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
2. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
3. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

F. Concealed Flashing: 0.0179-inch (26-gage) minimum dead-soft stainless steel, or 0.040-inch minimum aluminum sheet of alloy and type selected by manufacturer for compatibility with other components.

G. Weatherstripping:

1. Compression Weatherstripping: Manufacturer's standard replaceable compressible weatherstripping gaskets of molded neoprene (ASTM D2000) or molded PVC (ASTM D2287).
2. Sliding Weatherstripping: Manufacturer's standard replaceable wool, polypropylene, or nylon woven pile complying with AAMA 701.2.

H. Bituminous Coatings: Cold applied asphalt-mastic paint complying with SSPC-Paint 12 requirements, except containing no asbestos; formulated for 30-mil thickness per coat.

I. Glass: Center. Provide horizontal and vertical members with a nominal face dimension of 2 inches and overall depth of 4-1/2 inches. The major portions of each extrusion shall be not less than 0.093-inch thick unless otherwise indicated or specified. Glass stops shall be not less than 0.050-inch thick.

J. Glazing: Provide glass framing members designed for flush glazing on all sides with through sight lines and no projecting stops or face joints. Provide fully resilient setting of glass by use of vinyl, neoprene, or EPDM gaskets on both sides of the glass. Secure snap-in type stops at exterior side of aluminum framing to prevent removal.

K. Steel Reinforcing: Provide vertical and horizontal steel reinforcing sized as required for members and based on structural calculations and design analyses for imposed dead loads and wind load.

L. Door Stops: Door frames for doors hung on hinges or offset pivots shall have snap-in type door stops with pile weatherstripping at head and jambs.

M. Sealant: As specified in Section 07 92 00. For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

N. Tolerances: References to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.6 STOREFRONT FRAMING SYSTEM

A. Thermal Barrier (Trifab® VG 451T):

1. Kawneer IsoLock® Thermal Break with 1/4" separation consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.
   a. Thermal Break shall be designed in accordance with AAMA TIR-A8 and testing in accordance with AAMA 505.

B. Brackets and Reinforcements: Manufacturer’s standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer’s standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed, shall be stainless steel.

D. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

2.7 ENTRANCE DOOR SYSTEMS

A. Manufacturers: Acceptable products or equal:

1. Basis-of-Design Product: Kawneer Co., Inc.; TuffLine™ Series 500
   Arcadia Inc.
   U.S. Aluminum Corp.
   Oldcastle Building Envelope™

B. Design: Manufacturer's standard heavy-duty wide stile doors where scheduled, except provide width dimensions for rails and stiles as noted. The major portions of each extrusion

shall be not less than 0.188-inch thick unless otherwise indicated or specified. Glass stops shall be not less than 0.050-inch thick.

1. Bottom Rail: 12”.
2. Top Rail: 5”.
3. Middle Rail: 6”.
4. Vertical Stiles: 5”.
5. Depth: 1-3/4”.

C. Construction: Corner construction shall consist of both heavy reinforcement blocks or brackets secured with bolts or screws and SIGMA deep penetration welds. Furnish each door leaf with an adjustable mechanism allowing for minor field adjustments both vertically and front to back.

D. Glazing Stops: Provide snap-in type interior stops and lock in tamper proof type exterior stops with no exposed screws required to secure stops. Provide stops with vinyl, neoprene or EPDM bulb type glazing gaskets.

E. Weatherstripping: Provide pile weatherstripping on both stiles of center pivoted doors and on meeting stiles of offset pivoted doors.

2.8 ENTRANCE DOOR HARDWARE

A. Finish hardware is specified in Section 08 71 00. Coordinate with hardware supplier to obtain factory installed hardware and templates for field-installed hardware. Provide stainless or galvanized steel reinforcing for hardware items to be secured to aluminum framing in the field.

2.9 PROJECT-OUT WINDOWS

A. Basis-of-Design Product: Kawneer GLASSvent™ Windows.

1. 2-13/16” system depth (with 1” infill glazing).
2. Performance Grade: P-HC40 with 1” Glass and 2 Cam Locks.

B. Materials:

1. Aluminum Extrusions: Alloy and temper recommended by aluminum window manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.090" wall thickness at any location for the main frame and sash members.
2. Thermal Barrier: The thermal barrier shall be Kawneer consisting of low conductive polymer full depth of infill.
3. Fasteners: Nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components.
4. Anchors: Nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.
5. Sealant: For sealants required within fabricated windows, provide window manufacturer's standard, permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

C. Hardware:

1. Stainless Steel 4-Bar Hinges.
2. Cast White Bronze Cam Locking Handles.

3. Cast White Bronze Cam Handle with Pole Ring (where designated).

D. Fabrication:

1. Window Vent and/or Vent Frame Joinery: Mitered and Mechanically clipped and/or staked. Factory sealed vent and /or vent frame and corner joints.
2. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

2.10 WINDOW ACTUATORS

A. Provide window actuators for designated windows as indicated on Drawings.

B. Basis-of-Design Product: Clearline Inc., www.clearline.com; P/N 1992 Power Range 24 VDC Motorized Actuator System.

C. P/N 1992 Power Range Features and Specifications:

1. Chain: Double sprocket stainless steel, adjustable.
2. Different mounting brackets allow for the installation in a variety of situations.
3. The electrical parts are constructed with double insulation and contained in a plastic body to ensure the highest level of protection from the elements.
4. Case: Made of cast alloy, coated in epoxy powder coat, available in three standard colors; White, Bronze or Silver. Color as selected by Architect.
5. Dimensions: 11-1/4” L x 4” W x 2” H.
6. Max load in thrust: 67lb.
7. Max load in traction: 67lb.
8. Strokes adjustable in 2” increments: 4”, 6”, 8”,10”, 12”, 14”.
9. Protection degree: IP55.
10. Acoustic device that warns of improper alignment (ex. Racked window).
11. CE marked device.
12. Approved component of Clearline Inc. ETL certified system.
13. Actuators require 24 VDC via step-down power supply 115 VAC to 24 VDC.

D. System Design: One electrically operated actuator is required per operable window and is used to open and close windows. Window size will determine the number of push points per individual window. Chain length to be determined by window size and/or limiter.

E. Electrical Notes: The low voltage motorized system includes the actuator, 3-position switch, control panel and window attachments. It does not include installation, field wiring, switch boxes, electrical conduit or junction boxes necessary to comply with electrical codes.

F. Control Panel Basis-of-Design Product: Clearline Inc. P/N 2320-1.14 Control Panel.

1. Control Panels shall consist of a power supply and relay board (or boards) in a NEMA type 1 (screw cover) junction box to accommodate the number of actuators and groupings per location.
2. Control Panel System is ETL Certified and conforms to UL Standard 325 - Standard for Window Operations and Systems. Applies to Commercial and residential permanently connected household, indoor use, window controller for opening and closing a window.
2. Each panel is custom built to control up to (12) 24VDC actuators. Contains one 120VAC (input)/24VDC (output) power supply. The controller has a switch/ dry contact input.
3. Quick connect terminals provided to connect actuators to the control interface for easy installation.

4. Housing: NEMA type 1 enclosure with knockouts. The enclosure and cover are manufactured from G90 steel.

G. Key Switches:

1. 3 position switch.
2. Spring return to center.
3. Fits in standard single gang box.
4. Stainless steel cover plate.

2.11 FABRICATION

A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fit joints; make joints flush, hairline and weatherproof.
3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Provisions for field replacement of glazing.
7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

B. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

C. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.

D. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.12 ALUMINUM FINISH

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. High-Performance Organic Finish: Two-coat fluoropolymer finish (Kawneer Permafluor™) complying with AAMA 2605, (70% PVDF). Prepare, pretreat and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

C. Finish exposed fasteners to match the color finish of the adjacent material.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and supports for compliance with installation tolerances and other conditions that affect installation of aluminum entrances and storefronts. Correct unsatisfactory conditions before proceeding with the installation.

1. Concrete and Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
2. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. To facilitate installation and reduce installation costs, it shall be the responsibility of the window installer to properly prepare the operable windows to accept the actuators. Window preparation details will be shown on the Clearline shop drawings and installation instructions that are provided at time of delivery.

3.2 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure non-movement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Set continuous sill members and flashing in full sealant bed as specified in Section 07 92 00 "Joint Sealants" to produce weathertight installation.

D. Install components plumb and true in alignment with established lines and grades.

E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

F. Install glazing as specified in Section 08 80 00 "Glazing."

G. Install weatherseal sealant according to Section 07 92 00 "Joint Sealants" and according to sealant manufacturer's written instructions to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.

H. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible

3.3 ERECTION TOLERANCES

A. Erection Tolerances: Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet.
2. Level: 1/8 inch in 20 feet.
3. Alignment:
   a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
   b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
   c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.
4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.

1. Testing: Testing shall be performed by a qualified independent testing agency. Testing Standard per AAMA 503, including reference to ASTM E 783 for Air Infiltration Test and ASTM E 1105 Water Infiltration Test.

   a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft^2, whichever is greater.
   b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.24 psf.

C. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.

D. Manufacturer's Field Services: Upon Architect’s or Owner’s written request, provide periodic site visit by manufacturer’s field service representative.

3.5 CLEANING

A. Clean aluminum work before acceptance, removing blemishes, finger marks, oxidation, and leave in first-class condition. Use cleaning compounds approved by the aluminum framing manufacturer.

B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

3.6 ADJUSTING

A. Entrances: Adjust operating hardware for smooth operation according to hardware manufacturers' written instructions.

1. For doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch measured to the leading door edge.

B. Window Actuators: The operable windows with window actuators should function with ease. Fingertip operation is required. Loose rivet hinges are recommended.

3.7 PROTECTION

A. After installation, protect exposed portions of the aluminum entrance work from damage by grinding and polishing compounds, plaster, lime, acids, cement or other contaminants.

END OF SECTION

04/04/18

SECTION 07 42 93 (ADDENDUM 1)

SOFFIT PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes pre-finished, pre-fabricated Factory Manufactured Aluminum Soffit System. All metal trim, subframing, accessories, fasteners, and sealants indicated on the drawings are part of this section.

B. Related Sections:

1. Section 06 10 00 – Rough Carpentry.
2. Section 07 62 00 – Sheet Metal Flashing and Trim.

1.3 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference: Refer to Section 01 42 00 for information concerning availability and use of references.

B. ASTM International:
1. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
2. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
3. ASTM D2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
4. ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
5. ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

C. Sheet Metal Airconditioning Contractors' National Association:
1. SMACNA's "Architectural Sheet Metal Manual."

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:
1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.

2. Accessories: Include details of flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. IMETCO, Sacramento, CA, (800) 646-3826 products establish a minimum of quality required.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer, with a minimum of five (5) years experience in this type of project.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Protect strippable protective coating on any metal coated product from exposure to sunlight and high humidity, except to the extent necessary for material installation.

1.9 PROJECT CONDITIONS

A. Weather Limitations: proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed.

B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication

1.10 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Section 01 77 00 - Closeout Procedures: Requirements for warranties.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal soffit panels that show evidence of deterioration of factory-applied finish within specified warranty period.
   1. Exposed Panel Finish: Deterioration includes the following:
      a. Color fading more than 5 hunter units when tested according to ASTM D 2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
      c. Cracking, checking, peeling or failure of a paint to adhere to a bare metal.
   2. Finish Warranty Period: 20 Years from the date of substantial completion.

PART 2 - PRODUCTS

2.1 SOFFIT SYSTEM PERFORMANCE TESTING

A. Soffit System shall be designed to meet 2013 California Building Code wind load requirements.

B. Soffit System shall have been tested by the Manufacturer per ASTM E-330 and have the applicable Load Tables published from this Air Bag testing for negative loads.

2.2 ACCEPTABLE MANUFACTURERS

A. Basis-of-Design Manufacturer: IMETCO, Sacramento, CA (800) 646-3826, Soffit Panels.

B. Other acceptable manufacturers, if they comply with specification:
   1. Centria Panel only.

C. Substitutions: The material, products and equipment specified in this section establish a standard for required function, dimension, appearance and quality to be met by any proposed substitution.

2.3 PANEL DESIGN

A. Basis-of-Design product: IMETCO SP 120 Soffit Panels.
   1. Panel Profile: 12" wide by 1/2" deep, with linear V-groove at mid span of panel.
   2. Manufacturer shall be able to provide all three options of panel surface: Full Vent, Half Vent or Solid Soffit in the specified color (s).

2.4 MATERIALS

A. Materials: ASTM B-209 quality aluminum, 3105-H14 Alloy and Temper material. Aluminum shall be tension leveled (temper passed and stretcher leveled) with camber of a maximum of 1/4" in 20 feet, manufactured in the USA, and shall be 0.032" thick aluminum, US standard grade.
   1. Color: IMETCO Kynar 500 *Standard Pac-Clad Finish. Color as selected by Architect.
   2. Panel Surface shall be: Full Vent, Half Vent, or Solid as shown on drawings.

B. Forming: Use continuous and rolling method. No end laps on panels. No "portable rollforming" machines will be permitted on this project; no installer-owned or installer-rented machines shall be permitted. It is the intent of the Architect to provide Factory-Manufactured soffit systems only for this project.

C. Trim: Fabricate trim of the same material and finish to match the profiled sheeting and press broken in lengths of 10 - 12 feet. Trim shall be formed only by the manufacturer or their approved dealer. Erect trim in overlapped condition. Use lap strips only as indicated on drawings. Miter conditions shall be factory welded material to match the sheeting.

D. Fasteners: 400 series stainless steel, dished washers stainless steel with bonded neoprene.

E. Zees: Where required by design of primary structural framing system, zees shall be used to span between beams and/or other joists. Thermally responsive base and top clips shall be fastened to the zees on 12" centers.

2.5 SEALANTS

A. Panel Sealants: Provide sealant types recommended by manufacturer that are compatible with panel materials, are non-staining, and do not damage panel finish.
   1. Two-part polysulfide class B non-sag type for vertical and horizontal joints; or
   2. One part polysulfide not containing pitch or phenolic extenders; or
   3. Exterior grade silicone sealant recommended by roofing manufacturer; or
   4. One part non-sag, gun grade exterior type polyurethane recommended by the roofing manufacturer.

2.6 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Comply with dimensions, profile limitations, gauges and fabrication details shown and if not shown, provide manufacturer's standard product fabrication.

C. Fabricate components and assemble units to comply with fire performance requirements specified.

D. Apply specified finishes in conformance with manufacturer's standard, and according to manufacturer's instructions.

2.7 FINISHES

A. Finish: Kynar 500 or Hylar 5000 Fluorocarbon coating with a top side film thickness of 0.70 to 0.90 mil over 0.25 to 0.31 mil prime coat to provide a total dry film thickness of 0.95 to 1.25 mil. Finish shall conform to tests for adhesion, flexibility and longevity as specified by Kynar 500 or Hylar 5000 finish supplier.

B. Field protection must be provided by the Contractor at the job site so material is not exposed to weather and moisture.

C. If any strippable film coating is applied to any pre-finished panels or materials for protection during shipping, strippable film shall be removed prior to installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

B. Examine sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal panel manufacturer.

C. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

D. For the record, prepare written report, endorsed by installer, listing conditions detrimental to performance of the Work.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.3 FASTENERS

A. Secure units to supports

B. Place fasteners as indicated in manufacturer's standards.

3.3 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
   1. Shim or otherwise plumb substrates receiving metal panels.
   2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
   3. Install screw fasteners in predrilled holes.
   4. Locate and space fastenings in uniform vertical and horizontal alignment.
   5. Install flashing and trim as metal panel work proceeds.
   6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
   7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:
   1. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.
   1. Apply panels and associated items true to line for neat and weathertight enclosure.
   2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
   3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
   4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.

E. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
   1. Install components required for a complete metal panel system including trim, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

F. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.
   1. Install exposed flashing and trim that is without buckling, and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.
   2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

G. Remove all strippable coating and provide a dry-wipe down cleaning of the panels as they are erected.

H. Panels attached to any treated lumber must have an appropriate vapor barrier installed over the treated lumber prior installing any soffit panels or related flashings. Do not allow any metal products to come into direct contact with treated lumber.

3.4 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, prior to metal panel installation unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

04/12/18

SECTION 08 71 00 (ADDENDUM NO. 1)

DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions of Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

B. This Section includes the following, but is not necessarily limited to:

1. Door Hardware, including electric hardware.
2. Storefront and Entrance door hardware.
3. Low-energy door operators plus sensors and actuators.
4. Thresholds, gasketing and weather-stripping.
5. Door silencers or mutes.

C. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing.

1. Division 8: Section - Steel Doors and Frames.
2. Division 8: Section - Wood Doors.
3. Division 8: Section - Aluminum Storefront
4. Division 28: Section - Fire/Life-Safety Systems & Security Access Systems.

1.03 REFERENCES (USE DATE OF STANDARD IN EFFECT AS OF BID DATE.)

A. 2016 California Building Code, CCR, Title 24.

B. BHMA – Builders' Hardware Manufacturers Association

C. DHI – Door and Hardware Institute

D. NFPA - National Fire Protection Association.

1. NFPA 80 - Fire Doors and Other Opening Protectives
2. NFPA 105 - Smoke and Draft Control Door Assemblies

E. UL - Underwriters Laboratories.

1. UL 10C - Fire Tests of Door Assemblies
2. UL 305 - Panic Hardware

F. WHI - Warnock Hersey Incorporated

G. SDI - Steel Door Institute

1.04 SUBMITTALS & SUBSTITUTIONS

A. General: Submit in accordance with Conditions of the Contract and Division 1 Specification sections.

B. Submit product data (catalog cuts) including manufacturers' technical product information for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

C. Submit six (6) copies of schedule organized vertically into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Include a Cover Sheet with;
   a. Job Name, location, telephone number.
   b. Architects name, location and telephone number.
   c. Contractors name, location, telephone number and job number.
   d. Suppliers name, location, telephone number and job number.
   e. Hardware consultant's name, location and telephone number.

2. Job Index information included;
   a. Numerical door number index including; door number, hardware heading number and page number.
   b. Complete keying information (referred to DHI hand-book "Keying Systems and Nomenclature"). Provision should be made in the schedule to provide keying information when available; if it is not available at the time the preliminary schedule is submitted.
   c. Manufacturers' names and abbreviations for all materials.
   d. Explanation of abbreviations, symbols, and codes used in the schedule.
   e. Mounting locations for hardware.
   f. Clarification statements or questions.
   g. Catalog cuts and manufacturer’s technical data and instructions.

3. Vertical schedule format sample:

Heading Number 1 (Hardware group or set number – HW -1)						
			(a) 1 Single Door #1 - Exterior from Corridor 101		(b) 90°	(c) RH
				(d) 3' 0"x7' 0" x 1-3/4" x (e) 20 Minute (f) WD x HM		
(g) 1	(h)	(i) ea		(j) Hinges - (k) 5BB1HW 4.5 x 4.5 NRP (l) ½ TMS	(m) 626	(n) IVE
2	6AA	1 ea		Lockset - ND50PD x RHO x RH x 10-025 x JTMS	626	SCH

(a) - Single or pair with opening number and location. (b) - Degree of opening (c) - Hand of door(s) (d) - Door and frame dimensions and door thickness. (e) - Label requirements if any. (f) - Door by frame material. (g) - (Optional) Hardware item line #. (h) - Keyset Symbol. (i) - Quantity. (j) - Product description. (k) - Product Number. (l) - Fastenings and other pertinent information. (m) - Hardware finish codes per ANSI A156.18. (n) - Manufacture abbreviation.

D. Make substitution requests in accordance with Division 1. Substitution requests must be made prior to bid date. Include product data and indicate benefit to the project. Furnish samples of any proposed substitution.

E. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

F. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

G. Furnish as-built/as-installed schedule with close-out documents, including keying schedule and transcript, wiring/riser diagrams, manufacturers' installation and adjustment and maintenance information.

H. Fire Door Assembly Testing: Submit a written record of each fire door assembly to the Owner to be made available to the Authority Having Jurisdiction (AHJ) for future building inspections.

1.05 QUALITY ASSURANCE

A. Obtain each type of hardware (latch and lock sets, hinges, closers, exit devices, etc.) from a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.

1. Responsible for detailing, scheduling and ordering of finish hardware.
2. Meet with Owner to finalize keying requirements and to obtain final instructions in writing.
3. Stock parts for products supplied and are capable of repairing and replacing hardware items found defective within warranty periods.

C. Hardware Installer: Company specializing in the installation of commercial door hardware with five years documented experience.

D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not.

1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".

E. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

1.06 DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.

B. Hardware items shall be individually packaged in manufacturers' original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.

C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc.

D. Contractor to inventory door hardware jointly with representatives of hardware supplier and hardware installer until each all are satisfied that count is correct.

1.07 WARRANTY

A. Provide warranties of respective manufacturers' regular terms of sale from day of final acceptance as follows:

1. Locksets: Ten (10) years.
2. Closers: Thirty (30) years.
3. Exit devices: Three (3) years.
4. All other hardware: Two (2) years.

1.08 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.09 PRE-INSTALLATION CONFERENCE

A. Convene a pre-installation conference at least one week prior to beginning work of this section.

B. Attendance: Architect, Construction Manager, Contractor, Security Contractor, Hardware Supplier, Installer, Key District Personnel, and Project Inspector.

C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review District's keying standards.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

Item	Manufacturer	Acceptable Substitutes
Hinges	Ives	Hager, Stanley, McKinney
Locks, Latches & Cylinders	Schlage	Or Approved Equal
Exit Devices	Von Duprin	Or Approved Equal
Closers	LCN	Or Approved Equal

Push, Pulls & Protection Plates	Ives	Trimco, BBW, DCI
Flush Bolts	Ives	Trimco, BBW, DCI
Dust Proof Strikes	Ives	Trimco, BBW, DCI
Coordinators	Ives	Trimco, BBW, DCI
Stops	Ives	Trimco, BBW, DCI
Overhead Stops	Glynn-Johnson	Or Approved Equal
Thresholds	Zero	Pemko, National Guard
Seals & Bottoms	Zero	Pemko, National Guard

2.02 MATERIALS

A. Hinges: Exterior out-swinging door butts shall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.

1. Hinges shall be sized in accordance with the following:
   a. Height:
      1) Doors up to 42" wide: 4-1/2" inches.
      2) Doors 43" to 48" wide: 5 inches.
   b. Width: Sufficient to clear frame and trim when door swings 180 degrees.
   c. Number of Hinges: Furnish 3 hinges per leaf to 7'-5" in height. Add one for each additional 2 feet in height.

2. Furnish non-removable pins (NRP) at all exterior out-swing doors and interior key lock doors with reverse bevels.

B. Continuous Hinges: As manufactured by Ives, an Allegion Company. UL rated as required.

C. Heavy Duty Cylindrical Locks and Latches: Schlage "ND" Series as scheduled with "Rhodes" design, fastened with through-bolts and threaded chassis hubs.

1. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
   a. Abusive Locked Lever Torque Test – minimum 3,100 inch-pounds without gaining access
   b. Offset lever pull – minimum 1,600 foot pounds without gaining access
   c. Vertical lever impact – minimum 100 impacts without gaining access

2. Cycle life - tested to minimum 16 million cycles per ANSI/BHMA A156.2 Cycle Test with no visible lever sag or use of performance aids such as set screws or spacers
3. UL 10C for 4’-0” x 10’-0” 3-hour fire door.
4. Cylinders: Refer to “KEYING” article, herein.
5. Provide solid steel anti-rotation through bolts and posts to control excessive rotation of lever.
6. Provide lockset that allows lock function to be changed to over twenty other common functions by swapping easily accessible parts.

7. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw capable of UL listing of 3 hours on a 4' x 10' opening. Provide proper latch throw for UL listing at pairs.
8. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
9. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
10. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
11. Provide wired electrified options as scheduled in the hardware sets.
    a. 12 through 24 volt DC operating capability, auto-detecting
    b. Selectable EL (fail safe)/EU (fail secure) operating mode via switch on chassis
    c. 0.230A (230mA) maximum current draw
    d. 0.010A (10mA) holding current
    e. Modular / "plug in" request to exit switch

12. Lever Trim: Solid cast levers without plastic inserts, and wrought roses on both sides.

D. Exit devices: Von Duprin as scheduled.

1. Provide certificate by independent testing laboratory that device has completed over 1,000,000 cycles and can still meet ANSI/BHMA A156.3 - 2001 standards.
2. All internal parts shall be of cold-rolled steel with zinc dichromate coating.
3. Mechanism case shall have an average thickness of .140".
4. Compression spring engineering.
5. Non-handed basic device design with center case interchangeable with all functions.
6. All devices shall have quiet return fluid dampeners.
7. All latchbolts shall be deadlocking with ¾" throw and have a self-lubricating coating to reduce friction and wear.
8. Device shall bear UL label for fire and or panic as may be required.
9. All surface strikes shall be roller type and utilize a plate underneath to prevent movement.
10. Removable Mullions: Removable with single turn of building key. Securely reinstalled without need for key.
11. Furnish glass bead kits for vision lites where required.
12. All Exit Devices to be sex-bolted to the doors.
13. Panic Hardware shall comply with CBC Section 11B.404.2.7 and shall be mounted between 34" and 44" above the finished floor surface.
    a. Provide exit devices UL certified to meet maximum 5 pound requirements according to the California Building Code section 11B-309.4, and UL listed for Panic Exterior Fire Exit Hardware.

E. Closers: LCN as scheduled. Place closers inside building, stairs, room, etc.

1. Door closer cylinders shall be of high strength cast iron construction with double heat treated pinion shaft to provide low wear operating capabilities of internal parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum of 10,000,000 cycles must be provided.
2. All door closers shall be fully hydraulic and have full rack and pinion action with a shaft diameter of a minimum of 11/16 inch and piston diameter of 1 inch to ensure longevity and durability under all closer applications.
3. All parallel arm closers shall incorporate one piece solid forged steel arms with bronze bushings. 1-9/16" steel stud shoulder bolts, shall be incorporated in regular arms, hold-open arms, arms with hold open and stop built in. All other closers to have forged steel main arms for strength, durability, and aesthetics for versatility of trim accommodation, high strength and long life.
4. All parallel arm closers so detailed shall provide advanced backcheck for doors subject to severe abuse or extreme wind conditions. This advanced backcheck shall be located to

begin cushioning the opening swing of the door at approximately 45 degrees. The intensity of the backcheck shall be fully adjustable by tamper resistant non-critical screw valve.

5. Closers shall be installed to permit doors to swing 180 degrees.
6. All closers shall utilize a stable fluid withstanding temperature range of 120 degrees F. to -30 degrees F. without requiring seasonal adjustment of closer speed to properly close the door.
7. Provide the manufactures drop plates, brackets and spacers as required at narrow head rails and special frame conditions. NO wood plates or spacers will be allowed.
8. Maximum effort to operate closers shall not exceed 5 lbs., such pull or push effort being applied at right angles to hinged doors. Compensating devices or automatic door operators may be utilized to meet the above standards. When fire doors are required, the maximum effort to operate the closer may be increased but shall not exceed 15 lbs. when specifically approved by fire marshal. All closers shall be adjusted to operate with the minimum amount of opening force and still close and latch the door. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. Per 11B-404.2.8.1, door shall take at least 5 seconds to move from an open position of 90 degrees to a position of 12 degrees from the latch jamb.

F. Flush Bolts & Dust Proof Strikes: Automatic Flush Bolts shall be of the low operating force design. Utilize the top bolt only model for interior doors where applicable and as permitted by testing procedures.

1. Manual flush bolts only permitted on storage or mechanical openings as scheduled.
2. Provide dust proof strikes at openings using bottom bolts.

G. Door Stops:

1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Do not install floor stops more than four (4) inches from the face of the wall or partition (CBC Section 11B-307).
3. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

H. Protection Plates: Fabricate either kick, armor, or mop plates with four beveled edges. Provide kick plates 10" high and 2" LDW. Sizes of armor and mop plates shall be listed in the Hardware Schedule. Furnish with machine or wood screws of bronze or stainless to match other hardware.

I. Thresholds: As Scheduled and per details.

1. Thresholds shall not exceed 1/2" in height, with a beveled surface of 1:2 maximum slope.
2. Set thresholds in a full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 “Thermal and Moisture Protection”.
3. Use ¼” fasteners, red-head flat-head sleeve anchors (SS/FHSL).
4. Thresholds shall comply with CBC Section 11B-404.2.5.

J. Seals: Provide silicone gasket at all rated and exterior doors.

1. Fire-rated Doors, Resilient Seals: UL10C Classified complies with NFPA 80 & NFPA 252. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements.

2. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C Classified complies with NFPA 80 & NFPA 252. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required.
3. Smoke & Draft Control Doors, Provide UL10C Classified complies with NFPA 80 & NFPA 252 for use on "S" labeled Positive Pressure door assemblies.

K. Door Shoes & Door Top Caps: Provide door shoes at all exterior wood doors and top caps at all exterior out-swing doors.

L. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where sound or light seals occurs, or for fire-resistive-rated door assemblies.

2.03 KEYING

A. Furnish a Schlage masterkey system as directed by the owner or architect.

B. A detailed keying schedule is to be prepared by the owner and/or architect in consultation with a representative of the lock manufacturer. Each keyed cylinder on every keyed lock is to be listed separately showing the door #, key group (in BHMA terminology), cylinder type, finish and location on the door.

C. Establish a new masterkey system for this project as directed by the keying schedule.

D. Furnish all cylinders in the Schlage conventional style except the exit device and removable mullion cylinders which will be supplied in Schlage Full Size Interchangeable Core (FSIC). Pack change keys independently (PKI).

-OR-

E. Furnish construction keying for doors requiring locking during construction.

F. Furnish mechanical keys as follows:

1. Furnish 2 cut change keys for each different change key code.
2. Furnish 1 uncut key blank for each change key code.
3. Furnish 6 cut masterkeys for each different masterkey set.
4. Furnish 3 uncut key blanks for each masterkey set.
5. Furnish 2 cut control keys cut to the top masterkey for permanent I/C cylinders.
6. Furnish 1 cut control key cut to each SKD combination.

G. Furnish Schlage Padlocks and the cylinders to tie them into the masterkey system for gates, storage boxes, utility valve security, roof hatches and roll-up doors keyed as directed in the keying schedule.

2.04 FINISHES

A. Generally to be satin chrome US26D (626 on bronze and 652 on steel) unless otherwise noted.

B. Furnish push plates, pull plates and kick or armor plates in satin stainless steel US32D (630) unless otherwise noted.

C. Door closers shall be powder-coated to match other hardware, unless otherwise noted.

D. Aluminum items to be finished anodized aluminum except thresholds which can be furnished as standard mill finish.

2.05 FASTENERS

A. Screws for strikes, face plates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.

B. Screws for butt hinges shall be flathead, countersunk, full-thread type.

C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.

D. Provide expansion anchors for attaching hardware items to concrete or masonry.

E. All exposed fasteners shall have a phillips head.

F. Finish of exposed screws to match surface finish of hardware or other adjacent work.

G. All Exit Devices and Lock Protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.

B. Beginning of installation means acceptance of existing conditions.

C. Fire-Rated Door Assembly Inspection: Upon completion of the installation, all fire door assemblies shall be inspected to confirm proper operation of the closing device and latching device and that only the manufacturer's furnished fasteners are used for installation and that it meets all criteria of a fire door assembly per NFPA 80 (Standard for Fire Doors and Other Opening Protectives) 2013 Edition. A written record shall be maintained and transmitted to the Owner to be made available to the Authority Having Jurisdiction (AHJ). The inspection of the swinging fire doors shall be performed by a certified FDAI (Fire Door Assembly Inspector) with knowledge and understanding of the operating components of the type of door being subjected to the inspection. The record shall list each fire door assembly throughout the project and include each door number, an itemized list of hardware set components at each door opening, and each door location in the facility.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and requirements of DHI.

B. Use the templates provided by hardware item manufacturer.

C. Mounting heights for hardware shall be as recommended by the Door and Hardware Institute. Operating hardware will to be located between 34" and 44" AFF.

D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

F. Set thresholds for exterior doors in full bed of butyl-rubber sealant.

G. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

3.03 ADJUST AND CLEAN

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

B. Clean adjacent surface soiled by hardware installation.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy, return to that work area and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

D. Instruct Owner's Personnel in proper adjustment and maintenance of hardware finishes, during the final adjustment of hardware.

E. Continued Maintenance Service: Approximately six months after the completion of the project, the Contractor accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.04 HARDWARE LOCATIONS

A. Conform to CCR, Title 24, Part 2; and ADAAG; and the drawings for access-compliant positioning requirements for the disabled.

3.05 FIELD QUALITY CONTROL

A. Contractor is responsible for providing the services of an Architectural Hardware Consultant (AHC) or a proprietary product technician to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturers' instructions and as specified herein.

3.06 SCHEDULE

A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.

B. While the hardware schedule is intended to cover all doors, and other movable parts of the building, and establish type and standard of quality, the contractor is responsible for examining the Plans and Specifications and furnishing proper hardware for all openings whether listed or not. If there are any omissions in hardware groups in regard to regular

doors they shall be called to the attention of the Architect prior to bid opening for instruction; otherwise, list will be considered Complete. No extras will be allowed for omissions.

C. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Manufacturers Abbreviations (Mfr.)

GLY	=	Glynn-Johnson Corporation	Overhead Door Stops
IVE	=	Ives	Hinges, Pivots, Bolts, Coordinators, Dust Proof Strikes, Kick Plates, Door Stops & Silencers
LCN	=	LCN	Door Closers
SCH	=	Schlage Lock Company	Locks, Latches & Cylinders
VON	=	Von Duprin	Exit Devices
ZER	=	Zero International	Thresholds, Gasketing & Weather-stripping

SPEXTRA: 362411

HARDWARE GROUP NO. 01

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	628	IVE
1	EA	KEYED REMOVABLE MULLION	KR4954-STAB	689	VON
1	EA	PANIC HARDWARE	CD-PA-AX-98-EO	626	VON
1	EA	PANIC HARDWARE	CD-PA-AX-98-NL-OP-110MD	626	VON
1	EA	RIM CYLINDER	20-057	626	SCH
1	EA	MORTISE CYLINDER	26-091 (FOR REMOVABLE MULLION)	626	SCH
2	EA	MORTISE CYLINDER	26-091 XQ11-948 (FOR DOGGING)	626	SCH
2	EA	90 DEG OFFSET PULL	8190HD 12" O	630	IVE
2	EA	SURFACE CLOSER	4111 AVB EDA	689	LCN
2	EA	FLOOR STOP	FS18L	BLK	IVE
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	AL	ZER

WEATHER-STRIPPING FURNISHED WITH DOOR & FRAME ASSEMBLY

HARDWARE GROUP NO. 01A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	628	IVE
1	EA	KEYED REMOVABLE MULLION	KR4954-STAB	689	VON
2	EA	PANIC HARDWARE	PA-AX-98-EO	626	VON
1	EA	ELEC EXIT DEVICE TRIM	AD-400-993R-70-MTK-RHO-PD (FURNISHED IN SECTION 087400)	626	SCE
1	EA	MORTISE CYLINDER	26-091 (FOR REMOVABLE MULLION)	626	SCH
2	EA	SURFACE CLOSER	4111 AVB EDA	689	LCN
2	EA	FLOOR STOP	FS18L	BLK	IVE
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	AL	ZER

WEATHER-STRIPPING FURNISHED WITH DOOR & FRAME ASSEMBLY

HARDWARE GROUP NO. 02

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112HD	628	IVE
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO	626	SCH
1	EA	SURFACE CLOSER	4011	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP/HOLDER	WS40	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 03

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	CONST LATCHING BOLT	FB51T	630	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
2	EA	OH STOP & HOLDER	90H	630	GLY
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	MEETING STILE	44SP	SP	ZER
2	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 04

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
4	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	CONST LATCHING BOLT	FB51T	630	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
2	EA	OH STOP & HOLDER	90H	630	GLY
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	MEETING STILE	44SP	SP	ZER
2	EA	SILENCER	SR64	GRY	IVE

END OF SECTION

SECTION 08 74 00 (ADDENDUM NO. 1)

ACCESS CONTROL HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Electrified door hardware for:

a. Swinging doors.

2. Electronic access control system components, including:

a. Electronic access control locksets and exit device trim.

B. The work consists of providing and installing prescribed systems and equipment, in accordance with the Owner's directives and needs. The Contractor shall design, install, and configure systems to provide the exact function described herein and will be held to the operational criteria. Contractor shall be responsible for providing and installing a complete and fully operational system, with the intended features and capabilities, whether or not all required parts, components, systems or accessories are specified in the construction documents. Contractor shall provide all required parts, components, systems, materials and accessories needed for a complete and working system, without additional cost to the owner

C. Furnish all labor, materials, tools, equipment, and services for all Access Control Equipment, as indicated, in accord with provisions of Contract Documents. Final terminations and system commissioning to be performed by a factory certified technician. Systems and the respective specification sections which are part of this section include, but are not limited the following:

1. Reader Controller.
2. Electronic access control locksets and exit device trim.
3. Reader Interface.
4. Access Control software
5. Power Supply.
6. Card Reader and Credentials.
7. Wiring, switches, and ancillary equipment.
8. Although such work is not specifically indicated, provide and install supplementary or miscellaneous items, appurtenances and devices incidental to, or necessary for, a sound, secure and complete installation.
9. Training on operation and software of the access control system per Part 3, “OWNER PERSONNEL TRAINING” Article of this specification section.

D. Exclusions: Unless specifically listed in hardware sets, hardware is not specified in this section for:

1. Mechanical door hardware.
2. Cylinders and/or permanent cores.

E. Related Sections

F. Related Sections:

1. Division 01 Section “Alternates” for alternates affecting this section.
2. Division 08 Sections “Openings” for hollow metal doors and frames, wood doors, entrance assemblies, and door hardware
3. Division 26 sections for connections to electrical power system and for low-voltage wiring.
4. Division 28 sections for coordination with other components of electronic access control system.

1.3 REFERENCES

A. Fire/Life Safety

1. NFPA - National Fire Protection Association

a. NFPA 70 – National Electric Code
b. NFPA 80 - Standard for Fire Doors and Fire Windows
c. NFPA 105 - Smoke and Draft Control Door Assemblies

2. State Fire Safety Code.

B. UL - Underwriters Laboratories

1. UL 10C - Positive Pressure Test of Fire Door Assemblies
2. UL 1784 - Air Leakage Tests of Door Assemblies
3. UL 305 - Panic Hardware

C. Accessibility

1. ADA - Americans with Disabilities Act.
2. ANSI A117.1 - Accessible and Usable Buildings and Facilities.

D. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Key Systems and Nomenclature

E. ANSI - American National Standards Institute

1. ANSI/BHMA A156.1 - A156.29, and ANSI A156.31 - Standards for Hardware and Specialties

1.4 DEFINITIONS

A. Abbreviations and Acronyms

1. ACS: Access control system.
2. EACS: Embedded access control system.
3. LAN: Local area network.
4. LED: Light-emitting diode.
5. TCP/IP: Transport control protocol/Internet protocol incorporated into Microsoft Windows
6. UPS: Uninterruptible power supply.

B. The following definitions establish compliance requirements for terms used throughout this specification.

1. Proximity Readers and Credentials: Card and reader designed to validate when card is presented within the proximity of the card reader.
2. Proximity Credential to have 125 kHz compatible with either Schlage or XceedID. Proximity Reader having 125 kHz with Wiegand interface and compatible for use with all industry leading credentials.
3. Smart Card: Contactless credential having MIFARE, DESFire and EV1 technology. Designed to add additional layers of security protection having 128-bit diversified key encryption. Data storage having 2k, 4k, 8k bite and memory of 16k, 32k, and 64k.
4. Toggle: Double swiping a credential to change the state of a door.
5. Pass-Through: The ability assigned to a person's credential that allows them to access a door even if in lockdown state.
6. Lockdown: The ability assigned to a credential that allows the person using this credential to place a door into lockdown state.
7. RS-485: A TIA/EIA standard for multipoint communications.
8. Wiegand: Patented magnetic principle that uses specially treated wires embedded in the credential card.
9. Workstation: A PC with access control software loaded that is connected to the network and can access the access control panels.
10. NVR: network video recorder that resides on IP network and can be accessed by other PC's.
11. IP camera: cameras that transmit video over IP network.

1.5 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 requirements.
2. Highlight, encircle, or otherwise specifically identify on submittals deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
3. Prior to forwarding submittal, comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, “EXAMINATION” article, herein.

B. Action Submittals:

1. Product Data: Product data including manufacturers’ technical product data for each component of the electronic access control system, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of the system and component schedule, submit details of electrified and electronic components, indicating:

    a. Wiring Diagrams: For power, signal, and control wiring and including:

1) Details of interface of electrified components and building safety and security systems.
2) Schematic diagram of systems that interface with electrified components.
3) Point-to-point wiring.
4) Risers.

3. Samples for Verification: If requested by Architect, submit production sample or sample installations of each type of exposed electronic component in finish indicated, and tagged with full description for coordination with schedule.

   a. Samples will be returned to supplier in like-new condition. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. System and Components Schedule: Submit schedule with electrified door hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:

   a. Door Index; include door number, heading number, and Architects hardware set number.
   b. Opening Lock Function Spreadsheet: List locking device and function for each opening.
   c. Type, style, function, size, and finish of each hardware item.
   d. Name and manufacturer of each item.
   e. Fastenings and other pertinent information.
   f. Location of each hardware set cross-referenced to indications on Drawings.
   g. Explanation of all abbreviations, symbols, and codes contained in schedule.
   h. Mounting locations for hardware.
   i. Door and frame sizes and materials.
   j. Name and phone number for local manufacturer's representative for each product.
   k. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and access control components). Operational description should include how door will operate on egress, ingress, and fire and smoke alarm connection.
      1) Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work that is critical in Project construction schedule.

   l. Shop Drawings:
      1) Detail space conditions and coordinate with other trades within the shop drawings.
      2) Indicate interconnection equipment locations and specifying terminal/connecter termination locations. Submit a complete set of proposed drawings, identifying equipment locations, types of cabling, numbers of conductors, raceway locations, and termination points of each conductor.

   m. Cable Requirements
      1) Twisted, shielded, plenum-rated type cable.
      2) Install all exposed wiring in ridged conduit and wire mold.
      3) Fasten all cables to the structure at least every 10 feet where not in conduit.

5. Templates: After final approval of schedule, provide templates for doors, frames and other work specified to be factory prepared for door hardware installation.

C. Informational Submittals:

1. Qualification Data: For Supplier, Installer, and Architectural Hardware Consultant. Include certifications for approval with and be incorporated with submittal. Submittals will not be considered without the certifications
2. Product Certificates for electrified components, signed by manufacturer:

    a. Certify that electronic and/or electrified components approved for use on types and sizes of labeled fire-rated doors comply with listed fire-rated door assemblies.

3. Certificates of Compliance:

    a. Certificates of compliance for fire-rated hardware and installation instructions if requested by Architect or Authority Having Jurisdiction.
    b. Installer Training Meeting Certification: Letter of compliance, signed by Contractor, attesting to completion of installer training meeting specified in “QUALITY ASSURANCE” article, herein.
    c. Electrified Hardware Coordination Conference Certification: Letter of compliance, signed by Contractor, attesting to completion of electrified hardware coordination conference, specified in “QUALITY ASSURANCE” article, herein.

4. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by qualified testing agency, for door hardware on doors located in accessible routes.
5. Warranty: Special warranty specified in this Section.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:

    a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
    b. Catalog pages for each product.
    c. Name, address, and phone number of local representative for each manufacturer.
    d. Parts list for each product.
    e. Final approved system and components schedule, edited to reflect conditions as-installed.
    f. Copies of floor plans with access control openings identified
    g. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.
    h. Copy of product warranties including appropriate reference numbers for manufacturers to identify project.
    i. Statement of labor warranty from the manufacturer, Security Contractor, and/or 3rd party entity.

2. Record Documentation:

    a. Submit a copy of a signed agreement between the Security Contractor and the Owner stipulation that the license of all software and operation systems residing on the server and workstations are the sole property of the Owner.
    b. Submit to Owner upon completion of Work, all passwords used to access all aspects of the operating system software and database utilized by the system. Document the name and position of anyone who has knowledge or record of these passwords.

c. Commissioning Reports: Provide documentation of both the Final Test Acceptance and Start up Testing as per Part 3, "SITE QUALITY CONTROL" Article herein.

1.6 QUALITY ASSURANCE

A. Product Substitutions: Comply with product requirements stated in Division 01 and as specified herein.

1. Where specific manufacturer's product is named and accompanied by "No Substitute," including make or model number or other designation, provide product specified. (Note: Certain products have been selected for their unique characteristics and particular project suitability.)

a. Where no additional products or manufacturers are listed in product category, requirements for "No Substitute" govern product selection.

2. Where products indicate "acceptable substitute" or "acceptable manufacturer", provide product from specified manufacturers, subject to compliance with specified requirements and "Single Source Responsibility" requirements stated herein.

B. Contractor Qualifications and Responsibilities

1. Company that is trained, authorized, and certified to install the specified products.
2. Company with a minimum of 5 (five) years system design, engineering supervision, and installation experience in the access control industry.
3. The contractor will maintain a fully staffed local office within 50 miles of the work site. The service center will be staffed by factory trained technicians and must be adequately equipped to provide emergency phone service within twenty-four (24) hours on a twenty-four (24) hour, 365 days per year basis, whether or not the owner purchases a maintenance contract with the contractor.
4. Within the local service center, the contractor must maintain an inventory of spare parts and other items critical to system operation and as necessary to meet the emergency service requirements.
5. The contractor must have in-house engineering and project management capability consistent with the requirements of this project. Provide a project manager who is actively in the project, the same individual throughout the course of the project, and responsible for the scheduling of the system programming, preparation of the Operation and Maintenance Manuals, Training Programs, documentation and system testing, maintenance of Drawings and the coordination of all subcontract labor. The owner reserves the right to approve the contractor's Project Manager.
6. The contractor must abide by and adhere to all Drug Free School Zone laws and participate in a drug-free workplace program.

C. Certifications

1. System supplier must be certified by the equipment manufacturer for installing, supporting and servicing the products to be furnished. Submit certification on the equipment manufacturer's letterhead.

D. Single Source Responsibility: Obtain each component of the electronic access control system from a single manufacturer.

1. Manufacturers that perform electrical modifications and that are listed by testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

E. Fire-Rated Door Openings: Provide electrified door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction. Provide only items of electrified door hardware that are listed and are identical to products tested by Underwriters Laboratories, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

G. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release latch. Locks do not require use of key, tool, or special knowledge for operation.

H. Accessibility Requirements: For door hardware on doors in an accessible route, comply with governing accessibility regulations cited in "REFERENCES" article, herein.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of wrist and that operate with force of not more than 5 lbf (22.2 N).
2. Maximum opening-force requirements:

    a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
    b. Sliding or Folding Doors: 5 lbf (22.2 N) applied parallel to door at latch.
    c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

I. Regulatory Requirements: Furnish security equipment to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications.

J. Sequencing: Perform the work in the following sequence, unless directed otherwise by owner's representative:

1. Installation of all wiring, conduit and rough-in boxes
2. Installation of Access Controllers & power supplies.
3. Installation of new field devices and new readers.
4. Installation of site control & front end equipment.
5. Commissioning of the new system components.
6. End User training

K. Pre-installation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Inspect and discuss preparatory work performed by other trades.
3. Inspect and discuss electrical roughing-in for electrified door hardware.
4. Review sequence of operation for each type of electrified door hardware.
5. Review required testing, inspecting, and certifying procedures.

L. Coordination Conferences:

1. Electrified Hardware Coordination Conference: Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.
    a. Attendees: electrified door hardware supplier, doors and frames supplier, electrified door hardware installer, electrical subcontractor, Owner, **Owner's security consultant,** Architect and Contractor.

b. After meeting, provide letter of compliance to Architect, indicating when coordination conference was held and who was in attendance.

1.7 DELIVER, STORAGE, AND HANDLING

A. Inspect and inventory each component of the electronic access control system on receipt.

B. Tag each item or package separately with identification coordinated with final system and components schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

1. Deliver each component of the electronic access control system in manufacturer's original packaging.

C. Project Conditions:

1. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
2. Provide secure lock-up for each component of the electronic access control system delivered to Project, but not yet installed. Control handling and installation of items so that completion of Work will not be delayed by losses both before and after installation.

D. Protection and Damage:

1. Promptly replace products damaged during shipping.
2. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work.
3. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

1.8 COORDINATION

A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing electrified door hardware to comply with indicated requirements.

B. Doors, Frames, and Door Hardware: Coordinate electronic access control system preparation and installation with doors, frames, and door hardware specified elsewhere.

C. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware, including point-to-point wiring diagrams plus riser diagrams, with connections to power supplies and building safety and security systems.

D. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

E. Direct shipments not permitted, unless approved by Contractor.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace component of the electronic access control system that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Years from date of Substantial Completion, for durations indicated.

a. Exit Devices:
1) Electrified: 1 year.

b. Locksets:
1) Electrified: 1 year.

2. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

B. During system warranty period, system updates are to be made available to owner at no charge to owner.

C. During warranty period, provide twenty-four (24) hour toll-free technical support.

D. The Authorized Dealer will provide additional pricing for 1 year warranty from date of purchase.

1.10 MAINTENANCE

A. Extra Materials:

1. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

a. Fuses of all kinds, power and electronic, equal to 10 percent of amount installed for each size used, but no fewer than three units.

B. Maintenance Tools:

1. Furnish complete set of special tools required for maintenance and adjustment of electronic access control system components.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The Owner requires use of certain products for their unique characteristics and particular project suitability to insure continuity of existing and future performance and maintenance standards. After investigating available product offerings Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: “No Substitute.”

1. Where “No Substitute” is noted, submittals and substitution requests for other products will not be considered.

B. Approval of manufacturers and/or products other than those listed as ”Scheduled Manufacturer ” or “Acceptable Manufacturers” in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.

C. Approval of products from manufacturers indicated in “Acceptable Manufacturers” is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer’s product.

D. Hand of Door: Drawings show direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.

E. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.2 MATERIALS

A. Fasteners

1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners for hardware units exposed when door is closed except when no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.
4. Install hardware with fasteners provided by hardware manufacturer.

B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2. installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.3 ACCESS CONTROL SYSTEM

A. Manufacturers and Products:
1. Scheduled Manufacturer and Product: Products meeting or exceeding design and performance requirements specified.

B. Capabilities

1. Provide access control system software that serves as a database manager, controlling access rights, time schedules, multiple operation modes, and elevator control. Database changes are updated or downloaded automatically from the system server to the field devices. The system server determines which changes are to be downloaded to which field panels.

2. Provide field panels independently programmed, intelligent devices, with the ability to make decisions and store transactions at the local level.
3. Provide all databases with the ability to add, delete, report, view and edit information.
4. Provide system software designed to allow operational management and control at many "tiered levels" with the apex of control being in the hands of a "Global Manager". The "Global Manager" has administrative authority for the entire system and delegate administrative responsibility as necessary.
5. Provide system security with security in its operation and administration by offering flexibility for the administrator to establish and customize any level of security by assigning security permissions to group of operators, the ability to log into the system using a unique operator ID and a password associated with that operator ID, and allow the "Administrator" to set the rules and standards for login requirements.
6. Provide storage of all system transactions in a retrievable file.
7. Provide system that logs all events by time and date.
8. Provide system that with 'lock-down' capability in which the user can lock (or change the state of) all doors simultaneously with one single action.
9. Provide system with the ability to individually operate the system doors: including the ability to lock, un-lock, and return to time zone.

C. System Programming

1. Furnish and install all hardware, software, devices and components to meet the performance and functional requirements described in these contract documents. Include all items required, whether or not individually specified, to ensure a completely operational integrated Security Protection system. The contractor must complete all database entry, and provide the owner with training on cardholder entry, as well as all system programming. No additional costs allowed to make the system operational or to meet specifications.

D. System Architecture

1. Primary function is to regulate access through specific portals to Secured areas.
2. Utilize card technology as its primary access device.
3. Surge Protection Components must be protected from voltage surges originating externally to equipment housing and entering through power, communication, signal, control, or sensing leads. Must also include surge protection for external wiring of each conductor-entry connection to components.
4. Power: Provide any special power treatment required, such as filtering or spike elimination, for proper operation and protection of the ACS with the system. Step down power supply with battery backup of at least 4 hours.

E. System Software

1. Access Control software base package includes:

    a. Transaction & Alarm monitoring / routing
    b. Cardholder management (includes special access needs)
    c. 25,000 card holder capacity
    d. 1,000 card reader capacity
    e. Unlimited operator capacity
    f. Manage online locks/readers
    g. Complete Auditing/Reporting capabilities
    h. Elevator Control

F. System Hardware

1. Reader Controllers

a. Provide reader controllers which communicate via TCP/IP protocol and are able to be connected to a variety of different read head technologies.
b. Provide reader controllers capable of being fully networked into (TCP/IP LAN/WAN) network connectivity and includes tamperproof switch within the enclosure. Requires UL listed 294 power supplies for operation.
c. Provide independently programmed, intelligent devices within a lockable NEMA rated enclosure, capable of making decisions and store transactions at the local level.
d. Provide downstream communication via RS-485 connects directly to the following devices:
    1) Schlage AD 400 Series locks.
    2) Schlage wireless PIM-485

e. Specifications:
    1) Power input – 12 or 24 VDC +/- 10% regulated powered locally.
    2) Max. Current req. – 100 mA (without read head)
    3) Operating Temperature - 0° to 49° C or 32° to 120° F
    4) Cable – Network protocol 10/100 BaseT Ethernet, and 18 AWG 4 conductor stranded, shielded, twisted for power
    5) Cable distance –500 ft for power & 500 ft for read head & up to 4000 ft in total for RS 485 for AD series devices
    6) Operating humidity – 10% to 90% (non condensing)
    7) CE marking
    8) RoHS compliant
    9) UL Listed for UL294.

2.4 ELECTRONIC ACCESS CONTROL LOCKSETS AND EXIT DEVICE TRIM

A. Manufacturers:

1. Scheduled Manufacturer: To establish standard of quality and design intent, electronic access control locksets and exit device trim specifications have been based on Schlage. Products of other manufacturers meeting or exceeding design and performance requirements specified herein will be considered for substitution subject to compliance with provisions of Division 01 Section “Product Requirements.”
2. Scheduled Manufacturer and Product: Schlage AD series.

B. Product: Schlage adaptable bored-type electronic lockset.

1. Provide bored cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, non-handed, field-reversible.
2. Backset: **[2-3/4-inch**
3. Latchbolt Throw: 1/2-inch (13 mm) unless noted otherwise. Provide 3/4-inch (19 mm) throw for UL listing at pairs.
4. Chassis: Standard 161 cylindrical lock prep for 1-3/4-inch (44 mm) doors

C. Product: Schlage**]** adaptable electronic exit device trim.

1. Provide exit device trim conforming to ANSI/BHMA A156.25, non-handed, field-reversible.
2. Exit Device Configurations: Exit device lever trim to retract latchbolt for following exit device applications:

    a. Rim
    b. Surface vertical rod
    c. Mortise

d. Concealed vertical rod
e. Concealed vertical cables

3. Exit Device Compatibility: Provide exit device trim with universal mounting plate enabling operation as required.

D. Requirements:

1. Provide adaptable electronic access control products that comply with the following requirements:

a. Listed, UL 294 - The Standard of Safety for Access Control System Units.
b. Compliant with ANSI/BHMA A156.25 Grade 1 Operation and Security.
c. Certified to UL10C, FCC Part15, Florida Building Code Standards TAS 201 large missile impact, TAS 202 and TAS 203.
d. Compliant with ASTM E330 for door assemblies.
e. Compliant with ICC / ANSI A117.1, NFPA 101, NFPA 80, and Industry Canada IC.

2. Functions: Provide functions as scheduled that are field configurable without taking the adaptable electronic product off the door.
3. Emergency Override: Provide mechanical key override; cylinders: Refer to “KEYING” article, herein.
4. Levers:

a. Vandal Resistance: Exterior (secure side) lever rotates freely while door remains locked, preventing damage to internal lock components from vandalism by excessive force.
b. Provide non-handed lever trim that operates independently of non-locking levers.
c. Style:**[Rhodes (06)**
d. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

5. Power Supply:

a. Offline – access control rights stored on device and access control rights stored on magnetic stripe credential
1) Adaptable electronic access control products powered by four AA batteries with options for eight AA batteries or a 12V or 24V DC power supply.
2) Provide adaptable electronic access control products with the ability to communicate battery status.

b. Networked – hardwired
1) Adaptable electronic access control products powered by 12VDC or 24VDC power supply with max current draw not to exceed 250mA.

c. Networked – wireless
1) Adaptable electronic access control products powered by four AA batteries with options for eight AA batteries or a 12V or 24V DC power supply.
2) Provide adaptable electronic access control products with the ability to communicate battery status and battery voltage level by means of a handheld programming device at door and remotely by Partner integrated software.

6. Features:

a. Audible feedback that can be enabled or disabled.

b. Tamper-Resistant Screws: Tamper torx screws on inside escutcheon for increased security.
c. Offline – access control rights stored on device
    1) Visual tri-colored LED indicators that indicate activation, additional PIN code credential required, operational systems status, system error conditions and low power conditions.
    2) Visual bi-colored LED indicator on interior that is capable of indicating secured/unsecured status of device to occupants on interior.
    3) Onboard processor with memory capacity of 5,000 users, 5,000 event audit history, up to 16 time zones and up to 32 calendar events.

d. Networked – hardware and wireless
    1) Ability to communicate unit's communication status.
    2) Visual tri-colored LED indicators that indicate activation, additional PIN code credential required, operational systems status, system error conditions and low power conditions.
    3) Visual bi-colored LED indicator on interior that is capable of indicating secured/unsecured status of device to occupants on interior.

7. Adaptability:

    a. Field changeable Reader Modules: Adaptable electronic access control products to have the ability to change credential reader technologies without being removed from door.
    b. Offline
        1) Networking Capabilities: Network adaptable without removing device from door. Adaptable electronic access control products to have the ability to be upgraded in the field from a standalone battery powered configuration to a wireless networked configuration without being removed from the door.

    c. Networked
        1) Open Architecture: Adaptable electronic access control products manufactured with open architecture characteristics capable of handling new and existing access control software and credential reading technology.

8. Switches: Provide adaptable electronic access control products with the following switches, standard:

    a. Door Position Switch
    b. Interior Cover Tamper Guard
    c. Mechanical Key Override
    d. Request to Exit
    e. Request to Enter
    f. Lock/Unlock Status (Clutch Position).

9. Credential Reader:

    a. Offline – access control rights stored on device
        1) Credential Reader Configuration: Provide credential reader modules in the following configurations, as indicated in door hardware sets. Multi-tech contactless reader shall be NFC-Compatible and read access control data from both 125 kHz and 13.56 MHz contactless smart cards. The multi-tech contactless reader shall be optimally designed for use in access control applications that require reading both 125 kHz proximity and 13.56 MHz contactless smart cards.
            a) Proximity, Smartcard via Multi-Technology.

b) Proximity, Smartcard via Multi-Technology and keypad.
c) Keypad.

2) Credential Reader Capabilities: Provide credential readers capable of operating with the following integrated software partners.
   a) 13.56 MHz Smart card credentials:
      i. Secure section (Multi-Technology and Smartcard): aptiQ MIFARE Classic, aptiq MIFARE DESFire EV1, PIV and PIV-I Compatible
      ii. 13.56 MHz Serial number only (Multi-Technology and Smart-card): MIFARE, DESfire, HID iClass, MIFARE DESFire EV1
      iii. 125 kHz Proximity card credentials: Schlage, XceedID, HID, GE/CASI ProxLite and AWID.
   b) Multi-Technology readers that read both 13.56 MHz Smart Cards and 125 kHz Prox cards.
   c) Dual credential reading capabilities credential card or fob and PIN. 12 button keypad with backlit buttons.
   d) Magnetic Card Reader:
      i. Full insertion or swipe reader capable of reading information along full length of magnetic stripe.
      ii. Magnetic card triple track reader capable of reading tracks 1, 2 or 3 per configuration in field.

b. Networked – wireless

1) Credential Reader Configuration: Provide credential reader modules in the following configurations, as indicated in door hardware sets. Multi-tech contactless reader shall be NFC-Compatible and read access control data from both 125 kHz and 13.56 MHz contactless smart cards. The multi-tech contactless reader shall be optimally designed for use in access control applications that require reading both 125 kHz proximity and 13.56 MHz contactless smart cards.
   a) Proximity, Smartcard via Multi-Technology.
   b) Proximity, Smartcard via Multi-Technology and keypad.
   c) Keypad.
2) Credential Reader Capabilities: Provide credential readers capable of being configured at lockset with handheld programming device and remotely operated with the following integrated software partners.
   a) 13.56 MHz Smart card credentials:
      i. Secure section (Multi-Technology and Smartcard): aptiQ MIFARE Classic, aptiq MIFARE DESFire EV1, PIV and PIV-I Compatible
      ii. 13.56 MHz Serial number only (Multi-Technology and Smart-card): MIFARE, DESfire, HID iClass, MIFARE DESFire EV1
   b) 125 kHz Proximity card credentials: Schlage, XceedID, HID, GE/CASI ProxLite and AWID.
   c) Multi-Technology readers that read both 13.56 MHz Smart Cards and 125 kHz Prox cards.
   d) Dual credential reading capabilities credential card or fob and PIN.
   e) 12 button keypad with backlit buttons.

10. Operation:

a. Offline – access control rights stored on device

1) Provide adaptable electronic access control products with the ability to be configured at door by handheld programming device the length of time device is unlocked upon access grant.

2) Provide adaptable electronic access control products with the ability to communicate identifying information such as firmware versions, hardware versions, serial numbers, and manufacturing dates by handheld programming device.

b. Networked – wireless
   1) Adaptable electronic access control product system interface:
      a) Wiegand or Clock & Data via PIM400-TD2 (Panel Interface Module).
      b) Directly via RS485.
   2) Adaptable electronic access control products to have real-time bidirectional communication between access control system and lock.
   3) Remote Commanding By Partner Integrated Access Control Network Software: Battery-powered lockset shall have "Wake on Radio" feature causing activation of remote, wireless access control devices, enabling activated devices to be configured, locked or unlocked from a centralized location within 10 seconds or less without user interface at the device.
   4) Local Commanding: Provide adaptable electronic access control product with the ability to be configured, locked or unlocked locally by handheld programming device, in real-time.
   5) When Utilized with Access Control Network Software With Remote Commanding Capability: Provide adaptable electronic access control product with the ability to be remotely locked down or unlocked within 10 seconds or less while battery powered without user interface at the device.
   6) Real-time response of battery powered device capable of being configured at door by handheld programming device and remotely by Partner integrated software.
   7) Upon Loss of Power to Device: Provide adaptable electronic access control product with the ability to manage access control offline in one of three methods below that can be configured in the field at device by handheld programming device and remotely by Partner integrated software:
      a) Fail locked (secured)
      b) Fail unlocked (unsecured)
      c) Fail As-Is
   8) Upon Loss of Communication Between Device and Network: Provide adaptable electronic access control product with the ability to manage access control offline in one of four methods below that can be configured in the field at lockset by handheld programming device and remotely by Partner integrated software:
      a) Fail locked (secured)
      b) Fail unlocked (unsecured)
      c) Fail As-Is
      d) Fail to Degraded/cache mode utilizing cache memory with following selectable options:
         i. Grant access up to the last 1,000 unique previously accepted User IDs.
         ii. Grant access up to the last 1,000 unique previously accepted facility/site codes
         iii. Remove from cache previously stored User IDs or facility/site codes that have not been presented to lock within the last 5 days.
   9) Provide adaptable electronic access control product with the ability to be configured at door by handheld programming device and remotely by Partner integrated software the length of time device is unlocked upon access grant.
   10) Provide adaptable electronic access control product with the ability to communicate identifying information such as firmware versions, hardware

versions, serial numbers, and manufacturing dates by handheld programming device and remotely by Partner integrated software.

11) Wireless Transmission:
    a) Modulation: 900 MHz spread spectrum, direct sequence, 10 channels.
    b) Encryption: AES-128 bit Key minimum.

E. Components

1. Product: Schlage HHD series with Utility Software.

    a. Provide Handheld Programming Device for adaptable electronic access control products capable of the following minimum requirements.
        1) Capable of initializing lock and accessories using preloaded software.
        2) Utilized to field configure electronic access control devices, to download firmware updates and door files to device, and to download audit files from device.

2. Product: Schlage PIM400-485 or PIM400-TD2 Panel Interface Module as required,.

    a. Provide Panel Interface Module for wireless adaptable electronic access control products capable of the following minimum requirements.
        1) Used to connect wireless adaptable electronic access control products to the access control board or reader interface Distribution:
            a) General: Provide one (1) panel interface module per sixteen (16) electronic access control devices, subject to the following limitations:
                i. Panel interface module is located on the same floor as associated electronic access control devices.
                ii. Panel interface module is located up to 200-feet (60m) indoor range with normal building obstructions; or up to 1000-feet (300m) with unobstructed, clear line-of-sight of associated electronic access control device(s).
            b) Where panel interface module cannot comply with general distribution requirements for associated electronic access control devices, provide additional modules, as required.
            c) General: Provide one (1) panel interface module per two (2) electronic access control devices, subject to the following limitations:
                i. Panel interface module is located on the same floor as associated electronic access control devices.
                ii. Panel interface module is located up to 200-feet (60m) indoor range with normal building obstructions; or up to 1000-feet (300m) with unobstructed, clear line-of-sight of associated electronic access control device(s).
            d) Where panel interface module cannot comply with general distribution requirements for associated electronic access control devices, provide additional modules, as required.
        2) Applicable Standards:
            a) Listed, UL 294 - The Standard of Safety for Access Control System Units.
            b) Compliant with NEMA 1, 4, 4X, 6; 294
            c) Certified compliant with FCC Part 15 and RoHS.
        3) Power Supply: 12VDC or 24VDC.
        4) Wireless Transmission:
            a) Modulation: 900 MHz spread spectrum, direct sequence, 10 channels.
            b) Encryption: AES-128 bit Key minimum.

3. Product: Schlage PIM400-1501 Panel Interface Module.

a. Provide Panel Interface Module for wireless adaptable electronic access control products capable of the following minimum requirements.
   1) System Description – General
      a) Intelligent controller shall provide decision making, event reporting, and database storage for hardware platform. Reader interface shall provide control for up to 16 wireless access points in paired and or alternate reader configurations.
      b) Controller shall communicate with the host via on-board 10BaseT/100BaseTX Ethernet port.
      c) Card data, PIN data, Door position and Request to Exit shall all be reported to wireless access control remote device.
   2) Distribution:
      a) General: Provide one (1) panel interface module per sixteen (16) electronic access control devices, subject to the following limitations:
         i. Panel interface module is located on the same floor as associated electronic access control devices.
         ii. Panel interface module is located up to 200-feet (60m) indoor range with normal building obstructions; or up to 1000-feet (300m) with unobstructed, clear line-of-sight of associated electronic access control device(s).
      b) Where panel interface module cannot comply with general distribution requirements for associated electronic access control devices, provide additional modules, as required.
   3) Applicable Standards:
      a) Listed, UL 294 – The Standard of Safety for Access Control System Units, when connected to a UL 294-listed power supply.
      b) Certified compliant with:
         i. FCC Part 15, Class C.
         ii. NIST Encryption
         iii. IC (Canada)
         iv. RoHS
   4) Power Input:
      a) Power over Ethernet (PoE) power input 12.95 watts, compliant to IEEE 802.3af.
      b) Twelve volts of direct current (12VDC) ±10% 400 mA minimum from a UL294 listed power supply to achieve UL294 Listing.
      c) No additional wiring requirements such as RS-485 or RS-232.
   5) Wireless Communication:
      a) Transmission/Encryption: AES-128 bit Key
      b) 900MHz spread spectrum modulation, direct sequence, 10 channels, field configurable Dynamic Channel Switching.
      c) Up to 200’ with normal building obstructions or up to 1000’ feet in clear line of sight.
   6) Enclosure:
      a) Certifications: NEMA 1, 4, 4X, 12, 13.
      b) Size: 10.43-inches (265mm) high; 7.28-inches (185mm) wide; 3.79-inches (96mm) deep.
   7) Environmental Conditions:
      a) Operational Temperature: 32-deg F (0-deg C) to 150 F (66-deg C).
      b) Operating Humidity: Ten to ninety-five percent (10–95%) relative humidity, non-condensing (RHNC).
   8) Connectivity:
      a) Primary Port: 10/100 Ethernet
      b) External RJ-45 connector for direct connection on exterior of enclosure.
      c) External USB connector for direct connection on exterior of enclosure.

d) Option to connect to external remote antenna to enable additional wireless applications including extended distances and navigation of radio frequency barriers.

9) Door Control: Up to sixteen (16) physical barriers can be controlled wirelessly.
10) Access Control Capabilities:
    a) 240,000 Cardholder capacity
    b) 50,000 Transaction buffer
    c) 32 Access Levels per cardholder
    d) 19 digit (64-bit) user ID and 15 digit PIN numbers maximum
    e) Activation and Deactivation dates
    f) If/Then Macro capability
11) Card Formats:
    a) Eight active card formats per intelligent controller
    b) 19 digit (64-bit) User ID and 15 digit PIN numbers maximum
    c) PIV-II, CAC, TWIC card compatible
12) Card Reader Functions
    a) Multiple card format support by reader
    b) Paired reader support
    c) Elevator support
    d) Turnstile support
    e) Biometric device support
    f) Occupancy count
    g) Support of multi-occupancy rules
    h) Anti-passback support
    i) Area-based, reader-based, or time based
        i. Nested area, hard, soft, or timed forgiveness
        ii. Anti-passback support, both reader and time based
    j) Supports host-based approval rules
    k) Keypad support with programmable user commands, card input
13) Database Functions
    a) Configurable card database
    b) Supports up to nineteen (19) digital card numbers
    c) Supports pin codes up to fifteen (15) digits
    d) Programmable card activation and deactivation times and dates
    e) Card issue code, ADA and VIP flags (up to 32 bits); PIV (75 bits); Smart Card (200 bits)
    f) Up to 128 access levels per user
    g) Ability to track people and objects
14) Intrusion Alarm Functions
    a) Supports entry delays and exit delays
    b) Area monitoring
    c) Standard alarm masking
    d) Provides control and alarm processing from the keypad
    e) Real time always online event reporting

2.5 ACCESS CONTROL CREDENTIALS

A. Manufacturer and Product:

1. Scheduled Manufacturer and Product: aptiQ XF9551.
2. Acceptable Manufacturers and Products: No Substitute.

B. Requirements:

1. Provide access control credentials ISO 14443A compliant and GSC-IS® certified compatible with access control readers that allow authorized entry and hold information specific to the user.
2. Provide credentials that have an ISO MIFARE microprocessor, function at 13.56 MHz, 8kbits of memory, open memory architecture, and a passive design requiring no batteries.
3. Provide credentials made of a composite material for added durability that have a read range of up to 4 inches, support up to a 40 bit format.
4. Credentials presented to the access control reader at any angle within a minimum distance of one 1-inch shall result in an accurate reading of the card.

2.6 WIRELESS READER INTERFACE

A. Manufacturer and Product:

1. Scheduled Manufacturer and Product: Schlage WRI400.
2. Acceptable Manufacturers and Products: No Substitute.

B. Requirements:

1. Provide a wireless reader interface where specified that communicates data via 900MHz back to either a PIM400-485 or PIM400-TD2 which are hardwired to the Access Control Panel (ACP) where all access and specific reporting decisions are made and recorded.
2. Provide a wireless reader interface compatible with most of the popular Wiegand or Clock and Data format readers.
3. Wireless reader interface shall include:

    a. Visual LED Indications
        1) WRI400 cover is monitored by a tamper switch

    b. Encryption
        1) Each RF transmission is encrypted with AES-128 bit keys

    c. Reader Interfaces Support
        1) Wiegand (data1/data0) up to 255bits
        2) Magnetic Stripe (clock & data) up to 255bits

    d. Form C Relay Outputs
        1) Strike Relay
        2) Auxiliary Output Relay

    e. Signal Inputs
        1) Request-to-Enter
        2) Request-to-Exit
        3) Door Position Switch
        4) Reader Tamper 1
        5) Reader Tamper 2

2.7 OFFLINE CONTROLLER

A. Manufacturer and Product:

1. Scheduled Manufacturer and Product: Schlage CT5000.
2. Acceptable Manufacturers and Products: No Substitute.

B. Requirements:

1. Provide an offline single opening controller UL 294 listed and designed for offline electronic access control that supports up to two separate Wiegand reader inputs, three form C relay outputs, for strike, auxiliary and alarm, and three inputs that include door position, request-to-exit, and remote release.
2. Offline controller shall support up to 5000 users and 5000 audits, have the ability to be programmed locally via keypad or via the Handheld Programming Device, includes 15 foot (4.6 m) USB remote cable connector and decorative wall plate with USB input and supports, and has a LED visual indicators (including low battery and state of the relay).
3. Provide an offline controller that supports a variety of card functions including: normal, toggle, freeze, pass through, construction, lockdown and Card + PIN applications and is compatible with credential technologies including.

    a. Magnetic Stripe (tracks 1, 2, and 3)
    b. 125 kHz Proximity, and 13.56 MHz Smart cards

4. Provide an offline controller that can be upgraded to have networked functionality. With the addition of a networked communication board and upgraded firmware, the controller becomes a wireless reader interface that can communicate via 900MHz wireless signals to a Schlage AD-Series PIM400 which connects to the networked access control system. The wireless reader interface eliminates the need to run additional wires to the door.

2.8 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: As approved by manufacturer of electronic or electrified device.

B. Requirements:

1. Provide power supplies, recommended and approved by manufacturer of electrified locking component, for operation of electrified locks, electrified exit devices, magnetic locks, electric strikes, and other components requiring power supply.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply , and UL class 2 listed.
4. Options:

    a. Provide power supply, where specified, with internal capability of charging sealed backup batteries 24 VDC, in addition to operating DC load.
    b. Provide sealed batteries for battery back-up at each power supply where specified.
    c. Provide keyed power supply cabinet.

5. Provide power supply in an enclosure, complete, and requiring 120VAC to fused input.
6. Provide power supply with emergency release terminals, where specified, that allow release of all devices upon activation of fire alarm system complete with fire alarm input for initiating “no delay” exiting mode.

2.9 FINSHES

A. Finish: BHMA 626/652 (US26D); except:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Continuous Hinges: BHMA 630 (US32D)
3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
4. Protection Plates: BHMA 630 (US32D)
5. Overhead Stops and Holders: BHMA 630 (US32D)
6. Door Closers: Powder Coat to Match
7. Wall Stops: BHMA 630 (US32D)
8. Latch Protectors: BHMA 630 (US32D)
9. Weatherstripping: Clear Anodized Aluminum
10. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to installation of electronic access control system components:

1. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.
2. Examine pathway elements intended for cables. Check raceways, cable trays, and other elements for compliance with space allocations, installation tolerances, hazards to cable installation, and other conditions affecting installation.

B. Existing Door and Frame Compatibility: Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.

C. Examine roughing-in for LAN and control cable conduit systems to PCs, Controllers, card readers, and other cable-connected devices to verify actual locations of wiring connections, conduit and back boxes before device installation

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Where on-site modification of doors and frames is required:

1. Remove existing door hardware being replaced, tag, and store according to contract documents.
2. Field modify and prepare existing door and frame for new electrified hardware being installed.
3. When modifications are exposed to view, use concealed fasteners, when possible.
4. Prepare hardware locations in accordance with:

a. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

b. Wood Doors: DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."
c. Doors in rated assemblies: NFPA 80 for restrictions on on-site door hardware preparation.

3.3 INSTALLATION

A. Mounting Heights: Mount electrified door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each electronic access control system component in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed electronic access control system component during painting.

D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

F. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

G. Lead Protection: Lead wrap door hardware penetrating lead-lined doors. Levers and roses to be lead lined.

H. Wiring: Coordinate with Division 26, ELECTRICAL sections for:

1. Conduit, junction boxes and wire pulls.
2. Connections to and from power supplies to electrified hardware.
3. Connections to fire/smoke alarm system and smoke evacuation system.
4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
5. Testing and labeling wires with Architect's opening number.

I. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.
1. Configuration: Provide one power supply for each door opening][least number of power supplies required to adequately serve doors with electrified door hardware.

J. Card Readers: Provide protective bollards, railings, and/or coverings for card readers that are located in equipment traffic areas, and/or exposed to damage due to collision or impact from forklifts, or manually moved carts, carriers, or other equipment used by the Owner, to ensure that all card readers installed are properly protected from such damage.

3.4 SYSTEM SOFTWARE

A. Develop, install, and test software and databases for the complete and proper operation of systems involved. Assign software license to Owner and assign secured IP address to / or supplied by Owner.

3.5 SYSTEM PROGRAMMING

A. The Contractor shall work with the owner to ensure that the new components will be properly programmed into the new and/or existing system.

B. Coordination required is as follows, unless directed otherwise by owner or their representative;

1. Personal/staff information.
2. Access time for all personal /staff.
3. Definitions of openings for staff access.
4. Holiday definition.
5. Special access privileges.
6. Lock down conditions.

3.6 FIELD QUALITY CONTROL

A. The Contractor shall develop a Final Test and Acceptance (FTA) Plan. The plan shall identify each new system component provided, intent of test, method or methods of test and expected results. Each component listed in the plan shall include space for test part signatures, brief comments, time of test and pass/fail check boxes. The FTA plan shall be submitted to the owner's representative 30 days prior to the scheduled final test.

B. Provide authorized manufacturer's supervision of final testing of each system.

1. On-Site Testing: Manufacturer trained and authorized Systems Integrator shall functionally test each component in the system after installation to verify proper operation and confirm that the wiring and dressing conform to the wiring documentation.

C. Each system shall test free from interference, opens, grounds, and short circuits.

D. Start-up Test (Burn-In)

1. Following completion of the Final Test, the system shall undergo a thirty (30) day Operational Demonstration Test (ODT) or Burn-In period. This operational demonstration period shall start when all specified systems and equipment have been installed and "Substantial Completion" is reached, with only a moderate number of punch list items remaining.
2. During this period, the system shall be operated under a normal facility traffic load for no less than 30 days. If any item or system fails during the ODT, the 30-day burn-in period shall be suspended for that item until repaired or replaced. Once repaired or replaced, the burn-in period shall recommence.
3. Final system acceptance of the entire project will be withheld until after successful completion of this operational demonstration period for all systems and components.
4. System will not be considered substantially complete until the following activities have been successfully completed:

a. Acceptance of all submittals.

b. Delivery of final documentation
c. Successful Final Test and Inspection
d. Successful Operational Demonstration Test
e. Successful training and demonstration, including operation of systems using the manuals.
f. Purging of Contractor User privileges and return of all key card media.

3.7 OWNER PERSONNEL TRAINING

A. On Site Operator training: instruct operating staff in proper operation, including hands-on training.

1. Minimum of **4** man-hours covering the operations for each system installed.
2. Training sessions shall be provided to supervisors, staff utilizing systems and equipment provided under this section, maintenance personnel and any other personnel designated by the owner. Security Contractor should prepare to provide operator training for up to ten (10) personnel.
3. Security contractor shall be prepared to provide training sessions on all work shifts, including day, evening and night shifts.

B. On Site Administrator training: instruct owner-designated security system administrators for each system installed.

1. Minimum of four **4** man-hours of training for each owner-designated individual.
2. Training to cover all administrative and management functions, features and controls for each system.

C. Refresher training: provide a 90-day refresher training session to operators and administrators.

1. Minimum of 4 hours of training for each owner-designated Operator and/or Administrator.
2. Training shall cover summaries of all operator and administrator training topics and shall include greater detail on subject areas or operations not yet mastered by operators or administrators.

D. Review in detail all information in the operations manuals for each system provided.

E. Prior to administering the above training, the contractor(s) shall prepare an outline of the training, identifying the goals and expectations of the course and detailing what students are expected to learn.

F. Training courses shall be videotaped for subsequent training use by the Owner.

3.8 ADJUSTING

A. Initial Adjustment: Adjust and check each operating component of the electronic access control system to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended.
B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, the contractor shall examine and readjust each operating component of the electronic access control system.

3.9 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by electronic access control system installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure electronic access control system components are without damage or deterioration at time of Substantial Completion.

D. Maintain strict security during the installation of equipment and software. Rooms housing the control station, and workstations that have been powered up shall be locked and secured during periods when a qualified operator in the employ of Contractor is not present.

E. Protection: Provide protective covers, fenders, and barriers as necessary to maintain Work of this Section in same condition as installed until time of Substantial Completion.

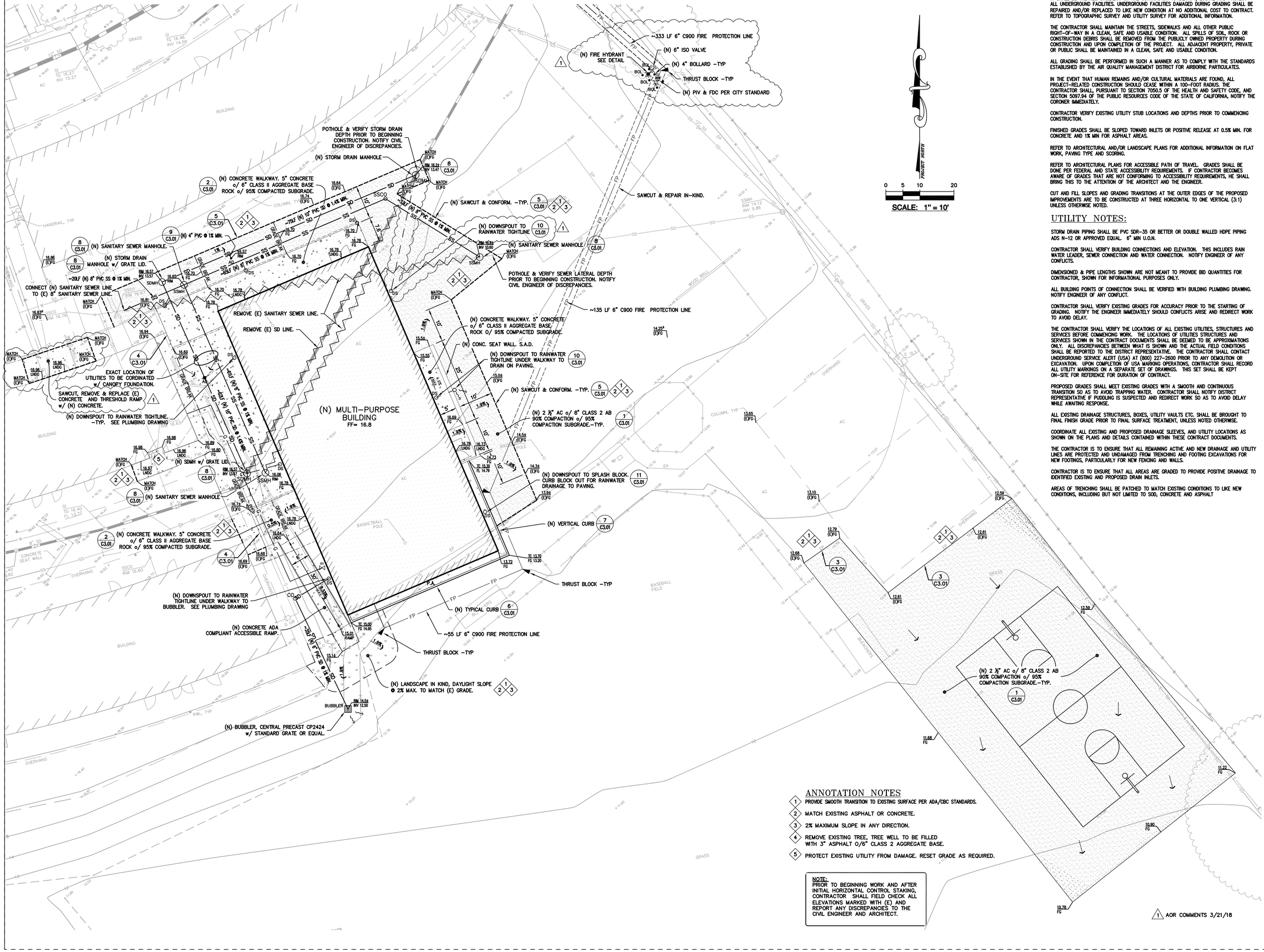
3.10 LIFECYCLE ACTIVITIES

A. Commissioning: All system components shall be commissioned as to conform to the manufacturer's recommendations for maximum life cycle.

B. Maintenance: Provide, in writing, Maintenance procedures for each system component. Such procedures shall be written in order to conform to the manufacturer's recommendations for maximum life cycle.

3.11 EQUIPMENT LIST

End Of Section



GRADING NOTES:

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY, LOCATE AND PROTECT ALL UNDERGROUND FACILITIES. UNDERGROUND FACILITIES DAMAGED DURING GRADING SHALL BE REPAIRED AND/OR REPLACED TO LIKE NEW CONDITION AT NO ADDITIONAL COST TO CONTRACT. REFER TO TOPOGRAPHIC SURVEY AND UTILITY SURVEY FOR ADDITIONAL INFORMATION.

THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.

ALL GRADING SHALL BE PERFORMED IN SUCH A MANNER AS TO COMPLY WITH THE STANDARDS ESTABLISHED BY THE AIR QUALITY MANAGEMENT DISTRICT FOR AIRBORNE PARTICULATES.

IN THE EVENT THAT HUMAN REMAINS AND/OR CULTURAL MATERIALS ARE FOUND, ALL PROJECT-RELATED CONSTRUCTION SHOULD CEASE WITHIN A 100-FOOT RADIUS. THE CONTRACTOR SHALL, PURSUANT TO SECTION 7050.5 OF THE HEALTH AND SAFETY CODE, AND SECTION 5097.94 OF THE PUBLIC RESOURCES CODE OF THE STATE OF CALIFORNIA, NOTIFY THE CORONER IMMEDIATELY.

CONTRACTOR VERIFY EXISTING UTILITY STUB LOCATIONS AND DEPTHS PRIOR TO COMMENCING CONSTRUCTION.

FINISHED GRADES SHALL BE SLOPED TOWARD INLETS OR POSITIVE RELEASE AT 0.5% MIN. FOR CONCRETE AND 1% MIN FOR ASPHALT AREAS.

REFER TO ARCHITECTURAL AND/OR LANDSCAPE PLANS FOR ADDITIONAL INFORMATION ON FLAT WORK, PAVING TYPE AND SCORING.

REFER TO ARCHITECTURAL PLANS FOR ACCESSIBLE PATH OF TRAVEL. GRADES SHALL BE DONE PER FEDERAL AND STATE ACCESSIBILITY REQUIREMENTS. IF CONTRACTOR BECOMES AWARE OF GRADES THAT ARE NOT CONFORMING TO ACCESSIBILITY REQUIREMENTS, HE SHALL BRING THIS TO THE ATTENTION OF THE ARCHITECT AND THE ENGINEER.

CUT AND FILL SLOPES AND GRADING TRANSITIONS AT THE OUTER EDGES OF THE PROPOSED IMPROVEMENTS ARE TO BE CONSTRUCTED AT THREE HORIZONTAL TO ONE VERTICAL (3:1) UNLESS OTHERWISE NOTED.

UTILITY NOTES:

STORM DRAIN PIPING SHALL BE PVC SDR-35 OR BETTER OR DOUBLE WALLED HDPE PIPING ADS N-12 OR APPROVED EQUAL. 6" MIN U.O.N.

CONTRACTOR SHALL VERIFY BUILDING CONNECTIONS AND ELEVATION. THIS INCLUDES RAIN WATER LEADER, SEWER CONNECTION AND WATER CONNECTION. NOTIFY ENGINEER OF ANY CONFLICTS.

DIMENSIONED & PIPE LENGTHS SHOWN ARE NOT MEANT TO PROVIDE BID QUANTITIES FOR CONTRACTOR, SHOWN FOR INFORMATIONAL PURPOSES ONLY.

ALL BUILDING POINTS OF CONNECTION SHALL BE VERIFIED WITH BUILDING PLUMBING DRAWING. NOTIFY ENGINEER OF ANY CONFLICT.

CONTRACTOR SHALL VERIFY EXISTING GRADES FOR ACCURACY PRIOR TO THE STARTING OF GRADING. NOTIFY THE ENGINEER IMMEDIATELY SHOULD CONFLICTS ARISE AND REDIRECT WORK TO AVOID DELAY.

THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES, STRUCTURES AND SERVICES BEFORE COMMENCING WORK. THE LOCATIONS OF UTILITIES STRUCTURES AND SERVICES SHOWN IN THE CONTRACT DOCUMENTS SHALL BE DEEMED TO BE APPROXIMATIONS ONLY. ALL DISCREPANCIES BETWEEN WHAT IS SHOWN AND THE ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE DISTRICT REPRESENTATIVE. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (USA) AT (800) 227-2600 PRIOR TO ANY DEMOLITION OR EXCAVATION. UPON COMPLETION OF USA MARKING OPERATIONS, CONTRACTOR SHALL RECORD ALL UTILITY MARKINGS ON A SEPARATE SET OF DRAWINGS. THIS SET SHALL BE KEPT ON-SITE FOR REFERENCE FOR DURATION OF CONTRACT.

PROPOSED GRADES SHALL MEET EXISTING GRADES WITH A SMOOTH AND CONTINUOUS TRANSITION SO AS TO AVOID TRAPPING WATER. CONTRACTOR SHALL NOTIFY DISTRICT REPRESENTATIVE IF PUDDLING IS SUSPECTED AND REDIRECT WORK SO AS TO AVOID DELAY WHILE AWAITING RESPONSE.

ALL EXISTING DRAINAGE STRUCTURES, BOXES, UTILITY VAULTS ETC. SHALL BE BROUGHT TO FINAL FINISH GRADE PRIOR TO FINAL SURFACE TREATMENT, UNLESS NOTED OTHERWISE.

COORDINATE ALL EXISTING AND PROPOSED DRAINAGE SLEEVES, AND UTILITY LOCATIONS AS SHOWN ON THE PLANS AND DETAILS CONTAINED WITHIN THESE CONTRACT DOCUMENTS.

THE CONTRACTOR IS TO ENSURE THAT ALL REMAINING ACTIVE AND NEW DRAINAGE AND UTILITY LINES ARE PROTECTED AND UNDAMAGED FROM TRENCHING AND FOOTING EXCAVATIONS FOR NEW FOOTINGS, PARTICULARLY FOR NEW FENCING AND WALLS.

CONTRACTOR IS TO ENSURE THAT ALL AREAS ARE GRADED TO PROVIDE POSITIVE DRAINAGE TO IDENTIFIED EXISTING AND PROPOSED DRAIN INLETS.

AREAS OF TRENCHING SHALL BE PATCHED TO MATCH EXISTING CONDITIONS TO LIKE NEW CONDITIONS, INCLUDING BUT NOT LIMITED TO SOD, CONCRETE AND ASPHALT

ANNOTATION NOTES

1. PROVIDE SMOOTH TRANSITION TO EXISTING SURFACE PER ADA/CBC STANDARDS.
2. MATCH EXISTING ASPHALT OR CONCRETE.
3. 2% MAXIMUM SLOPE IN ANY DIRECTION.
4. REMOVE EXISTING TREE, TREE WELL TO BE FILLED WITH 3" ASPHALT O/6" CLASS 2 AGGREGATE BASE.
5. PROTECT EXISTING UTILITY FROM DAMAGE. RESET GRADE AS REQUIRED.

NOTE:
PRIOR TO BEGINNING WORK AND AFTER INITIAL HORIZONTAL CONTROL STAKING, CONTRACTOR SHALL FIELD CHECK ALL ELEVATIONS MARKED WITH (E) AND REPORT ANY DISCREPANCIES TO THE CIVIL ENGINEER AND ARCHITECT.

1 AOR COMMENTS 3/21/18

SAN RAFAEL CITY SCHOOLS

SRCS Glenwood Elementary School Multi-Purpose Room

25 W. CASTLEWOOD DRIVE
SAN RAFAEL, CA 94901

DATE	ISSUE
3/6/2018	DSA Approval

CIVIL ENGINEER
CLARK CIVIL ENGINEERING
12700 HIGHWAY ONE,
POINT REYES STATION, CA 94956
TEL (415) 295-4450
FAX (510) 372-0259
CCE PROJECT NO. 217006

FILE#: 21-39 PTN#: 65458-43

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP#01-116941
AC___ FLS___ SS___
DATE_____

HED
417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94108| USA
(T) 415 981 2345
WWW.HED.DESIGN

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY C. CLARK
No. 65497
Exp. 09-30-19
CIVIL
STATE OF CALIFORNIA

PROJECT NUMBER:
2016-D0009-000

SHEET TITLE:
GRADING AND DRAINAGE PLAN

SHEET NO:
C2.01

ADDENDUM 1

MECHANICAL NOTES & SPECIFICATIONS

1. ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2016 EDITION OF CALIFORNIA BUILDING CODES AND ALL OTHER APPLICABLE CODES AND REGULATIONS, INCLUDING 2016 CALIFORNIA GREEN BUILDING STANDARDS (PART 11) AND 2016 CALIFORNIA ENERGY CODES (PART 6).
2. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED FEES, PERMITS AND INSPECTIONS.
3. COORDINATE ENTIRE INSTALLATION OF THE HVAC SYSTEM(S) WITH THE WORK OF ALL OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. PROVIDE ALL FITTINGS, OFFSETS, AND TRANSITIONS AS REQUIRED FOR A COMPLETE AND WORKABLE INSTALLATION. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ITEMS TO BE PROVIDED BY OTHER TRADES WHERE MENTIONED IN THE CONTRACT DOCUMENTS PRIOR TO BID - NO EXCEPTIONS. THEY SHALL BE RESPONSIBLE FOR A COMPLETE WORKING SYSTEM PER CONTRACT DOCUMENTS.
4. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING EQUIPMENT, DUCTWORK, AND REGISTERS PRIOR TO INSTALLATION OF ANY NEW EQUIPMENT, DUCTWORK OR REGISTERS. IF THE EXISTING DUCTWORK SIZE IS SMALLER THAN THE NEW DUCTWORK SIZE, AND/OR THE EXISTING DUCTWORK IS NOT IN THE NOTED LOCATION, THE CONTRACTOR IS TO NOTIFY OWNER IMMEDIATELY AND NO NEW DUCTWORK IS TO BE INSTALLED UNTIL THE ISSUE IS RESOLVED.
5. THESE DRAWINGS AND NOTES SHALL BE READ IN CONJUNCTION WITH AND BE CONSIDERED TO BE PART OF A SEPARATE AND COMPLETE MECHANICAL SPECIFICATION.
6. COORDINATE THE LOCATIONS OF ALL CEILING DIFFUSERS, REGISTERS, AND GRILLES WITH THE ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL LIGHTING LAYOUT, FIRE SPRINKLER SYSTEM, AND ARCHITECTURAL ROOM ELEVATIONS. THE ARCHITECT AND ENGINEER SHALL BE IMMEDIATELY NOTIFIED OF ANY CONFLICTS PRIOR TO FABRICATION AND INSTALLATION.
7. EQUIPMENT, DUCTS, PIPING, AND OTHER DEVICES AND MATERIALS INSTALLED OUTSIDE OF THE BUILDING OR OTHERWISE EXPOSED TO THE WEATHER SHALL BE COMPLETELY WEATHER PROOFED AND PAINTED TO MATCH. COORDINATE WITH ARCHITECT PRIOR TO PAINTING.
8. DIMENSIONS SHOWN ON THESE PLANS ARE APPROXIMATE AND MUST BE CONFIRMED ON SITE.
9. PRIOR TO OCCUPANCY THE ENTIRE HVAC SYSTEMS SHALL BE BALANCED BY AN INDEPENDENT AIR BALANCE CONTRACTOR FOR AIR IN ACCORDANCE AND PROCEDURES WITH (AABC) ASSOCIATED AIR BALANCE COUNCIL STANDARDS, (NEBB) NATIONAL ENVIRONMENTAL BALANCING BUREAU , OR (TABB) TESTING ADJUSTING AND BALANCING BUREAU. SYSTEMS SHALL BE BALANCED AS INDICATED ON PLANS INCLUDING OUTSIDE AIR VENTILATION. FINAL BALANCING SHALL BE WITHIN 10% FOR SUPPLY, RETURN AND OUTSIDE AIR QUANTITIES INDICATED. WHERE THERE IS A CONFLICT IN PLANS, THE AIR BALANCE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO BALANCING OF SYSTEM. IF NOT DONE SO THE AIR BALANCE CONTRACTOR SHALL BEAR ALL COSTS INCURRED FOR WORK THAT MUST BE RE-BALANCED DUE TO CONFLICTS ON CONTRACT DOCUMENTS. CONTRACTOR SHALL PROVIDE THREE COPIES OF THE AIR BALANCE REPORT TO THE ENGINEER FOR APPROVAL. PROVIDE PROCEDURES AND REPORTING PER CAL GREEN CODES SECTION 5.410.4.3, SECTION 5.410.4.3.1 AND SECTION 5.410.4.4.
11. CONTROLS CONTRACTOR AND AIR BALANCE CONTRACTOR SHALL COORDINATE WORK AND PERFORM NECESSARY TASKS AS REQUIRED TO OBTAIN AIR FLOW QUANTITIES FOR SYSTEMS SHOWN HEREIN.
12. PROVIDE TO BUILDING OWNER, PER CAL GREEN CODE SECTION 5.410.4.5, AND CMC 514.0, OPERATING PROCEDURES FOR THE USE, INSPECTION, TESTING, AND MAINTENANCE OF EQUIPMENT MANUAL INCLUDING INSPECTION AND REPORTS AS APPLICABLE.
13. PROVIDE OPERATING PROCEDURES FOR COOKING EQUIPMENT PER CMC SECTION 514.1.
14. COORDINATE THE LOCATION OF ALL ROOF OPENINGS AND THE LOCATION OF ALL ROOF MOUNTED EQUIPMENT WITH THE STRUCTURAL AND ARCHITECTURAL PLANS PRIOR TO ANY FABRICATION AND INSTALLATION.
15. PLATFORMS, CURBS, AND FLASHING FOR MECHANICAL EQUIPMENT SHALL BE AS INDICATED ON THE STRUCTURAL AND ARCHITECTURAL PLANS, UNLESS NOTED OTHERWISE. WHERE THERE IS A CONFLICT WITH THE MECHANICAL PLANS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER PRIOR TO FABRICATION AND INSTALLATION.
16. EQUIPMENT, ACCESSORIES AND RELATED PIPING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL FITTINGS, TRANSITIONS, DAMPERS, VALVES, AND OTHER DEVICES REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.
17. MAINTENANCE LABEL SHALL BE AFFIXED TO ALL MECHANICAL EQUIPMENT AND A MAINTENANCE MANUAL SHALL BE PROVIDED FOR THE OWNER'S USE. LABEL SHALL IDENTIFY THE UNIT DESIGNATION PER PLANS AND THE SPACE IT SERVES.
    - 17.1. EQUIPMENT: 4-1/2"X1-1/2" ENGRAVED PLASTIC-LAMINATED SIGN WITH 1/2" WHITE LETTERS ON BLACK BACKGROUND.
    - 17.2. VALVES: 1-1/2" DIAMETER BRASS DISC STAMPED WITH 3/8" HIGH LETTERS IDENTIFYING TYPE OF SERVICE AND VALVE NUMBER.
    - 17.3. PIPING: SELF-STICKING PIPE MARKERS CONSISTING OF PIPE SERVICE WORDING AND ARROW INDICATING DIRECTION OF FLOW ON ANSI COLOR BACKGROUND. MAXIMUM SPACING OF 50 FEET APART. SECURE MARKER WITH 2-1/4" WIDE SELF-STICKING CLEAR TAPE AROUND PERIPHERY OF MARKER.
18. PROVIDE MANUAL VOLUME DAMPERS AND BACKDRAFT DAMPERS FOR OUTSIDE AIR INTAKES ON ALL AIR HANDLING EQUIPMENT AND EXHAUST FANS SERVING CONDITIONED SPACES. EXCEPTION: EQUIPMENT WITH FACTORY AIR ECONOMIZERS.
19. OUTSIDE AIR INTAKES SHALL MEET AS A MINIMUM CODE REQUIRED CLEARANCES FROM EXHAUST, FLUE, FUEL BURNING APPLIANCES AND PLUMBING VENT OUTLETS. FOR GAS/ELECTRIC AIR CONDITIONING UNITS WHERE THE CODE REQUIRED CLEARANCES ARE NOT MET, A FACTORY FLUE GAS DEFLECTOR AND EXTENSION SHALL BE USED TO MINIMIZE THESE CLEARANCES. CONTRACTOR SHALL DETERMINE LOCATIONS WHERE REQUIRED PRIOR TO BID. THIS SHALL BE PROVIDED AT NO ADDITIONAL COST.
20. ALL HVAC EQUIPMENT SERVING NORMALLY OCCUPIED SPACES SHALL HAVE MERV 8 FILTERS UNLESS OTHERWISE NOTED.
21. AIR FILTERS SHALL BE STATE FIRE MARSHALL APPROVED AND LISTED, PREFORMED FILTERS HAVING COMBUSTIBLE FRAMING SHALL BE TESTED AS A COMPLETE ASSEMBLY. INSTALLED FILTERS SHALL BE CLEARLY LABELED BY THE MANUFACTURE INDICATING THE MERV RATING, AND THE FILTER SPECIFICATION SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUAL. AIR FILTERS SHALL BE ACCESSIBLE FOR CLEANING OR REPLACEMENT.
22. EQUIPMENT WITH MOVING PARTS, FIXED OR FLEXIBLY MOUNTED, SHALL BE PROVIDED WITH FLEXIBLE DUCT AND PIPE CONNECTIONS AND SHALL BE BRACED OR ANCHORED TO COMPLY WITH THE REQUIREMENTS OF TITLE 24.
23. HVAC EQUIPMENT SHALL BE CERTIFIED BY THE CALIFORNIA ENERGY COMMISSION TO COMPLY WITH THE LATEST EFFICIENCY STANDARDS.
24. AIR HANDLING EQUIPMENT SERVING CONDITIONED SPACES SHALL PROVIDE CONTINUOUS OUTSIDE AIR TO SPACES IN OCCUPIED MODE. CONTROLS SHALL BE PROVIDED TO PROVIDE THE MINIMUM RATE OF OUTDOOR AIR REQUIRED BY THE STATE ENERGY REGULATIONS.
25. CONTRACTOR SHALL VERIFY ALL CLEARANCES AND AVAILABLE SPACE FOR DUCTWORK PRIOR TO ORDERING AND/OR FABRICATION.
26. CONTRACTOR TO SUBMIT ALL EQUIPMENT, DUCTWORK, AIR DISTRIBUTION DEVICES, AND OTHER ACCESSORIES TO THE ENGINEER FOR APPROVAL PRIOR TO ANY ORDERING OF SUCH ITEMS.
27. CONTRACTOR SHALL BE RESPONSIBLE FOR ORDERING AIR CONDITIONING EQUIPMENT WITH THE THRU-BASE POWER, CONTROL, AND GAS CONNECTIONS. VERIFY ALL CONNECTION LOCATIONS WITH UNIT MANUFACTURER AND COORDINATE WITH OTHER TRADES AS NECESSARY.
28. COORDINATE ALL WORK WITH THE ARCHITECTURAL, STRUCTURAL DRAWINGS AND DRAWINGS OF OTHER TRADES. INSTALL ALL WORK TO CLEAR NEW AND EXISTING ARCHITECTURAL WORK, STRUCTURAL MEMBERS AND WORK OF OTHER TRADES. NO ITEM SUCH AS PIPE, DUCT, ETC. SHALL BE IN CONTACT WITH ANY EQUIPMENT. ANY ERRORS, OMISSIONS, DISCREPANCIES, DEFICIENCIES, OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR, THE ARCHITECT AND THE ENGINEER PRIOR TO PROCEEDING WITH ANY AFFECTED WORK.
29. DUCTWORK, PIPING, CONDUIT, ETC. PENETRATING FIRE RATED CONSTRUCTION SHALL HAVE APPROVED FIRE STOPPING.
30. CONTROL SCHEMATICS ARE FOR REFERENCE ONLY. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ELECTRICAL DEVICES REQUIRED AND SEQUENCE OF OPERATION.
31. WHERE THE CONTROLS CONTRACTOR IS RETAINED BY THE OWNER THEY SHALL BE RESPONSIBLE TO FURNISH AND INSTALL ALL DEVICES, WIRING, AND TERMINATIONS REQUIRED FOR A COMPLETE AND FUNCTIONAL INSTALLATION. COORDINATE ALL WORK AND REQUIREMENTS WITH OTHER TRADES INCLUDING THE GENERAL, MECHANICAL, AND ELECTRICAL CONTRACTORS PRIOR TO BID. CONTRACTOR SHALL FOLLOW ALL SUBMITTAL REQUIREMENTS PER DRAWINGS AND SPECIFICATIONS.
32. LINE VOLTAGE WIRING SHALL BE INSTALLED IN CONDUIT. ALL LINE VOLTAGE CONDUIT AND WIRING, INCLUDING FINAL CONNECTIONS, SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THE ELECTRICAL DRAWINGS OR SPECIFIED IN THE ELECTRICAL SECTION OF THE SPECIFICATIONS. ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS OF GOVERNING BODIES HAVING JURISDICTION THEREOF.
33. LOW VOLTAGE CONDUIT AND WIRING AS APPLICABLE, INCLUDING FINAL CONNECTIONS, SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR AS INDICATED ON THE MECHANICAL DRAWINGS OR SPECIFIED IN THE MECHANICAL SECTION OF THE SPECIFICATIONS.
34. LOW VOLTAGE WIRING SHALL BE IN CONDUIT WITHIN CONCEALED WALLS AND WHERE EXPOSED.
35. ELECTRICAL CONTRACTOR SHALL PROVIDE REQUIRED RELAY ACCESSORIES FOR CONNECTION OF 120V/1Ø VENTILATION EQUIPMENT TO 277V/1Ø LIGHTING AS APPLICABLE.
36. WHERE HVAC CONTROL WIRING IS REQUIRED BETWEEN BUILDINGS, PROVIDE UNDERGROUND CONDUIT WITH PULL STRING(S) FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR FOR THE ENERGY MANAGEMENT SYSTEM WIRING TERMINATIONS ONLY. CONTRACTOR SHALL FURNISH AND INSTALL CONDUIT AND WIRING TERMINATIONS FOR BETWEEN BUILDINGS.
37. THERMOSTATS SHALL HAVE LOCKABLE COVERS (WHERE INDICATED ON PLANS) AND SHALL BE OF THE ELECTRONIC, PROGRAMMABLE, AUTOMATIC CHANGEOVER TYPE TO SEQUENCE HEATING OR COOLING. SET POINT RANGE SHALL BE 10F° BETWEEN FULL HEATING AND COOLING. THEY SHALL HAVE CAPABILITY OF TERMINATING ALL HEATING AT A TEMPERATURE NO MORE THAN 70°F, AND COOLING AT A TEMPERATURE NOT LESS 78°F. ADJUSTABLE TEMPERATURE DIFFERENTIAL SHALL BE 1 1/2°F. CONTROL LIMITS SHALL BE FROM 55°F TO 85°F. MOUNT TOP OF BOX AT NO MORE THAN 42 INCHES ABOVE FLOOR OR AS REQUIRED BY LOCAL AUTHORITIES FOR ACCESSIBILITY. IN ADDITION, THERMOSTAT(S) SHALL HAVE THE CAPABILITY TO CONNECT AND RESPOND TO A OCCUPANT CONTROLLED DEMAND RESPONSE SIGNAL OR PRICE SIGNAL FOR RESETTING OF ROOM SETPOINTS.
38. THERMOSTATS THAT ARE PART OF AN ENERGY MANAGEMENT SYSTEM SHALL FOLLOW CONTROL SPECIFICATIONS AND DRAWING REQUIREMENTS.
39. SHOULD THE LOCATION OF THE THERMOSTAT NOT MEET THE ADA HEIGHT REQUIREMENTS DUE TO OBSTRUCTIONS, THEN AN ALTERNATE LOCATION SHALL BE PROPOSED OR REQUESTED BY THE CONTRACTOR THAT SHALL BE APPROVED BY THE ENGINEER AND ARCHITECT.
40. LINE VOLTAGE THERMOSTATS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
41. DUCTWORK CONSTRUCTION SHALL MEET THE FOLLOWING SYSTEM PRESSURE REQUIREMENTS:
    - 41.1. ALL OTHER DUCTWORK - 2 INCH WATER COLUMN
42. ALL SUPPLY, RETURN AND EXHAUST DUCT JOINTS SHALL BE SEALED PER CALIFORNIA MECHANICAL CODE CHAPTER 6 REQUIREMENTS. SEAL CLASS B.
43. RECTANGULAR DUCTWORK SHALL BE SHEET METAL CONSTRUCTED OR SPIRAL ROUND, ERECTED, AND TESTED IN ACCORDANCE WITH THE MOST RESTRICTIVE OF LOCAL REGULATIONS, PROCEDURES DETAILED IN THE ASHRAE HANDBOOK OF FUNDAMENTALS, CHAPTER 6 OF THE CALIFORNIA MECHANICAL CODES, OR THE APPLICABLE STANDARDS ADOPTED BY (SMACNA) SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION.
44. ALL FLEXIBLE DUCT SHALL NOT EXCEED SEVEN FEET IN LENGTH TO RESPECTIVE DIFFUSERS, GRILLES, OR OTHER AIR DEVICES.
45. AT THE TIME OF ROUGH INSPECTION AND DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENTS, OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL OR OTHER METHODS TO REDUCE THE AMOUNT OF DEBRIS WHICH MAY COLLECT IN THE SYSTEM.
46. LIMIT USE OF PERMANENT HVAC SYSTEMS DURING CONSTRUCTION TO CONDITIONING NECESSARY FOR MATERIAL AND EQUIPMENT INSTALLATION. IF PERMANENT HVAC IS USED DURING CONSTRUCTION, INSTALL MERV-8 FILTERS ON RETURNS, AND REPLACE ALL FILTERS IMMEDIATELY PRIOR TO OCCUPANCY, OR ,IF THE BUILDING IS OCCUPIED DURING ALTERATION, AT THE CONCLUSION OF CONSTRUCTION.
47. PROVIDE SEISMIC RESTRAINTS TO ALL DUCTWORK, PIPE, AND EQUIPMENT SUPPORTS IN ACCORDANCE WITH THE LATEST SMACNA GUIDELINES FOR SEISMIC RESTRAINT OF MECHANICAL SYSTEMS. SUSPENDED EQUIPMENT SHALL BE PROVIDED WITH SEISMIC ANCHORAGE AND ISOLATION SUPPORTS.
48. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER OR THE FIELD REPRESENTATIVE OF THE DIVISION OF THE STATE ARCHITECT.
49. RECTANGULAR DUCT TURNS IN SUPPLY, RETURN, AND EXHAUST DUCTS SHALL HAVE TURNING VANES UNLESS OTHERWISE NOTED, OR SHALL HAVE A INNER RADIUS TURN OF NO LESS THAN THE WIDTH OF THE DUCT.
50. DUCTWORK HANDLING CONDITIONED AIR SHALL BE INSULATED OR LINED. INTERIOR DUCTWORK SHALL BE INSULATED WITH A NON-FIBEROUS MATERIAL, R=4.2. ALL SUPPLY AND RETURN DUCTWORK EXPOSED TO WEATHER SHALL BE INTERNALLY LINED WITH 2" THICK DUCT LINER UNLESS OTHERWISE INDICATED OR SPECIFIED. ALL DUCT SIZES INDICATED ON PLANS ARE NET INSIDE DIMENSIONS. ALL INSULATION SHALL HAVE A FLAME SPREAD OF NOT MORE THAN 25 AND A SMOKE DENSITY NOT EXCEEDING 50.
51. CONTRACTORS OPTIONS: WHERE ROUND LINED DUCTWORK IS INDICATED, CONTRACTOR MAY USE RECTANGULAR DUCTWORK OF EQUIVALENT NET FREE AREA OR PRESSURE DROP (WHICHEVER IS MOST RESTRICTIVE).
52. MANUAL VOLUME DAMPERS SHALL BE PROVIDED IN ALL DUCT BRANCHES TO INDIVIDUAL DIFFUSERS, GRILLES, AND REGISTERS, AS WELL AS OUTSIDE AIR INTAKE DUCTS. DAMPERS SHALL BE LOCATED AT THE BRANCH DUCT LOCATIONS. THE MECHANICAL CONTRACTOR SHALL COORDINATE LOCATIONS OF DAMPERS WITH THE AIR BALANCING CONTRACTOR PRIOR TO BID, SO AS TO ENSURE ACCESSIBILITY AFTER INSTALLATION. IN LOCATIONS WHERE THESE DAMPERS ARE INACCESSIBLE, CABLE OPERATED ADJUSTMENT CONTROLS SHALL BE PROVIDED AT NO ADDITIONAL COST. OPPOSED BLADE DAMPERS SHALL NOT BE PERMITTED UNLESS OTHERWISE NOTED.
53. FOR INACCESSIBLE AREAS THE CONTRACTOR SHALL PROVIDE ACCESS PANELS FOR ALL DAMPERS, EQUIPMENT, SMOKE DETECTORS, AND CONTROL DEVICES. THESE PANELS SHALL MATCH THE RATING OF THE WALL AND/OR CEILING THAT THEY ARE LOCATED IN. MINIMUM ACCESS PANEL SIZES SHALL BE 12"X12" FOR HAND ACCESS AND 30"x30" MINIMUM FOR BODY ACCESS. WHERE A LARGER ACCESS PANEL IS REQUIRED DUE TO INSTALLATION CONSTRAINTS OR EQUIPMENT SIZE, THE CONTRACTOR SHALL DO SO AT NO ADDITIONAL COST AND SHALL OBTAIN PRIOR APPROVAL FROM THE ARCHITECT, ENGINEER AND DSA.
54. HVAC CONTRACTOR TO REMOVE ALL LEFT OVER DUCTWORK SCRAPES, ETC. (IF ANY) AND LEAVE PREMISES CLEAN AND FREE OF ANY TRASH OR DEBRIS DUE TO THEIR WORK.

SUBSTITUTION OF MATERIALS

EQUALS: THE DESIGN HAS BEEN BASED ON THE MANUFACTURER'S NAME AND PRODUCT LISTED ON THE DRAWINGS. OTHER MANUFACTURER'S NAMES LISTED IN THE SPECIFICATIONS MAY BE SELECTED AND CONSIDERED 'AS EQUAL' FOR QUALITY ONLY, HOWEVER, THEY MUST MATCH THE PERFORMANCE, CONSTRUCTION, FIT AND FEATURES OF THOSE SELECTED FOR DESIGN. THE ACCEPTANCE OF THESE DOES NO RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PROVIDING THE REQUIRED MATERIALS AND PROVIDING A WORKABLE SYSTEM. THOSE ITEMS NOTED AS 'NO SUBSTITUTIONS' SHALL BE FURNISHED WHEN SPECIFIED.

SHOULD THE CONTRACTOR THE WISH TO SUBSTITUTE EQUIPMENT OR MATERIAL OTHER THAN THOSE CONSIDERED FOR THE BASIS OF DESIGN, THE CONTRACTOR SHALL SUBMIT INFORMATION AS CALLED FOR IN THE 'REQUEST FOR SUBSTITUTION SPECIFICATIONS, AND SUBMIT REQUIRED INFORMATION FOR BOTH THE SPECIFIED OR SCHEDULED ITEM AND THE PROPOSED SUBSTITUTE ITEM. THESE SUBMITTALS MUST SHOW THAT BOTH THE SPECIFIED AND THE SUBSTITUTE MATERIAL MATCH IN QUALITY, PERFORMANCE, CONSTRUCTION, FIT AND FEATURES OF THOSE SELECTED FOR DESIGN. ANY EQUIPMENT OR MATERIAL SUBMITTED FOR SUBSTITUTION WITHOUT THE COMPARISON INFORMATION WILL NOT BE REVIEWED OR ACCEPTABLE.

LIABILITY OF SUBSTITUTIONS: PERFORMANCE OF SUBSTITUTIONS MUST BE EQUAL TO THE ITEM SPECIFIED. SHOULD THE SUBSTITUTED ITEM FAIL TO PERFORM ACCORDING TO SPECIFICATIONS, REPLACE WITH THE ORIGINALLY SPECIFIED ITEM WITHOUT EXTRA COMPENSATION ON REQUEST OF THE ARCHITECT ANY TIME WITHIN THE GUARANTEE PERIOD.

2016 CAL-GREEN COMMISSIONING

COMMISSIONING: NEW BUILDINGS 10,000 SQUARE FEET AND OVER, BUILDING COMMISSIONING SHALL BE INCLUDED IN THE DESIGN AND CONSTRUCTION PROCESSES OF THE BUILDING PROJECT TO VERIFY THAT THE BUILDING SYSTEMS AND COMPONENTS MEET THE OWNER'S OR OWNER REPRESENTATIVE'S PROJECT REQUIREMENTS. COMMISSIONING SHALL BE PERFORMED IN ACCORDANCE WITH THIS SECTION BY TRAINED PERSONNEL WITH EXPERIENCE ON PROJECTS OF COMPARABLE SIZE AND COMPLEXITY. COMMISSIONING REQUIREMENTS SHALL INCLUDE:
1. OWNER'S OR OWNER REPRESENTATIVE'S PROJECT REQUIREMENTS.
2. BASIS OF DESIGN.
3. COMMISSIONING MEASURES SHOWN IN THE CONSTRUCTION DOCUMENTS.
4. COMMISSIONING PLAN.
5. FUNCTIONAL PERFORMANCE TESTING.
6. DOCUMENTATION AND TRAINING.
7. COMMISSIONING REPORT.

ALL BUILDING OPERATING SYSTEMS COVERED BY TITLE 24, PART 6, AS WELL AS PROCESS EQUIPMENT AND CONTROLS AND RENEWABLE ENERGY SYSTEMS SHALL BE INCLUDED IN THE SCOPE OF THE COMMISSIONING REQUIREMENTS.

OWNER PROJECT REQUIREMENTS (OPR): THE EXPECTATIONS AND REQUIREMENTS OF THE BUILDING APPROPRIATE TO ITS PHASE SHALL BE DOCUMENTED BEFORE THE DESIGN PHASE OF THE PROJECT BEGINS. THIS DOCUMENTATION SHALL INCLUDE THE FOLLOWING:
1. ENVIRONMENTAL AND SUSTAINABILITY GOALS.
2. ENERGY EFFICIENCY GOALS.
3. INDOOR ENVIRONMENTAL QUALITY REQUIREMENTS.
4. PROJECT PROGRAM, INCLUDING FACILITY FUNCTIONS AND HOURS OF OPERATION, AND NEED FOR AFTER HOURS OPERATION.
5. EQUIPMENT AND SYSTEMS EXPECTATIONS.
6. BUILDING OCCUPANT AND OPERATION AND MAINTENANCE O&M PERSONNEL EXPECTATIONS.

BASIS OF DESIGN (BOD): A WRITTEN EXPLANATION OF HOW THE DESIGN OF THE BUILDING SYSTEMS MEETS THE OPR SHALL BE COMPLETED AT THE DESIGN PHASE OF THE BUILDING PROJECT. THE BASIS OF DESIGN DOCUMENT SHALL COVER THE FOLLOWING SYSTEMS:
1. HEATING, VENTILATION, AIR CONDITIONING (HVAC) SYSTEMS AND CONTROLS.
2. WATER HEATING SYSTEM.

COMMISSIONING PLAN: PRIOR TO PERMIT ISSUANCE A COMMISSIONING PLAN SHALL BE COMPLETED TO DOCUMENT HOW THE PROJECT WILL BE COMMISSIONED. THE COMMISSIONING PLAN SHALL INCLUDE THE FOLLOWING:
1. GENERAL PROJECT INFORMATION.
2. COMMISSIONING GOALS.
3. SYSTEMS TO BE COMMISSIONED. PLANS TO TEST SYSTEMS AND COMPONENTS SHALL INCLUDE:
    - A. AN EXPLANATION OF THE ORIGINAL DESIGN INTENT.
    - B. EQUIPMENT AND SYSTEMS TO BE TESTED, INCLUDING THE EXTENT OF TESTS.
    - C. FUNCTIONS TO BE TESTED.
    - D. CONDITIONS UNDER WHICH THE TEST SHALL BE PERFORMED.
    - E. MEASURABLE CRITERIA FOR ACCEPTABLE PERFORMANCE.
4. COMMISSIONING TEAM INFORMATION.
5. COMMISSIONING PROCESS ACTIVITIES, SCHEDULES AND RESPONSIBILITIES. PLANS FOR THE COMPLETION OF COMMISSIONING SHALL BE INCLUDED.

FUNCTIONAL PERFORMANCE TESTING: FUNCTIONAL PERFORMANCE TESTS SHALL DEMONSTRATE THE CORRECT INSTALLATION AND OPERATION OF EACH COMPONENT, SYSTEM AND SYSTEM-TO-SYSTEM INTERFACE IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. FUNCTIONAL PERFORMANCE TESTING REPORTS SHALL CONTAIN INFORMATION ADDRESSING EACH OF THE BUILDING COMPONENTS TESTED, THE TESTING METHODS UTILIZED AND INCLUDE ANY READINGS AND ADJUSTMENTS MADE.

DOCUMENTATION AND TRAINING: A SYSTEMS MANUAL AND SYSTEMS OPERATIONS TRAINING ARE REQUIRED, INCLUDING OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) REQUIREMENTS IN CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 8, SECTION 5142, AND OTHER RELATED REGULATIONS.

SYSTEMS MANUAL: DOCUMENTATION OF THE OPERATIONAL ASPECTS OF THE BUILDING SHALL BE COMPLETED WITHIN THE SYSTEMS MANUAL AND DELIVERED TO THE BUILDING OWNER OR REPRESENTATIVE. THE SYSTEMS MANUAL SHALL INCLUDE THE FOLLOWING:
1. SITE INFORMATION, INCLUDING FACILITY DESCRIPTION, HISTORY AND CURRENT REQUIREMENTS.
2. SITE SITE CONTACT INFORMATION.
3. BASIC OPERATIONS AND MAINTENANCE, INCLUDING GENERAL SITE OPERATING PROCEDURES, BASIC TROUBLESHOOTING, RECOMMENDED MAINTENANCE REQUIREMENTS, SITE EVENTS LOG.
4. MAJOR SYSTEMS.
5. SITE. SITE EQUIPMENT INVENTORY AND MAINTENANCE NOTES.
6. A COPY OF ALL SPECIAL INSPECTION VERIFICATIONS REQUIRED BY THE ENFORCING AGENCY OR THIS CODE.
7. OTHER RESOURCES AND DOCUMENTATION, IF APPLICABLE.

SYSTEMS OPERATIONS TRAINING: A PROGRAM FOR TRAINING OF THE APPROPRIATE MAINTENANCE STAFF FOR EACH EQUIPMENT TYPE AND/OR SYSTEM SHALL BE DEVELOPED AND DOCUMENTED IN THE COMMISSIONING REPORT AND SHALL INCLUDE THE FOLLOWING:
1. SYSTEM/EQUIPMENT OVERVIEW (WHAT IT IS, WHAT IT DOES AND WHAT OTHER SYSTEMS AND/OR EQUIPMENT IT INTERFACES).
2. REVIEW AND DEMONSTRATION OF SERVICING/PREVENTIVE MAINTENANCE.
3. REVIEW OF THE INFORMATION IN THE SYSTEMS MANUAL.
4. REVIEW OF THE RECORD DRAWINGS ON THE SYSTEM/ EQUIPMENT.

COMMISSIONING REPORT: A REPORT OF COMMISSIONING PROCESS ACTIVITIES UNDERTAKEN THROUGH THE DESIGN AND CONSTRUCTION PHASES OF THE BUILDING PROJECT SHALL BE COMPLETED AND PROVIDED TO THE OWNER OR REPRESENTATIVE.

TESTING AND ADJUSTING: TESTING AND ADJUSTING OF SYSTEMS SHALL BE REQUIRED FOR BUILDINGS LESS THAN 10,000 SQUARE FEET.

SYSTEMS: DEVELOP A WRITTEN PLAN OF PROCEDURES FOR TESTING AND ADJUSTING SYSTEMS. SYSTEMS TO BE INCLUDED FOR TESTING AND ADJUSTING AND BALANCING SHAH INCLUDE THE FOLLOWING,AS APPLICABLE TO THE PROJECT:
1. HVAC SYSTEMS AND CONTROLS.
2. INDOOR AND OUTDOOR LIGHTING AND CONTROLS.
3. WATER HEATING SYSTEMS.
4. RENEWABLE ENERGY SYSTEMS.
5. LANDSCAPE IRRIGATION SYSTEMS.

PROCEDURES: PERFORM TESTING AND ADJUSTING PROCEDURES IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND APPLICABLE NATIONAL STANDARDS ON EACH SYSTEM.

HVAC BALANCING: IN ADDITION TO TESTING AND ADJUSTING, BEFORE A NEW SPACE-CONDITIONING SYSTEM SERVING A BUILDING OR SPACE IS OPERATED FOR NORMAL USE, BALANCE THE SYSTEM IN ACCORDANCE WITH THE PROCEDURES DEFINED BY THE TESTING ADJUSTING AND BALANCING BUREAU NATIONAL STANDARDS, THE NATIONAL ENVIRONMENTAL BALANCING BUREAU PROCEDURAL STANDARDS OR ASSOCIATED AIR BALANCE COUNCIL NATIONAL STANDARDS OR AS APPROVED BY THE ENFORCING AGENCY.

REPORTING: AFTER COMPLETION OF TESTING, ADJUSTING AND BALANCING, PROVIDE A FINAL REPORT OF TESTING SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES.

OPERATION AND MAINTENANCE (0 & M) MANUAL: PROVIDE THE BUILDING OWNER OR REPRESENTATIVE WITH DETAILED OPERATING AND MAINTENANCE INSTRUCTIONS AND COPIES OF GUARANTIES/WARRANTIES FOR EACH SYSTEM. 0 & M INSTRUCTIONS SHALL BE CONSISTENT WITH OSHA REQUIREMENTS IN CCR, TITLE 8, SECTION 5142 AND OTHER RELATED REGULATIONS.

INSPECTIONS AND REPORTS: INCLUDE A COPY OF ALL INSPECTION VERIFICATIONS AND REPORTS REQUIRED BY THE ENFORCING AGENCY.

AIR DISTRIBUTION

STYLE	MFR	MODEL NO	APPLICATION	DESCRIPTION	INSTALLATION NOTES
A	TITUS	S-DL	DUCT MOUNT SUPPLY DRUM GRILLE	VERTICALLY ROTATING DRUM WITH BLADES FOR HORIZONTAL	WITH VOLUME DAMPER.
B		DL	SIDEWALL MOUNT SUPPLY DRUM GRILLE	VERTICALLY ROTATING DRUM WITH BLADES FOR HORIZONTAL	WITH VOLUME DAMPER. ANGLE GRILLE AT 15° DOWN
C		350ZRL	SIDEWALL RETURN / EXHAUST GRILLE	SURFACE MOUNT, 3/4 " BLADE SPACING @ 0 °, FRONT LONG, WHITE FINISH, NO DAMPER	

SIDEWALL GRILLE CALL OUT DESCRIPTION: 30X6 — SIZE; 200A — STYLE; CFM

FURNACE SCHEDULE

TAG	AREA SERVED	MANUF.	MODEL	INPUT (KBTUH)	OUTPUT (KBTUH)	AFUE (%)	AIRFLOW (CFM)	OUTSIDE AIR (CFM)	AIR PRESSURE - (IN. WC)	MOTOR (HP)	ELECT. (V/□/HZ)	FLUE OUTLET (INCH)	COMBUSTION AIR INLET (INCH)	OPER. WT. (LBS)	REF. DETAIL
FU-1	MULTIPURPOSE/STAGE	REZNOR	CAUA-300	300	240	80	4000	2000	1.5	3	208/3/60	6	6	675	1/M002

ACCESSORIES
1. TUBULAR STAINLESS STEEL HEAT EXCHANGER.
2. MAKEUP AIR BURNER WITH OPTION AD4.
3. TWO-STAGE COMBINATION GAS VALVE
4. ECONOMIZER CONTROLS
5. HORIZONTAL STAINLESS STEEL CONCENTRIC ADAPTOR COMBUSTION AIR/VENT KIT AND CAP
6. FILTER CABINET WITH 2" MIN. MERV 13 FILTER
7. MIXING BOX WITH DAMPERS
8. VIBRATION ISOLATION PADS

ADD-1

EXCEPTION: PER 2016 CMC SECTION 608 (EXCEPTION #2), AUTOMATIC SHUT DOWN IS NOT REQUIRED

FANS

TAG	LOCATION	ROOM SERVED	MANUF.	MODEL	AIRFLOW (CFM)	ESP ("WC)	RPM	HP/(WATT)	VOLTS/PH	SOUND POWER (dBA)	WEIGHT (LBS)	REMARKS	REF. DETAIL
RF-1, RF-2	MEZZANINE	MULTI-PURPOSE	GREENHECK	SQ-160HP-VG	2000	0.5	1600	1	120/1	46	150	FAN CONTROL BY EMS	2/M0.02
CF-1, CF-2	CEILING		BIG ASS FAN	PFX3-10	--	--	160	1	208/1	<55	231	FAN CONTROL BY SMARTSENSE CONTROLLER WITH EMS CONNECTION	6/M0.03

ACCESSORIES:
1. PROVIDE FANS WITH BACKDRAFT DAMPER, ISOLATION DISCONNECT SWITCH (FUSED DISCONNECT SWITCH BY DIV. 16)
2. FLOOR MOUNTING KIT WITH OSPHD PRE-APPROVED ISOLATOR OPM-0257-13
3. 1.5" INSULATED HOUSING
4. 24 VOLT TRANSFORMER AND STATIC PRESSURE CONTROL SEE CONTROL DIAGRAM ON SHEET M0.03 DETAIL 4 FOR CF-1 AND CF-2
5. VARI-GREEN CONTROLLER FOR CONSTANT PRESSURE WITH ROOM STATIC AND INTEGRAL PRESSURE TRANSDUCER

CF: CEILING FAN NOTES:
1. VERIFY EXTENSION TUBE LENGTH AND MOUNTING BRACKET WITH MANUFACTURER PRIOR TO ORDERING.
2. SUPPLY WITH POWERFOIL WINGLETS.
3. SUPPLY WITH PERMANENT MAGNET DIRECT DRIVE MOTORS.
4. FANS TO BE INSTALLED BY BIG ASS FANS FACTORY CERTIFIED INSTALLER.
5. CONTACT BIG ASS FANS AT 877-244-2367 FOR PRICING INFORMATION AND FACTORY INSTALLATION SCOPE OF WORK.
6. BOTTOM OF FAN SHOULD BE AT LEAST 10' AFF
7. FAN SHOULD BE AT LEAST 2' AWAY, IN ANY DIRECTION, FROM ANY POSSIBLE OBSTRUCTIONS
8. FAN SHOULD NOT BE MOUNTED WITHIN TWO FAN DIAMETERS OF ANY LARGE AIR MOVING EQUIPMENT.
9. PROVIDE 90° OFFSET MOUNT
10. PROVIDE SWAY BRACING KIT
11. PROVIDE BACNET ADAPTER FOR DISTRICT EMS CONNECTION

M/E/P COMPONENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCED AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2016 CBC, SECTIONS 1616A.1.18 THROUGH 1616A.1.26 AND ASCE 7-10 CHAPTER 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
3. MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT THE ATTACHMENT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT.

- A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
- B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

DUCTWORK AND PIPING DISTRIBUTION BRACING NOTES

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.5.6, 13.6.7, 13.6.8, AND 2016 CBC SECTION 1616A.1.23, 1616A.1.24, 1616A.1.25 AND 1616A.1.26

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G., SMACNA OR OSHPD OPM) COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND THE BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION (E)

MP MD PP + E + OPTION 1: DETAILED ON THE APPROVED DRAWINGS AND PROJECT SPECIFIC NOTES AND DETAILS

MP MD PP + E + OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVED (OPM#); (I.E. OPM#-0043-13 MASON INDUSTRIES INC., AND OPM#-0203-13 M.W. SAUSSE & CO. INC.)

MP MD PP + E + OPTION 3: SHALL COMPLY WITH SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION (2009) INCLUDING ANY ADDENDA. FASTENERS AND OTHER ATTACHMENTS NOT SPECIFICALLY IDENTIFIED IN THE SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION, ARE DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. THE DETAILS SHALL ACCOUNT FOR APPLICABLE SEISMIC HAZARD LEVEL ____ AND CONNECTION LEVEL ____ FOR THE PROJECT AND CONDITIONS.

2016 CHPS REQUIREMENT

ADD-1

1. EQ1.0: HVAC UNIT TO HAVE MINIMUM MERV 13 FILTER.
2. EQ5.0: CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT.
3. EQ5.1: ENHANCED CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT INCLUDING BUILDING FLUSH OUT PROCEDUR.
4. EQ6.1 POST CONSTRUCTION INDOOR AIR QUALITY
5. EE1.0: PERFORMANCE CALCULATION INDICATED ENERGY PERFORMANCE IS 5% LESS THAN TITLE 24 STANDARD.
6. EE1.1: SUPERIOR ENERGY PERFORMANCE - THE NEW MPR HAS ENERGY REDUCTION OF 12% BETTER THAN TITL POINTS AWARDED FROM CHPS IS 6 POINTS.

MECHANICAL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	AFF	ABOVE FINISHED FLOOR
	AL	ACOUSTICALLY LINED
	BOD	BOTTOM OF DUCT
	CFM	CUBIC FEET PER MINUTE
	SD	SMOKE DAMPER
	FSD	DAMPER: FIRE/SMOKE
	FD	DAMPER: FIRE
	MVD	DAMPER: MANUAL VOLUME
	□	DIAMETER
	DL	DOOR LOUVER
	DN	DOWN
	DS	DISCONNECT SWITCH
(S)		DUCT SMOKE DETECTOR
	EER	ENERGY EFFICIENCY RATIO
	EA	EXHAUST AIR
	F	FAN
	FLA	FULL LOAD AMPS
		FLEXIBLE DUCT
	HP	HORSEPOWER
	HWS	HOT WATER SUPPLY
	HWR	HOT WATER RETURN
	MCA	MINIMUM CIRCUIT AMPACITY
	MOCP	MAXIMUM OVERCURRENT PROTECTION
	MS	MOTOR STARTER
	RL	REFRIGERANT LIQUID
	RS	REFRIGERANT SUCTION
	OA	OUTSIDE AIR
	RA	RETURN AIR
	SA	SUPPLY AIR
	TA	TRANSFER AIR
	TP	RATED THRU PENETRATION
	SEER	SEASONAL EER
	SAD	SEE ARCHITECTURAL DRAWING
	SSD	SEE STRUCTURAL DRAWING
	(A)	THERMAFUSER TEMP. ADJUSTER
	(C)	SENSOR: CARBON DIOXIDE
	(T)	THERMOSTAT
	TYP.	TYPICAL
	UON	UNLESS OTHERWISE NOTED
	WT	WEIGHT
	24x12	RECTANGULAR DUCT - INCHES
	12"	ROUND DUCT - INCHES

San Rafael City Schools

SRCS Glenwood Elementary School Multi-Purpose Room

25 WEST CASTLEWOOD DR.
SAN RAFAEL, CA 94901

H&M MECHANICAL GROUP
8517 Earhart Rd, Suite 230
Oakland, CA 94621
510-569-2000

Construction Documents
ISSUED 07/21/17

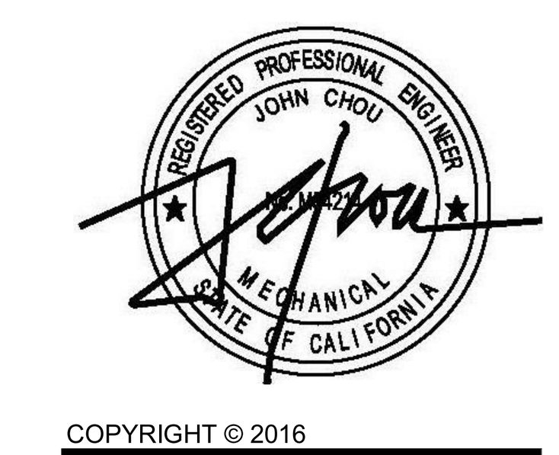
REVISIONS:

REV	DATE
ADDENDUM 1	3/20/2018

FILE#: 21-39 PTN#: 65458-43

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP#: 01-116941
AC ____FLS____SS____
DATE ________________

HED
417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA
(T) 415 981 2345
www.hed.design



PROJECT NUMBER:
2016-D009

SHEET TITLE:
MECHANICAL NOTES AND LEGENDS

SHEET NO:
M0.01
ADDENDUM 1

GENERAL NOTES

1. THE COMPLETE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE CALIFORNIA ELECTRICAL CODE, SPECIFICATIONS AND STANDARD, THE LATEST RULES AND REGULATIONS OF THE SAFETY ORDERS ISSUED BY THE DIVISION OF INDUSTRIAL SAFETY, THE NATIONAL BOARD OF FIRE UNDERWRITERS AND ALL APPLICABLE STATE AND LOCAL CODES ISSUED BY AUTHORITIES HAVING JURISDICTION.
2. PRIOR TO SUBMITTING PROPOSAL, BIDDER SHALL EXAMINE ALL GENERAL CONSTRUCTION DRAWINGS. VISIT CONSTRUCTION SITE AND ATTEND THE PRE-BID MEETING TO BE FAMILIAR WITH EXISTING CONDITIONS UNDER WHICH HE WILL HAVE TO OPERATE AND WHICH WILL IN ANYWAY AFFECT THE WORK UNDER THIS CONTRACT. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN THIS CONNECTION IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.
3. FIELD VERIFY TO CONFIRM ALL FIRE RESISTIVE CEILINGS AND WALLS. PROVIDE FIRE STOP SEALS PER CALIFORNIA BUILDING CODE FOR CONDUIT PENETRATION THROUGH FIRE RESISTIVE FLOORS, WALLS AND CEILINGS.
4. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITER'S LABORATORIES AND BEAR THEIR LABEL.
5. CONDUIT ROUTING SHOWN IS ESSENTIALLY DIAGRAMMATIC. CONTRACTOR SHALL LAYOUT RUNS TO SUIT FIELD CONDITIONS AND THE COORDINATION REQUIREMENTS OF OTHER TRADES. ALL EXPOSED CONDUIT, BOXES, FITTINGS, SUPPORT, ETC. SHALL BE PAINTED TO MATCH ADJACENT SURFACES.
6. CONSULT THE ARCHITECTURAL AND OTHER DRAWINGS RELATED TO THIS PROJECT FOR ADDITIONAL WORK TO BE PROVIDED.
7. ALL FEEDER AND BRANCH CIRCUIT CONDUITS SHALL BE INSTALLED CONCEALED IN FINISHED AREA, UNLESS OTHERWISE NOTED.
8. ALL PENETRATIONS THROUGH FIRE RESISTIVE WALLS SHALL BE TOTALLY SEALED TO PREVENT THE SPREAD OF SMOKE, FIRE, TOXIC GASES, AND WATER THROUGH THE PENETRATION BEFORE, DURING AND AFTER A FIRE CONDITION. THE FIRE RATING OF THE SEALED PENETRATION SHALL BE AT LEAST THAT OF THE WALL INTO WHICH IT IS INSTALLED. THE SEAL SHALL PERMIT THE VIBRATION, EXPANSION AND/OR CONTRACTION OF THE CONDUIT PASSING THROUGH THE PENETRATION WITHOUT THE SEAL CRACKING OR CRUMBLING.
9. BLANK COVERS SHALL BE INSTALLED WHEREVER DEVICE IS REMOVED AND OUTLET BOX REMAINS IN PLACE.
10. UNLESS OTHERWISE INDICATED, THE MINIMUM SIZE OF CONDUCTORS SHALL BE 12 AWG THWN STRANDED COPPER ONLY.
11. UNLESS OTHERWISE INDICATED, THE MINIMUM SIZE OF CONDUIT SHALL BE 3/4".
12. GREEN INSULATED GROUND CONDUCTORS SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUIT WIRING.
13. PROVIDE LABELS ON ALL EQUIPMENT AND DEVICES. LABELS SHALL BE SELF-ADHESIVE PHENOLIC TYPE AND WHITE LETTER ON BLACK BACKGROUND, PROVIDE BRADY OR DYMO TYPE LABELS (CIRCUIT IDENTIFICATION) FOR ALL SWITCHES AND RECEPTACLES.
14. PROVIDE TYPEWRITTEN DIRECTORIES FOR ALL ELECTRICAL PANELS INVOLVED IN THIS PROJECT. THE PANEL DIRECTORIES SHALL REFLECT THE AS-BUILT CIRCUITS. ONE COPY OF THE SCHEDULE SHALL BE TAPED TO THE INSIDE OF THE PANEL DOOR, AND ONE COPY SHALL BE SUBMITTED TO THE ENGINEER AS AN "AS-BUILT" DRAWING.
15. ALL ELECTRICAL EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION PER CBC REQUIREMENTS.
16. EMPLOY QUALIFIED AND EXPERIENCED WORKMEN FOR THIS WORK.
17. THE CONTRACTOR SHALL BE HELD FULLY RESPONSIBLE FOR THE PROPER RESTORATION OF ALL EXISTING SURFACES REQUIRING PATCHING, PLASTERING PAINTING AND/OR OTHER REPAIRS DUE TO THE INSTALLATION OF ELECTRICAL WORK UNDER THE TERMS OF THIS SPECIFICATION. CLOSE ALL OPENINGS, REPAIR ALL SURFACES, ETC., AS REQUIRED. THIS SHALL INCLUDE ALL WALLS, CEILINGS, ROOFS, PAVEMENT, PLANTERS, ETC.
18. WHERE CONDUIT IS ROUTED ON ROOF STRUCTURES, PROVIDE SUPPORT AT 10'-0" O.C. MAXIMUM.
19. ALL EXPOSED CONDUIT BELOW 7'-0" SHALL BE RSC OR IMC AND ALL EXPOSED HARDWARE SHALL BE "HOT DIPPED" GALVANIZED. ALL INTERIOR CONDUITS MAY BE EMT, UNLESS OTHERWISE NOTED.
20. OUTLETS MOUNTED ON WALL BACK-TO-BACK SHALL MAINTAIN A MINIMUM HORIZONTAL DISTANCE OF 24" OR BE SEPARATED BY STUD AND SHALL COMPLY WITH APPLICABLE CODES, REGULATION ON FIRE RATING(S) AND MAY REQUIRE ADDITIONAL MESURES, INCLUDING PUTTY PACKS OE EQUIVALENT AT DEVICES, FITTINGS OR JUNCTION BOXES, ETC, PER IOR AND/OR ARCHITECT AND HAVE FINAL DECISION.
21. NOT USED.
22. NOT USED.
23. NOT USED.
24. ALL UNDERGROUND CONDUIT SHALL HAVE #12 TRACER WIRE WITH THWN INSULATION UNDER EACH RUN OF THE UNDERGROUND CONDUIT DUCT BANK AND 6" FOIL MARKER IN TRENCH. TRACE WIRE SHALL EXTEND AT TERMINATION POINTS A MIN. OF 3 FT FROM SUCH SURFACE AND SHALL BE TRAPPED SECURED TO CONDUIT OR ACCEPTABLE EQUIVALENT.
25. UPON COMPLETION OF CONSTRUCTION, PAINT ALL EXPOSED ELECTRICAL CONDUITS, DEVICES AND BOXES (UNLESS DEVICES OR BOXES ARE ALREADY PRE-FINISHED) PER SPECIFICATION SECTION 09 91 00 PAINTING SCHEDULE. PAINT COLOR SHALL MATCH THE EXISTING SURFACES.
26. THE CONTRACTOR SHALL MAINTAIN AT THE JOB SITE, AN UP TO DATE "AS BUILT" DRAWING SET. THE "AS BUILT" DRAWING SET SHALL REFLECT ALL APPROVED CHANGES TO THE DESIGN DRAWINGS. THE "AS BUILT" DRAWING SET SHALL BE KEPT CLEAN AND IN GOOD CONDITION AND SHALL BE TURNED OVER TO THE OWNER AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE UPDATED DAILY AND BE CHECKED WEEKLY BY IOR. THE PROGRESS PAYMENT IS TIED TO THEIR COMPLETION.
27. UPON COMPLETION OF THE WORK, SCHEDULE AND PERFORM A COMPLETE FUNCTIONAL TEST IN THE PRESENCE OF DSA IOR TO DEMONSTRATE TO THE OWNER THAT THE NEW INSTALLATION IS OPERATING AS INTENDED TEST RESULTS SHALL BE SENT TO DISTRICT FOR IOR AND AOR. ANY DEFECTS OR DEFICIENCIES IN THE MATERIALS OR WORK SHALL BE CORRECTED IMMEDIATELY BY AND AT THE CONTRACTOR'S EXPENSE.
28. RECEPTACLES VERTICALLY INSTALLED SHALL HAVE THE "U" GROUND UP AND HORIZONTALLY INSTALLED SHALL HAVE THE NEUTRAL ON TOP.

LIST OF CODES

1. 2016 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE (PART 1, TITLE 24, CCR)
2. 2016 CALIFORNIA BUILDING CODE (CBC), VOLUMES 1 & 2 (PART 2, TITLE 24, CCR)
3. 2016 CALIFORNIA ELECTRICAL CODE (PART 3, TITLE 24, CCR)
4. 2016 CALIFORNIA MECHANICAL CODE (PART 4, TITLE 24, CCR)
5. 2016 CALIFORNIA PLUMBING CODE (PART 5, TITLE 24, CCR)
6. 2016 CALIFORNIA ENERGY CODE (PART 6, TITLE 24, CCR)
7. 2016 CALIFORNIA ELEVATOR SAFETY CONSTRUCTION CODE (PART 7, TITLE 24, CCR)
8. 2016 CALIFORNIA FIRE CODE (PART 9, TITLE 24, CCR)
9. 2016 CALIFORNIA REFERENCED STANDARDS CODE (PART 12, TITLE 24, CCR)
10. NFPA 13, 2016 EDITION, THE INSTALLATION OF AUTOMATIC SPRINKLER SYSTEMS, AS AMENDED
11. NFPA 14, 2016 EDITION, THE INSTALLATION OF STANDPIPE, PRIVATE HYDRANT AND HOSE SYSTEMS
12. NFPA 24, 2016 EDITION, THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES
13. NFPA 72, 2016 EDITION, NATIONAL FIRE ALARM CODE, AS AMENDED
14. 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN.

LEGEND

- HOMERUN TO PANEL, HASHMARKS INDICATE NUMBER OF #12 AWG WIRES IF MORE THAN (3); (1) INDICATES GROUND; (1) INDICATES NEUTRAL.
- CONDUIT AND CONDUCTORS CONCEALS IN WALL OR CEILING
- CONDUIT AND WIRES CONCEALED IN FLOOR OR UNDERGROUND
- CONDUIT STUBBED OUT IN ACCESSIBLE LOCATION, CAP AND MARK LOCATION
- CONDUIT RISER
- SURFACE MOUNTED ELECTRICAL PANELBOARD, 277/480V
- SURFACE MOUNTED ELECTRICAL PANELBOARD, 120/208V
- RECESSED MOUNTED ELECTRICAL PANELBOARD, 120/208V
- DUPLEX RECEPTACLE NEMA 5-20R, 20 AMP, 120V, +18" A.F.F U.O.N.
- FOURPLEX RECEPTACLE (2) NEMA 5-20R, 20 AMP, 120V, +18" A.F.F U.O.N.
- SINGLE RECEPTACLE CLOCK HANGER OUTLET AT 8'-0" A.F.F. U.O.N. NEMA 5-15R
- SPECIAL RECEPTACLE, SEE PLAN FOR TYPE; +18" A.F.F. U.O.N.
- 20 AMPERE GFCI 5-20R DUPLEX RECEPTACLE MOUNT +18" A.F.F. U.O.N. DO NOT FEED THRU FOR GFCI RECEPTACLES
- WP 20A, 120V WEATHERPROOF DUPLEX RECEPTACLE OUTLET WITH LOCKABLE SELF CLOSING COVER. ALL WEATHERPROOF OUTLETS SHALL BE GFCI TYPE, +18" AFF U.O.N., DO NOT FEED THRU FOR GFCI RECEPTACLES
- (2) 20 AMPERE GFCI 5-20R DUPLEX RECEPTACLE MOUNT +18" A.F.F. U.O.N. DO NOT FEED THRU FOR GFCI RECEPTACLES
- WALL MOUNTED DATA/VOICE OUTLET, +18" A.F.F. U.O.N. SUBCRIPT "2" DENOTES NUMBER OF JACK, NO NUMBER INDICATES 1 JACK. PROVIDE CAT 6A CABLE(S) TO IDF/MDF. PROVIDE 1"C TO CEILING SPACE
- WALL MOUNTED PHONE OUTLET, PROVIDE CAT 6A CABLE TO TELEPHONE BACKBOARD, CONNECT TO OUTSIDE LINE
- 1 2 WALL MOUNTED COMBINATION VOICE/DATA OUTLET, +18" A.F.F. U.O.N. SUBSCRIPT "1" & "2" DENOTES NUMBER OF PORT FOR VOICE & DATA
- WAP CEILING MOUNTED WIRELESS ACCESS POINT
- S WP EXTERIOR W.P. SPEAKER. PROVIDE 3/4"C TO ACCESSIBLE CEILING SPACE AND CABLE TO TERMINAL BLOCKS AND EXTERIOR AMPLIFIER
- S PUBLIC ADDRESS FLUSH CEILING MOUNTED SPEAKER PROVIDE CABLE TO TERMINAL BLOCKS AND AMPLIFIER
- J JUNCTION BOX OR PULL BOX, SIZE PER CODE.
- 1 SHEET NOTE REFERENCE, SEE NOTE 1
- A LIGHTING FIXTURE TAG (SEE FIXTURE SCHEDULE)
- 1 / E3.1 DETAIL TAG. REFER TO DETAIL 1 ON SHEET NUMBER E3.1
- EF EQUIPMENT IDENTIFICATION TAG
- 2'x4' RECESS LIGHT FIXTURE
- 2'x4' RECESS LIGHT FIXTURE CONNECT TO EMER. PNL
- 4' LIGHT FIXTURE
- 4' LIGHT FIXTURE CONNECT TO EMERGENCY PANEL
- CEILING MOUNTED LIGHT FIXTURE AND BOX
- CEILING MOUNTED LIGHT FIXTURE AND BOX CONNECT TO EMERGENCY PNL
- WALL MOUNTED FIXTURE AND BOX
- SELF-ILLUMINATED PHOTOLUMINESCENCE EXIT SIGN. ILLUMINATED EXIT SIGN AND JUNCTION BOX, CEILING, WALL MOUNTED, SHADED PORTION INDICATES FACE(S) ON SIGN, ARROW INDICATES DIRECTIONAL ARROWS IN FACE.
- COMBINATION EXIT/EMERGENCY FIXTURE WITH 2-HEAD EMERGENCY LAMPS
- $ SINGLE POLE SWITCH AND BOX, 20A/120V, LOWER CASE LETTER INDICATES CIRCUIT OR LAMPS CONTROLLED BY SWITCH, +48" TO TOP OF BOX
- $D DIMMING SWITCH +48" U.O.N.
- $2 SWITCH TWO POLE +42" U.O.N.
- $3 SWITCH 3 WAY +42" U.O.N.
- $4 SWITCH 4 WAY +42" U.O.N.
- $KL LOW VOLTAGE KEY OPERATED SWITCH AND BOX, +48"
- $T THERMAL OVERLOAD SWITCH
- $A CEILING MOUNTED MULTI-TECH OCCUPANCY SENSOR
- $B CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR
- $C SINGLE RELAY WALL-SWITCH PIR OCCUPANCY SENSOR
- $D DUAL-RELAY WALL-SWITCH PIR OCCUPANCY SENSOR
- $E CORNER MOUNTED MULTI-TECH OCCUPANCY SENSOR
- POWER PACK
- 2-HOURS TIMER SWITCH
- PHOTO SENSOR
- POWER CONTROLLER
- DAYLIGHT SENSOR
- PULLBOX, SIZE AS SHOWN ON THE DRAWING
- DISCONNECT SWITCH, FUSED OR NON-FUSED AS NOTED
- GROUNDING CONNECTION
- AV CONTROL STATION

DRAWING INDEX

ABBREVIATION

(E)	EXISTING	MTB	MAIN TELEPHONE BOARD
(R)	RELOCATED	NEC	NATIONAL ELECTRICAL CODE
A, AMP	AMPERE	NL	NIGHT LIGHT
AFF	ABOVE FINISHED FLOOR	NTS	NOT TO SCALE
AP	ACCESS POINT	O.C.	ON CENTER
BRKR	BREAKER	PA	PUBLIC ADDRESS
C	CONDUIT, CLOCK	PH, ø	PHASE
CATV	CABLE TELEVISION	PNL	PANEL
CBC	CALIFORNIA BUILDING CODE	RECPT	RECEPTACLE
CCTV	CLOSED CIRCUIT TELEVISION	SAD	SEE ARCHITECT DRAWINGS
CEC	CALIFORNIA ELECTRIC CODE	STC	SATELLITE TERMINAL CABINET
CKT	CIRCUIT		
CO	CONDUIT ONLY WITH PULL ROPE	TB	TELEPHONE BOARD
		TBB	TERMINAL BACK BOARD
CPS	CURRICULUM AND PRESENTATION SYSTEM	TC	TERMINAL CABINET
		TRANSF	TRANSFORMER
CSC	CLOCK/SPEAKER CABINET	TYP	TYPICAL
FU	FUSE	UON	UNLESS OTHERWISE NOTED
G	GROUND	V	VOLT
IDF	INTERMEDIATE DISTRIBUTION FRAME	W	WATT
		WAP	WIRELESS ACCES POINT
MAX	MAXIMUM	WG	
MDF	MAIN DISTRIBUTION FRAME	WG	WIRE GUARD
MIN	MINIMUM	WP	WEATHERPROOF
MPOE	MAIN POINT OF ENTRY	XFRM	TRANSFORMER
MSTC	MAIN SIGNAL TELEPHONE CABINET		

SAN RAFAEL CITY SCHOOL

SRCS GLENWOOD ELEMENTARY SCHOOL MULTI-PURPOSE ROOM
25 WEST CASTLEWOOD DRIVE,
SAN RAFAEL, CA 94901

Schematic Design
ISSUED 05-02-17

REVISIONS:

REV	DATE
DSA SUBMITTAL	09-08-17
DSA Backcheck	03-05-18
Addendum #1	03-27-18

REGISTERED PROFESSIONAL ENGINEER KENNETH S. BOH No. 11537 Exp. 6/30/19 ELECT. STATE OF CALIFORNIA

Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 19
Santa Clara, CA 95054
phone (408) 970-9888
fax (408) 970-9316
www.aec-engineers.com

PROJECT NO. 101-17-04

HED
417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA
(T) 415 981 2345
www.hed.design

PROJECT NUMBER:
2016-D0009-000

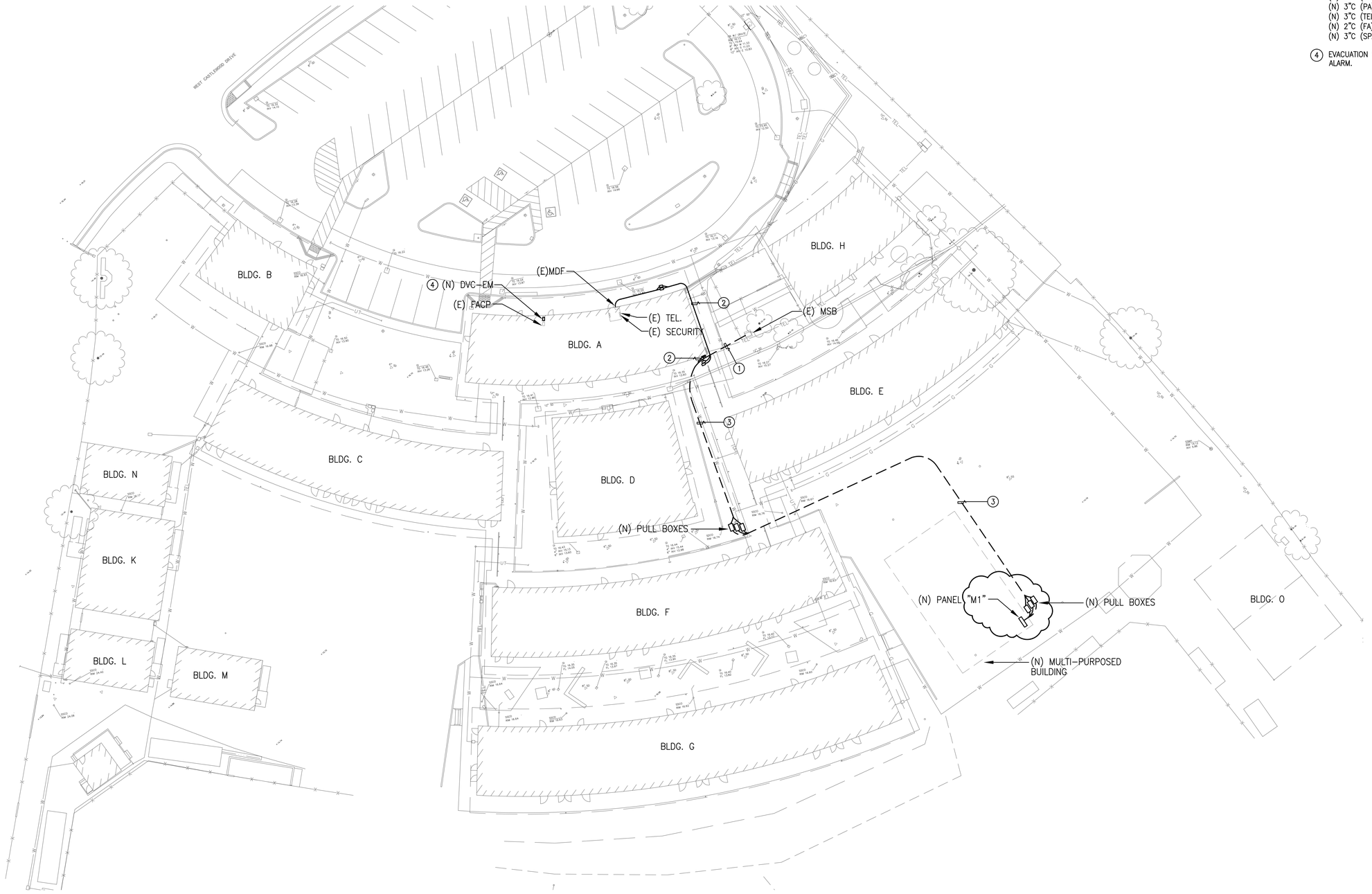
SHEET TITLE:
ELECTRICAL COVER SHEET

SHEET NO:
E0.1

ADDENDUM 1

SHEET NOTES:

1. (N) 3"C (POWER)
2. (N) 3"C (DATA)
   (N) 3"C (PA)
   (N) 3"C (TEL)
   (N) 2"C (FA)
   (N) 3"C (SPARE)
3. (N) 3"C (POWER)
   (N) 3"C (DATA)
   (N) 3"C (PA)
   (N) 3"C (TEL)
   (N) 2"C (FA)
   (N) 3"C (SPARE)
4. EVACUATION SYSTEM FOR FIRE ALARM.



1 ELECTRICAL SITE PLAN
SCALE: 1" = 20'-0"

SAN RAFAEL CITY SCHOOL

SRCS GLENWOOD ELEMENTARY SCHOOL MULTI-PURPOSE ROOM
25 WEST CASTLEWOOD DRIVE,
SAN RAFAEL, CA 94901

Schematic Design
ISSUED 05-02-17

REVISIONS:

REV	DATE
DSA SUBMITTAL	09-08-17
DSA Backcheck	03-05-18
Addendum #1	03-27-18

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. IRON
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 10
Santa Clara, CA 95054
phone (408) 970-9888
fax (408) 970-9018
www.aec-engineers.com

PROJECT NO. 101-17-04

HED
417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA
(T) 415 981 2345
www.hed.design

PROJECT NUMBER:
2016-D0009-000

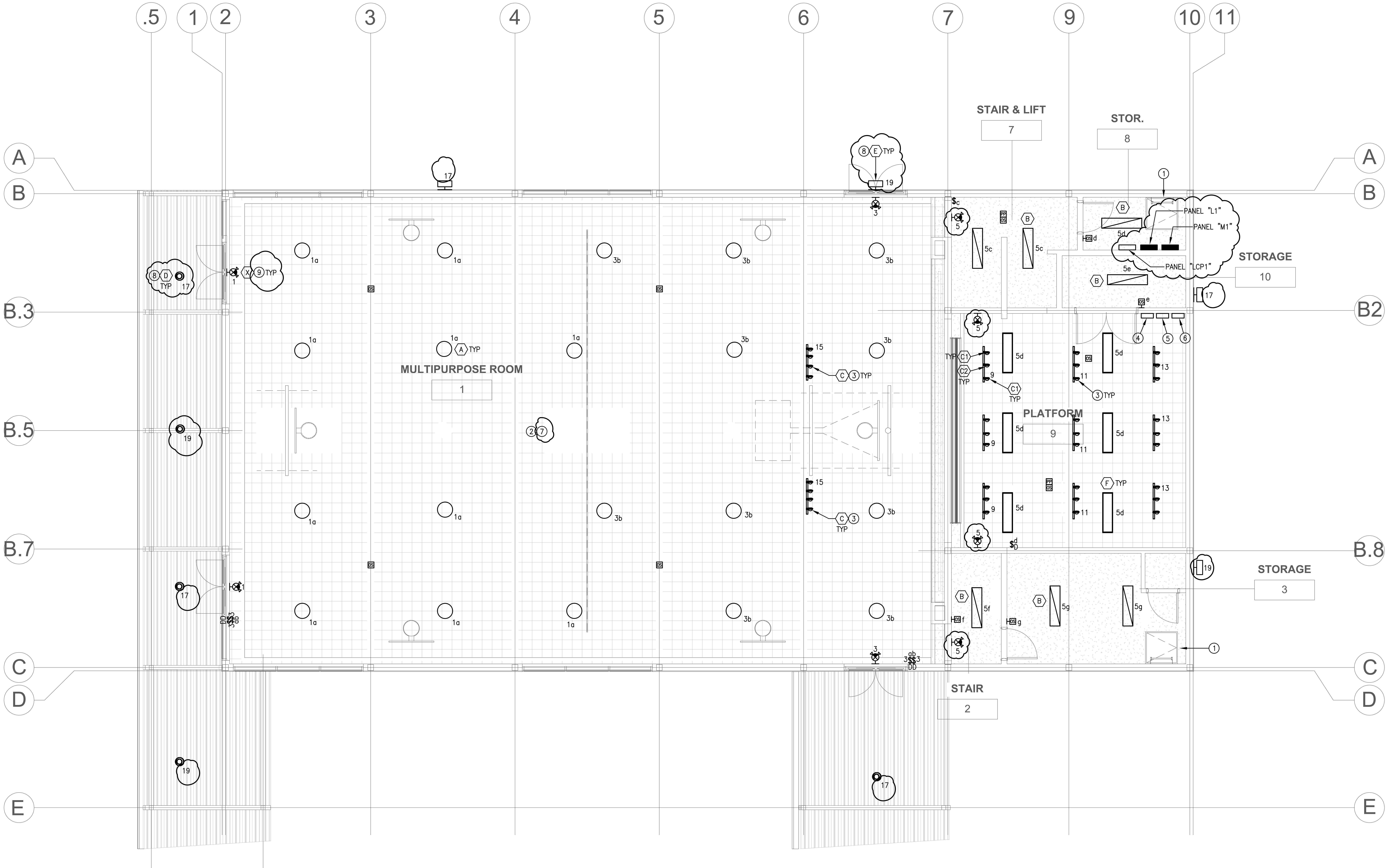
SHEET TITLE:
ELECTRICAL SITE PLAN

SHEET NO:
E1.1

ADDENDUM 1

SHEET NOTES:

1. PROVIDE TWO LED UTILITY LAMPS AT MEZANNINE AREA WITH SWITCH CLOSE TO ACCSESS LATTER.
2. DAYLIGHT AREA IS NOT SHOWN, SINCE DUE TO THE MOUNTING HEIGHT OF THE SKYLIGHTS THE WHOLE GYM IS CONSIDER SKYLIGHT ZONE.
3. TRACK LIGHTS TO BE CONNECTED TO DMX CONTROLLER. TRACK LIGHTS SHALL BE MOUNTED ON THE BEAM.
4. LOCATION FOR TOUCH SCREEN "FRESCO" ACUITY CONTROL FOR STAGE LIGHTING.
5. DMX CONTROLLER. (TYPICAL OF 4)
6. LUMEN TRANSLATOR CARD (TYPICAL OF 4)
7. CONNECT LIGHT FIXTURE TYPE "A" IN THIS ROOM VIA "LCP1". SEE WIRING DIAGRAM ON SHEET E5.4 FOR CONTROL.
8. CONNECT EXTERIOR LIGHT FIXTURE TYPE "D"/"E" VIA "LCP1". SEE WIRING DIAGRAM ON SHEET E5.4 FOR CONTROL.



1 LIGHTING PLAN
SCALE: 1/4" = 1'-0"

SAN RAFAEL CITY SCHOOL

SRCS GLENWOOD ELEMENTARY SCHOOL MULTI-PURPOSE ROOM
25 WEST CASTLEWOOD DRIVE,
SAN RAFAEL, CA 94901

Schematic Design
ISSUED 05-02-17

REVISIONS:

REV	DATE
DSA SUBMITTAL	09-08-17
DSA Backcheck	03-05-18
Addendum #1	03-27-18

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. NGAI
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

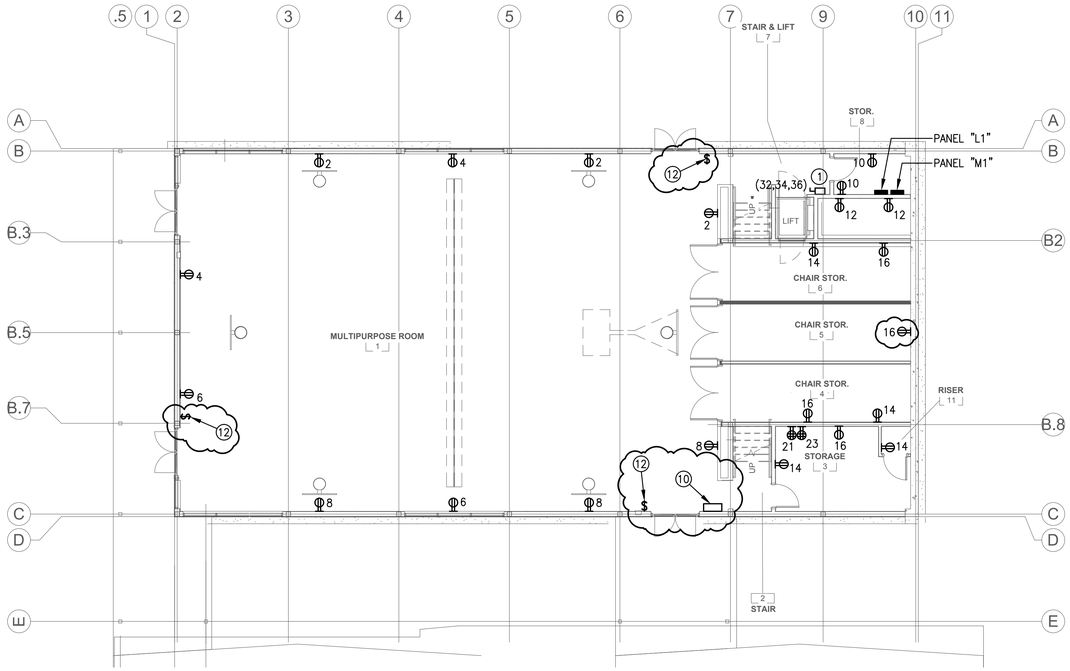
Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 10
Santa Clara, CA 95054
phone (408) 970-9888
fax (408) 970-9316
www.aec-engineers.com
PROJECT NO. 101-17-04

HED
417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA
(T) 415 981 2345
www.hed.design

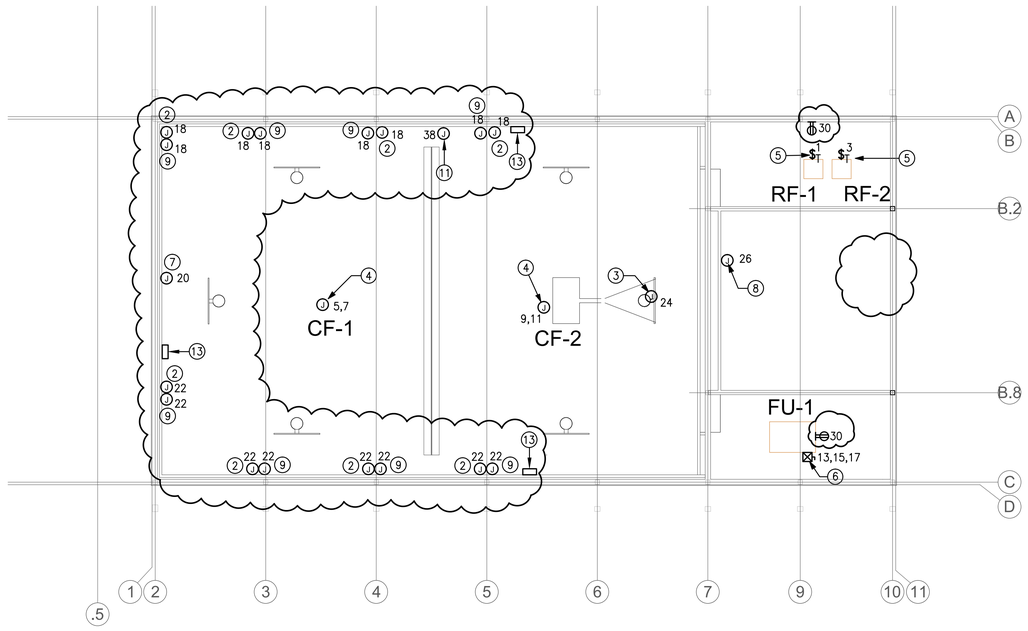
PROJECT NUMBER:
2016-D0009-000

SHEET TITLE:
LIGHITNG PLAN

SHEET NO:
E2.1
ADDENDUM 1



1 POWER PLAN
1/8" = 1'-0"



2 MEZZANINE POWER PLAN
1/8" = 1'-0"

GENERAL NOTE:

1 ALL POWER CIRCUITS SHOWN ON THIS SHEET SHALL BE CONNECTED TO PANEL "M1", U.O.N.

SHEET NOTES:

1. PROVIDE 30 AMP, 3 POLE, 208 VOLT FUSIBLE DISCONNECT WITH 15 AMP FUSES AND NEMA 1 ENCLOSURE AND CONNECT TO LIFT.
2. PROVIDE J-BOX TO CONNECT TO WINDOW ACCTUATORS.
3. CONNECT TO MOTORIZED BACKSTOP CEILING MOUNTED. RUN CONTROL WIRES AT CONTROL PANEL. SEE NOTE 12.
4. PROVIDE J-BOX TO CONNECT TO CELING FAN. FAN TO BE CONTROLLED VIA THERNOSTAT AND SMARTSENSE CONTROLLER. COORDINATE WITH MECHANICAL FOR EXACT LOCATION AND AUTOAMIC SHUT OFF.
5. PROVIDE MOTOR RATED SWITCH
6. PROVIDE 30 AMP, 3 POLE, 208 VOLT FUSIBLE DISCONNECT WITH 15 AMP FUSES AND NEMA 1 ENCLOSURE.
7. PROVIDE J-BOX TO CONNECT SCORE BOARD
8. PROVIDE J-BOX TO CONNECT TO MOTORIZED PROJECTOR SCREEN. MAKE ALL THE CONNECTIONS TO THE CONTROLS.
9. PROVIDE J-BOX AT UPPER CLERESTORY WINDOW TO CONNECT TO MOTORIZED BLINDS FOR WINDOW SHADES WITH OVERRIDE SWITCH CONTROL. SEE NOTE 12 THIS SHEET FOR LOCATION.
10. LOCKABLE CONTROL CENTER FOR LIGHTING, BACKSTOP, WINDOW SHADES,FAN, PROJECTION SCREEN, AND FOLDING PARTITION WALL.
11. PROVIDE CONNECTION FOR ROOM DIVIDER
12. WINDOW ACTUATOR KEY SWITCH.
13. WINDOW ACTUATOR CONTROL PANEL, LOCATE ABOVE 12'-0" AFF.

SAN RAFAEL CITY SCHOOL

SRCS GLENWOOD ELEMENTARY SCHOOL MULTI-PURPOSE ROOM
25 WEST CASTLEWOOD DRIVE,
SAN RAFAEL, CA 94901

Schematic Design
ISSUED 05-02-17

REVISIONS:

REV	DATE
DSA SUBMITTAL	09-08-17
DSA Backcheck	03-05-18
Addendum #1	03-27-18

KENNETH S. BOAK
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 19
Santa Clara, CA 95054
phone (408) 970-9888
fax (408) 970-9818
www.aec-engineers.com
PROJECT NO. 101-17-04

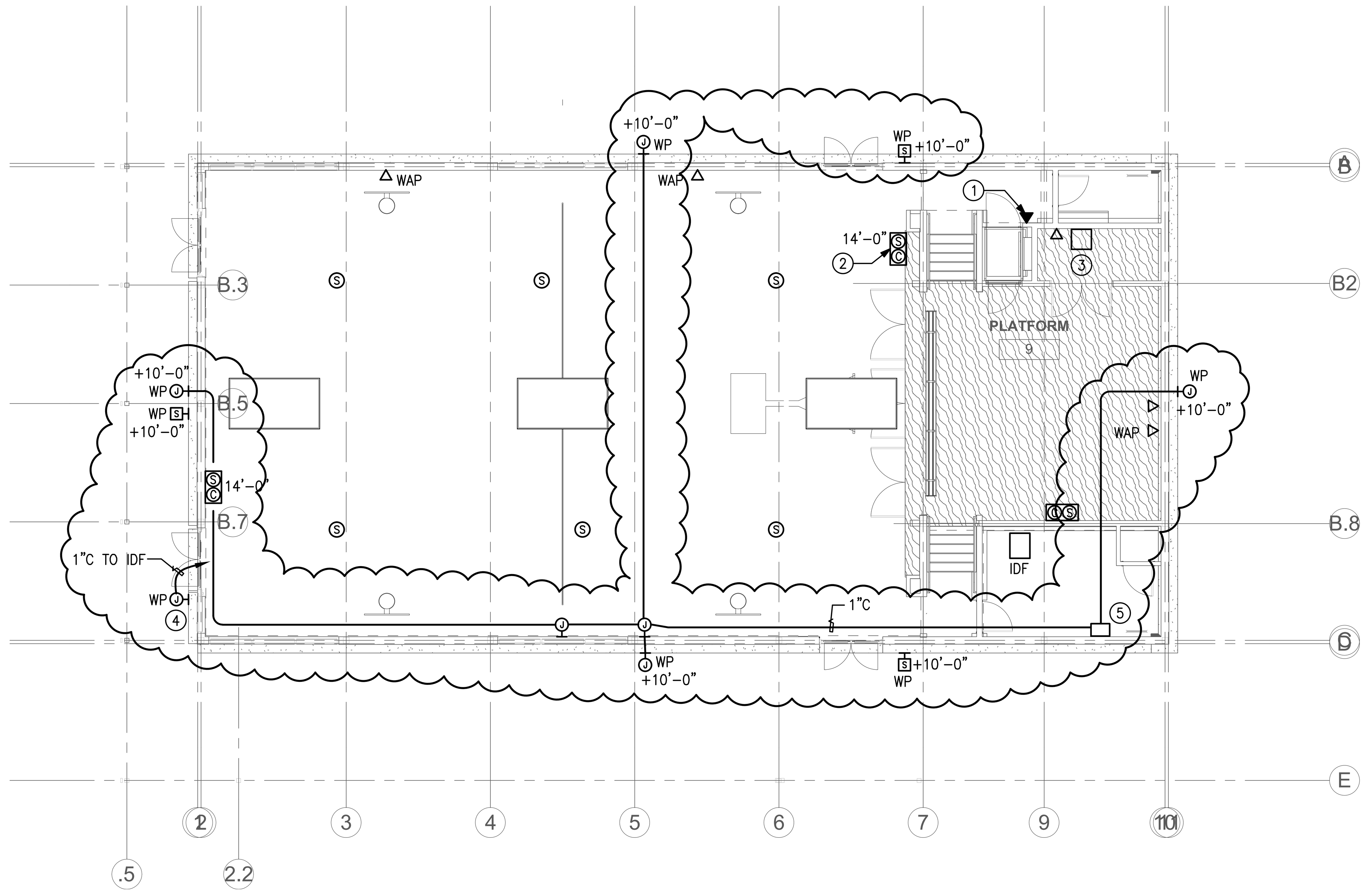
HED
417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA
(T) 415 981 2345
www.hed.design

PROJECT NUMBER:
2016-D0009-000

SHEET TITLE:
POWER PLAN

SHEET NO:
E3.1
ADDENDUM 1

:



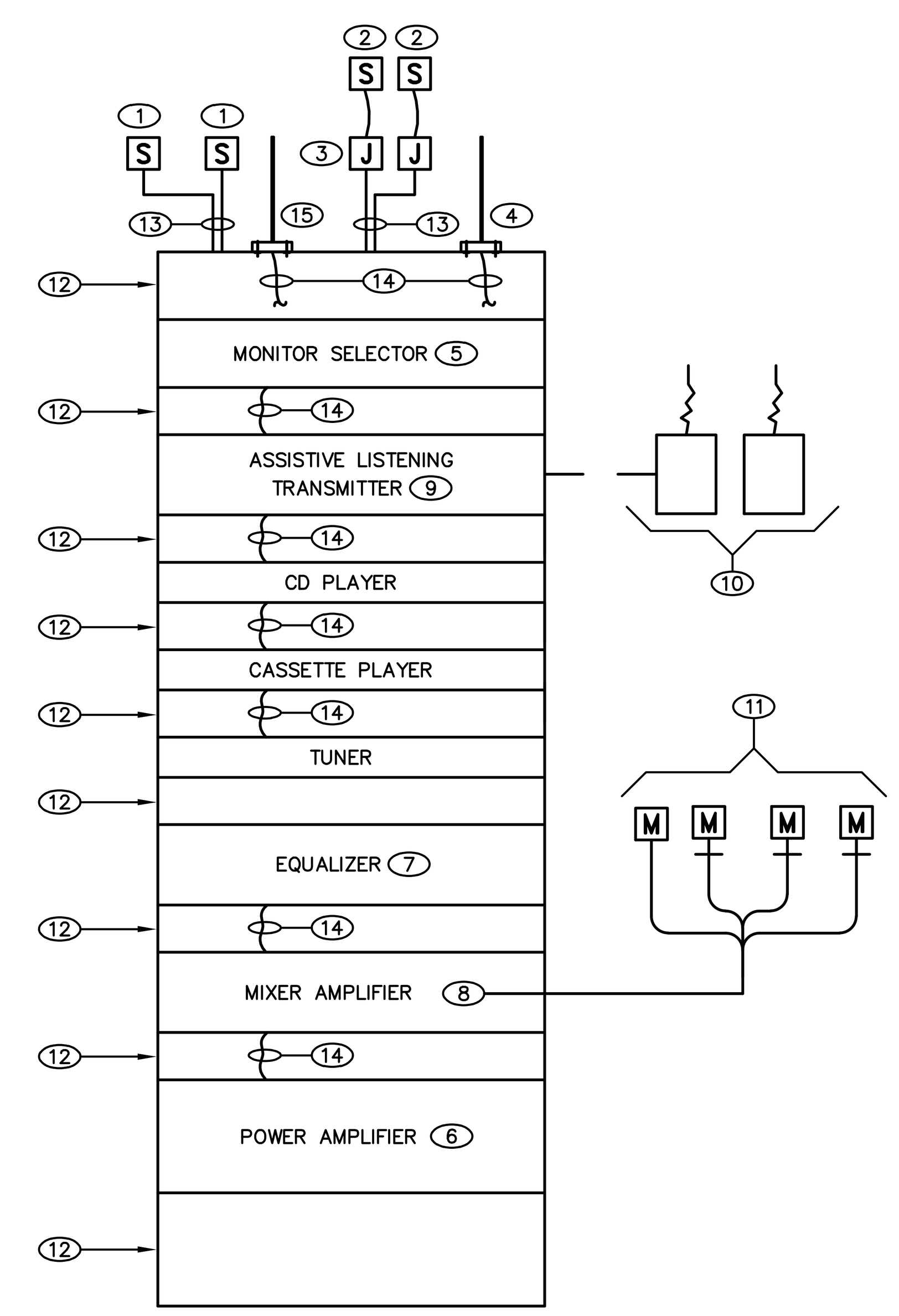
1 TECHNOLOGY PLAN
1/8" = 1'-0"

SHEET NOTES:

1. DEDICATED PHONE LINE FOR LIFT.
2. CLOCK/SPEAKER FOR PA.
3. SOUND SYSTEM EQUIPMENT RACK.
4. MAKE FINAL CONNECTION TO DISTRICT PROVIDED CARD READER.
5. 12"x12"x6"D PULL BOX FOR FUTURE CCTV.

DETAIL NOTES

1. MULTI-USE ROOM SPEAKER (ZONE ONE) APOGEE "AFI-4W" IN WHITE FINISH COMPLETE WITH ADJUSTABLE RIGGING BEAM ASSEMBLIES FOR TWO SPEAKERS. MOUNT SPEAKERS WITH UNISTRUTS TO STRUCTURAL MEMBERS AS DIRECTED BY ARCHITECT.
2. PORTABLE SPEAKER AT OUTDOOR (ZONE TWO) TOTAL OF TWO SPEAKER WITH SPEAKER STAND AND 20 FEET SPEAKER CABLES WITH PLUG IN CONNECTOR. TECHNOMAD VIENNA 16 LG SERIES OR APPROVED EQUAL.
3. SPEAKER OUTLET WITH FEMALE CONNECTOR WEATHER PROOF COVER AT EXTERIOR WALL.
4. EXTERNAL ANTENNA FOR ASSISTIVE LISTENING TRANSMITTER. MOUNT ANTENNA ON TOP SOUND SYSTEM EQUIPMENT RACK.
5. MONITOR SELECTOR TO ALLOW TO SELECT OPERATING ZONE ONE SPEAKERS, OR ZONE TWO SPEAKERS OR BOTH ZONE ONE AND ZONE TWO SPEAKERS. PROCO SOUND AUDIO "RMS-1A" SERIES OR APPROVED EQUAL. PROVIDE ONE HEAD SET FOR MONITORING.
6. POWER AMPLIFIER, STEREO, 300W PER CHANNEL @8 OHMS, BOGEN "M450" OR APPROVED EQUAL. USE ONE AMPLIFIER CHANNEL PER SPEAKER.
7. DUAL CHANNEL EQUALIZER INTERM "EQ9152" SERIES OR APPROVED EQUAL.
8. MIXER PRE AMPLIFIER WITH 13 INPUT AND TWO OUTPUT INTERM " PP9113" SERIES OR APPROVED EQUAL.
9. ASSISTIVE LISTENING TRANSMITTER WITH POWER SUPPLY, EXTERNAL ANTENNA. AND ONE SET HEAD PHONE. LISTEN TECHNOLOGY LS-03-072 SERIES OR APPROVED EQUAL.
10. 31 ASSISTIVE LISTENING PERSONNEL RECEIVERS WITH EAR SPEAKER. LISTEN TECHNOLOGY LR-400/LA-164 SERIES OR APPROVED EQUAL.
11. MICROPHONE AND OUTLET WITH MATCHING OUTLET AND PLUG IN CONNECTOR, ON/OFF SWITCH 25' CORD SHURE SM-58S SERIES OR APPROVED EQUAL. PROVIDE FOUR MICROPHONE, WITH SIX 25' CORD PROCO MASTERMIKE AND FOUR MICROPHONE STANDS.
12. PROVIDE BLANK COVER PLATES OVER NON USED SPACE.
13. PROVIDE ALL SPEAKER CABLES, PROCON AUDIO #12 AWG EXCELLINES OR APPROVED EQUAL.
14. PROVIDE ALL REQUIRED INTERCONNECTION CABLES WITH GOLD CONTACT CONNECTORS.
15. EXTERNAL ANTENNA FOR TUNER.



2 SOUND SYSTEM EQUIPMENT RACK DETAIL
NOT TO SCALE

SAN RAFAEL
CITY SCHOOL

SRCS GLENWOOD
ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
25 WEST CASTLEWOOD
DRIVE,
SAN RAFAEL, CA 94901

Schematic Design
ISSUED 05-02-17

REVISIONS:

REV	DATE
DSA SUBMITTAL	09-08-17
DSA Backcheck	03-05-18
Addendum #1	03-27-18

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. NGAI
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

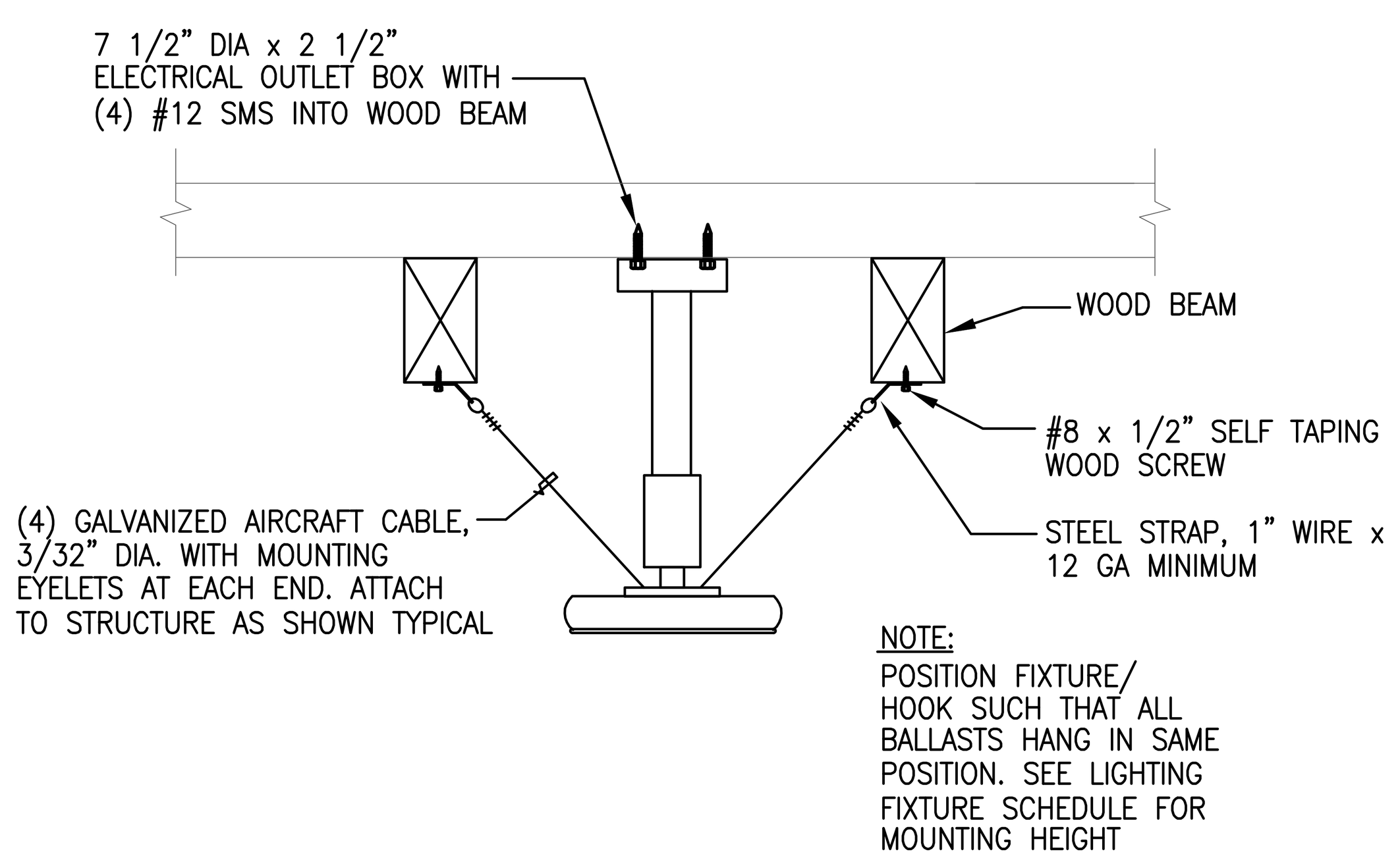
Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 10
Santa Clara, CA 95054
phone (408) 970-9888
fax (408) 970-9316
www.aec-engineers.com
PROJECT NO. 101-17-04

HED
417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA
(T) 415 981 2345
www.hed.design

PROJECT NUMBER:
2016-D0009-000

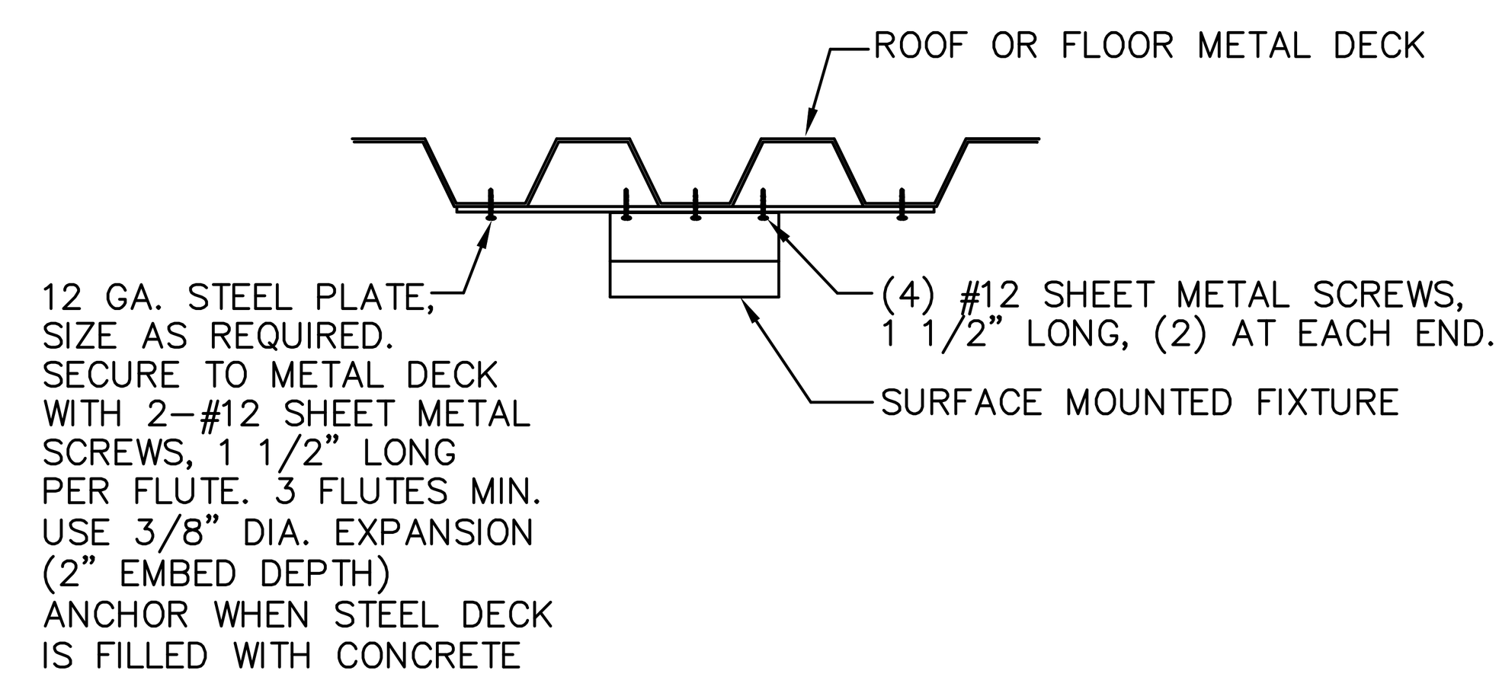
SHEET TITLE:
TECHNOLOGY PLAN

SHEET NO:
E4.1
ADDENDUM 1



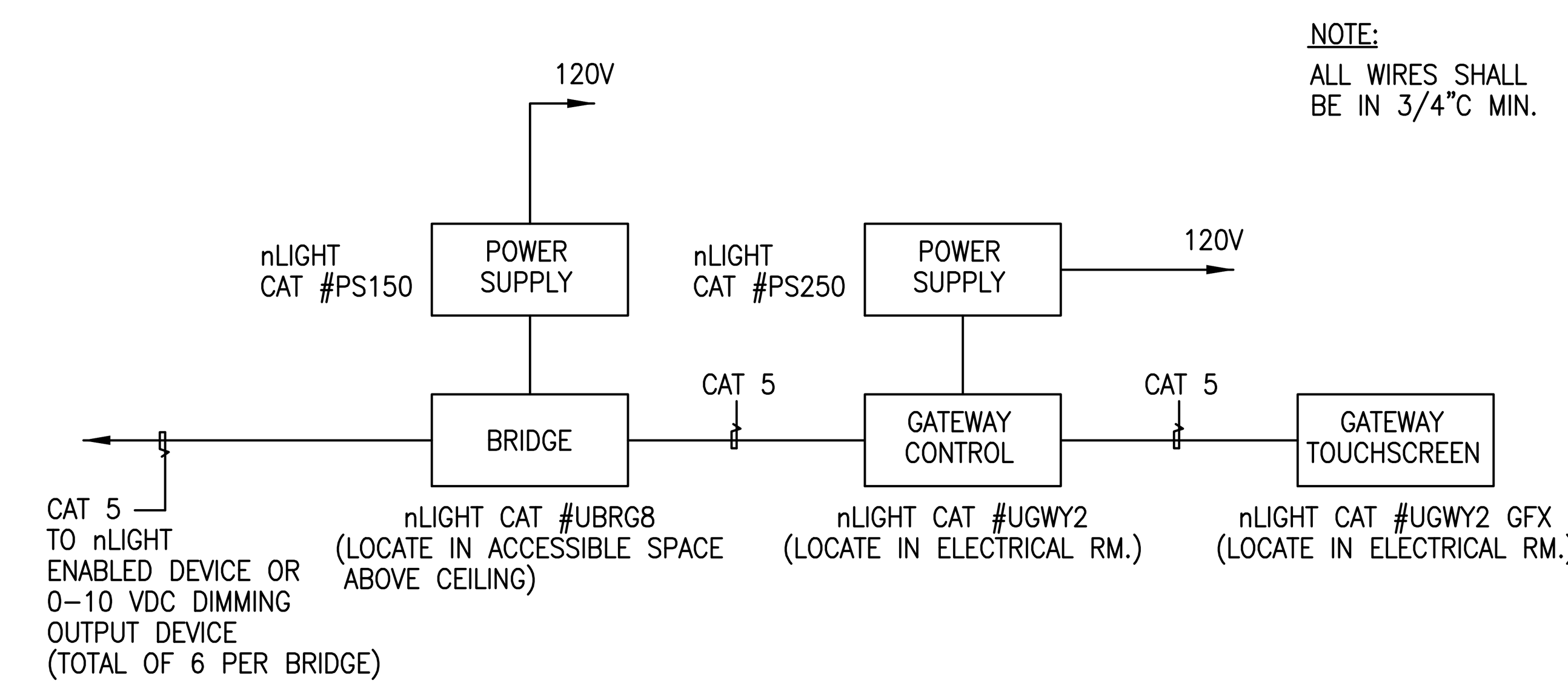
1 PENDANT MOUTING DETAIL

NOT TO SCALE



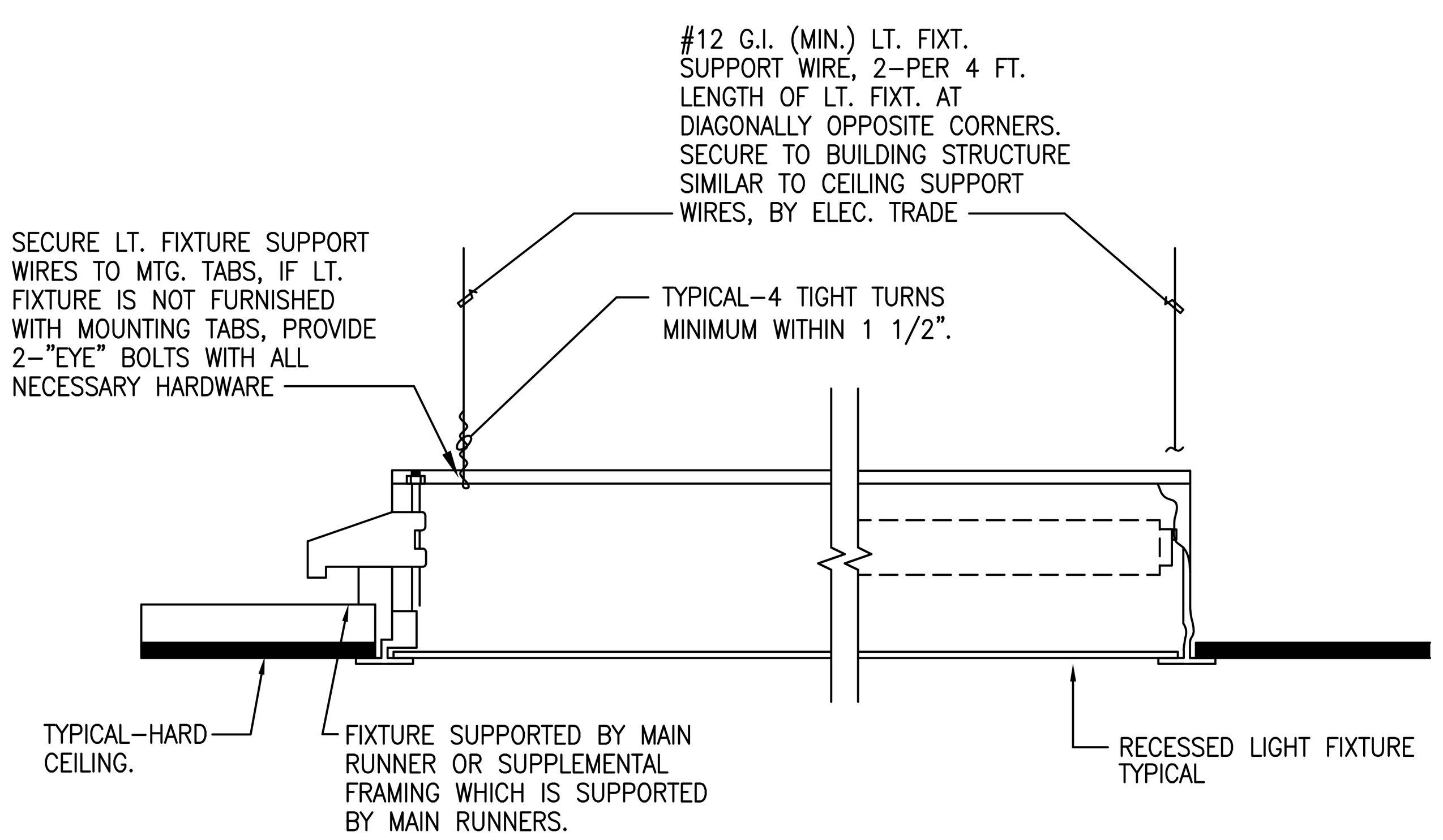
4 SURFACE MOUNTED LIGHT FIXTURE ON METAL DECK (CANOPY)

NOT TO SCALE



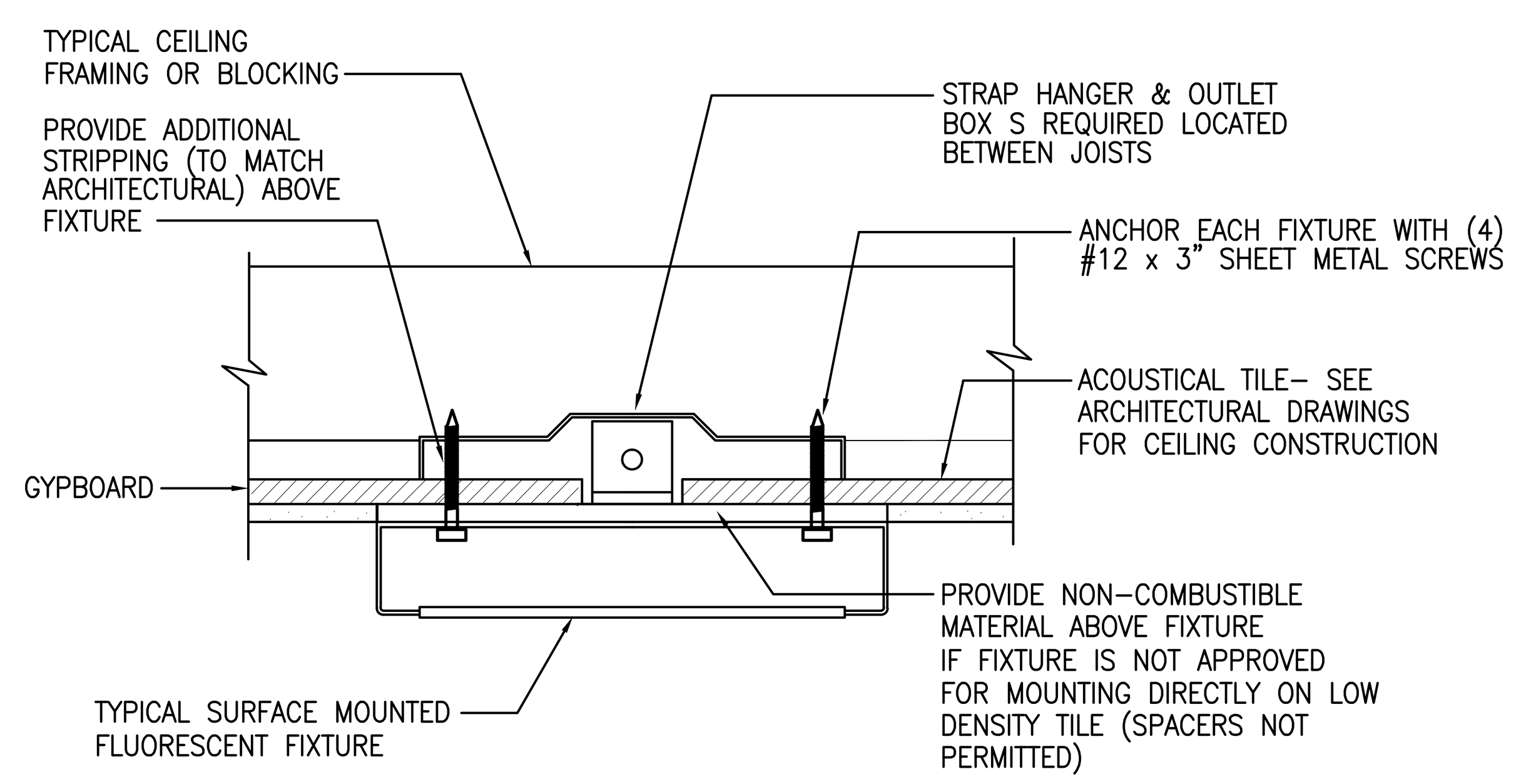
7 TYPICAL LIGHTING CONTROL WIRING DIAGRAM

NOT TO SCALE



2 TYPICAL RECESSED FIXTURE

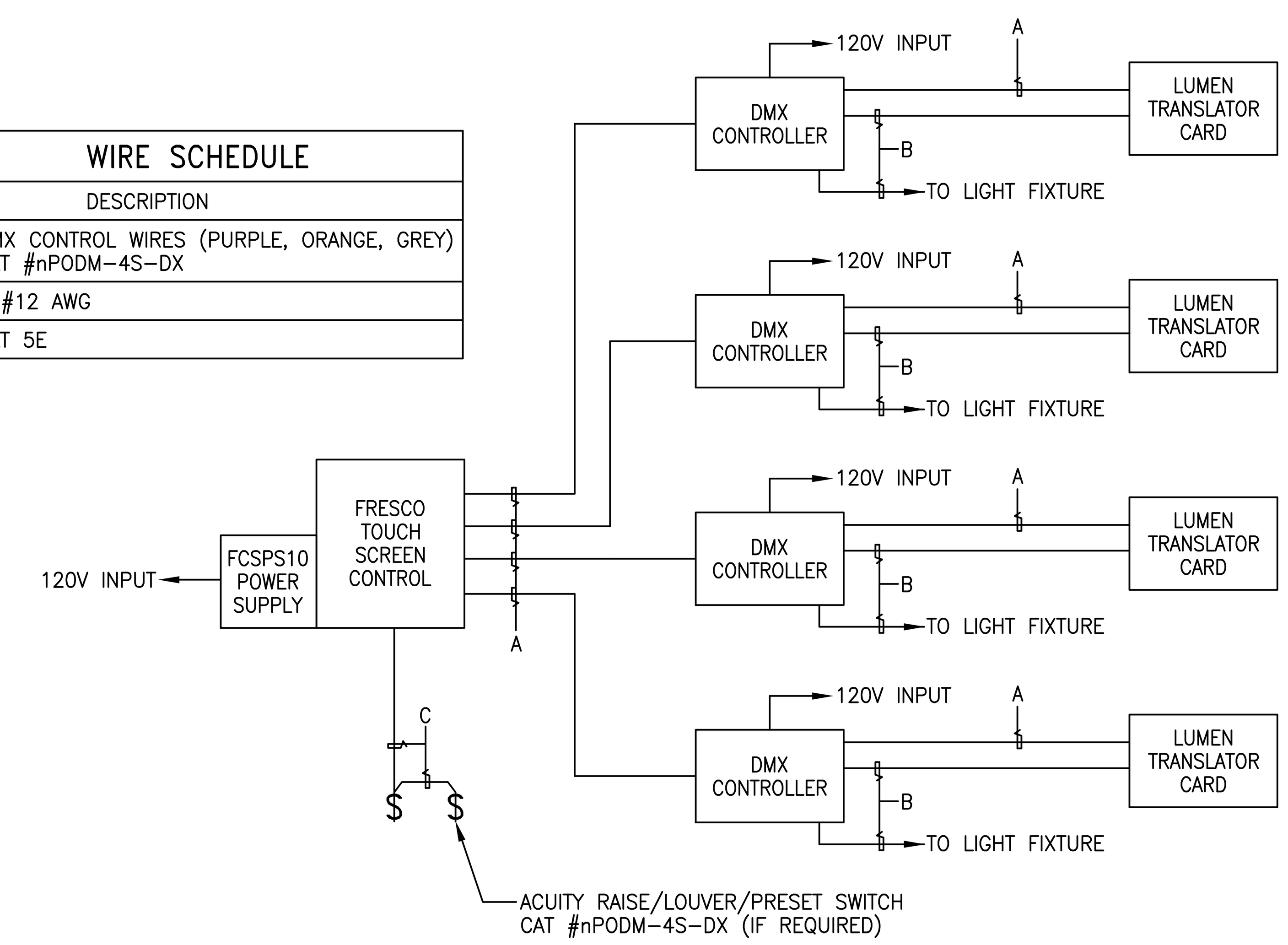
NOT TO SCALE



5 TYPICAL SURFACE MOUNTED FLUORESCENT FIXTURE

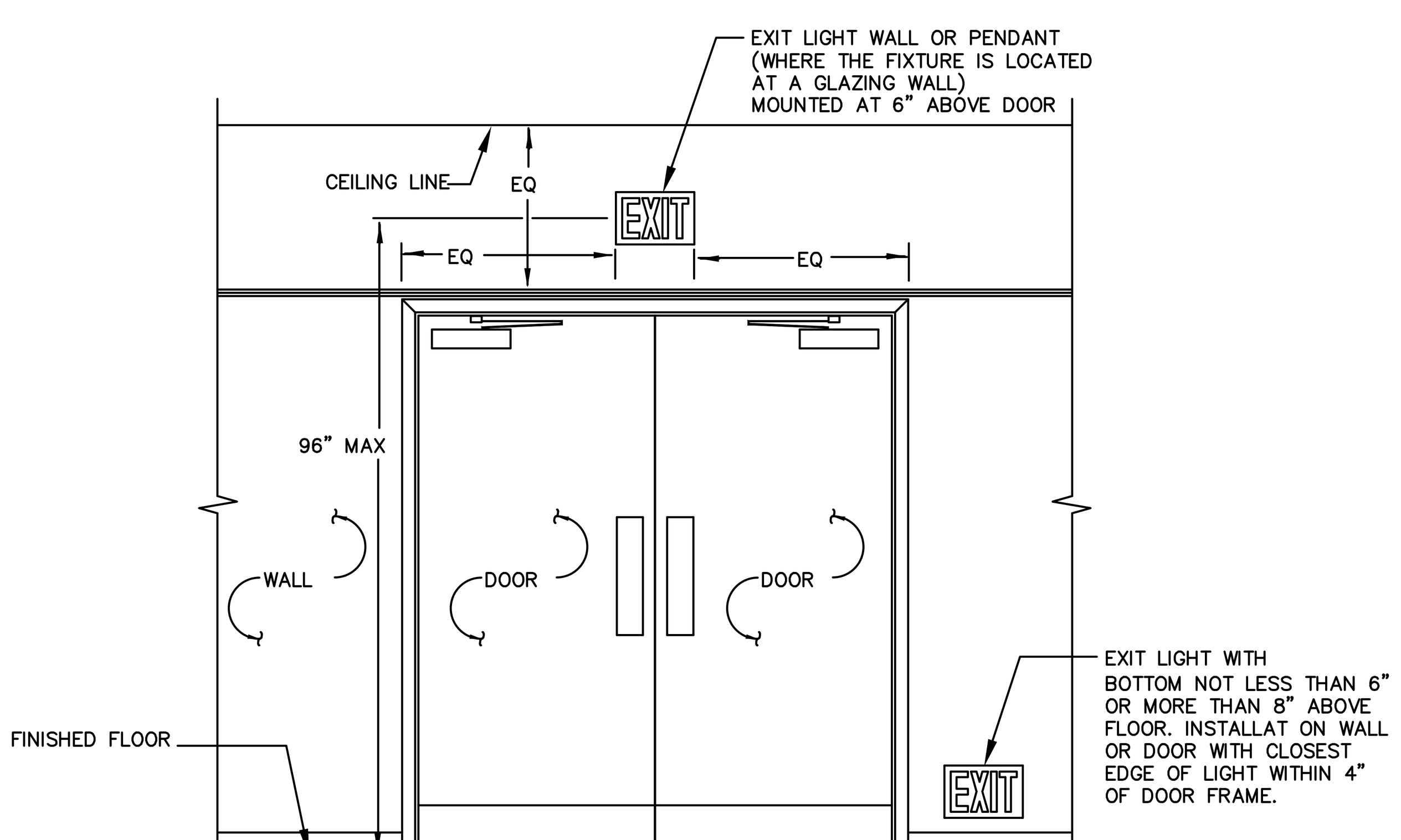
NOT TO SCALE

WIRE SCHEDULE	
TYPE	DESCRIPTION
A	DMX CONTROL WIRES (PURPLE, ORANGE, GREY) CAT #nPODM-4S-DX
B	3 #12 AWG
C	CAT 5E



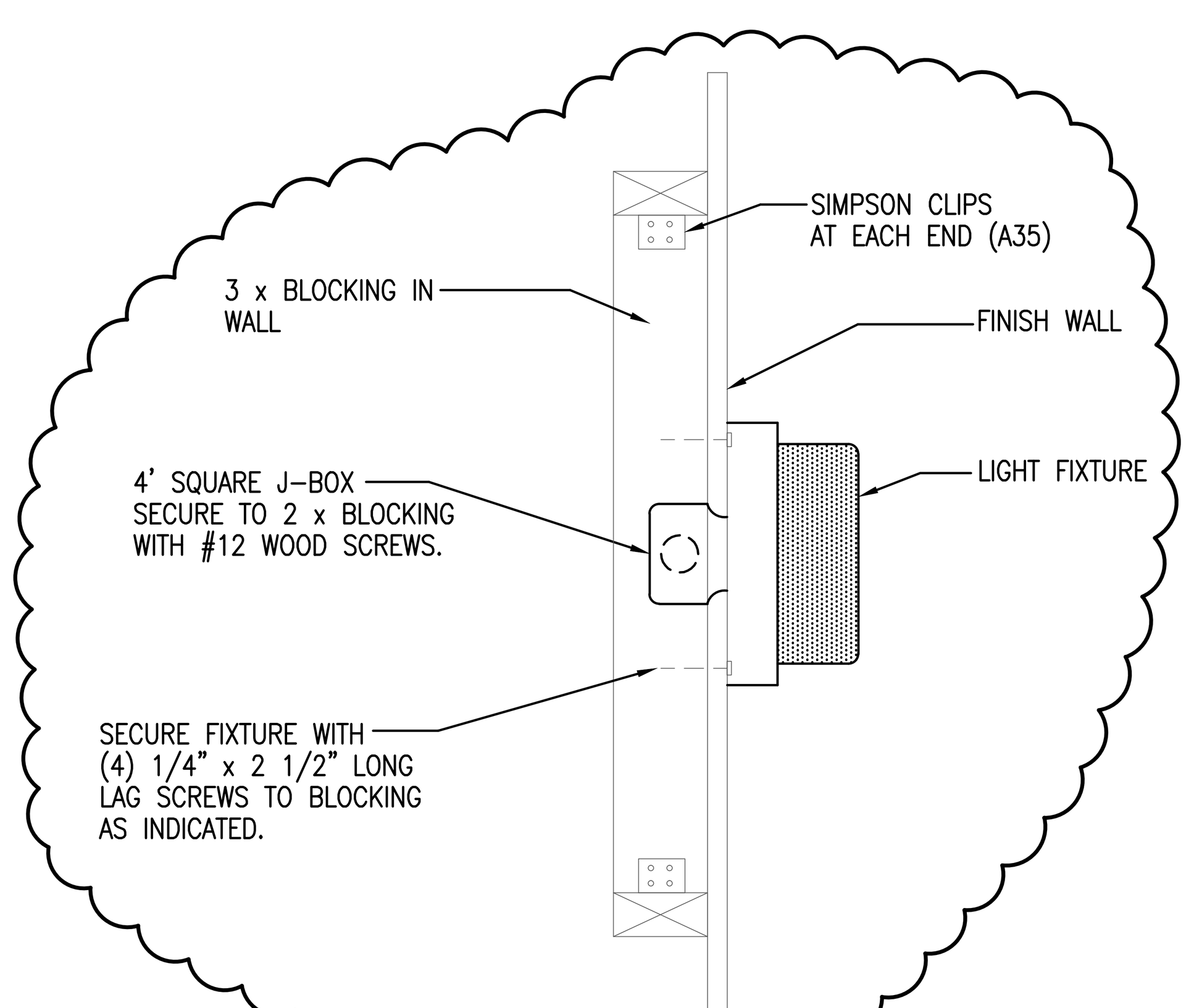
8 STAGE LIGHTING CONTROL WIRING DIAGRAM

NOT TO SCALE



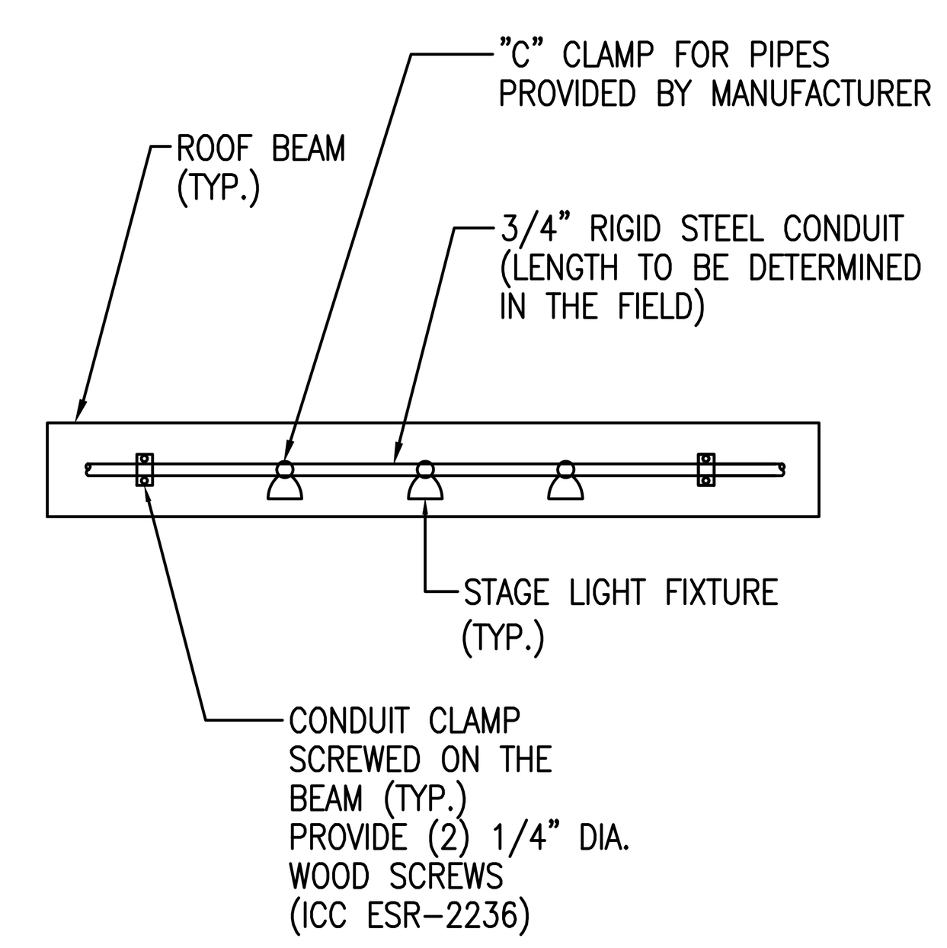
3 EXIT LIGHT FIXTURE

NOT TO SCALE



6 WALL MOUNTED LIGHT FIXTURE

NOT TO SCALE



9 STAGE LIGHT INSTALLATION DETAIL

NOT TO SCALE

SAN RAFAEL
CITY SCHOOL

SRCS GLENWOOD
ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
25 WEST CASTLEWOOD
DRIVE,
SAN RAFAEL, CA 94901

Schematic Design
ISSUED 05-02-17

REVISIONS:

REV	DATE
DSA SUBMITTAL	09-08-17
DSA Backcheck	03-05-18
Addendum #1	03-27-18

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. NGAI
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

Alliance
Engineering
Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 10
Santa Clara, CA 95054
phone (408) 970-9888
fax (408) 970-9316
www.aec-engineers.com
PROJECT NO. 101-17-04

HED

417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA

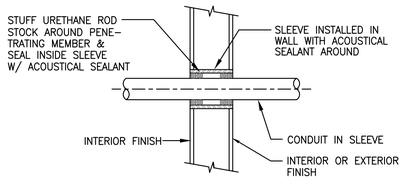
(T) 415 981 2345

www.hed.design

PROJECT NUMBER:
2016-D0009-000

SHEET TITLE:
LIGHTING DETAILS

SHEET NO:
E5.2
ADDENDUM 1

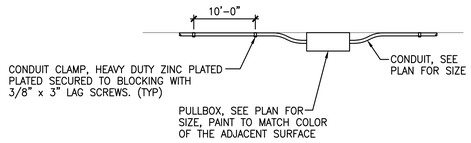


NOTE: PATCH AND FINISH TO MATCH (E)

THE COMPLETE ASSEMBLY SHALL BE PER ASTME-814 (UL1479) FIRE TEST AND UL THROUGH PENETRATION FIRESTOP SYSTEM # WL1001

1 TYPICAL WALL PENETRATION

NOT TO SCALE



4 PULLBOX MOUNTED BELOW CANOPY

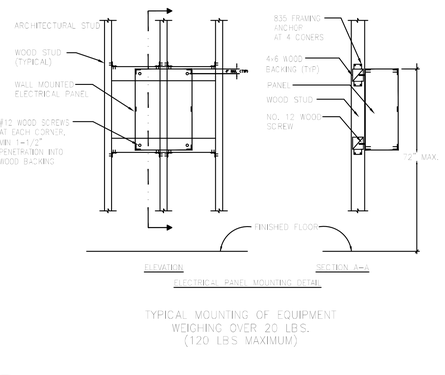
NOT TO SCALE

PANEL # M1	LOCATION ELEC. RM				FEEDER SIZE SEE SINGLE LINE DIAGRAM					
VOLTS 120/208V,3PH,4W	MLO [X]	FEED THRU LUGS [ ]			FLUSH [ ]	SURFACE [X]				
AMPS 250A	MCB [ ]	MCB AMPS 250			NEMA 1 [X]	NEMA 3R [ ]				
AIC RATING 22KAIC	BUS AMPS 250									
	LOAD (VA)			BKR/ POLE	CKT No.		BKR/ POLE	LOAD (VA)			DESCRIPTION
DESCRIPTION	A	B	C					A	B	C	
RF-1	1920			30/1	1	2	20/1	540			RCPT
RF-2		1920		30/1	3	4	20/1		540		RCPT
CF-1			499	20/2	5	6	20/1			540	RCPT
	499				7	8	20/1	540			RCPT
CF-2		499		20/2	9	10	20/1		360		RCPT
			499		11	12	20/1			180	RCPT
FU-1	1320			20/3	13	14	20/1	720			RCPT
		1320			15	16	20/1		540		RCPT
			1320		17	18	20/1			180	WINDOW ACTUATORS
FURNACE CONTROLS	180			20/1	19	20	20/1	360			SCORE BOARD
RCPT IDF		360		20/1	21	22	20/1		180		WINDOW ACTUATORS
RCPT IDF			360	20/1	23	24	20/1			720	RETRACTABLE HOOPS
SPARE				20/1	25	26	20/1	360			SCREEN
SPARE				20/1	27	28	20/1		720		CURTAINS
SPARE				20/1	29	30	20/1			360	RCPT
					31	32					
					33	34	30/3				LIFT
					35	36					
					37	38					ROOM DIVIDER
					39	40					
					41	42					
SUBTOTAL	3919	4099	2678					2520	2340	1980	SUBTOTAL

TOTAL LOAD 17.54 KVA; @ 208 VOLTS = 48.7 AMPS

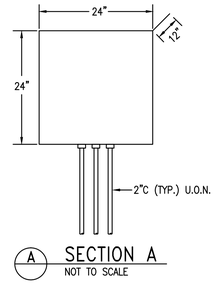
PANEL # L1	LOCATION ELEC RM				FEEDER SIZE SEE SINGLE LINE DIAGRAM					
VOLTS 120/208V,3PH,4W	MLO [X]	FEED THRU LUGS [ ]			FLUSH [ ]	SURFACE [X]				
AMPS 100A	MCB [ ]	MCB AMPS 100A			NEMA 1 [X]	NEMA 3R [ ]				
AIC RATING 22KAIC	BUS AMPS 100									
	LOAD (VA)			BKR/ POLE	CKT No.		BKR/ POLE	LOAD (VA)			DESCRIPTION
DESCRIPTION	A	B	C					A	B	C	
LTG - HI-BAY	900			20/1	1	2	20/1				SPARE
LTG - HI-BAY		900		20/1	3	4	20/1				SPARE
LTG			890	20/1	5	6	20/1				SPARE
LCP1	300			20/1	7	8	20/1				SPARE
LTG - STAGE		500		20/1	9	10	20/1				SPARE
LTG - STAGE			500	20/1	11	12	20/1				SPARE
LTG - STAGE	500			20/1	13	14	20/1				SPARE
LTG - STAGE		440		20/1	15	16	20/1				SPARE
EXTERIOR LTS			150	20/1	17	18	20/1				SPARE
EXTERIOR LTS	150			20/1	19	20	20/1				SPARE
SPARE				20/1	21	22	20/1				SPARE
					23	24					
					25	26					
					27	28					
					29	30					
					31	32					
					33	34					
					35	36					
					37	38					
					39	40					
					41	42					
SUBTOTAL	1850	1840	1540								SUBTOTAL

TOTAL LOAD 5.23 KVA; @ 208 VOLTS = 14.5 AMPS



2 ELECTRICAL PANEL MOUNTING DETAIL

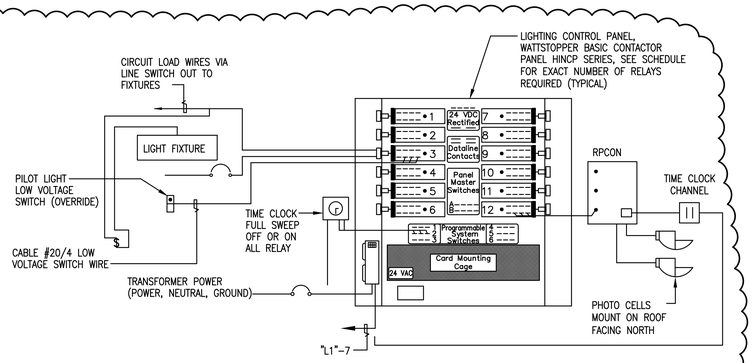
NOT TO SCALE



A SECTION A

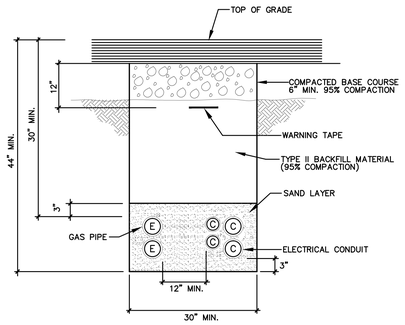
NOT TO SCALE

PANEL NAME: "LCP1" (LIGHTING CONTROL PANEL) LOCATION: ELECTRICAL ROOM				
RELAY #	PANEL & CIRCUIT #	DESCRIPTION	CONTROLS	OTHER CONTROLS
1	"L1"-1a	LIGHTING - MULTI PURPOSE ROOM 1	LSO TIMER ON	TIMER OFF
2	"L1"-3b		LSD TIMER ON	TIMER OFF
3	"L1"-17	LIGHTING - EXTERIOR	PHOTOCELL ON	PHOTOCELL OFF
4	"L1"-19		PHOTOCELL ON	TIMER OFF
5	SPACE			
6				
7				
8				
9				
10				
11				
12				



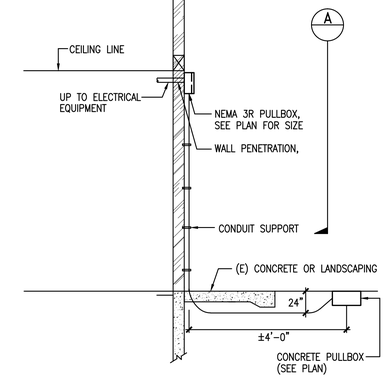
2 LIGHTING CONTROL PANEL DIAGRAM "LCP1"

NOT TO SCALE



3 TYPICAL TRENCH DETAIL

NOT TO SCALE



4 PULLBOX AND CONDUIT INSTALLATION DETAIL

NOT TO SCALE

LIGHTING FIXTURE SCHEDULE

MARK	MANUFACTURERS MODEL NO.	LAMPS QTY.	LAMPS TYPE	TOTAL WATTS	VOLTS	MOUNTING	DESCRIPTION AND REMARKS
A	SPACEGRADE CAT #HBF-90W-PM-120-WW-3500K-BL-WG-DIM-FL	-	LED	90	120	PENDANT	LED HI-BAY WITH UP LIGHT PENDANT MOUNT DIMMING CAPABILITIES. PROVIDE WIRE GUARD. WEIGHT = 8 LBS.
B	LITHONIA CAT #LT4-48L-FW-A12-L835 N80	-	LED	47	120	RECESSED	1'x4' LED LIGHT FIXTURE WITH PRISMATIC ACRYLIC LENS AND HIGH EFFICIENCY DRIVERS, FULL RANGE DIMMING FROM 0-10V CONTROL SIGNAL.
C	LSI SERVICES CAT #LP3 32RGBW-3G CC LTB	-	LED	55	120	TRACK MOUNT ON BEAM	LED SPOT LIGHT FIXTURE WITH ALUMINUM HOUSING AND BLACK FINISH.
C1	LSI SERVICES CAT #LP3 20RGBW-3G CC LTB	-	LED	55	120	TRACK MOUNT ON BEAM	SAME AS TYPE "C" LIGHT FIXTURE EXCEPT WITH 20° BEAM SPREAD.
C2	LSI SERVICES CAT #LP3 10RGBW-3G CC LTB	-	LED	55	120	TRACK MOUNT ON BEAM	SAME AS TYPE "C" LIGHT FIXTURE EXCEPT WITH 10° BEAM SPREAD.
D	GARDCO CAT #SVPG-168L-600-NW-SM-5120	-	LED	27	120	SURFACE	18"ø LED ROUND FIXTURE WEATHER PROOF CONTROL BY TIME CLOCK AND PHOTOCELL HIGH EFFICIENCY DRIVERS.
E	LITHONIA CAT #DSXW1 LED-10C-530-40K T3M-120-PE-DMG-PIRH1FC3V	-	LED	20	120	SURFACE	WALL MOUNT LED FIXTURE WITH MOTION/AMBIENT SENSOR, HIGH EFFICIENCY DRIVERS.
F	LITHONIA CAT #ZL2NL48-2000LMMDD120-35K80CRIWH	-	LED	32	120	SURFACE	4FT LED LIGHT FIXTURE WITH MEDIUM DIFFUSE LENS AND HIGH EFFICIENCY DRIVERS PROVIDE nLIGHT "N10DKO", 0-10VDC DIMMING OUTPUT DEVICE CHASE NIPPLE MOUNTING.
X	LITHONIA CAT #LHQM LED G SD	-	LED	1.5	120	UNIVERSAL	LED EXIT LIGHT WITH 2-HEAD EMERGENCY LED LIGHT.

SAN RAFAEL CITY SCHOOL

SRCS GLENWOOD ELEMENTARY SCHOOL MULTI-PURPOSE ROOM
25 WEST CASTLEWOOD DRIVE,
SAN RAFAEL, CA 94901

Schematic Design
ISSUED 05-02-17

REVISIONS:

REV	DATE
DSA SUBMITTAL	09-08-17
DSA Backcheck	03-05-18
Addendum #1	03-27-18

REGISTERED PROFESSIONAL ENGINEER KENNETH S. BOH No. 11537 Exp. 6/30/19 ELECT. STATE OF CALIFORNIA

Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 19, Santa Clara, CA 95054
phone (408) 970-9888
fax (408) 970-9316
www.aec-engineers.com

PROJECT NO. 101-17-04

HED
417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA
(T) 415 981 2345
www.hed.design

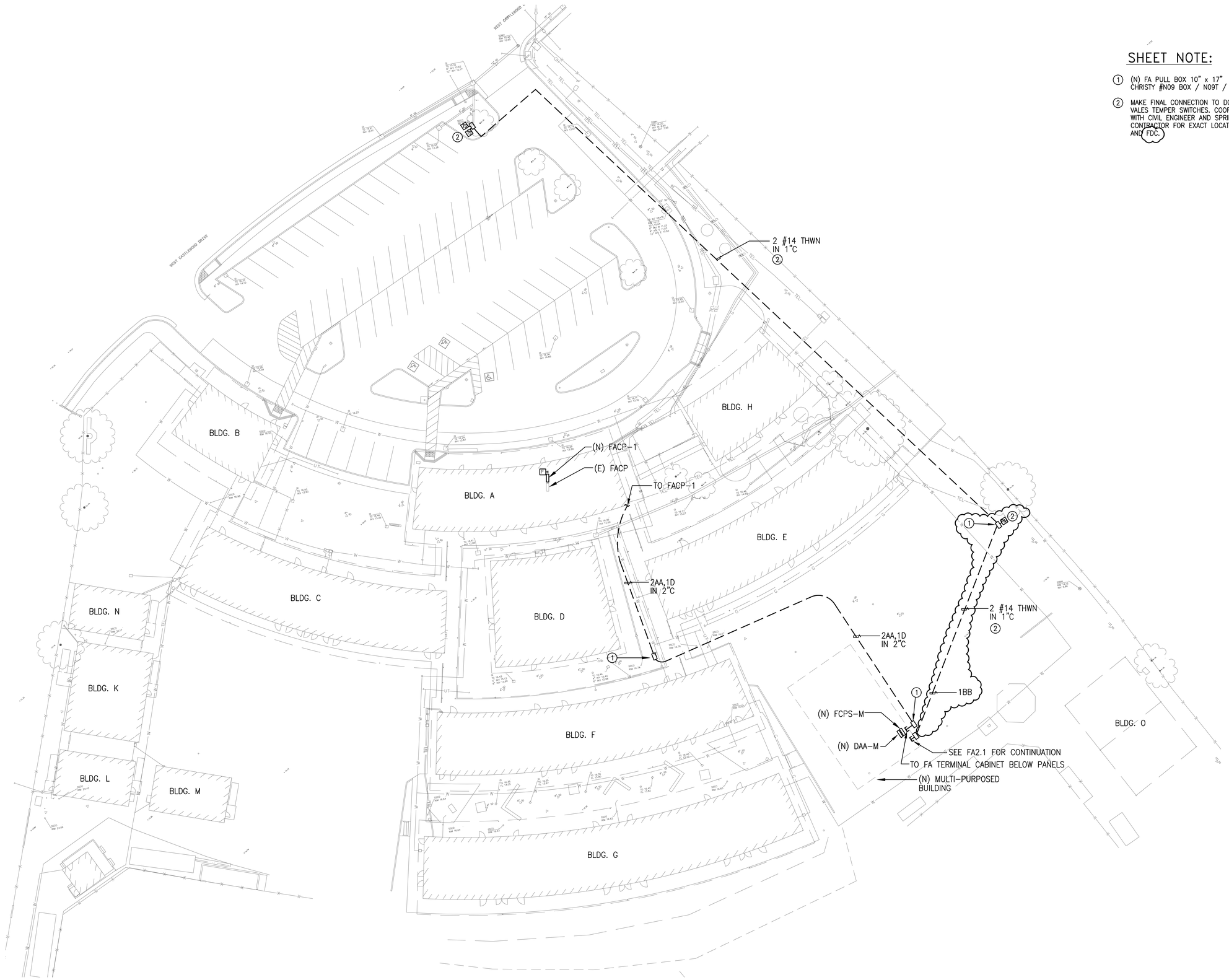
PROJECT NUMBER:
2016-D0009-000

SHEET TITLE:
PANEL SCHEDULES* DETAILS

SHEET NO:
E5.4
ADDENDUM 1

SHEET NOTE:

1. (N) FA PULL BOX 10" x 17" IN-GROUND CHRISTY #NO9 BOX / NO9T / BO9X12
2. MAKE FINAL CONNECTION TO DOUBLE CHECK VALES TEMPER SWITCHES. COORDINATE WITH WITH CIVIL ENGINEER AND SPRINKLER CONTRACTOR FOR EXACT LOCATION OF PIV AND FDC.



1 FIRE ALARM SITE PLAN

SCALE: 1" = 20'-0"

FILE: M:\101-17-04 Glenwood ES MPR\04FA1.dwg Sep 08, 2017 4:09 pm Scale: 1=1 by: DIEU
XREFS: X09133_TOPO_GLENWOOD-ACAD2000.dwg TB_D0C_E1_HED_SPO - SHEET - -.dwg

SAN RAFAEL CITY SCHOOL

SRCS GLENWOOD ELEMENTARY SCHOOL MULTI-PURPOSE ROOM
25 WEST CASTLEWOOD DRIVE,
SAN RAFAEL, CA 94901

Schematic Design
ISSUED 05-02-17

REVISIONS:

REV	DATE
DSA SUBMITTAL	09-08-17
DSA Backcheck	03-05-18
Addendum #1	03-27-18

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. IEAH
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 19
Santa Clara, CA 95054
phone (408) 970-9888
fax (408) 970-9316
www.aec-engineers.com

PROJECT NO. 101-17-04

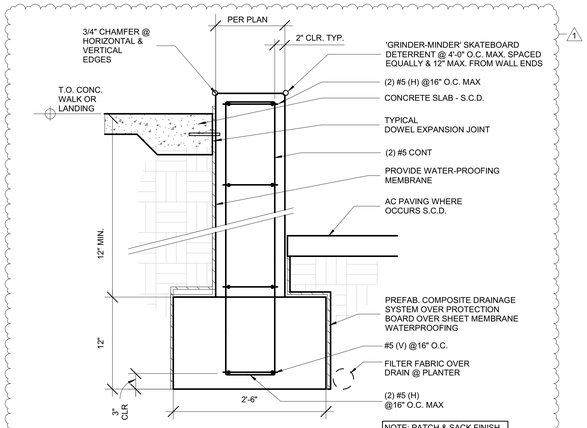
HED
417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA
(T) 415 981 2345
www.hed.design

PROJECT NUMBER:
2016-D0009-000

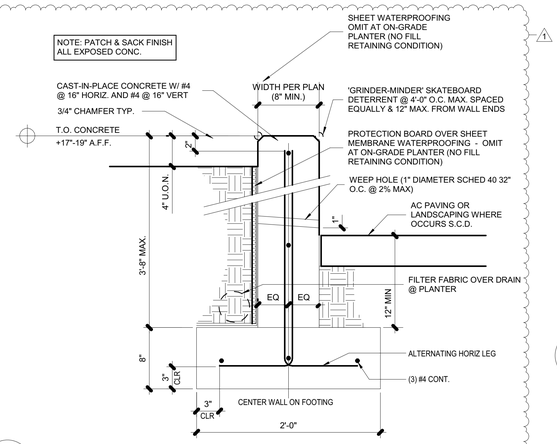
SHEET TITLE:
FIRE ALARM SITE PLAN

SHEET NO:
FA1.1

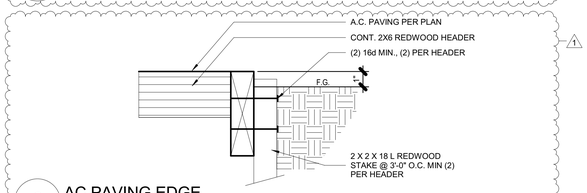
ADDENDUM 1



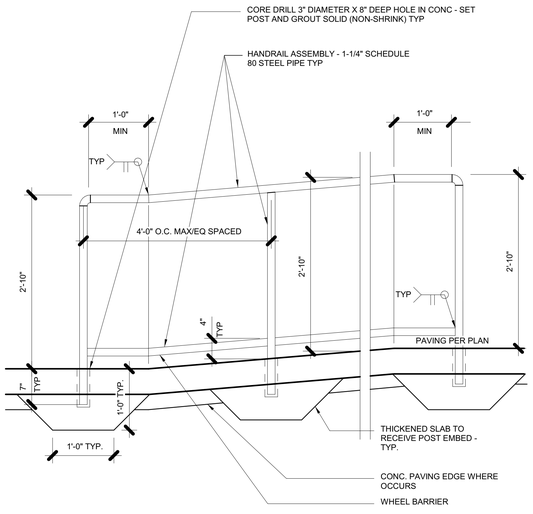
8 SITE CONCRETE SEAT WALL
SCALE: 1" = 1'-0"



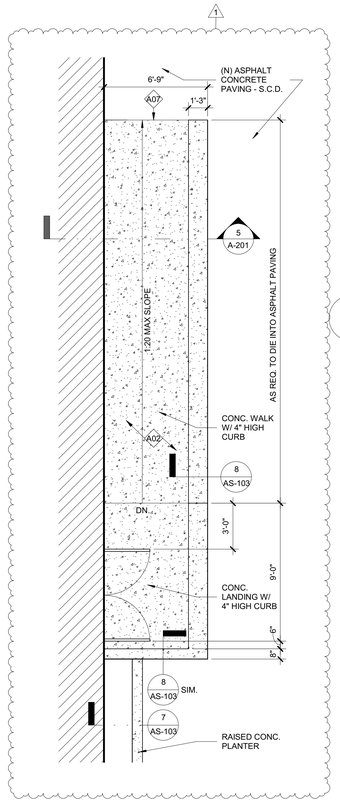
7 CONCRETE SEAT WALL AT LANDSCAPE
SCALE: 1 1/2" = 1'-0"



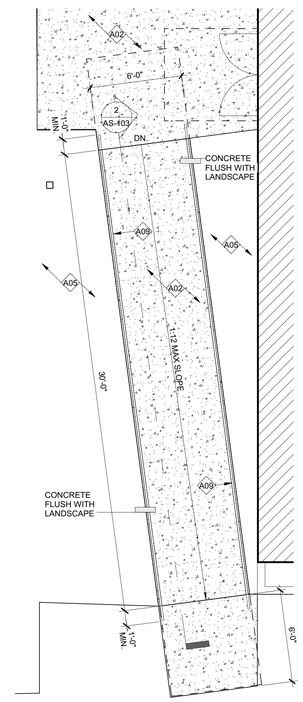
6 AC PAVING EDGE
SCALE: 3" = 1'-0"



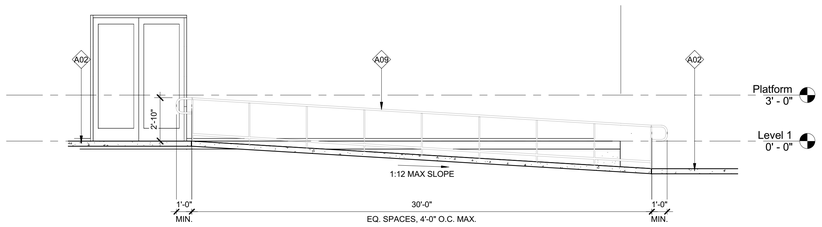
5 HANDRAIL AT RAMP
SCALE: 1" = 1'-0"



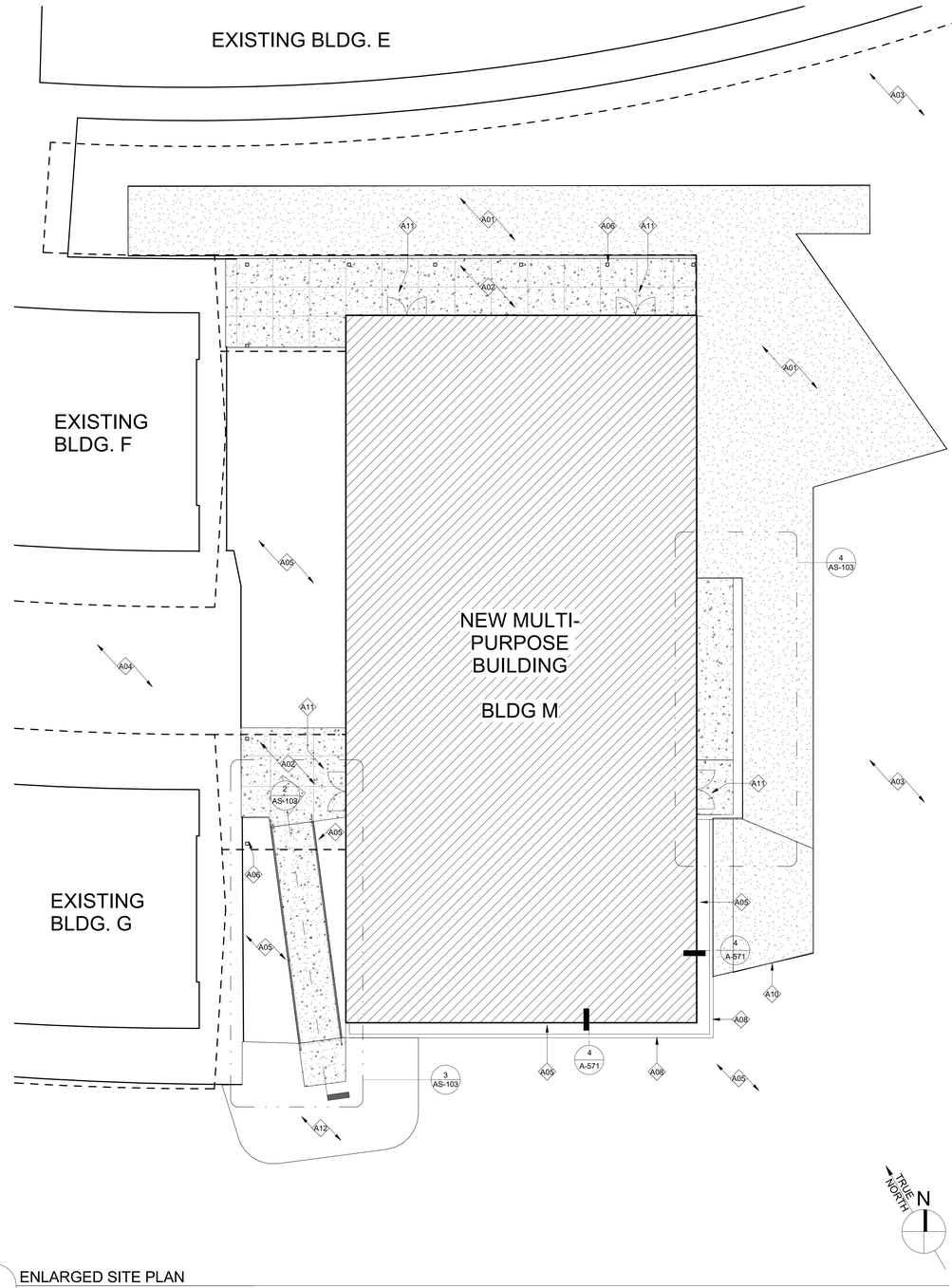
4 ENLARGED SLOPED WALK PLAN
SCALE: 1/4" = 1'-0"



3 ENLARGED RAMP PLAN
SCALE: 1/4" = 1'-0"



2 EXTERIOR RAMP SECTION
SCALE: 1/4" = 1'-0"



1 ENLARGED SITE PLAN
SCALE: 1/8" = 1'-0"

LEGEND

NEW BUILDING INCLUDED IN SCOPE OF WORK

EXISTING BUILDING NOT INCLUDED IN SCOPE OF WORK

NOTES

A01 NEW ASPHALT PAVING PER CIVIL DRAWINGS, FLUSH TRANSITION

A02 NEW CONCRETE PAVING PER CIVIL DRAWINGS, FLUSH TRANSITION

A03 EXISTING ASPHALT PAVING TO REMAIN

A04 EXISTING CONCRETE PAVING TO REMAIN

A05 EXISTING LANDSCAPING TO REMAIN PER CIVIL DRAWINGS

A06 STEEL COLUMN AND METAL DECK CANOPY PER DETAILS ON A-532

A07 CONCRETE TO ASPHALT TRANSITION PER CIVIL DRAWINGS

A08 CONCRETE CURB PER CIVIL DRAWINGS

A09 HANDRAIL PER DETAIL 5/AS-103

A10 AC PAVING EDGE PER DETAIL 6/AS-103

A11 CONCRETE PAVING AT DOOR LANDINGS SHALL HAVE MAX SLOPE 1:48 IN ALL DIRECTIONS AT ALL POINTS WITHIN 60" MEASURED PERPENDICULAR FROM THE FULL WIDTH OF THE DOORWAY TYP.

A12 NEW LANDSCAPE PER CIVIL DRAWINGS

San Rafael City Schools

Glenwood Elementary School
Multi-Purpose Building

25 WEST CASTLEWOOD DR.
SAN RAFAEL, CA 94901

DSA APPROVAL
ISSUED 3/06/18

REVISIONS:

REV	DATE
1	4/2/2018

FILE#: 21-39 PTN#: 65458-43

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES

APP#: 01-116941

AC ____ FLS ____ SS ____

DATE ____

HED

417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA

(T) 415 981 2345

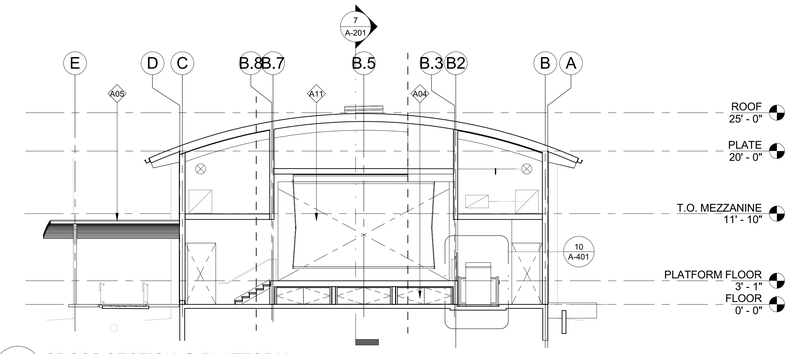
www.hed.design

PROJECT NUMBER:
2016-D009

SHEET TITLE:
ENLARGED SITE PLAN AND DETAILS

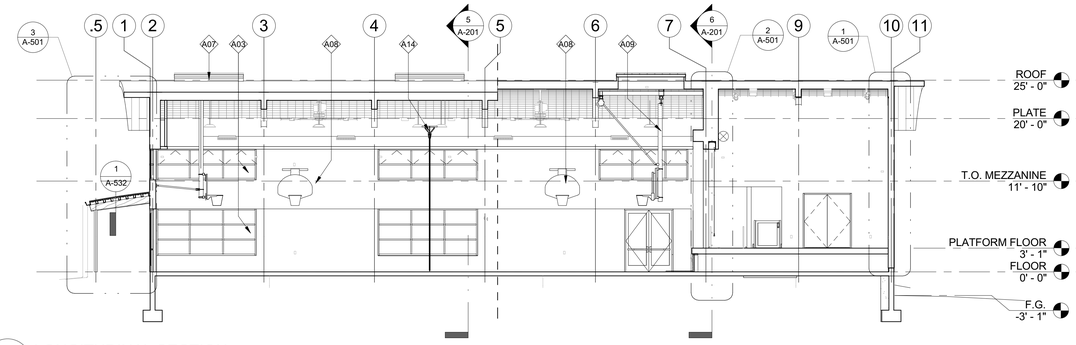
SHEET NO:

AS-103



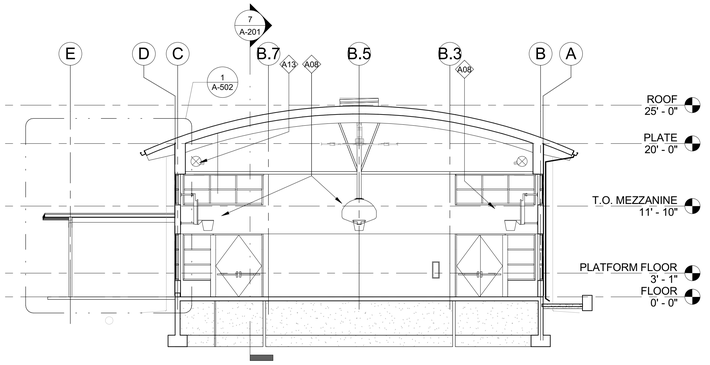
6 CROSS SECTION @ PLATFORM

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



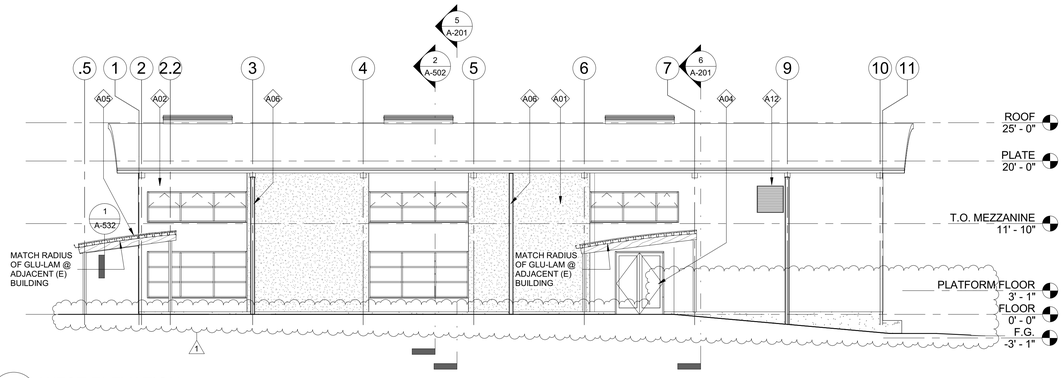
7 LONGITUDINAL SECTION

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



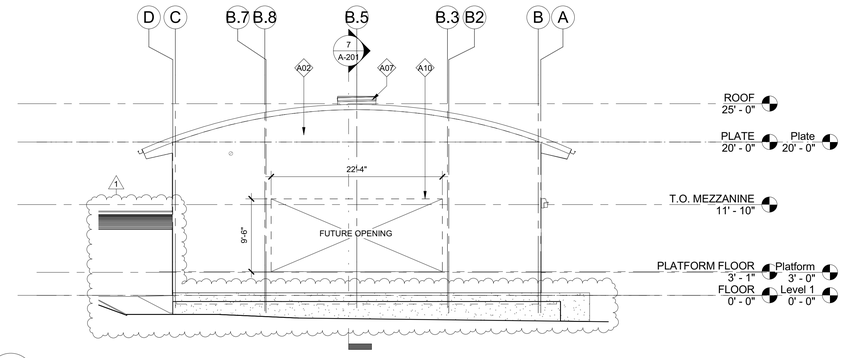
5 CROSS SECTION @ GYM

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



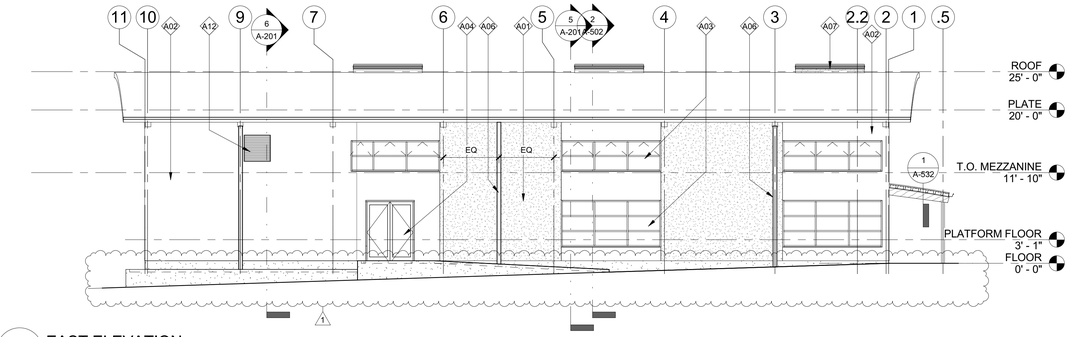
4 WEST ELEVATION

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



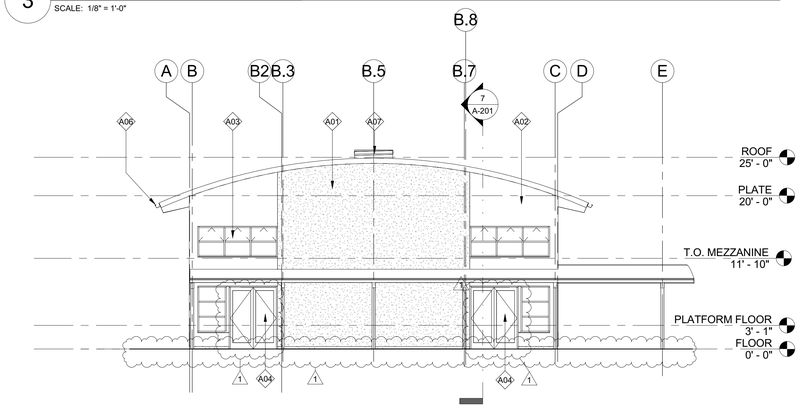
3 SOUTH ELEVATION

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



2 EAST ELEVATION

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



1 NORTH ELEVATION

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

NOTES

A01	EXTERIOR CEMENT PLASTER
A02	EXTERIOR T1-11 PLYWOOD
A03	WINDOW, SEE WINDOW TYPES TYP.
A04	DOOR, SEE DOOR TYPES TYP.
A05	STEEL COLUMN AND METAL DECK CANOPY
A06	DOWNSPOUT AND GUTTER PER DETAIL **2/A-531**
A07	SKYLIGHT PER DETAIL **4/A-531**
A08	WALL-MOUNTED STATIONARY BASKETBALL HOOP PER DETAIL **8/A-591**
A09	FORWARD FOLD BASKETBALL HOOP PER DETAIL **4/A-591**
A10	FUTURE OPENING PER DETAIL **10/A-571**
A11	PROJECTION SCREEN PER DETAIL **5/A-572**
A12	LOUVER PER MECHANICAL DRAWINGS
A13	DUCTING PER MECHANICAL DRAWINGS
A14	DIVIDER CURTAIN

San Rafael City Schools

Glenwood Elementary School
Multi-Purpose Building

25 WEST CASTLEWOOD DR.
SAN RAFAEL, CA 94901

DSA APPROVAL
ISSUED 3/06/18

REVISIONS:

REV	DATE
1	4/2/2018

FILE#: 21-39 PTN#: 65458-43

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES

APP#: 01-116941

AC ____ FLS ____ SS ____

DATE _____

HED

417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA

(T) 415 981 2345

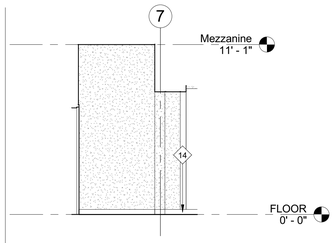
www.hed.design

PROJECT NUMBER:
2016-D009

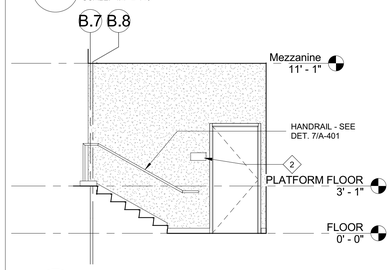
SHEET TITLE:
EXTERIOR ELEVATIONS / BUILDING SECTIONS

SHEET NO:

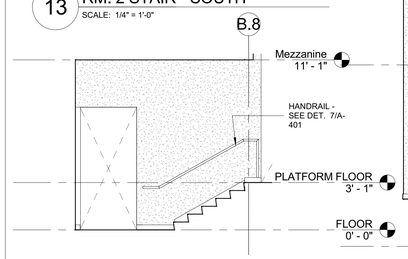
A-201



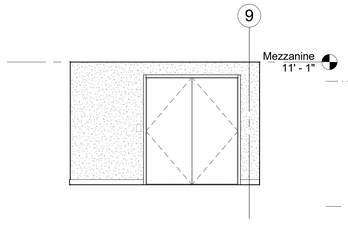
14 RM. 2 STAIR - WEST
SCALE: 1/4" = 1'-0"



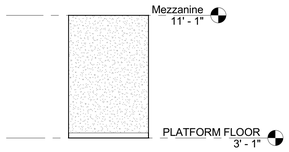
13 RM. 2 STAIR - SOUTH
SCALE: 1/4" = 1'-0"



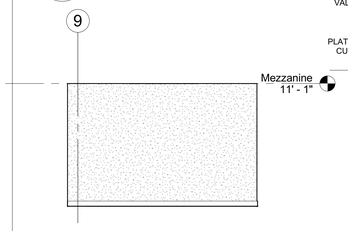
12 RM. 2 STAIR - NORTH
SCALE: 1/4" = 1'-0"



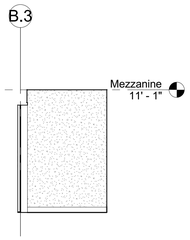
11 RM. 10 STORAGE - WEST
SCALE: 1/4" = 1'-0"



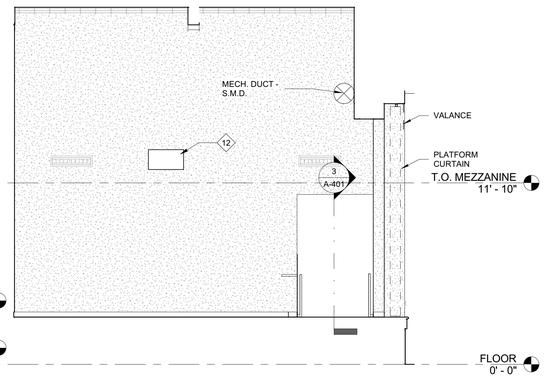
10 RM. 10 STORAGE - SOUTH
SCALE: 1/4" = 1'-0"



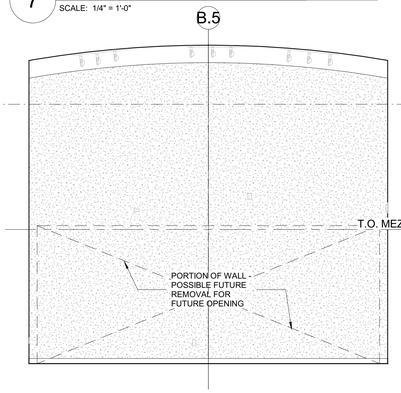
9 RM. 10 STORAGE - EAST
SCALE: 1/4" = 1'-0"



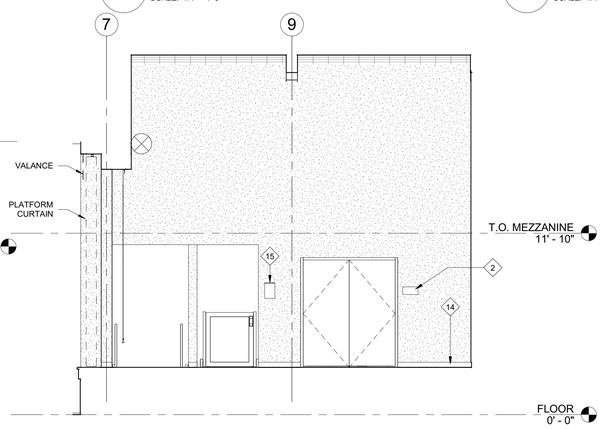
8 RM. 10 STORAGE - NORTH
SCALE: 1/4" = 1'-0"



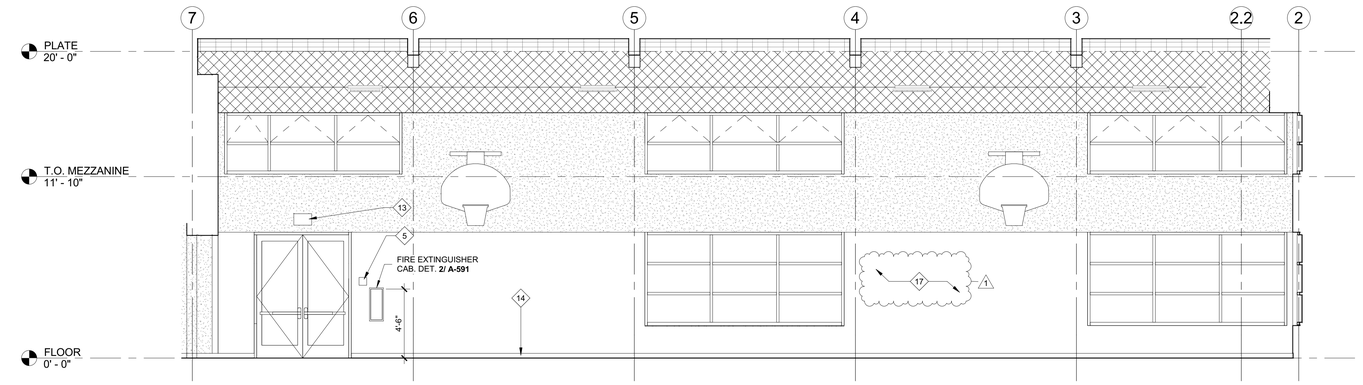
7 RM. 9 PLATFORM - WEST
SCALE: 1/4" = 1'-0"



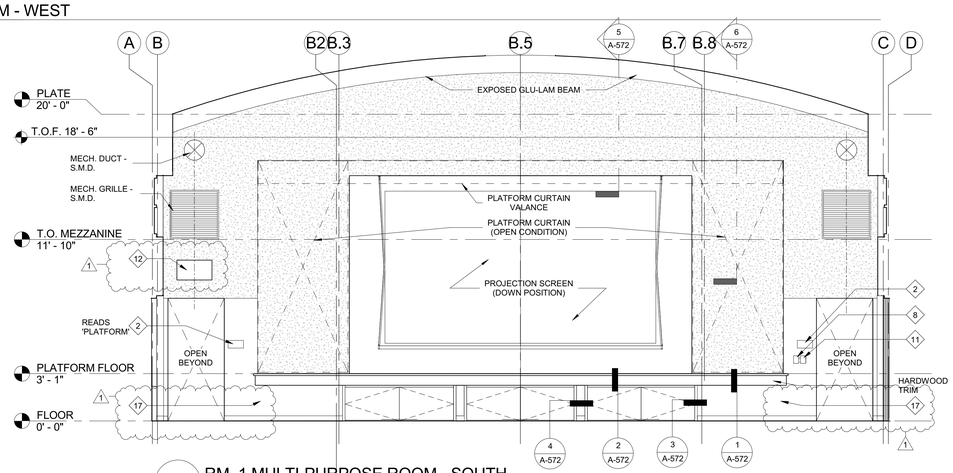
6 RM. 9 PLATFORM - SOUTH
SCALE: 1/4" = 1'-0"



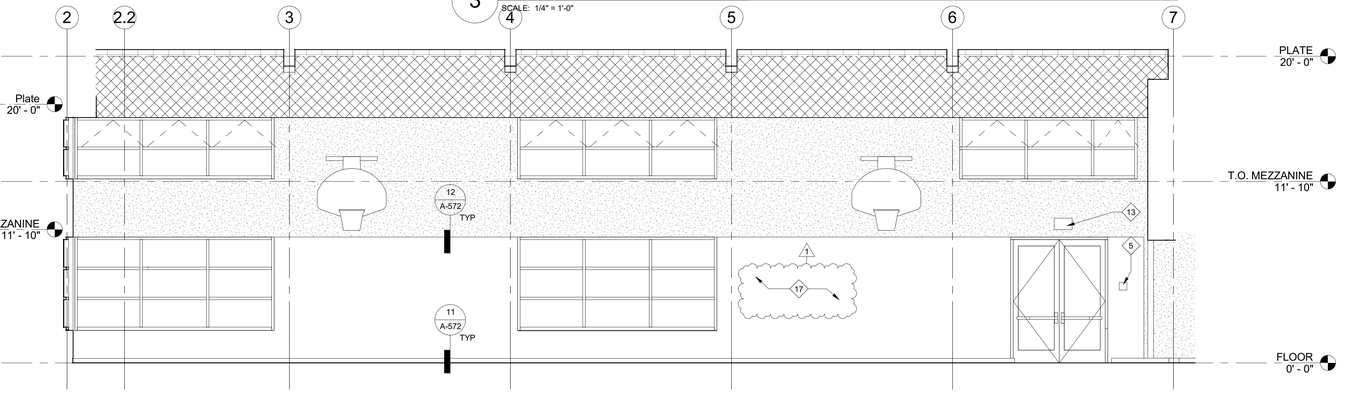
5 RM. 9 PLATFORM - EAST
SCALE: 1/4" = 1'-0"



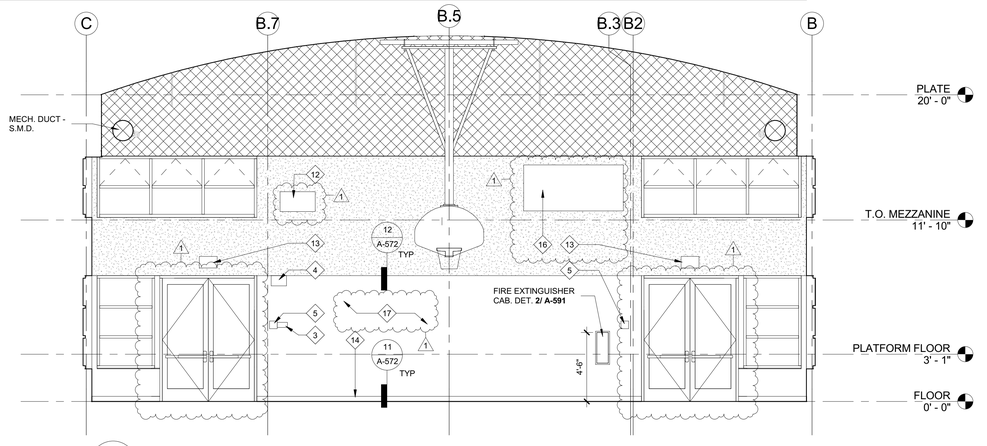
4 RM. 1 MULTI-PURPOSE ROOM - WEST
SCALE: 1/4" = 1'-0"



3 RM. 1 MULTI-PURPOSE ROOM - SOUTH
SCALE: 1/4" = 1'-0"



2 RM. 1 MULTI-PURPOSE ROOM - EAST
SCALE: 1/4" = 1'-0"



1 RM. 1 MULTI-PURPOSE ROOM - NORTH
SCALE: 1/4" = 1'-0"

LEGEND

WALL TYPES PER SHEET A-571

- GYPSUM BOARD
- 2" SOUND ABSORBING WALL UNITS
- CONSTRUCTION NOTES - SEE BELOW

INTERIOR ELEVATION NOTES

1. FOR TYPICAL BACKING SCHEDULE, SEE DETAIL **9/A-572**
2. IN MULTIPURPOSE ROOM # 1, PROVIDE IMPACT RESISTANT GYPSUM BOARD AT ALL WALLS UP TO +8 FT. ABOVE FINISH FLOOR.

CONSTRUCTION NOTES

1. FINISH MATERIAL/ASSEMBLY FOR FLOORS, WALLS AND PARTITIONS, CEILINGS IS INDICATED ON FINISH SCHEDULES, INTERIOR AND/OR EXTERIOR ELEVATIONS
2. ROOM IDENTIFICATION SIGN **15/A-003**
3. ASSISTIVE LISTENING SIGN SEE **16/A-003**
4. OCCUPANCY SIGN SEE **23/A-003**
5. EXIT SIGN SEE **14/A-003**
6. ACCESSIBLE BUILDING SIGN SEE **13/A-003**
7. ACCESS LADDER SEE **1/A-591**
8. THERMOSTAT **S.M.D.**
9. MANUAL ROLLER SHADE, SEE DET. **4/A-546**
10. MOTORIZED ROLLER SHADE, SEE DET. **14/A-546**
11. CARBON DIOXIDE SENSOR **S.M.D.**
12. CLOCK/SPEAKER **S.E.D.**
13. ILLUMINATED EXIT SIGN - **S.E.D.**
14. WALL BASE, TYP.
15. WHEELCHAIR LIFT SIGN. SEE **17/A-003**
16. SCOREBOARD
17. PLASTIC LAMINATE WAINSCOT PANELING @ ALL WALLS, TYP. SEE **11-, 12-, & 13/A572.**

San Rafael City Schools

Glenwood Elementary School
Multi-Purpose Building

25 WEST CASTLEWOOD DR.
SAN RAFAEL, CA 94901

DSA APPROVAL
ISSUED 3/06/18

REVISIONS:

REV	DATE
1	4/2/2018

FILE#: 21-39 PTN#: 65458-43

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES

APP#: 01-116941

AC ____ FLS ____ SS ____
DATE _____

HED

417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA

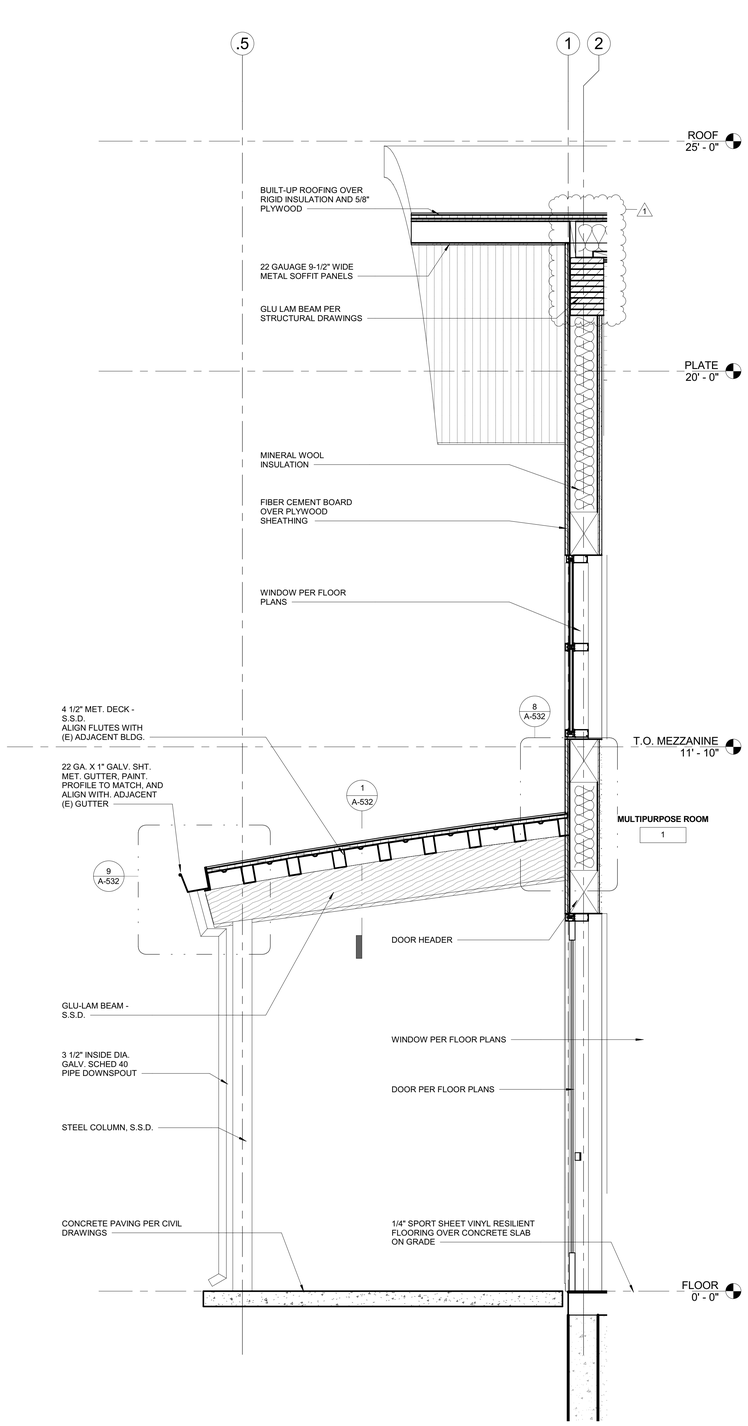
(T) 415 981 2345

www.hed.design

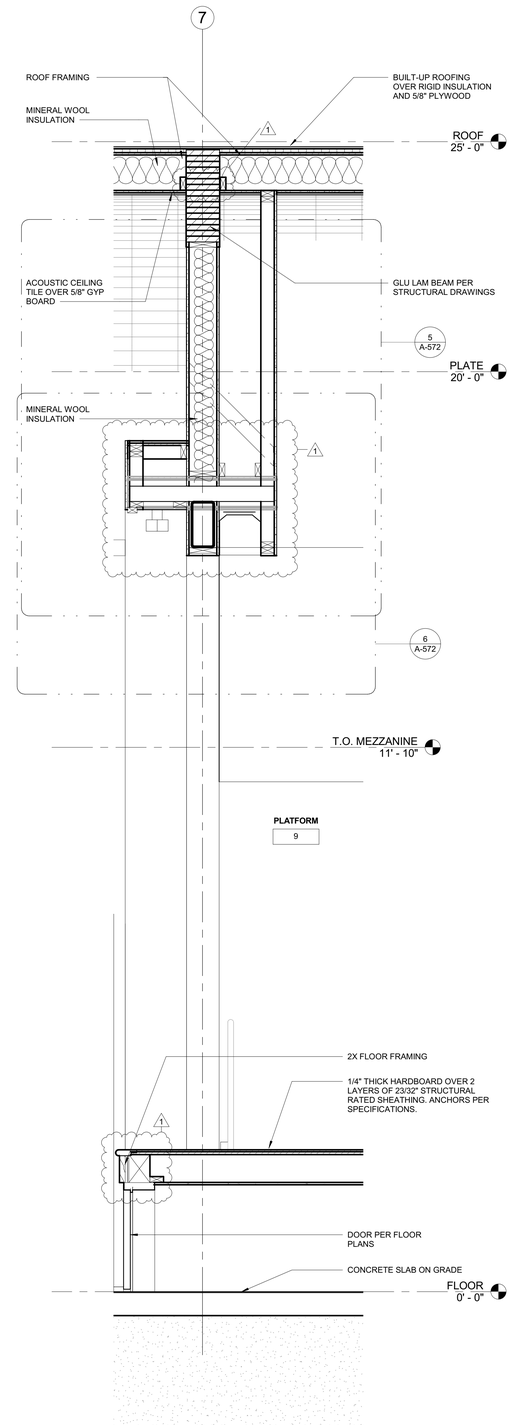
PROJECT NUMBER:
2016-D009

SHEET TITLE:
INTERIOR ELEVATIONS

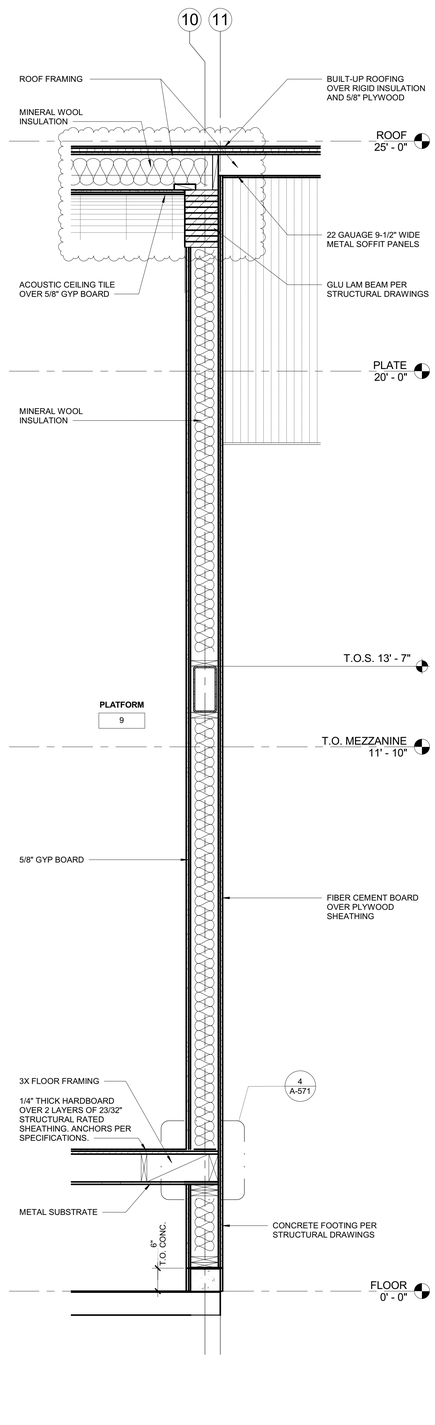
SHEET NO:
A-441



3 WALL SECTION - Callout 1
SCALE: 3/4" = 1'-0"



2 WALL SECTION - Callout 2
SCALE: 3/4" = 1'-0"



1 WALL SECTION - Callout 3
SCALE: 3/4" = 1'-0"

San Rafael City Schools

Glenwood Elementary School
Multi-Purpose Building

25 WEST CASTLEWOOD DR.
SAN RAFAEL, CA 94901

DSA APPROVAL
ISSUED 3/06/18

REVISIONS:

REV	DATE
1	4/2/2018

FILE#: 21-39 PTN#: 65458-43

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION
SERVICES

APP#: 01-116941

AC ____ FLS ____ SS ____

DATE _____

HED

417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA

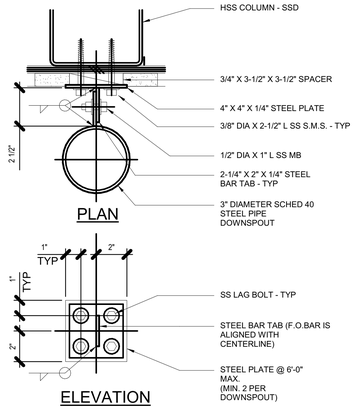
(T) 415 981 2345

www.hed.design

PROJECT NUMBER:
2016-D009

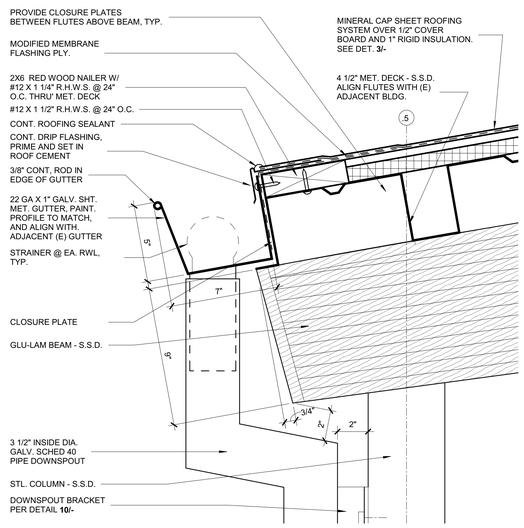
SHEET TITLE:
WALL SECTIONS

SHEET NO:
A-501



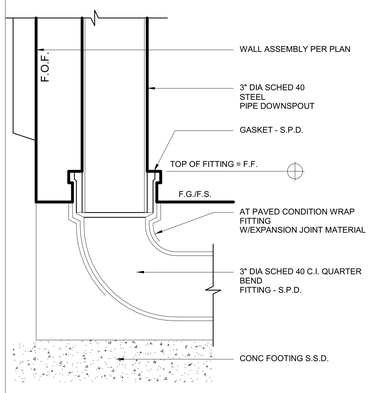
10 DOWNSPOUT DETAIL

SCALE: 3" = 1'-0"



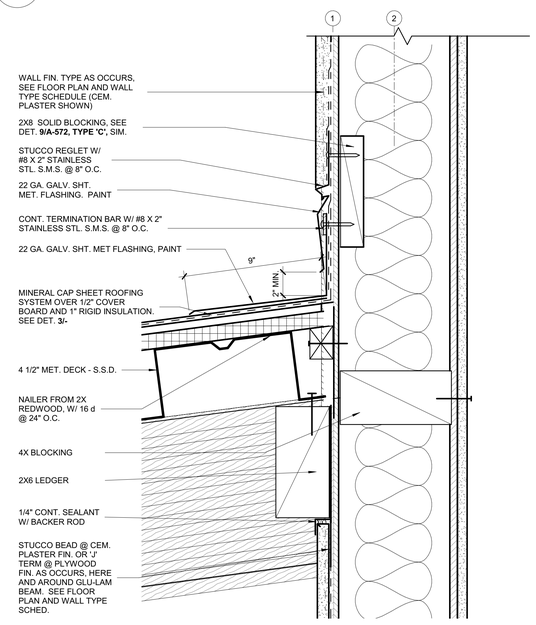
11 DOWNSPOUT TRANSITION

SCALE: 3" = 1'-0"



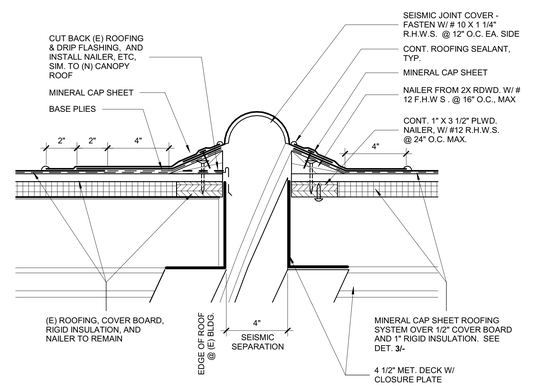
9 GUTTER AT NORTH CANOPY

SCALE: 3" = 1'-0"



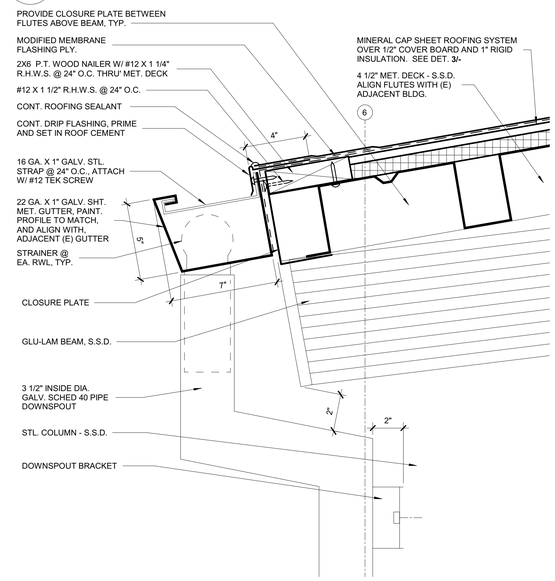
8 FLASHING - CANOPY TO EXTERIOR WALL

SCALE: 3" = 1'-0"



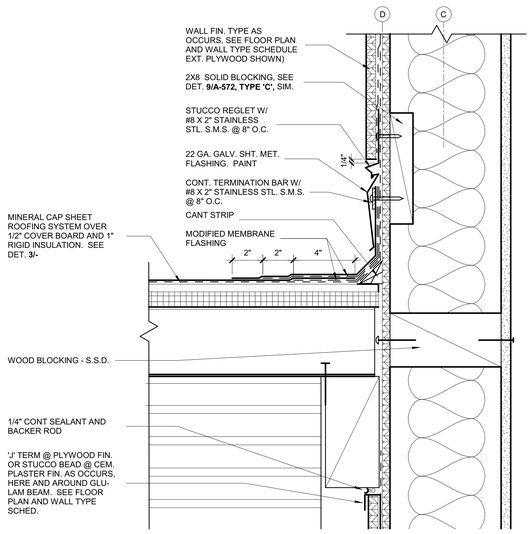
7 SEISMIC JOINT BETWEEN (N) AND (E) CANOPIES

SCALE: 3" = 1'-0"



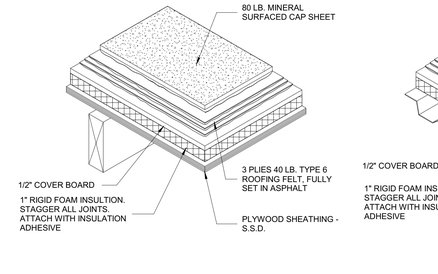
6 GUTTER @ SOUTH CANOPY

SCALE: 3" = 1'-0"



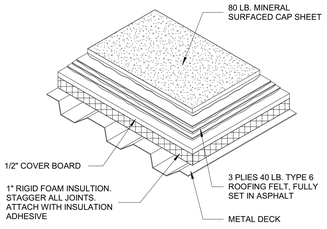
5 FLASHING - CANOPY TO EXTERIOR WALL2

SCALE: 3" = 1'-0"



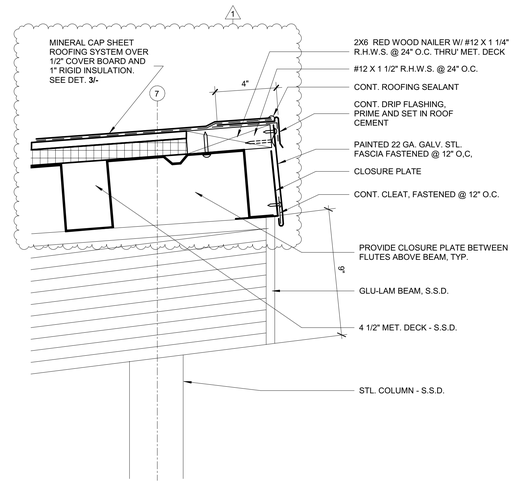
4 ROOFING ASEMBLY @ BUILDING

SCALE: 3" = 1'-0"



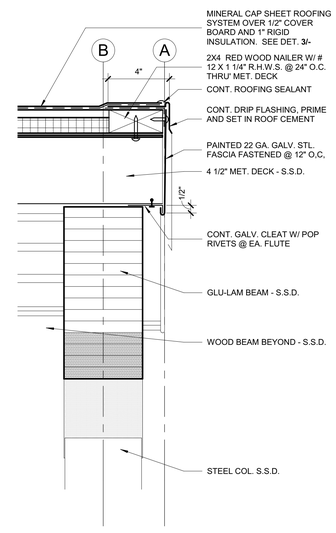
3 ROOFING ASSEMBLY @ CANOPY

SCALE: 3" = 1'-0"



2 TYP. CANOPY ROOF HIGH EDGE

SCALE: 3" = 1'-0"



1 EDGE @ NORTH CANOPY

SCALE: 3" = 1'-0"

San Rafael City Schools

Glenwood Elementary School
Multi-Purpose Building

25 WEST CASTLEWOOD DR.
SAN RAFAEL, CA 94901

DSA APPROVAL
ISSUED 3/06/18

REVISIONS:

REV	DATE
1	4/2/2018

FILE#: 21-39 PTN#: 65458-43

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP#: 01-116941
AC ____FLS____SS____
DATE _____

HED

417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA

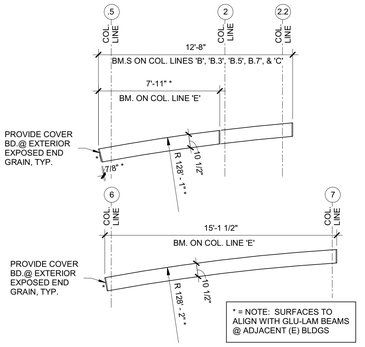
(T) 415 981 2345

www.hed.design

PROJECT NUMBER:
2016-D009

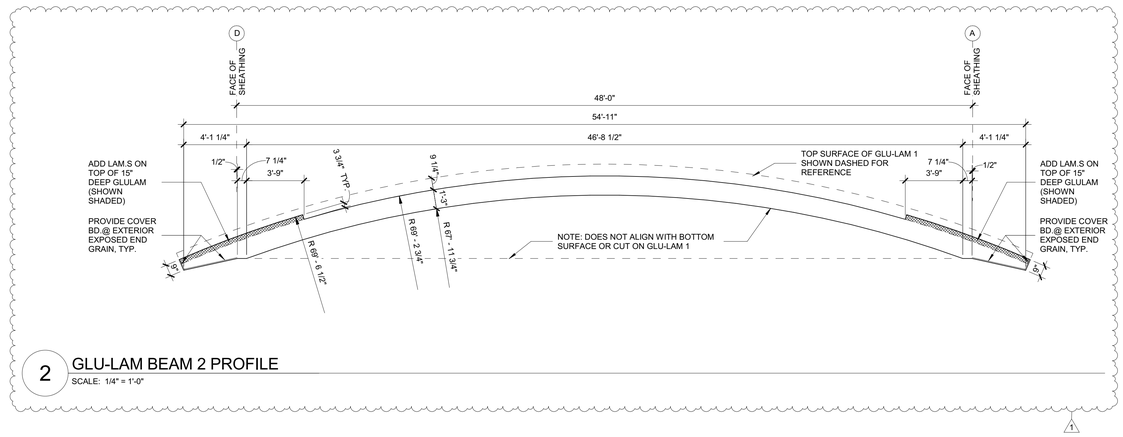
SHEET TITLE:
CANOPY/ROOF DETAILS

SHEET NO:
A-532



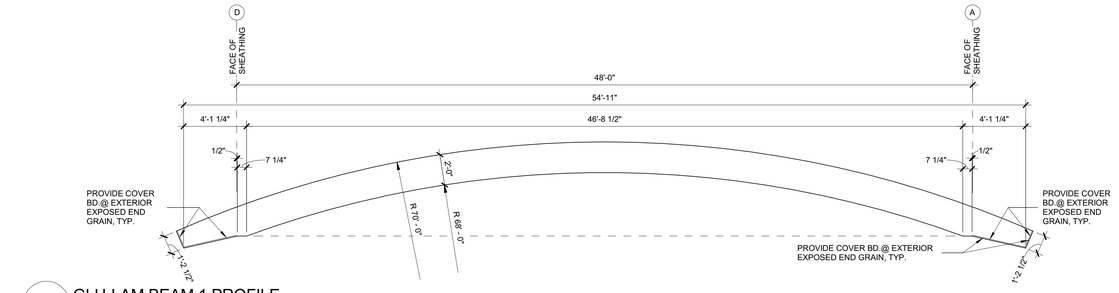
3 GLU-LAM BEAM 3 PROFILES (S.S.D.)

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



2 GLU-LAM BEAM 2 PROFILE

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



1 GLU-LAM BEAM 1 PROFILE

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

San Rafael City Schools

Glenwood Elementary School
Multi-Purpose Building

25 WEST CASTLEWOOD DR.
SAN RAFAEL, CA 94901

DSA APPROVAL
ISSUED 3/06/18

REVISIONS:

REV	DATE
1	4/2/2018

FILE#: 21-39 PTN#: 65458-43

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES

APP#: 01-116941

AC ____ FLS ____ SS ____

DATE _____

HED

417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA

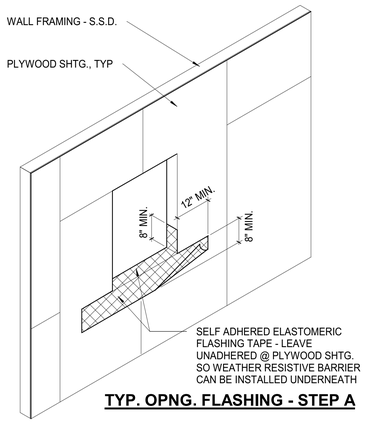
(T) 415 981 2345

www.hed.design

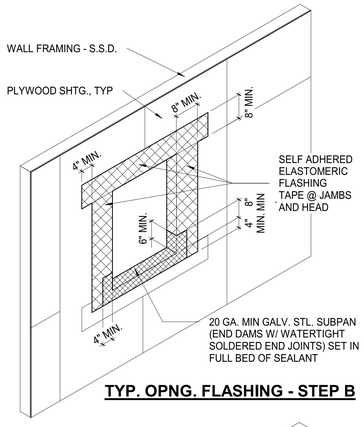
PROJECT NUMBER:
2016-D009

SHEET TITLE:
ROOF DETAILS

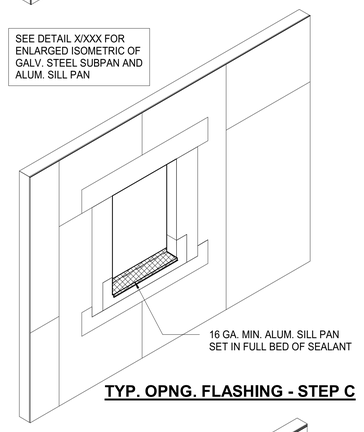
SHEET NO:
A-533



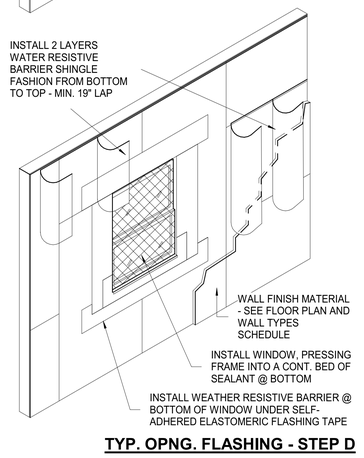
TYP. OPNG. FLASHING - STEP A



TYP. OPNG. FLASHING - STEP B

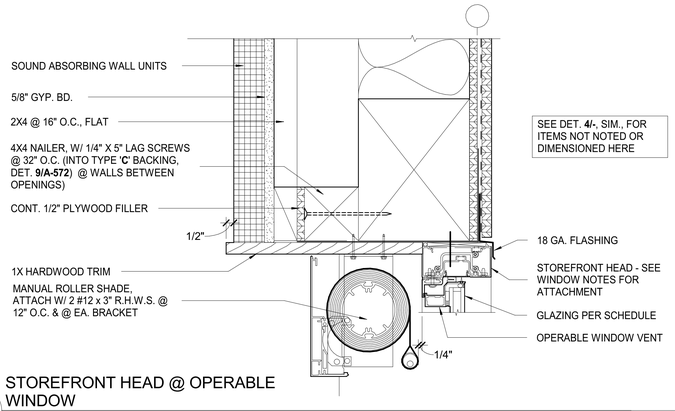


TYP. OPNG. FLASHING - STEP C

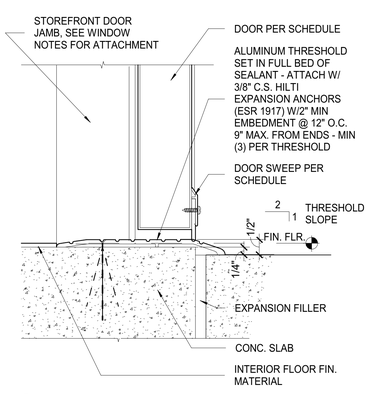


TYP. OPNG. FLASHING - STEP D

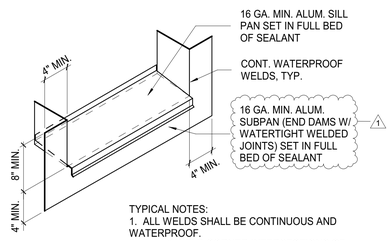
15 TYPICAL OPENING FLASHING
SCALE: 3" = 1'-0"



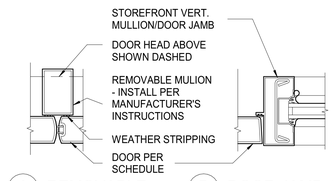
14 STOREFRONT HEAD @ OPERABLE WINDOW
SCALE: 3" = 1'-0"



13 TYP. EXTERIOR DOOR SILL
SCALE: 6" = 1'-0"

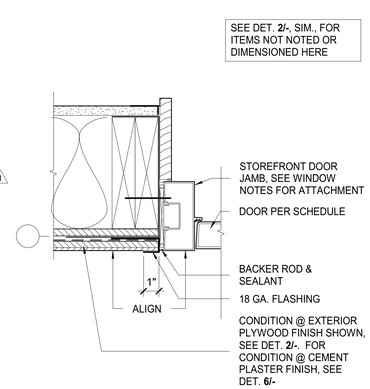


12 TYPICAL SILL PANS
SCALE: 3" = 1'-0"



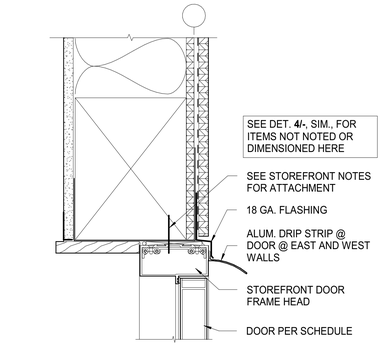
A REMOVABLE MULLION

B DOOR JAMB @ STOREFRONT

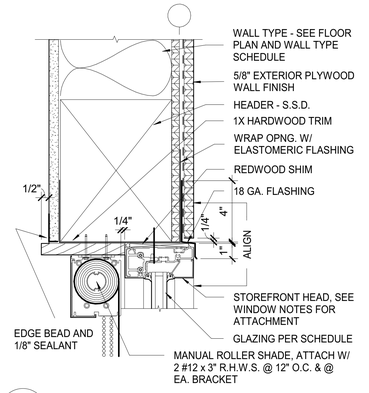


10 STOREFRONT JAMB @ POST
SCALE: 3" = 1'-0"

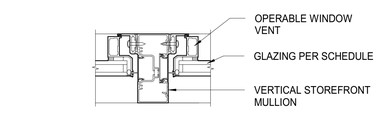
9 STOREFRONT JAMB @ DOOR
SCALE: 3" = 1'-0"



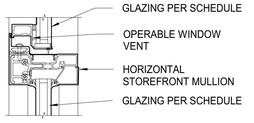
8 STOREFRONT HEAD @ DOOR
SCALE: 3" = 1'-0"



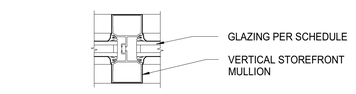
4 STOREFRONT TYP. HEAD
SCALE: 3" = 1'-0"



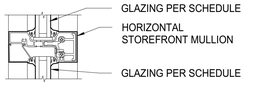
B MULLION @ OPERABLE WINDOWS



B MULLION @ OPERABLE WINDOW SILL



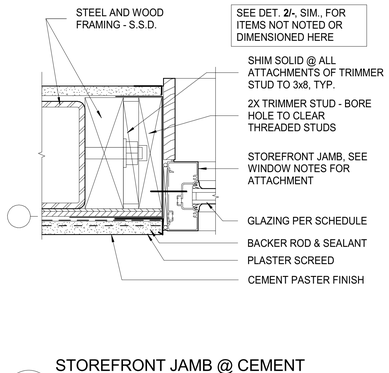
A TYPICAL MULLION



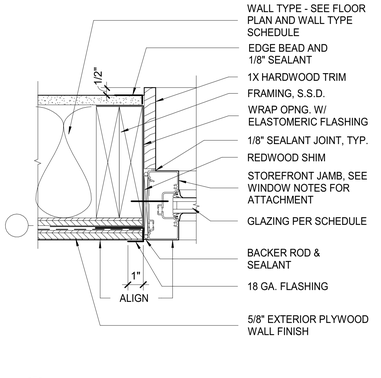
A TYPICAL MULLION

7 STOREFRONT VERT. MULLIONS
SCALE: 3" = 1'-0"

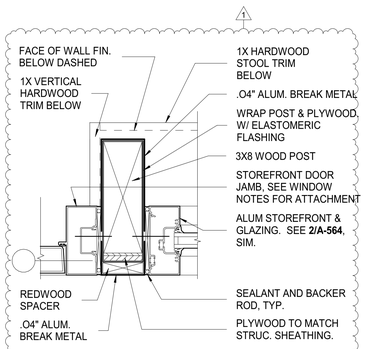
3 STOREFRONT HORIZ. MULLIONS
SCALE: 3" = 1'-0"



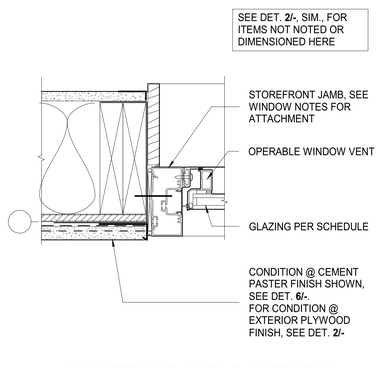
6 STOREFRONT JAMB @ CEMENT PLASTER FIN.
SCALE: 3" = 1'-0"



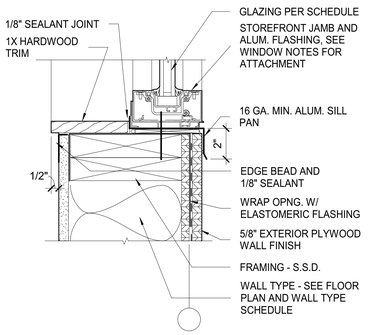
2 STOREFRONT TYP. JAMB @ PLY. FIN.
SCALE: 3" = 1'-0"



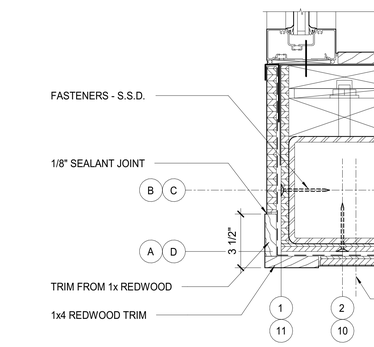
16 STOREFRONT AT POST
SCALE: 3" = 1'-0"



5 STOREFRONT JAMB @ OPERABLE WINDOW
SCALE: 3" = 1'-0"



1 STOREFRONT TYP. SILL
SCALE: 3" = 1'-0"



11 STOREFRONT JAMBS @ BLDG. CORNER
SCALE: 3" = 1'-0"

STOREFRONT SHEET NOTES

1. OVERALL DIMENSIONS SHOWN ARE NOMINAL DESIGH BIMENSIONS. FIELD VERIFY ROUGH OPENING DIMENSIONS TO DETERMINE OVERALL FABRICATION.

2 CONNECT ALUM. STOREFRONT AS FOLLOWS:

WOOD: #12 STAINLESS STEEL WOOD SCREWS @ 12" O.C. MAX., AND 6" MAX. FROM ENDS - 2 1/2" MIN. EMBED.

3. SILL PANS TO HAVE REAR VERTICAL LEG WITH END DAMS SEALED AT END TERMINATIONS. ALL SILL PANS SHALL BE FILLED WITH WATER AND TESTED TO BE WATERTIGHT PRIOR TO INSTALLATION.

4. ALL PENETRATIONS THROUGH SILL PANS SHALL BE SEALED WATERTIGHT.

5. ALL ATTACHMANTS MUST ACCOMODATE THERMAL AND DYNAMIC MOVEMENT.

6. ALL INTERUPTIONS IN FLASHINGS MUST BE SEALED.

7. EXTERIOR AND INTERIOR WINDOW PERIMETER SEALS SHALL BE CONTINUOUS AND IN THE SAME PLANE.

San Rafael City Schools

Glenwood Elementary School
Multi-Purpose Building

25 WEST CASTLEWOOD DR.
SAN RAFAEL, CA 94901

DSA APPROVAL
ISSUED 3/06/18

REVISIONS:

REV	DATE
1	4/2/2018

FILE#: 21-39 PTN#: 65458-43

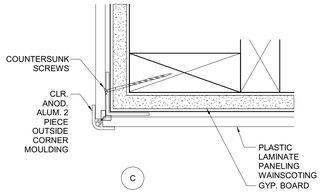
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP#: 01-116941
AC____FLS____SS____
DATE_____

HED
417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA
(T) 415 981 2345
www.hed.design

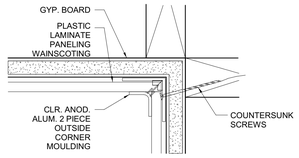
PROJECT NUMBER:
2016-D009

SHEET TITLE:
EXTERIOR ALUM. FRAMED STOREFRONT DETAILS

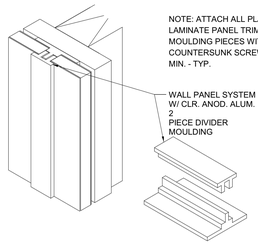
SHEET NO:
A-564

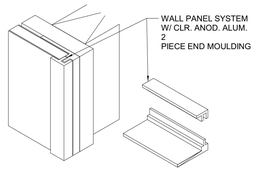


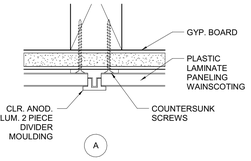
P-LAM PANELING @ OUTSIDE CORNER MOULDING



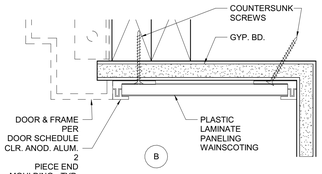
P-LAM PANELING @ INSIDE CORNER MOULDING







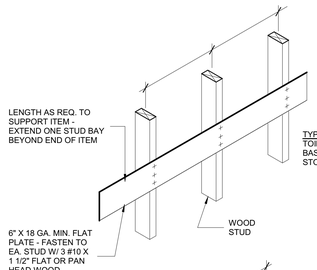
P-LAM. PANELING @ DIVIDER MOULDING

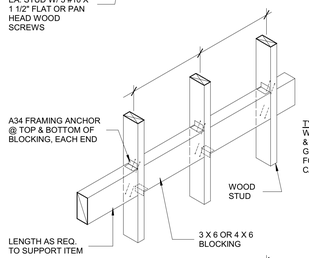


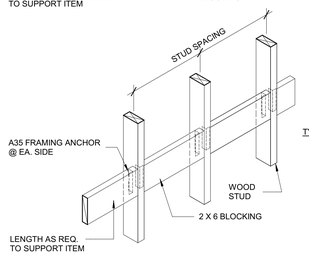
P-LAM. PANELING @ END MOULDING

13 TYP P-LAM PANELING DIVIDER MOULDING

SCALE: 6" = 1'-0"

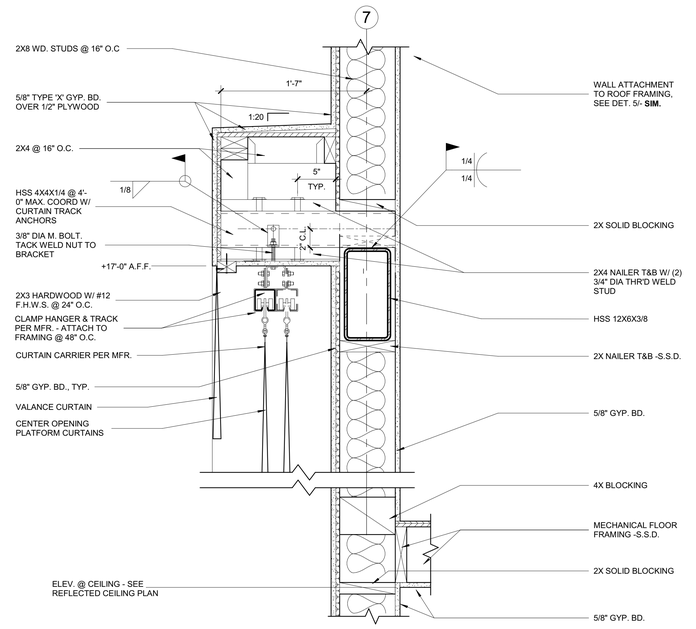






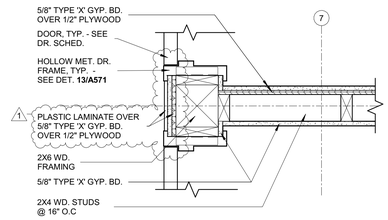
9 TYPICAL BACKING SCHEDULE

SCALE: 1" = 1'-0"



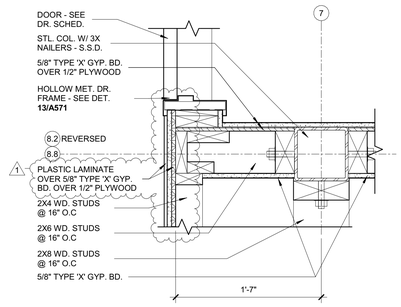
6 HEAD @ CURTAIN RECESS

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



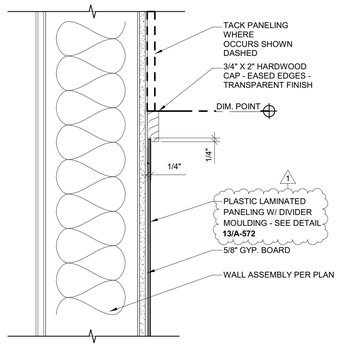
4 PLATFORM DOOR MEETING JAMBS

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



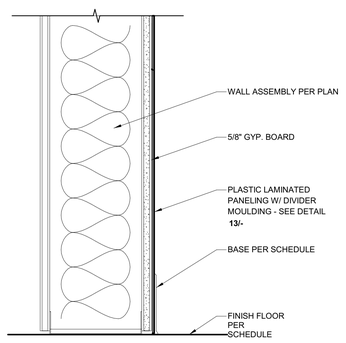
3 PLATFORM DOOR JAMB

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



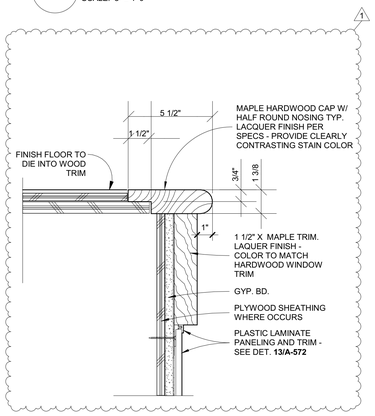
12 TYPICAL P-LAM PANELING AT WOOD CAP

SCALE: 3" = 1'-0"



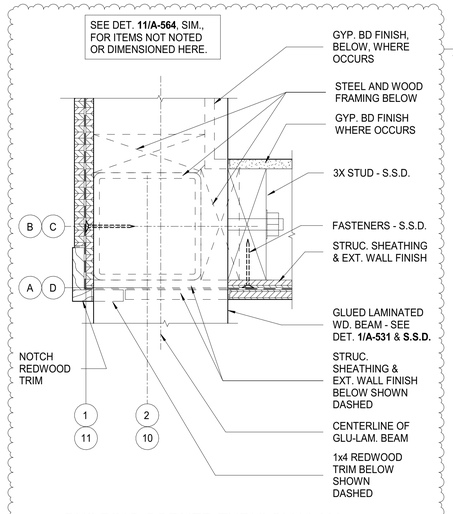
11 TYPICAL P-LAM PANELING WALL BASE

SCALE: 3" = 1'-0"



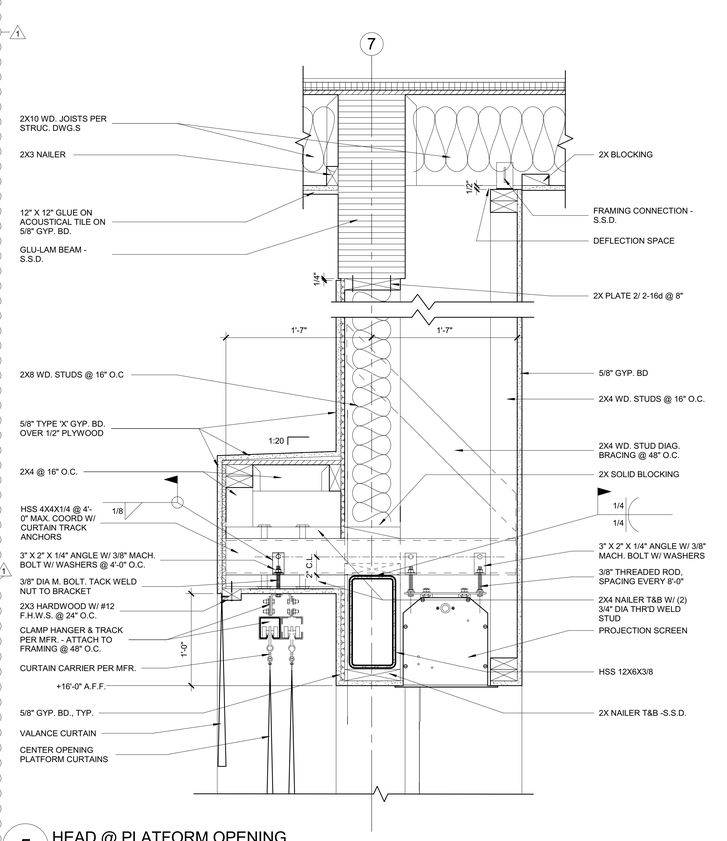
10 PLATFORM NOSING

SCALE: 3" = 1'-0"



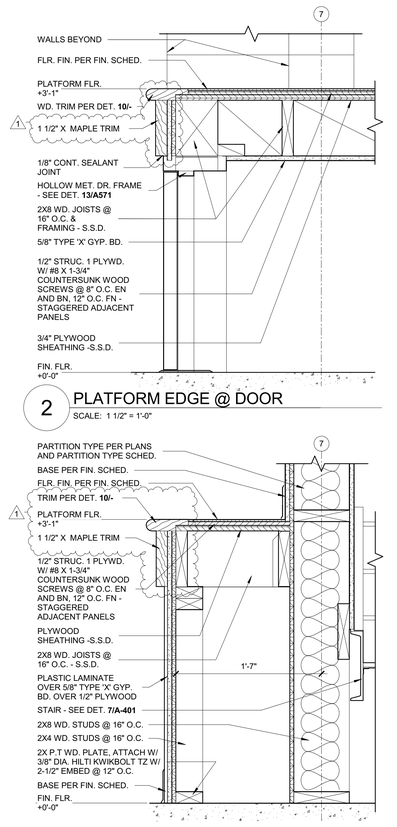
8 BUILDING CORNER THRU' GLU-LAM BEAM

SCALE: 3" = 1'-0"



5 HEAD @ PLATFORM OPENING

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



2 PLATFORM EDGE @ DOOR

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

1 PLATFORM EDGE @ CURTAIN RECESS

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

San Rafael City Schools

Glenwood Elementary School
Multi-Purpose Building

25 WEST CASTLEWOOD DR.
SAN RAFAEL, CA 94901

DSA APPROVAL
ISSUED 3/06/18

REVISIONS:

REV	DATE
1	4/2/2018

FILE#: 21-39 PTN#: 65458-43

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES

APP#: 01-116941

AC____FLS____SS____

DATE _____

HED

417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA

(T) 415 981 2345

www.hed.design

PROJECT NUMBER:
2016-D009

SHEET TITLE:
INTERIOR FRAMING DETAILS

SHEET NO:
A-572

DOOR & FINISH SCHEDULE ABBREVIATIONS

ACT	ACOUSTICAL CEILING TILE
ALUM	ALUMINUM
CBU	CEMENTITOUS BACKER UNIT
CONC	CONCRETE
CT	CERAMIC TILE
DAAC	DIRECT-APPLIED ACOUSTICAL CEILING
EPY	EPOXY
EXT	EXTERIOR
FIN	FINISH
FF	FACTORY FINISH
GLZ	GLAZING
GWB	GYPSUM WALL BOARD
HM	HOLLOW METAL
HDBD	HARDBOARD
INT	INTERIOR
IRGB	IMPACT RESISTANT GWB
MATL	MATERIAL
MD	METAL DECK
MRGB	MOISTURE RESISTANT GWB
NA	NOT APPLICABLE
P	PAINT
PH	PANIC HARDWARE
PL	PLASTER
PR	PAIR
RB	RUBBER BASE
RM	ROOM
SCWD	SOLID CORE WOOD DOOR
SAGB	SOUND ATTENUATING GWB
SLR	SEALER
SS	STAINLESS STEEL
ST	STAIN
STL	STEEL
SV	SHEET VINYL
SSV	SPORT SHEET VINYL
THK	THICKNESS
VCT	VINYL COMPOSITION TILE
WCT	WAINSCOT
WD	WOOD
XCP	EXTERIOR CEMENT PLASTER

GLAZING SCHEDULE

GT1 - CLEAR FLOAT GLASS

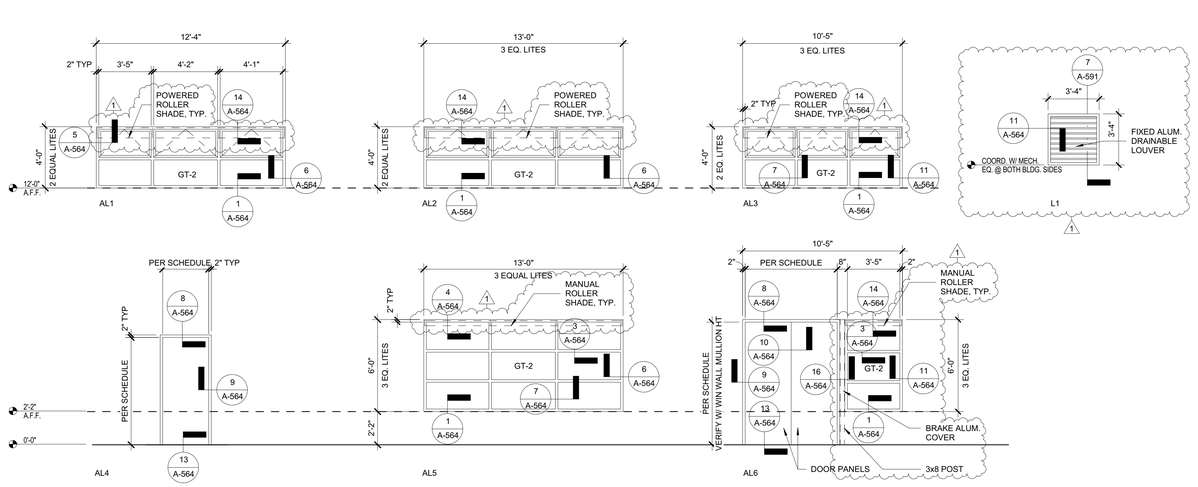
GT2 - INSULATING GLASS

Room Finish Schedule

Number	Name	Finish Floor	Wall Finish North	Wall Finish East	Wall Finish South	Wall Finish West	Ceiling Finish	Comments
1	MULTIPURPOSE ROOM	SSV	GWB/WCT	GWB/WCT	GWB/WCT	GWB/WCT	ACT	PAINT AT GWB FINISH
2	STAIR	SSV/WD	GWB	GWB	GWB	GWB	GWB	PAINT AT GWB FINISH, STAIRS TO BE MAPLE HARDWOOD
3	STORAGE	CONC	GWB	GWB	GWB	GWB	GWB	PAINT AT GWB FINISH
4	CHAIR STOR.	CONC	GWB	GWB	GWB	GWB	GWB	PAINT AT GWB FINISH
5	CHAIR STOR.	CONC	GWB	GWB	GWB	GWB	GWB	PAINT AT GWB FINISH
6	CHAIR STOR.	CONC	GWB	GWB	GWB	GWB	GWB	PAINT AT GWB FINISH
7	STAIR & LIFT	SSV/WD	GWB	GWB	GWB	GWB	GWB	PAINT AT GWB FINISH, STAIRS TO BE MAPLE HARDWOOD
8	STOR.	CONC	GWB	GWB	GWB	GWB	GWB	PAINT AT GWB FINISH
9	PLATFORM	HDBD	GWB	GWB	GWB	GWB	ACT	PAINT AT GWB FINISH
10	STORAGE	HDBD	GWB	GWB	GWB	GWB	GWB	PAINT AT GWB FINISH
11	RISER	CONC	GWB	GWB	GWB	GWB	GWB	PAINT AT GWB FINISH
20	BOYS RESTROOM	NA	NA	NA	NA	NA	NA	REPLACE CERAMIC TILE WALL FINISH TO MATCH EXISTING WHERE FIXTURES/ACCESSORIES ARE RELOCATED
21	GIRLS RESTROOM	NA	NA	NA	NA	NA	NA	REPLACE CERAMIC TILE WALL FINISH TO MATCH EXISTING WHERE FIXTURES/ACCESSORIES ARE RELOCATED
22	CLOSET	NA	NA	NA	NA	NA	NA	
23	STAFF RESTROOM	NA	NA	NA	NA	NA	NA	REPLACE CERAMIC TILE WALL FINISH TO MATCH EXISTING WHERE FIXTURES/ACCESSORIES ARE RELOCATED

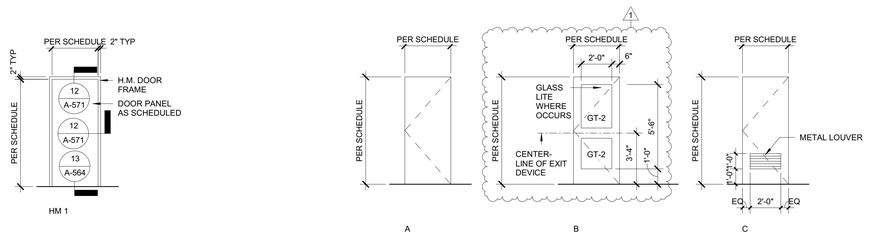
DOOR SCHEDULE

NO.	DOOR WIDTH	DOOR HEIGHT	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	HARDWARE SET	HARDWARE PH	FIRE RATIING	REMARKS
1A	6'-0"	8'-0"	B	ALUM	FF	AL6	ALUM	FF	1			
1B	6'-0"	8'-0"	B	ALUM	FF	AL6	ALUM	FF	1A			
1C	6'-0"	8'-0"	B	ALUM	FF	AL6	ALUM	FF	1			
1D	6'-0"	8'-0"	B	ALUM	FF	AL6	ALUM	FF	1			
3	3'-0"	7'-0"	A	H.M.	P	HM1	H.M.	FF	2		60	
3A	3'-0"	7'-0"	A	H.M.	P	HM1	H.M.	P	2			
4	7'-0"	2'-2"	A	H.M.	P	HM1	H.M.	P	4		45	
5	7'-0"	2'-2"	A	H.M.	P	HM1	H.M.	P	4		45	
6	7'-0"	2'-2"	A	H.M.	P	HM1	H.M.	P	4		45	
8	3'-0"	7'-0"	A	H.M.	P	HM1	H.M.	P	2			
10	6'-0"	7'-0"	A	H.M.	P	HM1	H.M.	P	3			



FOR HEAD/JAMB DETAILS SEE SHEETS:
- A-564 - STOREFRONT

ALUMINUM STOREFRONT FRAME AND LOUVER TYPES



HOLLOW METAL FRAME TYPES

DOOR TYPES

San Rafael City Schools

Glenwood Elementary School
Multi-Purpose Building

25 WEST CASTLEWOOD DR.
SAN RAFAEL, CA 94901

DSA APPROVAL
ISSUED 3/06/18

REVISIONS:

REV	DATE
1	4/2/2018

FILE#: 21-39 PTN#: 65458-43

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES

APP#: 01-116941

AC ____ FLS ____ SS ____

DATE _____

HED

417 MONTGOMERY STREET
SUITE 400
SAN FRANCISCO, CALIFORNIA
94104| USA

(T) 415 981 2345

www.hed.design

PROJECT NUMBER:
2016-D009

SHEET TITLE:
DOOR AND FINISH SCHEDULE

SHEET NO:

A-601