



ADDENDUM NO. 1

Date: January 14, 2021

PROJECT: **Dry Creek New Classroom Building & Administration Building Modernization**

DISTRICT CLOVIS UNIFIED SCHOOL DISTRICT

PROJECT LOCATION: 1273 NORTH ARMSTRONG
CLOVIS, CA 93619

DSA APP. NO.: **02-118109**

FILE. NO.: **19-34**



John H. Smith
Project Architect

This Addendum forms a part of the Contract Documents. It modifies the original Project Manual and Drawings, as well as any Addendum previously issued, as noted below. Bidders are required to acknowledge receipt of this Addendum in the space provided in the proposal form. Failure to acknowledge receipt of each addendum may subject bidder to disqualification.

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CONTRACT DOCUMENTS

- Item No. 1-01 DSA Approved plans and Specifications, were issued to bidders by the Construction Manager, Harris Construction, on January 4, 2021. These were issued to all bidders prior to this addendum. The subject documents remain unchanged from what was issued to bidders prior to this Addendum #1. All changes in the DSA approved drawings and specifications are reflected in this this Addendum #1 and any forthcoming addenda. Bidders shall only bid the DSA Approved Drawings and Specifications, Addendum #1 and any forthcoming addenda.
- Item No. 1-02 Hazardous Material Survey was issued to bidders by the Construction Manager, Harris Construction, on January 4, 2021. These subject documents were issued to all bidders prior to this Addendum #1. The subject documents remain `unchanged from what was issued to bidders prior to this Addendum #1.
- Item No. 1-03 Job Walk #1 Sign-In Sheets, 12/29/2020 was issued to bidders by the Construction Manager, Harris Construction, on January 4, 2021. These subject documents were issued to all bidders prior to this Addendum #1. These subject documents remain unchanged from what was issued to bidders prior to this Addendum #1.
- Item No. 1-04 Summary of Work for Bid Packages DC-01 thru DC-13 was issued to bidders by the Construction Manager, Harris Construction, on January 4, 2021. These subject documents were issued to all bidders prior to this Addendum #1. These subject documents are being revised in this Addendum #1.
- Item No. 1-05 Job Walk #2 Sign-In Sheets, 1/5/2021 was issued to bidders by the Construction Manager, Harris Construction, on January 4, 2021. These subject documents were issued to all bidders prior to this Addendum #1. These subject documents remain unchanged from what
- Item No. 1-06 The last day to turn in Pre-Bid RFI's and Substitutions will be **Wednesday 1/13/2021 by 4:00 pm.** Any RFI's and Substitutions submitted after this time will not be answered prior to bid.
- Item No. 1-07 Revised Scope of Work
- Item No. 1-08 Baseline Schedule
- Item No. 1-09 Site Access Plan
- Item No. 1-10 Pre-Bid RFIs Partial Responses.

SPECIFICATIONS

Item No. 1-11

Added Specifications Sections:

06 61 19	Quartz Surfacing Fabrications
07 42 43	Composite Panels
08 41 13	Aluminum-Framed Entrances and Storefronts
08 44 13	Glazed Aluminum Curtain Walls
09 30 13	Ceramic Tile
09 54 27	Specialty Ceiling
09 72 16	Dry Erase Wallcoverings
31 31 00	Soil Sterilization
32 15 40	Crushed Stone Surfacing
32 31 00	Ornamental Fencing
32 31 13	Chain Link Fencing

Item No. 1-12

Replaced Specifications Sections:

23 00 01	23 00 01 Heating, Ventilating and Air Conditioning
23 09 23	Direct Digital Control and Energy Management System

DRAWINGS

ARCHITECTURAL

Item No. 1-13

In Sheets AM6.20, AM6.21, AM6.22, AM6.23, replace all "Sheet Metal Fascia Panel" & "Sheet Metal Soffit Panel" keynotes to be "Composite Panels."

Item No. 1-14

Refer to attached Addendum Drawing AD1-A01. This drawing adds a reference detail in **Detail 2 on Sheet G0.2**. **Detail 6** is provided for fascia demo.

Item No. 1-15

Refer to attached Addendum Drawing AD1-A02. In Building A Partial Floor Plan #2 - Room A110 Data room, change the door direction as shown clouded. In Exterior Elevation #3, add (2) detail References as shown clouded. Modify the Building 'A' top of Roof as shown clouded.

Item No. 1-16

Refer to attached Addendum Drawing AD1-A03, detail 10 is provided.

Item No. 1-17

Refer to attached Addendum Drawing AD1-A04, detail 11 is provided.

Item No. 1-18

Refer to attached Addendum Drawing AD1-A05. This drawing replaces **Sheet A9.10** and is modified as follows: updated Door Schedules.

STRUCTURAL

- Item No. 1-19 Refer to attached Addendum Drawing AD1-S01. This drawing provides the attachment detail for the Bell mounting in Building A.
- Item No. 1-20 Refer to attached Addendum Drawing AD1- S02. This drawing replaces **Detail 5 on Sheet SM6.19.**

MECHANICAL

- Item No. 1-21 Refer to attached Addendum Drawing AD1-M01. These drawing replaced **Sheet MA2.10** and is modified as follows: Revised sheet notes. Revised notes describing EMS integration with existing EMS controls. Added a note regarding existing EMS router in Admin building that controls north campus buildings. EMS control will need to be maintained. Added mounting detail reference and EMS detail reference to ERV-1. Added EMS control interface, IDU-8 Thermostat, EMS control to IDU-8 in data room.
- Item No. 1-22 Refer to attached Addendum Drawing AD1-M02. These drawing replaced **Sheet MM2.10** and is modified as follows: Added EF-3 to plans, with 6" round duct to grille in Janitor Closet. Added IDU-9 Thermostat, EMS control to IDU-9 in electrical room. Added CO2 sensors to classrooms for DCV.
- Item No. 1-23 Refer to attached Addendum Drawing AD1-M03. These drawing replaced **Sheet MM3.10** and is modified as follows: Added EF-3 to roof plan.
- Item No. 1-24 Refer to attached Addendum Drawing AD1-M04. These drawing replaced **Sheet M6.10** and is modified as follows: Revised packaged air conditioning unit schedule. Revised notes for IDU, ODU, Packaged units and ERV schedules.
- Item No. 1-25 Refer to attached Addendum Drawing AD1-M05. **Sheet M6.12** is a new sheet of EMS details for ERV, Packaged unit, split system and exhaust fan.

ELECTRICAL

- Item No. 1-26 Refer to a Drawings EX.02, E0.1, and E0.2. Delete the requirements for providing new power to the Temporary Admin Portable. Remove the Panel 'PB' and transformer as shown on demolition and deliver all equipment to the District.
- Item No. 1-27 Refer to Drawing E0.1. Delete the requirements, under Key Note 19, for removing the canopy lights and wiring. The covered walkway canopy will remain. Reconnect these lights to the controlled lighting circuit for Building 'A exterior lighting.

Item No. 1-28 Refer to Drawing E0.3. Delete the requirements, under Key Note, for removing and replacing the existing surface wiring on the canopy. The covered walkway canopy will remain.

Item No. 1-29 Refer to Drawing E0.4.

1. Locate the relocated Fire Alarm Control Panel, under Key Note 1, to the available space on the west wall of Building 'D' MDF room.
2. Locate the relocated PA Rack, under Key Note 6, to on the right side of the existing data racks in Building 'D' MDF room. Provide a flexible cable loop for the PA cabling to allow for moving the PA rack for servicing the data racks.

Item No. 1-30 Refer to Drawings EA3.10 and EM3.10

1. Provide door contact provisions for all exterior doors with a 1/2" conduit to accessible ceiling spaces. Coordinate with the Districts Access / Security provider.

END



December 23, 2020

Asbestos & Lead Survey Report

**Clovis Unified School District
Dry Creek Elementary School
1273 N. Armstrong Avenue
Clovis, CA 93619**

Prepared for:

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FACS Project #PJ61672

Contents

List of Acronyms	2
Executive Summary	3
Introduction.....	2
Scope of Work	2
Site Characterization	2
Survey Methods	4
Regulations	6
Findings and Recommendations	9
Limitations.....	9

**Appendix A: Asbestos Survey Summary Table,
Asbestos Chain-of-Custody and Laboratory Results
Report**

**Appendix B: Lead Sample Chain-of-Custody, Laboratory
Results Report, XRF Form and CDPH 8552 Form**

Appendix C: Site Photos and Sample Location Drawings

**Appendix D: Certifications of Personnel and
Laboratories**

List of Acronyms

ACCM	Asbestos Containing Construction Material
ACM	Asbestos Containing Material
AHERA	Asbestos Hazard Emergency Response Act
AIHA	American Industrial Hygiene Association
CAC	California - Certified Asbestos Consultant
Cal/OSHA	California Occupational Safety and Health Association
CCR	Code of California Regulations
CFR	Code of Federal Regulation
DOSH	Department of Occupational Safety and Health
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency (EPA)
FACS	Forensic Analytical Consulting Services, Inc.
FALI	Forensic Analytical Laboratories, Inc.
ND	None Detected
NESHAP	National Emissions Standard Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Science and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
PLM	Polarized Light Microscopy
TEM	Transmission Electron Microscopy
TTLC	Total Threshold Limit Concentration

Executive Summary

Forensic Analytical Consulting Services, Inc. (FACS) was retained by the Clovis Unified School District to perform an asbestos and lead paint survey at the Administration and various portable classrooms of Dry Creek Elementary School, located at 1237 North Armstrong Avenue in Clovis, California. The survey included any suspect asbestos-containing materials (ACM) and suspect paints and coatings which may be disturbed during the upcoming modernization project at the site. A summary list of suspect asbestos-containing materials which were identified and sampled is included in Appendix A of this report. A table reporting suspect lead-containing paints or coatings which were identified and tested in the structure is included in Appendix B of this report. The survey was performed on December 14 and 15, 2020.

Asbestos

All materials sampled during this inspection were identified to not contain asbestos by laboratory analysis.

Please refer to the asbestos survey summary table in Appendix A of this report for identification of all suspect materials sampled and analyzed during this survey. Any suspect materials not included in this inspection must be assumed to be asbestos-containing materials until tested and proven not to contain asbestos.

Lead

The following paints did not contain lead above the laboratory's reporting limit. These paints may be handled as "lead-free" by any personnel:

- Off-White Paint on P46 Wood Siding
- Grey Paint on P39 Metal Door Frame
- Off-White Paint on Building A Stucco Overhang
- White Paint on Building A Drywall Wall

All other paints were found to be lead-containing by XRF analysis.

See attached XRF Report Form for locations of all paints and coatings tested during this survey.

FACS recommends that the results of this report be incorporated into any renovation plans provided for this project for informational purposes.

Introduction

Forensic Analytical Consulting Services, Inc. (FACS) was retained by the Clovis Unified School District to perform an asbestos and lead paint survey at the Administration and various portable classrooms of Dry Creek Elementary School, located at 1237 North Armstrong Avenue in Clovis, California. The survey included any suspect asbestos-containing materials (ACM) and suspect paints and coatings which may be disturbed during the upcoming modernization project at the site. The survey was performed on December 14 and 15, 2020.

Scope of Work

The purpose of this survey was to identify asbestos-containing materials (ACMs) and paints and coatings which may be disturbed during the upcoming modernization of the Administration Building and demolition of various portable classrooms for a new classroom building. The visual inspection, bulk sampling, and survey documentation were performed by Eric Farnsworth and John Lopez. Mr. Farnsworth is a Division of Occupational Safety and Health (DOSH) Certified Asbestos Consultant (CAC #19-6643) and California Department of Public Health (CDPH) Certified Lead Inspector/Risk Assessor (I/RA #LRC-00005578). Mr. Lopez is a DOSH Certified Site Surveillance Technician (CSST #10-6823) and CDPH Certified Lead Sampling Technician (#LRC-00006029). Technical oversight of the survey and this report was provided by Chris Chipponeri, who is a DOSH Certified Asbestos Consultant (CAC #10-4633) and CDPH Certified Lead Inspector/Risk Assessor (I/RA #LRC-00000782). The scope of the survey and the services provided by FACS included:

- Performing a visual inspection of the structure to identify accessible suspect asbestos-containing materials (ACMs) and lead-containing paints and coatings that will be disturbed during the planned project;
- Collection of bulk samples for asbestos analysis by polarized light microscopy (PLM);
- Performance of a lead paint inspection using a Niton X-Ray Fluorescence Spectrum Analyzer (XRF) of paints and coatings at the site;
- Collection of verification paint chip samples for lead analysis using atomic absorption spectrometry;
- Ensuring the technical quality of all work by using Asbestos Hazard Emergency Response Act (AHERA) accredited Building Inspectors;
- Ensuring the technical quality of all work by using California Department of Public Health (CDPH) Certified Lead Sampling Technicians and Inspector/Risk Assessors;
- Consolidating data and findings into a report format.

Site Characterization

Building A (Administration) and the Portable Classroom Buildings at Dry Creek Elementary School are typical construction for a school site. The buildings contain a variety of common suspect building materials including carpet, vinyl floor tiles, vinyl baseboards, drywall, 2'x4' false ceiling panels, brick and mortar, and concrete. All paints and coatings associated with the building are suspect to contain lead and were included in this survey.

Survey Methods

Document Review

Previous documentation was reviewed prior to the inspection because past surveys have been completed at this site. No data from previous projects was used as it did not apply to existing site conditions and areas included in this survey. The extent of the planned project was provided by Rick Lawson of Construction Services for Clovis Unified School District. Drawings provided by SIM-PBK were also reviewed to identify the upcoming project scope of work.

Visual Inspection

Accessible building materials were visually inspected using the methods presented in the Federal AHERA regulations (40 CFR, Part 763). AHERA inspection methodology is required to be used for inspections of K-12 schools and is generally accepted as the industry standard for all ACM inspections regardless of structure or facility type. Suspect ACMs were also physically assessed for friability, condition and possible disturbance factors.

All areas were accessible during this inspection.

Asbestos Inspection

Bulk Sample Collection

Bulk samples of identified homogeneous materials were collected in building areas that may be impacted by the planned renovation/demolition activities. Samples were collected of each separate homogeneous area. A homogeneous area is defined as a surfacing material, thermal system insulation, or miscellaneous material that is uniform in use, color and texture. Examples of homogeneous areas could include:

- Vinyl floor tiles
- False ceiling panels
- Drywall with joint compound
- Vinyl sheet flooring

The specific number of samples collected was determined by using the methods required by the Federal AHERA regulations (40 CFR, Part 763.86) as noted below:

- 1) For Surfacing Material:
 - 1,000 ft² or less - collect 3 samples
 - 1,001 to 5,000 ft² - collect 5 samples
 - 5,001 ft² or greater - collect 7 samples
- 2) For Thermal System Insulation:
 - "In a randomly distributed manner" - collect 3 samples
 - 6 linear feet of patching or less - collect 1 sample
 - cementitious pipe fittings - "In a manner sufficient to determine"
- 3) For all Miscellaneous Material:
 - Collect samples "In a manner sufficient to determine whether material is ACM (asbestos-containing material) or not ACM..."

The suspect ACMs were sampled using a knife, chisel, scraper, drill or other similar coring device suitable to the type of material sampled to cut through its entire thickness and to ensure that a cross-section of the material was obtained. The material was then placed in an appropriately labeled container that was sealed and submitted to SGS-Forensic Laboratories, Inc. for analysis. A unique sample number (e.g. PJ61672-01A) was assigned to each sample.

Bulk samples will be retained by the laboratory for one month unless otherwise instructed. After this period, the samples will be disposed of appropriately.

Bulk Sample Analysis

A total of 66 bulk samples were collected from a total of 31 suspect materials. Bulk samples were analyzed by SGS-Forensic Laboratories, Inc. (SGS-FL) in Hayward, California. SGS-FL is accredited by the California Department of Public Health (CDPH) Environmental Laboratory Accreditation Program (ELAP) and the National Institute of Science and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP). SGS-FL participates in the National Institute for Occupational Safety and Health (NIOSH) Proficiency Analytical Testing Program and has substantial experience in the analysis of asbestos.

All samples were analyzed using Polarized Light Microscopy with Dispersion Staining (PLM/DS) techniques in accordance with the methodology approved by the U.S. Environmental Protection Agency (EPA). The percentage of asbestos present in the samples was determined on the basis of a visual area estimation. The EPA defines asbestos-containing materials (ACM) as any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM). 40 CFR Part 763 identifies the lower limit of reliable quantification for asbestos using the PLM method as approximately one percent (1%) by volume. Regulations in California (CAL/OSHA Title 8 CCR 1529) define asbestos-containing construction materials (ACCM) as those materials having asbestos content of greater than one tenth of one percent (> 0.1%); therefore, for the purpose of this survey, any amount of asbestos detected will be considered positive. In addition to the percentages, the types of asbestos minerals are also reported. The PLM method is the standard method used to analyze asbestos bulk samples.

When "None Detected" (ND) appears in the laboratory results, it should be interpreted as meaning asbestos was not observed in the sample material.

Lead Inspection

The client-defined lead inspection was conducted in accordance with the CDPH Lead-Related Construction Program and modeled upon the sampling protocol described in "Chapter 7: Lead Based Paint Inspection" of the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1997 Revision).

Cal/OSHA, in Title 8 California Code of Regulations (CCR) Section 1532.1, Lead in Construction Standard which implements California Labor Code 8716-6717, regulates all construction work where an employee may be occupationally exposed to lead. Paint or materials with any detectable level of lead is considered lead-containing by Cal/OSHA.

For purposes of this report, materials containing lead shall be defined as materials that XRF testing has identified as containing a lead content at or above 0.01 mg/cm², or 0.00 mg/cm² readings which have not been confirmed with laboratory analysis of bulk samples.

XRF Testing Methodology

Surfaces and components were surveyed for lead content utilizing a portable X-ray fluorescence (XRF) analyzer, Niton Model 300 XLp, serial number 100252. The XRF analyzer contains a radioactive cadmium source which bombards tested surfaces with X-rays and gamma rays. This external energy source excites any lead atoms within the tested paint or coating, causing their atoms to emit X-ray photons with a characteristic energy profile. The instrument analyzes the emitted energy to identify and quantify the amount of lead in the tested paint or coating, with lead content reported in milligrams per square centimeter.

Testing combinations of homogeneous components in one area are representative of similar components found in other areas. During this survey, the inspector visually identified the painted or coated component to test, an XRF reading was collected, and the reading was documented in the XRF data table contained in Appendix B. For each test reading, the data table identifies the room equivalent/space designation, the tested component name, the substrate material, the sample location, paint/coating color, condition assessment, and the XRF results expressed as lead content reported in milligrams per square centimeter (mg/cm²).

Bulk Sample Methodology

XRF testing performed during this survey was used to determine which paints or coatings at the site have detectable concentrations of lead, and to determine which paints or coatings at the site are lead-based paint. Cal/OSHA does not accept XRF test results for use in determining that a paint or coating does not contain lead. Cal/OSHA requires laboratory analysis of a bulk sample to classify a paint or coating as lead-free.

During this inspection, FACS personnel collected five (5) bulk lead chip samples from materials to be impacted by renovation activities. All samples were analyzed by flame atomic absorption spectrometry. For bulk samples that were collected during this survey, samples were collected by a CDPH Lead Sampling Technician (under the direction of an Inspector/Assessor) using a knife, chisel or scraper to peel the paint from the substrate it was applied to. Samples were logged onto a chain-of-custody and shipped via FedEx to SGS - Forensic Laboratories (SGS-FL) for analysis of lead content using flame atomic absorption spectrometry (FAAS). SGS-FL is accredited by the American Industrial Hygiene Association's Environmental Lead Laboratory Accreditation Program for the analysis of bulk lead paint chip samples. Analysis results are expressed as percent lead content by weight. Paints or coatings with a sample result listed as less than the reporting limit for the sample may be handled as not containing a detectable concentration of lead.

Regulations

Background

Asbestos is the name of a class of magnesium-silicate minerals that occur in fibrous form. Minerals that are included in this group are chrysotile, crocidolite, amosite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos. Although the chrysotile minerals are the most common type of asbestos found in the construction industry, all types of asbestos are regulated in the same manner. Asbestos has been used in more than 3,000 different building materials. Asbestos was added to building materials to: increase fire-resistance, insulate against heat, cold and sound, resist corrosion, and increase tensile strength. Common building materials that may contain asbestos include but are not limited to the following: floor tile, resilient sheet flooring, ceiling tile, mastics, roofing materials, fireproofing, acoustical treatments, wallboard, pipe and boiler insulations. Adverse health effects have been associated with the inhalation of airborne asbestos. However, asbestos fibers that are tightly bound in the building material,

may not represent an exposure hazard, unless disturbed in such a way that releases airborne fibers (i.e., cutting, drilling, sanding, and other abrasive methods).

Building Surveys

The following is a summary of some current Federal and California State regulations which contain requirements related to the performance of building surveys for asbestos. These summaries are not intended to be all inclusive and do not contain every aspect of the regulations discussed.

U.S. EPA National Emission Standard for Hazardous Air Pollutants (NESHAPs), 40 CFR Part 61

Under the NESHAPs regulation, no visible emissions are allowed during building demolition or renovation activities which involve regulated asbestos-containing materials. For this reason, all buildings must be surveyed for asbestos-containing materials prior to demolition or renovation. The EPA, CARB, and/or the local Air Quality Management District which implements EPA actions, must be notified prior to any building demolition even if no asbestos-containing materials are present.

Regulated asbestos-containing material (RACM) is defined as a) any friable material with an asbestos content of greater than one percent, or b) any non-friable material with asbestos content of greater than one percent that will, or could, become friable.

Asbestos Hazard Emergency Response Act (AHERA), 40 CFR Part 763, Subpart E

AHERA requires performance of asbestos surveys and the development of Asbestos Management Plans for all primary and secondary schools in the United States. Although this regulation applies to primary and secondary schools only, the procedures mandated under AHERA are considered the industry standard and are applied to all surveys performed by FACS unless otherwise specified by the building owner.

Worker Protection

California Assembly Bill AB3713, Health and Safety Code Division 20, Chapter 10.4, Section 25915-25924

The state of California has enacted legislation that requires building owners, employers, lessees, etc. to notify tenants, employees and contractors of the presence of asbestos in both friable and non-friable forms. In addition, preventive maintenance activities must be developed and communicated to these parties. Notification is required 15 days after the identification of ACM in the building, and annually thereafter.

Occupational Safety and Health Administration (OSHA) 29 CFR 1926.1101 and 8 CCR 1529

The Federal and State Occupational Safety and Health Administrations (OSHA) require employers to implement specific work practices which protect workers from airborne asbestos exposure.

Building materials which contain even low levels of asbestos (<1%) can potentially generate significant concentrations of airborne asbestos fibers when disturbed. Therefore, control measures should be instituted which adequately address worker health and safety during planned renovation or demolition activities involving these materials. Cal/OSHA defines asbestos-containing construction materials as those materials having greater than one tenth of one percent asbestos (>0.1%). As stated previously, there is currently no viable method to accurately quantify asbestos at this level.

Hazardous Waste

Building materials reported to contain less than one percent (<1%) of asbestos are not considered hazardous by the U.S. EPA, and hence, may not require removal and disposal prior to demolition or renovation. Regulations may vary, however, between regional air quality management districts and/or other state agencies responsible for implementing EPA's rules. Therefore, local agencies should be contacted for specific ACM definitions and handling requirements. Cal/OSHA may also require special packaging and labeling on containers with asbestos-containing construction materials.

Composite sampling, which may potentially reduce the total asbestos content of the material, is only permitted when sampling joint compound, tape, and gypsum wallboard according to EPA's Asbestos NESHAP Clarification Regarding Analysis of Multi-Layered Systems (40 CFR Part 61 FRL-4821-7).

Lead

Cal/OSHA Lead (8 CCR 1532.1) & CDPH (Title 17)

If existing paints or coatings will be impacted, a project should be considered regulated by Cal/OSHA as lead-related construction (8 CCR 1532.1).

A contractor who has employees that may be occupationally exposed to lead during this project must perform an initial determination regarding worker exposures to lead, which may be based on personal air monitoring at the start of the project, prior employee monitoring from the past 12 months under workplace conditions closely resembling the current project, or objective data demonstrating that exposures will not exceed the Cal/OSHA action level (30 micrograms per cubic meter of air). It is the contractor's responsibility to conduct their initial determination and comply with any relevant Cal/OSHA requirements.

Workers disturbing existing paints or coatings during a project must have lead awareness or action level training depending on the initial exposure determination and lead-safe work practices must be used. Disturbance of lead-containing paints or coatings must be performed within a contained area to prevent the spread and build-up of lead dust in order to comply with CDPH requirements. HEPA vacuums, dustless tools or shrouds, and/or intact removal of components should be employed to minimize lead dust generation and properly cleanup work areas following disturbance to lead-containing materials during a project. Waste generated during disturbance to lead-containing materials must be profiled in a hazardous waste determination to ascertain proper disposal requirements.

If the initial determination or initial exposure monitoring shows that workers impacting lead can be expected to be or are shown to be exposed to lead above the Cal/OSHA permissible exposure level (50 micrograms per cubic meter of air) workers and supervisors must have the requisite training and CDPH lead worker or supervisor certification.

EPA Renovation, Repair and Painting Rule

The EPA's Renovation, Repair, and Painting (RRP) rule applies to disturbance of lead-based paints at residential units and child-occupied facilities constructed before 1978. In the context of the RRP rule, child-occupied facility is defined as being visited by the same child under the age of 6 on two or more days per week for at least 3 hours per visit with a cumulative annual total of 60 hours.

No lead-based paints were found during the inspection. Therefore, the US EPA RRP rule does not apply and this project would not be regulated by this rule.

Findings and Recommendations

Forensic Analytical Consulting Services, Inc. (FACS) was retained by the Clovis Unified School District to perform an asbestos and lead paint survey at Dry Creek Elementary School, located at 1237 North Armstrong Avenue in Clovis, California. This survey was performed in preparation for modernization of the Administration Building and construction of a new classroom building.

Asbestos

All materials sampled during this inspection were identified to not contain asbestos by laboratory analysis.

Please refer to the asbestos survey summary table in Appendix A of this report for identification of all suspect materials sampled and analyzed during this survey. Any suspect materials not included in this inspection must be assumed to be asbestos-containing materials until tested and proven not to contain asbestos.

Lead

The following paints did not contain lead above the laboratory's reporting limit. These paints may be handled as "lead-free" by any personnel:

- Off-White Paint on P46 Wood Siding
- Grey Paint on P39 Metal Door Frame
- Off-White Paint on Building A Stucco Overhang
- White Paint on Building A Drywall Wall

All other paints were found to be lead-containing by XRF analysis.

See attached XRF Report Form for locations of all paints and coatings tested during this survey.

If existing paints or coatings will be impacted, a project should be considered regulated by Cal/OSHA as lead-related construction (8 CCR 1532.1). Workers that impact paints containing any detectable amount of lead must use lead-safe practices and have valid training for the method of impact to comply with Cal/OSHA, 8 CCR 1532.1. In addition, if more than 100 square feet of lead-based paint may be disturbed as part of demolition activities, a notification must be filed with the local Cal/OSHA office at least 24 hours prior to the work disturbing lead-based paints.

To comply with CDPH requirements, any disturbance to paints or coatings that contain lead must be completed within a contained area to prevent the creation of a lead hazard. To comply with California Department of Toxic Substance Control and Title 22 requirements, any waste streams containing lead must be profiled prior to disposal. Please see the Regulations section above for additional regulatory compliance considerations.

FACS recommends that the results of this report be incorporated into any renovation plans provided for this project for informational purposes.

Limitations

This investigation is limited to the conditions and practices observed, and information made available to FACS. The methods, conclusions and recommendations provided are based on FACS' judgment, expertise and the standard of practice for professional service. They are subject to the limitations and variability inherent in the methodology employed. As with all environmental investigations, this

investigation is limited to the defined scope and does not purport to set forth all hazards, nor indicate that other hazards do not exist.

Please do not hesitate to contact our office at 559-436-0277 with any questions or concerns. Thank you for the opportunity to assist the Clovis Unified School District with promoting worker safety and a healthy environment.

Respectfully,
FORENSIC ANALYTICAL



Eric Farnsworth
Project Manager, Fresno
Cal/OSHA CAC #19-6643
CDPH I/RA #LRC-00005578

Reviewed by:
FORENSIC ANALYTICAL



Chris Chipponeri
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Cal/OSHA CAC #10-4633
CDPH I/RA #LRC-00000782

Appendix A

Asbestos Survey Summary Table, Asbestos Sample Chain-of-Custody and Laboratory Results Report

Asbestos Survey Summary (Lab Report # B311513)
CUSD – Dry Creek ES, 1273 N. Armstrong Avenue, Clovis, California
 Survey Date: December 14, 2020

Sample Numbers	Material Description	Location of Material	Material Number	Asbestos Content (percent)	Asbestos NESHAP Category	Approx. Quantity
01A	Carpet (Blue) with Glue	P39	01	None detect in blue carpet. None detect in yellow mastic.	NA	NA
02A	4" Vinyl Baseboard (Dark Grey) and Glue	P39, P46	02	None detect in black non-fibrous material. None detect in off-white mastic.	NA	NA
03A	Tackboard and Glue over Drywall	P39, P46, P47	03	None detect in white drywall. None detect in yellow adhesive. None detect in tan fibrous material. None detect in paint.	NA	NA
04A	2x4 False Ceiling Panel (Fiberglass)	P39, P46, P47	04	None detect in yellow fibrous material. None detect in paint.	NA	NA
05A	Carpet (Blue Tan Multi) and Glue	P46	05	None detect in blue carpet. None detect in yellow mastic.	NA	NA
06A	Walk-On Mat (Black) and Glue	P46	06	None detect in black carpet. None detect in yellow mastic.	NA	Na
07A	Carpet (Dark Blue) and Glue	P47	07	None detect in blue carpet. None detect in yellow mastic.	NA	NA
08A	4" Vinyl Baseboard (Brown) and Glue	P47	08	None detect in brown non-fibrous material. None detect in tan mastic.	NA	NA
09A	Vertical Seam Sealant (Grey) with Sealant Patch	P39, P46, P47 Exterior	09	None detect in light grey non-fibrous material. None detect in grey non-fibrous material. None detect in paint.	NA	NA
10A	Foam Roof	P39, P46, P47 Roof	10	None detect in yellow foam. None detect in paint.	NA	NA

Asbestos Survey Summary (Lab Report # B311513)
CUSD – Dry Creek ES, 1273 N. Armstrong Avenue, Clovis, California
Survey Date: December 14, 2020

Sample Numbers	Material Description	Location of Material	Material Number	Asbestos Content (percent)	Asbestos NESHAP Category	Approx. Quantity
11A	Carpet (Rainbow) with Glue	Building A	11	None detect in multicolored carpet. None detect in yellow mastic.	NA	NA
12A	6" Vinyl Baseboard (Blue) with Glue	Building A	12	None detect in blue non-fibrous material. None detect in yellow mastic.	NA	NA
13A	Drywall (Medium)	Building A	13	None detect in white drywall, joint compound, and tape. None detect in paint.	NA	NA
14A	Walk-On Mat (Black) with Glue	Building A	14	None detect in black carpet. None detect in yellow mastic.	NA	NA
15A	Tackboard and Glue on Drywall	Building A	15	None detect in white drywall. None detect in yellow mastic. None detect in tan fibrous material. None detect in paint.	NA	NA
16A	2x4 False Ceiling Panel (Sanded Pinholes)	Building A	16	None detect in beige fibrous material. None detect in paint.	NA	NA
17A	2x2 False Ceiling Panels (Sanded)	Building A	17	None detect in beige fibrous material. None detect in paint.	NA	NA
18A	2"x2" Ceramic Tile and Grout	Building A	18	None detect in white ceramic tile. None detect in white grout.	NA	NA
19A	FRP (White) and Glue	Building A	19	None detect in white non-fibrous material. None detect in yellow mastic.	NA	NA
20A	12" Vinyl Floor Tile (White Grey Oatmeal) with Glue	Building A	20	None detect in white tile. None detect in yellow mastic.	NA	NA
21A	4" Vinyl Baseboard (Grey) with Glue	Building A	21	None detect in grey non-fibrous material. None detect in off-white mastic.	NA	NA

Asbestos Survey Summary (Lab Report # B311513)
CUSD – Dry Creek ES, 1273 N. Armstrong Avenue, Clovis, California
Survey Date: December 14, 2020

Sample Numbers	Material Description	Location of Material	Material Number	Asbestos Content (percent)	Asbestos NESHAP Category	Approx. Quantity
22A	2x4 False Ceiling Panels (Random Pinhole)	Building A	22	None detect in beige fibrous material. None detect in paint.	NA	NA
23A	Resilient Flooring (Grey with Black Specks) with Glue	Building A	23	None detect in grey non-fibrous material. None detect in yellow mastic,	NA	NA
24A	Sink Undercoat (Black)	Building A	25	None detect in black coating.	NA	NA
25A	Sink Sealant (White)	Building A	25	None detect in white non-fibrous material.	NA	NA
26A	12" Vinyl Floor Tile (Grey with Black Specks) with Glue	Building A	26	None detect in grey tile. None detect in yellow mastic.	NA	NA
27A	Brick and Mortar	Building A Exterior	27	None detect in red cementitious material. None detect in grey mortar.	NA	NA
28A	Overhang Stucco	Building A Exterior	28	None detect in tan cementitious material. None detect in paint.	NA	NA
29A	Concrete	Building A Exterior	29	None detect in grey cementitious material.	NA	NA
30A	Single Roof	Building A Roof	30	None detect in black roof shingle. None detect in black felt.	NA	NA
31A	Roof Sealant (White)	Building A Roof	31	None detect in white non-fibrous material.	NA	NA



CLIENT: -FR09 FACS Fresno
 Clovis Unified School District

Sampled by: Eric Farnsworth & John Lopez

Sample Date: 12/14/20

Site/Bldg.:

Dry Creek Elementary School
 1273 North Armstrong Ave
 Fresno CA 93619

Turnaround Time: 2 Day

Analysis: PLM Standard PLM with Point Count (400 pt. 1,000 pt.)

FACS Proj. No.: PJ61672

Special Instructions E-mail results to hstevens@forensicanalytical.com cchipponeri@forensicanalytical.com
 efarnsworth@forensicanalytical.com john.lopez@forensicanalytical.com and dpyle@forensicanalytical.com

HA#	Homogeneous Material Description (incl. color, texture, phase of construction)	Quant. in SF (LF for small pipe only)	Friable/ Cat. I/ Cat. II	Condition (good, fair, poor)	Sample Number	Sample Location	Lab Result (when rcvd)
01	Carpet (Blue) with Glue				PJ61672-01A	P39: South Side West of Center	
01	Carpet (Blue) with Glue				PJ61672-01B	P39: South Side East of Center	
02	4" Vinyl Baseboard (Dark Grey) and Glue				PJ61672-02A	P46: East Side North End	
02	4" Vinyl Baseboard (Dark Grey) and Glue				PJ61672-02B	P46: West Side North End	
03	Tackboard and Glue over Drywall				PJ61672-03A	P47: East Side Center	
03	Tackboard and Glue over Drywall				PJ61672-03B	P39: West Side South End	
03	Tackboard and Glue over Drywall				PJ61672-03C	P39: South Side Center	
04	2x4 False Ceiling Panel (Fiberglass)				PJ61672-04A	P46: North Side Center	
04	2x4 False Ceiling Panel (Fiberglass)				PJ61672-04B	P47: East Side	

DW = Drywall JC = Joint Compound WT = Wall Texture VFT = Vinyl Floor Tile VSF = Vinyl Sheet Flooring BB = Baseboard BBM = Baseboard Mastic CM = Carpet Mastic ACT = Acoustic Ceiling
 Title ACS = Sprayed-on Acoustical Ceiling Material FP = Fireproofing PI = Pipe Insulation PFI = Pipe fitting Insulation WP = Plaster CP = Ceiling Plaster ES = Exterior Stucco

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Date & Time

12/15/20

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Date & Time

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Date & Time

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Date & Time

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 By: *[Signature]*

CLIENT: FR09 FAACS Fresno
Clovis Unified School District

Sampled by: Eric Farnsworth

Sample Date: 12/14/20

Site/Bldg.:
Dry Creek Elementary School
1273 North Armstrong Ave
Fresno CA 93619

Turnaround Time: 2 Day
Analysis: PLM Standard PLM with Point Count (400 pt. 1,000 pt.)

FACS Proj. No.: PJ61672

Special Instructions E-mail results to hstevens@forensicanalytical.com cchipponeri@forensicanalytical.com
efarnsworth@forensicanalytical.com john.lopez@forensicanalytical.com and dpyle@forensicanalytical.com

HA#	Homogeneous Material Description (Incl. color, texture, phase of construction)	Quant. in SF (UF for small pipe only)	Friable/ Cat. I/ Cat. II	Condition (good, fair, poor)	Sample Number	Sample Location	Lab Result (when revd)
05	Carpet (Blue Tan Multi) and Glue				PJ61672-05A	P46: East Side North End	
05	Carpet (Blue Tan Multi) and Glue				PJ61672-05B	P46: North Side West End	
06	Walk-On Mat (Black) and Glue				PJ61672-06A	P46: East Side North End	
07	Carpet (Dark Blue) and Glue				PJ61672-07A	P47: South Side East End	
07	Carpet (Dark Blue) and Glue				PJ61672-07B	P47: South Side West End	
08	4" Vinyl Baseboard (Brown) and Glue				PJ61672-08A	P47: East Side North End	
08	4" Vinyl Baseboard (Brown) and Glue				PJ61672-08B	P47: South Side East End	
09	Vertical Seam Sealant (Grey) with Sealant Patch				PJ61672-09A	P47 Exterior: East Side	
09	Vertical Seam Sealant (Grey)				PJ61672-09B	P39 Exterior: West Side	

DW = Drywall JC = Joint Compound WT = Wall Texture VFT = Vinyl Floor Tile VSF = Vinyl Sheet Flooring BB = Baseboard BBM = Baseboard Mastic CM = Carpet Mastic ACT = Acoustic Ceiling
 Title ACS = Sprayed-on Acoustical Ceiling Material FP = Fireproofing PI = Pipe Insulation PFI = Pipe fitting insulation WP = Plaster CP = Ceiling Plaster ES = Exterior Stucco

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Date & Time: 12/15/20

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Date & Time: _____

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Date & Time: _____

By: *[Signature]* Eric Farnsworth

CLIENT: FR09 FACS Fresno
 Clovis Unified School District

Sampled by: Eric Farnsworth

Sample Date: 12/14/20

Site/Bldg.:
 Dry Creek Elementary School
 1273 North Armstrong Ave
 Fresno CA 93619

Turnaround Time: 2 Day

Analysis: PLM Standard PLM with Point Count (400 pt. 1,000 pt.)

FACS Proj. No.: PJ61672

Special Instructions: E-mail results to hstevens@forensicanalytical.com cchipponeri@forensicanalytical.com
 efarnsworth@forensicanalytical.com john.lopez@forensicanalytical.com and dpyle@forensicanalytical.com

H#	Homogeneous Material Description (incl. color, texture, phase of construction)	Quant. in SF (LF for small pipe only)	Friable/ Cat. I/ Cat. II	Condition (good, fair, poor)	Sample Number	Sample Location	Lab Result (when recvd)
10	Foam Roof				PJ61672-10A	P47: Northwest of Center	
10	Foam Roof				PJ61672-10B	P46: Center	
10	Foam Roof				PJ61672-10C	P47: Northeast of Center	
11	Carpet (Rainbow) with Glue				PJ61672-11A	Building A: Restroom Hallway East Side	
11	Carpet (Rainbow) with Glue				PJ61672-11B	Building A: Main Hallway at Entry to Principals Office	
12	6" Vinyl Baseboard (Blue) with Glue				PJ61672-12A	Building A: Restroom Hallway: West Side South End	
12	6" Vinyl Baseboard (Blue) with Glue				PJ61672-12B	Building A: Reception: East Side Center	
13	Drywall (Medium) with Tape and Joint Compound				PJ61672-13A	Building A: File Storage: North Side West End	
13	Drywall (Medium) with Tape and Joint Compound				PJ61672-13B	Building A: File Storage: Northwest Corner	

DW = Drywall JC = Joint Compound WT = Wall Texture VFT = Vinyl Floor Tile VSF = Vinyl Sheet Flooring BB = Baseboard BBM = Baseboard Mastic CM = Carpet Mastic ACT = Acoustic Ceiling
 Title ACS = Sprayed-on Acoustical Ceiling Material FP = Fireproofing PI = Pipe Insulation PFI = Pipe fitting insulation WP = Plaster CP = Ceiling Plaster ES = Exterior Stucco

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CLIENT: FR09 FAACS Fresno
Clovis Unified School District

Sampled by: Eric Farnsworth

Sample Date: 12/14/20

Site/Bldg.:

Dry Creek Elementary School
1273 North Armstrong Ave
Fresno CA 93619

Turnaround Time: 2 Day

Analysis: PLM Standard PLM with Point Count (400 pt. 1,000 pt.)

FACS Proj. No.: PJ61672

Special Instructions E-mail results to hstevens@forensicanalytical.com cchipponeri@forensicanalytical.com efarmsworth@forensicanalytical.com john.lopez@forensicanalytical.com and dpyle@forensicanalytical.com

HA#	Homogeneous Material Description (incl. color, texture, phase of construction)	Quant. in SF (LF for small pipe only)	Friable/ Cat. I/ Cat. II	Condition (good, fair, poor)	Sample Number	Sample Location	Lab Result (when rec'd)
13	Drywall (Medium) with Tape and Joint Compound				PJ61672-13C	Building A: Workroom Storage: West Side Center	
13	Drywall (Medium) with Tape and Joint Compound				PJ61672-13D	Building A: Workroom Storage: Northeast Corner	
13	Drywall (Medium)				PJ61672-13E	Building A: Restroom Hallway: Southeast Corner	
14	Walk-on Mat (Black) and Glue				PJ61672-14A	Building A: Restroom Hallway: West Side South End	
15	Tackboard and Glue on Drywall				PJ61672-15A	Building A: Restroom Hallway: West Side North End	
15	Tackboard and Glue on Drywall				PJ61672-15B	Building A: Reception: Northwest Corner	
16	2x4 False Ceiling Panels (Sanded Pinholes)				PJ61672-16A	Building A: File Storage: Center	
16	2x4 False Ceiling Panels (Sanded Pinholes)				PJ61672-16B	Building A: Work Room Storage: West Side	
17	2x2 False Ceiling Panels (Sanded)				PJ61672-17A	Building A: Main Hallway: East Side South End	

DW = Drywall JC = Joint Compound WT = Wall Texture VFT = Vinyl Floor Tile VSF = Vinyl Sheet Flooring BB = Baseboard BBM = Baseboard Mastic CM = Carpet Mastic ACT = Acoustic Ceiling
 Title ACS = Sprayed-on Acoustical Ceiling Material FP = Fireproofing PI = Pipe Insulation PFI = Pipe fitting insulation WP = Plaster CP = Ceiling Plaster ES = Exterior Stucco

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BY: [Signature]

CLIENT: **FR09 FACS Fresno**
 Clovis Unified School District

Sampled by: **Eric Farnsworth**

Sample Date: **12/14/20**

Site/Bldg.:
 Dry Creek Elementary School
 1273 North Armstrong Ave
 Fresno CA 93619

Turnaround Time: 2 Day

Analysis: **PLM Standard** _____ **PLM with Point Count** (_____ 400 pt. _____ 1,000 pt.)

FACS Proj. No.: PJ61672

Special Instructions E-mail results to hstevens@forensicanalytical.com cchipponeri@forensicanalytical.com
 efarrowsworth@forensicanalytical.com john.lopez@forensicanalytical.com and dpyle@forensicanalytical.com

HA#	Homogeneous Material Description (incl. color, texture, phase of construction)	Quant. in SF (LF for small pipe only)	Friable/ Cat. I/ Cat. II	Condition (good, fair, poor)	Sample Number	Sample Location	Lab Result (when rcvd)
17	2x2 False Ceiling Panels (Sanded)				PJ61672-17B	Building A: Main Hallway: West Side North End	
18	2"x2" Ceramic Tile and Grout				PJ61672-18A	Building A: Men's Restroom: Northwest Corner	
18	2"x2" Ceramic Tile and Grout				PJ61672-18B	Building A: Women's Restroom: West Side at Entry	
19	FRP (White) and Glue				PJ61672-19A	Building A: Nurse's Restroom: Northeast	
19	FRP (White) and Glue				PJ61672-19B	Building A: Women's Restroom: West Side North End	
20	12" Vinyl Floor Tile (White Grey Oatmeal) with Glue				PJ61672-20A	Building A: Work Room: Southwest Corner	
20	12" Vinyl Floor Tile (White Grey Oatmeal) with Glue				PJ61672-20B	Building A: File Storage: Southeast Corner	
21	4" Vinyl Baseboard (Grey) and Glue				PJ61672-21A	Building A: Workroom Storage: East Side at Door	
21	4" Vinyl Baseboard (Grey) and Glue				PJ61672-21B	Building A: File Storage: Southeast Corner	

DW = Drywall JC = Joint Compound WT = Wall Texture VFT = Vinyl Floor Tile VSF = Vinyl Sheet Flooring BB = Baseboard BBM = Baseboard Mastic CM = Carpet Mastic ACT = Acoustic Ceiling
 Title ACS = Sprayed-on Acoustical Ceiling Material FP = Fireproofing PI = Pipe Insulation PFI = Pipe fitting insulation WP = Plaster CP = Ceiling Plaster ES = Exterior Stucco

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CLIENT: FR09 FAACS Fresno
 Clovis Unified School District
 Sample Date: 12/14/20

Site/Bldg.: Dry Creek Elementary School
 1273 North Armstrong Ave
 Fresno CA 93619
 Turnaround Time: 2 Day

Analysis: PLM Standard PLM with Point Count (400 pt. 1,000 pt.)

Special Instructions E-mail results to hstevens@forensicanalytical.com cchipponeri@forensicanalytical.com
 efarnsworth@forensicanalytical.com john.lopez@forensicanalytical.com and dpyle@forensicanalytical.com

FAACS Proj. No.: PJ61672

HA#	Homogeneous Material Description (incl. color, texture, phase of construction)	Quant. in SF (LF for small pipe only)	Friable/ Cat. I/ Cat. II	Condition (good, fair, poor)	Sample Number	Sample Location	Lab Result (when rec'd)
22	2x4 False Ceiling Panel (Random Pinholes)				PJ61672-22A	Building A: Workroom Storage: East Side North End	
23	Resilient Flooring (Grey with Black Specks) with Glue				PJ61672-23A	Building A: Nurses Restroom: East Side Center	
24	Sink Undercoat (Black)				PJ61672-24A	Building A: Nurses Office: East Side	
25	Sink Sealant (White)				PJ61672-25A	Building A: Nurses Restroom: North Side East End	
26	12" Vinyl Floor Tile (Grey with Black Specks) with Glue				PJ61672-26A	Building A: Nurses Office: Southwest Corner	
26	12" Vinyl Floor Tile (Grey with Black Specks) with Glue				PJ61672-26B	Building A: Nurses Office: West Side	
27	Brick And Mortar				PJ61672-27A	Building A: Exterior: East Side South End	
27	Brick And Mortar				PJ61672-27B	Building A: Exterior: South Side East End	
27	Brick And Mortar				PJ61672-27C	Building A: Exterior: South Side West End	

DW = Drywall JC = Joint Compound WT = Wall Texture VFT = Vinyl Floor Tile VSF = Vinyl Sheet Flooring BB = Baseboard
 Title ACS = Sprayed-on Acoustical Ceiling Material FP = Fireproofing PI = Pipe Insulation PFI = Pipe fitting insulation WP = Plaster
 BBM = Baseboard Mastic CM = Carpet Mastic ACI = Acoustic Ceiling

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CLIENT: FR09 FACS Fresno
Clovis Unified School District

Sampled by: Eric Farnsworth

Sample Date: 12/14/20

Site/Bldg.:
Dry Creek Elementary School
1273 North Armstrong Ave
Fresno CA 93619

Turnaround Time: 2 Day

Analysis: PLM Standard _____ PLM with Point Count (_____ 400 pt. _____ 1,000 pt.)

FACS Proj. No.: PJ61672

Special Instructions E-mail results to hstevens@forensicanalytical.com cchipponeri@forensicanalytical.com
efarnsworth@forensicanalytical.com john.lopez@forensicanalytical.com and dpyle@forensicanalytical.com

HA#	Homogeneous Material Description (incl. color, texture, phase of construction)	Quant. in SF (LF for small pipe only)	Friable/ Cat. I/ Cat. II	Condition (good, fair, poor)	Sample Number	Sample Location	Lab Result (when reqd)
28	Overhang Stucco				PJ61672-28A	Building A: Exterior: North Side Center	
28	Overhang Stucco				PJ61672-28B	Building A: Exterior: North Side West End	
28	Overhang Stucco				PJ61672-28C	Building A: Exterior: South Side Center	
29	Concrete				PJ61672-29A	Building A: Exterior: South Side East End	
29	Concrete				PJ61672-29B	Building A: Exterior: North Side Center	
29	Concrete				PJ61672-29C	Building A: Exterior: West Side Center	
30	Shingle Roof				PJ61672-30A	Building A: North Side Center	
30	Shingle Roof				PJ61672-30B	Building A: North Side East End	
30	Shingle Roof				PJ61672-30C	Building A: South Side East End	

DW = Drywall JC = Joint Compound WT = Wall Texture VFT = Vinyl Floor Tile VSF = Vinyl Sheet Flooring BB = Baseboard BBM = Baseboard Mastic CM = Carpet Mastic ACT = Acoustic Ceiling
 Tile ACS = Sprayed-on Acoustical Ceiling Material FP = Fireproofing PI = Pipe Insulation PFI = Pipe fitting insulation WP = Plaster CP = Ceiling Plaster ES = Exterior Stucco

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BY: _____

CLIENT : FR09 FACS Fresno
Clovis Unified School District

Sampled by: Eric Farnsworth

Sample Date: 12/14/20

Site/Bldg.:

Dry Creek Elementary School
1273 North Armstrong Ave
Fresno CA 93619

Turnaround Time: 2 Day

Analysis: PLM Standard _____ PLM with Point Count (_____ 400 pt. _____ 1,000 pt.)

FACS Proj. No.: PJ61672

Special Instructions E-mail results to hstevens@forensicanalytical.com cchipponeri@forensicanalytical.com
efarnsworth@forensicanalytical.com john.lopez@forensicanalytical.com and dpyle@forensicanalytical.com

HA#	Homogeneous Material Description (incl. color, texture, phase of construction)	Quant. in SF (LF for small pipe only)	Friable/ Cat. I/ Cat. II	Condition (good, fair, poor)	Sample Number	Sample Location	Lab Result (when rovd)
30	Shingle Roof				PJ61672-30D	Building A: South Side West End	
30	Shingle Roof				PJ61672-30E	Building A: North Side West End	
31	Roof Sealant (White)				PJ61672-31A	Building A: North Side West of Center	

DW = Drywall JC = Joint Compound WT = Wall Texture VFT = Vinyl Floor Tile VSF = Vinyl Sheet Flooring BB = Baseboard BBM = Baseboard Mastic CM = Carpet Mastic ACI = Acoustic Ceiling
Title ACS = Sprayed-on Acoustical Ceiling Material FP = Fireproofing PI = Pipe Insulation PFI = Pipe fitting insulation WP = Plaster CP = Ceiling Plaster ES = Exterior Stucco

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Bulk Asbestos Analysis

(EPA Method 40CFR, Part 763, Appendix E to Subpart E and EPA 600/R-93-116, Visual Area Estimation)
NVLAP Lab Code: 101459-0

FACS - Fresno
Eric Farnsworth
21228 Cabot Blvd.

Hayward, CA 94545

Client ID: FR09
Report Number: B311513
Date Received: 12/16/20
Date Analyzed: 12/17/20
Date Printed: 12/17/20
First Reported: 12/17/20

Job ID/Site: PJ61672; Clovis Unified School District Dry Creek ES 1273 North Armstrong Ave Clovis CA 93612

SGSFL Job ID: FR09
Total Samples Submitted: 66
Total Samples Analyzed: 66

Date(s) Collected: 12/14/2020

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ61672-01A	12367176						
Layer: Blue Carpet			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)	Synthetic (85 %)						
PJ61672-01B	12367177						
Layer: Blue Carpet			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)	Synthetic (85 %)						
PJ61672-02A	12367178						
Layer: Black Non-Fibrous Material			ND				
Layer: Off-White Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-02B	12367179						
Layer: Black Non-Fibrous Material			ND				
Layer: Off-White Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-03A	12367180						
Layer: White Drywall			ND				
Layer: Yellow Adhesive			ND				
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (80 %)							
PJ61672-03B	12367181						
Layer: White Drywall			ND				
Layer: Yellow Adhesive			ND				
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (80 %)							

Client Name: FACS - Fresno

Report Number: B311513

Date Printed: 12/17/20

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ61672-03C	12367182						
Layer: Yellow Adhesive			ND				
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (80 %)							
PJ61672-04A	12367183						
Layer: Yellow Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Fibrous Glass (99 %)							
PJ61672-04B	12367184						
Layer: Yellow Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Fibrous Glass (99 %)							
PJ61672-05A	12367185						
Layer: Blue Carpet			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Synthetic (85 %)							
PJ61672-05B	12367186						
Layer: Blue Carpet			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Synthetic (85 %)							
PJ61672-06A	12367187						
Layer: Black Carpet			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Synthetic (85 %)							
PJ61672-07A	12367188						
Layer: Blue Carpet			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Synthetic (85 %)							
PJ61672-07B	12367189						
Layer: Blue Carpet			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Synthetic (85 %)							

Client Name: FACS - Fresno

Report Number: B311513

Date Printed: 12/17/20

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ61672-08A	12367190						
Layer: Brown Non-Fibrous Material			ND				
Layer: Tan Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-08B	12367191						
Layer: Brown Non-Fibrous Material			ND				
Layer: Tan Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-09A	12367192						
Layer: Light Grey Non-Fibrous Material			ND				
Layer: Grey Non-Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Synthetic (5 %)							
PJ61672-09B	12367193						
Layer: Light Grey Non-Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Synthetic (10 %)							
PJ61672-10A	12367194						
Layer: Yellow Foam			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-10B	12367195						
Layer: Yellow Foam			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-10C	12367196						
Layer: Yellow Foam			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-11A	12367197						
Layer: Multicolored Carpet			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Synthetic (85 %)							

Client Name: FACS - Fresno

Report Number: B311513

Date Printed: 12/17/20

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ61672-11B	12367198						
Layer: Multicolored Carpet			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)	Synthetic (85 %)						
PJ61672-12A	12367199						
Layer: Blue Non-Fibrous Material			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-12B	12367200						
Layer: Blue Non-Fibrous Material			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-13A	12367201						
Layer: White Drywall			ND				
Layer: White Joint Compound			ND				
Layer: White Tape			ND				
Layer: White Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (20 %)	Fibrous Glass (10 %)						
PJ61672-13B	12367202						
Layer: White Drywall			ND				
Layer: White Joint Compound			ND				
Layer: White Tape			ND				
Layer: White Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (20 %)	Fibrous Glass (10 %)						
PJ61672-13C	12367203						
Layer: White Drywall			ND				
Layer: White Joint Compound			ND				
Layer: White Tape			ND				
Layer: White Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (20 %)	Fibrous Glass (10 %)						

Client Name: FACS - Fresno

Report Number: B311513

Date Printed: 12/17/20

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ61672-13D	12367204						
Layer: White Drywall			ND				
Layer: White Joint Compound			ND				
Layer: White Tape			ND				
Layer: White Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (20 %)	Fibrous Glass (10 %)						
PJ61672-13E	12367205						
Layer: White Drywall			ND				
Layer: White Joint Compound			ND				
Layer: White Tape			ND				
Layer: White Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (20 %)	Fibrous Glass (10 %)						
PJ61672-14A	12367206						
Layer: Black Carpet			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)	Synthetic (85 %)						
PJ61672-15A	12367207						
Layer: White Drywall			ND				
Layer: Yellow Mastic			ND				
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (80 %)							
PJ61672-15B	12367208						
Layer: White Drywall			ND				
Layer: Yellow Mastic			ND				
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (80 %)							
PJ61672-16A	12367209						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (35 %)	Fibrous Glass (45 %)						
PJ61672-16B	12367210						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (35 %)	Fibrous Glass (45 %)						

Client Name: FACS - Fresno

Report Number: B311513

Date Printed: 12/17/20

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ61672-17A	12367211						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (35 %)	Fibrous Glass (45 %)						
PJ61672-17B	12367212						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (35 %)	Fibrous Glass (45 %)						
PJ61672-18A	12367213						
Layer: White Ceramic Tile			ND				
Layer: White Grout			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-18B	12367214						
Layer: White Ceramic Tile			ND				
Layer: White Grout			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-19A	12367215						
Layer: White Non-Fibrous Material			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-19B	12367216						
Layer: White Non-Fibrous Material			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-20A	12367217						
Layer: White Tile			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-20B	12367218						
Layer: White Tile			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							

Client Name: FACS - Fresno

Report Number: B311513

Date Printed: 12/17/20

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ61672-21A	12367219						
Layer: Grey Non-Fibrous Material			ND				
Layer: Off-White Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-21B	12367220						
Layer: Grey Non-Fibrous Material			ND				
Layer: Off-White Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-22A	12367221						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (35 %) Fibrous Glass (45 %)							
PJ61672-23A	12367222						
Layer: Grey Non-Fibrous Material			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-24A	12367223						
Layer: Black Coating			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-25A	12367224						
Layer: White Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-26A	12367225						
Layer: Grey Tile			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-26B	12367226						
Layer: Grey Tile			ND				
Layer: Yellow Mastic			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
PJ61672-27A	12367227						
Layer: Red Cementitious Material			ND				
Layer: Grey Mortar			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							

Client Name: FACS - Fresno

Report Number: B311513

Date Printed: 12/17/20

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ61672-27B	12367228						
Layer: Red Cementitious Material			ND				
Layer: Grey Mortar			ND				
Total Composite Values of Fibrous Components: Cellulose (Trace)		Asbestos (ND)					
PJ61672-27C	12367229						
Layer: Red Cementitious Material			ND				
Layer: Grey Mortar			ND				
Total Composite Values of Fibrous Components: Cellulose (Trace)		Asbestos (ND)					
PJ61672-28A	12367230						
Layer: Tan Cementitious Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Cellulose (Trace)		Asbestos (ND)					
PJ61672-28B	12367231						
Layer: Tan Cementitious Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Cellulose (Trace)		Asbestos (ND)					
PJ61672-28C	12367232						
Layer: Tan Cementitious Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Cellulose (Trace)		Asbestos (ND)					
PJ61672-29A	12367233						
Layer: Grey Cementitious Material			ND				
Total Composite Values of Fibrous Components: Cellulose (Trace)		Asbestos (ND)					
PJ61672-29B	12367234						
Layer: Grey Cementitious Material			ND				
Total Composite Values of Fibrous Components: Cellulose (Trace)		Asbestos (ND)					
PJ61672-29C	12367235						
Layer: Grey Cementitious Material			ND				
Total Composite Values of Fibrous Components: Cellulose (Trace)		Asbestos (ND)					
PJ61672-30A	12367236						
Layer: Black Roof Shingle			ND				
Layer: Black Roof Shingle			ND				
Layer: Black Felt			ND				
Total Composite Values of Fibrous Components: Cellulose (15 %) Fibrous Glass (40 %)		Asbestos (ND)					

Client Name: FACS - Fresno

Report Number: B311513

Date Printed: 12/17/20

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ61672-30B	12367237						
Layer: Black Roof Shingle			ND				
Layer: Black Roof Shingle			ND				
Layer: Black Felt			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (15 %)	Fibrous Glass (40 %)						
PJ61672-30C	12367238						
Layer: Black Roof Shingle			ND				
Layer: Black Roof Shingle			ND				
Layer: Black Felt			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (15 %)	Fibrous Glass (40 %)						
PJ61672-30D	12367239						
Layer: Black Roof Shingle			ND				
Layer: Black Roof Shingle			ND				
Layer: Black Felt			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (15 %)	Fibrous Glass (40 %)						
PJ61672-30E	12367240						
Layer: Black Roof Shingle			ND				
Layer: Black Roof Shingle			ND				
Layer: Black Felt			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (15 %)	Fibrous Glass (40 %)						
PJ61672-31A	12367241						
Layer: White Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							



Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

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Appendix B

Lead Sample Chain-of-Custody, Laboratory Results Report, XRF Form and CDPH 8552 Form

Lead Results Summary (Lab Report #M230436) CUSD – Dry Creek ES, 1273 N. Armstrong Avenue, Clovis, California Survey Date: December 14, 2020					
Sample Number	Component Location	Component	Color	Substrate	Analytical Results (percent lead by weight)
01Pb	P46 Exterior Siding	Siding	Off-White	Wood	<0.006
02Pb	P46 Exterior Downspout	Downspout	Off-White	Metal	0.085
03Pb	P39 Door Frame	Door Frame	Grey	Metal	<0.02
04Pb	Building A: File Storage: Drywall Wall	Wall	White	Drywall	<0.006
05Pb	Building A: Exterior Overhang	Overhang	Off-White	Stucco	<0.006

PAINT CHIP SAMPLE REQUEST FORM

Client: FR09 FACCS Fresno Clovis Unified School District	Sampled by: Eric Farnsworth PM: Harold Stevens	Date: 12/15/2020
Contact: Harold Stevens Phone: (559) 436-0277	Special Instructions: E-mail results to hstevens@forensicanalytical.com cchipponeri@forensicanalytical.com efarnsworth@forensicanalytical.com john.lopez@forensicanalytical.com and dpyle@forensicanalytical.com	
Site: Dry Creek Elementary School CLOVIS UNIFIED SCHOOL DISTRICT	Turnaround Time:	<input type="checkbox"/> 1-Day <input checked="" type="checkbox"/> 2-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 5-Day <input type="checkbox"/> Other
Client No.: C22975	FACS Job #: PJ61672	Analysis: <input checked="" type="checkbox"/> Flame AA (Pb) / <input type="checkbox"/> Other:

Sample Number	Sample Location	Component	Color	Substrate	Condition
PJ61672-01Pb	Off-White Paint on Wood Siding: P46: East Side South End	Siding	Off-White	Wood	1
PJ61672-02Pb	Off-White Paint on Metal Downspout: P46: East Side North End	Downspout	Off-White	Metal	1
PJ61672-03Pb	Grey Paint on Metal Door Frame: P39: West Side	Door Frame	Grey	Metal	1
PJ61672-04Pb	White Paint on Drywall Wall: Building A: File Storage: West Side Center	Wall	White	Drywall	1
PJ61672-05Pb	Off-White Paint on Stucco Overhang: Building A: North Side West of Center	Overhang	Off-White	Stucco	1

Shipped via: Fed Ex Airborne UPS US Mail Courier Drop Off Other:

Retinquished by: *[Signature]* Date & Time: 15:00 12/15/20 Received by: *[Signature]* Date & Time: 12/15/20

Retinquished by: *[Signature]* Date & Time: 12/15/20 Received by: *[Signature]* Date & Time: 12/15/20



Metals Analysis of Paints

(AIHA-LAP, LLC Accreditation, Lab ID #101762)

FACS - Fresno
Eric Farnsworth
21228 Cabot Blvd.

Hayward, CA 94545

Client ID: FR09
Report Number: M230436
Date Received: 12/16/20
Date Analyzed: 12/17/20
Date Printed: 12/17/20
First Reported: 12/17/20

Job ID / Site: PJ61672; Clovis Unified School District Dry Creek ES 1273 North Armstrong Ave Clovis CA 93612

Date(s) Collected: 12/15/20

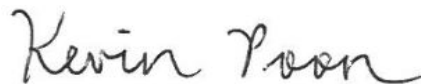
SGSFL Job ID: FR09

Total Samples Submitted: 5

Total Samples Analyzed: 5

Sample Number	Lab Number	Analyte	Result	Result Units	Reporting Limit*	Method Reference
PJ61672-01PB	30880374	Pb	< 0.006	wt%	0.006	EPA 3050B/7000B
PJ61672-02PB	30880375	Pb	0.085	wt%	0.006	EPA 3050B/7000B
PJ61672-03PB	30880376	Pb	< 0.02	wt%	0.02	EPA 3050B/7000B
PJ61672-04PB	30880377	Pb	< 0.006	wt%	0.006	EPA 3050B/7000B
PJ61672-05PB	30880378	Pb	< 0.006	wt%	0.006	EPA 3050B/7000B

* The Reporting Limit represents the lowest amount of analyte that the laboratory can confidently detect in the sample, and is not a regulatory level. The Units for the Reporting Limit are the same as the Units for the Final Results.



Kevin Poon, Laboratory Analyst, Hayward Laboratory

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Note* Sampling data used in this report was provided by the client as noted on the associated chain of custody form.



Forensic Analytical Consulting Services

Clovis Unified School District

Dry Creek Elementary

Lead Based Paint Survey By XRF

December 14, 2020

SURVEY BY

**Forensic Analytical Consulting Services
371 E BULLARD AVE., SUITE 109
FRESNO, CA 93710
(559) 436-0277**

LEAD-BASED PAINT (LBP) INSPECTION AND SAMPLE PROTOCOL

The lead-based paint survey at this site was conducted using the following inspection and sampling protocol:

DEFINITION OF LEAD-BASED PAINT

EPA/HUD/DHS: Paint which contains at least 1.0 mg/cm², 5000 parts per million, or 0.5% by weight of lead.

OSHA/Cal/OSHA: Lead containing paint which contains any detectable lead.

Cal/OSHA requires notification if over 100 sq. ft. of lead based paint (1.0 mg/cm² or higher) or presumed LBP (untested paint) is disturbed.

CONSTRUCTION YEARS

The building construction years as depicted in the report were supplied by others.

The condition of the paint was classified as follows:

INTACT: Paint is in good condition, with no chips, abrasions or delamination.

FAIR: Paint is reasonably intact, with minor chips and slight abrasions.

POOR: Paint is chipped, scraped, delaminated, or peeling.

EQUIPMENT AND CALIBRATION

Lead-based paint determination was performed using a Niton X-Ray Fluorescence (XRF) detector. Verification of calibration was performed prior to, and immediately following testing.

DISCLAIMER

Forensic Analytical Consulting Services, Inc. (FACS) has made every effort to sample every non-intact paint type and substrate within the structures at this site. If a painted surface that will be disturbed is not intact, and the paint is not listed in this report, the paint must be assumed to contain lead.

SURVEY FOR LEAD BASED PAINT
Clovis Unified School District

Site Name:		Dry Creek Elementary					Date:		December 14, 2020		
Address:		1273 North Armstrong Avenue					HMS Job #:		PJ61672		
Start Time:		08:00	Calibration:	1.04 = 0.9	1.04 = 0.9	1.04 = 1.1	Technician:		John Lopez		
End Time:		10:02	Calibration:	1.04 = 1.0	1.04 = 1.0	1.04 = 1.1	Inspector/Assessor:		Eric Farnsworth		
Niton XLP 300 100252		See Lead-Based Paint Inspections, Sampling Protocol, & Definition of Lead-Based Paint on Page 1								Condition Codes:	I = Intact, F = Fair, P = Poor
No.	Sample Location	Component	Substrate	Color	Condition	XRF Result (mg/cm2)					
1.	Dry Creek Building A										
2.	Reception Area										
3.	West Side	Door	Metal	Blue	I	0.00					
4.	West Side	Door Frame	Metal	Blue	I	0.17					
5.	East Side	Wall	Drywall	White	I	0.00					
6.	East Side North Facing Wall	Wall	Drywall	White	I	0.00					
7.	Center South Side	Wall	Drywall	White	I	0.00					
8.	South Side	Door	Metal	Blue	I	0.01					
9.		Door Frame	metal	Blue	I	0.03					
10.		Window Sil	Metal	Blue	I	0.14					
11.	Hallway East to West										
12.	South Side West End	Wall	Drywall	White	I	0.00					
13.	Restroom Hallway										
14.	Outside Restroom	Wall	Tackboard	Off-White	I	0.00					
15.	Outside Restroom East Side	Wall	Drywall	White	I	0.00					
16.	Mens Restroom West	Door Frame	Metal	Blue	I	0.00					
17.	Mens Restroom West	Door	Metal	Blue	I	0.00					
18.	Mens Restroom West Side	2" Ceramic Tile Floor	Ceramic Tile	Grey	I	0.01					

SURVEY FOR LEAD BASED PAINT
Clovis Unified School District

Site Name:		Dry Creek Elementary					Date:		December 14, 2020		
Address:		1273 North Armstrong Avenue					HMS Job #:		PJ61672		
Start Time:		08:00	Calibration:	1.04 = 0.9	1.04 = 0.9	1.04 = 1.1	Technician:		John Lopez		
End Time:		10:02	Calibration:	1.04 = 1.0	1.04 = 1.0	1.04 = 1.1	Inspector/Assessor:		Eric Farnsworth		
Niton XLP 300 100252		See Lead-Based Paint Inspections, Sampling Protocol, & Definition of Lead-Based Paint on Page 1								Condition Codes:	I = Intact, F = Fair, P = Poor
No.	Sample Location	Component	Substrate	Color	Condition	XRF Result (mg/cm2)					
19.	North Side	Wall	Drywall	White	I	0.00					
20.	South Side	Sink	Porcelain	White	I	0.00					
21.		Toilet	Porcelain	White	I	0.01					
22.	Womens Restroom										
23.	Womens Restroom West	Door Frame	Metal	Blue	I	0.00					
24.	Womens Restroom West	Door	Metal	Blue	I	0.00					
25.	Womens Restroom West Side	2" Ceramic Tile Floor	Ceramic Tile	Grey	I	0.01					
26.	East Side	Wall	Drywall	White	I	0.00					
27.	North Side	Sink	Porcelain	White	I	0.00					
28.		Toilet	Porcelain	White	I	0.01					
29.	Restroom Hallway										
30.	Exterior Door	Door	Metal	Blue	I	0.00					
31.	Exterior Door Frame	Door Frame	Metal	Blue	I	0.00					
32.	Hallway East to West										
33.	South Center	Wall	Drywall	White	I	0.00					
34.		Door	Metal	Blue	I	0.00					
35.		Window Sil	Metal	Blue	I	0.00					
36.											

**SURVEY FOR LEAD BASED PAINT
Clovis Unified School District**

Site Name:		Dry Creek Elementary					Date:		December 14, 2020	
Address:		1273 North Armstrong Avenue					HMS Job #:		PJ61672	
Start Time:		08:00	Calibration:	1.04 = 0.9	1.04 = 0.9	1.04 = 1.1	Technician:		John Lopez	
End Time:		10:02	Calibration:	1.04 = 1.0	1.04 = 1.0	1.04 = 1.1	Inspector/Assessor:		Eric Farnsworth	
Niton XLP 300 100252		See Lead-Based Paint Inspections, Sampling Protocol, & Definition of Lead-Based Paint on Page 1								Condition Codes: I = Intact, F = Fair, P = Poor
No.	Sample Location	Component	Substrate	Color	Condition	XRF Result (mg/cm2)				
37.	GIS Office									
38.	North Side	Door	Metal	Blue	I	0.00				
39.		Door Frame	Metal	Blue	I	0.00				
40.	South Center Office									
41.	North Side	Door	Metal	Blue	I	0.00				
42.		Door Frame	Metal	Blue	I	0.00				
43.	East Office									
44.	West Side	Wall	Drywall	White	I	0.00				
45.	West Side	Door Frame	Metal	Blue	I	0.00				
46.	East Side	Door Frame	Metal	Blue	I	0.00				
47.	East Side	Door	Metal	Blue	I	0.00				
48.	Work Room									
49.	South Side	Door Frame	Metal	Blue	I	0.00				
50.	North Side	Door	Metal	Blue	I	0.04				
51.		Door Frame	Metal	Blue	I	0.13				
52.		Soffit	Drywall	White	I	0.00				
53.	Work Room Supply Room									
54.	North Side	Wall	Drywall	White	I	0.00				

SURVEY FOR LEAD BASED PAINT
Clovis Unified School District

Site Name:		Dry Creek Elementary					Date:		December 14, 2020		
Address:		1273 North Armstrong Avenue					HMS Job #:		PJ61672		
Start Time:		08:00	Calibration:	1.04 = 0.9	1.04 = 0.9	1.04 = 1.1	Technician:		John Lopez		
End Time:		10:02	Calibration:	1.04 = 1.0	1.04 = 1.0	1.04 = 1.1	Inspector/Assessor:		Eric Farnsworth		
Niton XLP 300 100252		See Lead-Based Paint Inspections, Sampling Protocol, & Definition of Lead-Based Paint on Page 1								Condition Codes:	I = Intact, F = Fair, P = Poor
No.	Sample Location	Component	Substrate	Color	Condition	XRF Result (mg/cm2)					
55.	West Side	Door Frame	Metal	Blue	I	0.00					
56.	File Room										
57.	South Side	Door Frame	Metal	Blue	I	0.00					
58.		Door	Metal	Blue	I	0.00					
59.	East Side	Wall	Drywall	White	I	0.01					
60.	West Side	Wall	Drywall	White	I						
61.	Nurses Office										
62.	South Side	Door Frame	Metal	Blue	I	0.00					
63.		Door	Metal	Blue	I	0.00					
64.	West Side	Wall	Drywall	White	I	0.00					
65.	Nurses Restroom										
66.	East Side	Door Frame	Metal	Blue	I	0.00					
67.	East Side	Door	Metal	Blue	I	0.00					
68.	East Side	Wall	Drywall	White	I	0.00					
69.	North Side	Sink	Porcelain	White	I	0.00					
70.		Toilet	Porcelain	White	I	0.01					
71.											
72.											

SURVEY FOR LEAD BASED PAINT
Clovis Unified School District

Site Name:		Dry Creek Elementary						Date:		December 14, 2020	
Address:		1273 North Armstrong Avenue						HMS Job #:		PJ61672	
Start Time:		08:00		Calibration:		1.04 = 0.9		Technician:		John Lopez	
End Time:		10:02		Calibration:		1.04 = 1.0		Inspector/Assessor:		Eric Farnsworth	
Niton XLP 300 100252		See Lead-Based Paint Inspections, Sampling Protocol, & Definition of Lead-Based Paint on Page 1									
No.	Sample Location	Component	Substrate	Color	Condition	XRF Result (mg/cm2)	Condition Codes: I = Intact, F = Fair, P = Poor				
73.	Exterior										
74.	West Side	Door	Metal	Blue	I	0.00					
75.	West Side	Door Frame	Metal	Blue	I	0.11					
76.	West Side	Window Lite	Wood	Blue	I	0.00					
77.	Northwest	Overhang	Stucco	Tan	I	0.00					
78.	North Side West End	Overhang	Stucco	Tan	I	0.00					
79.		Fascia	Wood	Blue	I	0.14					
80.	West	Fascia	Wood	Blue	I	0.00					
81.	North Side West End	Electrical Box	Metal	Blue	I	0.12					
82.		Door Frame	Metal	Blue	I	0.21					
83.		Door	Metal	Blue	I	0.14					
84.	North	Gutter	Metal	Blue	I	0.00					
85.	North Side East End	Gutter	Metal	Blue	I	0.00					
86.		Fascia	Wood	Blue	I	0.02					
87.		Overhang	Stucco	Tan	I	0.00					
88.	East Side	Electrical Cover	Metal	Tan	I	0.00					
89.	East Side	Door Frame	Metal	Blue	I	0.00					
90.	East Side	Door	Metal	Blue	I	0.00					

**SURVEY FOR LEAD BASED PAINT
Clovis Unified School District**

Site Name:		Dry Creek Elementary						Date:		December 14, 2020	
Address:		1273 North Armstrong Avenue						HMS Job #:		PJ61672	
Start Time:		08:00		Calibration:		1.04 = 0.9		Technician:		John Lopez	
End Time:		10:02		Calibration:		1.04 = 1.0		Inspector/Assessor:		Eric Farnsworth	
Niton XLP 300 100252				See Lead-Based Paint Inspections, Sampling Protocol, & Definition of Lead-Based Paint on Page 1							
No.	Sample Location	Component	Substrate	Color	Condition	XRF Result (mg/cm2)	Condition Codes: I = Intact, F = Fair, P = Poor				
91.	Southwest	Downspout	Metal	Blue	I	0.00					
92.	Southwest	Window Frame	Metal	Blue	I	0.00					
93.	South Side	Door Frame	Metal	Blue	I	0.00					
94.	South Side	Door	Metal	Blue	I	0.00					
95.	South Side	Overhang	Stucco	Tan	I	0.00					
96.	South Side	Fascia	Wood	Blue	I	0.07					
97.	South Side	Gutter	Metal	Blue	I	0.01					
98.	Portable P46										
99.	East Side	Door	Metal	Blue	I	0.01					
100	East Side	Door Frame	Metal	Blue	I	0.03					
101	North	T-bar grid	Metal	Off-White	I	0.00					
102	East	T-bar grid	Metal	Off-White	I	0.00					
103	P46 Exterior										
104	East Side	Wall	Wood	Off-White	I	0.00					
105	East Side	Door	Metal	Blue	I	0.01					
106	East Side	Door Frame	Metal	Blue	I	0.02					
107	East Side	Window Frame	Wood	Blue	I	0.03					
108	East Side	Downspout	Metal	Off-White	I	0.00					

**SURVEY FOR LEAD BASED PAINT
Clovis Unified School District**

Site Name:		Dry Creek Elementary					Date:		December 14, 2020		
Address:		1273 North Armstrong Avenue					HMS Job #:		PJ61672		
Start Time:		08:00	Calibration:	1.04 = 0.9	1.04 = 0.9	1.04 = 1.1	Technician:		John Lopez		
End Time:		10:02	Calibration:	1.04 = 1.0	1.04 = 1.0	1.04 = 1.1	Inspector/Assessor:		Eric Farnsworth		
Niton XLP 300 100252		See Lead-Based Paint Inspections, Sampling Protocol, & Definition of Lead-Based Paint on Page 1								Condition Codes:	I = Intact, F = Fair, P = Poor
No.	Sample Location	Component	Substrate	Color	Condition	XRF Result (mg/cm2)					
109	P47 Exterior										
110	East Side	Wall	Wood	Off-White	I	0.00					
111	East Side	Downspout	Metal	Off-White	I	0.00					
112	East Side	Overhang	Metal	Off-White	I	0.04					
113	East Side	Gutter	Metal	Blue	I	0.00					
114	P46 Exterior										
115	East Side	Overhang	Metal	Off-White	I	0.04					
116	East Side	Gutter	Metal	Blue	I	0.00					
117	P39 Exterior										
118	West Side	Wall	Wood	Off-White	I	0.00					
119	West Side	Door	Metal	Blue	I	0.00					
120	West Side	Door Frame	Metal	Blue	I	0.00					
121	West Side	Window Frame	Wood	Blue	I	0.00					
122	West Side	Downspout	Metal	Off-White	I	0.00					
123	West Side	Overhang	Metal	Off-White	I	0.00					
124	West Side	Gutter	Metal	Blue	I	0.07					
125	West Side	Building Frame	Metal	Off-White	I	0.00					
126											

SURVEY FOR LEAD BASED PAINT
Clovis Unified School District

Site Name:		Dry Creek Elementary					Date:		December 14, 2020		
Address:		1273 North Armstrong Avenue					HMS Job #:		PJ61672		
Start Time:		08:00	Calibration:	1.04 = 0.9	1.04 = 0.9	1.04 = 1.1	Technician:		John Lopez		
End Time:		10:02	Calibration:	1.04 = 1.0	1.04 = 1.0	1.04 = 1.1	Inspector/Assessor:		Eric Farnsworth		
Niton XLP 300 100252		See Lead-Based Paint Inspections, Sampling Protocol, & Definition of Lead-Based Paint on Page 1								Condition Codes: I = Intact, F = Fair, P = Poor	
No.	Sample Location	Component	Substrate	Color	Condition	XRF Result (mg/cm2)					
127	P39 Interior										
128	West Side	Door Frame	Metal	Grey	I	0.00					
End of Report											

LEAD HAZARD EVALUATION REPORT

Section 1 – Date of Lead Hazard Evaluation 12/14/20

Section 2 – Type of Lead Hazard Evaluation (Check one box only)

Lead Inspection Risk assessment Clearance Inspection Other (specify) Client Defined

Section 3 – Structure Where Lead Hazard Evaluation Was Conducted

Address [number, street, apartment (if applicable)] 1273 North Armstrong Avenue (Dry Creek ES)		City Clovis	County Fresno	Zip Code 93619
Construction date (year) of structure unknown	Type of structure <input type="checkbox"/> Multi-unit building <input checked="" type="checkbox"/> School or daycare <input type="checkbox"/> Single family dwelling <input type="checkbox"/> Other _____		Children living in structure? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	


Section 4 – Owner of Structure (if business/agency, list contact person)

Name Clovis Unified School District ATTN: Rick Lawson		Telephone number 559-327-9240		
Address [number, street, apartment (if applicable)] 1470 Herndon Avenue		City Clovis	State CA	Zip Code 93612

Section 5 – Results of Lead Hazard Evaluation (check all that apply)

No lead-based paint detected Intact lead-based paint detected Deteriorated lead-based paint detected
 No lead hazards detected Lead-contaminated dust found Lead-contaminated soil found Other _____

Section 6 – Individual Conducting Lead Hazard Evaluation

Name Eric Farnsworth		Telephone number 559-436-0277		
Address [number, street, apartment (if applicable)] 371 East Bullard Avenue #109		City Fresno	State CA	Zip Code 93710
CDPH certification number LRC#00005578	Signature 		Date 12/23/20	

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)
John Lopez LRC-00006029

Section 7 – Attachments

- A. A foundation diagram or sketch of the structure indicating the specific locations of each lead hazard or presence of lead-based paint;
- B. Each testing method, device, and sampling procedure used;
- C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector
Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:
California Department of Public Health
Childhood Lead Poisoning Prevention Branch Reports
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804-6403
Fax: (510) 620-5656

Appendix C

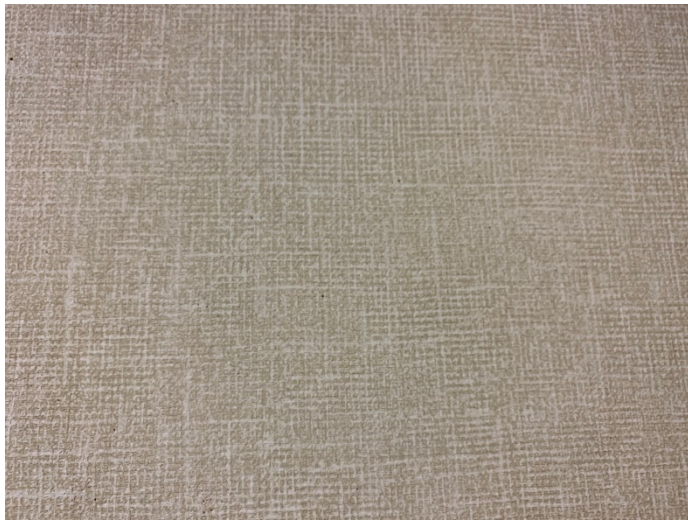
Site Photos and Sample Location Drawings



Carpet (Blue) with Glue



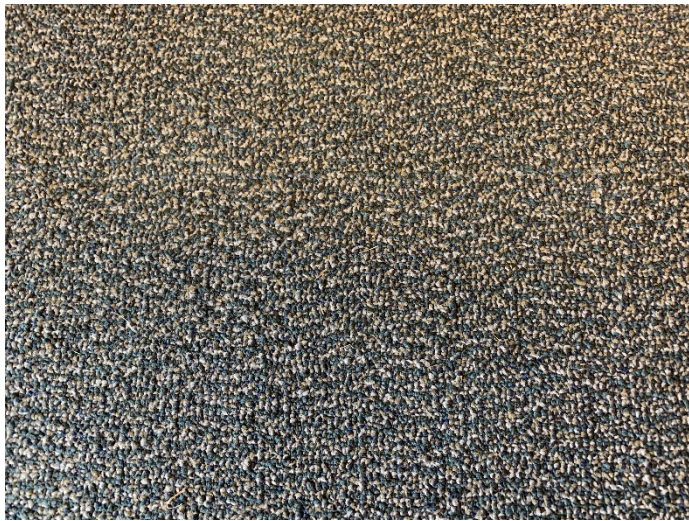
4" Vinyl Baseboard (Dark Grey) and Glue



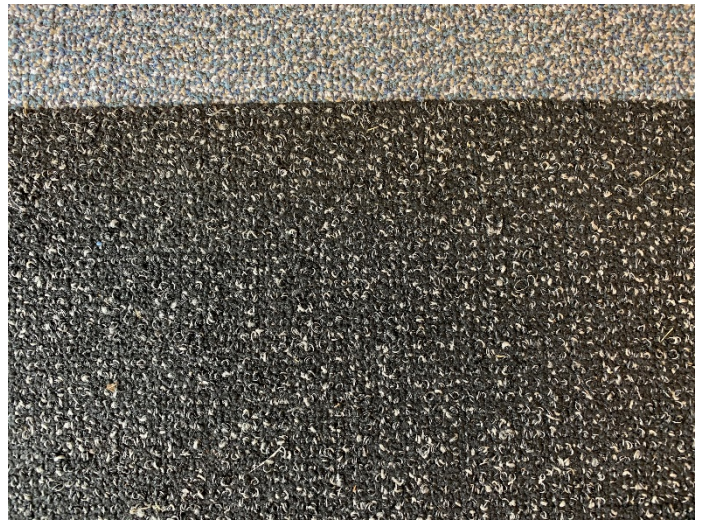
Tackboard and Glue over Drywall



2x4 False Ceiling Panels (Fiberglass)



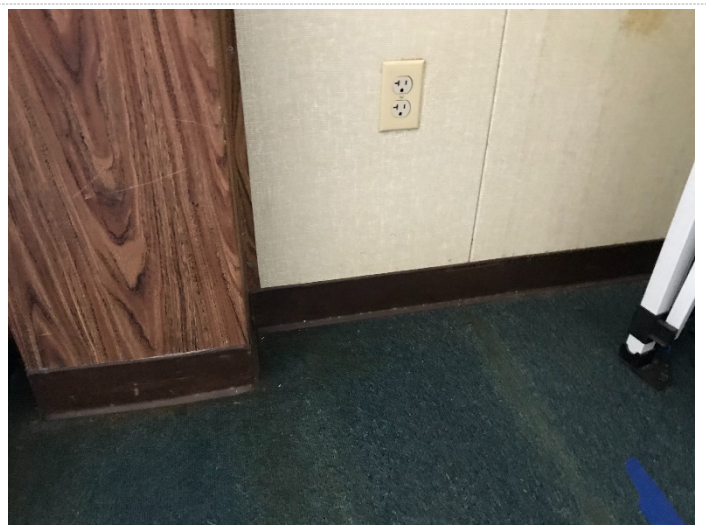
Carpet (Blue Tan Multi) and Glue



Walk-On Mat (Black) and Glue



Carpet (Dark Blue) and Glue



4" Vinyl Baseboard (Brown) and Glue



Vertical Seam Sealant (Grey)



Foam Roof



Carpet (Rainbow) with Glue



6" Vinyl Baseboard (Blue) with Glue

Walk



Drywall (Medium)



Walk-On Mat (Black) and Glue



Tackboard and Glue on Drywall



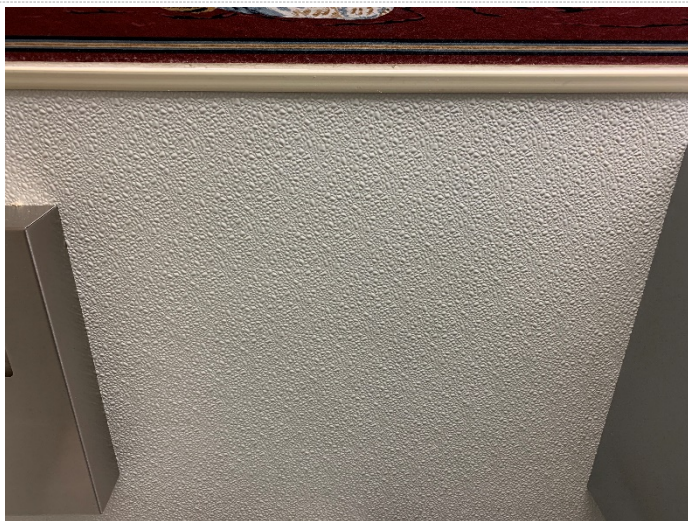
2x4 False Ceiling Panels (Sanded Pinholes)



2x2 False Ceiling Panels (Sanded)



2"x2" Ceramic Tile and Grout



FRP (White) and Glue



12" Vinyl Floor Tile (White Grey Oatmeal) with Glue



4" Vinyl Baseboard (Grey) and Glue



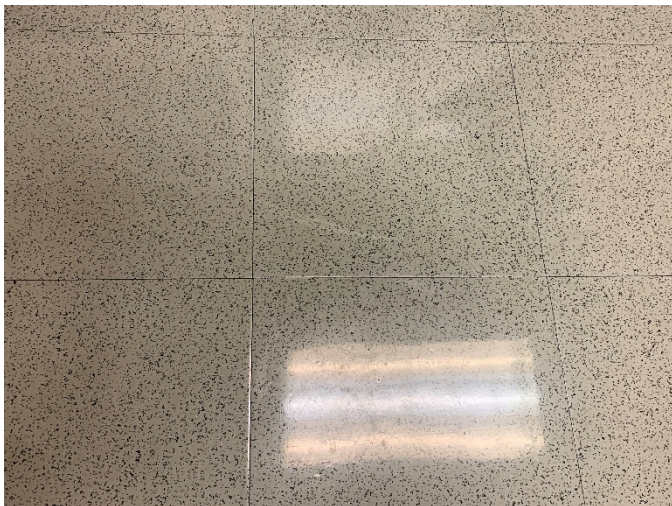
2x4 False Ceiling Panel (Random Pinhole)



Resilient Flooring (Grey with Black Specks) with Glue



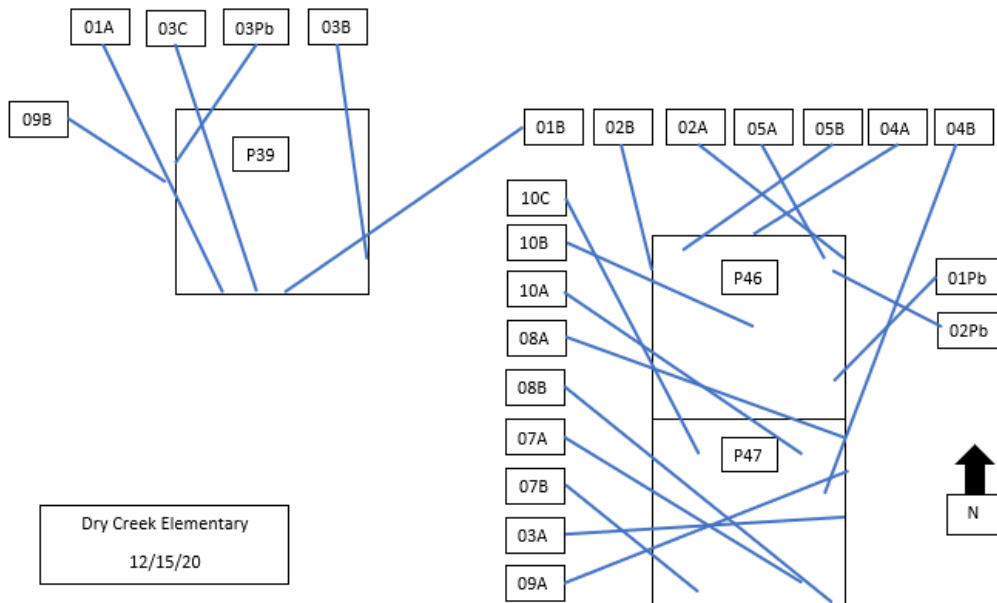
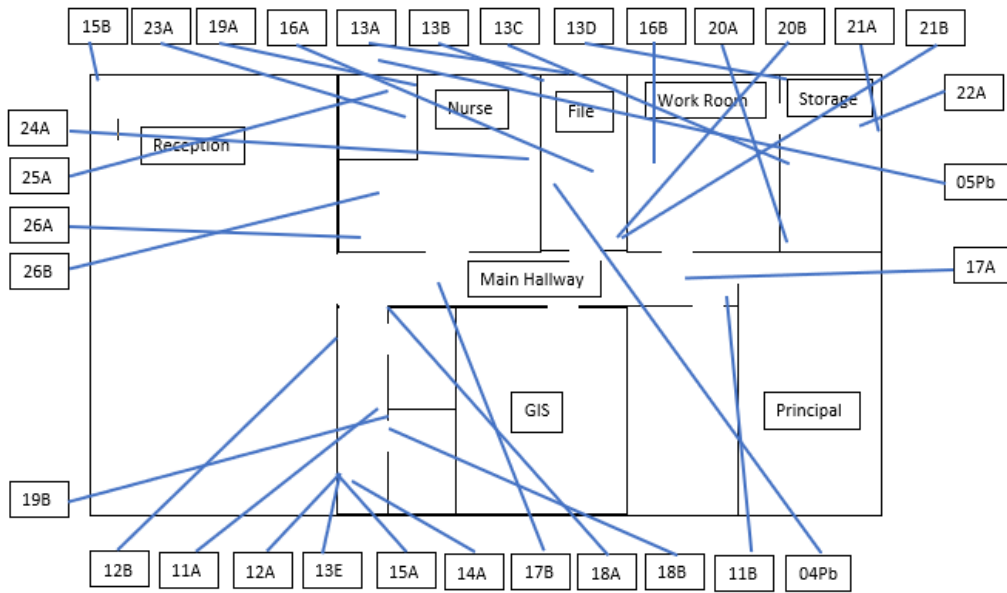
Sink Sealant (White)



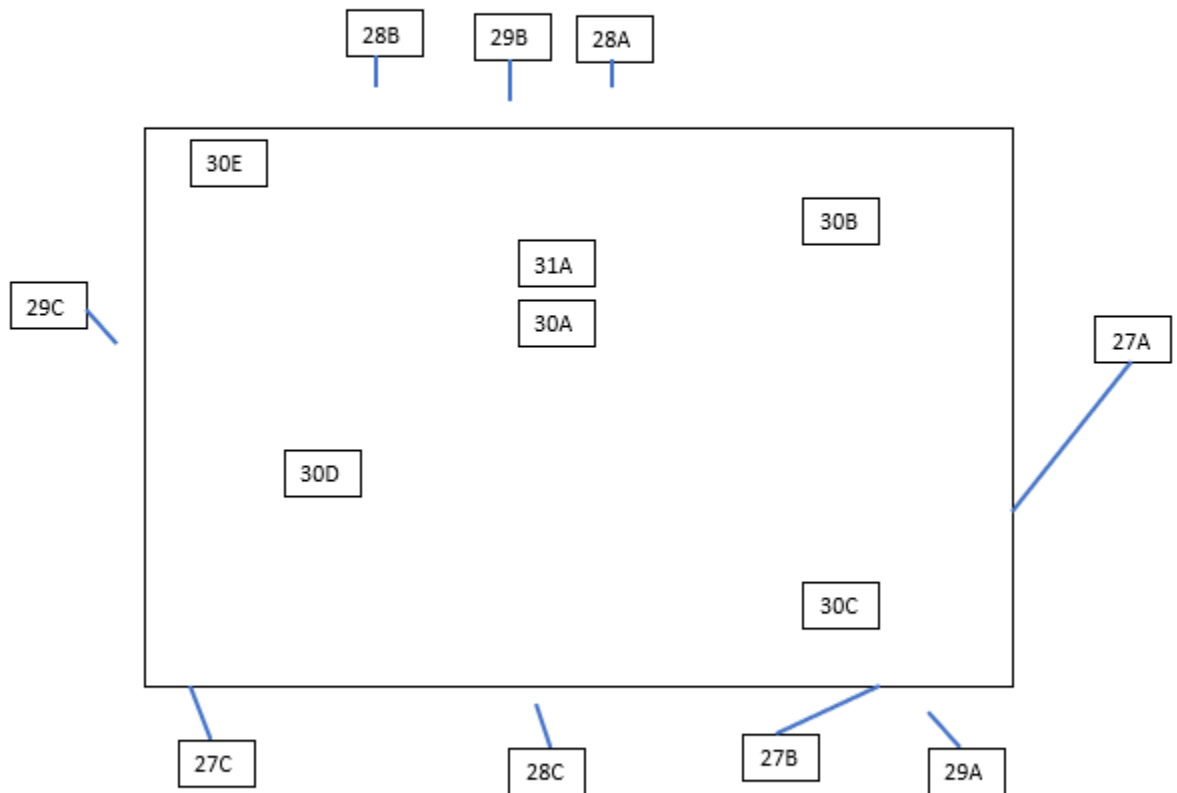
12" Vinyl Floor Tile (Grey with Black Specks) with Glue



Shingle Roof



Building A
Exterior Samples
12/15/20



Appendix D

Certifications of Personnel and Laboratories

DEPARTMENT OF INDUSTRIAL RELATIONS
Division of Occupational Safety and Health
Asbestos Certification & Training Unit

1750 Howe Avenue, Suite 460
Sacramento, CA 95825

(916) 574-2993 Office <http://www.dir.ca.gov/dosh/asbestos.html> acru@dir.ca.gov



909166643C

451

Forensic Analytical Consulting Services, Inc.
Eric S Farnsworth
371 E. Bullard Avenue, Suite 109
Fresno CA 93710

September 15, 2020

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. [8 CCR 341.15(h)(1)].

Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

Please notify our office via U.S. Postal Service or other carrier of any changes in your mailing or work address within 15 days of the change.

Sincerely,

Jeff Ferrell
Senior Safety Engineer

Attachment: Certification Card

cc: File



HMS Training

a division of Forensic Analytical Consulting Services

This is to confirm that

Eric Farnsworth

Has attended the four-hour

AHERA Refresher Course for Asbestos Inspectors

*And has completed the requisite training and passed the exam for
asbestos accreditation under TSCA Title II*

July 8, 2020

Certificate Number: HMSBIR824

Valid Until: July 8, 2021

Cal/OSHA Approval Number: CA-025-06



A handwritten signature in black ink that reads "Michael C. Sharp".

Michael C. Sharp - Training Director
HMS/Forensic Analytical Consulting Services
207 McHenry Ave. Modesto, CA 95354
(800) 677-1483



LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:



Eric Farnsworth

CERTIFICATE TYPE:

Lead Inspector/Assessor

Lead Sampling Technician

NUMBER:

LRC-00005578

LRC-00000970

EXPIRATION DATE:

2/18/2021

5/22/2020

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD.

DEPARTMENT OF INDUSTRIAL RELATIONS
 Division of Occupational Safety and Health
 Asbestos Certification & Training Unit
 1750 Howe Avenue, Suite 460
 Sacramento, CA 95825
 (916) 574-2993 Office <http://www.dir.ca.gov/dosh/asbestos.html> acru@dir.ca.gov



008186823T

457.2

Forensic Analytical Consulting Services, Inc.
 John E. Lopez
 207 McHenry Avenue
 Modesto CA 95354

October 22, 2020

Dear Certified Asbestos Consultant or Technician:

Congratulations, you have passed your certification examination!

Enclosed is your certification card. **To maintain your certification, please abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card in accordance with Title 8, California Code of Regulations, Division 1, Chapter 3.2, Article 2.6, Section 341.15(h) (1).

Please keep and do not send copies of your required AHERA refresher renewal certificates to the Division until you apply for renewal of your certification.

Please submit via U.S. Postal Service or other carrier, of any changes in your mailing or work address within 15 days of the change.

Sincerely,

Jeff Ferrell
 Senior Safety Engineer

Attachment: Certification Card

cc: File



HMS Training

a division of Forensic Analytical Consulting Services

This is to confirm that

John Lopez

Has attended the four-hour

AHERA Refresher Course for Asbestos Inspectors

And has completed the requisite training and passed the exam for

asbestos accreditation under TSCA Title II

September 11, 2020

Certificate Number: HMSBIR873

Valid Until: September 11, 2021

Cal/OSHA Approval Number: CA-025-06



A handwritten signature in black ink, appearing to read "Michael C. Sharp".

Michael C. Sharp - Training Director
HMS/Forensic Analytical Consulting Services
207 McHenry Ave. Modesto, CA 95354
(800) 677-1483



STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH



LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:



John Lopez

CERTIFICATE TYPE:

Lead Sampling Technician

NUMBER:

LRC-00006029

EXPIRATION DATE:

3/16/2021

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD.

DEPARTMENT OF INDUSTRIAL RELATIONS
Division of Occupational Safety and Health
Asbestos Certification & Training Unit

2424 Arden Way, Suite 495

Sacramento, CA 95825-2417

(916) 574-2993 Office <http://www.dir.ca.gov/dosh/asbestos.html> acru@dir.ca.gov



005174633C

339

June 08, 2020

Christopher J Chipponeri
1401 Louise Avenue
Modesto CA 95350

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. [8 CCR 341.15(h)(1)].

Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

Please notify our office via U.S. Postal Service or other carrier of any changes in your mailing or work address within 15 days of the change.

Sincerely,

Jeff Ferrell
Senior Safety Engineer

Attachment: Certification Card

cc: File

Renewal – Card Attached 08/2019

State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

Christopher J Chipponeri
Name

Certification No. **10-4633**

Expires on **06/16/21**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.




HMS Training

a division of Forensic Analytical Consulting Services

This is to confirm that

Chris Chipponeri

Has attended the four-hour

AHERA Refresher Course for Asbestos Inspectors

And has completed the requisite training and passed the exam for

asbestos accreditation under TSCA Title II

September 9, 2020

Certificate Number: HMSBIR851

Valid Until: September 9, 2021

Cal/OSHA Approval Number: CA-025-06



A handwritten signature in black ink, appearing to read "Michael C. Sharp".

Michael C. Sharp - Training Director

HMS/Forensic Analytical Consulting Services
207 McHenry Ave. Modesto, CA 95354

(800) 677-1483



LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:



Chris Chipponeri

CERTIFICATE TYPE:

Lead Inspector/Assessor

NUMBER:

LRC-00000782

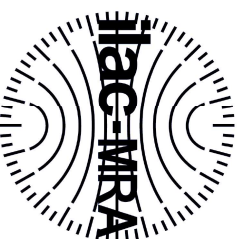
EXPIRATION DATE:

6/20/2021

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD.

United States Department of Commerce
National Institute of Standards and Technology

NVLAP[®]



Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101459-0

SGS Forensic Laboratories

Hayward, CA

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

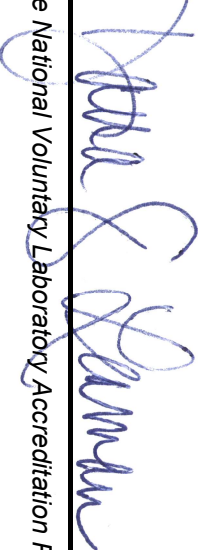
Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).*

2020-07-01 through 2021-06-30

Effective Dates




For the National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

SGS Forensic Laboratories

3777 Depot Road, Suite 409

Hayward, CA 94545-2761

Mr. Steven Takahashi

Phone: 310-294-4365 Fax: 310-764-1136

Email: steven.takahashi@sgs.com

<http://www.falaboratories.com>

ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 101459-0

Bulk Asbestos Analysis

Code

Description

18/A01

EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples

18/A03

EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

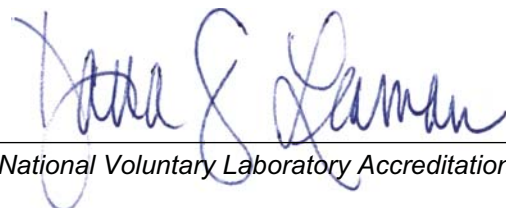
Airborne Asbestos Analysis

Code

Description

18/A02

U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.



For the National Voluntary Laboratory Accreditation Program



AIHA Laboratory Accreditation Programs, LLC

acknowledges that

SGS Forensic Laboratories

3777 Depot Rd, Suite 409, Hayward, CA 94545-2761

Laboratory ID: LAP-101762

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC accreditation to the ISO/IEC 17025:2005 international standard, General Requirements for the Competence of Testing and Calibration Laboratories in the following:

LABORATORY ACCREDITATION PROGRAMS

- INDUSTRIAL HYGIENE Accreditation Expires: December 01, 2020
- ENVIRONMENTAL LEAD Accreditation Expires: December 01, 2020
- ENVIRONMENTAL MICROBIOLOGY Accreditation Expires: December 01, 2020
- FOOD Accreditation Expires:
- UNIQUE SCOPES Accreditation Expires: December 01, 2020

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2005 and AIHA-LAP, LLC requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA-LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Elizabeth Bair

Cheryl O. Morton

Elizabeth Bair
Chairperson, Analytical Accreditation Board

Cheryl O. Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC

Revision 17: 09/11/2018

Date Issued: 08/02/2019

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JOBSITE WALK SIGN-IN SHEET

1807

Harris Job No.

Date: 12.29.2020

Project: Drycreek ES Classroom Bldg & Admin Modernization
 Estimator: Steve Hammett

Company Name	Bid Package	Contact Name	Phone Number	Email Address
CENCAL SERVICES	CONCRETE	CARL MACKAY	559-779-4016	carl@cencaldemo.com
ECI	Mechanical	Wayne Malcolson	559-323-9788	Wayne@ecihvac.com
Divcon inc.	Rough carpentry / Gen. elec.	Dylan Gandy	559-496-0205	Estimating@divconinc.com
Tan-Han-Tson	Master Drywall Pros	Scotty White	559-836-2447	ScottW@TanHamTson.com
Durham Construction	General Specialties	Hart Sandhu	559-294-1500	hart@durham-construction.com
Markko Construction	General Specialties	Jason Tenty	559-222-7888	j.tenty@markkoconstruction.com
Nelson - Moore Construction	Paints	Ecl Moore	559-246-9126	NM-Construction@aol.com
Innovation Commercial Flooring	Flooring	John Loblanc	559-439-8800	John@icflooring.com
WATERW ENGINEERING	Acoustics	ORALIN LAKE	559 454 8370	darin@wbmco.com
DAVID A BUSP INC	Demo / Abatement	Publio Quintero	(559) 949-3380	Publio@maglamaints.net
HARRIS CONSTRUCTION	GENERAL	TYLER THOMAS	559 584-1575	thomas@harriskonstruction.net
JOHN BURTONS COMPANY	Plumbing / HVAC	DANIEL THOMPSON	(559) 447-7810	DTHOMPSON@HARRISCON.COM
NEW ENGLAND SHEET METAL	HVAC	JOHN BURTONS	559 765 6929	johna.jburtons@neweng.com
GRAMMA PERMETTIN	DC-OFS ROOFING / SIM	KEN BURNARD	559-268-7375	kb@nesm.com
FENCE FACTORY (CENTALS)	General	JOHN PERGERS	559-291-3741	John@FFETROOFING.COM
		Ryan Mead	805-453-6548	Rmead@fencefactory.com



JOBSITE WALK SIGN-IN SHEET

Harris Job No. 1807
Date: 12.29.2020

Project: Drycreek ES Classroom Bldg & Admin Modernization
Estimator: Steve Hamett

Company Name	Bid Package	Contact Name	Phone Number	Email Address
Fresno Roofing	ROOFING	Bill Olson	217-3397	bill@fresnoroofing.com
Central Valley Enviro	Demol/ABATEMENT	Greg Paul	559-474-1653	gregp@cvsconstruction.net
Jo Boone Mechanical	HVAC	Jim Boone	559-269-8098	jo.boone@mech.com
Care Contracting Inc	Rough Carpentry	Andy SoSy	760 683 8308	estimating@carecontractinginc.com
Valley Electric	ELECTRICAL/LOW VOLTAGE	BRETT FERRE	559-237-4795	BRETT.FERRER@VALLEYELECTRIC.COM
Bowen Eng + Cnv.	Demol/Alt Earthwork	Erik Bowen	559-233-3464	bowen@boweneng.com
Central Valley Enviro	Carpentry	TIM WALKER	559-262-3898	tim@cwconstruction.net
Charzmat Concrete	Concrete	Dennis Daddino	559-352-6336	ddaddino@yahoo.com
Eldorado Excavation	Earthwork/Paving	Dennis Daddino	(559) 352-6336	ddaddino@yahoo.com
W.M. H. Selen Co	PAINTING	MARK SABELL	(559) 255-2046	mark@selencompany.com
MAGNETAR	General Spec, Concrete	GREG HARPOW	321 7821	greg.harwin@magnetar.us
Davis Morsand	Earthwork	JOE	(559) 352-9393	jo@davis-morsand.com
Strategic Mechanical Inc	HVAC	MARK STOECKLE	559-291-1952	mark@strategicmech.com
Coastal Enviro	Demol/Abate	Jason Ainsworth	559-477-1957	jason@coastalenviro.com
SIM-PBK	BRACKET	JESS BRICKS		



JOBSITE WALK SIGN-IN SHEET

Harris Job No. 1807
Date: 12.29.2020

Project: Drycreek ES Classroom Bldg & Admin Modernization
Estimator: Steve Hamett

Company Name	Bid Package	Contact Name	Phone Number	Email Address
ALTE SIM	HVAC Penetration	TRIF BARBAR	1591 275-1246	
SMITH MEP	HVAC / Plumbing	NORBERT VINT	805-345-0937	AV P SMITH - electric.com
DAVIS MORANO	OPEN SPEC CONTRACT	TR Naylor	352-5323	PAVIS MORANO CONTRACTORS.COM
DMS	Drywall / L&P	DAMIAN LEE	661-342-7305	dlee@dfinteriorsinc.com
General Services	concrete / Framing / Demo	MIKE POCKEN	593-790-5834	mpocken@ceperledo.com
COSSO FIRE	Fire sprinkler	COBY STEPHENS	959-290-1684	1stephens@ceperledo.com
CAL BUILDERS	CONCRETE / OPEN SPEC	CHRISTINA MORGAN	557-474-0936	CBUILDERS@YAHOO.COM
ELITE LANDSCAPE CONSTR.	LANDSCAPE / LAWN	BROS ROSE	559-232-2800	BROSROSE@ELITECONTRACTORS.COM
Novelli Painting	Painting	Samuel Novelli	909-379-3150	Sales@NovelliPainting.com
HAVE ELECTRIC	ELECTRICAL	LUKE GALT / GALT	755-8992	luke@thurs-electric.com
Valley Excavation, Inc	Excavation / Paving	ALAN NELSON	709-9001	alan@valleyexcavation.com
LAWSON MECHANICAL	HVAC / CONTROLS	JEFF SHORT	751-6600	JSHORT@LAWSONMECHANICAL.COM
NUMMUS ROOF	ROOFING	RICK CHASEN	559-978-4046	rchasen@nummusroof.com

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY

A. General: Construction of the BASE BID work for **Clovis Unified School District Drycreek Elementary School Classroom Addition & Admin Modernization Project in Clovis, CA**. The BASE BID work is defined as all material, labor, equipment and services necessary to do all work shown on the drawings and called for in the Specifications.

General Summary of the Project

The following information applies to all Prime Contractors and shall be reviewed carefully for inclusion in each bid. Following are critical logistics related to the Project:

1. Abatement work is included in this contract.
2. Addition of a Single Story Classroom Building, Administration Modernization, Site work, Low Voltage, Fire Alarm and EMS upgrades.
3. Work for the project will be performed during the hours of 7:00 a.m. to 3:30 p.m.
4. Submittals and material procurement shall begin immediately upon award or letter of intent from the District.
5. Material procurement is critical and shall be diligently pursued to meet the contract schedule.
6. Contractors shall review the project and schedule completely prior to bidding the work.
7. Substitutions must be noted in each bid with all costs for the specified product included in the bid and the substitution cost noted separately
8. Coordination of work during the preconstruction period is equally as critical to resolving all issues prior to the start of work. Prime Contractors shall review the project, coordinate and question any issues to allow resolution prior to the start of work.
9. Contractors shall include all necessary overtime costs in their base bid to complete the project as shown on the contract bid schedule. No additional money will be paid for overtime work.

In addition to the Bid Package Summary of Work provided by the CM for each trade, the following will apply and become a part of the contract with each respective Prime Contract.

Storm Water Pollution Prevention Plan

All contractors shall follow BMP's.

Contract

Please be advised that all successful bidders will be required to enter into a Prime Contract agreement with Clovis Unified School District.

Alternates

Additive Alternates for the work are as follows. Please provide a base bid for the project then list all additive alternates:

1. None

Crew Sizes

All Prime Contractors shall review the schedule and confirm that they can crew the project accordingly prior to submitting a bid. Include with each bid minimum and maximum crew sizes projected for the project.

Schedule

The Prime Contractors will be required to provide a schedule and crew sizing showing how the work will be accomplished within the given time frame.

Site Logistics, Work and Coordination (applies to each Prime Contractor):

1. The district will remove and replace all furnishings and equipment. Provide layout of areas needed to complete your scope of work prior to the project beginning to allow for coordination with CM and The District.
2. Review and verify all existing conditions report any conflicts to the CM.
3. Provide all necessary temporary power distribution from services provided @ the building by the Electrical Package.
4. All subcontractors will provide their own temporary lighting. Electrical Package will provide ingress and egress lighting and string lights in corridors only.
5. All contractors shall attend coordination meetings and provide coordination drawings for underground and above ceiling work for work related to this Prime Contract and for coordination of utilities, openings and other areas that require interface between trades. Coordinate all drawings with the drawings of this Prime Contract. Note conflicts and provide potential solutions to the architect for review. Coordination and drawing approval must occur prior to excavation (and/or) overhead work. Contractor shall attend a pre-installation meeting prior to the start of its work onsite. All contractors shall be available for pre-installation meetings of other contractors for coordination of related work.
6. Only company vehicles are allowed onsite. No tool drop off or parking by personal vehicles will be allowed. Contractor to make provisions for transport or tool distribution needs.
7. Lunch and breaks shall be at designated areas only. No other areas will be allowed.
8. Protect all work, new and existing, from damage until acceptance by owner.
9. Storage areas will be confined to the areas designated by the CM. Staging areas around the building shall be coordinated with the CM. Storage onsite will be controlled due to limited space available.
10. Furnish all access to roof for own work, this to include any required hoisting of materials and/or Equipment.
11. Work under each contract shall comply with the Storm Water Pollution standards and as set forth in these Contract Documents.
12. All work under each contract shall comply with Air Pollution Control District standards. Provide dust control for own work.
13. Provide written request for information through the CM for layout information from related Prime Contractors for all rough-in, embedded items, openings and block-outs, etc.
14. Request and review all associated shop drawings for coordination and layout purposes prior to installation of related materials.
15. Furnish and Install specified and/or approved sealant for own work abutting other, previously installed, materials.
16. Furnish and install protection of all floors and roofing for own work.
17. Furnish and install all physical layout for own work.
18. There will be one wash out area for all contractors as designated by the CM. Each contractor will be responsible for providing wash out bin.
19. The CM will provide a miscellaneous debris bin for all bid packages except Demolition and Masonry.
20. Secure all ladders, lifts, equipment and tools each evening, no security provided.
21. Provide caution tape and/or barriers for open area work and traffic control.
22. Coordinate all work with mechanical, plumbing and electrical contractors for shut down of services as needed. Written notification must be given to the CM 48 hours prior to all shut down activities.
23. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.

24. All Prime Contractors are to provide a Full-Time Onsite Superintendent at all times while the Prime Contractor has crews onsite. This requirement includes while the Prime Contractor's subcontractors are onsite.
25. Each contractor is to provide all equipment and manpower as necessary to offload all materials required to complete their respective scope of work.
26. Provide complete mockups as required by the specifications which is not integral to the building.
27. If purchasing of material and equipment is required prior to immediate delivery and installation, provide storage as required until material is required to be installed per the contract schedule.

Underground Locating (for reference only, provided by CM)

Furnish and install all work specifically required throughout the project documents to complete the work of this subcontractor that specifically includes, but is not limited to the following:

Specification Sections

N/A

Refer to additional related specifications sections for work specifically included in this subcontractor noted below.

General Items:

1. See General Notes at beginning of section.
2. Coordinate all underground locating with the CM prior to starting work.

Locating services shall include:

1. Proposed footprint of building(s) plus 5' in each direction.
2. Proposed footprint of site structure(s) plus 5' in each direction. Site structures include items such as fences, gates, flagpoles, bollards, retaining walls, railings, foundations, concrete benches, ramps, etc.
3. Pathways for all proposed underground utilities plus 5' in each direction. This includes electrical conduit, storm drain, sewer, water, gas, fire, irrigation, etc.

Documents:

1. Provide scaled color coded drawing (minimum of 11x17) for all items located.

Installation of FOB Items:

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. None

End of Underground Locating Scope

Survey (for reference only, provided by CM)

Furnish and install all work specifically required throughout the project documents to complete the work of

this subcontractor that specifically includes, but is not limited to the following:

Specification Sections

Division 00 – Procurement and Contracting Requirements

Division 01 – General & Supplementary Conditions

Specific Requirements

1. Provide minimum of (2) move-ins for each section of work as listed on the attached Project Schedule.
2. Set Control points complete per plans and specs.
3. Furnish and install all survey monuments as required by the plans and specs.

Coordination:

4. Coordinate elevation of all underground utilities. Attend all coordination meetings with underground utility contractors. Provide a list of all conflicts and potential solutions.
5. Coordinate location of site vaults and boxes to eliminate conflicts with walks, site structures, buildings and other utilities.
6. Coordinate locations of UG utilities to avoid conflict with angle of repose of foundations
7. Coordinate location of utilities to avoid conflicts with trees or other site related items.
8. Confirm concrete walk slopes for ADA compliance and proper flow.
9. Confirm ground slopes away from buildings in landscaped areas min 5% for at least 10'.
10. Confirm proper flow of all sewer and storm drain.
11. Confirm accuracy of (E) grades and benchmarks prior to start of staking.

Earthwork:

12. For each structure, establish a minimum of two permanent horizontal and vertical control points on the site, remote from the building area referenced to data established by survey control points
13. Staking for over excavation of Building pads
14. Staking of building corners for building pads for rough grading
15. Certification of site grades
16. Rough and finish grades for all offsite and onsite earthwork and paving

Under Ground Utilities:

17. Staking of all electrical vaults and boxes – orientation, horizontal and vertical points
18. Staking of all storm drain lines (manhole to manhole) and drain inlets (including orientation), drain boxes, sewer lines and cleanouts (100'); domestic water, fire water, gas lines and vaults (as required for excavation and installation horizontal and vertical) at the site.
19. Stake all valve locations.
20. Stake all fire Hydrants and PIV locations.
21. Stake all irrigation sleeves.
22. Stake all lateral tees and POC's at all Buildings for all utilities.
23. Stake all offsite utilities including water, sewer, storm drain, and electrical
24. Stake all Fire Risers (Horizontal and Vertical)
25. Stake all site lighting. Maintain required clearances from other underground utilities. Confirm all light fixtures are minimum 30" from face of curb when located at the head of a parking stall.

Onsite Concrete Work:

26. Provide staking for all onsite concrete work, walks, curbs, gutters, and walls.
27. Provide staking for all fencing.

Buildings:

28. Provide 1 permanent horizontal and vertical control point at each building.
29. Offset staking for building corners to be determined by CM.
30. Provide 10'x10' control grid at building pad.
31. Provide survey for every other building gridline at building pad, reference points and radiuses as required.
32. Provide Certification for building pads.
33. Provide (2) certifications of all anchor bolts for columns at buildings, canopies and similar for elevation, location and orientation. (1) Certification is to be completed prior to placement of concrete and the second is to take place after placement of concrete.
34. Provide two Gridlines North/South direction and one gridline East/West direction per building after SOG placement.

Documents:

1. Cut sheets and reference drawings for all stake items.
2. Certify site grades when site concrete and landscaping is complete.
3. ALL written certifications, cut sheets and reference drawings are to be provided within 48 hours of Survey to HCCI.
4. Provide an As-Grade Survey for Landscape Areas prior to planting.
5. Provide color coded as-built for all site work & utilities in PDF format.

DC-01 DEMOLITION & ABATEMENT

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

Division 00	CUSD General Conditions for CM Projects
Division 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
02 41 19	Selective Demolition
31 11 00	Site Clearing (As Applies to Demolition)
31 22 00	Soil Material (As Applies to Demolition)

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. See General Notes at beginning of summary of work specification section for other items.
2. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
3. Coordinate all work to provide access to buildings for other trades as scheduled. Coordinate with other activities in the schedule for other trades and confirm the schedule meets the CMBS dates.
4. Furnish and install all layout for own work from survey provided.
5. Coordinate all work with local utilities & utility contractors for shut down of services prior to demo.
6. Obtain all permits required to perform the work, including but not limited to Demolition Permit.
7. Provide all clean up daily and provide off-haul of own debris with bin provided by this bid package.
8. Review Asbestos and lead abatement survey for abatement scope of work.
9. Notify Air Board for demolition and abatement work.

Coordination with Other Trades

1. Review as-builts & underground locator survey & pothole utilities prior to starting work.
2. Dispose of building light fixtures and lamps in accordance with Contract Documents. Electrical Contractor will remove and stockpile for disposal by this package.
3. Coordinate extent of all abatement with CM prior to starting work
4. Coordinate with all other trades for extent of demo prior to starting work.
5. Demo shall include all substrate and fasteners ready for the next trade.
6. Coordinate with all contractors the extent of cutting/capping of utilities and concrete removal.
7. Coordinate extent of plaster removal for new fixtures with General Specialties package
8. AC Unit purges are to be completed by the HVAC Contractor.

Furnish and Install Items

1. Protect from damage all finishes shown to remain throughout demolition activities. Any finishes not to be removed but damaged during Demolition will be replaced by this contract.
2. Protect all irrigation adjacent to demo areas.
3. Provide all demolition/removal of all items noted to be removed as shown on civil, landscape, architectural, mechanical, plumbing, electrical, and structural, including but not limited to the following:
 - a. All cut or demo of concrete & asphalt.
 - b. All demo & removal of debris for: asphalt, concrete, foundations, trees, shrubs & turf, posts, signage, & foundations, fencing, and pole bases.
 - c. All irrigation, plant, roots and planter material demo shown throughout the documents. Coordinate with landscape contractor. Irrigation to be capped by landscape contractor. Furnish landscape grades in planters to tolerances noted in documents.
 - d. All salvageable items noted in the contract documents to be reused or turned over

- to District will be tagged and turned over with an itemized list to the CM.
- e. Casework, countertops, backsplashes shown to be removed. Casework contractor to remove these items where shown adjacent to items to remain. Casework contractor also to remove and reinstall casework items shown to be reinstalled.
 - f. Remove and deliver to Owner salvage items shown.
 - g. HVAC duct work and equipment, unit ventilators, chillers, boilers, roof mounted units, and Ice tanks will be disconnected and removed by mechanical contractor, items will be staged for off haul by demo contractor.
 - h. Building Gypsum board and/or Plaster
 - i. Framed Walls, roofs and Ceilings
 - j. Ceiling Grid shown to be removed
 - k. Wall Finishes – Including glue removal
 - l. Exterior Finishes
 - m. Doors, Windows, Hardware and Louvers
 - n. Bldg. Electrical, LV, FA Demo (Safe-Off by Electrical)
 - o. All plumbing items at the site and buildings.
 - p. Flooring where all flooring in the room is removed. Including adhesive removal.
 - q. Demo grout bed.
 - r. Ceramic Tile.
4. Items to be removed by others:
- a. Irrigation contractor will cut and cap and remove all heads and devices
 - b. Remove and salvage all plumbing fixtures shown to be demolished.
 - c. Remove (disconnect and stage) all mechanical units including roof mounted and unit ventilators complete is by mechanical contractor
 - d. Remove and store all mechanical items that are to be reinstalled at it later date is by mechanical contractor.
 - e. Roofing.
5. Demolition of all concrete shall be from joint to joint. No overcuts allowed.
6. Demo all toilet partitions and accessories as shown, General Specialties package to remove accessories shown to be removed and re-installed.
7. Demo ceilings where walls are to be installed.
8. Demo concrete for plumbing relocation including curb and wall finishes.
9. Provide for proper hazardous material disposal of lamps and ballasts.
10. Remove all electrical equipment and fixtures at the site.
11. Cut & cap of utilities will be by all utility trades. Coordinate prior to demo
12. Demo and removal of a UG Utility Lines shown to removed
13. Demolish and backfill (E) Septic Tank and leach lines per P1.0P
14. Remove all abandoned Underground Utilities within Construction Limits and identified on Underground Locating Map.
15. Backfill and compact all voids left by demolished items.
16. This contract shall provide cleaning services for all adjacent structures to remain of all dust dirt and debris caused by demo activities.
17. Furnish, install and maintain Traffic Control for all work in this bid package.
18. This Contract will be responsible to provide all abatement requirements per the haz-mat report provided by HMS. Coordinate extent of all abatement with the CM prior to starting work. Review the haz-mat report prepared by HMS, Inc. for the scope of work and abatement methodology.
19. Provide daily offhaul of debris from jobsite in accordance with HMS Hazardous Materials Report.

FOB Items

1. None.

Provide Information Separate from Bid amount. Include on Bid form.

1. None.

Installation of FOB Items:

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None.

End of Package

DC-02 SITE & BUILDING CONCRETE & REINFORCING

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
03 02 00	Concrete Resurfacing, Repair & Moisture Vapor Mitigation
03 10 00	Concrete Forming & Accessories
03 20 00	Concrete Reinforcing
03 30 00	Cast-in-Place Concrete
03 35 00	Concrete Finishing
03 35 43	Concrete Polishing (As Applies)
07 92 00	Joint Sealants (As Applies)
31 23 00	Trench Excavation & Backfill (As Applies)
32 11 26	Aggregate Base Course
32 13 13	Site Concrete Improvements
32 13 15	Concrete Improvements
32 17 26	Tactile Warning Surfacing

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
2. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
3. There will be one wash out area for all contractors as designated by the CM. Each contractor will be responsible for providing wash out bin.
4. Provide all backfill of excavations to original sub-grade for work included in this Prime Contract.
5. Provide all clean up and provide off-haul of own debris from site daily.
6. See General Notes at beginning of summary of work specification section for other items
7. Furnish off-haul of all excavation spoils from site.
8. Provide Dewatering for own work. Dewater block outs for structural steel columns until pour back.
9. All subcontractors will provide their own temporary lighting. Harris Construction will provide ingress and egress lighting and string lights in corridors only.

Coordination with Other Trades –

1. Review and coordinate layout of all block outs in concrete as shown in the contract documents, related shop drawings or written layout provided by other Prime Contractors. Coordinate locations with related Prime Contractors prior to installation.
2. Provide location for reinforcing steel passing through structural steel for structural steel shop drawings, as required.
3. Coordinate dimensions with other related Prime Contractors of all equipment and housekeeping pads. Pad sizes shall be provided by other Prime Contractors and physically laid out and installed by this Prime Contractor.
4. This Prime Contractor will receive all building pads at +/-0.05' and site at +/-0.10' will be responsible for all cut and fill necessary to complete the work of this Prime Contractor.
5. Maintain building slab subgrade moisture content per soils report once building pad is received from the earthwork Prime Contractor.

6. Provide access for other trades through reinforcing steel at building lines.
7. Provide layout drawings for all building slab on grade concrete joints for approval prior to installation of concrete.
8. Provide layout drawings for all site concrete joints for approval prior to installation of concrete.
9. Receive and coordinate written layout from other Prime Contractors for items embedded in, or passing through concrete. All sleeves are to be installed by the utility and or misc. steel / railing Prime Contractors.
10. Coordinate all embedded items in foundations at exterior of building to be installed at a later time i.e. fencing, posts, etc...
11. Coordinate installation of all sleeves for work passing through concrete work with respective Prime Contractors prior to excavation.
12. Coordinate concrete curbs relative to framing prior to pour.
13. Coordinate all work to provide access to buildings for other trades as scheduled. Coordinate with other activities in the schedule for other trades and confirm the schedule meets the CMBS dates.
14. Install and coordinate block-outs at the site concrete to facilitate installation of fine grading by Earthwork Prime Contractor and to protect concrete until fine grading is complete. Complete site concrete block-outs once fine grading is complete. Backfill and fine grade once block-outs have been poured.
15. Irrigation sleeves will be installed by the landscape/irrigation Prime Contractor. Coordinate schedule.
16. Coordinate the location of depressions, block outs, slopes and drains prior to pour, with other trades as required.
17. Coordinate site walks at building plaster. Termination to conform to code.
18. Review as-builts & underground locator survey & pothole utilities prior to starting work.
19. See General Notes at beginning of summary of work specification section for other items.
20. Coordinate with Demolition Prime Contractor for extent of concrete demolition. Concrete will be removed joint to joint by demo contractor. Replace as required for all trades. Existing concrete to be figured at those areas shown on Demo drawings. In addition concrete patch back to be figured at all plumbing & electrical/LV/FA trenches shown to be located in existing slab. All trenches to be patched figure to be 2' wide.
21. Coordinate site walks @ building plaster. Termination to conform to code.
22. Electrical and site utility bid package shall furnish and install all concrete required for installation of thrust blocks, manholes, vaults, boxes, underground structures for work related to their bid package. This bid package shall furnish and install all other concrete shown including aprons mow strips and collars.

Furnish and Install Items

1. Furnish and install all site and building concrete complete including any required reinforcement per plans and specifications. This to include entire SOG profile (Agg. Base, Sand, Vapor Barrier, Concrete, Etc...)as shown on the contract documents. This also to include patch back of concrete sidewalk, curbs, gutters, etc... at all Utility Tie-Ins.
2. Furnish proposed construction joint layout for review and approval by the Architect. Provide all saw cutting, formwork and sealant for same as required per the contract documents
3. Furnish and install all sand as detailed at site concrete. All other fill material shall be furnished and installed by the earthwork subcontractor. Agg. Base under vehicular type sidewalk to be by Earthwork package per the contract documents.
4. Furnish and install all layout for own work from survey provided by the survey contractor. See survey scope of work for reference. This bid package will be responsible for all additional required layout not performed by the survey contractor. Contractors are responsible for protection of all requested survey. Provide 72 hour notice by submitting a survey request form.
5. Furnish and install surface saw cutting per the contract documents.

6. Furnish proposed construction joint layout for review and approval by the Architect. Provide all saw cutting, formwork and epoxy joint filler for same.
7. Furnish and install all drilling of holes for work performed in this Prime Contract.
8. Furnish and install all expansion joints, sealant and filler complete required by the contract documents.
9. Furnish and install all agg. Base/sand as detailed at building concrete. All other fill material shall be furnished and installed by the earthwork package.
10. Furnish and install any and all backfill of excavations at all stem, retaining, and ramp walls by this Prime Contractor to the required grade.
11. Furnish and install all mow strips including excavation. Backfill will be by the earthwork package.
12. Physically layout and install all block outs, openings, etc... in concrete from written layout provided by other contractors for installation of their work.
13. Furnish & install all concrete equipment/housekeeping pads on site.
14. Furnish and install all concrete for utilities shown on Civil and Architectural Drawings; i.e., collars at Christy inlets, concrete at gate valves, post indicator valves, backflow preventer.
15. Furnish and install all reinforcing steel for site work and building concrete.
16. Furnish and install all sealant at building to site concrete.
17. Furnish and Install concrete walks damaged or removed for irrigation, electrical and plumbing cut and patch work (see Civil, Architectural, Structural, Plumbing, Mechanical, and Electrical Drawings). Shall be patched back with new concrete to match texture, grade finish, and thickness of existing adjacent concrete walks.
18. Furnish and install all Tactile Warning Surfaces (truncated domes) as called for.
19. Furnish and install all seat walls, curbs, and foundations.
20. Weakened plane joints at walks shall be max 10 feet, expansion joints 20' max spacing per plan. Where not shown refer to specification section 32 13 13.
21. Furnish and install all patch and infill at slab as required.
22. Furnish and install all rebar and doweling into existing concrete including lubrication/epoxy.
23. Furnish and install backfill of all foundations.
24. Patch areas where demo has been performed for utilities.
25. Furnish and install 6" concrete curb at infill framing.
26. Furnish and install under slab vapor barrier
27. Furnish and install topical concrete vapor control barrier (Curranseal or sim product per Specifications) at new slabs only.
28. Furnish and install protection for polished concrete floor areas and maintain until final clean.
29. Furnish and install all expansion joints and sealant complete required by the contract documents in concrete.
30. Furnish and install 3" min. cover with concrete for all structural steel and base plates that extend beyond the building line.
31. Furnish and install all grouting and/or dry pack for structural steel at concrete.
32. Furnish and install cleaning and protection of anchor bolts until turn over to structural steel erection or setting of leveling nuts.
33. Furnish & install all floor prep for floors out of tolerance. Tolerance of concrete placement is to be per the specifications. Any concrete placed that is not within these tolerances will be corrected by this bid package (Up to removal and replacement at the sole discretion of the AOR and CUSD). Where tolerance for flooring material is higher than what is required in Concrete Specification respective flooring contractors will correct as needed.
34. Furnish and install all wood embedded into concrete per the contract documents.
35. Furnish and install slopes to drain at all drains coordinate prior to installation with utility contractor.
36. Furnish and install termite control and soil sterilization under all building concrete.
37. Furnish and install all grouting under handrails and at sleeves
38. Provide all concrete coring for furnished and installed handrails.
39. All minor depressions for tile and slopes to drain shall be performed by the Concrete Subcontractor
40. Furnish & install mow strip at fencing as detailed.

41. Furnish and install treads, landings and nosing's as shown on Civil and Architectural Drawings at site.

Provide Information Separate from Bid amount. Include on Bid form.

1. None

FOB Items

1. None

Installation of FOB Items

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. Physically layout and install all items embedded in (N) concrete (i.e. anchor bolts, plates, angles, non-bolted tube steel, rails, sleeves, pipe rail, etc....) as provided FOB jobsite by other Prime Contractors from written layout provided by those Prime Contractors. Install and grout all items installed in sleeves.
2. Install and remove when complete all bolt templates provided by other Prime Contractors.
3. Install all framing sill and hold down bolts as provided FOB by the framing Prime Contractor in new concrete. All layouts will be furnished by the framing Prime Contractor.
4. Install bollards furnished by building steel contractor, including locking hardware complete

End of Package

DC-03 GENERAL SPECIALTIES

Furnish and install any or all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00

DIVISION 01

CUSD General Conditions for CM Projects

General & Supplemental Conditions

	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
03 35 43	Polished Concrete Finishing
04 21 13.13	Thin Brick
05 12 00	Structural Steel Framing
05 50 00	Metal Fabrications
06 40 00	Architectural Woodwork
07 19 00	Water Repellants
07 21 00	Thermal Insulation
07 25 00	Weather Barriers (As Applies)
07 72 00	Roof Accessories
07 84 00	Firestopping (As Applies)
07 92 00	Joint Sealants (As Applies)
08 11 13	Hollow Metal Doors & Frames
08 14 16	Flush Wood Doors
08 71 00	Door Hardware
	Aluminum Storefront/Curtainwall
08 80 00	Glazing
09 30 00	Tiling
09 65 13.13	Resilient Base
09 65 19	Resilient Tile Flooring
09 68 00	Carpeting
09 90 00	Painting & Coating
10 14 00	Graphics & Signage
	Window Shades
10 28 13	Toilet Accessories
10 44 00	Fire Extinguishers and Cabinets
32 31 13	Chain Link Fences & Gates

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
2. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
3. See General Notes at beginning of summary of work specification section for other items.
4. Review Asbestos and lead abatement survey for abatement scope of work.
5. Provide protection of slab and utilities from cranes and equipment.
6. Provide Dewatering for own work.
7. Furnish clean up daily and off-haul of all debris generated by this bid package.

Coordination with Other Trades

1. Provide layout for all items installed by this package requiring backing to Rough Carpentry package. All backing to be physically layed out and written layout provided.
2. Coordinate layout and opening sizes for thin brick cutouts for other trades.
3. Coordinate SF/Window/Door frame finish openings with other trades.

4. Coordinate with wood framing contractor all finished dimensions required to meet ADA.
5. Coordinate ceramic tile installation with mirror locations at toilets.
6. Coordinate locations of window and door frames installed relative to the location of plaster molding adjacent to the frames to insure a water tight system.
7. This contract to coordinate all HM Frames with appropriate wall finishes to achieve needed throat size for frames
8. Submit shop drawings & procure material so as not to delay the scheduled installation of plaster.
9. Provide written request for information through the CM for layout information at least 21 days prior to need, from related bid packages for all for rough-in, drilling, coring, backing, openings and block-outs etc....
10. Furnish written layout information within 21 days of request for all for embedded items, drilling, coring, backing, openings and block-outs, etc....to other bid packages. Any work where layout was not provided on initial construction shall be performed by this bid package. This shall be done during the shop drawing period not after submittal for approval. Prime Contractors will mark up shop drawings and return with proper dimensions.
11. Provide coordination drawings for above ceiling work for work related to this bid package. Coordinate all drawings with the drawings of this bid package. Note conflicts and provide potential solutions to the architect for review. Attend all coordination meetings required to coordinate all above ceiling work.
12. Request and receive layout (prior to detailing and fabrication) from other bid packages for all items that require holes, openings, reinforcing or bracing related to this bid package's scope of work including but not limited to, bolt holes for attachment, roof openings, HVAC supports, reinforcing steel, etc....Allow 21 days for return of dimensions
13. Coordinate with Painting Prime Contractor the application of the cement plaster painting system, and provide written report of the cement plaster pH prior to the painting application.
14. Schedule paint coats so as to allow for completion of work with minimal damage with final coat being installed with majority of work completed. Furnish and install all touch up required
15. Plaster contractor shall coordinate with Painting contractor the application of the cement plaster painting system, this contract to provide a written report of the cement plaster pH prior to the painting application.
16. Coordinate painting/coating with other contractors or control vapors so as to allow for completion of work without cross exposure to other contractors when using paints or coatings that could create a hazard to other workers exposed to vapors.
17. Examine floor substrate for acceptance prior to start of work per specifications.
18. Review details and provide recommendation of best practices for crack control in polished concrete areas.
19. Coordinate cove base transition with framing and structural concrete contractors to ensure flush transition to wall finishes.
20. Due to schedule constraints field measuring should be considered at framing stage in lieu of after all drywall and finishes are complete. Review the schedule to determine necessity relative to fabrication times. If measurement is required at the framing stage, provide measurement to meet the schedule and figure all associated finishes.
21. Coordinate at the jobsite all plumbing and electrical locations during rough-in activities to assure proper fit at time of casework and equipment installation.
22. Coordinate counter support bracket layout to avoid conflict with in-wall rough-in.
- 23.

Furnish and Install Items

1. Furnish and install all polished concrete finishing complete per the plans and specifications. This contract shall provide floor protection for all polished floors during and after the polishing process. This also to include the application of any stains or colors as noted on the contract documents as it relates to Polished Concrete.

2. Furnish and install all Thin Brick Veneer systems complete per the Plans and Specifications.
3. Furnish and install all special or cut bricks to match details at special corners and ends of walls, including mitered corners.
4. Furnish and install all caulking of joints at Thin Brick including Expansion & Control Joints.
5. Furnish and install saw cutting of Thin Brick for installation of flashing and sealant by others; layout to be provided by other contractors.
6. Provide scaffolding as needed to complete your work.
7. Remove all efflorescence and grout residue from masonry prior to sealing.
8. Clean and seal all thin brick as required by the plans and specifications.
9. Furnish and install all Structural and Misc Steel Fabrications complete per Plans and Specifications. This to include any Steel Item noted to be 10GA and heavier. This is to include but not be limited to: Columns, Beams, Angles, Plates, Ladders, Counter-top brackets.
10. Physically layout and install all block outs, openings, reinforcing, bracing and holes in steel from requested written layout provided by other contractors.
11. Provide dewatering of all column block-outs as needed to complete your work.
12. Set leveling nuts at anchor bolts to the proper elevation for structural steel installation after one nut has been set to elevation by the concrete contractor. Assume protection of bolts from the concrete contractor.
13. Furnish and install all Architectural Woodwork complete per plans and specifications.
14. Furnish and install all floor anchorage, angles and floor blocking for casework. Backing in wall to be provided by the Framing Contractor from layouts provided by this Contract
15. Furnish and install Mail Slot Casework as noted on AA8.10 and similar.
16. Furnish and install all openings in casework and tops for other trades.
17. Furnish & install cable holes and grommets.
18. Remove all casework items shown to be removed that are adjacent to casework items shown to remain.
19. Furnish and install all counter tops prepared to receive plumbing and electrical. Cutting holes for sinks will be by this contract.
20. Furnish and install casework accessories as noted in specification.
21. Furnish and install shims & wood supports.
22. Furnish and install all Water Repellants complete per plans and specifications.
23. Furnish and install all thermal insulation/Fire Stopping complete per contract documents, roofing and exterior wall rigid insulation by others.
24. Furnish and install all acoustical/sound insulation, blankets, per the contract documents fire rated gyp board is provided by gypsum board subcontractor
25. Furnish and Install calcium fiber filler, per contract documents.
26. Furnish and install all insulation draft / fire stops.
27. Furnish and install all labeling/stenciling required at Firer Rated Walls as required.
28. Furnish and install all HM Doors, Frames complete per plans and specifications
29. Furnish and install all door lite frames and trims complete per plans and specifications
30. Furnish and install all Flush Wood Doors complete per plans and specifications
31. Furnish and install all door louver inserts at all hollow metal and wood doors complete per plans and specifications
32. Furnish and install all Hardware at HM, Wood and Storefront/Curtainwall.
33. Hardware to be provided with construction cores installed, permanent cores to be provided to district for keying and installation.
34. Furnish and install bituthene at door and window openings as required.
35. Furnish and install all membrane & window flashings at openings under this scope of work
36. Furnish and install all Storefront, Curtainwall and Glazing systems complete per plans and specifications. This is to include all related flashings, sealant, trims and accessories needed to make for a complete and watertight system.
37. Furnish & install glass at door lites.
38. Furnish & install all aluminum break metal.

39. Furnish and install all glass and glazing shown throughout the contract documents, this to include any required Spandrel, Acoustical and/or Fire Rated Glazing, as required.
40. Furnish, Install, and Remove any scaffolding/equipment required by this scope of work at the interior of the buildings.
41. Furnish and install sealants at all aluminum windows, storefront, curtainwall and or aluminum flashings at interior and exterior.
42. Furnish and install all mirrored glass as called for in the glass specification.
43. This contract to perform water & air testing at storefronts, curtainwalls and windows as called for in the contract documents.
44. Furnish and install all Tiling systems complete including but not limited to ceramic/quarry tile, water barriers and copper flashings, Interior & Exterior as required.
45. Furnish and install floor prep for concrete cracking, saw cut joints and construction joints.
46. Furnish and install Mortar beds as required in the project documents.
47. Furnish and Install sealant for work included in this contract abutting other materials. Sealant shall be furnished and installed by the last contractor to install adjacent materials as scheduled in the CMBS (excluding painting). Unless otherwise noted in the contractors summary of work.
48. Furnish and install floor protection for all finished floors once complete.
49. Test moisture levels of slab on grade meet manufacturer's requirements prior to installation of flooring.
50. Furnish & install all flooring except concrete sealer, polished concrete and Epoxy-Resinous Flooring. This to include but not be limited to all carpet walk-off mats and resilient base & accessories
51. Furnish and install floor leveling to meet manufacturer's requirements.
52. Refer to concrete specifications for tolerances of (N) Slabs. Any slabs found to be within tolerance of concrete specifications but not with Flooring specifications shall be the responsibility of the flooring contractor to correct.
53. Furnish and install floor protection for all finished floors once complete.
54. Furnish and install flooring patch after demo of flooring.
55. Furnish and install prep of existing floors to receive new materials.
56. Provide floor covering at all knee spaces and areas open to view under casework
57. Furnish and install all prep, primer and painting complete per plans and specs. This to include all areas where ceiling is open to bottom of the roof assembly and is also to include all exposed ductwork, conduit, piping, etc... that is left exposed as well.
58. Furnish and install all interior door / window frame caulking complete.
59. Furnish and install finish as specified for trim, doors, and millwork.
60. Furnish and install all surface preparation and finish of all flashing to be painted.
61. Furnish and install all sealing of masonry/Thin Brick Surfaces
62. Provide testing for primer adhesion at structural steel to confirm compatibility with paint
63. Furnish and install painting on all exposed piping as called for throughout the contract documents.
64. Furnish and install expansion joint caulking at Site Concrete and Masonry Walls.
65. Furnish and install painting corner to corner or break line at all patches.
66. This contract is to provide paint touch-up for minor trade damage.
67. Furnish and install clear floor sealer per complete per plans & specs.
68. Furnish and install protection of concrete at areas where exposed concrete is the finished product (Polished Concrete, Sealed Concrete, etc...). This to include protection prior to and after floor finishing.
69. Furnish and install all exterior and interior signage shown complete.
70. Furnish and install all access signage on walls and fencing.
71. Furnish and install all building lettering and signage.
72. Furnish and install all Window Shades complete per plans and specifications.
73. Furnish and install all toilet accessories including mirrors. If project requires hand dryers, the hand dryers are to be furnished by this contract and turned over to the Electrician for install.
74. Furnish and install all toilet partitions complete per plans and specifications

Provide Information Separate from Bid Amount, Include on Bid Form

1. None.

FOB Items

1. Furnish FOB jobsite all Anchor Bolts for Structural Steel. This to include all required templates for structural steel bolt setting. Templates are to be made of 1/8" plate and are to have the anchor bolts stuffed in the template prior to being delivered onsite. Bolts should be set within template in such manner as to ensure the proper projection of the bolt out of the footing. Coordinate with Concrete Package to attain proper projection.

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. Install all carpet provided by owner, provide any necessary materials required for complete installation. This only applies to carpet, all Walk-Off Mats, Resilient Base and Resilient Tile is to be furnished and installed by this contract see F&I items above.

End of Package

DC-04 ROUGH CARPENTRY

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report

06 10 00	Rough Carpentry
06 18 00	Glue-Laminated Construction
07 92 00	Joint Sealants

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
2. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
3. Provide protection of slab and utilities from equipment.
4. Provide permits for scaffolding as required.
5. Furnish clean up daily and off-haul of all debris generated by this Prime Contractor.
6. See General Notes at beginning of summary of work specification section for other items.

Coordination with Other Trades

1. Coordinate installation of blocking, backing, etc. for other Prime Contractors from written layout provided. Coordinate concrete curb vs. framing to assure proper alignment.
2. Provide physical layout for backing required for own work.
3. Coordinate locations of window and door frames installed by the General Specialties package, guarantee door and opening sizes, all openings to be square, plumb and level.
4. Provide coordination drawings for above ceiling work for work related to this Prime Contractor. Coordinate all drawings with the drawings of other Prime Contractors. Note conflicts and provide potential solutions to the architect for review. Coordination must take place prior installation of the work. Attend all coordination meetings required to coordinate all underground and above ceiling work.
5. Coordinate with Mechanical and Electrical contractors for location and size of equipment for platforms built by this bid package including all bolts and hardware.
6. Coordinate recessed roof sheathing and blocking for roof drains with plumbing contractor.
7. Provide review and verification of space for ADA requirements prior to framing. Note all discrepancies.
8. Coordinate finish thickness with ceramic tile contractor all rough framing dimensions required to meet ADA.
9. Coordinate access panel locations with other trades.
10. This contractor shall confirm and coordinate all dimensions for wood framing furnished by this package. Procure all related information so as to not to delay installations as scheduled in the project baseline schedule.

Furnish and Install Items

1. Furnish and install all drilling of holes for work performed in this Prime Contract.
2. Physically layout and install all block outs, openings, reinforcing and bracing from written layout provided by other Prime Contractors.
3. Furnish and install all lumber and plywood on the project including in-wall blocking including but not limited to:
 - a. all wood plaster screeds, grounds, nailers, and stops except those embedded in concrete.
 - b. all plywood backboards at electrical and IDF rooms as required
 - c. all plywood at transformer and equipment supports
 - d. Casework blocking
 - e. Signage blocking
 - f. Blocking for MEPF Contractors

4. Furnish, install and physically layout all openings, block-outs, backing, blocking, blocking for utility and fixture supports. Coordinate locations with related trades prior to installation of framing.
5. Furnish and install backing for plaster expansion joints and moldings as required for proper installation.
6. Furnish and install all material attached to framing including but not limited to the following:
 - a. Furnish and install all braces and angles.
 - b. Furnish and install all connection hardware
7. Furnish and install all Framing for architectural access doors shown in the architectural drawings at hard ceilings, soffits and walls other than utility access doors.
8. Provide review and verification of space for ADA requirements prior to framing. Note all discrepancies
9. Furnish and install all wall prep for framing out of tolerance.
10. Furnish and Install all blocking required for all trades.
11. Furnish and install all Simpson hardware complete. Concrete sub to install Simpson hardware installed in new concrete, this package to install in existing concrete.
12. Furnish and install protection of door and window openings after demo/abatement
13. Furnish and install all framed mechanical and electrical pads at the roof.
14. Furnish and install all framing complete.
15. Furnish and install all miscellaneous iron required for framing.
16. Furnish and install temporary shoring as required for new framed openings.
17. Furnish and install blocking for duct supports. Include attachment method for wood nailers to wood I-joists per E.O.R. and I-joist manufacture's recommendations.
18. Furnish and install head of wall framing for 1 hour walls.
19. Furnish and install infill framing.
20. Furnish and install all framing for MEP installed access doors.

FOB Items

1. Furnish FOB jobsite all bolts and hold downs to be embedded in new concrete for installation by the concrete package. Provide written layout.

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None

End of Package

DC-05 ROOFING, METAL PANELS/FASCIA & SHEETMETAL FLASHING

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00

DIVISION 01

CUSD General Conditions for CM Projects

General & Supplemental Conditions

Storm Water Pollution Prevention Plan

Geo Technical Investigation

Hazardous Materials Report

07 21 00	Thermal Insulation (As Applies)
07 25 00	Weather Barriers
07 31 13	Asphalt Roof Shingles
07 41 13	Metal Roof Panels
07 54 19	PVC Thermoplastic Membrane Roofing
07 62 00	Sheet Metal Flashing and Trim
07 92 00	Joint Sealants

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
2. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
3. Provide protection of slab and utilities from equipment.
4. Provide permits for scaffolding as required.
5. Furnish clean up daily and off-haul of all debris generated by this Prime Contractor.
6. See General Notes at beginning of summary of work specification section for other items.

Coordination with Other Trades

1. Due to schedule constraints field measuring should be considered at framing stage in lieu of after all drywall and finishes are complete. Review the schedule to determine necessity relative to fabrication times. If measurement is required at the framing stage, provide measurement to meet the schedule, coordinate and figure all associated finishes.
2. Coordinate at the jobsite all plumbing and electrical locations during rough-in activities to assure proper fit at time of casework and equipment installation.

Furnish and Install Items

1. Furnish and install roof system complete regardless of material type, including but not limited to all roof insulation, rigid insulation, cover board, crickets, slope system, and roofing system over plywood deck. Glass mat gypsum board to be furnished and installed at parapet and all roof areas by this contract.
2. Furnish and install all walk mats/pads
3. Furnish and install all Sheetmetal Flashing and Trim complete per plans and specifications.
4. Furnish and install all sheet metal flashing associated with mechanical electrical and plumbing work at the roof, this includes lead flashings/pans as detailed and noted under the sheet metal section.
5. Furnish and install waterproofing at Concrete Planters as required.
6. Furnish and install all sheet metal flashing associated with mechanical, electrical and plumbing work at the roof, this includes lead flashing and pans shown under the sheet metal section
7. Furnish and install tapered insulation at roofing as required.
8. Furnish and install all sealant as required for own work.

FOB Items

1. None

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. Install all roof jacks supplied by other subcontractors.

End of Package

DC-06 LATH/PLASTER, DRYWALL & ACCESS PANELS

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00
DIVISION 01

CUSD General Conditions for CM Projects
General & Supplemental Conditions
Storm Water Pollution Prevention Plan
Geo Technical Investigation

07 21 00	Hazardous Materials Report
07 25 00	Thermal Insulation (As Applies)
07 84 00	Weather Barrier
07 92 00	Fire Stopping
08 31 13	Joint Sealants
09 21 16	Access Doors and Frames
09 24 00	Gypsum Board Assemblies
	Cement Plastering

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Furnish and install all hangers, supports and bracing necessary for installation of work included in this Contract.
2. Provide permits for scaffolding as required.
3. This contract shall be responsible for all fireproofing patch back as a result of own work.
4. Furnish and install all attachment of all equipment related to this scope of work.
5. Coordinate all work to provide access to buildings for other trades as scheduled. Coordinate with other activities in the schedule for other trades and confirm the schedule meets the CMBS dates.
6. Contractor is responsible for all work referenced throughout the project documents related to this contractor's scope of work.
7. Furnish and install all physical layout for own work except where noted above to provide written layout to others.
8. Provide complete mockups as required by the specifications which is not integral to the building.
9. Furnish and Install sealant for work included in this contract abutting other materials. Sealant shall be furnished and installed by the last contractor to install adjacent materials as scheduled in the CMBS (excluding painting). Unless otherwise noted in the contractors summary of work.
10. There will be one wash out area for contractors as designated by Harris. Each contractor will be responsible for removal from the site of all debris and spoils generated by each contract.
11. See General Notes at beginning of summary of work specification section for other items
12. Furnish and install protection of all roofing when work under this contract requires access on the roofing systems.

Coordination with Other Trades

1. Physically layout and install all block outs, openings, holes, backing, etc...from written layout provided by other contractors for installation of their work.
2. Coordinate with Painting contractor the application of the cement plaster painting system, and provide written report of the cement plaster pH prior to the painting application.
3. Coordinate locations of window and door frames installed by this contract relative to the location of plaster molding adjacent to the frames to insure a good fit. Glass contractor to provide physical layout to the plaster contractor for the plaster molding should windows not arrive prior to plaster mold installation.
4. Provide a plaster control and expansion joint layout for architect approval prior to installation
5. Sheet metal contractor shall furnish and install rigid insulation at metal roofing

Furnish and Install Items

1. Furnish and install all Gypsum Board Assemblies complete per plans and specifications.
2. Furnish and install all Cement Plastering complete per plans and specifications.
 - a. Furnish and install sealant at all plaster penetrations except aluminum windows
3. Furnish and install all architectural access doors shown in the architectural drawings at hard ceilings and soffits other than utility access doors.
4. Furnish and install all sealant from plaster to hollow metal frames

5. Furnish and install all exterior gypsum board sheathing / rigid foam insulation, water barrier, lath, scratch and brown coats where ceramic tile (as required), lath/plaster and brick veneer is to be installed, interior and exterior.
6. Sheet metal contractor will be installing their own rigid foam insulation, water barrier and support structures. See that sections summary of work for specific items. This contract will install all exterior sheathing on the entire project as detailed.
7. Furnish and install fire rated stopping / assemblies for own work as called for throughout the documents.
8. Furnish, Install, Remove scaffolding for all work included in this trade and also for exterior ceramic tile, brick veneer, all metal panels, skylights / SF windows, per the durations noted on the contract schedule. Each trade using this scaffolding will be required to sign an indemnity agreement.
9. Furnish and install bituthene at all door openings
10. Furnish and install all Penetration Flashing Sheets and water barriers around all items that penetrate the Cement Plaster including but not limited to doorframes, window frames, structural steel, piping etc...
11. Furnish and install all sealant as noted above, in addition to the following is a list of specific items:
 - o Furnish and install all sealant at hollow metal frames, interior and exterior.
 - o Furnish and install sealant at plaster & gyp board to other material transitions.
 - o Furnish and install sealants from plaster to louver.
 - o Furnish and install sealant at bottom of all gypsum board.
12. Furnish and install all plaster grounds and stops
13. Furnish and install cut and patch of existing walls for backing and infill's and Utilities
14. Furnish and Install plaster patch at new openings and demoed areas
15. Furnish and install plaster and drywall patch where door frames/window frames are to be removed
16. Cut and patch for installation of new countertop support brackets.
17. Furnish and install all plaster and drywall patch complete
18. Furnish and install all cut and patch for wall intersections.
19. All plaster patchwork shall be applied from corner to corner. Patches cannot stop in the middle of the wall. Re-dash.
20. Furnish and install rigid insulation at plaster/thin brick veneer.
21. Furnish and install Gypsum Bd. Finish at Wall talkers to finish level required by manufacturer.

FOB Items

1. None

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None

End of Package

DC-07 ACCOUSTICAL, WOOD CEILINGS, TACKBOARD & FRP

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
07 92 00	Joint Sealants

09 51 00	Acoustical Ceiling Panels
09 51 26	Acoustical Wood Ceilings
09 72 16	Vinyl Coated Fabric Wall Coverings
09 72 16.17	Vinyl Coated Fabric Covered Tackable Wall Panels
09 77 20	Fiberglass Reinforced Plastic Paneling

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below

General Items

1. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
2. This contract shall be responsible for all fireproofing patch back as a result of own work.
3. Furnish and install all physical layout for own work except where noted above to provide written layout to others.
4. Provide complete mockups as required by the specifications which is not integral to the building.
5. See General Notes at beginning of summary of work specification section for other items

Coordination with Other Trades

1. Review buildings prior to installation of ceilings to note conflicts with ceiling heights.
2. Review CMBS with CM prior to start of work and advise of issues relating to warranties and bldg. acclimation.
3. Coordinate ceiling height locations with all trades prior to rough in.
4. Coordinate backing requirements for all trades associated with this bid package prior to start of Bldg. framing.

Furnish and Install Items

1. Furnish and install all Acoustical Ceiling Panel Systems complete per plans and specifications. This work is to include any and all accessories required for a complete system.
2. Furnish and install all Acoustical Wood Ceiling Systems complete per plans and specifications. This work is to include any and all accessories required for a complete system.
3. Furnish and install all Vinyl Coated Fabric Wall Coverings complete per plans and specifications. This work is to include any and all accessories required for a complete system.
4. Furnish and install all Vinyl Coated Fabric Covered Tackable Wall Panel systems complete per plans and specifications. This work is to include any and all accessories required for a complete system.
5. Furnish and install all Fiber Reinforced Plastic Paneling complete per plans and specifications. This work is to include any and all accessories required for a complete system.
6. Furnish and install all hangers, supports and bracing necessary for installation of work included in this Prime Contract.
7. Furnish and Install sealant at all locations where tack board meets other materials.
8. Furnish and install tile at electrical & low voltage devices prior to dropping of tile activity. Cut holes in tiles for devices as required.
9. Furnish and install all "hanger wires" and "brace wires" for work in this bid package and light fixtures, cable trays and projector mounts. Electrical contractor will connect to wire to their own work.
10. Furnish and install trapeze supports for acoustical ceiling as required.
11. Furnish and install all perimeter trim and similar as detailed for acoustical ceiling
12. Furnish and install ALL access panels shown on architectural ceilings / walls for work included in this contract.
13. Furnish and install own floor protection after initial floor protection by HCCI (i.e. Tarps, plastic, plywood, etc.).
14. Furnish and install all compression struts.

FOB Items

1. None

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None

End of Package

DC-08 FIRE SPRINKLERS

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00

DIVISION 01

CUSD General Conditions for CM Projects

General & Supplemental Conditions

Storm Water Pollution Prevention Plan

Geo Technical Investigation

07 84 00	Hazardous Materials Report
07 92 00	Fire Stopping
08 31 13	Joint Sealants
21 00 00	Access Doors and Frames
	Fire Sprinkler System

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
2. Furnish and install all sleeves for work passing through masonry and concrete work. Coordinate with Respective Prime Contractors.
3. Furnish and install all access doors necessary to provide access to work included in this Prime Contract, provide layout to framing contractor.

Coordination with Other Trades –

1. All work/shop drawings will be done and coordinated with all other trades.
2. Coordinate locations of all openings, block-outs, backing, blocking and blocking for utility and fixture supports with related trades prior to installation of framing.
3. Layout above ceiling blocking as required for hangers and supports of own work.
4. Provide location of fire water stub up to the site utility contractor.
5. Coordinate all work to provide access to buildings for other trades as scheduled. Provide a breakout schedule of where and when rough-in operations will be performed in the building that has been coordinated with other activities in the schedule for other trades.
6. Purging and testing of all building fire sprinkler utilities included in this bid contract is the responsibility of this contractor. Coordinate with site utility contractor prior to connection.
7. Coordinate hook up of electrical and low voltage wiring with related contracts
8. Provide dimensions for structural steel and rough carpentry openings with 14 days of NTP.
9. This contract shall be responsible for all fireproofing patch back as a result of own work.

Furnish and Install Items

1. Furnish and install all fire sprinkler systems work complete per plans and specifications.
2. Install all coring or place sleeves for utilities through masonry and concrete.
3. Furnish and install drilling of holes for work performed in this contract.
4. Furnish and install all attic, canopy and building fire sprinklers as required.
5. Any holes through materials to allow installation of utilities not called for in the contract documents shall be installed and reinforced by this contract.
6. Furnish and install drilling of metal for piping and supports.
7. Furnish and install all access doors necessary to provide access to work included within this contract.
8. Furnish and install all attachment of all equipment related to this scope of work.
9. Furnish and install all hangers, supports, and bracing necessary for installation of work included in this contract.
10. Furnish and install fire stopping and fire caulking related to this scope of work.
11. Furnish and install fire sprinkler system from 6" above finished floor for a complete system.
12. Furnish and install all signage required for this scope of work.
13. Furnish and install all exposed materials in a consistent and aesthetic manner.
14. Furnish a complete set of as-builts, documenting all changes made during installation and submit immediately upon completion of work for DSA Approval, if required.

FOB Items

1. None

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None

End of Package

DC-09 PLUMBING & SITE UTILITIES

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00
DIVISION 01

CUSD General Conditions for CM Projects
General & Supplemental Conditions
Storm Water Pollution Prevention Plan
Geo Technical Investigation
Hazardous Materials Report

07 84 00	Fire Stopping
07 92 00	Joint Sealants
08 31 13	Access Doors and Frames
22 00 00	Plumbing
31 22 00	Soil Material (As Applies)
31 23 00	Trench Excavation & Backfill (As Applies)
33 12 00	Water Utilities
33 30 00	Site Sewer Systems
33 40 00	Storm Drainage

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
2. Furnish and install all sleeves for work passing through masonry and concrete work. Coordinate with Respective Prime Contractors.
3. Furnish and install all access doors necessary to provide access to work included in this Prime Contract, provide layout to framing contractor.
4. Furnish off-haul of all excavation spoils from site, generated by the contract.
5. Furnish and install all attachment of all equipment related to this scope of work.
6. There will be one wash out area for each Prime Contractor as designated by the HCCI. Each Prime Contractor will be responsible for removal from the site of all debris and spoils generated by each Prime Contractor.
7. Provide all backfill of excavations to original subgrade for work included in this Prime Contract.
8. Provide early startup / use of plumbing equipment as required by HCCI / Owner for construction or building systems testing of buildings prior to final acceptance, which will not initiate the warranty period until the filing notice of completion.
9. See General Notes at beginning of summary of work specification section for other items
10. Review Asbestos and lead abatement survey for abatement scope of work

Coordination with Other Trades –

1. Provide coordination drawings for underground and above ceiling work for work related to this Prime Contract. Coordinate all drawings with the drawings of this subcontractor. Note conflicts and provide potential solutions to the architect for review. Coordination must occur prior to excavation and/or installation of the work. Attend all coordination meetings required to coordinate all underground and above ceiling work.
2. Provide dimensions and physical layout. Coordinate with framing contractor for framed openings and backing.
3. Any holes through materials to allow installation of utilities not called for in the contract documents shall be installed and reinforced by this Prime Contractor.
4. Coordinate locations of all openings, block-outs, backing, blocking and blocking for utility and fixture supports with related trades prior to installation of framing.
5. Layout above ceiling blocking as required for hangers and supports of own work.
6. Coordinate all work to provide access to buildings for other trades as scheduled. Provide a breakout schedule of where and when piping operations will be performed that has been coordinated with other activities in the schedule for other trades.
7. Building Plumbing Prime Contractor shall install and make physical connections to site utilities.
8. Cleaning and purging of all building plumbing utilities included in this Prime Contract is the responsibility of this Prime Contractor.
9. Coordinate routing of plumbing to miss foundations.

10. Coordinate the location of depressions, block outs, slopes and drains with the drawings prior to pour.
11. Housekeeping and equipment pads will be furnished and installed by the concrete subcontractor. Provide dimensions and layout for pads.
12. Coordinate alignment of all utilities between plumbing and civil drawings prior to excavation
13. Review as-builts and underground locator survey and pothole prior to starting work.
14. At conflicts with site utilities, electrical duct banks/conduits are to have the lower elevations.
15. Under slab rough-in should be figured for use of laser screed relating to holding stub ups below grade with appropriate markers.

Furnish and Install Items

1. This contractor to perform all capping of plumbing systems on items shown to be removed prior to demolition.
2. Furnish and install Site and Building Plumbing Systems complete per plans and specifications.
3. Furnish and install all Water, Site Sewer & Storm Drainage Utilities complete per plans and specifications.
4. Furnish and install all drilling of holes for work performed in this Prime Contract.
5. Furnish and install physical layout for all deepened foundations at utilities prior to excavation by the concrete Prime Contractor.
6. Furnish and install all sleeves in foundations prior to the installation of concrete and reinforcing steel. Coordinate location with other related Prime Contractors prior to excavation.
7. Furnish and install all excavation for own work and re-compact.
8. Furnish and install all backfill of excavations to original subgrade for work included in this Prime Contract. Certify grades have been returned to original grade when work is complete.
9. Furnish and install all concrete required for installation of thrust blocks, manholes, vaults, boxes, underground structures, for work related to this Prime Contract.
10. Furnish and install all site and building plumbing utilities
11. Furnish and install all condensate drain piping required throughout the Contract Documents.
12. Furnish and install all flues associated with own work.
13. Furnish and install water tight closures at all gang and individual pipe penetration through exterior walls.
14. Furnish and install water heater strapping and platforms complete including steel.
15. Furnish and install all hangers, supports and bracing necessary for installation of work included in this Prime Contract.
16. Furnish and install drilling of wood and metal as needed for pipes and supports.
17. Provide testing of floor drains at completion of project.
18. Furnish and install disinfection of all building and site plumbing in relation to this subcontract. Coordinate a disinfection plan with other Prime Contractors to assure a clean system at acceptance.
19. Furnish and install all rough-in for all equipment of other Prime Contractors as required by the related specification sections and drawings. Connect to equipment.
20. Furnish and install all required utilities for Owner Furnished Equipment., capped and ready for connection. Make connection when installed.
21. Furnish and install all signage required for this scope of work.
22. Furnish & install all drinking fountains and associated backing. Modify backing and plumbing as required. This includes removal of existing drinking fountains.
23. Furnish & install clean outs shown on plumbing drawings.
24. Furnish & install roof and over flow drains complete including sealant.
25. Furnish and install fire stopping related to this scope of work.
26. Raise all utilities to grade in paving areas once paving is complete. Provide all patch back as necessary.

27. Test existing piping prior to new connection to confirm proper operation
28. Furnish and Install all plumbing shown on the Plumbing plans.
29. Furnish and install own floor protection after initial floor protection by HCCI (i.e. Tarps, plastic, plywood, etc.).
30. Adjust all utility boxes to new grades.
31. Cut and cap all plumbing at site. Disconnect and reconnect all plumbing utilities for equipment.
32. Furnish and install all ADA plumbing wrap.
33. Furnish and install all site plumbing to connect to existing site plumbing from building.

FOB Items

1. Provide roof jacks needed by this Prime Contract to the roofer for installation.

Provide Information Separate from Bid amount. Include on Bid form.

1. None.

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. None

End of Package

DC-10 HVAC & CONTROLS

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
07 22 00	Roof Accessories (As Applies)

07 84 00	Fire Stopping
07 92 00	Joint Sealants
08 31 13	Access Doors and Frames
23 00 00	General Mechanical Provisions
23 00 01	Heating Ventilating & Air Conditioning
23 09 23	Direct Digital Control & Energy System

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below:

General Items

1. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
2. Provide early startup and maintenance of HVAC equipment as required by the District / or HCCI for acclimatization of buildings prior to final acceptance, which will not initiate the warranty period until the filing notice of completion.
3. See General Notes at beginning of summary of work specification section for other items.
4. Review Asbestos and lead abatement survey for abatement scope of work
5. This contract shall be responsible for all fireproofing patch back as a result of own work.
6. Provide complete mockups as required by the specifications which is not integral to the building.

Coordination with Other Trades –

1. Provide coordination drawings for underground and above ceiling work for work related to this Prime Contract. Coordinate all drawings with the drawings of this Prime Contract. Note conflicts and provide potential solutions to the architect for review. Coordination must occur prior to excavation and/or installation of the work. Attend all coordination meetings required to coordinate all underground and above ceiling work.
2. Coordinate all work to provide access to buildings for other trades as scheduled. Provide a breakout schedule of where and when rough-in operations will be performed in the building that has been coordinated with other activities in the schedule for other trades.
3. Provide all necessary openings and/or connection points for EMS and fire alarm wiring and devices. Fire Alarms Systems will be provided under separate contracts. EMS by this contract.
- 4.
5. Coordinate locations of all openings, block-outs, backing, blocking and blocking for utility and fixture supports with related trades prior to installation of framing.
6. Layout blocking as required for hangers and supports for own work.
7. Any holes through materials to allow installation of utilities for this contract not called for in the contract documents shall be installed and reinforced by this Prime Contract.
8. Provide all necessary openings and/or connection points for EMS and fire alarm wiring and devices.
9. House-keeping and equipment pads will be furnished and installed by the concrete contractor. Provide dimensions and layout for pads.
10. Coordinate and layout extent of Demo with demo contractor.

Furnish and Install Items

1. Furnish and install all HVAC Systems complete per plans and specifications. This to include all accessories needed for a complete and operable system.
2. Furnish and install all Direct Digital Control & Energy Systems complete per plans and specifications. This to include all conduit, wiring, devices and accessories needed for a complete and operable system.

3. Furnish and install all drilling of holes for work performed in this Prime Contract.
4. Furnish and install all access doors necessary to provide access to work included in this Prime Contract, provide layout to framing contractor.
5. Furnish and install all attachment of all equipment related to this scope of work.
6. Furnish and install all hangers, supports and bracing necessary for installation of work included in this Prime Contract.
7. Stub HVAC to all Owner furnished equipment and connect as required.
8. Furnish and install all roof curbs with proper height and slope for the roofing system. Verify heights with roofing shop drawings prior to fabrication. This applies to only Pre-Manufactured roof curbs, all roof curbs shown to be wood framed will be provided by the Rough Carpentry package. This package will provide written and physical layout for all roof curbs associated with HVAC regardless of type.
9. Furnish and install all Roof Accessories and/or Curbs/Platforms/Stands/Supports/Steel Backing/Bolts/Angles.
10. Furnish and install all rough-in for all equipment of other Prime Contractors as required by the related specification sections and drawings. Connect and or stub as described.
11. Furnish and install drilling of metal.
12. Furnish and install fire stopping related to this scope of work.
13. Furnish and install all flues associated with own work.
14. Furnish and install protection of all roofing when work under this contract requires access on the roofing systems.
15. Furnish and install water tight closures at all gang and individual pipe penetration thru exterior walls.
16. Furnish and install all signage and lettering called for in the contract documents related to work of this subcontractor.
17. Provide for testing of Fire Smoke Dampers resettable link coordinate with Fire Alarm Contractor as required.
18. Provide Fire Smoke Dampers ready for power hook up.
19. Furnish and install all metal louvers and screens at all areas
20. Provide two sets of filters during construction and a final set of filters following Final Clean of the Bldgs.
21. Furnish & install transfer grills.
22. Furnish and install all fusible links for testing of dampers
23. Allow use, as directed by the District, of the HVAC utility systems during construction for construction and testing operations without the start of the warranty period until the notice of completion for the project.
24. Provide cut and cap of mechanical items to be demoed, all items that are to be salvaged or reused shall be removed and reinstalled by this contract.
25. Provide Demolition of existing Mechanical equipment including any refrigerant recovery required. Stockpile equipment in an area designated by the Demo. Contractor for removal and offhaul from the site.
26. Furnish and install own floor protection after initial floor protection by HCCI (i.e. Tarps, plastic, plywood, etc.)
27. Confirm standard of existing operation of mechanical equipment at the mechanical yard prior to demolition. Confirm standard of unit ventilators prior to installation and demolition.
28. Furnish and install all flashing that is modified due to mechanical work at roofs.
29. Furnish and install all roof curb adapters as required.
30. Furnish and install flashing at new door frames and window frames.
31. Furnish and install unit ventilator closures and gasket to window.

32. Remove and store all mechanical items that are to be reinstalled at it later date as required.
33. Verify location of rough-in prior to ordering HVAC units for electrical mechanical and plumbing utilities.
34. Confirm existing power for new equipment prior to ordering.

Provide Information Separate from Bid amount. Include on Bid form.

1. None.

FOB Items

1. Furnish all starters at HVAC units. Electrical connections shall be made by Electrical Subcontractor. Starters at MCC shall be provided by the Electrical Subcontractor.
2. Furnish FOB all sleeves for all utilities to the concrete subcontractor for installation.
3. Furnish all roof jacks for this bid package to the roofer for installation.

Installation of FOB Items

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. None

End of Package

DC-11 ELECTRICAL/LOW VOLTAGE/FIRE ALARM

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00
DIVISION 01

CUSD General Conditions for CM Projects
General & Supplemental Conditions
Storm Water Pollution Prevention Plan
Geo Technical Investigation
Hazardous Materials Report

07 84 00	Fire Stopping
07 92 00	Joint Sealants
08 31 13	Access Doors and Frames
26 00 00	Electrical
26 05 00	Common Work Results for Electrical
26 50 00	Lighting
27 00 00	Communications
27 10 00	Structured Cabling System
27 40 40	Assistive Listening Systems
27 42 00	Classroom Audio/Visual Systems
27 51 13	Paging Systems
28 31 00	Fire Detection & Alarm System

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this contractor's scope of work.
2. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
3. There will be one wash out area for each Prime Contractor as designated by the CM. Each Prime Contractor will be responsible for removal from the site of all debris and spoils generated by each Prime Contractor.
4. Provide trenching plan and permits for excavations over 5' per OSHA requirements to the CM.
5. See General Notes at beginning of summary of work specification section for other items.
6. Review Asbestos and lead abatement survey for abatement scope of work

Coordination with Other Trades –

1. Provide coordination drawings for underground and above ceiling work for work related to this Prime Contract. Coordinate all drawings with the drawings of this Prime Contract. Note conflicts and provide potential solutions to the architect for review. Coordination must occur prior to excavation and/or installation of the work. Attend all coordination meetings required to coordinate all underground and above ceiling work.
2. Provide use and maintenance of electrical equipment and devices as required by the District /or the CM for construction and testing of other equipment prior to final acceptance, which will not initiate the warranty period until filing of notice of completion.
3. Provide shop drawings for equipment layout in electrical rooms to confirm that dimensions are adequate prior to rough in and pouring of foundations.
4. Coordinate with PG&E, SBC/AT&T, Comcast, District and (E) site for service requirements to the site, as needed.
5. Coordinate all work to provide access to buildings for other trades as scheduled. Provide an underground utility schedule of where and when piping operations will be performed. Coordinate with other activities in the schedule for other trades and confirm the schedule meets the CBS dates.
6. Under slab rough-in should be figured for use of laser screed relating to holding stub ups below grade with appropriate markers.
7. At conflicts with site utilities, electrical duct banks/conduits are to have the lower elevations.
8. Any holes through materials to allow installation of utilities not called for in the contract documents shall be installed and reinforced by this Prime Contractor.
9. Quantify, coordinate and provide final connections of starters for HVAC units as provided by the Mechanical contractor.

10. Connect "hanger wires" provided by the Acoustical Subcontractor to light fixtures, cable trays and projector mounts.
11. Coordinate locations of all openings, block-outs, backing, blocking and blocking for utility and fixture supports with related trades prior to installation of framing.
12. Coordinate with all underground utilities prior to excavation.
13. Coordinate with the CM for power shutdown which must be done after school hours.
14. Coordinate location of UG utilities to be out of angle of repose of building, equipment, and tank foundations.
15. House-keeping and equipment pads will be furnished and installed by the concrete contractor. Provide dimensions for pads.
16. Review as-builts & underground locator survey & pothole utilities prior to starting work.
17. Coordinate concrete demo in the central plant with the CM and demo contractor.
18. Obtain district approval through the CM for all low voltage labeling.
19. Coordinate and provide access for all electrical conduit in aluminum storefront and curtain wall as details
20. Coordinate locations of all vaults away from doorways.

Furnish and Install Items

1. Furnish and install all Electrical Systems complete per the plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
2. Furnish and install all Communications Systems complete per the plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
3. Furnish and install all Structured Cabling System complete per plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
4. Furnish and install all Assistive Listening Devices complete per plans and specifications.
5. Furnish and install Classroom Audio/Visual Systems complete per plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
6. Furnish and install all Paging Systems complete per plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
7. Furnish and install Fire Alarm & Detection System complete per plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
8. Provide relocation of (E) systems as noted on plan sheets. Relocation should include any all items, accessories, devices required to make for a complete and operating system. Provide dedicated Fire Watch at times where FA system is unable to report or is inoperative. Dedicated Fire Watch is to be provided during work hours, nights and weekends while the system is not functioning.
9. Furnish and install cut and cap of existing utilities and items shown to be removed by the demolition contractor prior to demolition, terminate and pull wire back to nearest box. Remove all equipment. Light Fixtures disposal is by the demo contractor. This contract is responsible to remove and stockpile for the demo contractor.
10. Furnish and install all trench plates for excavations by this Prime Contractor for protected campus walk paths and construction activities.
11. Furnish and install disconnects not provided on factory equipment installed by other Prime Contractors.
12. Furnish and install physical layout for all deepened foundations at utilities prior to excavation.
13. Furnish and install all drilling of holes for work performed in this Prime Contractor.
14. Furnish and install protection of all roofing when work under this contract requires access on the

roofing systems.

15. Furnish and install fire-stopping for own work.
16. Furnish and install pull strings / rope in all empty or future conduits.
17. Furnish and install all concrete required for installation of manholes, vaults, boxes, underground structures, for work related to this Prime Contract.
18. Furnish and install all colored concrete cap over all required duct banks.
19. Any holes through materials to allow installation of utilities not called for in the contract documents shall be installed and reinforced by this Prime Contractor.
20. Furnish and install all sleeves for work passing through masonry and concrete work. Coordinate with Respective contractors.
21. Furnish and install all sleeves in foundations prior to the installation of concrete and reinforcing steel. Coordinate location with other related contractors prior to excavation.
22. Furnish and install all access doors necessary to provide access to work included in this Prime Contract, provide layout to framing contractor.
23. Furnish off-haul of all excavation spoils off site.
24. Furnish and install all attachment of all equipment related to this scope of work.
25. Provide all backfill of excavations to original subgrade for work included in this Prime Contract.
26. Furnish and install all conduits, sleeves and bushings for future low voltage and telecommunications wiring. Install fire stopping as required.
27. Provide all trenching, conduit and wiring for low voltage and telecommunications.
28. Furnish and install disconnects and associated supports.
29. Furnish and install all necessary backing and supports (Wood Blocking/Backing by others) required for light fixtures as required.
30. Furnish and install all supports and bracing required for electrical work except for hanger wires. Hanger Wires will furnished and installed by the Acoustical package. This package will be responsible for layout of wires connecting to their work and connecting the wire to the light fixtures.
31. Furnish and install water tight closures at all gang and individual pipe penetration thru exterior walls.
32. Furnish and install sealant system as required to provide water tight condition at devices mounted at exterior.
33. Furnish and install all signage and lettering called for in the contract documents related to work of this Prime Contract.
34. Furnish and install all required utilities for Owner Furnished Equipment, hook up as required.
35. Furnish and install all rough-in for all equipment of other contractors as required by the related specification sections and drawings. Connect and or stub as described.
36. Furnish and install all power to fire and smoke dampers as called for in the documents.
37. Furnish & install all floor boxes solid for install of slab on grade.
38. Furnish & install power to new booster pump. Disconnect existing pump prior to removal by the landscaper. Confirm power of new pump with Landscape contractor and report any discrepancies to the CM.
39. Furnish and install fire alarm to all site Fire Protection equipment (PIV's, Backflow Preventers, Fire Hydrants, Etc..) as required.
40. Verify continuity of electrical and low voltage conduits for work in this contract.
41. Furnish & install all connections to existing utilities (Coordinate).
42. Furnish and install all roof accessories relative to this Prime Contract.
43. Furnish & install all roof supports for electrical.
44. Provide shop drawings with required dimensions for electrical room.
45. Furnish and Install all new clock and speakers as required.
46. Furnish and install line voltage and conduit for controls coordinate with HVAC Contractor.
47. Provide all demo for electrical work except where walls are to be demolished. Safe off prior to any demo.
48. Furnish and install own floor protection after initial floor protection by HCCI (i.e. Tarps, plastic,

- plywood, etc.).
49. Adjust all utility boxes to new grade.
 50. Cut and cap all electrical at site as required for demo.
 51. Furnish and install projector mounts and all AV equipment as called for.
 52. Provide plates over all existing electrical and low-voltage items to be abandoned.
 53. Remove all data wire and modify as necessary for new work.
 54. Remove all technology equipment as called for in a manner as to allow the district the opportunity to salvage if desired.
 55. Remove and replace all wire back to panel as called for.
 56. Remove and store all electrical items to be removed and replaced at later date.
 57. Unhook all utilities to existing mechanical units that are to be replaced. Reinstall connection after new equipment is installed.
 58. Confirm all lamp types in field prior to bid.
 59. Verify Existing system and performance prior to starting work. Report any issues.
 60. Review existing low voltage and fire alarm systems and advise of any issues prior to the start of work.
 61. This contract is to provide temporary power (Conduit/Temp Elec Lines/Transformers/Connected Spider Boxes, etc.) to each building after the completion of Slab-On-Grade. From the temp transformer, spider boxes shall be connected every 50' per floor and roof at each building. Contractors will be responsible for own distribution of power from that point. Spider boxes are to be inspected monthly per HCCI Safety Program and records are to be turned at the end of each month. HCCI to pay for cost of power usage.
 62. This contract is to provide temporary power to construction trailers as shown on the Site Access Plan. Enough power should be provided to run 2 (60') construction trailers with cooling/ac units. Connection of the construction trailers to the power source shall be made by this contract.
 63. Install, adjust, program and test owner provided projectors.

Provide Information Separate from Bid amount. Include on Bid form.

1. None.

FOB Items

1. Furnish FOB jobsite all bolt templates for use by the concrete subcontractor and masonry subcontractor.
2. Furnish FOB jobsite all anchor bolts and templates for all electrical equipment.
3. Furnish F.O.B. all roof jacks related to this package to the roofer for installation.

Installation of FOB Items

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. Quantify, Install and hook up all starters at HVAC units as provided by the Mechanical and Plumbing subcontractor.
2. Install all switches for equipment provided by others i.e. exhaust fans, etc....
3. Install power for smoke dampers and fire alarm for HVAC unit shut down.

End of Package

DC-12 EARTHWORK AND PAVING

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00
DIVISION 01

CUSD General Conditions for CM Projects
General & Supplemental Conditions
Storm Water Pollution Prevention Plan
Geo Technical Investigation
Hazardous Materials Report

31 11 00	Site Clearing
31 20 00	Earthwork
31 22 00	Soil Material
31 23 00	Trench Excavation and Backfill
31 31 00	Soil Sterilization
32 11 26	Aggregate Base Course
32 12 16	Asphalt Paving

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this contractor's scope of work.
2. See General Notes at beginning of summary of work specification section for other items.
3. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
4. There will be one wash out area for contractors as designated by the General Contractor. Each contractor will be responsible for removal from the site of all debris and spoils generated by each contractor.
5. Furnish and install all layout for own work from surveyor provided by the survey contractor. See survey scope of work for reference. This contractor will be responsible for all additional required layout not performed by the survey contractor. Contractors are responsible for protection of all requested survey. Provide 72 hours' notice by submitting a survey request form.
6. Provide all backfill of excavations to original sub-grade for work included in this Prime Contract.
7. Provide dust control for own work.
8. This contract is to provide temporary power for own work through completion of steel erection as required. Once temporary power has been established by the Electrical contractor, each contractor will only need to provide temporary utility distribution from services provide at the building by the electrical contractor. Contractors are responsible for own distribution of power and lighting.

Coordination with Other Trades

1. Coordinate and allow access to building pad for building related scope of work (concrete, plumbing, utilities, electrical).
2. Coordinate all work with local utilities & electrical contractor for shut down of services prior to demo with a minimum of 48 hours notice as required per Contract Documents.
3. Obtain all permits required to perform the work (including encroachment permits).
4. Hold all turf areas down 1/2" at concrete walks and mow strips for SOD, 2" at planters.
5. Remove excess spoils from site daily.
6. Review as-builts & underground locator survey & pothole utilities prior to starting work.
7. Complete all building pads and grade at building areas first as shown on the schedule.
8. Coordinate with the CM survey points required.

Furnish and Install Items

1. Furnish and install all Site Clearing work complete per plans and specifications.
2. Furnish and install all Earthwork complete per plans and specifications. This to include all required over excavation and recompaction at Building pads and any required fill at demolished portables.
3. Grade all earthwork to within +/-0.05' from a planned elevation.
4. Furnish and install all Soil Sterilization work complete per plans and specifications.
5. Furnish and install Asphalt Paving complete per plans and specifications.
6. Protect all irrigation adjacent to site work and buildings.

7. Furnish and install all cut and fill necessary to perform work
8. Furnish and Install fine grading of the site on separate move-ins (as scheduled by the CM) to accommodate the site concrete & mow strips installation. Coordinate backfill and final fine grading activities with the concrete Prime Contractor to eliminate damage to new site concrete.
9. Furnish & install all grading and swales for landscape to $\pm .05'$
10. Maintain and protect building pads to within tolerance, elevation, moisture, weed free and compaction until accepted/received by the concrete subcontractor as noted in the schedule.
11. Furnish and Install backfill of mow strips, walks, curb, curb & gutter, planter and turf areas.
12. Furnish, install, and maintain traffic control for work included in this Prime Contract as required.
13. Furnish & install all on site earthwork, grading, paving & striping, markers, traffic signage, posts, concrete at posts, and permits.
14. Furnish & install certification of final grading to confirm grades prior to landscape.
15. Furnish & install tree/landscape protection where required. The CM will maintain protection throughout project.
16. Furnish and install all asphalt patches.
17. Furnish and install all slurry seal.
18. Remove all plumbing electrical and irrigation within the area of excavation for earthwork.
19. Strip organic materials from all areas to be demolished.
20. Furnish and install processing of subgrade at site to proper grade and compaction.
21. Provide backfill at Planter Areas during finish grade operations.
22. Furnish and install compacted soil under all concrete as called for.
23. Furnish and install cut for fire lane.
24. Furnish and install cut and fill for all valley gutters and curbs.
25. Furnish and install all track out stations as shown on the site access plan for onsite. Furnish and install silt fence and straw waddle around the entire perimeter of the project for the duration of the project. Track outs are to consist of crushed rock and rumble strips which measure 24' wide x 50' long. Maintain for own work. Earthwork contractor to maintain as needed. Provide street cleaning for own scope of work thru end of Earthwork operations.
26. Furnish and install slurry seal and restriping of Basketball courts, patch asphalt as necessary prior to sealing. (THIS ITEM IS NOT SHOWN ON THE PLANS BUT WILL BE PART OF THIS PRIME CONTRACTORS WORK). Exact striping layout will be determined at a later date, however, for bidding purposes figure at minimum to replace (E) striping.

FOB Items

1. None

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items:

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None

End of Package

DC-13 LANDSCAPING/IRRIGATION

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00

CUSD General Conditions for CM Projects

DIVISION 01

General & Supplemental Conditions

Storm Water Pollution Prevention Plan

Geo Technical Investigation

Hazardous Materials Report
Existing Landscaping Protection
Irrigation System
Landscape Planting

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
2. Furnish and install all sleeves in masonry, concrete, foundations and under existing walks prior to the installation of concrete and reinforcing steel. Coordinate location with other related Prime Contractors prior to excavation.
3. Furnish off-haul of all excavation spoils from site.
4. There will be one wash out area for each Prime Contractor as designated by HCCI. Each Prime Contractor will be responsible to dump all debris in the HCCI provided dumpster.
5. Provide all clean up and provide off-haul of own spoils from site.
6. Verify continuity of the existing irrigation system with the owner's representative prior to demolition.
7. Coordinate all work to provide access to buildings for other trades as scheduled. Coordinate with other activities in the schedule for other trades and confirm the schedule meets the CMBS dates.
8. Contractor is responsible for all work referenced throughout the project documents related to this contractor's scope of work.
9. Furnish and install all physical layout for own work except where noted above to provide written layout to others.
10. Furnish and install all attachment of all equipment related to this scope of work.

Coordination with Other Trades

1. Provide coordination drawings for underground work related to this Prime Contract. Coordinate all drawings with the drawings of other Prime Contracts. Note conflicts and provide potential solutions to the architect for review. Coordination must occur prior to excavation and/or installation of the work. Attend all coordination meetings required to coordinate all underground and above ceiling work.
2. At conflicts with electrical duct banks, electrical duct banks are to have the lower elevations.
3. Coordinate location of UG utilities to be out of angle of repose of building equipment.
4. Receive grades at $\pm .10'$. Cut all additional swales required to provide proper drainage
5. Review as-builts & underground locator survey & pothole utilities prior to starting work.
6. Coordinate with demolition contractor all valves, heads, etc. to be salvaged for reuse or turnover to District prior to demolition. Furnish and install all cut and cap locations prior to the start of demo.
7. See General Notes at beginning of summary of work specification section for other items.
8. Review entire irrigation system prior to starting work to confirm continuity. Report any issues to Harris immediately.

Furnish and Install Items

1. Furnish and install all landscaping and irrigation work complete per plans and specifications. This to include all related accessories, devices, etc...needed for a complete and functioning system. Connect to (E) power, wiring and controls where required.
2. Furnish and install cut cap and demo of existing irrigation system and terminate to nearest box or valve.
3. Protect/relocate heads and or piping as needed for new concrete improvements per irrigation legend

4. Furnish and install all drilling of holes for work performed in this subcontract.
5. Furnish & install relocation, cut, and cap of irrigation at all demo areas. Remove all irrigation at areas outside of earthwork excavation. Remove all heads and valves, etc....salvage to Owner via the CM. Re-compact demo areas.
6. Furnish & install all thrust blocks for own work.
7. Furnish & install grading and top soil.
8. Provide water test of turf and planter areas prior to planting to confirm proper drainage and coverage
9. Furnish & install all irrigation sleeves.
10. Provide patch back of all landscaping at all utilities and new concrete as required. Review utility plans for areas.
11. Backfill all planters and planter walls
12. Cut and cap all existing irrigation. Remove all existing heads called to be salvaged and deliver back to owner. All other irrigation piping will be removed by the Demo. Package.
13. Furnish and install all fine grading of planter areas prior to planting. Import dirt as required
14. Remove and relocate irrigation systems as required to work
15. Replace all turf around walkways and mow strips that have been removed for construction. Replace all turf and plants disturbed by utility work.
16. This contractor is responsible for protecting and keeping all existing irrigation systems operational for the duration of the project. Any damages caused by lack of water will be the responsibility of this contractor. Hand water as required.
17. Furnish and install all temporary watering for length of project to maintain turf, trees, and plant materials.
18. Furnish and install booster pump package complete including concrete pad. Coordinate with electrical package for power requirements. Remove existing pump.
19. Furnish and install high gain equipment and antenna including all wire conduit and concrete.
20. Adjust all utility boxes to new grades.

Provide Information Separate from Bid amount. Include on Bid form.

1. None

FOB Items

1. None

Installation of FOB Items

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. None

End of Package



JOBSITE WALK SIGN-IN SHEET

1807

Harris Job No.

1.5.2020

Project: Drycreek ES Classroom Bldg & Admin Modernization
 Estimator: Steve Hammett

Company Name	Bid Package	Contact Name	Phone Number	Email Address
JMY Const	CONCRETE	Jim Holman	243-4200	jholman@bmyinc.com
BLUMSONE ELECT	ELECT.	MANNY FLORIS	805 450 2424	YFLORIS@BLUMBELCORP.COM
KROEKER, INC	DEMOLITION	Daniel Torvar	559-237-3764	Dan@kroekerinc.com
Seal Pitepaving	paving	Mon Sen Lee	559-222-7322	monsenlee@sealritepaving.com
SIM-PBK	ARCHITECT	Paris Alsharif	313-510-8077	palsharif@sim-pbk.com
HECI	CM	TRERUBITSEN	559-538-0462	TRERUBITSEN@HECI.COM
RAKAR	General Spawl.	Menny Roman	(555) 417-8402	MennyRoman@RPC.com
Stentec Mechanical	Plumbing/Site Utilities	Melwys Antipas	559-291-1952	Estimating@stentec.com
Wild Electric Inc	Electrical	Craig Newton	559-251-7170	Estimating@wildelectric.com
FRONE	MECHANICAL	Noted	559-240-3447	nashan.gay@frone.com
TODD COMPANIES	PLUMBING/SITE UTILITIES	JIM TODD II	555 651 5880	ASOTZINC.COM
WESTSCAPES	LANDSCAPE/IRRIGATION	ERIN BELL	559-583-8066	ERIN@WESTSCAPES.NET
Cableway Construction	Earthwork/Paving	Ardy Beales	559-854-4494	arbeales@cablewayconstruction.com
Bush Engineering	Earth work/Paving	RANDY MEDINA	559-589-5014	rmedina@bushconstruction.net
HEAVY ROAD & K&L	GRATEWORK/CONCRETE	DAVID CRUCE	559-213-3445	DAVID@HEAVY-ROAD.COM
Boahma Const Inc	Concrete	Tessy Cousins	559-251-4050	TIC@Boahmaconstruction.com



JOBSITE WALK SIGN-IN SHEET

Harris Job No. 1807
Date: 1.5.2020

Project: Drycreek ES Classroom Bldg & Admin Modernization
Estimator: Steve Hamett

Company Name	Bid Package	Contact Name	Phone Number	Email Address
PAC ENV	DEMO	ERIC KIDD	760 420 8030	ekidd@pacenv.com
Fire Systems	Fire sprinkler	Tory Rohlfsh	559-281-8772	ToryR@firesystemolutions.com
Jenco Fire	Fire Sprinkler	Josh Valloa	559-760-6781	JValloa@jenco.com
Meyers Const.	ROUGH CARP / MISC SPECIALTY	BRYP MELIKIAN	559-473-0014	Bryane.meyersconst@pac.com
modern Air Mechanical	HVAC Controls	Ben Dekker	209-722-0076	ben@modernair.biz
A-C Electric Company	Electrical	Jeff Woughtal	559-233-2208	jeff.woughtal@a-c-electric.com
RESOURCE - ENV.	Demo	John Garcia	909 265 - 1173	JohnG@resource-env.com
Arcant General, INC	Gen. specialties	KRONICA RUIZ	559 477 8909	ash.national@arcantgeneral.com
BE Lion	LANDSCAPE / IRL	DEVI FITZGERALD	457-2531	Devino@brim.com
BRUCEK. Hall Const	Demolition / LATENT & REMEDIATION	MARCULO RAMOS	(559) 252-2622	mauricio@bkhconst.com
Meyers Const	ROUGH CARP / MISC. SPECIALTY	BRYAN MELIKIAN	559 473 0014	Bryane.meyersconst@pac.com
ACOUSTIC SOLUTIONS	ACOUSTIC	STUART NEAL	559-256-9167	acooustic@acoustic.com
FIRE SMO PARTS	STRUCTURAL STEEL	TRAVIS NASH	559-875-9600	FINISH@FFTI.US

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY

A. General: Construction of the BASE BID work for **Clovis Unified School District Drycreek Elementary School Classroom Addition & Admin Modernization Project in Clovis, CA**. The BASE BID work is defined as all material, labor, equipment and services necessary to do all work shown on the drawings and called for in the Specifications.

General Summary of the Project

The following information applies to all Prime Contractors and shall be reviewed carefully for inclusion in each bid. Following are critical logistics related to the Project:

1. Abatement work is included in this contract.
2. Addition of a Single Story Classroom Building, Administration Modernization, Site work, Low Voltage, Fire Alarm and EMS upgrades.
3. Work for the project will be performed during the hours of 7:00 a.m. to 3:30 p.m.
4. Submittals and material procurement shall begin immediately upon award or letter of intent from the District.
5. Material procurement is critical and shall be diligently pursued to meet the contract schedule.
6. Contractors shall review the project and schedule completely prior to bidding the work.
7. Substitutions must be noted in each bid with all costs for the specified product included in the bid and the substitution cost noted separately
8. Coordination of work during the preconstruction period is equally as critical to resolving all issues prior to the start of work. Prime Contractors shall review the project, coordinate and question any issues to allow resolution prior to the start of work.
9. Contractors shall include all necessary overtime costs in their base bid to complete the project as shown on the contract bid schedule. No additional money will be paid for overtime work.

In addition to the Bid Package Summary of Work provided by the CM for each trade, the following will apply and become a part of the contract with each respective Prime Contract.

Storm Water Pollution Prevention Plan

All contractors shall follow BMP's.

Contract

Please be advised that all successful bidders will be required to enter into a Prime Contract agreement with Clovis Unified School District.

Alternates

Additive Alternates for the work are as follows. Please provide a base bid for the project then list all additive alternates:

1. None

Contractor Badging

All crews working onsite for Prime Contractors or their subcontractors are required to checkout and wear a CUSD contractor badge while onsite. Badges should be checked out at the beginning of each day and returned at the end of each day. Should a badge not be returned the associated Prime Contractor will be billed \$100 per badge not returned.

Crew Sizes

All Prime Contractors shall review the schedule and confirm that they can crew the project accordingly prior to submitting a bid. Include with each bid minimum and maximum crew sizes projected for the project.

Schedule

The Prime Contractors will be required to provide a schedule and crew sizing showing how the work will be accomplished within the given time frame. **Prime Contractors will not be allowed to take the Administration Bldg offline (Turn off Water, Sewer, Power, Low Voltage Systems, etc...) during the school year. However, infrastructure work, investigation and any other that can be done at the (E) Admin. Without disrupting operations can be completed prior to the end of the school year. All activities taking place prior to the end of the school year pertaining to the Admin Bldg or outside the construction areas of either Bldg. must be coordinated and cleared by HCCI and CUSD (BUL3).**

Site Logistics, Work and Coordination (applies to each Prime Contractor):

1. The district will remove and replace all furnishings and equipment. Provide layout of areas needed to complete your scope of work prior to the project beginning to allow for coordination with CM and The District.
2. Review and verify all existing conditions report any conflicts to the CM.
3. Provide all necessary temporary power distribution from services provided @ the building by the Electrical Package.
4. All subcontractors will provide their own temporary lighting. Electrical Package will provide ingress and egress lighting and string lights in corridors only.
5. All contractors shall attend coordination meetings and provide coordination drawings for underground and above ceiling work for work related to this Prime Contract and for coordination of utilities, openings and other areas that require interface between trades. Coordinate all drawings with the drawings of this Prime Contract. Note conflicts and provide potential solutions to the architect for review. Coordination and drawing approval must occur prior to excavation (and/or) overhead work. Contractor shall attend a pre-installation meeting prior to the start of its work onsite. All contractors shall be available for pre-installation meetings of other contractors for coordination of related work.
6. Only company vehicles are allowed onsite. No tool drop off or parking by personal vehicles will be allowed. Contractor to make provisions for transport or tool distribution needs.
7. Lunch and breaks shall be at designated areas only. No other areas will be allowed.
8. Protect all work, new and existing, from damage until acceptance by owner.
9. Storage areas will be confined to the areas designated by the CM. Staging areas around the building shall be coordinated with the CM. Storage onsite will be controlled due to limited space available.
10. Furnish all access to roof for own work, this to include any required hoisting of materials and/or Equipment.
11. Work under each contract shall comply with the Storm Water Pollution standards and as set forth in these Contract Documents.
12. All work under each contract shall comply with Air Pollution Control District standards. Provide dust control for own work.
- 13. Each contractor will provide required dust control as needed for own work (BUL3).**
14. Provide written request for information through the CM for layout information from related Prime Contractors for all rough-in, embedded items, openings and block-outs, etc.
15. Request and review all associated shop drawings for coordination and layout purposes prior to installation of related materials.
16. Furnish and Install specified and/or approved sealant for own work abutting other, previously

installed, materials.

17. Furnish and install protection of all floors and roofing for own work.
18. Furnish and install all physical layout for own work.
19. There will be one wash out area for all contractors as designated by the CM. Each contractor will be responsible for providing wash out bin.
20. The CM will provide a miscellaneous debris bin for all bid packages except Demolition and Masonry.
21. Secure all ladders, lifts, equipment and tools each evening, no security provided.
22. Provide caution tape and/or barriers for open area work and traffic control.
23. Coordinate all work with mechanical, plumbing and electrical contractors for shut down of services as needed. Written notification must be given to the CM 48 hours prior to all shut down activities.
24. **Prime** Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
25. All Prime Contractors are to provide a Full-Time Onsite Superintendent at all times while the Prime Contractor has crews onsite. This requirement includes while the Prime Contractor's subcontractors are onsite.
26. Each contractor is to provide all equipment and manpower as necessary to offload all materials required to complete their respective scope of work.
27. Provide complete mockups as required by the specifications which is not integral to the building.
28. If purchasing of material and equipment is required prior to immediate delivery and installation, provide storage as required until material is required to be installed per the contract schedule.
29. **Underground Locating scope of work below is limited to the construction areas shown on the documents. Any work to occur outside of this area will be the responsibility of the Prime Contractor to Pot Hole & Investigate prior to digging (BUL3).**

Underground Locating (for reference only, provided by CM)

Furnish and install all work specifically required throughout the project documents to complete the work of this subcontractor that specifically includes, but is not limited to the following:

Specification Sections

N/A

Refer to additional related specifications sections for work specifically included in this subcontractor noted below.

General Items:

1. See General Notes at beginning of section.
2. Coordinate all underground locating with the CM prior to starting work.

Locating services shall include:

1. Proposed footprint of building(s) plus 5' in each direction.
2. Proposed footprint of site structure(s) plus 5' in each direction. Site structures include items such as fences, gates, flagpoles, bollards, retaining walls, railings, foundations, concrete benches, ramps, etc.
3. Pathways for all proposed underground utilities plus 5' in each direction. This includes electrical conduit, storm drain, sewer, water, gas, fire, irrigation, etc.

Documents:

1. Provide scaled color coded drawing (minimum of 11x17) for all items located.

Installation of FOB Items:

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. None

End of Underground Locating Scope

Survey (for reference only, provided by CM)

Furnish and install all work specifically required throughout the project documents to complete the work of this subcontractor that specifically includes, but is not limited to the following:

Specification Sections

Division 00 – Procurement and Contracting Requirements

Division 01 – General & Supplementary Conditions

Specific Requirements

1. Provide minimum of (2) move-ins for each section of work as listed on the attached Project Schedule.
2. Set Control points complete per plans and specs.
3. Furnish and install all survey monuments as required by the plans and specs.

Coordination:

4. Coordinate elevation of all underground utilities. Attend all coordination meetings with underground utility contractors. Provide a list of all conflicts and potential solutions.
5. Coordinate location of site vaults and boxes to eliminate conflicts with walks, site structures, buildings and other utilities.
6. Coordinate locations of UG utilities to avoid conflict with angle of repose of foundations
7. Coordinate location of utilities to avoid conflicts with trees or other site related items.
8. Confirm concrete walk slopes for ADA compliance and proper flow.
9. Confirm ground slopes away from buildings in landscaped areas min 5% for at least 10'.
10. Confirm proper flow of all sewer and storm drain.
11. Confirm accuracy of (E) grades and benchmarks prior to start of staking.

Earthwork:

12. For each structure, establish a minimum of two permanent horizontal and vertical control points on the site, remote from the building area referenced to data established by survey control points
13. Staking for over excavation of Building pads
14. Staking of building corners for building pads for rough grading
15. Certification of site grades
16. Rough and finish grades for all offsite and onsite earthwork and paving

Under Ground Utilities:

17. Staking of all electrical vaults and boxes – orientation, horizontal and vertical points
18. Staking of all storm drain lines (manhole to manhole) and drain inlets (including orientation), drain boxes, sewer lines and cleanouts (100'); domestic water, fire water, gas lines and vaults (as required for excavation and installation horizontal and vertical) at the site.
19. Stake all valve locations.
20. Stake all fire Hydrants and PIV locations.
21. Stake all irrigation sleeves.
22. Stake all lateral tees and POC's at all Buildings for all utilities.
23. Stake all offsite utilities including water, sewer, storm drain, and electrical
24. Stake all Fire Risers (Horizontal and Vertical)

25. Stake all site lighting. Maintain required clearances from other underground utilities. Confirm all light fixtures are minimum 30" from face of curb when located at the head of a parking stall.

Onsite Concrete Work:

26. Provide staking for all onsite concrete work, walks, curbs, gutters, and walls.
27. Provide staking for all fencing.

Buildings:

28. Provide 1 permanent horizontal and vertical control point at each building.
29. Offset staking for building corners to be determined by CM.
30. Provide 10'x10' control grid at building pad.
31. Provide survey for every other building gridline at building pad, reference points and radiuses as required.
32. Provide Certification for building pads.
33. Provide (2) certifications of all anchor bolts for columns at buildings, canopies and similar for elevation, location and orientation. (1) Certification is to be completed prior to placement of concrete and the second is to take place after placement of concrete.
34. Provide two Gridlines North/South direction and one gridline East/West direction per building after SOG placement.

Documents:

1. Cut sheets and reference drawings for all stake items.
2. Certify site grades when site concrete and landscaping is complete.
3. ALL written certifications, cut sheets and reference drawings are to be provided within 48 hours of Survey to HCCI.
4. Provide an As-Grade Survey for Landscape Areas prior to planting.
5. Provide color coded as-built for all site work & utilities in PDF format.

DC-01 DEMOLITION & ABATEMENT

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

Division 00	CUSD General Conditions for CM Projects
Division 01	General & Supplemental Conditions Storm Water Pollution Prevention Plan Geo Technical Investigation Hazardous Materials Report
02 41 19	Selective Demolition
31 11 00	Site Clearing (As Applies to Demolition)
31 22 00	Soil Material (As Applies to Demolition)

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. See General Notes at beginning of summary of work specification section for other items.
2. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
3. Coordinate all work to provide access to buildings for other trades as scheduled. Coordinate with other activities in the schedule for other trades and confirm the schedule meets the CMBS dates.
4. Furnish and install all layout for own work from survey provided.
5. Coordinate all work with local utilities & utility contractors for shut down of services prior to demo.
6. Obtain all permits required to perform the work, including but not limited to Demolition Permit.
7. Provide all clean up daily and provide off-haul of own debris with bin provided by this bid package.
8. Review Asbestos and lead abatement survey for abatement scope of work.
9. Notify Air Board for demolition and abatement work.

Coordination with Other Trades

1. Review as-builts & underground locator survey & pothole utilities prior to starting work.
2. Dispose of building light fixtures and lamps in accordance with Contract Documents. Electrical Contractor will remove and stockpile for disposal by this package.
3. Coordinate extent of all abatement with CM prior to starting work
4. Coordinate with all other trades for extent of demo prior to starting work.
5. Demo shall include all substrate and fasteners ready for the next trade.
6. Coordinate with all contractors the extent of cutting/capping of utilities and concrete removal.
7. Coordinate extent of plaster removal for new fixtures with General Specialties package
8. AC Unit purges are to be completed by the HVAC Contractor.
9. **CUSD shall be given 72 Hours notice prior to any items being removed from the Building. This is to allow CUSD the opportunity to remove and salvage any desired items (BUL3).**
10. **All CL Fence noted to be removed is to be done so by this contract with the CL Fabric being salvaged back to CUSD.**

Furnish and Install Items

1. Protect from damage all finishes shown to remain throughout demolition activities. Any finishes not to be removed but damaged during Demolition will be replaced by this contract.
2. Protect all irrigation adjacent to demo areas.
3. Provide all demolition/removal of all items noted to be removed as shown on civil, landscape,

architectural, mechanical, plumbing, electrical, and structural, including but not limited to the following:

- a. All cut or demo of concrete & asphalt.
 - b. All demo & removal of debris for: asphalt, concrete, foundations, trees, shrubs & turf, posts, signage, & foundations, fencing, and pole bases.
 - c. All irrigation, plant, roots and planter material demo shown throughout the documents. Coordinate with landscape contractor. Irrigation to be capped by landscape contractor. Furnish landscape grades in planters to tolerances noted in documents.
 - d. All salvageable items noted in the contract documents to be reused or turned over to District will be tagged and turned over with an itemized list to the CM.
 - e. Casework, countertops, backsplashes shown to be removed. Casework contractor to remove these items where shown adjacent to items to remain. Casework contractor also to remove and reinstall casework items shown to be reinstalled.
 - f. HVAC duct work and equipment, unit ventilators, chillers, boilers, roof mounted units, and Ice tanks will be disconnected and removed by mechanical contractor, items will be staged for off haul by demo contractor.
 - g. Building Gypsum board and/or Plaster
 - h. Framed Walls, roofs and Ceilings
 - i. Ceiling Grid shown to be removed
 - j. Wall Finishes – Including glue removal
 - k. Exterior Finishes
 - l. Doors, Windows, Hardware and Louvers
 - m. Bldg. Electrical, LV, FA Demo (Safe-Off by Electrical)
 - n. All plumbing items at the site and buildings, **including septic tanks and leach lines (BUL3)**.
 - o. Flooring where all flooring in the room is removed. Including adhesive removal.
 - p. Demo grout bed.
 - q. Ceramic Tile.
4. Items to be removed by others:
- a. Irrigation contractor will cut and cap and remove all heads and devices
 - b. Remove and salvage all plumbing fixtures shown to be demolished.
 - c. Remove (disconnect and stage) all mechanical units including roof mounted and unit ventilators complete is by mechanical contractor
 - d. Remove and store all mechanical items that are to be reinstalled at it later date is by mechanical contractor.
 - e. Roofing.
5. Demolition of all concrete shall be from joint to joint. No overcuts allowed.
6. **Provide Sawcut, Break and remove of all concrete at the (E) Slab. This should include all areas to be Demo'd noted on all drawings through all disciplines. Layout of Demo to be provided the respective trades (BUL3).**
7. Demo all toilet accessories as shown, General Specialties package to remove accessories shown to be removed and re-installed.
8. Demo ceilings where walls are to be installed.
9. Demo concrete for plumbing relocation including curb and wall finishes.
10. Provide for proper hazardous material disposal of lamps and ballasts.
11. Remove all electrical equipment and fixtures at the site **(Electrician to Safe-Off and Disconnect)**.
12. Cut & cap of utilities will be by all utility trades. Coordinate prior to demo
13. Demo and removal of a UG Utility Lines shown to removed
14. Demolish and backfill (E) Septic Tank and leach lines per P1.0P
15. Remove all abandoned Underground Utilities within Construction Limits and identified on Underground Locating Map.
16. Backfill and compact all voids left by demolished items.

17. This contract shall provide cleaning services for all adjacent structures to remain of all dust dirt and debris caused by demo activities.
18. Furnish, install and maintain Traffic Control for all work in this bid package.
19. This Contract will be responsible to provide all abatement requirements per the haz-mat report provided by HMS. Coordinate extent of all abatement with the CM prior to starting work. Review the haz-mat report prepared by HMS, Inc. for the scope of work and abatement methodology.
20. Provide daily offhaul of debris from jobsite in accordance with HMS Hazardous Materials Report.
- 21. Furnish and install Demo and Backfill of (E) Drywell per N/P10.10 and similar (BUL3).**
- 22. Furnish and install shoring required to support roof structure once Demolition is complete. All shoring is to be in compliance with all applicable local, state and federal codes and laws. Additionally shoring plan shall be signed and stamped by a Structural Engineer licensed to do work in the State of CA. Engineered and stamped shoring plan to be provided to HCCI and Design Team prior to Demolition. Shoring to remain in place until structure has been supported and inspected (BUL3).**

FOB Items

1. None.

Provide Information Separate from Bid amount. Include on Bid form.

1. None.

Installation of FOB Items:

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None.

End of Package

DC-02 SITE & BUILDING CONCRETE & REINFORCING

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
03 02 00	Concrete Resurfacing, Repair & Moisture Vapor Mitigation
03 10 00	Concrete Forming & Accessories
03 20 00	Concrete Reinforcing
03 30 00	Cast-in-Place Concrete
03 35 00	Concrete Finishing
03 35 43	Concrete Polishing (As Applies)
07 92 00	Joint Sealants (As Applies)
31 23 00	Trench Excavation & Backfill (As Applies)
32 11 26	Aggregate Base Course
32 13 13	Site Concrete Improvements
32 13 15	Concrete Improvements
32 17 26	Tactile Warning Surfacing

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
2. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
3. There will be one wash out area for all contractors as designated by the CM. Each contractor will be responsible for providing wash out bin.
4. Provide all backfill of excavations to original sub-grade for work included in this Prime Contract.
5. Provide all clean up and provide off-haul of own debris from site daily.
6. See General Notes at beginning of summary of work specification section for other items
7. Furnish off-haul of all excavation spoils from site.
8. Provide Dewatering for own work. Dewater block outs for structural steel columns until pour back.
9. All subcontractors will provide their own temporary lighting. Harris Construction will provide ingress and egress lighting and string lights in corridors only.

Coordination with Other Trades –

1. Review and coordinate layout of all block outs in concrete as shown in the contract documents, related shop drawings or written layout provided by other Prime Contractors. Coordinate locations with related Prime Contractors prior to installation.
2. Provide location for reinforcing steel passing through structural steel for structural steel shop drawings, as required.
3. Coordinate dimensions with other related Prime Contractors of all equipment and housekeeping pads. Pad sizes shall be provided by other Prime Contractors and physically laid out and installed by this Prime Contractor.

4. This Prime Contractor will receive all building pads at +/-0.05' and site at +/-0.10' will be responsible for all cut and fill necessary to complete the work of this Prime Contractor.
5. Maintain building slab subgrade moisture content per soils report once building pad is received from the earthwork Prime Contractor.
6. Provide access for other trades through reinforcing steel at building lines.
7. Provide layout drawings for all building slab on grade concrete joints for approval prior to installation of concrete.
8. Provide layout drawings for all site concrete joints for approval prior to installation of concrete.
9. Receive and coordinate written layout from other Prime Contractors for items embedded in, or passing through concrete. All sleeves are to be installed by the utility and or misc. steel / railing Prime Contractors.
10. Coordinate all embedded items in foundations at exterior of building to be installed at a later time i.e. fencing, posts, etc...
11. Coordinate installation of all sleeves for work passing through concrete work with respective Prime Contractors prior to excavation.
12. Coordinate concrete curbs relative to framing prior to pour.
13. Coordinate all work to provide access to buildings for other trades as scheduled. Coordinate with other activities in the schedule for other trades and confirm the schedule meets the CMBS dates.
14. Install and coordinate block-outs at the site concrete to facilitate installation of fine grading by Earthwork Prime Contractor and to protect concrete until fine grading is complete. Complete site concrete block-outs once fine grading is complete. Backfill and fine grade once block-outs have been poured.
15. Irrigation sleeves will be installed by the landscape/irrigation Prime Contractor. Coordinate schedule.
16. Coordinate the location of depressions, block outs, slopes and drains prior to pour, with other trades as required.
17. Coordinate site walks at building plaster. Termination to conform to code.
18. Review as-builts & underground locator survey & pothole utilities prior to starting work.
19. See General Notes at beginning of summary of work specification section for other items.
20. Coordinate with Demolition Prime Contractor for extent of concrete demolition. Concrete will be removed joint to joint by demo contractor. Replace as required for all trades. Existing concrete to be figured at those areas shown on Demo drawings. In addition concrete patch back to be figured at all plumbing & electrical/LV/FA trenches shown to be located in existing slab. All trenches to be patched figure to be 2' wide.
21. Coordinate site walks @ building plaster. Termination to conform to code.
22. Electrical and site utility bid package shall furnish and install all concrete required for installation of thrust blocks, manholes, vaults, boxes, underground structures for work related to their bid package. This bid package shall furnish and install all other concrete shown including aprons mow strips and collars.

Furnish and Install Items

1. Furnish and install all site and building concrete complete including any required reinforcement per plans and specifications. This to include entire SOG profile (Agg. Base, Sand, Vapor Barrier, Concrete, Etc...)as shown on the contract documents. This also to include patch back of concrete sidewalk, curbs, gutters, etc... at all Utility Tie-Ins.
2. Furnish proposed construction joint layout for review and approval by the Architect. Provide all saw cutting, formwork and sealant for same as required per the contract documents
3. Furnish and install all sand as detailed at site concrete. All other fill material shall be furnished and installed by the earthwork subcontractor. Agg. Base under vehicular type sidewalk to be by Earthwork package per the contract documents.
4. Furnish and install all layout for own work from survey provided by the survey contractor. See survey scope of work for reference. This bid package will be responsible for all additional required

layout not performed by the survey contractor. Contractors are responsible for protection of all requested survey. Provide 72 hour notice by submitting a survey request form.

5. Furnish and install surface saw cutting per the contract documents.
6. Furnish proposed construction joint layout for review and approval by the Architect. Provide all saw cutting, formwork and epoxy joint filler for same.
7. Furnish and install all drilling of holes for work performed in this Prime Contract.
8. Furnish and install all expansion joints, sealant and filler complete required by the contract documents.
9. Furnish and install all agg. Base/sand as detailed at building concrete. All other fill material shall be furnished and installed by the earthwork package.
10. Furnish and install any and all backfill of excavations at all stem, retaining, and ramp walls by this Prime Contractor to the required grade.
11. Furnish and install all mow strips including excavation. Backfill will be by the earthwork package.
12. Physically layout and install all block outs, openings, etc... in concrete from written layout provided by other contractors for installation of their work.
13. Furnish & install all concrete equipment/housekeeping pads on site.
14. Furnish and install all concrete for utilities shown on Civil and Architectural Drawings; i.e., collars at Christy inlets, concrete at gate valves, post indicator valves, backflow preventers and **Gas Regulators**.
15. Furnish and install all reinforcing steel for site work and building concrete.
16. Furnish and install all sealant at building to site concrete.
17. Furnish and Install concrete walks damaged or removed for irrigation, electrical and plumbing cut and patch work (see Civil, Architectural, Structural, Plumbing, Mechanical, and Electrical Drawings). Shall be patched back with new concrete to match texture, grade finish, and thickness of existing adjacent concrete walks.
18. Furnish and install all Tactile Warning Surfaces (truncated domes) as called for.
19. Furnish and install all seat walls, curbs, and foundations.
20. Weakened plane joints at walks shall be max 10 feet, expansion joints 20' max spacing per plan. Where not shown refer to specification section 32 13 13.
21. Furnish and install all patch and infill at slab as required.
22. Furnish and install all rebar and doweling into existing concrete including lubrication/epoxy.
23. Furnish and install backfill of all foundations.
24. Patch areas where demo has been performed for utilities.
25. Furnish and install 6" concrete curb at infill framing.
26. Furnish and install under slab vapor barrier
27. Furnish and install topical concrete vapor control barrier (Curranseal or sim product per Specifications) at new slabs only.
28. Furnish and install all expansion joints and sealant complete required by the contract documents in concrete.
29. Furnish and install 3" min. cover with concrete for all structural steel and base plates that extend beyond the building line.
30. Furnish and install all grouting and/or dry pack for structural steel at concrete.
31. Furnish and install cleaning and protection of anchor bolts until turn over to structural steel erection or setting of leveling nuts.
32. Furnish & install all floor prep for floors out of tolerance. Tolerance of concrete placement is to be per the specifications. Any concrete placed that is not within these tolerances will be corrected by this bid package (Up to removal and replacement at the sole discretion of the AOR and CUSD). Where tolerance for flooring material is higher than what is required in Concrete Specification respective flooring contractors will correct as needed.
33. Furnish and install all wood embedded into concrete per the contract documents.
34. Furnish and install slopes to drain at all drains coordinate prior to installation with utility contractor.
35. Provide all concrete coring for furnished and installed handrails.
36. Furnish and install termite control and soil sterilization under all building concrete.

37. All minor depressions for tile and slopes to drain shall be performed by the Concrete Subcontractor
38. Furnish and install treads, landings and nosing's as shown on Civil and Architectural Drawings at site.
- 39. Furnish and install all excavation, concrete, reinforcing and expansion material and caulking at concrete curbs/stemwalls adjacent to (E) portables, reference C,D & E/X3.0 (BUL3).**

Provide Information Separate from Bid amount. Include on Bid form.

1. None

FOB Items

1. None

Installation of FOB Items

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. Physically layout and install all items embedded in (N) concrete (i.e. anchor bolts, plates, angles, non-bolted tube steel, rails, sleeves, pipe rail, etc....) as provided FOB jobsite by other Prime Contractors from written layout provided by those Prime Contractors. Install and grout all items installed in sleeves.
2. Install and remove when complete all bolt templates provided by other Prime Contractors.
3. Install all framing sill and hold down bolts as provided FOB by the framing Prime Contractor in new concrete. All layouts will be furnished by the framing Prime Contractor.
4. Install bollards furnished by building steel contractor, including locking hardware complete

End of Package

DC-03 GENERAL SPECIALTIES

Furnish and install any or all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
03 35 43	Polished Concrete Finishing
04 21 13.13	Thin Brick
05 12 00	Structural Steel Framing
05 50 00	Metal Fabrications
06 40 00	Architectural Woodwork
07 19 00	Water Repellants
07 21 00	Thermal Insulation
07 25 00	Weather Barriers (As Applies)
07 72 00	Roof Accessories
07 84 00	Firestopping (As Applies)
07 92 00	Joint Sealants (As Applies)
08 11 13	Hollow Metal Doors & Frames
08 14 16	Flush Wood Doors
08 71 00	Door Hardware
	Aluminum Storefront/Curtainwall (Deferred Approval)
08 80 00	Glazing
	Tiling
09 65 13.13	Resilient Base
09 65 19	Resilient Tile Flooring
09 68 00	Carpeting
09 90 00	Painting & Coating
10 14 00	Graphics & Signage
	Window Shades
10 28 13	Toilet Accessories
10 44 00	Fire Extinguishers and Cabinets
32 31 13	Chain Link Fences & Gates

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
2. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
3. See General Notes at beginning of summary of work specification section for other items.
4. Review Asbestos and lead abatement survey for abatement scope of work.
5. Provide protection of slab and utilities from cranes and equipment.
6. Provide Dewatering for own work.
7. Furnish clean up daily and off-haul of all debris generated by this bid package.

Coordination with Other Trades

1. Provide layout for all items installed by this package requiring backing to Rough Carpentry package. All backing to be physically layed out and written layout provided.
2. Coordinate layout and opening sizes for thin brick cutouts for other trades.
3. Coordinate SF/Window/Door frame finish openings with other trades.
4. Coordinate with wood framing contractor all finished dimensions required to meet ADA.
5. Coordinate ceramic tile installation with mirror locations at toilets.
6. Coordinate locations of window and door frames installed relative to the location of plaster molding adjacent to the frames to insure a water tight system.
7. This contract to coordinate all HM Frames with appropriate wall finishes to achieve needed throat size for frames
8. Submit shop drawings & procure material so as not to delay the scheduled installation of plaster.
9. Provide written request for information through the CM for layout information at least 21 days prior to need, from related bid packages for all for rough-in, drilling, coring, backing, openings and block-outs etc....
10. Furnish written layout information within 21 days of request for all for embedded items, drilling, coring, backing, openings and block-outs, etc....to other bid packages. Any work where layout was not provided on initial construction shall be performed by this bid package. This shall be done during the shop drawing period not after submittal for approval. Prime Contractors will mark up shop drawings and return with proper dimensions.
11. Provide coordination drawings for above ceiling work for work related to this bid package. Coordinate all drawings with the drawings of this bid package. Note conflicts and provide potential solutions to the architect for review. Attend all coordination meetings required to coordinate all above ceiling work.
12. Request and receive layout (prior to detailing and fabrication) from other bid packages for all items that require holes, openings, reinforcing or bracing related to this bid package's scope of work including but not limited to, bolt holes for attachment, roof openings, HVAC supports, reinforcing steel, etc....Allow 21 days for return of dimensions
13. Coordinate with Painting Prime Contractor the application of the cement plaster painting system, and provide written report of the cement plaster pH prior to the painting application.
14. Schedule paint coats so as to allow for completion of work with minimal damage with final coat being installed with majority of work completed. Furnish and install all touch up required
15. Plaster contractor shall coordinate with Painting contractor the application of the cement plaster painting system, this contract to provide a written report of the cement plaster pH prior to the painting application.
16. Coordinate painting/coating with other contractors or control vapors so as to allow for completion of work without cross exposure to other contractors when using paints or coatings that could create a hazard to other workers exposed to vapors.
17. Examine floor substrate for acceptance prior to start of work per specifications.
18. Review details and provide recommendation of best practices for crack control in polished concrete areas.
19. Coordinate cove base transition with framing and structural concrete contractors to ensure flush transition to wall finishes.
20. Due to schedule constraints field measuring should be considered at framing stage in lieu of after all drywall and finishes are complete. Review the schedule to determine necessity relative to fabrication times. If measurement is required at the framing stage, provide measurement to meet the schedule and figure all associated finishes.
21. Coordinate at the jobsite all plumbing and electrical locations during rough-in activities to assure proper fit at time of casework and equipment installation.

22. Coordinate counter support bracket layout to avoid conflict with in-wall rough-in.

Furnish and Install Items

1. Furnish and install all polished concrete finishing complete per the plans and specifications. This contract shall provide floor protection for all polished floors during and after the polishing process. This also to include the application of any stains or colors as noted on the contract documents as it relates to Polished Concrete.
2. Furnish and install all Thin Brick Veneer systems complete per the Plans and Specifications.
3. Furnish and install all special or cut bricks to match details at special corners and ends of walls, including mitered corners.
4. Furnish and install all caulking of joints at Thin Brick including Expansion & Control Joints.
5. Furnish and install saw cutting of Thin Brick for installation of flashing and sealant by others; layout to be provided by other contractors.
6. Provide scaffolding as needed to complete your work.
7. Remove all efflorescence and grout residue from masonry prior to sealing.
8. Clean and seal all thin brick as required by the plans and specifications.
9. Furnish and install all Structural and Misc Steel Fabrications complete per Plans and Specifications. This to include any Steel Item noted to be 10GA and heavier. This is to include but not be limited to: Columns, Beams, Angles, Plates, Ladders, Counter-top brackets.
10. Physically layout and install all block outs, openings, reinforcing, bracing and holes in steel from requested written layout provided by other contractors.
11. Provide dewatering of all column block-outs as needed to complete your work.
12. Set leveling nuts at anchor bolts to the proper elevation for structural steel installation after one nut has been set to elevation by the concrete contractor. Assume protection of bolts from the concrete contractor.
13. Furnish and install all Architectural Woodwork complete per plans and specifications.
14. Furnish and install all floor anchorage, angles and floor blocking for casework. Backing in wall to be provided by the Framing Contractor from layouts provided by this Contract
15. Furnish and install Mail Slot Casework as noted on AA8.10 and similar.
16. Furnish and install all openings in casework and tops for other trades.
17. Furnish & install cable holes and grommets.
18. Remove all casework items shown to be removed that are adjacent to casework items shown to remain.
19. Furnish and install all counter tops prepared to receive plumbing and electrical. Cutting holes for sinks will be by this contract.
20. Furnish and install casework accessories as noted in specification.
21. Furnish and install shims & wood supports.
22. Furnish and install all Water Repellants complete per plans and specifications.
23. Furnish and install all thermal insulation/Fire Stopping complete per contract documents, roofing and exterior wall rigid insulation by others. **Thermal insulation should be figured at all concealed spaces which do not receive Fire Sprinkler coverage (BUL3).**
24. Furnish and install all acoustical/sound insulation, blankets, per the contract documents fire rated gyp board is provided by gypsum board subcontractor
25. Furnish and Install calcium fiber filler, per contract documents.
26. Furnish and install all insulation draft / fire stops.
27. Furnish and install all labeling/stenciling required at Firer Rated Walls as required.
28. Furnish and install all HM Doors, Frames complete per plans and specifications
29. Furnish and install all door lite frames and trims complete per plans and specifications
30. Furnish and install all Flush Wood Doors complete per plans and specifications
31. Furnish and install all door louver inserts at all hollow metal and wood doors complete per plans and specifications

32. Furnish and install all Hardware at HM, Wood and Storefront/Curtainwall.
33. Hardware to be provided with construction cores installed, permanent cores to be provided to district for keying and installation.
34. Furnish and install bituthene at door and window openings as required.
35. Furnish and install all membrane & window flashings at openings under this scope of work
36. Furnish and install all Storefront, Curtainwall and Glazing systems complete per plans and specifications. This is to include all related flashings, sealant, trims and accessories needed to make for a complete and watertight system.
37. Furnish & install glass at door lites.
38. Furnish and install all glass and glazing shown throughout the contract documents, this to include any required Spandrel, Acoustical and/or Fire Rated Glazing, as required.
39. Furnish, Install, and Remove any scaffolding/equipment required by this scope of work at the interior of the buildings.
40. Furnish and install sealants at all aluminum windows, storefront, curtainwall and or aluminum flashings at interior and exterior.
41. Furnish and install all mirrored glass as called for in the glass specification.
42. This contract to perform water & air testing at storefronts, curtainwalls and windows as called for in the contract documents.
43. Furnish and install all Tiling systems complete including but not limited to ceramic/quarry tile, water barriers and copper flashings, Interior & Exterior as required.
44. Furnish and install floor prep for concrete cracking, saw cut joints and construction joints.
45. Furnish and install Mortar beds as required in the project documents.
46. Furnish and Install sealant for work included in this contract abutting other materials. Sealant shall be furnished and installed by the last contractor to install adjacent materials as scheduled in the CMBS (excluding painting). Unless otherwise noted in the contractors summary of work.
47. Furnish and install floor protection for all finished floors once complete.
48. Test moisture levels of slab on grade meet manufacturer's requirements prior to installation of flooring.
49. Furnish & install all flooring including concrete sealer, polished concrete and Epoxy-Resinous Flooring. This to include but not be limited to all carpet walk-off mats and resilient base & accessories
50. Furnish and install floor leveling to meet manufacturer's requirements.
51. Refer to concrete specifications for tolerances of (N) Slabs. Any slabs found to be within tolerance of concrete specifications but not with Flooring specifications shall be the responsibility of the flooring contractor to correct.
52. Furnish and install flooring patch after demo of flooring.
53. Furnish and install prep of existing floors to receive new materials.
54. Provide floor covering at all knee spaces and areas open to view under casework
55. Furnish and install all prep, primer and painting complete per plans and specs. This to include all areas where ceiling is open to bottom of the roof assembly and is also to include all exposed ductwork, conduit, piping, etc... that is left exposed as well.
56. Furnish and install all interior door / window frame caulking complete.
57. Furnish and install finish as specified for trim, doors, and millwork.
58. Furnish and install all surface preparation and finish of all flashing to be painted.
59. Provide testing for primer adhesion at structural steel to confirm compatibility with paint
60. Furnish and install painting on all exposed piping as called for throughout the contract documents.
61. Furnish and install expansion joint caulking at Site Concrete and Masonry Walls.
62. Furnish and install painting corner to corner or break line at all patches.
63. This contract is to provide paint touch-up for minor trade damage.
64. **Furnish and install all painting at (E) MPR for work associated with the Overhang cutback. This should include painting (N) Fascia and sheetmetal at this location (BUL3).**
65. Furnish and install clear floor sealer per complete per plans & specs.

66. Furnish and install protection of concrete at areas where exposed concrete is the finished product (Polished Concrete, Sealed Concrete, etc...). This to include protection prior to and after floor finishing.
67. Furnish and install all exterior and interior signage shown complete.
68. Furnish and install all access signage on walls and fencing.
69. Furnish and install all building lettering and signage.
70. Furnish and install all Window Shades complete per plans and specifications.
71. Furnish and install all toilet accessories including mirrors. If project requires hand dryers, the hand dryers are to be furnished by this contract and turned over to the Electrician for install.
72. Furnish and install all toilet partitions complete per plans and specifications
73. **Furnish and install (N) Flagpole per K/X1.0, this to include all Concrete Footing, Reinforcement and accessories as noted in the plans and specifications (BUL3).**
74. **Furnish and install all chainlink fencing and gates complete per plans and specifications. This should include all concrete and reinforcing as noted for post footings. Mowstrip to be furnished and installed by others (BUL3).**
75. **Furnish and install all Ornamental Metal Fencing and gates complete per plans and specifications. This to include all concrete and reinforcing as noted for post footings. Mowstrip to be furnished and installed by others. Hardware for Ornamental gates and painting of Ornamental Fencing (A/X3.0) is to be provided by the bid package (BUL3).**
76. **Furnish and install all Quartz Surfacing as noted on AA2.00 reference specifications for further requirements (BUL3)**
77. **Furnish and install all Architectural Wood Trim complete per plans and specifications (Ex. Keynote 6.15 on 1/AA6.20 and Sim.) (BUL3).**
78. **Furnish and install all counter-top support brackets complete. This to include but not be limited to those shown on 9/A10.60 (BUL3).**
79. **Furnish and install Aluminum Breakmetal complete per plans and specifications. This to include but not be limited to that shown on 11/A10.80 and similar (BUL3).**
80. **Furnish and install all Bollards complete per plans and specifications. This should include all associated concrete footings (BUL3).**
81. **Furnish and install all Aluminum Louvers complete per plans and specifications. This to include all mounting, flashings & accessories needed for a complete and functioning system (BUL3).**
82. **Remove and relocate Play Equipment as noted on sheet C3.0. This should include all concrete footings and reinforcement required. This contractor to verify fall zones prior to removal and reinstallation to insure compliance with applicable regulations (BUL3).**
83. **Furnish and install painting of sheetmetal flashing at (E) portables see C,D & E/X3.0 (BUL3).**
84. **Furnish and install Grilles at (E) portable Vents see D/X3.0.**
85. **Furnish and install all sealant as noted above, in addition to the following is a list of specific items (BUL3):**
 - o **Furnish and install all sealant at hollow metal frames, interior and exterior.**
 - o **Furnish and install sealant at plaster & gyp board to other material transitions.**
 - o **Furnish and install sealants from plaster to louver.**
 - o **Furnish and install sealant at bottom of all gypsum board.**

Provide Information Separate from Bid Amount, Include on Bid Form

1. None.

FOB Items

1. Furnish FOB jobsite all Anchor Bolts for Structural Steel. This to include all required templates for structural steel bolt setting. Templates are to be made of 1/8" plate and are to have the anchor bolts stuffed in the template prior to being delivered onsite. Bolts should be set within template in such manner as to ensure the proper projection of the bolt out of the footing. Coordinate with Concrete Package to attain proper projection.

2. Furnish FOB jobsite all 1x1x3/16" angles for embedment in concrete wall at Portable vents see D/X3.0 (BUL3).

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. Install all carpet provided by owner, provide any necessary materials required for complete installation. This only applies to carpet, all Walk-Off Mats, Resilient Base and Resilient Tile is to be furnished and installed by this contract see F&I items above.
2. **Install all Paper Towel and Soap Dispensers (Remainder of Toilet Accessories are to be furnished and installed by this contract) (BUL3).**
3. **Install all Safe and Key Box (BUL3)**

End of Package

DC-04 ROUGH CARPENTRY

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
06 10 00	Rough Carpentry
06 18 00	Glue-Laminated Construction
07 92 00	Joint Sealants

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
2. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
3. Provide protection of slab and utilities from equipment.
4. Provide permits for scaffolding as required.
5. Furnish clean up daily and off-haul of all debris generated by this Prime Contractor.
6. See General Notes at beginning of summary of work specification section for other items.

Coordination with Other Trades

1. Coordinate installation of blocking, backing, etc. for other Prime Contractors from written layout provided. Coordinate concrete curb vs. framing to assure proper alignment.
2. Provide physical layout for backing required for own work.
3. Coordinate locations of window and door frames installed by the General Specialties package, guarantee door and opening sizes, all openings to be square, plumb and level.
4. Provide coordination drawings for above ceiling work for work related to this Prime Contractor. Coordinate all drawings with the drawings of other Prime Contractors. Note conflicts and provide potential solutions to the architect for review. Coordination must take place prior installation of the work. Attend all coordination meetings required to coordinate all underground and above ceiling work.
5. Coordinate with Mechanical and Electrical contractors for location and size of equipment for platforms built by this bid package including all bolts and hardware.
6. Coordinate recessed roof sheathing and blocking for roof drains with plumbing contractor.
7. Provide review and verification of space for ADA requirements prior to framing. Note all discrepancies.
8. Coordinate finish thickness with ceramic tile contractor all rough framing dimensions required to

meet ADA.

9. Coordinate access panel locations with other trades.
10. This contractor shall confirm and coordinate all dimensions for wood framing furnished by this package. Procure all related information so as to not to delay installations as scheduled in the project baseline schedule.

Furnish and Install Items

1. Furnish and install all drilling of holes for work performed in this Prime Contract.
2. Physically layout and install all block outs, openings, reinforcing and bracing from written layout provided by other Prime Contractors.
3. Furnish and install all lumber and plywood on the project including in-wall blocking including but not limited to:
 - a. all wood plaster screeds, **stops**, grounds, nailers, and stops except those embedded in concrete.
 - b. all plywood backboards at electrical and IDF rooms as required
 - c. all plywood at transformer and equipment supports
 - d. Casework blocking
 - e. Signage blocking
 - f. Blocking for MEPF Contractors
4. Furnish, install and physically layout all openings, block-outs, backing, blocking, blocking for utility and fixture supports. Coordinate locations with related trades prior to installation of framing.
5. Furnish and install backing for plaster expansion joints and moldings as required for proper installation.
6. Furnish and install all material attached to framing including but not limited to the following:
 - a. Furnish and install all braces and angles.
 - b. Furnish and install all connection hardware
7. Furnish and install all Framing for architectural access doors shown in the architectural drawings at hard ceilings, soffits and walls other than utility access doors.
8. Provide review and verification of space for ADA requirements prior to framing. Note all discrepancies
9. Furnish and install all wall prep for framing out of tolerance.
10. Furnish and Install all blocking required for all trades.
11. Furnish and install all Simpson hardware complete. Concrete sub to install Simpson hardware installed in new concrete, this package to install in existing concrete.
12. Furnish and install protection of door and window openings after demo/abatement
13. Furnish and install all framed mechanical and electrical pads at the roof.
14. Furnish and install all framing complete.
- 15. Furnish and install cutback of (E) MPR Overhang per 2/G0.02 (BUL3).**
- 16. Furnish and install (N) framing associated with MPR Overhang Cutback. This is to included but not be limited to Fascia, Blocking, etc...as noted in the contract documents (BUL3).**
17. Furnish and install all miscellaneous iron required for framing.
18. Furnish and install temporary shoring as required for new framed openings.
19. Furnish and install blocking for duct supports. Include attachment method for wood nailers to wood I-joists per E.O.R. and I-joist manufacture's recommendations.
20. Furnish and install head of wall framing for 1 hour walls.
21. Furnish and install infill framing.
22. Furnish and install all framing for MEP installed access doors.
- 23. Furnish and install all Fire Treated Plywood on walls in IDF Rm's complete per plans and specifications (BUL3).**

FOB Items

1. Furnish FOB jobsite all bolts and hold downs to be embedded in new concrete for installation

by the concrete package. Provide written layout.

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None

End of Package

DC-05 ROOFING, METAL PANELS/FASCIA & SHEETMETAL FLASHING

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
07 21 00	Thermal Insulation (As Applies)
07 25 00	Weather Barriers
07 31 13	Asphalt Roof Shingles
07 41 13	Metal Roof Panels
07 54 19	PVC Thermoplastic Membrane Roofing
07 62 00	Sheet Metal Flashing and Trim
07 92 00	Joint Sealants

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this bid package's scope of work.
2. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
3. Provide protection of slab and utilities from equipment.
4. Provide permits for scaffolding as required.
5. Furnish clean up daily and off-haul of all debris generated by this Prime Contractor.
6. See General Notes at beginning of summary of work specification section for other items.

Coordination with Other Trades

1. Due to schedule constraints field measuring should be considered at framing stage in lieu of after all drywall and finishes are complete. Review the schedule to determine necessity relative to fabrication times. If measurement is required at the framing stage, provide measurement to meet the schedule, coordinate and figure all associated finishes.
2. Coordinate at the jobsite all plumbing and electrical locations during rough-in activities to assure proper fit at time of casework and equipment installation.

Furnish and Install Items

1. Furnish and install roof system complete regardless of material type, including but not limited to all

roof insulation, rigid insulation, cover board, crickets, slope system, and roofing system over plywood deck. Glass mat gypsum board to be furnished and installed at parapet and all roof areas by this contract.

2. Furnish and install all walk mats/pads
3. Furnish and install all Sheetmetal Flashing and Trim complete per plans and specifications.
4. Furnish and install all sheet metal flashing associated with mechanical, electrical and plumbing work at the roof, this includes lead flashings/pans as detailed and noted under the sheet metal section.
5. Furnish and install waterproofing at Concrete Planters as required.
6. Furnish and install all sheet metal flashing associated with mechanical, electrical and plumbing work at the roof, this includes lead flashing and pans shown under the sheet metal section
7. Furnish and install tapered insulation at roofing as required.
8. Furnish and install all sealant as required for own work.
- 9. Furnish and install roof removal and Patchback as needed at (E) MPR for Overhang cutback (BUL3).**
- 10. Furnish and install all sheetmetal and drip edge needed at (E) MPR new fascia and roofing (BUL3).**
- 11. Furnish and install all Metal Platform covers at Mechanical Curbs and Platforms per**

FOB Items

1. None

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. Install al roof jacks supplied by other subcontractors.

End of Package

DC-06 LATH/PLASTER, DRYWALL & ACCESS PANELS

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
07 21 00	Thermal Insulation (As Applies)
07 25 00	Weather Barrier
07 84 00	Fire Stopping
07 92 00	Joint Sealants
08 31 13	Access Doors and Frames
09 21 16	Gypsum Board Assemblies
09 24 00	Cement Plastering

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Furnish and install all hangers, supports and bracing necessary for installation of work included in this Contract.
2. Provide permits for scaffolding as required.
3. This contract shall be responsible for all fireproofing patch back as a result of own work.
4. Furnish and install all attachment of all equipment related to this scope of work.
5. Coordinate all work to provide access to buildings for other trades as scheduled. Coordinate with other activities in the schedule for other trades and confirm the schedule meets the CMBS dates.
6. Contractor is responsible for all work referenced throughout the project documents related to this contractor's scope of work.
7. Furnish and install all physical layout for own work except where noted above to provide written layout to others.
8. Provide complete mockups as required by the specifications which is not integral to the building.
9. Furnish and install sealant for work included in this contract abutting other materials. Sealant shall be furnished and installed by the last contractor to install adjacent materials as scheduled in the CMBS (excluding painting). Unless otherwise noted in the contractors summary of work.
10. There will be one wash out area for contractors as designated by Harris. Each contractor will be responsible for removal from the site of all debris and spoils generated by each contract.
11. See General Notes at beginning of summary of work specification section for other items
12. Furnish and install protection of all roofing when work under this contract requires access on the roofing systems.

Coordination with Other Trades

1. Physically layout and install all block outs, openings, holes, backing, etc...from written layout provided by other contractors for installation of their work.
2. Coordinate with Painting contractor the application of the cement plaster painting system, and provide written report of the cement plaster pH prior to the painting application.
3. Coordinate locations of window and door frames installed by this contract relative to the location of plaster molding adjacent to the frames to insure a good fit. Glass contractor to provide physical layout to the plaster contractor for the plaster molding should windows not arrive prior to plaster mold installation.
4. Provide a plaster control and expansion joint layout for architect approval prior to installation
5. Sheet metal contractor shall furnish and install rigid insulation at metal roofing

Furnish and Install Items

86. Furnish and install all Gypsum Board Assemblies complete per plans and specifications.
87. Furnish and install all Cement Plastering complete per plans and specifications.
 - a. Furnish and install sealant at all plaster penetrations except aluminum windows
88. Furnish and install all architectural access doors shown in the architectural drawings at hard ceilings and soffits other than utility access doors.
89. Furnish and install all sealant from plaster to hollow metal frames
90. Furnish and install all exterior gypsum board sheathing / rigid foam insulation, water barrier, lath, scratch and brown coats where ceramic tile (as required), lath/plaster and brick veneer is to be installed, interior and exterior.
91. Sheet metal contractor will be installing their own rigid foam insulation, water barrier and support structures. See that sections summary of work for specific items. This contract will install all exterior sheathing on the entire project as detailed.
92. Furnish and install fire rated stopping / assemblies for own work as called for throughout the documents.
93. Furnish, Install, Remove scaffolding for all work included in this trade and also for exterior ceramic tile, brick veneer, all metal panels, skylights / SF windows, per the durations noted on the contract schedule. Each trade using this scaffolding will be required to sign an indemnity agreement.
94. Furnish and install bituthene at all door openings
95. Furnish and install all Penetration Flashing Sheets and water barriers around all items that penetrate the Cement Plaster including but not limited to doorframes, window frames, structural steel, piping etc...
96. Furnish and install all plaster grounds and stops
97. Furnish and install cut and patch of existing walls for backing and infill's and Utilities
98. Furnish and Install plaster patch at new openings and demoed areas
99. Furnish and install plaster and drywall patch where door frames/window frames are to be removed
100. Cut and patch for installation of new countertop support brackets.
101. Furnish and install all plaster and drywall patch complete
102. Furnish and install all cut and patch for wall intersections.
103. All plaster patchwork shall be applied from corner to corner. Patches cannot stop in the middle of the wall. Re-dash.
104. Furnish and install rigid insulation at plaster/thin brick veneer.
105. Furnish and install Gypsum Bd. Finish at Wall talkers to finish level required by manufacturer.

FOB Items

1. None

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None

End of Package

DC-07 ACCOUSTICAL, WOOD CEILINGS, TACKBOARD & FRP

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
07 92 00	Joint Sealants
09 51 00	Acoustical Ceiling Panels
09 51 26	Acoustical Wood Ceilings
09 72 16	Vinyl Coated Fabric Wall Coverings
09 72 16.17	Vinyl Coated Fabric Covered Tackable Wall Panels
09 77 20	Fiberglass Reinforced Plastic Paneling

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below

General Items

1. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
2. This contract shall be responsible for all fireproofing patch back as a result of own work.
3. Furnish and install all physical layout for own work except where noted above to provide written layout to others.
4. Provide complete mockups as required by the specifications which is not integral to the building.
5. See General Notes at beginning of summary of work specification section for other items

Coordination with Other Trades

1. Review buildings prior to installation of ceilings to note conflicts with ceiling heights.
2. Review CMBS with CM prior to start of work and advise of issues relating to warranties and bldg. acclimation.
3. Coordinate ceiling height locations with all trades prior to rough in.
4. Coordinate backing requirements for all trades associated with this bid package prior to start of Bldg. framing.

Furnish and Install Items

1. Furnish and install all Acoustical Ceiling Panel Systems complete per plans and specifications. This work is to include any and all accessories required for a complete system.
2. Furnish and install all Acoustical Wood Ceiling Systems complete per plans and specifications. This work is to include any and all accessories required for a complete system.
3. Furnish and install all Vinyl Coated Fabric Wall Coverings complete per plans and specifications. This work is to include any and all accessories required for a complete system.
4. Furnish and install all Vinyl Coated Fabric Covered Tackable Wall Panel systems complete per plans and specifications. This work is to include any and all accessories required for a complete system.
5. Furnish and install all Fiber Reinforced Plastic Paneling complete per plans and specifications. This

- work is to include any and all accessories required for a complete system.
6. Furnish and install all hangers, supports and bracing necessary for installation of work included in this Prime Contract.
 7. Furnish and Install sealant at all locations where tack board meets other materials.
 8. Furnish and install tile at electrical & low voltage devices prior to dropping of tile activity. Cut holes in tiles for devices as required.
 9. Furnish and install all "hanger wires" and "brace wires" for work in this bid package and light fixtures, cable trays and projector mounts. Electrical contractor will connect to wire to their own work.
 10. Furnish and install trapeze supports for acoustical ceiling as required.
 11. Furnish and install all perimeter trim and similar as detailed for acoustical ceiling
 12. Furnish and install ALL access panels shown on architectural ceilings / walls for work included in this contract.
 13. Furnish and install own floor protection after initial floor protection by HCCI (i.e. Tarps, plastic, plywood, etc.).
 14. Furnish and install all compression struts.

FOB Items

1. None

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None

End of Package

DC-08 FIRE SPRINKLERS

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
07 84 00	Fire Stopping
07 92 00	Joint Sealants
08 31 13	Access Doors and Frames
21 00 00	Fire Sprinkler System

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
2. Furnish and install all sleeves for work passing through masonry and concrete work. Coordinate with Respective Prime Contractors.
3. Furnish and install all access doors necessary to provide access to work included in this Prime Contract, provide layout to framing contractor.

Coordination with Other Trades –

1. All work/shop drawings will be done and coordinated with all other trades.
2. Coordinate locations of all openings, block-outs, backing, blocking and blocking for utility and fixture supports with related trades prior to installation of framing.
3. Layout above ceiling blocking as required for hangers and supports of own work.
4. Provide location of fire water stub up to the site utility contractor.
5. Coordinate all work to provide access to buildings for other trades as scheduled. Provide a breakout schedule of where and when rough-in operations will be performed in the building that has been coordinated with other activities in the schedule for other trades.
6. Purging and testing of all building fire sprinkler utilities included in this bid contract is the responsibility of this contractor. Coordinate with site utility contractor prior to connection.
7. Coordinate hook up of electrical and low voltage wiring with related contracts
8. Provide dimensions for structural steel and rough carpentry openings with 14 days of NTP.
9. This contract shall be responsible for all fireproofing patch back as a result of own work.

Furnish and Install Items

1. Furnish and install all fire sprinkler systems work complete per plans and specifications.
2. Install all coring or place sleeves for utilities through masonry and concrete.
3. Furnish and install drilling of holes for work performed in this contract.
4. Furnish and install all attic, canopy and building fire sprinklers as required.

5. Any holes through materials to allow installation of utilities not called for in the contract documents shall be installed and reinforced by this contract.
6. Furnish and install drilling of metal for piping and supports.
7. Furnish and install all access doors necessary to provide access to work included within this contract.
8. Furnish and install all attachment of all equipment related to this scope of work.
9. Furnish and install all hangers, supports, and bracing necessary for installation of work included in this contract.
10. Furnish and install fire stopping and fire caulking related to this scope of work.
11. Furnish and install fire sprinkler system from 6" above finished floor for a complete system.
12. Furnish and install all exposed materials in a consistent and aesthetic manner.
13. Furnish a complete set of as-builts, documenting all changes made during installation and submit immediately upon completion of work for DSA Approval, if required.
- 14. Furnish and install all signage associated with the Fire Sprinkler system complete per plans and specifications (BUL3).**

FOB Items

1. None

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None

End of Package

DC-09 PLUMBING & SITE UTILITIES

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
07 84 00	Fire Stopping
07 92 00	Joint Sealants
08 31 13	Access Doors and Frames
22 00 00	Plumbing
31 22 00	Soil Material (As Applies)
31 23 00	Trench Excavation & Backfill (As Applies)
33 12 00	Water Utilities
33 30 00	Site Sewer Systems
33 40 00	Storm Drainage

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
2. Furnish and install all sleeves for work passing through masonry and concrete work. Coordinate with Respective Prime Contractors.
3. Furnish and install all access doors necessary to provide access to work included in this Prime Contract, provide layout to framing contractor.
4. Furnish off-haul of all excavation spoils from site, generated by the contract.
5. Furnish and install all attachment of all equipment related to this scope of work.
6. There will be one wash out area for each Prime Contractor as designated by the HCCI. Each Prime Contractor will be responsible for removal from the site of all debris and spoils generated by each Prime Contractor.
7. Provide all backfill of excavations to original subgrade for work included in this Prime Contract.
8. Provide early startup / use of plumbing equipment as required by HCCI / Owner for construction or building systems testing of buildings prior to final acceptance, which will not initiate the warranty period until the filing notice of completion.
9. See General Notes at beginning of summary of work specification section for other items
10. Review Asbestos and lead abatement survey for abatement scope of work

Coordination with Other Trades –

1. Provide coordination drawings for underground and above ceiling work for work related to this Prime Contract. Coordinate all drawings with the drawings of this subcontractor. Note conflicts and provide potential solutions to the architect for review. Coordination must occur prior to

- excavation and/or installation of the work. Attend all coordination meetings required to coordinate all underground and above ceiling work.
2. Provide dimensions and physical layout. Coordinate with framing contractor for framed openings and backing.
 3. Any holes through materials to allow installation of utilities not called for in the contract documents shall be installed and reinforced by this Prime Contractor.
 4. Coordinate locations of all openings, block-outs, backing, blocking and blocking for utility and fixture supports with related trades prior to installation of framing.
 5. Layout above ceiling blocking as required for hangers and supports of own work.
 6. Coordinate all work to provide access to buildings for other trades as scheduled. Provide a breakout schedule of where and when piping operations will be performed that has been coordinated with other activities in the schedule for other trades.
 7. Building Plumbing Prime Contractor shall install and make physical connections to site utilities.
 8. Cleaning and purging of all building plumbing utilities included in this Prime Contract is the responsibility of this Prime Contractor.
 9. Coordinate routing of plumbing to miss foundations.
 10. Coordinate the location of depressions, block outs, slopes and drains with the drawings prior to pour.
 11. Housekeeping and equipment pads will be furnished and installed by the concrete subcontractor. Provide dimensions and layout for pads.
 12. Coordinate alignment of all utilities between plumbing and civil drawings prior to excavation
 13. Review as-builts and underground locator survey and pothole prior to starting work.
 14. At conflicts with site utilities, electrical duct banks/conduits are to have the lower elevations.
 15. Under slab rough-in should be figured for use of laser screed relating to holding stub ups below grade with appropriate markers.
 - 16. This contract shall be responsible for sawcutting, breaking and removing any concrete, asphalt or other site finish as needed to complete their work. This contractor shall also be responsible for the patch back as needed of these finishes. All finishes being removed and replaced shall be removed and replaced from joint to joint with no over cuts in sawcutting allowed. (BUL3).**
 - 17. Coordinate with PG&E for installation of (N) Gas Meter as noted on the plans. Immediately make CM of any schedule problems as it relates to PG&E's work (BUL3).**

Furnish and Install Items

1. This contractor to perform all capping of plumbing systems on items shown to be removed prior to demolition.
2. Furnish and install Site and Building Plumbing Systems complete per plans and specifications.
3. Furnish and install all Water (Fire & Domestic), Site Sewer & Storm Drainage Utilities complete per plans and specifications.
4. Furnish and install all Backflow Preventers, PIV's, Fire Hydrants complete per plans and specifications.
5. Furnish and install all drilling of holes for work performed in this Prime Contract.
6. Furnish and install physical layout for all deepened foundations at utilities prior to excavation by the concrete Prime Contractor.
7. Furnish and install all sleeves in foundations prior to the installation of concrete and reinforcing steel. Coordinate location with other related Prime Contractors prior to excavation.
8. Furnish and install all excavation for own work and re-compact.
9. Furnish and install all backfill of excavations to original subgrade for work included in this Prime Contract. Certify grades have been returned to original grade when work is complete.
10. Furnish and install all concrete required for installation of thrust blocks, manholes, vaults, boxes, underground structures, for work related to this Prime Contract.
11. Furnish and install all site and building plumbing utilities
12. Furnish and install all condensate drain piping required throughout the Contract Documents.

13. Furnish and install all flues associated with own work.
14. Furnish and install water tight closures at all gang and individual pipe penetration through exterior walls.
15. Furnish and install water heater strapping and platforms complete including steel.
16. Furnish and install all hangers, supports and bracing necessary for installation of work included in this Prime Contract.
17. Furnish and install drilling of wood and metal as needed for pipes and supports.
18. Provide testing of floor drains at completion of project.
19. Furnish and install disinfection of all building and site plumbing in relation to this subcontract. Coordinate a disinfection plan with other Prime Contractors to assure a clean system at acceptance.
20. Furnish and install all rough-in for all equipment of other Prime Contractors as required by the related specification sections and drawings. Connect to equipment.
21. Furnish and install all required utilities for Owner Furnished Equipment., capped and ready for connection. Make connection when installed.
22. Furnish and install all signage required for this scope of work.
23. Furnish & install all drinking fountains and associated backing. Modify backing and plumbing as required. This includes removal of existing drinking fountains.
24. Furnish & install clean outs shown on plumbing drawings.
25. Furnish & install roof and over flow drains complete including sealant.
26. Furnish and install fire stopping related to this scope of work.
27. Raise all utilities to grade in paving areas once paving is complete. Provide all patch back as necessary.
28. Test existing piping prior to new connection to confirm proper operation
29. Furnish and Install all plumbing shown on the Plumbing plans.
30. Furnish and install own floor protection after initial floor protection by HCCI (i.e. Tarps, plastic, plywood, etc.).
31. Adjust all utility boxes to new grades.
32. Cut and cap all plumbing at site. Disconnect and reconnect all plumbing utilities for equipment.
33. Furnish and install all ADA plumbing wrap.
34. Furnish and install all site plumbing to connect to existing site plumbing from building.
- 35. Furnish and install all interior, exterior and Site Drinking Fountains complete per plans and specifications (BUL3).**
- 36. Furnish and install all Steel Downspouts complete per plans and specifications (BUL3)**
- 37. Furnish and install all Emergency Eyewash Stations complete per plans and specifications (BUL3).**
- 38. Furnish and install gas regulator enclosure as noted on P/P10.10 (BUL3).**
- 39. Furnish and install all Fixture backing plates as required for Equipment/Fixtures being installed by this contract. Carpentry contract will provide necessary wood backing needed to receive mounting plates. Layout of backing to be provided by this contract (BUL3).**

FOB Items

1. Provide roof jacks needed by this Prime Contract to the roofer for installation.

Provide Information Separate from Bid amount. Include on Bid form.

1. None.

Installation of FOB Items

Note. Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. None

End of Package

DC-10 HVAC & CONTROLS

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
07 72 00	Roof Accessories (As Applies)
07 84 00	Fire Stopping
07 92 00	Joint Sealants
08 31 13	Access Doors and Frames
23 00 00	General Mechanical Provisions
23 00 01	Heating Ventilating & Air Conditioning
23 09 23	Direct Digital Control & Energy System

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below:

General Items

1. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
2. Provide early startup and maintenance of HVAC equipment as required by the District / or HCCI for acclimatization of buildings prior to final acceptance, which will not initiate the warranty period until the filing notice of completion.
3. See General Notes at beginning of summary of work specification section for other items.
4. Review Asbestos and lead abatement survey for abatement scope of work
5. This contract shall be responsible for all fireproofing patch back as a result of own work.
6. Provide complete mockups as required by the specifications which is not integral to the building.

Coordination with Other Trades –

1. Provide coordination drawings for underground and above ceiling work for work related to this Prime Contract. Coordinate all drawings with the drawings of this Prime Contract. Note conflicts and provide potential solutions to the architect for review. Coordination must occur prior to excavation and/or installation of the work. Attend all coordination meetings required to coordinate all underground and above ceiling work.
2. Coordinate all work to provide access to buildings for other trades as scheduled. Provide a breakout schedule of where and when rough-in operations will be performed in the building that has been coordinated with other activities in the schedule for other trades.
3. Provide all necessary openings and/or connection points for EMS and fire alarm wiring and devices. Fire Alarms Systems will be provided under separate contracts. EMS by this contract.
- 4.
5. Coordinate locations of all openings, block-outs, backing, blocking and blocking for utility and fixture supports with related trades prior to installation of framing.
6. Layout blocking as required for hangers and supports for own work.

7. Any holes through materials to allow installation of utilities for this contract not called for in the contract documents shall be installed and reinforced by this Prime Contract.
8. Provide all necessary openings and/or connection points for EMS and fire alarm wiring and devices.
9. House-keeping and equipment pads will be furnished and installed by the concrete contractor. Provide dimensions and layout for pads.
10. Coordinate and layout extent of Demo with demo contractor.
- 11. This contract shall be responsible for sawcutting, breaking and removing any concrete, asphalt or other site finish as needed to complete their work. This contractor shall also be responsible for the patch back as needed of these finishes. All finishes being removed and replaced shall be removed and replaced from joint to joint with no over cuts in sawcutting allowed. (BUL3).**

Furnish and Install Items

1. Furnish and install all HVAC Systems complete per plans and specifications. This to include all accessories needed for a complete and operable system.
2. Furnish and install all Direct Digital Control & Energy Systems complete per plans and specifications. This to include all conduit, wiring, devices and accessories needed for a complete and operable system.
3. Furnish and install all drilling of holes for work performed in this Prime Contract.
4. Furnish and install all access doors necessary to provide access to work included in this Prime Contract, provide layout to framing contractor.
5. Furnish and install all attachment of all equipment related to this scope of work.
6. Furnish and install all hangers, supports and bracing necessary for installation of work included in this Prime Contract.
7. Stub HVAC to all Owner furnished equipment and connect as required.
8. Furnish and install all roof curbs with proper height and slope for the roofing system. Verify heights with roofing shop drawings prior to fabrication. This applies to only Pre-Manufactured roof curbs, all roof curbs shown to be wood framed will be provided by the Rough Carpentry package. This package will provide written and physical layout for all roof curbs associated with HVAC regardless of type.
9. Furnish and install all Roof Accessories and/or Curbs/Platforms/Stands/Supports/Steel Backing/Bolts/Angles.
10. Furnish and install all rough-in for all equipment of other Prime Contractors as required by the related specification sections and drawings. Connect and or stub as described.
11. Furnish and install drilling of metal.
12. Furnish and install fire stopping related to this scope of work.
13. Furnish and install all flues associated with own work.
14. Furnish and install protection of all roofing when work under this contract requires access on the roofing systems.
15. Furnish and install water tight closures at all gang and individual pipe penetration thru exterior walls.
16. Furnish and install all signage and lettering called for in the contract documents related to work of this subcontractor.
17. Provide for testing of Fire Smoke Dampers resettable link coordinate with Fire Alarm Contractor as required.
18. Provide Fire Smoke Dampers ready for power hook up.
19. Furnish and install all metal louvers and screens at all areas
20. Provide two sets of filters during construction and a final set of filters following Final Clean of the Bldgs.
21. Furnish & install transfer grills.
22. Furnish and install all fusible links for testing of dampers
23. Allow use, as directed by the District, of the HVAC utility systems during construction for construction and testing operations without the start of the warranty period until the notice of completion for the project.

24. Provide cut and cap of mechanical items to be demoed, all items that are to be salvaged or reused shall be removed and reinstalled by this contract.
25. Provide Demolition of existing Mechanical equipment including any refrigerant recovery required. Stockpile equipment in an area designated by the Demo. Contractor for removal and offhaul from the site.
26. Furnish and install own floor protection after initial floor protection by HCCI (i.e. Tarps, plastic, plywood, etc.)
27. Confirm standard of existing operation of mechanical equipment at the mechanical yard prior to demolition. Confirm standard of unit ventilators prior to installation and demolition.
28. Furnish and install all flashing that is modified due to mechanical work at roofs.
29. Furnish and install all roof curb adapters as required.
30. Furnish and install unit ventilator closures and gasket to window.
31. Remove and store all mechanical items that are to be reinstalled at it later date as required.
32. Verify location of rough-in prior to ordering HVAC units for electrical mechanical and plumbing utilities.
33. Confirm existing power for new equipment prior to ordering.
- 34. Furnish and install plywood shims as needed for HVAC Duct Hager Straps, see B/M6.10 (BUL3)**

Provide Information Separate from Bid amount. Include on Bid form.

1. None.

FOB Items

1. Furnish all starters at HVAC units. Electrical connections shall be made by Electrical Subcontractor. Starters at MCC shall be provided by the Electrical Subcontractor.
2. Furnish FOB all sleeves for all utilities to the concrete subcontractor for installation.
3. Furnish all roof jacks for this bid package to the roofer for installation.

Installation of FOB Items

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. None

End of Package

DC-11 ELECTRICAL/LOW VOLTAGE/FIRE ALARM

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
07 84 00	Fire Stopping
07 92 00	Joint Sealants
08 31 13	Access Doors and Frames
26 00 00	Electrical
26 05 00	Common Work Results for Electrical
26 50 00	Lighting
27 00 00	Communications
27 10 00	Structured Cabling System
27 40 40	Assistive Listening Systems
27 42 00	Classroom Audio/Visual Systems
27 51 13	Paging Systems
28 31 00	Fire Detection & Alarm System

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this contractor's scope of work.
2. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
3. There will be one wash out area for each Prime Contractor as designated by the CM. Each Prime Contractor will be responsible for removal from the site of all debris and spoils generated by each Prime Contractor.
4. Provide trenching plan and permits for excavations over 5' per OSHA requirements to the CM.
5. See General Notes at beginning of summary of work specification section for other items.
6. Review Asbestos and lead abatement survey for abatement scope of work

Coordination with Other Trades –

1. Provide coordination drawings for underground and above ceiling work for work related to this Prime Contract. Coordinate all drawings with the drawings of this Prime Contract. Note conflicts and provide potential solutions to the architect for review. Coordination must occur prior to excavation and/or installation of the work. Attend all coordination meetings required to coordinate all underground and above ceiling work.
2. Provide use and maintenance of electrical equipment and devices as required by the District /or the CM for construction and testing of other equipment prior to final acceptance, which will not initiate the warranty period until filing of notice of completion.
3. Provide shop drawings for equipment layout in electrical rooms to confirm that dimensions are adequate prior to rough in and pouring of foundations.

4. Coordinate with PG&E, SBC/AT&T, Comcast, District and (E) site for service requirements to the site, as needed.
5. Coordinate all work to provide access to buildings for other trades as scheduled. Provide an underground utility schedule of where and when piping operations will be performed. Coordinate with other activities in the schedule for other trades and confirm the schedule meets the CBS dates.
6. Under slab rough-in should be figured for use of laser screed relating to holding stub ups below grade with appropriate markers.
7. At conflicts with site utilities, electrical duct banks/conduits are to have the lower elevations.
8. Any holes through materials to allow installation of utilities not called for in the contract documents shall be installed and reinforced by this Prime Contractor.
9. Quantify, coordinate and provide final connections of starters for HVAC units as provided by the Mechanical contractor.
10. Connect "hanger wires" provided by the Acoustical Subcontractor to light fixtures, cable trays and projector mounts.
11. Coordinate locations of all openings, block-outs, backing, blocking and blocking for utility and fixture supports with related trades prior to installation of framing.
12. Coordinate with all underground utilities prior to excavation.
13. Coordinate with the CM for power shutdown which must be done after school hours.
14. Coordinate location of UG utilities to be out of angle of repose of building, equipment, and tank foundations.
15. House-keeping and equipment pads will be furnished and installed by the concrete contractor. Provide dimensions for pads.
16. Review as-builts & underground locator survey & pothole utilities prior to starting work.
17. Coordinate concrete demo in the central plant with the CM and demo contractor.
18. Obtain district approval through the CM for all low voltage labeling.
19. Coordinate and provide access for all electrical conduit in aluminum storefront and curtain wall as details
20. Coordinate locations of all vaults away from doorways.
- 21. This contract shall be responsible for sawcutting, breaking and removing any concrete, asphalt or other site finish as needed to complete their work. This contractor shall also be responsible for the patch back as needed of these finishes. All finishes being removed and replaced shall be removed and replaced from joint to joint with no over cuts in sawcutting allowed. (BUL3).**

Furnish and Install Items

1. Furnish and install all Electrical Systems complete per the plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
2. Furnish and install all Communications Systems complete per the plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
3. Furnish and install all Structured Cabling System complete per plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
4. Furnish and install all Assistive Listening Devices complete per plans and specifications.
5. Furnish and install Classroom Audio/Visual Systems complete per plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
6. Furnish and install all Paging Systems complete per plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.

7. Furnish and install Fire Alarm & Detection System complete per plans and specifications. This to include but not be limited to all Equipment, Conduit, Wire, Devices, Fixtures, Hardware and Accessories needed for a complete and functioning system.
8. Provide relocation of (E) systems as noted on plan sheets. Relocation should include any all items, accessories, devices required to make for a complete and operating system. **Provide dedicated Fire Watch at times where FA system is unable to report or is inoperative. Dedicated Fire Watch is to be provided during work hours, nights and weekends while the system is not functioning. (BUL3)**
9. Furnish and install cut and cap of existing utilities and items shown to be removed by the demolition contractor prior to demolition, terminate and pull wire back to nearest box. Remove all equipment. Light Fixtures disposal is by the demo contractor. This contract is responsible to remove and stockpile for the demo contractor.
10. Furnish and install all trench plates for excavations by this Prime Contractor for protected campus walk paths and construction activities.
11. Furnish and install disconnects not provided on factory equipment installed by other Prime Contractors.
12. Furnish and install physical layout for all deepened foundations at utilities prior to excavation.
13. Furnish and install all drilling of holes for work performed in this Prime Contractor.
14. Furnish and install protection of all roofing when work under this contract requires access on the roofing systems.
15. Furnish and install fire-stopping for own work.
16. Furnish and install pull strings / rope in all empty or future conduits.
17. Furnish and install all concrete required for installation of manholes, vaults, boxes, underground structures, for work related to this Prime Contract.
18. Furnish and install all colored concrete cap over all required duct banks.
19. Any holes through materials to allow installation of utilities not called for in the contract documents shall be installed and reinforced by this Prime Contractor.
20. Furnish and install all sleeves for work passing through masonry and concrete work. Coordinate with Respective contractors.
21. Furnish and install all sleeves in foundations prior to the installation of concrete and reinforcing steel. Coordinate location with other related contractors prior to excavation.
22. Furnish and install all access doors necessary to provide access to work included in this Prime Contract, provide layout to framing contractor.
23. Furnish off-haul of all excavation spoils off site.
24. Furnish and install all attachment of all equipment related to this scope of work.
25. Provide all backfill of excavations to original subgrade for work included in this Prime Contract.
26. Furnish and install all conduits, sleeves and bushings for future low voltage and telecommunications wiring. Install fire stopping as required.
27. Provide all trenching, conduit and wiring for low voltage and telecommunications.
28. Furnish and install disconnects and associated supports.
29. Furnish and install all necessary backing and supports (Wood Blocking/Backing by others) required for light fixtures as required.
30. Furnish and install all supports and bracing required for electrical work except for hanger wires. Hanger Wires will furnished and installed by the Acoustical package. This package will be responsible for layout of wires connecting to their work and connecting the wire to the light fixtures.
31. Furnish and install water tight closures at all gang and individual pipe penetration thru exterior walls.
32. Furnish and install sealant system as required to provide water tight condition at devices mounted at exterior.
33. Furnish and install all signage and lettering called for in the contract documents related to work of this Prime Contract.
34. Furnish and install all required utilities for Owner Furnished Equipment, hook up as required.

35. Furnish and install all rough-in for all equipment of other contractors as required by the related specification sections and drawings. Connect and or stub as described.
36. Furnish and install all power to fire and smoke dampers as called for in the documents.
37. Furnish & install all floor boxes solid for install of slab on grade.
38. Furnish and install fire alarm to all site Fire Protection equipment (PIV's, Backflow Preventers, Fire Hydrants, Etc..) as required.
39. Verify continuity of electrical and low voltage conduits for work in this contract.
40. Furnish & install all connections to existing utilities (Coordinate).
41. Furnish and install all roof accessories relative to this Prime Contract.
42. Furnish & install all roof supports for electrical.
43. Provide shop drawings with required dimensions for electrical room.
44. Furnish and Install all new clock and speakers as required.
45. Furnish and install line voltage and conduit for controls coordinate with HVAC Contractor.
46. Provide all demo for electrical work except where walls are to be demolished. Safe off prior to any demo.
47. Furnish and install own floor protection after initial floor protection by HCCI (i.e. Tarps, plastic, plywood, etc.).
48. Adjust all utility boxes to new grade.
49. Cut and cap all electrical at site as required for demo.
50. Furnish and install projector mounts and all AV equipment as called for.
51. Provide plates over all existing electrical and low-voltage items to be abandoned.
52. Remove all data wire and modify as necessary for new work.
53. Remove all technology equipment as called for in a manner as to allow the district the opportunity to salvage if desired.
54. Remove and replace all wire back to panel as called for.
55. Remove and store all electrical items to be removed and replaced at later date.
56. Unhook all utilities to existing mechanical units that are to be replaced. Reinstall connection after new equipment is installed.
57. Confirm all lamp types in field prior to bid.
58. Verify Existing system and performance prior to starting work. Report any issues.
59. Review existing low voltage and fire alarm systems and advise of any issues prior to the start of work.
60. This contract is to provide temporary power (Conduit/Temp Elec Lines/Transformers/Connected Spider Boxes, etc.) to each building after the completion of Slab-On-Grade. From the temp transformer, spider boxes shall be connected every 50' per floor and roof at each building. Contractors will be responsible for own distribution of power from that point. Spider boxes are to be inspected monthly per HCCI Safety Program and records are to be turned at the end of each month.
61. This contract is to provide temporary power to construction trailers as shown on the Site Access Plan. Enough power should be provided to run 2 (60') construction trailers with cooling/ac units. Connection of the construction trailers to the power source shall be made by this contract.
62. Install, adjust, program and test owner provided projectors.
- 63. Relocate (E) Bell and PA Rack to MDF as shown on the Electrical Drawings and reconnect into the district system. This will be a temporary relocation once the project is complete relocate from (E) MDF Rm to the (N) Admin Data Rm. Include all provisions needed to put system back up and running at both locations (BUL3).**
- 64. Furnish, Install and hookup power to Pump Filter shown on Landscape drawings (L1.1).**

Provide Information Separate from Bid amount. Include on Bid form.

1. None.

FOB Items

1. Furnish FOB jobsite all bolt templates for use by the concrete subcontractor and masonry

- subcontractor.
2. Furnish FOB jobsite all anchor bolts and templates for all electrical equipment.
 3. Furnish F.O.B. all roof jacks related to this package to the roofer for installation.

Installation of FOB Items

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this subcontractor

1. Install and hook up all starters at HVAC units as provided by the Mechanical and Plumbing subcontractor.
2. Install all switches for equipment provided by others i.e. exhaust fans, etc....
3. Install power for smoke dampers and fire alarm for HVAC unit shut down.
4. **Install all Projectors complete (Projector Mounts are to be furnished and installed by this contract) (BUL3)**
5. **Install all TV's and TV Brackets (BUL3)**

End of Package

DC-12 EARTHWORK AND PAVING

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
31 11 00	Site Clearing
31 20 00	Earthwork
31 22 00	Soil Material
31 23 00	Trench Excavation and Backfill
31 31 00	Soil Sterilization
32 11 26	Aggregate Base Course
32 12 16	Asphalt Paving

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Contractor is responsible for all work referenced throughout the project documents related to this contractor's scope of work.
2. See General Notes at beginning of summary of work specification section for other items.
3. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
4. There will be one wash out area for contractors as designated by the General Contractor. Each contractor will be responsible for removal from the site of all debris and spoils generated by each contractor.
5. Furnish and install all layout for own work from surveyor provided by the survey contractor. See survey scope of work for reference. This contractor will be responsible for all additional required layout not performed by the survey contractor. Contractors are responsible for protection of all requested survey. Provide 72 hours' notice by submitting a survey request form.
6. Provide all backfill of excavations to original sub-grade for work included in this Prime Contract.
7. Provide dust control for own work.
8. This contract is to provide temporary power for own work through completion of steel erection as required. Once temporary power has been established by the Electrical contractor, each contractor will only need to provide temporary utility distribution from services provide at the building by the electrical contractor. Contractors are responsible for own distribution of power and lighting.

Coordination with Other Trades

1. Coordinate and allow access to building pad for building related scope of work (concrete, plumbing, utilities, electrical).
2. Coordinate all work with local utilities & electrical contractor for shut down of services prior to demo with a minimum of 48 hours notice as required per Contract Documents.
3. Obtain all permits required to perform the work (including encroachment permits).
4. Hold all turf areas down 1/2" at concrete walks and mow strips for SOD, 2" at planters.
5. Remove excess spoils from site daily.
6. Review as-builts & underground locator survey & pothole utilities prior to starting work.

7. Complete all building pads and grade at building areas first as shown on the schedule.
8. Coordinate with the CM survey points required.

Furnish and Install Items

1. Furnish and install all Site Clearing work complete per plans and specifications.
2. Furnish and install all Earthwork complete per plans and specifications. This to include all required over excavation and recompaction at Building pads and any required fill at demolished portables.
3. Grade all earthwork to within +/-0.05' from a planned elevation.
4. Furnish and install all Soil Sterilization work complete per plans and specifications.
5. Furnish and install Asphalt Paving complete per plans and specifications.
6. Protect all irrigation adjacent to site work and buildings.
7. Furnish and install all cut and fill necessary to perform work
8. Furnish and Install fine grading of the site on separate move-ins (as scheduled by the CM) to accommodate the site concrete & mow strips installation. Coordinate backfill and final fine grading activities with the concrete Prime Contractor to eliminate damage to new site concrete.
9. Furnish & install all grading and swales for landscape to $\pm .05'$
10. Maintain and protect building pads to within tolerance, elevation, moisture, weed free and compaction until accepted/received by the concrete subcontractor as noted in the schedule.
11. Furnish and Install backfill of mow strips, walks, curb, curb & gutter, planter and turf areas.
12. Furnish, install, and maintain traffic control for work included in this Prime Contract as required.
13. Furnish & install all on site earthwork, grading, paving & striping, markers, traffic signage, posts, concrete at posts, and permits.
14. Furnish & install certification of final grading to confirm grades prior to landscape.
15. Furnish & install tree/landscape protection where required. The CM will maintain protection throughout project.
16. Furnish and install all asphalt patches.
17. Furnish and install all slurry seal.
18. Strip organic materials from all areas to be demolished.
19. Furnish and install processing of subgrade at site to proper grade and compaction.
20. Provide backfill at Planter Areas during finish grade operations.
21. Furnish and install compacted soil under all concrete as called for.
22. Furnish and install cut for fire lane.
23. Furnish and install cut and fill for all valley gutters and curbs.
24. Furnish and install all track out stations as shown on the site access plan for onsite. Furnish and install silt fence and straw waddle around the entire perimeter of the project for the duration of the project. Track outs are to consist of crushed rock and rumble strips which measure 24' wide x 50' long. Maintain for own work. Earthwork contractor to maintain as needed. Provide street cleaning for own scope of work thru end of Earthwork operations.
25. Furnish and install slurry seal and restriping of Basketball courts, patch asphalt as necessary prior to sealing. (THIS ITEM IS NOT SHOWN ON THE PLANS BUT WILL BE PART OF THIS PRIME CONTRACTORS WORK). Exact striping layout will be determined at a later date, however, for bidding purposes figure at minimum to replace (E) striping.
- 26. Furnish and install Entry Accessibility Sign per G/X2.0 (BUL3)**

FOB Items

1. None

Provide Information Separate from Bid amount. Include on Bid form.

1. None

Installation of FOB Items:

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be installed by this Prime Contractor

1. None

End of Package

DC-13 LANDSCAPING/IRRIGATION

Furnish and install all work specifically required throughout the project documents to complete the work of this Prime Contract that specifically includes, but is not limited to the following:

Specification Sections

DIVISION 00	CUSD General Conditions for CM Projects
DIVISION 01	General & Supplemental Conditions
	Storm Water Pollution Prevention Plan
	Geo Technical Investigation
	Hazardous Materials Report
	Existing Landscaping Protection
	Irrigation System
	Landscape Planting

Refer to additional related specifications sections for work specifically included in this Prime Contract noted below.

General Items

1. Any substitution of details or materials must be pre-approved by the Architect, engineers and DSA. All substitution requests must be submitted to the CM prior to bid. This contractor is responsible for all costs and time delays required for DSA approval.
2. Furnish and install all sleeves in masonry, concrete, foundations and under existing walks prior to the installation of concrete and reinforcing steel. Coordinate location with other related Prime Contractors prior to excavation.
3. Furnish off-haul of all excavation spoils from site.
4. There will be one wash out area for each Prime Contractor as designated by HCCI. Each Prime Contractor will be responsible to dump all debris in the HCCI provided dumpster.
5. Provide all clean up and provide off-haul of own spoils from site.
6. Verify continuity of the existing irrigation system with the owner's representative prior to demolition.
7. Coordinate all work to provide access to buildings for other trades as scheduled. Coordinate with other activities in the schedule for other trades and confirm the schedule meets the CMBS dates.
8. Contractor is responsible for all work referenced throughout the project documents related to this contractor's scope of work.
9. Furnish and install all physical layout for own work except where noted above to provide written layout to others.
10. Furnish and install all attachment of all equipment related to this scope of work.

Coordination with Other Trades

1. Provide coordination drawings for underground work related to this Prime Contract. Coordinate all drawings with the drawings of other Prime Contracts. Note conflicts and provide potential solutions to the architect for review. Coordination must occur prior to excavation and/or installation of the work. Attend all coordination meetings required to coordinate all underground and above ceiling work.
2. At conflicts with electrical duct banks, electrical duct banks are to have the lower elevations.
3. Coordinate location of UG utilities to be out of angle of repose of building equipment.
4. Receive grades at $\pm .10'$. Cut all additional swales required to provide proper drainage
5. Review as-builts & underground locator survey & pothole utilities prior to starting work.
6. Coordinate with demolition contractor all valves, heads, etc. to be salvaged for reuse or turnover to District prior to demolition. Furnish and install all cut and cap locations prior to the start of demo.
7. See General Notes at beginning of summary of work specification section for other items.

8. Review entire irrigation system prior to starting work to confirm continuity. Report any issues to Harris immediately.
9. **This contract shall be responsible for sawcutting, breaking and removing any concrete, asphalt or other site finish as needed to complete their work. This contractor shall also be responsible for the patch back as needed of these finishes. All finishes being removed and replaced shall be removed and replaced from joint to joint with no over cuts in sawcutting allowed. (BUL3).**
10. **Furnish and install Pump Filter System shown on L1.1, this to include concrete pier and wood top plate (BUL3).**

Furnish and Install Items

1. Furnish and install all landscaping and irrigation work complete per plans and specifications. This to include all related accessories, devices, etc...needed for a complete and functioning system. Connect to (E) power, wiring and controls where required.
2. Furnish and install cut cap and demo of existing irrigation system and terminate to nearest box or valve.
3. Protect/relocate heads and or piping as needed for new concrete improvements per irrigation legend
4. Furnish and install all drilling of holes for work performed in this subcontract.
5. Furnish & install relocation, cut, and cap of irrigation at all demo areas. Remove all irrigation at areas outside of earthwork excavation. Remove all heads and valves, etc....salvage to Owner via the CM. Re-compact demo areas.
6. Furnish & install all thrust blocks for own work.
7. Furnish & install grading and top soil.
8. Provide water test of turf and planter areas prior to planting to confirm proper drainage and coverage
9. Furnish & install all irrigation sleeves.
10. Provide patch back of all landscaping at all utilities and new concrete as required. Review utility plans for areas.
11. Backfill all planters and planter walls
12. Furnish and install all fine grading of planter areas prior to planting. Import dirt as required
13. Remove and relocate irrigation systems as required to work
14. Replace all turf around walkways and mow strips that have been removed for construction. Replace all turf and plants disturbed by utility work.
15. This contractor is responsible for protecting and keeping all existing irrigation systems operational for the duration of the project. Any damages caused by lack of water will be the responsibility of this contractor. Hand water as required.
16. Furnish and install all temporary watering for length of project to maintain turf, trees, and plant materials.
17. Adjust all utility boxes to new grades.
18. **Furnish and install/relocate all Boulders noted on the Landscape/Irrigation drawings. This to include removal at the beginning of the project and storage until installation for boulders being relocated as needed (BUL3).**
19. **Furnish and install all stabilized DG complete per plans and specifications (BUL3).**

Provide Information Separate from Bid amount. Include on Bid form.

1. None

FOB Items

1. None

Installation of FOB Items

Note: Unload, inventory, store and notify of deficiencies for all items delivered to the jobsite FOB, to be


installed by this subcontractor

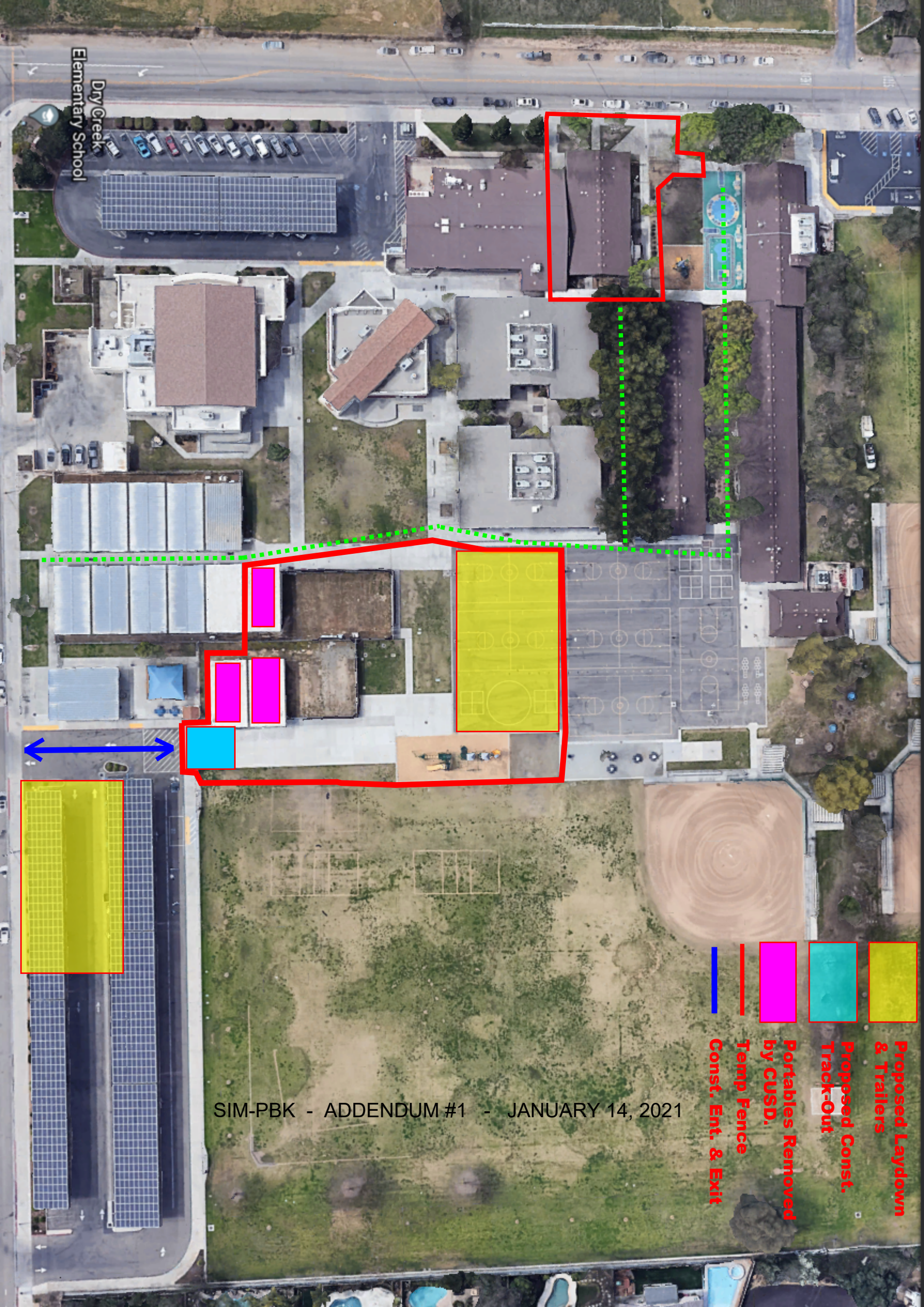
1. None

End of Package

1807 - CUSD - DRY CREEK ES MODERNIZATION BASELINE SCHEDULE

Activity ID	Activity Name	Orig	Accl	Rem	Total	Early Start	Early Finish	Late Start	Late Finish	2021												2022				
		Dur	Dur	Dur	Foal	Apr-21-21	May-18-21	Sep-29-21	Oct-26-21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
323113-01C	Fab/Dei - Chain Link Fencing/ Gates & Hardware	20	0	20	112	Apr-21-21	May-18-21	Sep-29-21	Oct-26-21																	

<p>START DATE: Mar-03-21 FINISH DATE: Apr-14-22 DATA DATE: Mar-03-21 RUN DATE: Jan-12-21 PAGE 23 OF 23</p>	<p>Remaining Level of Effort Actual Work Remaining Work Critical Remaining Work Milestone</p>	<p>1807 - CUSD - DRY CREEK ES MODERNIZATION BASELINE SCHEDULE</p>	
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Dry Creek
Elementary School

SIM-PBK - ADDENDUM #1 - JANUARY 14, 2021

- Proposed Laydown & Trailers
- Proposed Const. Track-Out
- Portables Removed by CUSD.
- Temp Fence
- Const. Ent. & Exit

Harris Construction
 CUSD Drycreek ES Mod 2020

Date: 1/13/21

#	Company	DESCRIPTION	DATE CREATED	ANSWER	DATE ANSWERED
1	HCCI	The large planter walls West of Bldg A how does the transition from the 15" thick wall to the 10" wall work? The 15" wall is roughly finishes roughly 8" Above grade and the 10" wall roughly 18" above grade?	12/4/2020	See Details G&H/X1.0 - Addressed in DSA Approved set. - HCCI	12.29.2020
2	HCCI	We assume there will be a front end document issued to bidders aside from the Div 01 items in the SIM/PBK Specifications? Please provide.	12/4/2020	Received from CUSD 12.16.2020 - Issued w/Bid Docs. - HCCI	12.16.2020
3	HCCI	Please advise as to the status of the Haz-Mat Report?	12/4/2020	Received from SIM/PBK 12.24.2020 - Issued w/Bulletin#1 - HHCI	12.24.2020
4	HCCI	Please advise as to the status of the Soils Report?	12/4/2020	Received from SIM/PBK 12.9.2020 - Issued w/Bid Docs - HCCI	12.9.2020
5	HCCI	Please provide a detail for the transformer pad on the Exterior of Bldg A	12/4/2020	Detail provided see 7/EX.02 - Addressed in DSA Approved set. - HCCI	12.29.2020
6	HCCI	No Arch Site Plan included aside from regulatory plans. We need to make sure we delineate where (N) and (E) side walks interact. Are there doweling requirements? No detail is provided at sidewalk conditions.	12/4/2020	Dowels are required at junction between old and new sidewalk - see Civil Site Plan for new work - HCCI	1/5/2021
7	HCCI	At the seat walls North of Bldg A they appear to be 3' long but this is a scaled dimension, we should probably have a given dimension on these. Additionally Civil drawing have you look at the grading plan to get the height of the Planter/Seatwalls. There is no Top of Wall elevation given for any of these. The detail (J/X1.0) says 24" max but there should be at least one or two elevations.	12/4/2020	On the north side of BLDG A, the seat that are shown will be free-standing benches, not cast-in-place seat walls. Arch to spec; on the SW corner of the building, the Civil grading plan now includes additional grading information - HCCI	1/5/2021
8	HCCI	On Sht SM2.10 GL MA there are 3 "Popouts" Popouts between M1 & M3 and M4 & M5 have footing designations of F2 which is a 1'6" W footing. These appear to be significantly wider and scale to 3'0" W. Should there be additional footing designation or are these to be the F3 designation and be 3'6" W?	12/4/2020	See detail 5/SM6.10. Condition between Grids M3 & M4 is similar (no footing beyond). Footing width is as labeled and measured from the outside face of glazing towards the interior of the slab. The footing is widened to accommodate the concrete sill per the provided dimension. Part of the detail has been cut off and will be reissued in an Addendum. - HCCI	1.4.2021
9	HCCI	With regard to the Slab On Grade SM2.10 notes the slab to be 4" thk and goes on to talk about verifying with the Archt'sor Soils Report. There is no such note at Bldg A. Are they to be the same? Additionally what is to be under the Slab other than the vapor barrier. The details show what appears to be sand but no where does it state. Recommend providing slab section detail for both bldgs that takes into account the recommendations of the Soils Report.	12/4/2020	Slab is 4" thick. Added note to SM2.10 stating thickness and reinforcement. - HCCI	1.4.2021
10	HCCI	There doesn't appear to be a Finish Schedule included in the Set of documents provided. Please advise.	12/7/2020	Sht AA2.00 added - Addressed in DSA Approved set. - HCCI	12.29.2020
11	HCCI	On Sht SA2.10 there is a ftg that is unclear. At GL H from the North Edge of the Wall South to GL 2 this is called out as an F1 Ftg. What happens from GL 2 South to where the footing returns back into the existing Ftg? Please Advise.	12/7/2020	It is a new footing poured up against the existing footing to support the new extended slab. New and existing footings shall be doweled together. There is no detail currently for this condition but may have to be issued later if needed. - HCCI	12.29.2020

#	Company	DESCRIPTION	DATE CREATED	ANSWER	DATE ANSWERED
12	HCCI	On Sht SA2.10 at the 3 Toilet Rooms there are several Continuous Fig's shown in this area however nothing shows which fig these are to be.	12/7/2020	Per the footnote below the Footing Schedule, all footings shall be type F1 unless noted otherwise. - HCCI	12.29.2020
13	HCCI	On Sht SA2.10 at GL C on the North side of the Bldg there are two 'P1' Figs shown with what appears to be a fig connecting the two. No information is given for what the connecting footing is to be. There are notes stating that everything is F1 UNO but this doesn't seem correct.	12/7/2020	P1 footings are close enough that they are to be joined. - HCCI	12.29.2020
14	HCCI	On Sht SA2.10 starting at GL C and moving West there is no footing designation called out from GL C to the next P1 Footing. Please Advise, this appears to be an F1?	12/7/2020	This shall be an F1 footing. - HCCI	12.29.2020
15	HCCI	On Sht AA2.10 there are two hatches indicating slab removal one is hatched and shaded grey the other is only hatched. In the legend at both of these hatches there is a reference to a sheet AA2.20 however this sheet is not included in the set provided. Please provide.	12/7/2020	Legend revised - Addressed in DSA Approved set. - HCCI	12.29.2020
16	HCCI	Sht A9.11 shows only Storefront Windows several of these window elevations have doors and say "refer to door schedule" the Door schedule shows no storefront doors on HM Doors in HM Frames. Please advise. An example would be windows M4-6 corresponding to door openings M101A, M102A & M103A. All of these openings call for HM Doors and frames	12/9/2020	See upcoming Addendum #1 with the updated Door Schedule. - HCCI	PA 1/8/2021
17	HCCI	There is no door shown on the interior elevation AA7.10 for room A107 & A108.	12/9/2020	Doors added - Addressed in DSA Approved set. - HCCI	12.29.2020
18	HCCI	No Specifications are included for Metal Panels noted in Detail 1/AM6.23, please provide.	12/10/2020	There are no Metal Panels. The material shall be Standing seam metal panels. Spec section 07 41 13	PA 1/8/2021
19	HCCI	Please confirm it is the intent of the documents for the entire roof at Bldg A to be removed and replaced. It is recommended to replace the entire roof so as to not run into color match issues or warranty issues later on.	12/10/2020	Revised Roof Demo Plan issued - Addressed in DSA Approved set. - HCCI	12.29.2020
20	HCCI	Please advise if a SWPPP will be required for this project. It is HCCI anticipation that one will be required. If this is the case who is creating the Plan. We would assume the district would have the plan created and HCCI would scope the BMP install into the Bid Packages and Maintenance and Inspections would be a reimbursable item?	12/16/2020	Yes, a SWPPP will be required for the project; CUSD will provide the SWPPP and file the Notice of Intent (NOI) with the State Water Board; Contractor shall be responsible for all QSP inspections, reporting, BMP installation and management; CUSD will provide the completed SWPPP document and NOI to HCCI and will complete the Annual Reports; the design team will issue a specification for SWPPP requirements as a bidding addendum. - HCCI	12.29.2020
21	HCCI	Will earlier hours be allowed during the summer months. Normal work hours are 7am-3:30pm. In the summer time these hours typically change to 6am-2:30pm in order to avoid the extreme heat in the summer months	12/16/2020	Hours of work shall from 7am-3:30pm, should exceptions to this need to be made for certain specific situations such as concrete pours, HCCI should be notified 7 days in advance with HCCI and CUSD having the sole discretion on whether the accommodation can be made. Time	1/14.2021
22	HCCI	Is there a specific form that needs to be issued with the bid documents for Substitutions? If so please provide.	12/16/2020	Form provided, see Spec. Section 01 25 00 - Addressed in DSA Approved set. - HCCI	12.29.2020

#	Company	DESCRIPTION	DATE CREATED	ANSWER	DATE ANSWERED
23	HCCI	Please confirm the district will be removing all Furniture and Equipment from the Admin Bldg prior to Demo. Also confirm that there are no "salvage" items that need to be returned to the district. One such item would be the Basketball Goals at the South end of the Basketball courts. This portion of the court is Demo and replace do the Goals get saved and reinstalled or replaced.	12/16/2020	Salvage items that are to be returned to CUSD is called out in the Summary of Work in the various Bid Packages issued in the Addenda. HCCI	1/13/2021
24	HCCI	Please confirm there are no Deferred Approval items with DSA anticipated on the project. There are none listed in the drawings.	12/16/2020	Revised Cover Sheet indicates storefront - Addressed in DSA Approved set. - HCCI	12.29.2020
25	HCCI	Please advise as to the scope of the OFCI items? In the past Carpet has been OFCI, is this the case for this project?	12/16/2020	OFCI items that are to be returned to CUSD is called out in the Summary of Work in the various Bid Packages issued in the Addenda - HCCI	1/13/2021
26	HCCI	Be advised there is no specification section for Storefront or Curtainwall Systems	12/22/2020	See Addendum #1 for specs. -SIM-PBK	1/13/2021
27	HCCI	Be advised there is no specification section for Window Shades	12/22/2020	See Addendum #1 for specs. -SIM-PBK	1/13/2021
28	HCCI	Is the district going to be installing there own permanent lock cores? In the past it is our understanding that the construction cores will come installed in the dorhardware when it is installed. The permanent cores will be turned over to the CUSD key shop and keyed the way needed and then CUSD will come and swap out the construction cores for the permanent ones. Please confirm this is correct or advise of the correct procedure.	12/22/2020		
29	HCCI	Wall Talkers are called for on the Interior Elevation of the Classroom Bldg. But there is no Specification section provided for this material or a ny other Markerboard type device. Please advise	12/22/2020	See Addendum #1 for specs. -SIM-PBK	1/13/2021
30	HCCI	Specification Section 10 28 13 Toilet Accessories appears to be a generic Specification. There is a list of approximately 22 items several different versions of the same thing, please advise which of these items are to be utilized and where. There is a keynote legend on the plan sheets but the keynotes themselves are not shown to be installed anywhere. Additionally if the restrooms in Bldg A are to have Electric hand dryers there is no power shown on the Electrical drawings to support this.	12/22/2020		
31	HCCI	Are there any concrete flatness or levelness requirements? None are listed in the current concrete or flooring specifications. If there are wo performs this test the contractor under the supervisin of the IOR or will the testing lab do it?	12/22/2020		
32	HCCI	Thin Brick Specification 042113.13 2.8A references a section 072726 Fluid Applied Membrane Air Barriers. This Specification section does not exist in the current documents. Please advise.	12/22/2020	Specification verbiage modified - Addressed in DSA Approved set. - HCCI	12.29.2020
33	HCCI	Please advise as to where Specification section 071900 would apply is it Sealer that is applied to the Thin Brick? If this is the case does it apply anywhere else?	12/22/2020	Refer to Pre-bid RFI#34 for scope of waterproofing at concrete planter walls. Refer to Pre-Bid RFI#38 for scope of sealer coating at brick wall finishes. - SIM-PBK	1/14/2021
34	HCCI	Is there any Waterproofing to occur at the inside of the concrete planter walls?	12/22/2020	Yes, the waterproofing on all of the inside surfaces of the concrete planter walls shall have waterproofing. The waterproofing shall be "WR Meadows", Mel-Rol-LM or Mel-Rol Peel & Stick or equal. Provide primer. Provide Protection Course PC-2 coverbaord over either selected membrane system. - SIM-PBK	1/14/2021

#	Company	DESCRIPTION	DATE CREATED	ANSWER	DATE ANSWERED
35	Resource Environmental Inc	Resource is planning on bidding the above-referenced multi-prime project. We'll be bidding on package DC-01 demolition and abatement. In addition to the required licenses, C-21 & C-22 or C-21 with ASB & HAZ, we also hold an A and B license. Could you clarify on the prequalification requirements? Will we be required to prequalify with this district because we hold the A and B license, or are we exempt from that prequalification requirement because we'll be utilizing C-21, C22, ASB, HAZ to complete our scope of work?	12/23/2020	Licenses shall remain how noted on the Notice to Contractors. - HCCI	1/14/2021
36	Saleh Painting	The interior elevations on building M (plan page AM8.10) show Walktalkers Projectable Magrite. Please confirm the exact locations of the Magrite. Please confirm that Magrite is what they want (with the magnetic qualities) which is more costly than the regular Walktalkers. Please supply a specification as well and types of trim and trays (if any) that are required.	12/29/2020	See Addendum #1 for specs. -SIM-PBK	1/13/2021
37	Saleh Painting	The interior elevations on building M (plan page AM8.10) show TAC-WALL C250. Please confirm exact locations of the TAC-WALL, trims required, and a specification for the product.	12/29/2020		
38	Saleh Painting	The Painting and Coating Specification section 09 90 00, Part 4 Schedules, talks about graffiti resistant coatings, although no products are specified. Please clarify if graffiti coatings are required and, if so, where they are to be applied on the building(s).	12/29/2020	Yes, provide non-sacrificial anti-graffiti coatings to the new exterior brick wall finish. - SIM-PBK	1/14/2021
39	Saleh Painting	Please confirm that the Specification Section included in the documents is what is to be issued on the project. CUSD typically has a standard specification for Polished Concrete across all district project and it is different from the Spec. currently in the documents.	12/29/2020	Refer to spec section 03 35 43 in the DSA approved set for the required Polished Concrete Floor Finishing spec. The footer of this spec reads Clovis Unified Standard Specification 12/04/18. - SIM-PBK	1/13/2021
40	DMS Drywall	DMS Drywall is bidding on the DC-06 LATH/PLASTER/DRYWALL scope. On the bid package it notes that you require a C9 and C35 to bid this project. If we get our 'B' license prequalified with the district are we able to bid this bid package with our B License?	12/29/2020	Licenses shall remain how noted on the Notice to Contractors. - HCCI	1/14/2021
41	HCCI	Specification section 032000 part 1.5D requests a 10% allowance of the total reinforcing steel tonnage be added to the reinforcing contractors package. Please confirm this will not be required.	1/4/2021	This subject allowance shall not be included in the base bid. SIM-PBK	1/13/2021
42	HCCI	DSA Approved Specifications do not include Specifications for Landscaping or Irrigation	1/5/2021	Landscaping and Irrigation specs will be provided in forthcoming addendum.	1/13/2021
43	HCCI	Sheet C2.0 contains keynote B1 through B10 at Bldg A. There is no legend provided for what these keynotes stand for. Please provide.	1/5/2021	Send to BCF 1/7/21; BC&F answer - keynotes B1 through B10 reference boulders around the Admin Building (bldg A) that need to be salvaged and re-installed. The Planting plans have corresponding keynote references for the locations where those salvaged boulders will be	1/13/2021
44	HCCI	Landscaping and Irrigation Drawings indicate bidders are to carry \$1k allowances within their bids for both landscaping and irrigation scopes of work. Please confirm these allowances are not to be carried in the Base bid for the project.	1/5/2021	This subject allowance shall not be included in the base bid. SIM-PBK	1/13/2021

#	Company	DESCRIPTION	DATE CREATED	ANSWER	DATE ANSWERED
45	HCCI	Finish Schedule Sht AA2.00 indicates a Specification section 064100 for Casework. This specification section is not currently included in the bid documents please provide.	1/5/2021	See Spec section 06 41 00 in the DSA approved dwgs. -SIM-PBK	1/13/2021
46	HCCI	Finish Schedule Sht AA2.00 indicates Specification section 066119 Quartz Surfacing Fabrications. This specification section is not included in the specifications. Please provide.	1/5/2021	See Addendum #1 for specs. -SIM-PBK	1/13/2021
47	HCCI	Finish Schedule Sht AA2.00 indicates Specification section 093013 Ceramic Tile, this specification section is not included in the specs. Please provide.	1/5/2021	See Addendum #1 for specs. -SIM-PBK	1/13/2021
48	HCCI	Finish Schedule Sht AA2.00 indicates Specification section 095427 - Specialty Ceilings. This appears to refer to the Wood Ceilings, should this reference actually be 095126. Please Advise.	1/5/2021	Yes, See Addendum #1 for Specialty Ceilings specs. -SIM-PBK	1/13/2021
49	HCCI	Reference is made on Interior Elevation Sheets to the Carpet on the project being an OFCI item Please confirm and advise of extent of items being provided. Is glue and rubber base OFCI as well and if so does this apply to carpeted areas only?	1/5/2021	Glue and Rubber Base is CFCL. -SIM-PBK	1/13/2021
50	HCCI	Finish Schedule Sht AA2.00 indicates Specification section 097217 - Fiber Reinforced Plastic Panels. Should this in fact reference section 097720, which is included in the specifications. Please Advise.	1/5/2021	Refer to spec section 09 77 20. -SIM-PBK	1/8/2021
51	HCCI	Drawings do not indicate extent of Canopy removal at the existing MPR per G0.02. Please provide extent of Demo as well as details for repair of Fascia and sheet metal drip edge as required.	1/5/2021	See Addendum #1 for Canopy Details. -SIM-PBK	1/13/2021
52	HCCI	1/AA6.21 is detailed as Storefront however note 8.01 notes the frame as HM please advise which is correct.	1/5/2021	All storefront doors shall be Aluminum. -SIM-PBK	1/8/2021
53	HCCI	On Sht AM2.10, Bldg M Classrooms show projector mounts. Rm M106 does not show a Projector Mount. Please confirm this room should not have a Projector Mount.	1/5/2021	See electrical Dwgs for Projector mounts. -SIM-PBK	1/13/2021
54	HCCI	Please provide a Specification Section for Metal Fascia. Example would be 2/AM2.16 and similar.	1/5/2021	There will be no metal Fascia in this project. -SIM-PBK	1/13/2021
55	HCCI	Please clarify Wall Talker areas noted on AM8.10 and all other areas to have wall talkers. Certain interior elevations are labeled for Wall Talkers however no limits for the material are shown. Also a Specification section for this material was not included in the DSA Approved documents.	1/5/2021	See Addendum #1 for subject specs. -SIM-PBK	1/13/2021
56	HCCI	Specification Section 081416 is included in Documents. Please advise where these occur it appears all doors are HM.	1/5/2021	All storefront doors shall be Aluminum. See Door Schedule in upcoming Addenda. -SIM-PBK	1/13/2021
57	HCCI	Interior Windows at Bldg M at Classroom Entries are called out as Storefront per the details. This will present a problem should the frame be damaged over the course of the life of the Bldg. The Aluminum Storefront cannot be easily repaired. Can these be changed to HM Frames, if damaged these can be repaired more easily.	1/5/2021	No. -SIM-PBK	1/13/2021
58	HCCI	No Exterior Bldg Signage is shown at either the (N) Classroom bldg or the existing Admin. Please confirm this is correct.	1/5/2021		

#	Company	DESCRIPTION	DATE CREATED	ANSWER	DATE ANSWERED
59	HCCI	Sht 12/SA6.12 references a Pre-Cast Bell Please advise if this bell is to be provided as part of the project. If so please provide a Specification and details for mounting.	1/5/2021	Bell shall be from Maas Rowe Model # BR32 Bell Shell with Medium Bronze powdercoat Finish. See Addendum #1 for mounting details. - SIM-PBK	1/8/2021
60	HCCI	There appears to be several architectural details showing Galv Sht metal and Aluminum Storefront touching. This presents a problem given the dissimilar metals, please advise.	1/5/2021	All flashing at Aluminum Storefront windows shall be aluminum. - SIM-PBK	1/13/2021
61	HCCI	Keynote 19 on E0.3talsk about removing and pulling back wires at the existing covered walkway. Please confirm this work is not to be included in the base bid.	1/5/2021	This work is not in the base bid scope. -SIM-PBK	1/13/2021
62	HCCI	DSA Approved drawings include sheet FPA3.10 which appears to indicate the need for Fire Sprinklers at Bldg A. However there are no plans showing sprinklers and FPA3.10 appears to indicate a Design/Build system at this building. Is this the intent? Please Advise.	1/5/2021		
63	HCCI	Please advise if Termite treatment will be required at the (N) Figs and Slabs. If so, please provide specification as none is currently included in the documents.	1/5/2021	Yes. Provide soil sterilization at new footings and new slab. See Addendum #1 for subject specs. -SIM-PBK	1/13/2021
64	Wild Electric	After walking the job we have noticed a few discrepancies on the drawings. The location of the existing Distribution Board MS-1 shown on drawing E0.2 is incorrect (see attached drawing). Drawing E0.2 sheet note 19 states to provide a 4" conduit with 4- #500 KCMIL & 1- #1/0 GND for secondary power for the temporary Administration Portable Building. Please provide footage for the bid. Single Line Diagram drawing EX.02 shows the existing MSB feeding New Panel MD, drawing E0.2 shows the New Panel at the New Classroom M as being Panel HM ? Drawing EX.02 also says the 3" conduits that are feeding the Relocated Panels BP and PB are New & Extended. Is your intentions to tie onto existing 3" conduits and extend ? Please Clarify.	1/5/2021	Delete all work for providing new power to the temporary Administration Portable Building. The unused Panel 'PB' and the transformer to be delivered to the District after removal. -HCCI	1/13/2021
65	J Boone Mechanical	Please provide duct dimensions for thefollowing locations: 1) HCC-2 & HC-7 - exposed ducts of roof, 2) HC-7 - Return air above ceiling to grilles, 3) HC4,5&6 - Return air from drops to outlets.	1/5/2021	Duct size callouts added to plans. -LEG	1/11/2021
66	HCCI	Civil Drawings and detail K/X1.0 indicate that a new Flagpole is to be installed near the Admin Bldg. The detail does not have any information about Manufacturer, Model, Accessories, Etc...that will be required. Please provide a specification for the Flagpole.	1/5/2021		
67	HCCI	Detail 1/AM6.21 keynote 5.06 calls for Aluminum Outtrigger Louver Systems. These occur on the three Classroom windows on the South side of the Bldg. The keynote description gives a manufacturer but no other information (Colors, Installation Requirements, Accessories, etc...) please provide the appropriate specification. Additionally the detail noted above simply shows this item floating next to the window, there is no attachment shown. Please provide the appropriate attachment detail. Structural drawings simply direct back to the Architectural drawings.	1/5/2021		
68	J Boone Mechanical	On the original MM2.10 & MM3.10 sheets EF-1A through 1F & EF-3 were shown on the plans and listed on the Exhaust Fan Schedule. However, Bull#01 (DSA Approved Drawings) MM2.10 & MM3.10 sheets are fans are not shown. Please clarify if the above mentioned exhaust fans are deleted from the project.	1/7/2021	Correct - those exhaust fans are deleted from the project. -LEG	1/11/21

#	Company	DESCRIPTION	DATE CREATED	ANSWER	DATE ANSWERED
69	San Joaquin Glass	Floor Plans, Exterior Elevations, & all doors on door schedule except one indicate doors and frames are HM. The A10.80 details that are referenced call for Aluminum Storefront.	1/11/2021	See Addendum #1 for revised Door Schedule. -SIM-PBK	1/13/2021
70	San Joaquin Glass	Door A112B is indicated to be AL. Please provide specifications.	1/11/2021	See Addendum #1 for Specs 08 41 13 - Aluminum-Framed Entrances and Storefronts. -SIM-PBK	1/13/2021
71	San Joaquin Glass	Door Schedule lists all 01 Door Types to have CT panel glass. Please clarify.	1/11/2021		
72	San Joaquin Glass	Window schedule glazing legend #2 states all exterior glazing is to be single pane. All 10.80 details show single pane. Spec. 088000 Glazing Schedule only lists 1" insulated glass. Please clarify.	1/11/2021		
73	San Joaquin Glass	Spec. 088000 Glazing Schedule lists GL1 & SP glass types. Please indicate where these glass types are to be used.	1/11/2021		
74	San Joaquin Glass	Spec. 088000 glass type GL 1 indicates tinted. Sec 2.2A indicates clear. Please clarify	1/11/2021		
75	San Joaquin Glass	Spec. 088000 glass type SP indicates VE1 (Clear) glass. Sec2.1G lists 7 different glass tints. Please clarify.	1/11/2021		
76	HCCI			Ornamental fencing shall be Ameristar Montage II "Genesis" style fencing - see note 1 in detail [A/X3.0]; all products and installation associated with this product shall conform to the manufacturer's recommendations or the details on the civil sheets, whichever is more stringent; chain link specs will be provided	1/13/2021
77	HCCI	Please provide specifications for Chainlink Fencing and Gates as well as Ornamental Fencing and Gates.	1/12/2021	No. Fire treated plywood is not required at these rooms.	1/13/2021
78	HCCI	Will Fire Treated Plywood be required on the wall of the (N) Data Rooms if so please indicate where.	1/12/2021	Sent to BCF 1/13/21	
79	HCCI	Please provide footing details for relocation of Play Equipment	1/12/2021	There is a small area of stabilized DG to be installed on the west side of Bldg A, adjust to the back-of-walk on Armstrong - see sheet C3.0; stabilized DG spec will be provided	1/13/2021
80	HCCI	Civil Drawings include a detail for Stabilized DG no Specification included and none is indicated on the documents. Please provide location for installation if needed. (Detail E/X1.0)	1/12/2021	This question seems to be referring to Detail [G/X2.0] for the Entry Accessible sign - this sign should be installed at the accessible gate at the southwest corner of the Admin Building (building A) - see detail [I/X1.0 for specific location]	1/13/2021
81	HCCI	Civil Drawings show a detail for a Parking Accessibility Sign. Drawings do not indicate where this sign occurs. Please Advise.	1/12/2021	Detail E/X3.0 is no longer required - reference Details C and D on sheet X3.0 for construction of concrete walk, vents, and vent surrounds for the existing portable building south of the new Classroom building	1/13/2021
82	HCCI	Civil Drawings included detail E/X3.0, please advise as to where this detail occurs. Drawings only show Details C&D/X3.0 occurring adjacent to the existing portables.	1/12/2021		
83	HCCI	Please advise if there are any electrical requirements at the (N) Pump Filter Assembly shown on the Landscape drawings. Per keynote E on Sheet L1.1 there appears to be 120VAC needed.	1/12/2021	See email forwarded to Jeff. Not sure what to do here.	
84	HCI Systems	Please clarify where the existing audio signal is coming from as the 3-ASU-4 will not have one. (Reference EA.06)	1/13/2021		
85	HCI Systems	Please clarify if there is an existing fiber network	1/13/2021		
86	HCI Systems	Please clarify the existing head-end equipment in Bldg D (existing FACP). Please clarify if there is a battery in the existing cabinet.	1/13/2021		
87	Wild Electric	In Drawing EM2.10 STC-M. Could not find what this is in the drawings or notes, please clarify	1/13/2021		

#	Company	DESCRIPTION	DATE CREATED	ANSWER	DATE ANSWERED
88	Wild Electric	In drawing EA1.10 it shows an Inverter-A and Drawing EM1.10 shows Inverter-M. Is there a manufacturing or model number for these inverters? Please Clarify.	1/13/2021		
89	Wild Electric	In Drawing EA1.10 it shows Inverter-A but there is no Lighting Control Panel. Is there going to be a lighting control panel needed for Bldg A? Inverter-A also is not shown in the Panel AR Schedule. Which Panel is Inverter-A terminating into? Please Clarify.	1/13/2021		
90	Wild Electric	In Drawing EM2.10 it shows CPM-1,3 outlet and CPM-5,7 outlet for UPS. Will the contractor be responsible for supplying UPS or will the school district supply the UPS? Please clarify.	1/13/2021		
91	Graham Prewett	Regarding the metal soffit/fascia panels in multiple areas such as page AM6.23 keynote 7.19 and 7.20 indicate the panels as Sheet Metal Fascia and Soffit panels, the profile of the panel appears to be an Aluminum Composite panel per the joint and profile, however there is no spec section listed for these panels. please provide a specification and product for the soffit/fascia panels. Please confirm that the metal soffit panels are in bid package DC-05 Roofing, Metal Panels/Fascia & Sheet Metal.	1/13/2021	See Addendum #1 for Composite Panels specs. -SIM-PBK	1/13/2021
92	Karsyn	Please provide Wall-Talker details	1/13/2021	See Specs section 09 72 16 - Dry Erase Wallcoverings, and see drawings for locations. -SIM-PBK	1/13/2021

SECTION 06 61 19**QUARTZ SURFACING FABRICATIONS****PART 1 - GENERAL****1.01 Summary****A. Section Includes**

1. Quartz surfacing fabrications, countertops, table surfaces, and integral sinks

B. Related Requirements

1. Section 06 41 16, Casework.
2. Section 09 06 00, Schedules for Finishes.

1.02 REFERENCE STANDARDS**A. Conform to current adopted reference standards by date of issue of the current code cycle and the date of the Contract Documents.****B. ANSI - American National Standards Institute**

1. IAPMO/ANSI Z124.6 - Plastic Sinks

C. ASTM International

1. C 97 - Absorption and Bulk Specific Gravity of Dimension Stone
2. C 170 - Compressive Strength of Dimension Stone
3. C 501 - Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser
4. C 880 - Flexural Strength of Dimension Stone
5. D 790 - Flexural Properties of Unreinforced and Reinforced Plastics
6. E 84 - Surface Burning Characteristics of Building Materials

D. NSF International

1. Certified Products Directory
2. NSF/ANSI 51 - Food Equipment Materials

E. SJVAPCD - San Joaquin Valley Air Pollution Control District regulations.**1.03 SUBMITTALS****A. Product Data: For each type of product indicated****B. Shop Drawings: Show location of each item, dimensioned plans, elevations, and sections, large-scale details, attachment devices, and other components.**

1. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, and other items installed in countertops.

C. Samples

1. Material: Manufacturer's standard sample size, but not less than 6 inches square
2. A minimum 1 foot wide by 6 inch deep, full size sample for each type of counter top indicated, including the edge profile and backsplash.

QUARTZ SURFACING FABRICATIONS

06 61 19 - 1

- D. Test and Evaluation Reports: For specified performance criteria, by an independent testing agency
- E. Qualification Statements
 - 1. Fabricator

1.04 QUALITY ASSURANCE

- A. Qualifications
 - 1. Fabricator: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of not less than 5 years of successful in-service performance, with at least one project in the past 5 years where the value of the quartz surfacing fabrications was within 20 percent of the cost of quartz surfacing fabrications for this Project.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery of surfacing fabrications shall be made only when the area of operation is enclosed, all plaster, concrete work, painting, and similar operations that could damage casework are dry, and the area broom clean.

1.06 FIELD CONDITIONS

- A. Do not deliver or install surfacing fabrications until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. CaesarStone USA Inc, Van Nuys, CA
 - 2. Cambria, Eden Prairie, MN
 - 3. Cosentino USA Inc Stafford, TX. Product: Silestone
 - 4. E. I. du Pont de Nemours and Company Wilmington, DE. Product: Zodiaq
 - 5. Hanwha L & C Corp Atlanta, GA. Product: HanStone
 - 6. Seieffe Corp ("Okite"), Houston, TX
 - 7. Samsung Chemical USA Inc, La Mirada, CA; Product: Staron/Radianz
 - 8. Ice Stone
 - 9. Daltille
- B. Or equal, as approved in accordance with Division 01 requirements for Substitutions

2.02 PERFORMANCE CRITERIA

- A. Surface Burning Characteristics, ASTM E 84
 - 1. Flame Spread Index: 25 or less
 - 2. Smoke Developed Index: 450 or less

- B. Water Absorption: 0.05% or less, ASTM C 97
- C. Compressive Strength: Not less than 20,000 psi, ASTM C 170
- D. Flexural Strength: Not less than 5,000 psi, ASTM C 880 or D 790
- E. Abrasion Resistance: Material loss not greater than 225, ASTM C 501
- F. Comply with IAPMO/ANSI Z124.6
- G. NSF/ANSI 51 Certified
- H. Adhesives and sealants shall comply with VOC limits of SJVAPCD .

2.03 MATERIALS

- A. Material Dimensions: as indicated on drawing
- B. Proprietary blend of natural quartz aggregate and pigments in a polymer matrix.

2.04 FABRICATION

- A. Fabricate components by mold to achieve required shape and configuration. Comply with manufacturer's written recommendations for fabrication.
 - 1. Fabricate in shop to greatest completion possible; minimize cutting and fitting in the field.
 - 2. Square edges, and square inside corners, eased, unless indicated otherwise.
 - 3. Cure components before shipment, except sheet materials requiring site fabrication.
- B. Edge Detail: As indicated in Drawings.

2.05 FINISH

- A. Pattern and color shall occur, and shall be consistent in appearance, throughout the entire depth (thickness) of the solid polymer material.
- B. Exposed finished surfaces and edges per 09 06 00.
- C. Colors: Specified in Section 09 06 00 Schedules for Finishes.

2.06 ACCESSORIES

- A. Accessory products, as specified below, shall be manufactured by the quartz surface fabrication manufacturer or shall be products approved by the quartz surface fabrication manufacturer for use with the solid polymer materials being specified.

1. Seam Adhesive: Seam adhesive shall be a two-part adhesive kit to create permanent, inconspicuous, non-porous, hard seams and joints by chemical bond between quartz surface fabrication materials and components to create a monolithic appearance of the fabrication. Adhesive shall be approved by the quartz surface fabrication manufacturer. Adhesive shall be color-matched to the surfaces being bonded where solid-colored materials are being bonded together. The seam adhesive shall be clear or color matched where particulate patterned materials are being bonded together.
2. Panel Adhesive: Panel adhesive shall be neoprene based panel adhesive meeting TCA Hdbk, Underwriters Laboratories (UL) listed. Use this adhesive to bond solid polymer components to adjacent and underlying substrates.
3. Silicone Sealant: As specified in Section 07 92 00 and approved for use by the quartz surface fabrication manufacturer; use sealant to seal all expansion joints between components and all joints between components and other adjacent surfaces such as walls, floors, ceiling, and plumbing fixtures.
4. Conductive Tape: Manufacturer's standard foil tape, 0.1 mm 4 mils thick, applied around the edges of cut outs containing hot or cold appliances.
5. Insulating Felt Tape: Manufacturer's standard product for use with drop-in food wells used in commercial food service applications to insulate solid polymer surfaces from hot or cold appliances.
6. Heat Reflective Tape: As recommended by the solid polymer manufacturer for use with cutouts for heat sources.
7. Mounting Hardware: Provide mounting hardware, including sink/bowl clips, inserts and fasteners for attachment of undermount sinks where specified, and lavatories.

2.07 FABRICATION

- A. Components shall be factory or shop fabricated to sizes and shapes indicated, to the greatest extent practical, in accordance with approved Shop Drawings and manufacturer's requirements. Provide factory cutouts for sinks, lavatories, and plumbing fixtures where indicated on the drawings. Contours and radii shall be routed to template, with edges smooth.
 1. Joints and Seams: Form joints and seams between components using manufacturer's approved seam adhesive. Joints shall be inconspicuous in appearance and without voids to create a monolithic appearance.
 2. Edge Finishing: Rout and finish component edges to a smooth, uniform appearance and finish. Rout all cutouts, then sand all edges smooth.
- B. Countertops: Fabricate counter top components from 1/2 inch thick material unless indicated otherwise. Counter tops shall be complete with 4 inch high backsplash, permanently attached with coved transition, and loose endsplashes unless indicated otherwise. Attach 2 inch wide reinforcing strip of polymer material under each horizontal counter top seam.
 1. Permanently attached backsplashes shall be attached with seam adhesive and to form a radiused coved transition from countertop to backsplash.
 2. End splashes shall be provided loose for installation at the jobsite after horizontal surfaces to which they are to be attached have been installed

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Verify existing conditions are complete and ready to receive work of this Section.
 - 1. Verify that joint preparation, substrates and affected dimensions are acceptable to manufacturer.

3.02 PREPARATION

- A. Provide anchoring devices for installation and embedment.
 - 1. Provide templates and rough-in measurements.

3.03 INSTALLATION

- A. Install components, sinks according to shop drawings and manufacturer's instructions.
 - 1. Align Work plumb and level. Form joints using manufacturer's recommended procedures. Panel seams should not align with substrate seams.
 - 2. Rigidly anchor to substrate to prevent misalignment. Utilize fasteners, adhesives and bonding agents as recommended by the manufacturer. Materials that is damaged as a result of installation or fabrication methods will not be accepted.

3.04 TOLERANCES

- A. Maximum Variation From True Dimension: 1/8 inch.
 - 1. Maximum Offset From True Position: 1/8 inch.

3.05 CLEANING

- A. Clean and polish fabrications according to manufacturer's instructions.

3.06 PROTECTION OF FINISHED WORK

- A. Protect finished work until Date of Substantial Completion.
 - 1. Do not permit construction near unprotected surfaces.

END OF SECTION

SECTION 07 42 43**COMPOSITE PANELS****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Preformed composite metal panel system for exterior walls, with related flashings and accessory components.
- B. Related Sections:
 - 1. Section 07 62 00 Sheet Metal Flashings and Trim.
 - 2. Section 07 92 00 Joint Sealers

1.02 REFERENCES

- A. ASTM B117 - Salt Spray (Fog) Testing.
- B. ASTM D822 - Tests on Paint and Related Coatings and Materials Using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.
- C. ASTM D1735 - Method for Water Fog Testing of Organic Coatings.
- D. ASTM D1781 - Climbing Drum Peel Test for Adhesives.
- E. ASTM D2244 - Color Difference from Instrumentally Measured Color Coordinates.
- F. ASTM D2247 - Water Resistance of Coatings in 100% Relative Humidity.
- G. ASTM D2994 - Resistance of Organic Coatings to the Effects of Rapid Deformation.
- H. ASTM E84 - Surface Burning Characteristics of Building Materials.
- I. AA-C22-A41 Aluminum Association Anodized - Clear Coatings.
- J. AA-C22-A43 Aluminum Association Anodized- Integral Color Coatings.
- K. ICC/ES Legacy Report: NER-657 for Alipolic thermoplastic polyethylene Core. non-rated construction.

1.03 SYSTEM DESCRIPTION

- A. Composition: Two sheets of aluminum sandwiching a core of extruded polyethylene, formed in a continuous process, no glues or adhesives between dissimilar materials.
 - 1. Alipolic Aluminum Composite Panels, 4 mm thick.
- B. Preformed and prefinished composite metal panel system of horizontal and vertical profile; site assembled with sub-girt framing/anchorage assembly.
 - 1. High Performance Rout and Return-Wet System - Sealant reveal joints.
 - 2. Ventilated System - Rain Screen.

COMPOSITE PANELS

07 42 43 - 1

1.04 PERFORMANCE REQUIREMENTS

- A. Preformed metal panel system to withstand code imposed design loads. Maximum allowable deflection of span: 1/90.
- B. System to accommodate movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to seasonal temperature ranges.
- C. System to accommodate tolerances of structure.
- D. Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

1.05 SUBMITTALS

- A. Shop Drawings: Show fabrication and installation layouts of metal-faced composite wall panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details. Distinguish among factory-, shop-, and field-assembled work.
 - 1. Accessories: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches (1:10):
 - a. Flashing and trim.
 - b. Anchorage systems.
- B. Delegated-Design Submittal: For metal-faced composite wall panel assembly indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Coordination Drawings: Exterior elevations, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Wall panels and attachments.
 - 2. Stud framing.
 - 3. Wall-mounted items including doors, windows, louvers, and lighting fixtures.
 - 4. Penetrations of wall by pipes and utilities.
- D. Product data.
- E. Color samples, 12 x 12 inches.
- F. Manufacturer's installation instructions.
- G. Submit certification of qualifications.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: At least 5 years of experience with similar projects and system specified.

- B. Fabricator Qualifications: 10 years successful experience and can provide field service representation during construction. Fabricator shall be an approved by the composite panel manufacturer.
- C. Manufacturer Qualifications: 10 years experience in production of specified composite materials. Manufacturers of accessories and perimeter framing extrusions shall have a minimum of 5 years experience in the production of their respective products.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Products of following manufacturers form basis for design and quality intended.
 - 1. Alpolic/Mitsubishi Chemical America, Inc., Chesapeake, VA.
- B. Or equal as approved in accordance with Division 01, General Requirements for substitutions.

2.02 SHEET MATERIALS

- A. Face Sheets: AA3003 alloy aluminum for coil-coated sheets and AA5005 for anodized, 0.020 inch thick.
- B. Required Performance:
 - 1. ASTM B117 - Salt Spray: Minimum 3000 HRS.
 - 2. ASTM D822 - Color Retention: Minimum 5000 HRS.
 - 3. ASTM D2244 - Color Retention: Maximum 5 Units Change, 10 Years Florida Exposure.
 - 4. ASTM D2247 - Humidity Resistance: Minimum 3000 HRS.
- C. Fire Performance:
 - 1. ASTM E84-Flame Spread 0. Smoke developed 0.
- D. Tolerances:
 - 1. Panel Bow: Maximum 0.8 percent of panel dimension in 72 inches width and length.
 - 2. Panel Dimensions: Allowance for field adjustments and as recommended by the manufacturer.
 - 3. Panel lines, breaks and angles shall be free from warp or buckle.
 - 4. Maximum deviation from panel flatness: 1/8 inches in 15 feet on panel in any direction for assembled units.

2.03 MATERIALS

- A. Aluminum sheets: Bonded to black extruded low-density polyethylene plastic core, density of 65 lbs/cu. ft.
- B. Sealants and Gaskets: Manufacturer's standard type suitable for use with installation of metal panel system; non-staining; non-shrinking and non-sagging; ultra-violet and ozone resistant for exterior applications, EPDM or equal; colors as selected.

1. Dry gasket interlocking system and panel extrusions for Dry System.
 2. Sealant at adjacent construction, sills, walls, window and door jambs per Section 07 92 00.
 3. Sealant and backer rods for Wet System.
- C. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, Drill-Flex Fastener by ELCO Textron Inc. or equal.
- D. Stiffeners: 6063-T5 Aluminum, secure to rear face of panels maximum 30 inches on centers, mechanically fastener or silicone bonded.
- E. Perimeter Extrusions: extruded aluminum 6063-T5, with integral weather-stripping. Rout and return the composite panels on all perimeters. Maximum panel thickness, including attachment shim not to exceed 2 inches. The composite panels shall be mechanically attached to perimeter extrusions. Exposed edge of composite panel shall be protected inside an extruded aluminum pockets.
- F. Touch-up Paint: As recommended by panel manufacturer.
- G. Bituminous Paint: Concealed on one or more surfaces where dissimilar metals are in contact.
- H. Flashings: 0.062 inch thickness min. aluminum sheet. Finish to match adjacent panels. Provide lap strip under flashing at abutted conditions: with lapped surfaces sealed with a full bed of non-hardening sealant per Section 07 92 00.
- I. Reveals at Panel: Joint size between the faces of the perimeter extrusions, ½ inches nominal.

2.04 FABRICATION

- A. Fabricate panel units to dimensions based on an assumed design temperature of 70 degrees F. Allow for ambient temperature range of time of fabrication and erection.
- B. Fabricate panels in sizes indicated using composite aluminum panel material and perimeter extrusion so that the panel thickness at the joinery is 1-1/2 inches.
- C. Completed panel shall be properly fabricated and designed so that no restraints can be placed on the panel which might result in compressive skin stresses. Panels shall remain flat due to temperature changes and at all times remain water and wind tight.
- D. Shop fabricate units ready for erection.
- E. Where drawings indicate, factory curve panels to required radius. Extrusions shall be factory rolled to conform to panel curve.

2.05 FINISH

- A. Factory Finish: Fluoropolymer paint finish that meets or exceeds values expressed in AAMA 2605 where relevant to coil coatings.
- B. Refer to Section 09 06 00.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify site conditions. Review drawings and details.
- B. Verify that backing or structural supports are satisfactorily installed and in place and are ready to receive materials.
 - 1. Steel stud required at every vertical joint for panel attachment.

3.02 INSTALLATION

- A. Install composite metal building panel system in accordance with manufacturer's instructions.
- B. Protect panel surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.
- C. Remove site cuttings from finish surfaces.
- D. Permanently fasten panel system to structural supports; align, level and plumb, within specified tolerances.
- E. Locate panel joints over supports.
- F. Provide expansion control joints.
- G. Use concealed fasteners.
- H. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.
- I. Make allowances for free and noiseless vertical and horizontal thermal movement due to the contraction and expansion of component parts, for ambient temperature range of 20 degrees F to 180 degrees F.
- J. Buckling, opening of joints, undue stress on fasteners, failure of sealants or any other detrimental effects due to thermal movement of component parts will not be permitted.
- K. Do not cut, trim, weld, or braze component parts during erection, in a manner which would damage finish, decrease strength, or result in a visual imperfection of failure in performance of wall panels.

3.03 TOLERANCES

- A. Maximum Offset from True Alignment between Adjacent Members Butting or In Line: 1/16 inch.
- B. Maximum Variation from Plane or Location: 1/4 inch in 10 feet.

END OF SECTION

COMPOSITE PANELS
07 42 43 - 5

SIM-PBK - ADDENDUM #1 - JANUARY 14, 2021

SECTION 08 41 13
ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements including but not limited to:
1. Exterior and interior storefront framing.
 2. Exterior and interior manual swing entrance doors.
 3. Accessories necessary for a complete installation.

1.3 PERFORMANCE REQUIREMENTS

- A. Aluminum framed systems shall withstand the effects of specified performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:
1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
 2. Dimensional tolerances of building frame and other adjacent construction.
 3. Failure includes the following:
 - a. Deflection exceeding specified limits.
 - b. Thermal stresses transferring to building structure.
 - c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
 - d. Noise or vibration created by wind and by thermal and structural movements.
 - e. Loosening or weakening of fasteners, attachments, and other components.
 - f. Sealant failure.
 - g. Failure of operating units.
- B. Structural Loads:
1. Wind Loads: Ultimate Wind Speed Gust; 115 mph. Exposure; D.
- 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 inch19 mm, whichever is less.
 2. Deflection Parallel to Glazing Plane: Limited to L/360 of clear span or 1/8 inch3.2 mm, whichever is smaller.
- D. Structural Test Performance - Provide aluminum framed systems tested according to ASTM E330 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. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. 0.03 L/s per sq. m of fixed wall area when tested according to ASTM E283 at a minimum static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa.)
- F. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. (300 Pa.)
- G. Windborne Debris Impact Resistance:
 - 1. Pass missile impact and cyclic pressure tests when tested according to ASTM E1886 and testing information in ASTM E1996 for Wind Zone 4:
 - a. Large Missile Test: For glazed openings located within 30 feet (9.1 m) of grade.
- H. Thermal Movements:
 - 1. Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss:
 - a. Temperature Change (Range): 120 degrees F (67 degrees C, ambient; 180 degrees F 100 degrees C, material surfaces.
 - b. Interior Ambient-Air Temperature: 75 degrees F (24 degrees C.
- I. Condensation Resistance: Provide aluminum framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 45 when tested according to AAMA 1503.
- J. Thermal Conductance: Provide aluminum framed systems with fixed glazing and framing areas having an average U-factor of not more than 0.57 Btu/sq. ft. x h x degrees F 3.23 W/sq. m x K when tested according to AAMA 1503.

1.4 SUBMITTALS

- A. Product Data: Technical data for each type of product indicated including construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum framed systems.
- B. Shop Drawings:
 - 1. Submit aluminum storefront framing and entrances shop drawings including plans, elevations, sections, full size details, and attachments to other Work:
 - c. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
 - d. For entrance doors, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.
- C. Entrance Door Hardware Schedule: Prepared by or under the 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.
- D. Engineer's calculations of performance requirements.
- E. Maintenance Data: For aluminum framed systems to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Accessibility Requirements:
 - a. California Building Code: CBC Section 11B-404.3 accessible route.
 - b. U.S. Architectural and Transportation Barriers Compliance Board Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG).
 - c. ICC A117.1 Accessible and Useable Building and Facilities.
 - d. CBC Section 11B-309.4 operable parts interior usage.
- B. Installer Qualifications: Installer having minimum 10 years documented experience who is an authorized representative of the manufacturer and is trained and approved for installation of units required.
- C. Engineering Responsibility: Prepare data for aluminum framed systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in systems similar to those indicated.
- D. Product Options:
 - 1. Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in service performance:
 - a. Do not revise intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If revisions are proposed, submit comprehensive explanatory data to Architect for review.
- E. Source Limitations: Obtain aluminum framed entrances from single source from single manufacturer.
- F. Preinstallation Conference: Conduct conference at site.

1.6 WARRANTY

- A. Written warranty signed by Manufacturer, Contractor, and Installer in which manufacturer agrees to repair or replace components of aluminum framed systems 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 caused by thermal movements.
 - c. Water leakage through fixed glazing and framing areas.
 - d. Failure of operating components.
 - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Written warranty signed by manufacturer in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering:
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MATERIALS

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
08 41 13 - 3

- A. Basis of Design:
1. Kawneer Trifab 451/451T (Product Evaluation CWSF-34), impact resistant system, maximum design pressure +/- 45 psf. Subject to compliance with requirements, provide comparable storefront system by one of the following:
 - a. Tubelite, Inc.
 - b. US Aluminum Corporation.
 - c. Vistawall.
 - d. YKK America AP, Inc.
- B. Aluminum:
1. Alloy and temper recommended by manufacturer for type of use and finish indicated:
 - a. Sheet and Plate: ASTM B209/ASTM B209M.
 - b. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221/ASTM B221M.
 - c. Extruded Structural Pipe and Tubes: ASTM B429.
- C. Framing Members:
1. Extruded aluminum framing members of thickness required and reinforced necessary to support imposed loads:
 - a. Construction: Nonthermal/Thermal.
 - b. Glazing System: Retained mechanically with gaskets on four sides.
 - c. Glazing Plane: Center.
- D. Accessories:
1. Brackets and Reinforcements: High strength aluminum with nonstaining, nonferrous shims for aligning system components.
 2. Fasteners and Accessories:
 - a. Corrosion resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials:
 - 1) Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 - 2) Reinforce members as required to receive fastener threads.
 3. Concrete and Masonry Inserts: Hot dip galvanized cast iron, malleable iron, or steel inserts, complying with ASTM A123/A123M or ASTM A153/A153M.
 4. Concealed Flashing: Corrosion resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.
 5. Framing System Gaskets and Sealants: Recommended by manufacturer for joint type.
- E. Glazing:
1. Refer to Section 08 80 00: Glazing for impact resistant laminated insulating glass with low-e coating on Number 2 surface:
 - a. Glazing Gaskets: Compression types; replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.
 - b. Spacers and Setting Blocks: Elastomeric type.
- F. Entrance Doors:
1. Glazed entrance doors for manual swing operation:
 - a. Door Construction: 1-3/4 inch 44.5 mm overall thickness, with minimum 0.125 inch 3.2 mm thick, extruded aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
 - b. Door Design:
 - 1) Wide stile; 5-1/2 inch (88.9 mm) nominal width:
 - a) Accessible Doors: Smooth surfaced for width of door in area within 10 inches 255 mm above floor or ground plane.
 - c. Glazing Stops and Gaskets: Square, snap on, extruded aluminum stops and preformed gaskets.

- G. Entrance Door Hardware:
1. Refer to Section 08 71 00 for aluminum entrance hardware sets:
 - a. Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door to comply with requirements in this Section:
 - 1) Opening-Force Requirements: CBC Section 11B-404.2.9:
 - a) Exterior/Interior hinged doors, sliding doors or folding doors: 5 lbs. sf, Maximum.
 - b) Required Fire Doors: The minimum opening force allowable by DSA not to exceed 15 lbs. sf. (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).
 - c) Accessible Interior Doors: Maximum 5 lb. ft. to fully open door.
 - 2) Weather Stripping: Standard replaceable components to match existing.
 - 3) Weather Sweeps: Standard exterior door bottom sweep with exposed fasteners on mounting strip to match existing.
- H. Accessories:
1. Joint Sealants: For installation at perimeter of aluminum framed systems, refer to Section 07 92 00.
 2. Bituminous Paint: Cold applied, asphalt mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30 mil 0.762 mm thickness per coat.

2.2 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Framing Members:
1. Fabricate components that, when assembled, have specified characteristics:
 - a. Profiles that are sharp, straight, and free of defects or deformations.
 - b. Accurately fitted joints with ends coped or mitered.
 - c. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
 - d. Physical and thermal isolation of glazing from framing members.
 - e. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - f. Provisions for field replacement of glazing from interior for vision glass and exterior for spandrel glazing or metal panels.
 - g. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
 - h. Provide sill receptors with end dams at all sill conditions.
- C. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- D. Storefront Framing: Fabricate components for assembly using screw spline system.
- E. Entrance Door Frames:
1. Reinforce as required to support loads imposed by door operation and for installing entrance door hardware:
 - a. At exterior doors, provide weather stripping at fixed stops.
 - b. At interior doors, provide weather stripping at stops to prevent metal to metal contact.
- F. Entrance Doors:

1. Reinforce doors as required for installing entrance door hardware:
 - a. At pairs of exterior doors, provide compression type weather stripping retained in adjustable strip and mortised into door edge.
 - b. At exterior doors, provide weather sweeps applied to door bottoms.
- G. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.3 ALUMINUM FINISHES

- A. Class I, Clear Anodic Finish (#14): AA-M10C21A41 / AA-M45C22A41, 0.018 mm or thicker.

PART 3 EXECUTION

3.1 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of structural supports for aluminum framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

3.2 EXAMINATION

- A. Examine areas and conditions for compliance with requirements for installation tolerances and conditions affecting performance of the Work. Proceed with installation after correcting unsatisfactory conditions.

3.3 INSTALLATION

- A. Comply with aluminum framed storefront manufacturer recommended installation instructions. Coordinate installation with curtain wall work:
 1. Do not install damaged components.
 2. Fit joints to produce hairline joints free of burrs and distortion.
 3. Rigidly secure nonmovement joints.
 4. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
 5. Seal joints watertight unless otherwise indicated.
 6. Min anchorage #8 with 2 inch min embedment. Min 2 inches from edges. Refer to shop drawings.
- B. Metal Protection:
 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.
 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
- D. Set continuous sill members and flashing in full sealant bed as specified in Section 07 92 00: Joint Sealants to produce weathertight installation.
- E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.

- F. Install glazing specified in Section 08 80 00.
- G. Entrance Doors and Hardware:
 - 1. Install doors to produce smooth operation and tight fit at contact points:
 - a. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
 - b. 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.
- H. Install perimeter joint sealants as specified in Section 07 92 00 to produce weathertight installation.

3.4 ERECTION TOLERANCES

- A. Install aluminum framed systems to comply with the following maximum erection tolerances:
 - 1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet (3 mm in 3.7 m); 1/4 inch (6 mm) over total length.
 - 2. Alignment:
 - a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch1.5 mm.
 - b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch0.8 mm.
- B. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch3 mm.

3.5 ADJUSTING

- A. Adjust operating entrance door hardware to function smoothly as recommended by manufacturer:
 - 1. For entrance 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 75 mm from the latch, measured to the leading door edge.

3.6 MAINTENANCE SERVICE

- A. Entrance Door Hardware:
 - 1. 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 entrance door hardware.
 - 2. Initial Maintenance Service: Beginning at Substantial Completion, provide six months full maintenance by skilled employees of entrance door hardware Installer. Include quarterly preventive maintenance, repair, or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper entrance door hardware operation at rated speed and capacity. Provide parts and supplies the same as those used in the manufacture and installation of original equipment.

END OF SECTION 08 41 13

SECTION 08 44 13
GLAZED ALUMINUM CURTAIN WALLS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements including but not limited to:
1. Glazed aluminum curtain walls.
 2. Accessories necessary for a complete installation.

1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, licensed in the State of California with experience in the design of curtainwalls and aluminum storefronts to design glazed aluminum curtain walls using performance requirements and design criteria indicated.
- B. Provide curtain wall assembly, storefront system, and windows by a single source and tested as a combined single assembly.
- C. System Description:
1. Curtainwall assembly fabricated from aluminum stick framed system with exposed interior and exterior metal framing. Design system to allow for installation tolerances, expansion and contraction of adjacent materials and joint design:
 - a. Drawings are diagrammatic and do not identify or solve thermal or structural movement, glazing, anchorage, or moisture disposal. Details establish basic dimension of unit, sight lines, and profiles of members.
 - b. Glass, sealants, and interior finishes do not contribute to framing member strength, stiffness, or lateral stability.
 - c. Design and fabricate glazing systems for interior glazing.
 - d. Design perimeter conditions to allow for installation tolerances, expansion and contraction of adjacent materials, and sealant manufacturer's recommended joint design.
 - e. Design attachments to address site conditions, expansion, and contraction movements to eliminate possibility of loosening, weakening, or fracturing connection between units and building structure or between units themselves.
 - f. Allow for expansion and contraction due to structural movement without detriment to appearance or performance.
 - g. Design system to drain to exterior face of wall, water entering joints and condensation occurring within system by drain holes and gutters of adequate size to evacuate water without infiltration to interior or the top of lower lites of glass.
 - h. Design metal faces to be visually flat under lighting conditions.
 - i. Design interior dense EPDM wedge gasket with sealed corners, with maximum 30% compression when glazed, to create a water and air seal.
 - j. Design rigid isolators to maintain flatness of face caps and provide thermal break between exterior and interior members.
 - k. For stresses placed on structural silicone sealants, maintain sealant manufacturer's recommended maximum.

- I. Not Permitted: Vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.
- D. Performance Criteria:
 - 1. Coordinate with Section 08 41 13: Aluminum-Framed Entrances and Storefronts for performance criteria, fabrication, and erection standards. Provide curtain wall assemblies to meet or exceed performance requirements:
 - a. Design and fabricate curtain wall to withstand the operating loads without measurable permanent deflection. Limit deflections to provide the normal degree of rigidity required to avoid glass breakage, air infiltration, and objectionable results of excessive flexibility.
 - b. Glazed aluminum curtain walls 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.
 - c. Failure also includes the following:
 - 1) Thermal stresses transferring to building structure.
 - 2) Glass breakage.
 - 3) Noise or vibration created by wind and thermal and structural movements.
 - 4) Loosening or weakening of fasteners, attachments, and other components.
 - 5) Failure of operating units.
- E. Structural - Test according to ASTM E330:
 - 1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
 - 2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
 - 3. Test Durations: As required by design wind velocity, but not less than 10 seconds.
- F. Air Infiltration - Test according to ASTM E283 for infiltration:
 - 1. Fixed Framing and Glass Area:
 - a. Maximum air leakage of 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa) and 6.24 lbf/sq. ft. (300 Pa).
- G. Water Penetration under Static Pressure - Test according to ASTM E331:
 - 1. No evidence of water penetration through fixed glazing and framing areas when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure.
- H. Water Penetration under Dynamic Pressure - Test according to AAMA 501.1:
 - 1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure.
 - 2. Maximum Water Leakage: According to AAMA 501.1. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.
- I. Interstory Drift - Accommodate design displacement of adjacent stories indicated:
 - 1. Design Displacement: Indicated on Drawings.
 - 2. Test Performance: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.4 at design displacement.
- J. Seismic Performance:
 - 1. Glazed aluminum curtain walls shall withstand the effects of earthquake motions determined according to ASCE 7. Design and size components to withstand seismic loads and sway displacement as calculated in accordance with CBC Section 1613A:
 - a. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on

- building occupancy type when tested according to AAMA 501.6 at design displacement.
 - b. Vertical Interstory Movement: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.7 at design displacement.
 - c. Design and size components to withstand seismic loads and sway displacement as calculated in accordance with CBC Section 1613A.
- K. Energy Performance:
- 1. Certify and label energy performance according to NFRC:
 - a. Thermal Transmittance (U-factor): Fixed glazing and framing areas shall have U-factor of not more than 0.69 Btu/sq. ft. x h x deg F (3.92 W/sq. m x K) as determined according to NFRC 100.
 - b. Solar Heat Gain Coefficient: Fixed glazing and framing areas shall have a solar heat gain coefficient of no greater than 0.45 as determined according to NFRC 200.
 - c. Condensation Resistance: Fixed glazing and framing areas shall have an NFRC certified condensation resistance rating of no less than 25 as determined according to NFRC 500. Excessive condensation is defined as the accumulation of uncontrolled condensate flowing from the curtain wall at any location, or visible ice, frost, or water on more than 5% of the area of any module of the exterior wall.
- L. Noise Reduction - Test according to ASTM E90, with ratings determined by ASTM E1332:
- 1. Outdoor-Indoor Transmission (OITC) Class: Minimum 30.
- M. Sound Transmission:
- 1. Provide window wall and storefront systems with fixed glazing and framing areas having sound transmission characteristics of:
 - a. Sound Transmission Class (STC): Minimum 35 standard and 41 laminated STC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E413.
- N. Thermal Movements:
- 1. Allow for thermal movements resulting from ambient and surface temperature changes:
 - a. Temperature Change: 120 degrees F (67 degrees C), ambient; 180 degrees F (100 degrees C), material surfaces.
 - b. Thermal Cycling:
 - 1) No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5:
 - a) High Exterior Ambient Air Temperature: That which produces an exterior metal surface temperature of 180 degrees F (82 degrees C).
 - b) Low Exterior Ambient Air Temperature: 0 degrees F (minus 18 degrees C).
- O. Structural Sealant Joints:
- 1. Designed to carry gravity loads of glazing.
 - 2. Designed to produce tensile or shear stress of less than 20 psi (138 kPa).
- P. Structural Sealant:
- 1. Capable of withstanding tensile and shear stresses imposed by structural sealant glazed curtain walls without failing adhesively or cohesively. When tested for preconstruction adhesion and compatibility, cohesive failure of sealant shall occur before adhesive failure:
 - a. Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.

- b. Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate because sealant-to-substrate bond strength exceeds sealant's internal strength.

Q. Design Modifications:

- 1. Submit design modifications necessary to meet performance requirements and field coordination:
 - a. Variations in details or materials shall not adversely affect the appearance, durability, or strength of components, nor shall variations cause excessive stress, or deflections, to building structural frame.
 - b. Maintain general design concept without altering size of members, profiles, and alignment.

1.4 SUBMITTALS

A. Combined Submittals:

- 1. Combine submittals for exterior curtainwall and storefronts into a single submission. Submit combined shop drawing which has been reviewed, annotated, and coordinated by each of the principal exterior cladding subcontractors:
 - a. As an indication of review, and as a condition of acceptance by the Architect, provide combined submittal with a cover sheet clearly indicating the signatures of the Contractor and each exterior cladding subcontractor.
 - b. Coordinate curtainwall, storefronts and entrances, windows, ACM, and window wall submittals.

B. Product Data: Manufacturer technical data for each type of product, including construction details, material descriptions, dimensions of individual components and profiles, and finishes.

C. Shop Drawings:

- 1. Submit plans, elevations, sections, full size details, and attachments to other work.
 - a. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
 - b. Include full size isometric details of each vertical to horizontal intersection of glazed aluminum curtain walls, showing the following:
 - 1) Joinery, including concealed welds.
 - 2) Anchorage.
 - 3) Expansion provisions.
 - 4) Glazing.
 - 5) Flashing and drainage.
 - 6) Thermal breaks.
 - 7) Interface with building construction.
 - c. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
 - d. Indicate glazing details, methods, locations of various types and thickness of glass, emergency breakout locations, and internal sealant requirements.
 - e. Indicate locations of exposed fasteners and joints for Architect's acceptance.

D. Fabrication Sample (Mock Up Drawings):

- 1. Submit drawings for field mockup of each vertical to horizontal intersection of assemblies, made from 12 inch (300 mm) lengths of full size components and showing details of the following:
 - a. Joinery, including concealed welds.
 - b. Anchorage.
 - c. Expansion provisions.
 - d. Glazing.

- e. Flashing and drainage.
- E. Delegated Design Submittal: For glazed aluminum curtain walls indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for the preparation.
- F. Structural Calculations: Submit sealed copies of structural calculations indicating complete compliance with the specified performance requirements. Submit calculations prepared, signed, and sealed by a Professional Engineer licensed in the State of California.
- G. Preconstruction Laboratory Mockup Testing Submittals:
 - 1. Submit the following:
 - a. Testing Program: Developed specifically for Project.
 - b. Test Reports: Prepared by a qualified preconstruction testing agency for each mockup test.
 - c. Record Drawings: Record drawings prepared from as built drawings of preconstruction laboratory mockups showing changes made during preconstruction laboratory mockup testing.
- H. Energy Performance Certificates:
 - 1. For glazed aluminum curtain walls, accessories, and components from manufacturer:
 - a. Basis for Certification: NFRC certified energy performance values for each glazed aluminum curtain wall.
- I. Reports:
 - 1. Submit the following:
 - a. Product Test Reports: Submit report for tests performed by a qualified testing agency.
 - b. Quality Control Program: Program developed specifically for Project, including fabrication and installation, according to recommendations in ASTM C1401. Include periodic quality control reports.
 - c. Source quality control reports.
 - d. Field quality control reports.
- J. Maintenance Data: Submit maintenance data to include in maintenance manuals.
- K. Maintenance Data for Structural Sealant: For structural sealant glazed curtain walls to include in maintenance manuals. Include ASTM C1401 recommendations for post-installation-phase quality control program.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Building Code: CBC 2019 California Building Code (CCR Title 24, Part 2, as adopted and amended by DSA).
 - a. CBC Section 1609A – Wind Loads.
 - b. CBC Section 1613A – Earthquake Loads.
 - 2. Surface Burning Characteristics:
 - a. Comply with ASTM E84 - testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency:
 - 1) Flame Spread Index: 25 or less.
 - 2) Smoke Developed Index: 450 or less.
 - 3. Accessibility Requirements:
 - a. Americans with Disabilities Act of 1990, as amended.
 - 1) ADA Title II Regulations & the 2010 ADA Standards for Accessible Design

- b. CBC 2019 California Building Code (CCR Title 24, Part 2, as adopted and amended by DSA).
 - 1) CBC Chapter 11B, Accessibility to Public Buildings, Public Accommodations, Commercial Buildings and Public Housing.
 - 4. Welding Standards: Welding shall be performed by skilled and qualified mechanics. Welding shall be performed in accordance with the applicable provisions of AWS for Steel and AWS D1.2 Structural Welding Code - Aluminum.
 - 5. Structural Sealant Glazing: Comply with ASTM C1401 for design and installation of structural sealant glazed curtain walls.
 - 6. Energy Performance Standards: NFRC for minimum standards of energy performance, materials, components, accessories, and fabrication. Comply with more stringent requirements if indicated.
- B. Manufacturer/Fabricator Qualifications: Fabricator specializing in the fabrication of aluminum framed window wall and window systems and components, having minimum 10 years documented experience, and with sufficient production capacity, organized quality control and testing procedures, and published written and illustrated installation manuals, to produce and install the entrance assemblies required.
- C. Installer Qualifications:
- 1. Firm that specializes in the erection of aluminum framed window wall, storefront, and window systems, having minimum 10 years documented experience, and approved or certified by manufacturer/fabricator:
 - a. Engineering Responsibility:
 - 1) Prepare data for curtainwall, storefront, and window systems, including Shop Drawings, based on testing and engineering analysis of manufactured units in systems similar to those indicated:
 - a) Professional Engineer Qualifications: A professional engineer who is legally licensed to practice in the State of California, experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of heavy glass storefront and entrance system similar to those indicated in material, design, and extent.
- D. Laboratory Mockup Testing Agency Qualifications: Qualified according to ASTM E699 for testing indicated.
- E. Testing Agency Qualifications: Qualified according to ASTM E699 for testing indicated.
- F. Product Options:
- 1. Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction:
 - a. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.
- G. Source Limitations: Obtain components of curtain wall system, including framing spandrel panels, venting windows, entrances, sun control and accessories, from single manufacturer.
- H. Preinstallation Conference: Conduct conference at site.
- I. Mockups:
- 1. Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation:

- a. Build mockup of typical wall area as shown on Drawings.
 - b. Perform testing on mockups according to specified requirements.
 - c. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - d. Subject to compliance with requirements, approved mockups may become part of the completed work if undisturbed at time of Substantial Completion.
- J. Preconstruction Laboratory Mockups:
1. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform testing on preconstruction laboratory mockups.
 2. Build preconstruction laboratory mockups at testing agency facility; use personnel, products, and methods of construction that will be used at Project site:
 - a. Size and Configuration: As indicated on Drawings.
 - b. Notify Architect seven days in advance of the dates and times when preconstruction laboratory mockups will be constructed and tested.
 3. Preconstruction Laboratory Mockup Testing Program:
 - a. Test preconstruction laboratory mockups according to requirements. Perform the following tests in the following order:
 - 1) Structural: ASTM E330 at 50 percent of positive test load.
 - 2) Air Infiltration: ASTM E283.
 - 3) Water Penetration under Static Pressure: ASTM E331.
 - 4) Water Penetration under Dynamic Pressure: AAMA 501.1.
 - 5) Structural - ASTM E330 at 100 percent of positive and negative test loads:
 - a) Repeat the following: Air Infiltration - ASTM E283; Water Penetration under Static Pressure - ASTM E331.
 - 6) Interstory Drift - AAMA 501.4 at 100 percent of design displacement:
 - a) Repeat the following: Air Infiltration - ASTM E283; Water Penetration under Static Pressure - ASTM E331.
 - 7) Vertical Interstory Movement - AAMA 501.7:
 - a) Repeat the following: Air Infiltration - ASTM E283; Water Penetration under Static Pressure - ASTM E331.
 - 8) Thermal Cycling - According to AAMA 501.5:
 - a) Repeat the following: Air Infiltration - ASTM E283; Water Penetration under Static Pressure - ASTM E331.
 - 9) Structural - ASTM E330 at 100 and 150 percent of positive and negative test loads:
 - a) Repeat the following: Air Infiltration - ASTM E283; Water Penetration under Static Pressure - ASTM E331.
- K. Laboratory Mockup Testing:
1. Curtain wall mock up testing shall include components of fixed window units, glazed framing including captured mullions and SSG mullions, and storefront units in mock up:
 - a. Provide mockups as specified for testing. Verify required mockup submittals are reviewed and have received final approval from the Architect prior to construction of the mockups:
 - 1) Laboratory testing mockups are used as a standard for judging visual and performance acceptability of the work for the project. Replace unsatisfactory work as directed. Provide personnel to construct exterior wall mockups who will be the same personnel who will be performing and supervising the actual work. Simulate actual construction conditions as accurately as possible in every way. Provide extra materials necessary to replace any which fail during tests. Cut glass used in mockups to the minimum tolerances expected in the final exterior wall installation.
 - 2) Size: As shown but not less than the requirements of AAMA Standard 501 and ASTM E331 Section 9. Provide larger mockup(s) if the proposed

exterior wall details create a condition requiring a larger mockup(s) for proper evaluation and testing. Provide mockups at wall testing facility complete with glass, aluminum framing, metal panels, anchors, connections, flashings, sealants, and joint fillers as accepted on the mockup shop drawings. Do not take special precautions or use techniques that do not represent those to be used on the work.

- 3) Laboratory Testing: Notify the Architect of the readiness of the mockups for preliminary and final testing. Do not begin the testing program without the presence of the Owner's representative and the Architect.
- 4) Preliminary Test: Conduct single static pressure test at 50 percent of the maximum Wind Pressure followed by a single test for water penetration at 50 percent of the pressure specified. The preliminary test is purposely limited to a single event. No interim or repeat preliminary testing for Contractor benefit or correction of systems shall be permitted.
- 5) Perform tests of the mockup(s) in accordance with the standards except as modified, in the order listed, and in accordance with the specified performance criteria. Tests 1 and 5 shall be conducted at 1.57 lbf/sq. ft. (75 Pa) and 6.24 lbf/sq. ft. (300 Pa), respectively. Tests 2, 3, and 6 shall be conducted at 12 lbf/sq. ft. (600 Pa) for 1 cycle, maintaining the test pressure for 15 minutes:
 - a) Test 1 (For Air Infiltration): ASTM E283. Extraneous air leakage (tare) shall be limited to 10 percent or less of the net air leakage through the exterior wall assembly as provided under ASTM E283. Provide pressure taps as required within the test chamber to ensure uniform stratification of design test pressure across the exterior wall assembly.
 - b) Test 2 (For Water Penetration - Uniform Static Pressure): ASTM E331.
 - c) Test 3 (For Water Penetration - Dynamic Pressure): AAMA 501.1.
 - d) Test 4 (For Structural Performance): ASTM E330, Method B, test to .5, and 1.0 times the wind pressure, during test. Deflection readings shall be taken at end connections and midspans of main framing members, at intersections of framing members and at midspans of glass holding members, glass, and panels. Take readings for both positive and negative loading. If failure occurs through glass breakage prior to achieving 1.5 times the maximum wind pressure, replace glass and repeat test. Two successive failures of the same light or panel not otherwise attributable to inherent glass defects will be considered unacceptable. Further tests shall be suspended until deficiencies are corrected, which may include increasing the stiffness of glass holding members and/or adjustment of the glazing details.
 - e) Test 5 (Retest for Air Infiltration): ASTM E283. Extraneous air leakage (tare) shall be limited to 10 percent or less of the net air leakage through the exterior wall assembly as provided under ASTM E283. Provide pressure taps as required within the test chamber to ensure uniform stratification of design test pressure across the exterior wall assembly.
 - f) Test 6 (Retest for Water Penetration, Uniform Static Pressure): ASTM E331.
 - g) Test 7 (For Structural Performance): ASTM E330, Method B, except conduct test to 1.5 times the maximum wind pressure. Record pressures and deflections at 1.5 times the wind pressure, during test.
 - h) Test 8 (For Live Load Deflection Performance): AAMA 501.4 Modified. Test for live load deflection by applying vertical load to the frame supporting the mockup specimen, so as to induce a deflection in the mockup equivalent to the live load deflection identified on the drawings at the location the mockup is simulating. The load shall be applied and released through ten (10) cycles. Visually inspect mockup specimen after each displacement.

- i) Test 9 (Exterior Window Maintenance Equipment Test): Perform concentrated load testing on the exterior wall maintenance tie back equipment attached to the exterior wall framing. Apply outward, inward, and side-loading of a magnitude and for a duration as required to comply with the authorities having jurisdiction for window washing equipment. There shall be no failure or gross permanent distortion of the tie back equipment or any part of the exterior wall framing.
 - j) Test 10 (For Thermal Transmittance and Condensation Resistance): At the completion of Test 9, carefully disassemble the glass, glazing, and metal framing components and reassemble them as a mockup, and test the mockup, in accordance with AAMA 1503.
- b. Corrective Measures: Correct deficiencies in mockups observed during testing and repeat tests as required to show compliance with performance standards. Deficiencies requiring repair or modification to mockup(s) require complete retesting of mockup(s) beginning with the specified Preliminary Test unless otherwise directed by the Architect.
- 1) The Owner will pay the cost of the first mock up test. The cost of subsequent tests and retesting is the responsibility of the contractor. The Contractor shall bear costs for additional retesting until compliance with performance standards is accomplished.
 - 2) Incorporate corrective measures indicated by the test report into the final exterior wall assemblies after review by the Architect.

1.6 WARRANTY

A. Assembly Warranty:

- 1. Written warranty signed by manufacturer, Contractor, and Installer in which the manufacturer agrees to repair or replace components of glazed aluminum curtain wall that do not comply with requirements or that fail in materials or workmanship within specified warranty period:
 - a. Failures include, but are not limited to, the following:
 - 1) Failure to meet performance requirements.
 - 2) Structural failures including, but not limited to, excessive deflection.
 - 3) Glass breakage due to defective design.
 - 4) Noise or vibration created by wind and thermal and structural movements.
 - 5) Deterioration of metals, finishes and materials beyond normal weathering.
 - 6) Water penetration through fixed glazing and framing areas.
 - 7) Deterioration of materials and finishes beyond normal weathering.
 - 8) Failure of insulating glass.
 - 9) Noise or vibration created by wind and thermal and structural movements.
 - 10) Failure of operating components.
- 2. Warranty Period: 2 years from date of Substantial Completion.

B. Finish Warranty:

- 1. Written warranty signed by manufacturer in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory applied finishes within specified warranty period:
 - b. Deterioration includes, but is not limited to, the following:
 - 1) Color fading more than 5 Hunter units when tested according to ASTM D2244.
 - 2) Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - 3) Cracking, checking, peeling, or failure of paint to adhere to bare metal.
- 2. Warranty Period: 2 years from date of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Identify components of curtainwall work after fabrication by marks clearly indicating location in the building. Package components to protect components from damage during shipping and handling.
- B. Storage on Site: Store units, components, and materials in clean, dry location, away from uncured concrete, masonry work, sprayed on fireproofing work, and construction activities. Cover with nonstaining waterproof paper, tarpaulin, or polyethylene sheeting to permit circulation of air inside the covering.
- C. Keep handling on site to a minimum. Exercise care to avoid damage to finishes of metals or breakage of glass.

PART 2 PRODUCTS

2.1 FRAMING

- A. Manufacturers are subject to compliance with requirements. Provide products by one of the following:
 - 1. Arcadia, Inc.
 - 2. EFCO Corporation.
 - 3. Kawneer North America; an Alcoa company.
 - 4. Oldcastle Building Enclosure.
 - 5. SAFTI FIRST Fire Rated Glazing Solutions.
 - 6. Trulite Glass & Aluminum Solutions, LLC.
 - 7. U.S. Aluminum; a brand of C.R. Laurence.
 - 8. YKK AP America Inc.
- B. Framing Members:
 - 1. Extruded or formed aluminum framing members of thickness required and reinforced necessary to support imposed loads:
 - a. Construction: Thermally broken.
 - b. Glazing System: Retained mechanically with gaskets on four sides.
 - c. Glazing Plane: Front.
 - d. Finish: Clear Anodized.
 - e. Fabrication Method: Either factory or field fabricated system.
- C. Pressure Caps: Aluminum components that mechanically retain glazing with snap on aluminum trim that conceals fasteners.
- D. Brackets and Reinforcements: High strength aluminum with nonstaining, nonferrous shims for aligning system components.
- E. Materials:
 - 1. Aluminum:
 - a. Alloy and temper recommended by manufacturer for type of use and finish indicated:
 - 1) Sheet and Plate: ASTM B209.
 - 2) Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.
 - 3) Extruded Structural Pipe and Tubes: ASTM B429.
 - 2. Steel Reinforcement:
 - a. Zinc rich, corrosion resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard:
 - 1) Structural Shapes, Plates, and Bars: ASTM A36.

- 2) Cold Rolled Sheet and Strip: ASTM A1008.
- 3) Hot Rolled Sheet and Strip: ASTM A1011.
3. Carbon Steel: ASTM A36.

2.2 INSULATED SPANDREL PANELS

- A. Insulated Spandrel Panels:
 1. Laminated, metal faced flat panels with no deviations in plane exceeding 0.8 percent of panel dimension in width or length:
 - a. Overall Panel Thickness: 1 inch (25.4 mm).
 - b. Exterior Skin – Aluminum:
 - 1) Thickness: Standard for finish and texture indicated.
 - 2) Finish: Match framing system.
 - 3) Texture: Smooth.
 - 4) Backing Sheet: 0.125 inch (3.2 mm) thick, corrugated, high density polyethylene.
 - c. Interior Skin – Aluminum:
 - 1) Thickness: Standard for finish and texture indicated.
 - 2) Finish: Matching curtain wall framing.
 - 3) Texture: Smooth.
 - 4) Backing Sheet 0.125 inch (3.2 mm) thick, corrugated, high density polyethylene.
 - d. Thermal Insulation Core: Rigid, closed cell, polyisocyanurate board.

2.3 ENTRANCES

- A. Entrances: Comply with Section 08 41 13.

2.4 GLAZING

- A. Glazing: Comply with Section 08 80 00.
- B. Glazing Gaskets: Sealed corner pressure glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.
- C. Glazing Sealants: Recommended by manufacturer.
- D. Structural Glazing Sealants - ASTM C1184:
 1. Chemically curing silicone formulation that is compatible with system components with which it comes in contact, specifically formulated and tested for use as structural sealant and approved by structural-sealant manufacturer for use in curtainwall assembly indicated:
 - a. Color: Black
- E. Weatherseal Sealants – ASTM C920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O:
 1. Chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural sealant, weatherseal sealant, and structural sealant glazed curtainwall manufacturers for this use:
 - a. Color: Match structural sealant.

2.5 ACCESSORIES

- A. Fasteners and Accessories:

1. Corrosion resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials:
 - a. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 - b. Reinforce members as required to receive fastener threads.
 - c. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.
- B. Anchors:
 1. Three way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer:
 - a. Concrete and Masonry Inserts: Hot dip galvanized cast iron, malleable iron, or steel inserts complying with ASTM A123 or ASTM A153 requirements.
- C. Concealed Flashing: Corrosion resistant, nonstaining, nonbleeding flashing compatible with adjacent materials
- D. Bituminous Paint: Cold applied asphalt mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.6 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Fabricate components that, when assembled, have the following characteristics:
 1. Profiles that are sharp, straight, and free of defects or deformations.
 2. Accurately fitted joints with ends coped or mitered.
 3. Physical and thermal isolation of glazing from framing members.
 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 5. Provisions for field replacement of glazing from exterior
 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
 7. Components curved to indicate radii.
- D. Fabricate components to resist water penetration:
 1. Internal guttering system or other means to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.
 2. Pressure equalized system or double barrier design with primary air and vapor barrier at interior side of glazed aluminum curtain wall and secondary seal weeped and vented to exterior.
- E. Factory Assembled Frame Units:
 1. Rigidly secure nonmovement joints.
 2. Prepare surfaces that are in contact structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion.
 3. Preparation includes, but is not limited to, cleaning and priming surfaces.
 4. Seal joints watertight unless otherwise indicated.

5. Install glazing to comply with requirements in Section 08 80 00.

F. After fabrication, clearly mark components to identify locations according to Shop Drawings.

2.7 ALUMINUM FINISHES

A. Color Anodic Finish - AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker:
1. Color: Selected by Architect.

2.8 SOURCE QUALITY CONTROL

A. Structural Sealant: Perform quality control procedures complying with ASTM C1401 recommendations including, but not limited to, assembly material qualification procedures, sealant testing, and assembly fabrication reviews and checks.

PART 3 EXECUTION

3.1 PROJECT CONDITIONS

A. Field Measurements:
1. Verify dimensions of supporting structure by field measurements before fabrication so curtainwall work is accurately designed, fabricated, and fitted to the structure. Indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the work. Use Contractor's lines and benchmarks as a basis for measurements:
a. Established Dimensions: Where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabricating curtainwalls without field measurements. Coordinate supporting structure construction to ensure actual dimensions correspond to established dimensions.

3.2 EXAMINATION

A. Examine openings, substrates, adjoining construction, structural support, anchorage, and conditions for compliance with requirements for installation tolerances and conditions affecting performance of the work:
1. Verify rough opening dimensions, levelness of sill plate, and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and built in components to ensure weathertight window wall installation.
2. Notify Architect in writing, of dimensions, or conditions, found which prevent proper execution of the window wall work, including specified tolerances.
B. Proceed with installation after correcting unsatisfactory conditions.

3.3 PREPARATION

A. Prepare surfaces that will contact structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.

3.4 INSTALLATION

A. Coordinate installation with building enclosure work.
B. Comply with manufacturer's written instructions for installing curtain wall, accessories, and other components. For installation procedures and requirements not addressed in

manufacturer's written instructions, comply with installation requirements in ASTM E2112:

1. Do not install damaged components.
 2. Fit frame joints to produce hairline joints free of burrs and distortion.
 3. Rigidly secure nonmovement joints.
 4. Remove loose particles present or resulting from fabrication or field cutting and drilling by blowing out joints with oil free compressed air, or by vacuuming joints.
 5. Remove protective coatings, oils from cutting and drilling operations, and residue on metallic surfaces with solvents that leave no residue.
 6. Do not allow solvent to air dry without wiping. Use lint free towels for wiping of surfaces. Wipe metal surfaces with IPA (isopropyl alcohol) or xylene unless otherwise required by compatibility and adhesion testing results. Seal joints watertight. Clean excess joint sealants from finished surfaces.
 7. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
 8. Where welding is required, weld components in concealed locations to minimize distortion or discoloration of finish. Protect glazing surfaces from welding.
 9. Seal joints watertight unless otherwise indicated.
 10. Set components within erection tolerances with uniform joints. Place components on shims and fasten to supporting substrates using bolts and similar fasteners.
 11. Do not erect components that are warped, deformed, bowed, dented, defaced, or damaged and impair strength or appearance. Remove and replace members damaged in process of erection.
 12. Coat concealed surfaces of dissimilar materials, and ferrous metal components, with heavy coating of bituminous paint, zinc rich primer or separation in accordance with manufacturer's recommendations. Where aluminum components will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
 13. Do not burn, cut into or field drill holes or slots in building framing member without written acceptance of the structural engineer.
- C. Metal Protection:
1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with primer, applying sealant or tape, or installing nonconductive spacers as recommended by manufacturer for this purpose.
 2. Where aluminum is in contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- D. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.
- E. Install components plumb and true in alignment with established lines and grades.
- F. Permanently fasten to building structure with manufacturer recommended attachments and shims to permanently fasten system to building structure. Securely anchor components and units in place, allowing for required movement, including expansion and contraction. Set sill members in bed of sealant. Set other members with internal sealants and baffles to provide weathertight construction.
- G. Water Drainage: Compartmentalize each light of glass using joint plugs and silicone sealant to divert water to the horizontal weep locations. Locate weep holes in the horizontal pressure plates and covers to divert water to the exterior of the building.
- H. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather stripping contact and hardware movement to produce proper operation.
- I. Glazing:

1. Install glazing gaskets and sealants in accordance with manufacturer's instructions without exception; including surface preparations. Refer to Section 08 80 00:
 - a. Prepare surfaces that will contact structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion:
 - 1) Preparation includes, but is not limited to, cleaning and priming surfaces.
- J. Insulation and Fire Stopping: Refer to Division 07, respectively.
- K. Weatherseal: Install weatherseal sealant according to Section 07 92 00 and according to sealant manufacturer's written instructions to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.

3.5 ERECTION TOLERANCES

- A. Erection Tolerances:
 1. Install glazed aluminum curtain walls to comply with the following maximum tolerances:
 - a. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
 - b. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
 - c. Alignment:
 - 1) Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
 - 2) Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
 - 3) Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).
 - d. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.
 - e. Tolerances are not accumulative.

3.6 FIELD QUALITY CONTROL

- A. The Owner reserves the rights to engage an independent testing and inspection agency to verify the adequacy of the Contractor's quality control. Obtain inspections from representative of the Owner's independent testing and inspection agency. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.
- B. Test Area: Perform tests on representative areas of glazed aluminum curtain walls.
- C. Field Quality Control Testing:
 1. Perform the following test on representative areas of glazed aluminum curtain walls.
 - a. Water Spray Test:
 - 1) Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration:
 - a) Perform a minimum of two tests in areas as directed by Architect.
 - b) Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 70 percent completion.
 - b. Air Infiltration:
 - 1) ASTM E783 at 1.5 times the rate specified for laboratory testing but not more than 0.09 cfm/sq. ft. (0.45 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa):
 - a) Perform a minimum of three tests in areas as directed by Architect.
 - b) Perform tests in each test area as directed by Architect. Perform at least

- three tests, prior to 70 percent completion.
- c. Water Penetration: ASTM E1105 at a minimum cyclic static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing, but not less than 6.24 lbf/sq. ft. (300 Pa), and shall not evidence water penetration.
 - D. Structural Sealant Adhesion:
 - 1. Test structural sealant according to recommendations in ASTM C1401, Destructive Test Method A, *Hand Pull Tab (Destructive)*, Appendix X2:
 - a. Test a minimum of two areas on each building facade.
 - b. Repair installation areas damaged by testing.
 - E. Glazed aluminum curtain walls will be considered defective if they do not pass tests and inspections.
 - F. Prepare test and inspection reports.
 - G. Remove and replace noncomplying windows and retest as specified.
 - H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7 CLEANING

- A. Clean metal surfaces promptly after installation, exercising care to avoid damage to factory finished exposed surfaces.
- B. Wash glass on both faces not more than 4 days prior to date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer. Remove excess glazing and sealant compounds, dirt, and other substances.
- C. Immediately remove deleterious material from surfaces of aluminum.

3.8 PROTECTION

- A. Institute protective measures required throughout the remainder of the construction period to ensure that window wall work will be without damage or deterioration, other than normal weathering, at time of acceptance.

END OF SECTION 08 44 13

SECTION 09 30 13**CERAMIC TILE**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Ceramic Tile at floor, using full setting bed application method.
- B. Ceramic Tile at walls, and base, using thinset application method.
- C. Related Sections.
 - 1. Section 01 35 42, CALGreen Requirements.
 - 2. Section 09 29 00, Gypsum Board.

1.02 REFERENCE STANDARDS

- A. Conform to current adopted reference standards by date of issue of the current code cycle and the date of the Contract Documents.
- B. ADA - Americans with Disabilities Act of 1990 as amended
 - 1. ADA Standards - ADA Title II Regulations and the 2010 ADA Standards for Accessible Design.
- C. California Green Building Standards Code, CALGreen - 2016.
- D. ANSI/TCNA A108.1B - Installation of Ceramic Tile on Cured Portland Cement Mortar Setting Bed with Dry-set or Latex-Portland Cement Mortar.
- E. ANSI/TCNA A108.5 - Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
- F. ANSI/TCNA A108.10 - Installation of Grout in Tile Work.
- G. ANSI/TCNA A118.6 - Cement Grouts for Tile Installation.
- H. ANSI/TCNA A118.1 - Dry-Set Portland Cement Mortar.
- I. ANSI/TCNA A118.4 - Latex-Portland Cement Mortar.
- J. ANSI/TCNA A118.7 - Polymer Modified Tile Grouts for Tile Installation.
- K. ANSI/TCNA A118.10 - Bonded Waterproof Membranes for Thin-set Ceramic Tile and Dimension Stone Installation.
- L. ANSI/TCNA A137.1 - Ceramic Tile.
- M. ASTM A185 - Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.

- N. ASTM C144 - Aggregate for Masonry Mortar.
- O. ASTM C150 - Portland Cements.
- P. ASTM C207 - Hydrated Lime for Masonry Purposes.
- Q. ASTM C373 - Water Absorption, Bulk Density, Apparent Porosity and Apparent Specific Gravity of Fired Whiteware Products.
- R. ASTM D1056 - Flexible Cellular Materials.
- S. ASTM C1178 - Coated Glass Mat Water-Resistant Gypsum Backing Panel.
- T. ASTM C171 - Sheet Materials for Curing Concrete.
- U. ASTM C920 - Elastomeric Joint Sealants.
- V. TCNA (Tile Council of North America) - Handbook for Ceramic Tile Installation, Latest Edition.
- W. SJVAPCD - San Joaquin Valley Air Pollution Control District regulations.

1.03 SUBMITTALS

- A. Product Data: For each type of tile, bond coat, grout, and other products specified.
- B. CALGreen Submittals:
 - 1. Product Data Sheets and Declaration Statements showing compliance with CALGreen Code per 1.04.D.
- C. Shop Drawings: Include following:
 - 1. Tile patterns and locations.
 - 2. Widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
- D. Samples for Verification: Of each item listed below, prepared on Samples of size and construction indicated. Where products involve normal color and texture variations, include Sample sets showing full range of variations expected.
 - 1. Each type and composition of tile and for each color and texture required, at least 12 inches square, mounted on braced cementitious backer units, and with grouted joints using product complying with specified requirements and approved for completed work in color or colors selected by Architect.
 - 2. Full-size units of each type of trim and accessory for each color required.
 - 3. Metal edge strips in 6-inch lengths.
- E. Product Certificates: Master Grade Certificate signed by the manufacturer certifying that products furnished comply with requirements of Standard Grade.

- F. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names of architects and owners, and other information specified.

1.04 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Company specializing in the manufacture of products specified in this Section with minimum five years' experience.
- B. Installer Qualifications: Engage experienced installer who has completed tile installations similar in material, design, and extent to that indicated for this Project and with record of successful in-service performance. Minimum 5 years of documented experience of tile installation.
 - 1. Installer-Tile Layer: Journeyman Level Classification required, recognized by California Directory of Industrial Relations or the U.S. Department of Labor. Certification required or Installer employs Certified Tile Installer (CTI) by the Ceramic Tile Education Foundation (CTEF)
- C. Source Limitations for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from one source with resources to provide products from same production run for each contiguous area of consistent quality in appearance and physical properties without delaying Work.
- D. California Green Building Standards Code, CALGreen2016.
 - 1. Adhesives, sealants, primers, and caulks shall comply with air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, per CALGreen Tables 5.504.4.1 and 5.504.4.2.
- E. Source Limitations for Setting and Grouting Materials: Obtain ingredients of uniform quality for each bond coat, and grout component from single manufacturer and each aggregate from one source or producer.
- F. Mockups: Before installing tile, construct mockups for each form of construction and finish required to verify selections made under Sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with following requirements, using materials indicated for completed Work.
 - 1. Locate mockups in location and of size indicated or, if not indicated, as directed by Architect.
 - 2. Notify Architect 7 days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate proposed range of aesthetic effects and workmanship.
 - 4. Obtain Architect's approval of mockups before proceeding with final unit of Work.
 - 5. Maintain mockups during construction in undisturbed condition as standard for judging completed Work.
 - a. When directed, demolish and remove mockups from Project site.
- G. Pre-installation Conference: Conduct conference at Project site to comply with requirements of Division 01, General Requirements.

- H. Tile Adhesives and Joint Sealers: As recommended by the tile manufacturer. Comply with VOC Limits set by SJVAPCD.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site only in cartons which have been grade sealed by manufacturer in accordance with ANSI A137.1 and with grade seals unbroken. Seconds grade seal quality not permitted.
- B. Tiles delivered to job or installed in Work that do not fall within specified standards of quality or accepted color range shall be removed from jobsite and properly be replaced with acceptable material.
- C. Store and protect products in dry, secure areas.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not install volatile materials in a closed, unventilated environment.
- B. Maintain 50 degrees F or above during installation of adhesive and grout materials.
- C. Shade work from direct sunlight during tile installation as needed to prevent rapid evaporation caused by excessive heat.

1.07 MAINTENANCE

- A. Extra Materials
 1. Extra Materials shall be from same production run as installed materials.
 2. Wrap or crate for storage and label for contents and dates and locations of related installations.
 3. Deliver Extra Materials to Site as directed by Owner.
 4. Tile. For each type, size and color or finish of tile provide, as extra materials, a quantity equal to approximately 2-percent of the quantity required for its installation; round quantity up to next higher full carton.
 5. Special Shapes. For each type, size and color or finish of special shaped tile required, provide, as extra materials, a quantity equal to the following.
 - a. Coved Base: 10-linear-feet
 - b. Formed Coved Base Corners: 6 pieces, each inside and outside
 - c. Bullnose Tile: 15-linear feet
 - d. Bullnose Corner: 6 pieces

PART 2 - PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Slip Resistant: Ceramic Tile Flooring shall be stable, firm, and slip resistant. CBC Section 11B-302.1.

2.02 MANUFACTURERS

- A. Products of following manufacturers form basis for design and quality intended.
 - 1. Dal-Tile, Corona, CA./American Olean Tile, City of Industry, CA.
 - 2. Interceramic Inc., Anaheim, CA.
 - 3. SpecsCeramics, Inc., Anaheim, CA.
 - 4. Royal Mosa, Maastricht, Netherlands.
 - 5. Trans Ceramica Ltd., Elk Grove, IL.
 - 6. Crossville, Inc., Crossville, TN.
 - 7. Terra Green Ceramics, Richmond, IN.
- B. Or equal as approved in accordance with Division 01, General Requirements for Substitutions.

2.03 TILE

- A. Ceramic Mosaic Floor Tile: ANSI/TCA A137.1, conforming to following:
 - 1. Moisture Absorption: 0 to 0.5 percent, (impervious) ASTM C373
 - 2. Size: As selected by Architect
 - 3. Surface Finish: As selected by Architect
 - 4. Colors: As selected by Architect.
 - 5. Patterns: Per Architectural Drawings.
- B. Ceramic Wall Tile: ANSI/TCA A137.1, conforming to following:
 - 1. Moisture Absorption: As permitted by ANSI A137.1.
 - 2. Size: As selected by Architect
 - 3. Surface Finish: As selected by Architect
 - 4. Colors: As selected by Architect.
 - 5. Patterns: Per Architectural Drawings.
- C. Base: Match wall tile for moisture absorption, surface finish and color, coved bottom and Per Architectural Drawings. Where no wall tile is installed, match floor tile, 6" high.
- D. Wainscot Cap: Match wall tile for moisture absorption, surface finish and color, bullnosed top edge. Coordinate sizes and coursing of adjoining tile.
- E. Corners: coved at inside corners and bullnose at exterior corners.
- F. Colors and Patterns: Refer to Architectural Drawings

2.04 BOND COAT

- A. ANSI/TCNA A118.1 - Dry-Set Portland Cement Mortar.
- B. ANSI/TCNA A118.4 - Latex Portland Cement Mortar.

2.05 SETTING BED MATERIALS

- A. Portland Cement: ASTM C150, Type I.

B. Lime: ASTM C207, Type S.

C. Sand: ASTM C144.

D. Water: Potable.

2.06 GROUT

A. Grout: ANSI/TCNA A118.3, chemical-resistant type consisting of epoxy resin and hardener. Manufacturers:

1. Laticrete SpectraLOCK Pro Premium Grout, High Performance.
2. Custom Building Products. Product: Epoxy Grout.
3. Refer to Architectural Drawings.
4. Or equal in accordance with Division 01, General Requirements for Substitutions. Colors as selected by Architect.

2.07 ACCESSORIES

A. Cleavage Membrane for Floors - Unbonded Full Mortar bed:

1. NOBLESEAL TS, 30 mil thick, chlorinated polyethylene, manufactured by Noble Co., Grand Haven, MI
2. Cleavage Membrane: Asphalt felt, ASTM D 226/D 226M, Type I (No. 15), unperforated; or polyethylene sheeting, ASTM D 4397, 4.0 mils thick.
3. Or equal as approved in accordance with Division 01, General Requirements for substitutions.

B. Waterproof Membrane for water-prone surfaces requiring waterproofing, toilet areas:

1. Chloraloy CPE #240, 40 mil thick, chlorinated polyethylene under full mortar bed floors. Waterproofing and cleavage membrane.
2. Hydro Ban by Laticrete (thin set), RedGard Waterproofing and Crack Prevention Membrane (thin set or mortar bed) by Custom Building Products without "field" reinforcing fabric, or equal, ANSI A118.10, ANSI A118.12.
3. Or equal as approved in accordance with Division 01, General Requirements for substitutions.

C. Reinforcing Mesh: 2 x 2 inch size weave of 16 GA/16 GA wire size; welded fabric, galvanized, ASTM A185 and ASTM A82, galvanized per ASTM A641.

D. Expanded Metal Lath: 3.4 lbs/sq.yd. galvanized laminated to Grade B, Type 1, Kraft Paper, by Western Metal Lath, La Mirada, CA, or equal as approved in accordance with Division 01, General Requirements for substitutions.

E. Curing Paper: Kraft paper conforming to ASTM C171.

F. Grout Sealer for Walls and Floors, epoxy based grouts:

1. Pro Spec Grout Sealer (acrylic), by Bonsal American Co, Charlotte, NC.
2. Grout Armor Color Sealer (acrylic), by Grout Armor, Fort Lauderdale, FL.
3. Acrylic Grout Sealer (acrylic), by Glaze 'N Seal.
4. MicroGuard AD708 (Silane), by Adsil, Palm Coast, FL.
5. Silox 8 (Silane), by Bostik, Middleton, MA.

6. Or equal and as recommended by grout manufacturer.
- G. Waterproofing Membrane at Vertical Surfaces: ASTM D4601, Type I asphalt saturated glass felt.
- H. Waterproofing and Crack Suppression Membranes for Floors.
 1. General: Manufacturer's standard product that complies with ANSIA118.10.
 2. Corrugated-Polyethylene Product: Corrugated polyethylene with dovetail-shaped corrugations for adhering to latex-portland cement mortar and with anchoring webbing on the underside: 39 inches wide by 3/16-inch nominal thickness.
 - a. Product: Schluter Systems L.P.; DITRA.
 - b. Product: NOBLESEAL CIS, ANSI A118.12.
 3. Laticrete Hydro Ban, RedGard Waterproofing and Crack Prevention Membrane by Custom Building Products without field reinforcing fabric or equal, ANSI A118.10, ANSI A118.12.
- I. Edge Strips, Coves:
 1. Angle, L-shape, reducers, or T-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications.
 2. Acceptable manufacturer: Schluter Systems or approved equivalent.
 3. Edge Strip - Floors: Schluter-Reno Series and Schluter-Schiene Series [Schluter-Deco]. Size for tile materials specified.
 4. Cove Base: Schluter-DILEX-AHK; anodized aluminum, trapezoid-perforated anchoring leg, 3/8" radius. Thickness per tile specified.
 5. Edge Strip - Walls: Schluter-JOLLY edge-protection profile for the outside corners. Size for tile materials specified.
 6. Material: Satin Anodized Aluminum (AE) .
 7. Colors, sized: Refer to Architectural Drawings.
- J. Corner Trims: Aluminum
 1. Manufacturer: Profilitec
 2. Product: Mosaictec RJF, Invisible Aluminum profile for mosaic.
 3. Finish: Silver Anodized aluminum.
- K. Cementitious Backer Units: Per Section 09 29 00.

2.08 SETTING MORTARS

- A. Scratch Coat For Walls: One part Portland cement, 1/2 part hydrated lime, 4 parts dry sand or 5 parts damp sand, or one part Portland cement, 3-parts dry sand or 4-parts damp sand.
- B. Float or Leveling Coat For Walls: One part Portland cement, 1part hydrated lime, 6 parts dry sand or 7 parts damp sand.
- C. Conform to Table 2103A.11, California Building Code.
- D. Setting Bed Mix for Floors: One part Portland cement, 1/10 part hydrated lime, 5 parts dry sand or 6 parts damp sand by volume.

- E. Admixture: Mix in accordance with manufacturer's directions.
- F. Consistency: When mixed with water, setting bed material shall be workable and allow maximum compaction during tamping.
- G. Mixing: Thoroughly mix dry setting bed ingredients before adding water to obtain proper consistency. When machine mixing, add water first. Discard mix when it has reached its initial set.

2.09 EXPANSION JOINT MATERIALS

- A. Joint Sealer: ASTM C920
 - 1. Vertical Joints: One part silicone sealant, non-sag, elongation movements 25/25 percent, Shore A, hardness range 20 -27, Pecora 890FTS and 890FTS-TXTR.
 - 2. Horizontal Joints: Polyurethane joint sealant; ASTM C 920, Type M, Grade NS, Class 25, Use T, M, A and O. Pecora DynaTred or equal.
 - 3. Color: to match grout color.
- B. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- C. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- D. Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 25 percent larger than joint width; Backer Rod Mfg. DENVER FOAM or Nomaco Green rod.
- E. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application. Apply to bottom of joints that are too shallow to receive foam backer rod.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work. Verify types of materials that may have been in contact with surfaces.
- B. Beginning of installation means installer accepts condition of existing substrate.
- C. Verify waterproof paper and Backer Units have been installed per Section 09 29 00 for thin set application on walls.

3.02 PREPARATION

- A. Protect surrounding work from damage or disfiguration.
- B. Vacuum clean existing substrate and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.03 MIXING BOND COAT

- A. Use brand of prepackaged dry mix specified by manufacturer.
- B. Mixing: Mix dryset Portland-cement bond coat or latex Portland-cement bond {epoxy bond} coat in accordance with manufacturer's instructions.
- C. Proper bond coat consistency is such that when applied with recommended notched trowel to backing, ridges formed in bond coat will not flow or slump.
- D. During use, remix mortar occasionally. Additional water or fresh materials shall not be added after initial mixing. Mortar shall not be used after initial set.

3.04 INSTALLATION: SETTING BED AT FLOORS

- A. Install setting bed in accordance with TCNA Handbook for Ceramic Tile Installation, ANSI/TCNA A108.1B.
- B. Install cleavage [waterproof] membrane, solvent welded at joints. Clamp membrane to drains. Extend membrane under expansion joints.
 - 1. At floor slabs on-grade; Do not install cleavage membrane.
- C. Place wire reinforcing and setting bed over [concrete slab] [cleavage membrane] [waterproof membrane]. Lap reinforcing at least one full mesh and support so that reinforcing is approximately in middle of setting bed. Do not butt reinforcing against vertical surfaces.
- D. Thickness of Setting Bed: Approximately 1-3/4 inches.
 - 1. Thickness of setting bed at slope to drains and shower receptors: High point shall be not less than 2 inches not more than 9 inches below top of finished dam and shall have a minimum of 1/4 inch per foot pitch toward drain.
- E. Firmly tamp setting bed to levels required.
- F. Allow setting bed to cure in accordance with ANSI/TCNA A108.1.

3.05 INSTALLATION: THIN SET AT WALLS.

- A. Walls: Install in accordance with TCNA Handbook for Ceramic and ANSI A108.5 and A118.1. Tile Installation for thin-set application:
 - 1. No. W244E for cement board, ASTM C1325
- B. At Wet Locations, Shower Areas: install waterproof membrane in accordance with TCNA Handbook for Ceramic No. F-122, weld joints and upturn at wall 6 inches. Clamp membrane to drains at floors. Extend membrane under expansion joints.
 - 1. Bond membrane with manufacturer approved modified thin-set bond coat (acrylic latex Portland cement mortar).
 - 2. At floor slabs on-grade; Do not install cleavage.
- C. Align wall tile grout with floor tile grout.

3.06 INSTALLATION: SETTING BED AT WALLS

- A. Install paper-backed metal lath in accordance with TCNA Handbook for Ceramic Tile Installation.
- B. Install scratch and leveling coat for walls in accordance with TCNA Handbook for Ceramic Tile Installation.
- C. Apply setting bed over surfaces to a minimum thickness of 3/4 inch.
- D. Allow setting bed to cure in accordance with ANSI/TCNA A108.1.
- E. Align wall tile grout with floor tile grout.

3.07 BOND COAT APPLICATION

- A. Clean surface thoroughly. Dampen if very dry, but do not saturate.
- B. Apply bond coat with flat side of trowel over an area no greater than covered with tile while bond coat remains plastic.
- C. Within ten minutes before applying tile and using a notched trowel of type recommended by bond coat manufacturer, comb bond coat obtain even setting bed without scraping backing material.
- D. Cover surface uniformly with no bare spot, with sufficient bond coat to ensure a minimum bond coat thickness of 3/32 inch between tile and backing after tile has been beaten into place. Tile shall not be applied to skinned-over bond coat.

3.08 INSTALLATION OF TILE

- A. Refer to mortar and latex manufacturers directions.
- B. Do not soak tile.
- C. Set tile firmly on bond coat over setting bed or cementitious backerboard surfaces with minimum of 95 percent coverage at floors and wet areas. Back-butter ribbed tiles and other tiles in accordance with ANSI/TCNA 108.5. Spacers on tile determine joint width between tile. Strings or pegs may be used to space tile that have no spacers. Bring all surfaces to a true plane at proper position or elevation. Thoroughly beat-in all tile with a beating block while bond coat is still plastic. Beating shall fill minimum of 95 percent of entire space between units and setting bed. 80 percent coverage is permitted for walls in non-wet areas.
- D. Lay tile to pattern indicated on Drawings or request tile pattern from Architect. Do not interrupt tile pattern through openings.
- E. Place edge strips at exposed tile edges.
- F. Cut and fit tile tight to penetrations through tile. Align floor, base and wall joints where floor tiles and wall tiles are same width.

- G. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight without voids, cracks, excess setting bed mix or excess grout. All inside corners shall be coved and exterior corners shall be bullnose. No butted 90 degree intersections permitted. All outside corners shall be bullnose. All tile edges and terminations shall have bullnose unless noted otherwise.
- H. Sound tile after setting. Replace hollow sounding units.
- I. Keep expansion or control joints free of setting bed mix or grout. Apply sealant to joints.
- J. Allow tile to set for a minimum of 16 hours prior to grouting.
- K. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.
- L. If tile is face-mounted, remove paper within one hour after tile is set and adjust all tiles that are out of line or level. Use no more water than necessary in removing paper.
- M. Align wall tile grout with floor tile grout.

3.09 INSTALLATION OF GROUT

- A. Remove bond coat from face and edges of tile.
- B. Mixing: Refer to manufacturer's directions.
- C. Dry blend contents of an entire container of grout prior to mixing with water or latex.
- D. Use caution to prevent scratching or damaging tile surfaces.
- E. Dampen dry joints prior to grouting. Do not leave puddles of water in joints before grouting.
- F. Force maximum amount of grout into joints. Cushion edge tile shall be finished evenly to depth of cushion. Square-edge tile shall be finished flush with surface. Finished joint shall be uniform in color, smooth and without pinholes, voids or low spots.
- G. Grout width: 1/8" unless noted otherwise on drawings.

3.10 CURING

- A. Damp-Cure grout for a minimum of 72 hours. Remove and replace improperly cured grout.
 - 1. Cover with 40-pound kraft paper.
 - 2. Polyethylene curing membrane not permitted.

3.11 GROUT SEALING FOR PORTLAND CEMENT GROUTS

- A. Floors: Apply grout sealer after curing, two coats required, throughout surface.

- B. Walls: Seal wall and grout, 2 coats required, install per manufacturer's instructions.
- C. Verify that grout is dry, clean and properly cured. Ensure grout has been installed minimum of 10 days prior to sealing.
- D. Apply undiluted sealer to grout joints in accordance with manufacturer's instructions and recommendations. Maintain abundance of sealer on joint until porosity has been satisfied.
- E. Thoroughly remove excess material; allow to dry, minimum 24 hours prior to use.
- F. Remove excess sealer that has dried on tile surface.

3.12 EXPANSION JOINTS

- A. Install expansion joints over any construction (cold joint), contraction joint, expansion joint, at juncture of floors and walls, changes in material at other restraining surfaces such as curbs, columns, bases, and wall corners and where recommended by TCNA EJ171A for mortar bed tile or EJ171F for thin set tile.
- B. Expansion joint shall penetrate full depth of setting bed.
- C. Do not damage waterproofing membrane.
- D. Install sealant in accordance with manufacturer's instructions, using hand pointing tools.
- E. Measure joint dimensions and size materials to achieve required width/depth ratios. Minimum width: 3/8 inch.
- F. Install joint backing to achieve a neck dimension no greater than 1/3 joint width. Concrete shall be fully cured.
- G. Install bond breaker where joint backing is not used. Install removable masking material to maintain clean lines and protect adjoining surfaces.
- H. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges. Do not install sealant on wet or damp surfaces.
- I. Install sealant free of air pockets, foreign embedded matter, ridges and sags.
- J. Tool joints concave, channel shaped or as detailed. Use slicking agent type recommended by manufacturer.

3.13 EDGE STRIP

- A. Install according to manufacturer's recommended procedures.

3.14 CLEANING

- A. Clean tile work and adjacent surfaces.

3.15 PROTECTION

- A. Protect finished installation.
- B. Do not permit traffic over finished floor surface.

END OF SECTION

SECTION 09 54 27
SPECIALTY CEILING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Wood veneer ceiling panels.
- B. Exposed grid suspension system.
- C. Wire hangers, fasteners, main runners, cross tees, wall angle moldings and accessories.
- D. Related Sections:
 - 1. Section 09 06 00, Schedules for Finishes.
 - 2. Section 09 53 23, Acoustical Suspension Systems
 - 3. Section 09 29 00, Gypsum Board.

1.02 REFERENCE STANDARDS

- A. Conform to current adopted reference standards by date of issue of the current code cycle and the date of the Contract Documents.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - 2. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot- Dip Process.
 - 3. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
 - 5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
 - 6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
 - 7. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 8. ASTM E 580 Application of Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels in Areas Requiring Seismic Restraint.
 - 9. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
 - 10. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.
 - 11. ASTM E 1264 Classification for Acoustical Ceiling Products.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each type of ceiling unit and suspension system required.
- B. Installation Instructions: Submit manufacturer's installation instructions.
- C. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.
- D. Shop Drawings: Layout and details of ceilings. Show locations of items which are to be coordinated with, or supported by the ceilings.
- E. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.
- F. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.04 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide ceiling panel units and grid components by a single manufacturer.
- B. Fire Performance Characteristics:
 - 1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.
 - a. Flame Spread: 25 or less
 - b. Smoke Developed: 50 or less
- C. Coordination of Work: Coordinate ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store ceiling components in a dry interior location in their cartons prior to installation to avoid damage. Store cartons in a flat, horizontal position. The protectors between the panels should not be removed until installation.
- B. Do not store in unconditioned spaces with humidity greater than 70 percent or lower than 20 percent relative humidity and temperatures lower than 50 degrees F or greater than 86 degrees F. Panels must not be exposed to extreme temperatures, for example, close to a heating source or near a window with direct sunlight.
- C. Handle ceiling units carefully to avoid chipped edges or damage to units in anyway.

1.06 PROJECT CONDITIONS

- A. Wood veneer ceiling materials should be permitted to reach room temperature and have a stabilized moisture content for a minimum of 72 hours before installation. (Remove plastic wrap to allow panels to climatize).
- B. The wood veneer panels should not be installed in spaces where the temperature or humidity conditions vary greatly from the temperatures and conditions that will be normal in the occupied space.
- C. As interior finish products, the wood veneer panels are designed for installation in temperature conditions between 50 degrees F and 86 degrees F, in spaces where the building is enclosed and HVAC systems are functioning and will be in continuous operation. Relative humidity should not fall below 20 percent or exceed 70 percent. Additionally, the fluctuation in relative humidity should not vary more than 30 percent over the life of the ceiling panels.

1.07 WARRANTY

- A. Wood Veneer Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to:
 - 1. Ceiling Panels: Sagging and warping
 - 2. Grid System: Rusting and manufacturer's defects
- B. Warranty Period:
 - 1. Wood veneer panels: Standard - One (1) year from date of substantial completion.
 - 2. Grid: Ten years from date of substantial completion.
- C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.08 MAINTENANCE

- A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
 - 1. Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.
 - 2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Ceiling Units/Panels:

1. Armstrong World Industries, Inc.
- B. Or equal in accordance with Division 01 General Requirements.

2.02 WOOD VENEER CEILING UNITS

- A. Ceiling Panels: WoodWorks Linear 6691 W1
 1. Surface Texture: Smooth
 2. Composition: Fire-Retardant Particle Board
 3. Species Finish: As selected by Architect
 4. Size: 24" x 96"
 5. NRC: 0.20
 6. Acoustical infill panel: BioAcoustic 2' x 2' x 5/8"
 7. Suspension System: Per Section 09 54 23.
 8. Refer to Section 09 06 00.
- B. Accessories: Manufacturer's recommended infill panel (fiberglass infill)
- C. Edge Banding - Pre-finished pressure sensitive adhesive banding is available 15/16 inch wide and in 50-foot lengths. Standard colors are cherry, maple and anigre (steamed beech).

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out.
- B. Proper design for both supply air and return air, maintenance of the HVAC filters and building interior space are essential to minimize soiling. Before starting the HVAC system, make sure supply air is properly filtered and the building interior is free of construction dust.

3.02 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

3.03 INSTALLATION

- A. Install suspension system and panels in compliance with ASTM C636, and Section 09 53 23 [and the Division of the State Architect IR M-3], and in accordance with the manufacturer's installation instructions.
- B. Suspend main beam from overhead construction with hanger wires spaced 4 feet on center along the length of the main runner. Install hanger wires plumb and straight.

- C. Install main beams 48 inches on center with a 48 inch cross tee every 24 inches at 90 degrees to the main beam. Install the 24 inch cross tees at midpoints of the 48 inch cross tees.
 - D. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.
 - E. Follow the manufacturer's instructions for border treatment of panels.
 - 1. Re-cut tegular edge, or
 - 2. Straight cut and use border clips to support the cut edge of perimeter panels.
 - F. Cut panel edges that are exposed to view will have to be treated to look like factory edges. Pre-finished peel and stick edge banding is recommended for this purpose.
- 3.04 ADJUSTING AND CLEANING
- A. Replace damaged and broken panels.
 - B. Clean exposed surfaces of ceilings panels, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 72 16
DRY ERASE WALLCOVERING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Projection dry erase wallcovering.
- B. Accessories.

1.02 REFERENCE STANDARDS

- A. Conform to current adopted reference standards by date of issue of the current code cycle and the date of the Contract Documents.
- B. American Society for Testing and Materials (ASTM):
 - 1. E 84: Test Method for Surface Burning Characteristics of Building Materials.
 - 2. D 751: Methods of Testing Coated Fabrics.
- C. Underwriters Laboratory, Inc. (UL)
 - 1. UL 723: Test for Surface Burning Characteristics of Building Materials
- D. Gypsum Association
 - 1. GA-214: Recommended Levels of Gypsum Board; Level 5

1.03 SUBMITTALS

- A. Manufacturer's product data and installation instructions for each type of dry erase wallcovering, adhesive and accessories required.
- B. Manufacturer's written product data indicating compliance with specified materials required.
- C. Manufacturer's written installation instructions.
- D. Manufacturer's written instructions for recommended maintenance of each type of dry erase wallcovering required.
- E. Samples:
 - 1. 7-inch by 9-inch samples of each dry erase material required.
 - 2. 6-inch samples of trim, tray and end caps required.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Provide each type of dry erase wallcovering required produced by one manufacturer.

- B. Applicator: Installation by skilled commercial wallcovering applicators with no less than three years of documented experience installing dry erase wallcovering of the types and extent required.
- C. Composition:
 - 1. Projectrite: Provide non-woven backing, pigmented vinyl, capped with an embossed dry erase film.
- D. Fire Hazard Classification: Provide materials that comply with NFPA Class A fire rating when tested in accordance with ASTM E84 using GRC Board as substrate. Identify components with markings from testing and inspection organization.
- E. Field Samples: Prepare field samples for Architect's review and establish requirements for seaming and finish trim.
 - 1. Install sample panel of each type presentation wallcovering specified in area designated by Architect.
 - 2. Maintain corrected and approved samples to serve as a standard of performance for the project.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver presentation wallcoverings to the project site in unbroken and undamaged original factory wrappings and clearly labeled with the manufacturer's identification label, quality or grade, and lot number.
- B. Store materials in a clean, dry storage area with temperature maintained above 55 degrees F with normal humidity.
- C. Store material in a flat position to prevent damage to roll ends. Do not cross stack material. Support material off the floor in a manner to prevent sagging and warping.

1.06 PROJECT CONDITIONS

- A. Do not apply presentation wallcoverings when surface and ambient temperatures are outside the temperature ranges required by the wallcovering manufacturer.
- B. Provide continuous ventilation and heating facilities to maintain substrate surface and ambient temperatures above 55 degrees F unless required otherwise by manufacturer's instructions.
- C. Apply adhesive when substrate surface temperature and ambient temperature is above 55 degrees F and relative humidity is below 40 percent.
- D. Maintain constant recommended temperature and humidity for at least 72 hours prior to and throughout the installation period, and for 72 hours after wallcovering installation completion.
- E. Provide not less than an 80 foot-candles per square foot lighting level measured mid-height at substrate surfaces.

1.07 WARRANTY

- A. Submit manufacturer's limited five-year written warranty against manufacturing defects.

1.08 MAINTENANCE

- A. Maintenance instructions: Include precautions against cleaning materials and methods that may be detrimental to finishes and performance. Provide instructions for maintenance of wallcoverings from the manufacturer including cleaning solution,
- B. Maintenance Materials and Supplies: 5 gallons of cleaning solution recommended by the manufacturer.
- C. Use only writing materials recommended by the manufacturer.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Wallcoverings: Walltalkers Wallcoverings manufactured by RJF International Corporation, Fairlawn, Ohio.
- B. Or equal in accordance with Division 01 General Requirements for Substitutions.

2.02 MATERIALS

- A. Walltalkers Projectrite: embossed vinyl surface for **projection and dry erase markers**.
 - 1. MAG-Rite M2PR: 49/50-inch width, non-woven backing, white only.
 - 2. MAG-Rite M2PR: 59/60-inch width, non-woven backing, color as selected by Architect.

2.04 TRIM, TRAY PRESENTATION RAILS

- B. Aluminum Tray:
 - 1. Clear satin, anodized aluminum, snap-on marker and eraser tray with clips. Refer to drawings for lengths.
 - 2.
- C. Aluminum Trim:
 - 1. AT01: Clear satin, anodized aluminum, snap-on trim with clips.
 - 2. AT01-99: Black anodized aluminum, snap-on trim with clips.
 - 3. J Cap Wallcovering Trim: Clear satin, anodized aluminum, low profile trim.
- D. End Caps:
 - 1. ET01: Clear satin, anodized aluminum end caps for marker and eraser tray.
 - 2. ET01-99: Black anodized aluminum, end caps for marker and eraser tray.
- E. Paper Rail:
 - 1. APR1: Aluminum Paper Rail.

- F. Map Rail:
 - 1. MAP1: 1 inch Map Rail with tac•wall™ Insert.

2.01 ACCESSORIES

- A. Adhesives: Heavy-duty clear premixed vinyl adhesive or clay based adhesive.
- B. Substrate Primer/Sealer: White pigmented acrylic base primer/sealer specifically formulated for use with vinyl wallcoverings.
- C. Presentation Starter Kits: Provide one Walltalkers starter kit containing eight dry erase markers, two erasers, 10 cleaning towels, and one 8 ounce bottle liquid surface cleaning solution for each room installed with dry erase wallcovering.
 - 1. RSK1: Presentation starter kit for regular dry erase surfaces.
- D. Broad Tip Dry Erase Markers:
 - 1. DEB1-02: Red
 - 2. DEB1-03: Blue
 - 3. DEB1-04: Green
 - 4. DEB1-99: Black
 - 5. DEB4-00: Set of four colors: Red, Blue, Green, Black
- E. Broad Tip Low Odor Dry Erase Markers
 - 1. DEB2-02: Red
 - 2. DEB2-03: Blue
 - 3. DEB2-04: Green
 - 4. DEB2-99: Black
 - 5. DEBB-00: Set of four colors: Red, Blue, Green, Black
- F. Erasers:
 - 1. DEFE: Dry Erase Felt Eraser - Black
- G. Liquid Surface Cleaner
 - 1. RCC8: 8 oz. bottle liquid surface cleaner
 - 2. RCCC: Case (8 – 12 oz. bottles) liquid surface cleaner
 - 3. RCCG: 1-gallon bottle liquid surface cleaner
- H. Cleaning Towels
 - 1. TOWL: Package of 10 cleaning towels
- I. Towelettes
 - 1. DET1: Dry Erase Towelettes

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates and installation conditions to ensure surface conditions meet or exceed a Level 4 finish, GA-214, Recommended Levels of Gypsum Board Finish.

- B. Test substrates with a suitable moisture meter and verify that moisture content does not exceed 4 percent.
- C. Verify substrate surfaces are clean, dry, smooth, structurally sound and free from surface defects and imperfections that would show through the finished surface.
- D. Evaluate all painted surfaces for the possibility of pigment bleed-through.
- E. Notify the contractor and architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- F. Beginning of installation means acceptance of surface conditions.

3.02 INSTALLATION

- A. Acclimate wallcovering in the area of installation a minimum of 24 hours before installation.
- B. Read and follow the instructions in the manufacturer's installation sheet contained in each roll of the dry erase wallcovering.
- C. Examine all materials for pattern, color, quantity and quality as specified for the correct location prior to cutting.
- D. Adhesive: Use heavy-duty pre-mixed strippable clear or clay-based vinyl adhesive, such as: Koroseal A-848-B or other high quality adhesive recommended for fabric backed vinyl wallcovering and approved by manufacturer.
- E. Primer: Use a pigmented primer on deep colored walls and walls with contrasting colors.
- F. F. Install each strip in the same sequence as cut from the roll.
- G. Install dry erase wallcovering panels in exact order as they are cut from bolt. Reverse hang alternate strips. Do not crease or bend the wallcovering when handling.
- H. Install dry erase wallcovering horizontally using a level line. Using level or straight edge, double cut the seam with a new razor or knife.
- I. When covering the entire wall, seam the material out of the main writing and viewing areas of the wall.
- J. Smooth wallcovering to the hanging surface using a wallcovering smoother, wrapped with a soft cloth, to eliminate air bubbles, wrinkles, gaps and overlaps. Do not use sharp edged smoothing tools. Smooth material on the wall from the middle to the outside edge.
- K. K. Remove excess adhesive along finished seams immediately after each wallcovering strip is applied. Clean entire surface with warm, mild soap solution, a natural sponge

and clean towels. Rinse thoroughly with water and let dry before using. Change water often to maintain water cleanliness.

- L. Stop installation of material that is questionable in appearance and notify the manufacturer's representative for an inspection.

3.03 CLEAN-UP

- A. Upon completion of installation, remove all exposed adhesive immediately using a natural sponge and a warm, mild soap solution and rinse thoroughly with water and dry with clean towel prior to using.
- B. Upon completion of the work, remove surplus materials, rubbish and debris resulting from the wallcovering installation. Leave areas in neat clean and orderly condition.

END OF SECTION

**SECTION 31 31 00
SOIL STERILIZATION**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following:
1. Furnishing and installing soil sterilant under all new asphaltic-concrete pavement and crushed stone surfacing (DG).
- B. Related Sections include the following:
1. Section 31 20 00 – Earthwork: Excavation, Filling, and Grading
 2. Section 31 23 00 – Trench Excavation and Backfill
 3. Section 32 11 26 – Aggregate Base Course
- C. Related Documents
1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to the work specified in this section.

1.02 SUBMITTALS

- A. Submit in accordance with Specification Section Submittal Procedures 013300 - Contract General Conditions.
- B. Certificates of application.
- C. Certificates of compliance for material.

1.03 QUALITY ASSURANCE

- A. Provide licensed operator to apply soil sterilant.
- B. All products shall comply with the current EPA laws at time of application. Should the products listed become unavailable because of changes in the law, submit substitute products for review by the Owner.

1.04 STANDARDS

- A. In accordance with the following:
- | | |
|----------------|--|
| CCR-T21
CBC | California Code of Regulations, Title 21 Public Works.
California Building Code, California Code of Regulations, Title 24, Part 2, CCR-T24. |
| USDA
EPA | United States Department of Agriculture.
Environmental Protection Agency. |

SOIL STERILIZATION
31 31 00

All applicable Environmental Regulations and Standards.

1.05 COORDINATION

- A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Soil Sterilant: Alligare SFM 75, weed and grass preventer, or approved equal.

PART 3 - EXECUTION

3.01 Examination

- A. Verify that site is ready for application.

3.02 Preparation

- A. Identify installation locations.
- B. Employ equipment and methods appropriate to the work site.
- C. Provide vehicular and traffic controls per Division 01.

3.03 Application

- A. Thoroughly water soak surface to be treated. Avoid excessive water runoff.
- B. Apply sterilant solution over surface to receive pavement or surfacing prior to the start of pavement or surfacing installation.
- C. Apply in spray form, at rate as allowable by State of California.
- D. Take all precautions to limit soil sterilant solution to areas immediately under proposed pavement or surfacing. Use shields as necessary, and do not apply under windy conditions.

3.04 Field Quality Control

- A. Field inspection will be performed under provisions of Division 01.

END OF SECTION

SOIL STERILIZATION
31 31 00

SECTION 32 15 40**CRUSHED STONE SURFACING****PART 1 - GENERAL**

1.01 DESCRIPTION

- A. Furnish and install decomposed granite surfacing which includes:
1. Sub-grade Preparation
 2. Base Preparation
 3. Edge restraint
 4. Stabilizer
 5. Compaction
 6. Cleanup
- B. Related work:
1. Section 312200: Earthwork
 2. Section 312222: Soil Materials
 3. Section 321216: Soil Sterilization
 4. Section 321126: Aggregate Base
- C. Definitions: The word Architect as used herein shall refer to the Landscape Architect or the Owner's authorized representative.

1.2 SUBMITTALS:

- A. Procedure: Submittals shall be provided in accordance with Division 01 requirements.
- B. Submit aggregate sieve analysis, product specifications and a one pint representative sample of the proposed decomposed granite, with named source.

PART 2 - PRODUCTS

2.1 DECOMPOSED GRANITE

- A. Decomposed granite is referred to by the abbreviation (D.G.), or referred to as disintegrated granite. All decomposed granite for non-vehicular surfaces shall conform to the following grading requirements:

Sieve Designation	% Passing
3/8 inch	100
No. 4	90-100
No. 8	75-80
No. 16	55-65

Sieve Designation	% Passing
No. 30	40-50
No. 50	25-35
No. 100	15-20
No. 200	10-15

CRUSHED STONE SURFACING
32 15 40-1

- B. All decomposed granite for vehicular surfaces shall conform to the following grading requirements:

Sieve Designation	% Passing
1/2 inch	95-100
3/8 inch	90-95
No. 4	65-80
No. 8	43-63
No. 16	40-49

Sieve Designation	% Passing
No. 30	30-40
No. 50	20-27
No. 100	10-18
No. 200	10-12

- C. The portion of D.G retained on the no. 4 sieve shall have a maximum percentage of wear of 50 at 500 revolutions as determined by AASHTO T96.
- D. The portion passing a No. 40 sieve shall have a maximum liquid limit of 25 and maximum plasticity index of 7 as determined by AASHTO T89 and AASHTO T90, respectively.
- E. The sand equivalent shall be in the range of 35-55. The R-value shall be a minimum of 71.
- F. Crushed aggregate screenings shall be free from clay lumps, vegetative matter and deleterious material.
- G. D.G. shall be tan in color.

2.2 SOIL BINDER

- A. Binder shall be a non-toxic, colorless, odorless, organic powder that binds D.G. screenings consisting of 95% Psyllium with a minimum 70% Mucilliod content. The binder shall be "Stabilizer" as manufactured by Stabilizer Solutions Inc., (800) 336-2468, FAX: (602) 225-5902, or equal.

2.3 EDGING

- A. Aluminum edging: 3/16" x 5 1/2", manufactured from 6063 extruded aluminum alloy of T-6 hardness with interlock system and 5 stake punch outs fabricated in each strip. Stakes 12" long, lock 1/2" below top of edging.
1. Finish: Black anodized

PART 3 - EXECUTION

3.1 SUBGRADE AND DECOMPOSED GRANITE PREPARATION AND COMPACTION

- A. Subgrade under all D.G. shall be scarified to a minimum depth of 12", graded and compacted to 92% maximum dry density.

- B. Aggregate base under D.G. surfacing shall be in conformance with Section 321126.
- C. After subgrade preparation or base installation, sterilize base or subgrade receiving D.G. surfacing per Section 321216.
- D. Minimum compaction for pedestrian use D.G. surfaces shall be 85% relative density, and 90% relative density for vehicular use. The Contractor shall provide one compaction test for every 2,000 square feet or fraction thereof.
- E. The finish grade shall be even between the headers with no humps or depressions greater than +/- 0.25" after the compaction.

3.2 SOIL STABILIZER AND DECOMPOSED GRANITE INSTALLATION

- A. Soil stabilizer shall be thoroughly mechanically blended per the manufacturer's recommendations with the D.G. screenings prior to transport to the job site.
 - 1. For vehicular and/or pedestrian use, the stabilizer shall be mixed at a minimum rate of 15 lbs. of Stabilizer product per ton of D.G. aggregate.
 - 2. For tree well use, the stabilizer shall be mixed at a minimum rate of 8 lbs. of Stabilizer product per ton of DG aggregate.
 - 3. Premixed Stabilizer and D.G. material can be obtained locally by contacting the stabilizer manufacturer and obtaining the location of a local vendor.
 - 4. Drop spreading of the Stabilizer product over raked D.G. screenings and mixing stabilizer by rototilling is NOT ACCEPTABLE.
- B. Place the premixed stabilizer product on the pre-soaked subgrade in maximum 2" lifts. Rake smooth to the desired grade and cross slope.
- C. After placement and raking, water the Stabilized D.G. to achieve full depth moisture penetration of the placed product. Apply 25 – 45 gallons per ton to achieve the proper full depth moisture penetration.
- D. After 6 – 72 hours for activation, roll the Stabilized D.G material with a 2 to 5 ton double drum roller to achieve finish grade and initial compaction without separation, plowing or any other physical compromise of the aggregate. Utilize a hand tamp at edges, around benches, and sign posts. Do not use a vibratory plate compactor or vibratory roller to compact the Stabilized D.G.
- E. Finish surface elevation:
 - 1. Compacted finish surface of DG shall be flush with headers, paving, mowstrips and/or curbs, unless otherwise indicated.
 - 2. Compacted finish surface of DG shall be two inches above finish grade in adjacent shrub/ground cover planting areas, unless otherwise indicated.
 - 3. Compacted finish surface of DG shall be one-half inch above finish grade in adjacent sodded turfgrass planting areas, unless otherwise indicated.
 - 4. Compacted finish surface of DG shall be flush to finish grade in adjacent seeded or sprigged turfgrass planting areas, unless otherwise indicated.

- F. Lightly spray the surface after compaction operations. Allow the finished surface sufficient time to dry prior to use.
- G. Finished surface shall be smooth, uniform and solid with no evidence of chipping or cracking. Cured and compacted pathway shall be firm throughout profile with no spongy areas. Loose material shall not be present on surface after installation, but may appear after use and according to environmental conditions. Pathway shall remain stable underneath loose granite on top with a "natural" look. Any significant irregularities in path surface shall be repaired to the uniformity of entire installation.

3.3 CLEANUP

- A. After all stabilization operations are completed, remove trash, excess materials, empty containers and rubbish from the property. All scars, ruts or other marks in the ground caused by this work shall be repaired and the ground left in a smooth condition throughout the site.
- B. The D.G. surface shall be dragged and a final dressing performed within 48 hours prior to final acceptance.

END OF SECTION

SECTION 32 31 00**Ornamental FENCING****PART 1 - GENERAL**

1.01 WORK INCLUDED

- A. The contractor shall provide all labor, materials and other items necessary for installation of the industrial ornamental steel fence system defined herein.

1.02 SYSTEM DESCRIPTION

- A. The manufacturer shall supply a total ornamental fence system and shall include all components (i.e., pickets, rails, posts, gates and hardware) required.

1.03 QUALITY ASSURANCE

- A. The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.04 REFERENCES

- A. ASTM A653/A653M - Standard Specifications for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus.
- C. ASTM D523 - Test Method for Specular Gloss
- D. ASTM D822 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame carbon-Arc Light and Water Exposure Apparatus.
- E. ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- F. ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- G. ASTM D2794 - Test Method for Resistance of Organic Coatings to The Effects of Rapid Deformation (Impact).
- H. ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.

1.06 SUBMITTAL

- A. The manufacturer's literature shall be submitted prior to installation.

1.07 PRODUCT HANDLING AND STORAGE

- A. Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

PART 2 - PRODUCTS

2.01 BASIS OF DESIGN

- A. Obtain fencing and gates, including accessories, fittings, and fastenings, from a single source. The fence system shall conform to the Montage Plus™ Welded Ornamental Steel 2-Rail Genesis™ design. With standard picket spacing, extended picket bottom rail treatment and rigid weld treatment. The system shall include all components (i.e., pickets, rails, posts, gates and hardware) required.

Approved Supplier:

1. Master Halco, Inc.
4000 W. Metropolitan Drive, Suite 400
Orange, CA 92868
Phone (800) 229-5615 Fax (714) 385-0107
2. Merchants Metals
400 N. Sam Houston Pkwy. E. #1200
Houston, TX 77060
Phone (866) 888-5611 Fax (281) 372-3801

2.02 MATERIAL

- A. Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M, with a minimum yield strength of 50,000 psi (344 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.90 oz/ft² (276 g/m²), Coating Designation G-90.
- B. Material for fence pickets shall be 3/4" square x 16 Ga. tubing. The rails shall be steel channel profile, 1.5" x 1.4375" x 14 Ga. Picket holes in the rail shall be spaced 4.334" o.c. Posts shall be a minimum of 2-1/2" square x 16 Ga. 12 Ga. posts may be used for heavy applications.

2.03 FABRICATION

- A. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.
- B. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. The aligned pickets and rails shall be joined at each picket-to-rail intersection by a proprietary fusion welding process, thus completing the rigid panel assembly (Note: The process produces a virtually seamless, spatter-free good-neighbor appearance, equally attractive from either side of the panel.).
- C. The manufactured panels and posts shall be subjected to the AmeriCoat™ inline electrodeposition coating process consisting of a multi-stage pre-treatment/wash (with zinc phosphate), followed by a duplex cathodic electrocoat application of an epoxy primer followed by an acrylic topcoat. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils (0.058 mm). The color shall be Black. The coated panels and posts shall be capable of meeting the performance requirements for each quality characteristic shown in Table 1.
- D. Gates shall be fabricated using welded ornamental panel material and gate ends having a 1-3/4” square cross-sectional size. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

PART 3 - EXECUTION

3.01 PREPARATION

- A. All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION

- A. Fence posts shall be set according to manufacturers recommendations. Fence panels shall be attached to posts with boulevard brackets supplied by the manufacturer. Gate posts shall be spaced according to the gate openings specified in the construction plans.

3.03 CLEANING

- A. The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

Table 1 – Coating Performance Requirements

Quality Characteristics	ASTM Test Method	Performance Requirements
-------------------------	------------------	--------------------------

Adhesion	D3359 – Method B	Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).
Corrosion Resistance	B117 & D1654	Corrosion Resistance over 3,500 hours (Scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters).
Impact Resistance	D2794	Impact Resistance over 60 inch lb. (Forward impact using 0.625" ball).
Weathering Resistance	D822, D2244, D523 (60° Method)	Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).

END OF SECTION

SECTION 32 31 13
CHAIN LINK FENCING

GENERAL

1.01 SUMMARY

A. Section Includes

1. Provisions of constructing chain link fence at locations shown on the Construction Documents, including but not limited to:
 - a. Site chain link fencing and gates.

B. RELATED SECTIONS

1. Contract General Conditions and Division 01 Specifications.
2. Section 31 20 00 – Earthwork: Excavation, Filling, and Grading
3. Section 32 13 13 – Site Concrete Improvements.

1.02 QUALITY ASSURANCE

A. Qualifications of Installer

1. Throughout the progress of installation of the work of this Section, provide at least one person who shall be thoroughly familiar with the specified requirements, completely trained and experienced in the necessary skills, and who shall be present at the site and shall direct all work performed under this Section.
2. In actual installation of the work of this Section, use adequate numbers of skilled workmen to insure installation in strict accordance with the contract documents.
3. In acceptance or rejection of work performed under this Section, the Engineer will make no allowance for lack of skill on the part of the workmen.

1.03 PRODUCT HANDLING

A. Protection

1. Use all means necessary to protect the materials of this Section before, during and after installation, and to protect the work of other trades.

B. Replacements

1. In the event of damage, immediately make all repairs and replacements necessary to the satisfaction of the Engineer and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. The materials and fabrication of chain link fabric shall conform to these specifications, and as shown on the plans and details.
- B. All ferrous materials shall be new and galvanized. Imperfectly galvanized material or material upon which serious abrasions of the galvanizing occur shall not be used.
- C. Height - all fencing shall stand at the heights shown on the plans.
- D. Fabric
 - 1. Chain link fabric shall conform to the specifications of ASTM, designation: A392, Class 1
 - a. The wire used in the manufacture of the fabric shall be 9-gauge. All chain link fabric shall be woven to receive privacy slats as specified. Fabric shall be furnished with knuckling at all selvages. The knuckled selvage shall be used along all corners and edges. Fabric shall be GBW, galvanized before weaving.
 - 2. Privacy Screening shall consist of pre-inserted vinyl slats woven in chain link mesh, Merchant Metals Priva-Max 95% Privacy Screening, or approved equal. Color samples to be submitted to architect and owner for final approval.
- E. Posts, braces and gate frames
 - 1. The base material for the manufacture of steel pipe used for posts and braces shall conform to the specifications of ASTM, designation: A53, standard weight, Schedule 40, and the base material for the manufacture of other steel sections used for posts and braces shall be good commercial quality weldable steel.
 - 2. All posts, braces and gate frames shall conform to the size and weight designations shown on the plans.
 - 3. All posts shall be fitted with rainproof caps designed so as to fit securely over the top of the posts.
 - 4. All posts shall be of a total length of not less than the depth of the concrete footing as shown on the plans, plus the length required above ground.
 - 5. Posts and braces shall be galvanized in accordance with specifications of ASTM, designation: A123.
 - 6. All horizontal braces shall be attached to posts by approved steel fixtures.
- F. Stretcher bars and other required fittings and hardware shall be steel and shall be galvanized in accordance with the specifications of ASTM, designation: A153.
- G. All swinging gates and walk gates to be installed with a gate holdback in the concrete mowstrip, unless otherwise noted.

- H. Concrete mowstrip shall be in accordance with Section 32 13 13 SITE CONCRETE IMPROVEMENTS.
- I. Walk gates shall be constructed as per detailed drawings and in accordance with CBC sections 11B-206.5 and 11B-404.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All posts shall be set in concrete footings as shown on the plans to within 3 inches of bottom.
- B. All vertical line and end posts shall be braced to the nearest adjacent vertical post with galvanized horizontal braces as shown on the plans.
- C. Welding
 - 1. All welding shall conform to the requirements of the California Building Code, current edition.
 - 2. Where the galvanized surface has been burned by welding, all surfaces of the welded connections shall be thoroughly cleaned by wire brushing and all traces of the welding flux and loose or cracked galvanizing removed. The damaged area and weld shall then be painted in accordance with the following details.
 - a. All galvanized, welded, or damaged surfaces that are to be painted shall first be cleaned by washing with mineral spirit solvent sufficient to remove any oil, grease or other materials foreign to the galvanized coating.
 - b. After washing, all areas shall be roughened by abrasive blasting using an abrasive that is no larger than 30-mesh. Galvanizing shall not be removed by this operation.
 - c. After preparation, all galvanized surfaces that are to be painted shall be covered with one application of zinc dust-zinc oxide primer, federal specification TT-P-641, Type II. The zinc dust-zinc oxide paint shall be applied by spraying to produce a complete covering of the galvanized surface.
 - d. After the application of the zinc dust-zinc oxide paint, one application of pre-treatment, vinyl wash primer, Section 91-2.7 of the state Standard Specifications, shall be applied to such surfaces. The vinyl wash primer shall be applied by spraying to produce a uniform wet film on the surface.
 - e. Such surfaces shall then be covered with two separate applications of white tint base vinyl finish coat, Section 91-2.22 of the state standard specifications, sufficient to completely cover the preceding color. Paint for the first application shall be tinted with a compatible coloring agent to slightly contrast with the color of the second application. After drying for 24 hours, one application of aluminum paint, finish coat, Section 91-2.8 of the state standard specifications, shall be painted on the welded areas.
- D. Perimeter fencing chain link fabric shall be fastened to the outside of the fence.

- E. All fabric shall be stretched and securely fastened to the posts, as follows:
- F. The fabric shall be fastened to end, corner and gate posts with 3/16 inch by 5/8 inch stretcher bars and not less than 1/8 inch by 3/4 inch stretcher bar bands spaced at one foot intervals for whatever widths of fabric are supplied. The fabric shall be fastened to line posts with tie wires or post clips. Tie wires shall be at least 9-gauge (0.148 inch diameter) steel. Post clips shall be at least 6-gauge (0.192 inch diameter) steel. The wire or clip fasteners shall be spaced at approximately 14 inches on line posts, with a minimum of 5 fasteners per 6 foot high post. Top and bottom edges of the fabric shall be secured to each horizontal brace with tie wires or fastened to tension wire with hog rings spaced at 15 inch maximum intervals. Hog rings shall be at least 9-gauge (0.148 inch diameter) steel. Wire ties shall be given at least one complete turn. Hog rings shall be closed with ends overlapping. The distance from the selvage to the braces or top rails shall be 2 inch maximum and shall be fastened to the brace or rail by wire fasteners spaced at approximately 14 inches with a minimum of 8 fasteners per each 10 foot horizontal span.
- G. Construct concrete mowstrip at the width as shown on the plans.

END OF SECTION

SECTION 23 00 01**HEATING, VENTILATING AND AIR CONDITIONING****PART 1: - GENERAL**

1.01 GENERAL MECHANICAL PROVISIONS:

- A. The General Mechanical Provisions, Section 23 00 00, shall form a part of this Section with the same force and effect as though repeated here.

1.02 SCOPE:

- A. Included: Provide all labor, materials and services necessary for complete, lawful and operating systems as shown or noted on the drawings or as specified here. The work includes, but is not necessarily limited to, the following:
1. Air distribution system.
 2. All equipment as shown or noted on the drawings or as specified. Furnish motor starters except where motor control centers are used. Coordinate with Division 26.
 3. System energy balance.
 4. Coordinate with Section 23 09 23 (Direct digital control and energy management system, DDC/EMS) regarding location and installation of system sensors and to provide simultaneous start-up.
 5. Refrigeration system.
 6. Demolition as indicated on drawings. Where demolition is called for, remove all equipment, piping, ductwork, braces, supports, housekeeping pads, temperature controls and related items no longer required.
- B. Work Specified Elsewhere:
1. Line voltage power wiring, motor starters in motor control centers, disconnect switches and installation of all starters are included in the Electrical Section, unless otherwise noted.
 2. Connection of gas and condensate drains to equipment.
 3. Concrete and reinforcing steel unless specifically called for in the drawings or specifications.
 4. Painting unless specifically called for in the drawings or specifications.
 5. Carpentry.
 6. Direct Digital Control and Energy Management System (DDC/EMS).

PART 2: - PRODUCTS

2.01 PIPING MATERIALS:

- A. Refrigerant Piping: Hard drawn Type ACR copper, dried and capped. Wrought copper fittings, silver alloy brazed, 1100°F, Silfos. Size 3/8" and smaller may be refrigerant tube, ASTM B280.
- B. Miscellaneous Piping Items:
1. Pipe Support:

- a. Pipe Hanger: Steel "J" hanger with side bolt. Load and jam nuts. Size and maximum load per manufacturer's recommendations. Felt liner for copper piping. Hanger and rod shall have galvanized finish. B-Line, Anvil, Unistrut.
 - b. Isolating Shield: Galvanized steel shell and reinforcing ribs. 1/4" non-conducting hair felt pad. Pipe hanger in accordance with paragraph above. Increase hanger size per manufacturer's recommendation. B-Line, Semco.
 - c. Construction Channel: 12-gage, 1-5/8" x 1-5/8" galvanized steel channel. Single or multiple section. Self-locking nuts and fittings. B-Line, Anvil, Unistrut.
2. Flashing: Flashing for piping through roof shall be prefabricated galvanized steel roof jacks with 16" square flange around pipe. Provide clamp-on storm collar and seal water tight with mastic. Maintain dielectric separation between copper and galvanized materials. For cold process built-up roof, material shall be 4 lb/ft² lead instead of galvanized steel. For single-ply roofing, use the roofing manufacturer's recommended flashing material.

2.02 PIPING INSULATION MATERIALS:

- A. General: All piping insulation materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL 723 not exceeding a flame spread of 25 and smoke developed of 50.
- B. PVC Jacket (for pipe, fittings and valves): Pre-molded polyvinyl chloride (PVC) jackets, 0.020" thickness. Size to match application. Provide solvent weld adhesive and PVC vapor barrier pressure sealing tape by same manufacturer. Zeston.
- C. Aluminum Jacketing: Aluminum pipe and fitting jacketing, 0.016" thickness for straight pipe. 0.024" thickness for fittings. Integral moisture barrier. Stucco-Embossed finish. Provide pre fabricated aluminum strapping and seals by same manufacturer. ITW or RPR.
- D. Metal Jacketing Sealant: Childers CP-76, Foster 95-44.
- E. Foamed Plastic: Rubber based elastomeric preformed pipe insulation. Thermal conductivity shall not exceed 0.27 Btu-in/hr-ft²-°F at a mean temperature of 70°F. 1/2" thick. Provide adhesive by same manufacturer. Armacell Armaflex.

2.03 DUCTWORK MATERIALS:

- A. General: All ductwork materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL 723 not exceeding a flame spread of 25 and smoke developed of 50. Shall comply with 2019 CMC.
- B. Metal Ductwork: Metal ductwork shall be galvanized sheet steel, lock forming quality, ASTM A-653, with gage and construction to match SMACNA Standard for pressure required (26 gage minimum).
- C. Flexible Ductwork: Insulated flexible ductwork. One pound per cubic foot glass fiber insulation, 1-1/2" thick (R-6), 2" thick (R-8) where ductwork is outside the

building thermal insulation envelope. Thermal conductivity shall not exceed 0.25 Btu-in/hr-ft²-°F at a mean temperature of 75°F. Seamless metalized reinforced polyester vapor barrier jacket. Continuous internal liner bonded to galvanized steel wire helix. Duct shall be capable of continuous operation at 1-1/2" of positive water static pressure and 4,000 ft/min air velocity. Duct shall be capable of continuous operation at 1-1/2" of positive water static pressure and 4,000 ft/min air velocity. Steel connection collars. Duct shall comply with NFPA 90A. JP Lamborn.

- D. Duct Sealants: All Joints Exposed to Weather: Sealant shall be G.E. "Silglaze II" or Silimax Multipurpose Silicone Sealant, without substitution. Joints Not Exposed to Weather: Fiber reinforced. White in color. Design Polymerics DP1030, Hardcast Versa-Grip 181, Hardcast CCWI-181. Joints Not Exposed to Weather and Exposed to View in Finished Areas: Non fibrated. Gray in color. Foster 32-19, Childers CP-146, Design Polymerics DP 1010, or United Duct Sealer WB.

2.04 AIR TERMINALS AND DUCT FITTINGS:

- A. Grilles: (Grilles, Registers, Diffusers and Louvers)
1. Information on Drawings: Refer to Grille Schedule on the drawings for the list of grilles. Manufacturer's model numbers are listed to complete the description Titus. Equivalent models of Anemostat or Krueger are acceptable. Refer to the floor plans for neck size, CFM, air diffusion pattern and fire damper, if required.
 2. Performance: Submit complete performance data (throw, pressure drop, noise level, etc.) for all grilles proposed, other than those scheduled. Testing shall be in accordance with ANSI/ASHRAE 70-1991. If, according to the certified data of the manufacturer of the proposed units, the sizes indicated on the drawings will not perform satisfactorily, the units shall be reselected by the Contractor for the proper diffusion, spread, pressure drop, throw and noise level.
 3. Frame and Accessories: All supply, return, and exhaust grilles shall not have an opposed blade volume control damper unless otherwise noted. All surface mounted grilles shall have a perimeter gasket and flanged edge. All grilles shall have frames suitable for mounting in the surfaces designated by the architectural drawings. Key or screwdriver operated, no slide bars.
 4. Finish: All ceiling and wall grilles and all louvers shall have a paintable white finish unless otherwise noted. Interior components (everything behind the face plate) shall be flat black. Floor grilles shall have an anodized aluminum finish unless otherwise noted.
- B. Branch Duct Volume Damper: Volume control damper (VCD) in rectangular ducts shall be as follows: Opposed blade, 6" maximum blade width, 16-gage blade, 48" maximum length, nylon or oil impregnated bronze bearings, 1/2" diameter pin shaft, 16-gage channel frame, actuating rod and linkage out of air stream. VCD in round duct shall be as follows: Damper blade full height of branch and 1" less than branch width. All branch dampers shall have regulator with stamped steel handle, spring loaded shaft nut, cast body and serrated self-locking die cast core. Regulator for horizontal ducts overhead shall be mounted on sides or bottom of ducts. Secure a 12" length of brightly colored plastic ribbon to handle for ease of

location. Where rectangular or round ductwork is insulated, slit insulation to allow handle to protrude. Ventlok 641 (with 607 end bearing for round ducts).

- C. Extractor: Curved blade turns in adjustable position rigid frame. Tuttle and Bailey Deflectrol.
- D. Turning Vanes: Double wall, hollow metal, air foil shape. Spacing in accordance with manufacturer's recommendations. Aero Dyne HEP.
- E. Flexible Connection: UL listed neoprene coated 30 ounce fiberglass cloth. 3" metal, 3" fabric, 3" metal. Ventglas.

2.05 DUCTWORK INSULATION MATERIALS:

- A. General: All ductwork insulation materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL 723 not exceeding a flame spread of 25 and smoke developed of 50.
- B. Fiberglass Blanket: **Installed** thermal resistance at a mean temperature of 75°F shall not exceed indicated value. 3/4 lb/ft³ or 1 lb/ft³, **R-6** where ductwork is within the building thermal insulation envelope. 3/4 lb/ft³ **R-8** where ductwork is outside the building thermal insulation envelope and/or above the roof. Faced with glass reinforced foil laminated to Kraft paper. Certainteed, Knauf, Johns-Manville, Owens-Corning.
- C. Acoustic Lining: Glass fiber. **Installed** thermal resistance at a mean temperature of 75°F shall meet or exceed indicated value. One side coated to prevent fiber erosion up to 6000 ft/min. Average noise reduction coefficient of 0.80. 1.5 lb/ft³ density. 1" thick (**R-4.2**) where ductwork is within the building thermal insulation envelope. 2" thick (**R-8**) where ductwork is outside the building thermal insulation envelope and/or above the roof. Certainteed, Knauf, Johns-Manville, Owens-Corning.
- D. Bonding Adhesive: Design Polymerics DP2501, Foster 85-60.

2.06 EQUIPMENT:

- A. General Requirements:
 - 1. Capacity: Capacities shall be in accordance with schedules shown on drawings. Capacities are to be considered minimum.
 - 2. Dimensions: Equipment must conform to space requirements and limitations as indicated on drawings and as required for operation and maintenance. Where Architectural screening is indicated, equipment shall not extend above or beyond screening. Equipment will not be accepted that does not readily conform to space conditions. Prepare and submit layout drawings for all proposed equipment (different than scheduled units) showing actual job conditions, required clearances for proper operation, maintenance, etc.
 - 3. Ratings:

- a. Gas: Gas burning equipment shall be furnished with 100% safety gas shut-off, intermittent pilot ignition, and be CSA (US) certified, except that boilers shall be CSA (US) certified or UL listed.
 - b. Electrical: Electrical equipment shall be in accordance with NEMA Standards and UL or ETL listed where applicable standards have been established.
4. Piping: Each item or assembly of items shall be furnished completely piped for connection to services. Control valves and devices shall be provided. Equipment requiring domestic water for non-potable use shall be provided with backflow preventer acceptable for intended use by local governing authorities.
5. Electrical:
- a. General: Each item or assembly of items shall be furnished completely wired to individual terminal blocks for connection to single branch electrical circuit. All electrical accessories and controls required by equipment shall be furnished. Provide terminal blocks for controls and interlocks not included in equipment package. Manual and magnetic starters shall have ambient compensating running overcurrent protection in all ungrounded conductors. Magnetic starters shall be manual reset, shall have H-O-A switches and auxiliary contacts. Controllers and other devices shall be in NEMA 1 or 3R enclosures as applicable.
 - b. Wiring: Conductors, conduit, and wiring shall be in accordance with Electrical Specifications. Individual items within assembly shall be separately protected with dead front, fused disconnect, fuse block, or circuit breaker for each ungrounded conductor, all accessible on operating side of equipment. Switches, contacts and other devices shall be in ungrounded conductors.
 - c. Motors: Shall be rated, constructed and applied in accordance with NEMA and ANSI Standards without using service factor. Single-phase motor shall be of type to suit application. Three-phase motors shall be open drip proof, NEMA B design on pumps and fans, NEMA C on reciprocating equipment, sealed ball bearing, three-phase induction unless otherwise noted. Design shall limit starting inrush current and running current to values shown on drawings. Motors 1 horsepower and larger shall be the premium efficiency type, tested according to IEEE Standard 112, Method B. Motors exposed to weather shall be TEFC. Motors in a fan air stream shall be TEFC or TEAO. Vertical motors outdoors shall be ODP or TEFC and shall have rain caps.
 - d. Starters: Motor starters shall be furnished for all equipment except where starter is in a motor control center as designated on the electrical drawings. Deliver starter to Electrical Contractor for installation and wiring.
 - e. Control Voltage: Equipment connected to greater than 240 volts shall be provided with 120 volt control circuit from integral protected transformer if separate source is not indicated on plans. 240 volt control is acceptable if confined within control panel.
 - f. Submittals: Included in shop drawings shall be internal wiring diagrams and manufacturer's recommended external wiring.

6. Fan Selection - Static Pressure: Unless otherwise noted, pressure scheduled as external static pressure (ESP) includes all ductwork and accessory losses external to the unit housing. Unless otherwise noted, pressure scheduled as total static pressure includes all ductwork, filter, coil, cabinet, damper and other accessory losses. Unless otherwise noted, pressure scheduled as duct static pressure includes all supply and return ductwork and accessory losses external to the unit housing and plenum (as applicable). The allowance for filter losses is 0.3" WC, unless otherwise noted. Submit itemized static pressure losses for all components.
 7. Filters:
 - a. General: Tested and rated in accordance with ASHRAE Standard 52.2 and Title 24, C.C.R. Furnish and install one complete change of all filters after air balance is completed and prior to acceptance.
 - b. Filter Media: 2" media. MERV-13. Clean filter resistance 0.41" water at 500 fpm. Throw-away frame. Class 2. Camfil AP-Thirteen.
 8. Screens: All duct or louver openings to the outside shall be covered with 1/2", 16-gage, galvanized wire mesh screen.
 9. Mixing Dampers: Opposed blade, 16-gage. Six-inch maximum blade width, 48" maximum length. Nylon or oil impregnated bronze bearings. One-half inch diameter pin shaft. 16-gage channel frame. One percent maximum leakage at 4" WC in accordance with AMCA 500 for outside air dampers. Actuating rod out of air stream. Arrow.
 10. Sound Ratings: Shall be in accordance with ASHRAE 36 - 72. Sound ratings shall not exceed scheduled values.
 11. Drives: Unless noted as direct connected, drives shall be V-belt, rated at 150% of motor horsepower. Multiple drive belts shall be matched set. Drive sheaves shall be dynamically balanced, adjustable, range +/- 10%, selected at mid range. Adjustable relative movement shall be lockable to shaft. Belts shall be aligned within 1-1/2 degrees at all times. Open drives shall be provided with OSHA approved open mesh belt guards. Belt guards exposed to weather shall be weatherproof enclosure with louvered face for adequate ventilation. Driving motor shall be mounted on adjustable rails. T.B. Woods, Browning. Submit RPM range of driven machine with drive selection.
- B. Air Conditioning Unit:
1. General: Self-contained heating/cooling unit designed for outdoor installation. Factory assembled and tested. Refer to Paragraph 2.06A for general requirements. Provide all starters and relays required for operation. 24-volt control circuit from integral transformer. Weatherproof cabinet, galvanized steel with enamel finish. Outside air inlet. Drain pan. Multivane centrifugal supply fan. ARI certified. Gas equipment AGA certified. Trane or District approved equivalent.
 2. Refrigeration: Sealed hermetic compressor with internal vibration isolating mount. Crankcase heater, high/low pressure switch, recycling timer. Air-cooled condenser with propeller fan. Non-ferrous finned coil. Low ambient control to 45°F. Single phase units shall have compressor start assist kit. 5-year extended warranty on compressor(s).
 3. Heat: Natural gas fired. Low NOx. Aluminized or ceramic coated welded steel heat exchanger. Electric ignition. Automatic gas valve. Fan and limit controls.

- C. Exhaust Fan:
1. General: All exhaust fans shall be tested and rated in accordance with AMCA Standard 210. Fans exposed to weather shall have ventilated weatherproof housing over motor and drive assembly. Refer to Paragraph 2.06A for general requirements. All direct drive fans shall be provided with unit mounted speed controllers. All exhaust fans shall have a disconnect switch. All motors 1 horsepower and larger shall be the premium efficiency type.
 2. Roof Fan: Spun aluminum, roof mounted, direct driven, downblast centrifugal exhaust ventilator. Fan shall be of bolted and welded construction utilizing corrosion resistant fasteners and stainless-steel fasteners on cap. Spun aluminum structural components shall be constructed of minimum 16-gauge marine alloy aluminum, bolted to a rigid aluminum support structure. Aluminum base shall have continuously welded curb cap corners for maximum leak protection. Discharge baffle shall have a rolled bead for added strength. An integral conduit chase shall be provided through the curb cap and into the motor compartment to facilitate wiring connections. Motor shall be enclosed in a weather-tight compartment, separated from the exhaust airstream. Unit shall bear an engraved aluminum nameplate. Wheel shall be centrifugal backward inclined, constructed of 100% aluminum, including a precision machined cast aluminum hub. An aerodynamic aluminum inlet cone shall be provided for maximum performance and efficiency. Motor shall be heavy duty type with permanently lubricated sealed bearings and furnished at the specified voltage, phase and enclosure. Backdraft damper. Cook or District approved equivalent.
- D. Indoor / Outdoor Unit (IDU-8,9, ODU-2,3):
1. General: Refer to Paragraph 2.06A for General Requirements. Completely assembled and factory tested. Provide all starters and relays required for operation. All components by same manufacturer. Mitsubishi.
 2. Outdoor Unit:
 - a. Compressor: Sealed hermetic rotary compressor with vibration isolator mountings. Crankcase heater, suction line accumulator, recycling timer. High and low head pressure/temperature protection. Motor overload protection, low ambient feature to 20F cooling mode. High and low side service valves. Recycling timer. Single phase start assist kit. 5-year extended warranty.
 - b. Fan and Coil: Finned tube non-ferrous coil. Propeller type fan, 1200 RPM maximum, direct drive. Totally enclosed motor, overload protected, permanently lubricated, resiliently mounted.
 - c. Cabinet: Weatherproof, factory paint.
 3. Indoor Unit:
 - a. Supply Fan: Direct drive, multi-speed forward curve, centrifugal fan, resiliently mounted. Thermally protected motor.
 - b. Indoor Coil: Copper tube, aluminum fin, DX coil.
 - c. Condensate Pan: Install under complete coil area with drain connections.
 - d. Filter: Washable media. Class 2 or better.

4. Controls: Microprocessor control containing temperature selection, room temperature indication, malfunction alarm, power failure automatic restart safety, and emergency operation function. Provide optional remote start/stop.
- E. Variable Refrigerant Volume System:
1. General: Variable capacity, heat pump heat recovery air conditioning system providing simultaneous cooling and heating. Refer to Paragraph 2.06A for general requirements. The R2-Series system shall consist of a PURY outdoor unit, Branch Circuit Controller, multiple indoor units (-E models), and M-NET DDC (Direct Digital Controls). Each indoor unit or group of indoor units shall be capable of operating in any mode independently of other indoor units or groups. System shall be capable of changing mode (cooling to heating, heating to cooling) with no interruption to system operation. Each indoor unit or group of indoor units shall be independently controlled. The sum of connected capacity of all indoor air handlers shall range from 50% to 150% of outdoor rated capacity. The units shall be listed by Electrical Laboratories (ETL) and bear the ETL label. A full charge of R-410A for the condensing unit only shall be provided in the condensing unit. The units shall be covered by the manufacturer's limited warranty for a period of one (1) year from date of installation. In addition the compressor shall have a manufacturer's limited warranty for a period of seven (7) years from date of installation. The mandatory contractor service and install training shall be performed by the manufacturer. Mitsubishi Electric CITY MULTI VRFZ (Variable Refrigerant Flow Zoning). Provide BACnet interface controller to interface with DDC/EMS.
 2. Outdoor Units (ODU-1):
 - a. General: The R2-Series PURY outdoor unit shall be used specifically with CITY MULTI VRFZ components. The PURY outdoor units shall be equipped with multiple circuit boards that interface to the M-NET controls system and shall perform all functions necessary for operation. Each outdoor unit module shall be completely factory assembled, piped and wired and run tested at the factory.
 - (1) All units requiring a factory supplied twinning kits shall be piped together in the field, without the need for equalizing line(s). If an alternate manufacturer is selected, any additional material, cost, and labor to install additional lines shall be incurred by the contractor.
 - (2) Outdoor unit shall have a sound rating no higher than 60 dB(A) individually or 64 dB(A) twinned. Units shall have a sound rating no higher than 50 dB(A) individually or 53 dB(A) twinned while in night mode operation. If an alternate manufacturer is selected, any additional material, cost, and labor to meet published sound levels shall be incurred by the contractor.
 - (3) Both refrigerant lines from the outdoor unit to the BC (Branch Circuit) Controller (Single or Main) shall be insulated.
 - (4) There shall be no more than 3 branch circuit controllers connected to any one outdoor unit.

- (5) Outdoor unit shall be able to connect to up to 50 indoor units depending upon model.
 - (6) The outdoor unit shall have an accumulator with refrigerant level sensors and controls.
 - (7) The outdoor unit shall have a high pressure safety switch, over-current protection, crankcase heater and DC bus protection.
 - (8) The outdoor unit shall have the ability to operate with a maximum height difference of 164 feet and have total refrigerant tubing length of 1804-2625 feet. The greatest length is not to exceed 541 feet between outdoor unit and the indoor units without the need for line size changes or traps.
 - (9) The outdoor unit shall be capable of operating in heating mode down to -4°F ambient temperature or cooling mode down to 23°F ambient temperature, without additional low ambient controls. If an alternate manufacturer is selected, any additional material, cost, and labor to meet low ambient operating condition and performance shall be incurred by the contractor.
 - (10) The outdoor unit shall be capable of operating in cooling mode down to -10°F with optional manufacturer supplied low ambient kit.
 - (11) Manufacturer supplied low ambient kit shall be provided with predesigned control box rated for outdoor installation and capable of controlling kit operation automatically in all outdoor unit operation modes.
 - (12) Manufacturer supplied low ambient kit shall be listed by Electrical Laboratories (ETL) and bear the ETL label.
 - (13) Manufacturer supplied low ambient kit shall be factory tested in low ambient temperature chamber to ensure operation. Factory performance testing data shall be available when requested.
 - (14) The outdoor unit shall not cease operation in any mode based solely on outdoor ambient temperature.
 - (15) The outdoor unit shall have a high efficiency oil separator plus additional logic controls to ensure adequate oil volume in the compressor is maintained.
 - (16) Unit must defrost all circuits simultaneously in order to resume full heating more quickly. Partial defrost which may extend “no or reduced heating” periods shall not be allowed.
- b. Unit Cabinet: The casing(s) shall be fabricated of galvanized steel, bonderized and finished. Units cabinets shall be able to withstand 960 hours per ASTM B117 criteria for seacoast protected models (-BS models)
- c. Fan:
- (1) Each outdoor unit module shall be furnished with one direct drive, variable speed propeller type fan. The fan shall be factory set for operation under 0 in. WG external static pressure, but capable of normal operation under a

- maximum of 0.24 in. WG external static pressure via dipswitch.
- (2) All fan motors shall have inherent protection, have permanently lubricated bearings, and be completely variable speed.
 - (3) All fan motors shall be mounted for quiet operation.
 - (4) All fans shall be provided with a raised guard to prevent contact with moving parts.
 - (5) The outdoor unit shall have vertical discharge airflow.
- d. Refrigerant: R410A refrigerant shall be required for outdoor unit systems.
- e. Coil:
- (1) The outdoor coil shall be of nonferrous construction with lanced or corrugated plate fins on copper tubing.
 - (2) The coil fins shall have a factory applied corrosion resistant blue-fin finish.
 - (3) The coil shall be protected with an integral metal guard.
 - (4) Refrigerant flow from the outdoor unit shall be controlled by means of an inverter driven compressor.
 - (5) The outdoor coil shall include 4 circuits with two position valves for each circuit, except for the last stage.
- f. Compressor:
- (1) Each outdoor unit module shall be equipped with one inverter driven scroll hermetic compressor. Non inverter-driven compressors shall not be allowed.
 - (2) A crankcase heater(s) shall be factory mounted on the compressor(s).
 - (3) The outdoor unit compressor shall have an inverter to modulate capacity. The capacity shall be completely variable with a turndown of 19%-5% of rated capacity, depending upon unit size.
 - (4) The compressor will be equipped with an internal thermal overload.
 - (5) The compressor shall be mounted to avoid the transmission of vibration.
 - (6) Field-installed oil equalization lines between modules are not allowed. Prior to bidding, manufacturers requiring equalization must submit oil line sizing calculations specific to each system and module placement for this project.
- g. Electrical:
- (1) The outdoor unit electrical power shall be 208/230 or 460 volts, 3-phase, 60 hertz.
 - (2) The outdoor unit shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz), 207-253V (230V/60Hz) or 414-506V (460V/60Hz).
 - (3) The outdoor unit shall be controlled by integral microprocessors.
 - (4) The control circuit between the indoor units, BC Controller and the outdoor unit shall be 24VDC completed using a 2-conductor, twisted pair shielded cable to provide total integration of the system.

3. Branch Controller (BC):
 - a. General: The BC (Branch Circuit) Controllers shall be specifically used with R410A R2-Series systems. These units shall be equipped with a circuit board that interfaces to the M-NET controls system and shall perform all functions necessary for operation. The unit shall have a galvanized steel finish. The BC Controller shall be completely factory assembled, piped and wired. Each unit shall be run tested at the factory. This unit shall be mounted indoors, with access and service clearance provided for each controller. The sum of connected capacity of all indoor air handlers shall range from 50% to 150% of rated capacity.
 - b. BC Unit Cabinet:
 - (1) The casing shall be fabricated of galvanized steel.
 - (2) Each cabinet shall house a liquid-gas separator and multiple refrigeration control valves.
 - (3) The unit shall house two tube-in-tube heat exchangers.
 - c. Refrigerant: R410A refrigerant shall be required.
 - d. Refrigerant Valves:
 - (1) The unit shall be furnished with multiple branch circuits which can individually accommodate up to 54,000 BTUH and up to three indoor units. Branches may be twinned to allow more than 54,000 BTUH.
 - (2) Each branch shall have multiple two-position valves to control refrigerant flow.
 - (3) Service shut-off valves shall be field-provided/installed for each branch to allow service to any indoor unit without field interruption to overall system operation.
 - (4) Linear electronic expansion valves shall be used to control the variable refrigerant flow.
 - e. Integral Drain Pan: An integral condensate pan and drain shall be provided.
 - f. Electrical:
 - (1) The unit electrical power shall be 208/230 volts, 1 phase, 60 hertz.
 - (2) The unit shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253V (230V/60Hz).
 - (3) The BC Controller shall be controlled by integral microprocessors.
 - (4) The control circuit between the indoor units and the outdoor unit shall be 24VDC completed using a 2-conductor, twisted pair shielded cable to provide total integration of the system.
4. Indoor Units (IDU-1 thru 7):
 - a. General: The PEFY shall be a ceiling-concealed ducted indoor fan coil design that mounts above the ceiling with a 2-position, field adjustable return and a fixed horizontal discharge supply and shall have a modulating linear expansion device. The PEFY shall be used with the R2-Series outdoor unit and BC Controller, Y-Series outdoor unit, or S-Series outdoor unit. The PEFY shall support individual control using M-NET DDC controllers.

- b. Indoor Unit. The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory.
- c. Unit Cabinet:
 - (1) The unit shall be, ceiling-concealed, ducted.
 - (2) The cabinet panel shall have provisions for a field installed filtered outside air intake.
- d. Fan:
 - (1) PEFY-NMAU models shall feature external static pressure settings from 0.14 to 0.60 in. WG.
 - (2) The indoor unit fan shall be an assembly with one or two Sirocco fan(s) direct driven by a single motor.
 - (3) The indoor fan shall be statically and dynamically balanced and run on a motor with permanently lubricated bearings.
 - (4) The indoor fan shall consist of three (3) speeds, High, Mid, and Low plus the Auto-Fan function
 - (5) The indoor unit shall have a ducted air outlet system and ducted return air system.
- e. Filter:
 - (1) Return air shall be filtered by means of a standard factory installed return air filter.
 - (2) Optional return filter box (rear or bottom placement) with high-efficiency filter shall be available for all PEFY indoor units.
- f. Coil:
 - (1) The indoor coil shall be of nonferrous construction with smooth plate fins on copper tubing.
 - (2) The tubing shall have inner grooves for high efficiency heat exchange.
 - (3) All tube joints shall be brazed with phos-copper or silver alloy.
 - (4) The coils shall be pressure tested at the factory.
 - (5) A condensate pan and drain shall be provided under the coil.
 - (6) The condensate shall be gravity drained from the fan coil.
 - (7) Both refrigerant lines to the PEFY indoor units shall be insulated.
- g. Electrical:
 - (1) The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
 - (2) The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).
- h. Controls:
 - (1) This unit shall use controls provided by Mitsubishi Electric Cooling & Heating to perform functions necessary to operate the system. Please refer to Part 5 of this guide

specification for details on controllers and other control options.

- (2) Indoor unit shall compensate for the higher temperature sensed by the return air sensor compared to the temperature at level of the occupant when in HEAT mode. Disabling of compensation shall be possible for individual units to accommodate instances when compensation is not required.
- (3) Control board shall include contacts for control of external heat source. External heat may be energized as second stage with 1.8°F – 9.0°F adjustable deadband from set point.
- (4) Indoor unit shall include no less than four (4) digital inputs capable of being used for customizable control strategies.
- (5) Indoor unit shall include no less than three (3) digital outputs capable of being used for customizable control strategies.
- (6) Manufacturer to provide drain pan level sensor powered by a 20-year life lithium battery. Sensor shall require no external power for operation and shall have an audible indication of low battery condition.
- (7) The drain pan sensor shall provide protection against drain pan overflow by sensing a high condensate level in the drain pan. Should this occur the control shuts down the indoor unit before an overflow can occur. A thermistor error code will be produced should the sensor activate indicating a fault which must be resolved before the unit re-starts.

F. Energy Recovery Ventilator:

1. General: Rooftop packaged energy recovery ventilator, belt driven. Refer to Paragraph 2.06A for general requirements. Unit shall be listed by Underwriters Laboratories UL 1812. Unit shall be ARI certified in accordance with the ARI Air-to Air Energy Recovery Ventilation Equipment Certification Program. Unit shall bear the AMCA certified ratings seal for air performance. Outdoor air shall not mix with exhaust air in a common plenum. Exhaust discharge and outside air intake shall not be located on the same side on roof top units. Cook Model ERV or District approved equivalent.
2. Construction: The unit shall be of bolted construction utilizing corrosion resistant fasteners. Housing shall be minimum 18 gauge galvanized steel, bolted to a minimum 16 gauge galvanized steel base with integral lifting lugs. Unit shall be provided with insulated top, side and interior panels utilizing 1" thick, three pound density foil faced insulation, manufactured and tested to meet NFPA 90A and UL 181 requirements. Insulation shall be fastened to the panels with weatherproof adhesive and weld pins. Energy recovery wheel shall be mounted in a slide track for easy inspection and cleaning. Separate blower and motor shall be provided for supply and exhaust airstream for independent system balancing. Blower and motor assemblies shall be mounted on rubber vibration isolators. Two inch thick, MERV-13 pleated filters shall be provided for supply and exhaust airstreams. Removable side panels shall be provided for easy access to motors, blowers, filters and energy recovery wheel. Unit shall bear an

- engraved aluminum nameplate. Nameplate shall indicate design CFM, static pressure, and maximum fan RPM. Unit shall be shipped in ISTA certified transit tested packaging.
3. Energy Wheel: Wheel shall be a total energy recovery wheel constructed of fluted synthetic fiber-based media impregnated with a non-migrating water selective 4 angstrom molecular sieve desiccant. Wheels with the desiccant applied in a secondary operation will not be accepted. Energy transfer ratings shall be ARI certified in accordance with the ARI Air-to Air Energy Recovery Ventilation Equipment Certification Program, based on ARI Standard 1060-2000.
 4. Fan Wheel: Wheel shall be DWDI centrifugal forward curved type, constructed of painted steel. Wheel shall be balanced in accordance with AMCA Standard 204-05, Balance Quality and Vibration Levels for Fans.
 5. Motors: Motor shall be Nema design B with class B insulation rated for continuous duty and furnished at the specified voltage, phase and enclosure.
 6. Coils: All heat and cooling coils shall be tested and rated in accordance with ARI Standard 410 and certified in accordance with the ARI Certification Program. DX coils shall be equipped with distributors to receive expansion valves at the liquid connections.
 7. Controls and Electrical: All internal electrical components shall be pre-wired for single point power connection. Internal control panel shall be UL listed with hinged access door and interlocking NEMA 3R disconnect switch. Each motor shall have a motor starter combination providing fuseless disconnect, over-current, overload and motor starting functions. A 24 volt circuit shall be provided to allow remote on/off control of ERV by building control system. Short circuit protection shall be provided on primary and secondary of control power transformer.
 8. Bearings: Bearings shall be permanently lubricated, sealed ball type selected for a minimum L50 life in excess of 200,000 hours at maximum cataloged operating speed.
 9. Belts and Drives: Belts shall be oil and heat resistant, static conducting. Drives shall be precision machined cast iron type, keyed and securely attached to the wheel and motor shafts. Drives shall be sized for 150 percent of the installed motor horsepower. The variable pitch motor drive must be factory set to the specified fan RPM.

PART 3: - EXECUTION

3.01 PIPING INSTALLATION:

A. General:

1. Piping Layout: Piping shall be concealed in walls, above the ceilings, or below grade unless otherwise noted. Exposed piping shall run parallel to room surfaces; location to be approved by Architect. No structural member shall be weakened by cutting, notching, boring or otherwise, unless specifically allowed by structural drawings and/or specifications. Where such cutting is required, reinforcement shall be provided as specified or detailed. All piping shall be installed in a manner to ensure unrestricted flow, eliminate air pockets, prevent any unusual noise, and permit complete drainage of the system. All piping shall be installed to permit expansion and

contraction without strain on piping or equipment. Vertical lines shall be installed to allow for building settlement without damage to piping. Lines shall be adequately braced against vertical and lateral movement. Pipe sizes indicated on the drawings are nominal sizes unless otherwise noted. Pipe sizes shall not decrease in direction of flow, unless otherwise noted.

2. Joints:
 - a. Threaded: Pipe shall be cut square, and reamed to full size. Threads shall be in accordance with ANSI B2.1. Joint compound or tape suitable for conveyed fluid shall be applied to male thread only. Joints shall be made with three threads exposed.
 - b. Brazed: Filler rod shall be of suitable or the same alloy as pipe. Brazing filler metal shall have a minimum melting point of 1100°F. Brazing shall be performed by a Certified Brazer as certified by an organization / institution that uses standards recognized by the American Welding Society (AWS) and meets the requirements of the ASME Boiler and Pressure Vessels Code, Section 9.
 - c. Open Ends: Open ends of piping shall be capped during progress of work to preclude foreign matter.
3. Fittings and Valves:
 - a. Standard Fittings: All joints and changes in direction shall be made with standard fittings. Close nipples shall not be used.
 - b. Reducers: Pipe size reduction shall be made with bell reducer fittings. Bushings shall not be used.
4. Pipe Support:
 - a. General: Hangers shall be placed to support piping without strain on joints or fittings. Maximum spacing between supports shall be as specified below (based on straight lengths of pipe with couplings only). Provide additional supports for equipment, valves or other fittings. Seismic requirements may reduce maximum spacing. Actual spacing requirements will depend on structural system. Refer to drawings for additional requirements and attachment to structure. Side beam clamps shall be provided with retaining straps to secure the clamp to the opposite side of the beam. Vertical piping shall be supported with riser clamp at 20' on center (maximum). Support pipe within 12" of all changes in direction.
 - b. Refrigerant Piping: Support insulated refrigerant line with construction channel and sheet metal support saddle or Cooper B-Line Armafix clamps. 5' spacing. Use isolation shield for uninsulated pipe. When using pre-charged tubing, all changes of direction shall be made with bending tools producing neat uniform bends. Free hand bends will not be accepted.
 - c. Trapeze: Trapeze hangers of construction channel and pipe clamps may be used. Submit design to Engineer for review.
5. Miscellaneous:
 - a. Escutcheons: Provide chrome plated escutcheons where piping penetrates walls, ceilings, or floors in finished areas.
 - b. Pipe Sleeves: All piping passing through concrete or concrete block shall be provided with pipe sleeves. Allow 1" (nominal) clearance between sleeve and pipe or pipe insulation.
 - c. Pipes Passing through Fire Rated Surfaces: Pipes passing through fire rated walls, floors, ceilings, partitions, etc. shall have the

annular space surrounding the pipe or pipe insulation sealed with fire rated materials in accordance with the requirements of 2019 CBC Section 714.

- B. Refrigerant Piping: Pipe shall be cut square. Joint surfaces shall be thoroughly cleaned, fitted and erected before brazing. Continuously purge with Nitrogen during brazing. After installation, evacuate to 29 inches of mercury, ambient temperature during evacuation shall not be less than 70°F. After evacuation, fill with dry nitrogen to 250 psi and maintain for two-hour period without additional charge. After nitrogen test, purge with refrigerant charged through dryer and maintain holding charge in system and equipment. Refrigerant piping below grade shall be run in 4" (min.) PVC conduit with long radius ells. Seal ends of conduit watertight. VRF system fittings shall be as recommended by manufacturer. Installers shall have successfully completed manufacturer's installation training within 6 months of installation. Provide training certificate or letter from manufacturer's rep stating such.

3.02 PIPING INSULATION INSTALLATION:

- A. Refrigerant Piping: Cover piping with foamed plastic insulation. Longitudinal and end seams shall be thoroughly cemented with adhesive in accordance with manufacturer's recommendations. Cover all fittings, unions, valves and connections. Piping exposed to view shall be covered with PVC jacketing. Piping exposed to weather shall be covered with aluminum jacketing, install all joints and seams to prevent water entry, seal with 1/8" bead of gray metal jacketing sealant.

3.03 DUCTWORK INSTALLATION:

- A. General:
1. Standards: Unless otherwise noted, all ductwork shall be constructed and installed in accordance with current SMACNA Standards. Ductwork shall be built to a pressure classification equal to or greater than the maximum operating pressure at that point in the ductwork. A copy of these standards shall be maintained at the job site at all times. Duct work and accessories shall be installed in a manner to prevent vibration and rattling.
 2. Access: Provide duct access doors as required to adjust equipment and dampers. Provide wall or ceiling access panels, or remote actuators as required where equipment and dampers are not otherwise accessible. Remote regulator shall be as detailed on drawings.
 3. Flanges and Escutcheon: Where ductwork penetrates walls, ceilings, or floors, furnish and install flange or escutcheon of same material as duct.
 4. Flexible Connections: Connection of ductwork to any vibrating equipment shall be with 3" (min.) flexible connection. Install with ample slack and uniform gap. There shall be no metal to metal contact across flexible connection. Flexible connections exposed to weather shall have a protective sheet metal cover.
- B. Low Velocity-Low Pressure (up to 2,000 ft/min and up to 2.0 in water):
1. Sheet Metal Ductwork:
 - a. Ells: Ells with less than standard radius and square ells shall be fitted with turning vanes.

- b. Tees: Tees in supply ductwork shall be straight tap-in with extractor or 45 degree take-off as shown on drawings. Grilles or branches in supply ductwork shall be a minimum of 8 duct diameters downstream of tees.
 - c. Duct Joints and Seams: All joints and seams which are not exposed to weather shall be sealed airtight with duct sealant. All joints and seams exposed to weather shall be sealed air and water tight with outdoor sealant. (See Part 2 of this Specification). All joints on metal ductwork exposed to view inside building shall be sealed air tight with grey duct sealant.
 - d. Dampers: Install volume control damper and damper regulator in all branch ducts.
2. Flexible Glass Fiber Ductwork: The use of flexible duct is limited to the last 5 feet of each branch duct (i.e. one 5 foot section of flexible duct may be used to connect the grille to the sheet metal branch duct). No joints are permitted in this 5' length. Hangers shall be 4" wide metal straps spaced to prevent sagging, 42" spacing maximum. Insert 6" wide fiberglass pad between duct and hanging strap. Joints shall be installed with stainless steel or nylon draw bands, Duro Dyne Dyn-O-Tie. Minimum turn radius shall be in accordance with SMACNA Standards (turn radius of duct centerline not less than 1.5 times the duct diameter).

3.04 AIR TERMINALS AND DUCT FITTINGS INSTALLATION:

- A. General: Unless otherwise noted, all air terminals and duct fittings shall be installed in accordance with current SMACNA Standards. Terminals and fittings shall be installed in a manner to prevent vibration and rattling. Metal surfaces exposed to view behind grilles and registers shall be painted flat black.

3.05 DUCTWORK INSULATION INSTALLATION:

- A. General: Insulate all sheet metal supply, return and outside air intake ductwork except as noted below. Insulation shall be continuous through walls and floors except at fire dampers.
- B. Where Insulation Is Not Required: Do not insulate factory-insulated ducts or casings, acoustic lined ducts, fibrous glass ducts, underground ductwork, supply or return ductwork exposed to view in the space that it serves, or exhaust ductwork.
- C. Concealed Ductwork: Wrap concealed ductwork including outside air intakes with fiberglass blanket lapped 2" minimum. Secure with staples 4" on centers maximum on straight runs and 3" maximum at elbows and fittings. Insulation on bottom of ducts wider than 36" shall also be secured with mechanical fasteners at 24" on center.
- D. Acoustic Lining: Unless otherwise indicated, all supply and return ductwork in equipment rooms, all ductwork exposed to weather and other ducts as indicated on drawings, shall have acoustic lining. Do not acoustic line outside air intakes. Where acoustic lining is installed, increase each sheet metal dimension to accommodate lining and maintain clear inside duct dimensions shown on drawings. Apply lining with bonding adhesive in accordance with manufacturer's

recommendations and also secure with mechanical fasteners in accordance with SMACNA Standards. Seal exposed edges of lining with bonding adhesive.

3.06 EQUIPMENT INSTALLATION:

- A. General: It shall be the responsibility of the equipment installer to ensure that no work done under other specification sections shall in any way block or otherwise hinder the equipment. All equipment shall be securely anchored in place. All equipment shall be installed level.
- B. Connections to Equipment: Where size changes are required for connections to equipment, they shall be made immediately adjacent to the equipment and, if possible, inside the equipment cabinet.
- C. Equipment Platforms: Shall be as shown on drawings and as follows: Flashing and platform cover shall be 22 gage (min.) sheet metal. All joints and seams shall be soldered with 2" (min.) overlaps. Provide 3/4" gap around perimeter between roofing and platform cover to facilitate re-roofing. Extend drip lip down 3" (min.). Provide 30# felt under platform cover.

3.07 TESTS AND ADJUSTMENTS:

- A. General: Unless otherwise directed, tests shall be witnessed by a representative of the Architect. Work to be concealed shall not be enclosed until prescribed tests are made. Should any work be enclosed before such tests, the Contractor shall, at his expense, uncover, test and repair all work to original conditions. Leaks and defects shown by tests shall be repaired and entire work retested.

3.08 SYSTEM ENERGY BALANCE:

- A. Scope: Provide the services of an independent test and balance agency to test, adjust and balance, retest and record performance of the system to obtain design quantities as specified. The agency must prove that they have no affiliation with any equipment manufacturer, design engineer, installing contractor, or any other party which might lead to a conflict of interest, in order to provide an unbiased, third party system balance and report.
- B. Qualifications: Prior to commencing work, the agency shall be reviewed by the Engineer and shall be certified by the Associated Air Balance Council, National Environmental Balancing Bureau or Testing, Adjusting and Balancing Bureau. The agency shall provide documentation of having successfully completed at least five projects of similar size and scope.
- C. Instruments: All instruments shall be accurately calibrated; calibration histories shall be available for examination. Application of instrumentation shall be in accordance with AABC, NEBB or TABB standards.
- D. Submittals: Include in shop drawings copies of forms to be used for testing and balancing showing all data which is to be recorded. Three copies of completed balance report shall be submitted to and reviewed by the Mechanical Engineer prior to the final mechanical construction review.

- E. Procedure - General: Procedure shall be in accordance with Associated Air Balance Council's "National Standards for Field Measurements and Instrumentation - Total System Balance", Volume Two, No. 12173, or equivalent NEBB or TABB standards. System shall be in full, continuous operation during test. Balanced quantities shall be plus 10%, minus 0% of design quantities. All nameplate data, manufacturer, model and serial numbers shall be recorded for each item tested.
- F. Extended Warranty: The test and balance agency shall include an extended warranty of 90 days after completion of test and balance work, during which time the Engineer, at his discretion, may request a recheck or resetting of any item or items in test report. The agency shall provide technicians to assist the Engineer in making any tests he may require during this period of time.
- G. Air Balance Procedure (For Each Air Handling System):
1. All air filters shall be clean when air balance is performed.
 2. Provide a sketch of the equipment showing exactly where all pressure readings were taken.
 3. Adjust blower RPM to design requirements.
 4. Record motor full load amperes.
 5. Make pitot tube traverse of main supply and return ducts and obtain design CFM at fans.
 6. Record system static pressures, inlet and discharge.
 7. Record filter quantity, size(s) and pressure drop across filter(s) at each filter bank.
 8. Adjust system for design CFM recirculated air.
 9. Adjust system for design CFM outside air.
 10. Record entering air temperatures. (DB heating, DB and WB cooling.)
 11. Record leaving air temperatures. (DB heating, DB and WB cooling.)
 12. Adjust all main supply and return air ducts to design CFM.
 13. Adjust all zones to design CFM, supply and return.
 14. Adjust all diffusers, grilles and registers to plus 10%, minus 0% of design requirements.
 15. Adjust CFM at all exhaust fans, make-up units, etc. (high and low speed, where applicable). Record applicable data from items 1 through 11 above.
 16. Each grille, diffuser and register shall be identified as to location.
 17. Verify proper diffusion pattern for all ceiling grilles and that all sidewall grilles are set for 5 degrees upward deflection unless otherwise noted. Make a notation of any that are not set properly.
 18. Size, type and manufacturer of diffusers, grilles, registers and all tested items shall be identified and listed. Manufacturer's ratings shall be used to make required calculations on all items.
 19. Readings and tests of diffusers, grilles, and registers shall include required FPM velocity and test resultant velocity, required CFM and test resultant CFM after adjustments.
 20. In cooperation with the control manufacturer's representative, set adjustments of automatically operated dampers to operate as specified. Testing agency shall check all controls for proper calibrations and list all controls requiring adjustment by control installers.

21. All diffusers, grilles and registers shall be adjusted for required air patterns and to minimize drafts.
22. As a part of the work of this contract, THE AIR CONDITIONING CONTRACTOR shall make any changes in pulleys, belts and dampers or the addition of dampers required for correct balance as recommended by air balance agency, at no additional cost to Owner.
23. Set, test and adjust packaged heating/cooling unit economizer operation in cooperation with controls contractor. Record minimum and maximum outside and exhaust airflows.

END OF SECTION

SECTION 23 09 23**DIRECT DIGITAL CONTROL AND ENERGY MANAGEMENT SYSTEM****PART 1 - GENERAL**

1.01 GENERAL MECHANICAL PROVISIONS:

- A. The General Mechanical Provisions, Section 23 00 00, shall form a part of this Section with the same force and effect as though repeated here.

1.02 SCOPE:

- A. General: The direct digital control and energy management system (DDC/EMS) includes control panels, control devices, valves, actuators, all line and low voltage control and interlock wiring (including wiring to controllers, switches, timers, relays, etc.) and conduit and related equipment, as required for proper operation of all equipment. Provide all equipment, programming, labor, materials and services necessary for a complete, lawful and operating DDC/EMS as shown or noted on the drawings and as specified herein. All control wiring, line and low voltage shall be installed in conduit. Power wiring, power to DDC/EMS control panels and disconnect switches are included in the Electrical Specifications, except that power wiring for control devices such as controllers, valves, etc., is included in the control system. Electrical work shall be in accordance with Electrical Specifications. The system shall be direct digital control/electric. **The control system shall be direct digital. Schneider TAC I/A, Distech, Alerton, or Honeywell. Replace existing control system with specified new control system and provide controls for new equipment. If specific cabling is required that is not existing, it shall be provided at no additional cost.** Protocol shall be BACnet. The system shall be Niagara N4 based with open license supervisory controller and shall be compatible with existing district-wide system. The system shall communicate over the District's Ethernet LAN/WAN, and shall include the latest upgrading (software and firmware) during the warranty period. The data wiring shall have an Ethernet connection at the DDC/EMS panel. A Graphical User Interface (GUI) must reside on the District's server and be integrated into the District's current GUI maintained on the District's server. The design of the total installed system shall be based on such systems, which are the District standards. Coordinate with Section 23 00 01, Heating, Ventilating and Air Conditioning and with Division 26. Comply with ASHRAE 55 and Title 24.
- B. Contractor Qualifications: All controls shall be furnished and installed by a Contractor who is licensed, certified or contracted by the controls and VRV manufacturers for design, installation, start-up and service of their product. The Contractor must have factory supplied training and support. The Contractor must have sufficient personnel to respond to a trouble call at the site within four hours. The Contractor's local manager shall have a minimum of five years' experience in the design, installation, start-up and service of similar systems. The Contractor shall submit a list of at least five projects which are similar in size, scope and

contract value to this project. This list shall include the Owner's contact person, phone number and controls contract value.

- C. Submittals: Within 60 days of contract award, submit eight (8) copies of shop drawings showing the following aspects of the DDC/EMS system (CAD file with DXF format if required of floor and site plans can be secured from the Architect).
1. All termination points, terminal cabinets, and cabling.
 2. Schedule of input and output points.
 3. Locations of all visible DDC/EMS system components (i.e. interior and exterior sensors, terminal strips, panels, trench and pull boxes, etc.), identifying specifically any exposed conduit.
 4. Descriptive literature for all material and equipment items shall include manufacturer's name and catalog numbers, dimensions, capacities, and all other characteristics and accessories as listed in the specifications or on the drawings.
 5. Submit copies of forms to be used for testing and verification showing all data which is to be recorded. Three copies of complete report shall be submitted for review.
 6. Complete written sequence of operation for all controlled equipment.
- D. Installation and Operation Manuals: Furnish Installation and Operating Manuals for all components. These manuals shall contain full documentation which shall include, without being limited to, the following:
1. General description and specifications.
 2. Installation and initial checkout procedures.
 3. Complete alignment and calibration procedures for all components.
 4. Detailed schematics and assembly drawings.
 5. LON and/or BACNet architecture diagrams
 6. Sequence of Operations.
 7. Controller points lists.

1.03 SYSTEM ARCHITECTURE

- A. DDC/EMS Equipment: The main controller shall contain the network communications and information management programs providing integrated global control, trend logging, local and remote alarming and fully menu driven user interface. The local network controller must be an intelligent, stand-alone microprocessor based controller which can have a variety of configurations based on their application.
- B. Campus-Wide Data Transfer System: The DDC/EMS shop drawings shall indicate where all equipment items are to be located for input and output to complete the system. The conduit/cabling system shall inter-tie these points as required to complete one system to meet the design criteria herein. Conduit shall be used for all EMS wiring whenever access is limited (hard-lid, walls, etc). When EMS wiring is installed in/above accessible areas (such as T-bar ceilings), free-air with J-hooks and wire-ties is acceptable. However, EMS wiring cannot be intermixed or bundled with any other cabling/wiring (Fire Alarm, internet, etc). System high speed communication shall be hardwired using a Belden shielded cable as recommended by DDC manufacturer.

- C. User Interface Communication: The user may communicate with the DDC/EMS system with a workstation located at the District Office over the WAN, with a remote workstation, with an On-Campus Operator Workstation, or with a Lap-Top computer (Service Tool).
- D. Standard Network Support: All Master Controllers, Workstation(s) and File Server shall be capable of residing directly on the owner's Ethernet TCP/IP LAN/WAN. Furthermore, the Master Controllers, Workstation(s) and File Server shall be capable of using standard, commercially available, off-the-shelf Ethernet infrastructure components such as routers, switches and hubs. With this design the owner may utilize the investment of an existing or new enterprise network or structured cabling system. This also allows the option of the maintenance of the LAN/WAN to be performed by the owner's Information Technology Department as all devices utilize standard TCP/IP components. If the DDC/EMS contractor needs an additional data port that is not already provided, its installation must be coordinated with the District's IT department (and IT infrastructure contractor if applicable) and shall be installed at the DDC/EMS contractor's expense. As a result, the DDC/EMS contractor shall ensure any additional data port locations are clearly indicated and that the existing EMS data ports they intend to utilize are addressed/identified prior to construction so they are not damaged or removed. This coordination shall occur between the District's Construction Office, IT department, DDC/EMS operator, IT infrastructure contractor (if applicable), and the project's general construction contractor manager.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. General Requirements: The Electronic Microprocessor Based Direct Digital Control and Energy Management System (DDC/EMS) shall monitor the data environment and perform control functions in relation to a programmed strategy and the status of the data environment. The system shall use solid state computer based digital and analog technology. The system shall be standard with the manufacturer to insure on going parts availability and trained technical support. The DDC/EMS shall be of the user programmable type requiring no special computer education for operation. All necessary instruction manuals and user orientation training shall be supplied by the manufacturer or agent thereof. The DDC/EMS shall be UL listed as a Direct Digital Control and Energy Management System. The programmable control requirements of the DDC/EMS shall include, but not be limited to:

HEATING AND COOLING SETPOINT ADJUSTMENTS
 OPTIMUM START/STOP (BASED ON HISTORICAL DATA)
 TIME OF DAY ROUTINES
 SCHEDULED OCCUPANCY ROUTINES INCLUDING HOLIDAYS
 CUSTOM TAILORED REPORTING
 CRITICAL CONDITION ALARMING
 FLUID FLOW SWITCH AND CONTROL ALARMING
 PID CONTROL ON ANALOG OUTPUTS
 HOT WATER RESET

DIRECT DIGITAL CONTROL AND ENERGY MANAGEMENT SYSTEM
 23 09 23 - 3

ECONOMIZER/PURGE
 CUSTOM TAILORED REPORTING
 ACCUMULATING RUN TIME
 POINT OVERRIDE ABILITY FOR EVERY DIGITAL AND ANALOG OUTPUT
 SEPARATE MODES AS REQUIRED BY CONTROL SEQUENCE
 ALL EXTERIOR LIGHTING CIRCUITS CONTROLLED BY SYSTEM

- B. Environment: The DDC/EMS shall operate in an environment of 40 120 degrees F and 10 95% relative humidity. Sensors and control elements shall operate under the temperature, pressure, humidity, and vibration conditions normally encountered in the installed location. The DDC/EMS shall maintain accuracy as follows:
1. +/- 0.5 F for the space temperatures in the 0 F 130 F range.
 2. +/- 0.5 F for duct temperatures in the 40 F 130 F range.
 3. +/- 1.0 F for outside air temperatures in the 30 230 F range.
 4. +/- 1.0 F for water temperature in the 30 230 F range.
 5. KWH and KW monitoring within 1.0%.
- C. Battery Backup: The system shall be tolerant of power failure and hold memory for a minimum of 12 hours. On power restoration, the system shall automatically and without operator intervention of execution of manual restart procedures:
1. Come On Line.
 2. Update all monitored functions.
 3. Resume operation based on current time and status.
 4. Implement special building start up strategies as required.
 5. Log time of power outages and start ups.
- D. Program Storage: The system shall also be capable of interfacing with a mass storage (tape or disc) device, for use in uploading and downloading programs to the DDC/EMS.

2.02 SYSTEMS DESCRIPTION:

- A. Modular Design/Expandability: The DDC/EMS shall be of a modular design providing distributed processing capability, and allowing future expansion of both input/output points and processing/control functions. The modular DDC/EMS shall be configured on the main/local concept. The main controller shall have the capability of adding local controllers and the local controllers shall be capable of adding I/O modules.
- B. Main (Master) Description: The master shall function as the overall system coordinator, accept control programs, perform automated energy management functions, control peripheral devices and perform all necessary mathematical calculations. The master shall be a microcomputer of modular design. The word size shall be 16 bits or larger, with a memory cycle time less than 1 microsecond. All chips shall be second sourced. The master shall have the following:
1. Protected Access: Key lock protected access to output override switches and internal circuitry.
 2. Memory: The master shall have memory required for systems operation and diagnostics or MCP software.

3. Real Time Clock: The master shall have a battery backed uninterruptable "Real Time Clock". The accuracy shall be within ten seconds per day. The RTC shall provide the following information: Time of Day, Day, Month, Year, and Day of Week. The system shall be programmed to automatically correct the clock for day light savings time and leap years and Time Sync with the District's server..
 4. Power: The master shall operate from 120 VAC +/- 20%, 60 Hz. Line voltages below the operating range of the system shall be considered outages. The master shall have over voltage surge protection, and require no additional AC power signal conditioning.
 5. Parallel Processing: The master shall be capable of parallel processing, executing separate control programs simultaneously. Any control program may affect control of another program if desired. Each program shall have full access to all I/O facilities of the processors.
 6. Communications Processor: Each master shall provide communication to the District's server, Workstation(s) (LAN) and the field buses. In addition, each master must have communications ports that support portable service tool and connection to third party controllers such as a chiller control panel or Variable Frequency Drives.
 7. Uninterruptable Functions: Control functions shall not be interrupted due to program entry or other user communications.
- C. Local Controller Units: The local units function as a stand-alone controller and as an Input/Output interface of the DDC/EMS and the Data Environment.
1. HVAC units must be fully controlled by a controller connected to the DDC/EMS that can be fully programmed by the DDC/EMS contractor.
 2. Monitoring: Local units shall be used to connect the data environment to the system and contain all necessary Input/Output functions to read field sensors and operate controlled equipment based on internal instructions or instructions from the Master. The units shall be fully supervised to detect failures. The units shall report the status of all points in its data environment at the rate of at least once every second. Local units shall connect directly to the Master with a twisted pair shielded RS-485 interface.
 3. Unit Failure: Upon failure of the unit (including transmission failure), the unit shall automatically fail off or to a predetermined state for three-way valves. All local units must run independently in the event of a central unit failure (including transmission failure) in bypass mode via the thermostat.
 4. Power: The unit shall operate from 120 VAC, +/-20%, 60 Hz, 220 VAC, +/-20%, 50 Hz or 24 VAC +/- 20%, 50/60 Hz power. For voltages below the operating threshold the unit shall totally shutdown and de energize its outputs.
 5. LAN and/or Field Bus: Each unit shall communicate with any unit through the RS-485 interface LAN and/or field bus.
 6. Auxiliary Port: Each unit shall be equipped with an auxiliary port to allow local interrogation of input and output values, and keyboard override of outputs through laptop.

2.03 INPUT/OUTPUT CAPABILITY:

- A. Inputs: The DDC/EMS shall accept information in the form of a temperature, voltage, digital signal (on off) or pulse counter.

1. Analog Inputs: The Analog Input (AI) function shall monitor each analog input, perform A/D conversion, and hold the digital value in a buffer for interrogation. The A/D conversion shall have a minimum resolution of 10 bits. Input ranges shall be within the range of 0-10 VDC.
2. Digital Inputs: The Digital Input (DI) function shall accept dry contact closures and voltage level or resistance level (5VDC reference voltage) transitions. A voltage level below 1 volt or a resistance below 500 ohms shall be read as ON (closed), a voltage level above 3 volts or a resistance above 1400 ohms shall be read as OFF (open).
3. Pulse Accumulator Inputs: The pulse accumulator function shall have the same characteristics as the DI, except that, in addition, a buffer shall be included to totalize pulses between interrogations. Each input shall accept pulses at a minimum of 2 per second.
4. Temperature Inputs: Temperature inputs originating from a thermistor, shall be monitored and buffered as an AI, except that, automatic conversion to degrees F shall occur without any additional signal conditioning.
5. Input Wiring: All analog inputs shall be two wire devices, with shielded wire for accurate operation.

B. Outputs:

1. Master and local controllers - Form C relay outputs rated at 5 amp, 24 VAC/DC or 2 amp, 30 VAC for on/off or Pulse Width Modulation for maintained operation of field devices. Output pulse width shall be selectable between 0.1 and 3200 seconds with a minimum resolution of 0.1 seconds. Isolation and protection against voltage surges shall be provided. Central plant controllers shall be equipped with an ON/OFF/AUTO switch to manually obtain either output state. Manual overrides shall be reported to the master at each update. An LED shall be provided to indicate the state of each digital output.
2. All digital and analog output points on every controller must have an override (highest priority) input point in the controller's point list in the JACE. This override point must be clearly labeled and identifiable. For example, "DO1ovrd" would be the point to override Digital Output 1.

2.04 SOFTWARE:

- A. User Software: Provide software (required upgrades) for Laptop Computer (Service Tool), District office workstation, District server.
- B. Software Features:
 1. Mathematical Requirements: The DDC/EMS shall have a math package capable of addition, subtraction, multiplication, division, square root, greater than and less than functions, minimum and maximum selection functions, and up to five levels of parenthesis for computation of variables. Control commands may be executed based on these calculated variables which are available to the program on a global basis. Math expressions may be used in action and exit commands of control program. The mathematical software shall be capable of mixed mode arithmetic, utilizing Boolean logic statements in combination with basic arithmetic to provide conditional mathematical computations.

2. Passwords: The DDC/EMS shall have multiple levels of user programmable passwords in addition to a master password, for programming security. Separate passwords may be user programmed. Level of password will define user's access level and ability to change system.
 3. Trend Logging: The DDC/EMS shall trend log variables. Any system variable (inputs, outputs, numerals, can be trend logged).
 4. Messages: The DDC/EMS shall provide alarming, preventative maintenance and status reporting messages.
 5. Documentation Format: The programming language of the DDC/EMS shall be plain English based such that a printout of the control program shall serve as the primary documentation for the system.
 6. Micro Processor Integrity Checking: Each DDC/EMS microprocessor shall continuously monitor and check itself and produce error messages in the event of a malfunction.
 7. Data Plotting: The DDC/EMS shall provide plots of values of system variables on a graph. Graphs may consist of combinations of up to 3 system variables at a time from the history logs.
- C. Color Graphics Requirements Provide color graphics which allow user to access and change (based on user access level) all schedules and setpoints (including damper or control valve positions) directly through the user graphics. Real time data shall continuously be updated. Navigation between the screens (forward and backwards) shall be accomplished with the use of a mouse. The minimum graphic screens shall include the following:
1. Site lay-out locations of all equipment being controlled, control component locations, and spaces served. Provide multiple screens-minimum of 1 screen per building plus site and others as needed for clarity. By "clicking" mouse on the desired equipment area a flow diagram will be displayed for the related equipment (as described below - Item 2). By "clicking" the mouse on a conditioned space, a graphic display of the zone conditions (as described below - Item 3) will be displayed.
 2. Each building must have a graphical summary page of all the zones in that building that displays zone temperature, set point, discharge air temperature, and fan command.
 3. Zone & HVAC Equipment Description on GUI: Each item of HVAC equipment must be clearly identified by what area it serves and its unit number. For example, if HC-2A serves Classroom 4, the GUI should list it as "Classroom 4, HC-2A." It should NOT be listed as only "HC-2A" or "Classroom 4."
 4. Flow diagrams shall be provided for each HVAC system, such as air-handling system, chilled water system, hot water system, condenser water system, package unit system, brine system with all inputs and outputs dynamically displayed.
 5. Each temperature control zone shall have a screen providing set points, temperatures, and related HVAC system status data.
 6. Scheduling screens allowing On/Off times to be set.
- D. Software Manual: The software manual shall describe programming and testing, starting with a system overview and proceeding to a detailed description of each software feature. The manual shall instruct the user on programming or

reprogramming any portion of the system. This shall include all control programs, variables, set points, time periods, messages, passwords and other information necessary to load, alter, test and execute the system. The manual shall include commands, editing and writing control programs, printouts and logs, mathematical calculations, and instructions on modifying any control point, verifying error status, changing passwords, and initiating or disabling control programs.

- E. Software Licenses: The owner shall be named the license holder of all software associated with any and all incremental work on the project(s). All Niagara AX and N4 software licenses shall have the “accept.station.in=*”; “accept.station.out=*”; “accept.wb.in=*”; and “accept.we.out=*” section of the software licenses. The intent is to insure that the installed Niagara AX and N4 products may be completely open for integrations. Owner shall be free to direct the modification of the software license, regardless of supplier. In addition, the Owner shall receive ownership of all job-specific software configuration documentation, data files, and application-level software developed for this project. This shall include all custom, job-specific software code and documentation for all configuration and programming that is generated for a given project and/or configured for use within Niagara Framework (Niagara AX and N4) based controllers and/or servers and any related LAN/WAN/Intranet and Internet connected routers and devices. Any and all required IDs and passwords for access to any component or software program shall be provided to the Owner.

2.05 USER INTERFACE:

- A. LAN Connections: If an additional LAN connection is needed, the conduit and cable from LAN rack is to be installed by electrical contractor. The planned location of all LAN connections (new and existing) to EMS equipment must be coordinated with the District’s networking staff and EMS staff as early as possible. Final connections shall be made by DDC/EMS Contractor.
- B. Direct Computer Communication: The DDC/EMS shall have a computer compatible communication mode for communication with other intelligent devices, which performs data integrity checking, with automatic retransmission of data when errors are detected.
- C. JACE software must include all applications to make all folders viewable and accessible in the JACE. Install DDC/EMS software on server, and furnish Software license to District. Coordinate hardware requirements with District.

2.06 SYSTEM COMPONENTS:

- A. Control Components:
1. Wall Switches: Plates for all wall switches and timers shall match those specified in Division 26.
 2. Labels: All labels, signs, etc. shall be engraved, laminated plastic, white on black background, 1/8" high lettering, minimum.
 3. Temperature Sensors:
 - a. Sensor Type: All temperature sensors shall be made of a highly stable, precision thermistor material accurate to within ± 0.36

- Degrees F. Identify each temperature sensor with a "Lamicoid" label keyed to the control system as-built drawings.
- b. Room Sensor: Room temperature sensor shall have Executive Decorator housing with programmable visible temperature indication. Housing shall include an occupancy override, temperature setpoint adjustment and a service tool jack.
 - c. Vandal Resistant Room Sensor: Where noted, shall be a blank stainless steel wall plate with the sensing element bonded to the back side. The plate back shall be insulated to reduce wall temperature influence.
 - d. Duct Sensor: Duct temperature sensor shall be a probe type element with 9 inch insertion length. Element shall be installed where air mixture provides a true temperature indication. Where adequate mixing is not practical, the duct temperature sensor shall have an averaging type thermistor element, installed across the entire cross section of the duct.
 - e. Outdoor Air Sensor: Outdoor air temperature sensor shall be a probe type element mounted in a ventilated, treated white PVC sun shield to minimize radiant energy effects. The sensor and sun shield shall be mounted on a weatherproof outlet box for outdoor installation.
 - f. Low Differential Air Pressure Applications (0" to 5" W.C.): The differential pressure transmitter shall be of industrial quality and transmit a linear, 4 to 20 mA output in response to variation of differential pressure or air pressure sensing points. Non-interactive zero and span adjustments, adjustable from the outside cover. (0.00 - 1.00" to 5.00") W.C. input differential pressure ranges. 4-20 mA output. Maintain accuracy up to 20 to 1 ratio turndown. Reference Accuracy: +0.2% of full span.
 - g. CO2 Sensor: The sensor shall have a five year recommended calibration interval. In addition, the sensor shall be provided with a five-year calibration guarantee, providing for free factory replacement if the sensor is found to be out of calibration within five years of the purchase date. The sensor shall have accuracy of ± 50 ppm and repeatability of ± 20 ppm. All adjustments to the sensor including output scaling, elevation adjustment, relay set point, relay dead-band, linear or exponential output, and single point calibration shall be made via on-board push buttons and LCD display. The LCD display must be covered by a solid door and only viewable when the door is opened for adjustments.
4. Temperature Control Panels: Each panel and each control device or readout on the front of the panel shall be identified with a laminated plastic label with 1/4" high engraved lettering, white on black background. Pilot lights shall be the push to test type.
 5. Status Sensor: Current sensing status sensor (with sensitivity adjustment for belt loss detection).
 6. Mitsubishi Controller. CITY MULTI Controls Network (CMCN) controller with on-site LCD and internet IP accessibility.
 7. Mitsubishi Room Sensor/Controller: Shall be wall mounted "in-room" wired remote controller.

- B. Lighting Contactors: Lighting contactor with metal enclosure will be furnished, installed, and wired to the lighting panel by the electrical contractor. See electrical contract documents for location. The DDC/EMS Contractor shall provide low voltage relay(s) required at the contactor panel and wire to the contactors to complete the DDC/EMS side of the lighting control. DDC/EMS Contractor shall provide required photo cells. Relays shall be suitable for up to 277 volts.
- C. Lightning Arrestor and Surge Suppressors: Shall be provided as approved and/or manufactured by the DDC/EMS equipment manufacturer.
- D. Conduit: Conduit to be a minimum 1" diameter, and to have at least 25% spare capacity, except drops to room sensors may be run in ½" conduit. Conduit shall be run in electrical or mechanical trenches wherever possible. Site conduit (building to building) will be installed (and terminated inside the building) by Division 26.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION:

- A. General: All electrical work shall be in accordance with the California Electrical Code, Electrical Specification Sections, and VRV Manufacturer's recommendations. All electric/electronic systems shall be hardwired in conduit, except as specifically allowed by 1.03, B. Wiring shall be concealed in walls, above the ceilings, or below grade unless otherwise noted. Exposed wiring shall run parallel to room surfaces; location shall be approved by the Architect. No structural member shall be weakened by cutting, notching, boring or otherwise. Provide a 120 volt circuit for each device requiring external power. Dedicated circuits shall be provided where required. Any devices or wiring exposed to the weather shall be protected in weatherproof enclosures such as NEMA 3R and weatherproof conduit.
- B. Labeling of System: DDC/EMS Contractor shall provide complete labeling of all terminals at all panels or equipment terminal strips and wiring. Equal to Brady marking on wires and number on terminals in sequence corresponding to control diagram.
- C. Programming:
 - 1. The Direct Digital Control and Energy Management System (DDC/EMS) operational program shall be provided by the DDC/EMS Contractor. The DDC/EMS Contractor shall be responsible for programming the system and shall coordinate the scheduling (on/off times) with the Owner. Prior to start-up, the DDC/EMS Contractor shall provide any testing program he feels necessary to fully test the operation of the various components.
 - 2. The DDC/EMS Contractor shall load the operational program into the DDC/EMS controller from his office via the District's network (via VPN) or at the job site via a direct connect cable. Prior to starting up the system, the DDC/EMS Contractor shall:
 - a. Confirm that the control system has been connected to the District's LAN/WAN and that the LAN/Wan is working.

- b. Confirm the functionality of the DDC/EMS controllers and all input points by reading the input values, and comparing them with a measured temperature, pressure, voltage, current, or resistance as appropriate. Calibrate all transducers as required.
 - c. Confirm the functionality of all digital output points by manual operational of the relay contacts. Use proper discretion in starting and stopping equipment.
 - d. Confirm the functionality of all analog output points by manually imposing an adjustable voltage on the appropriate circuit to check proper operation of the controlled device. Calibrate all transducers as required.
 - e. The DDC/EMS Contractor shall notify the General Contractor (one week in advance of) when the system will be ready for loading and testing the operational program. The DDC/EMS Contractor's start-up technician shall be present while the program is being loaded and shall communicate with the programmer prior and after program loading to confirm proper operation.
- D. Training: Prior to final acceptance, the DDC/EMS Contractor shall provide operational training to the Owner's personnel. The training sessions shall include a complete demonstration of the system. Dates and times of the training sessions shall be coordinated through the Owner not less than one week prior to session. A total of 40 hours of instruction shall be provided. The DDC/EMS Contractor shall maintain a log of training sessions including dates, times and names/titles of those attending. The DDC/EMS Contractor shall submit a copy of this log on request.
- E. Testing and Acceptance: The DDC/EMS Contractor shall furnish a complete and operating system. The DDC/EMS Contractor shall also verify, in the presence of the Owner, the system accuracy and proper function of each controlled device and sensor. The following items shall be successfully demonstrated prior to acceptance by the Owner:
1. All system outputs including controllers, relays, and other control devices shall be addressed and start/stop functions demonstrated.
 2. All inputs shall be displayed and all event-initiated functions shall be demonstrated.
 3. Demonstrate program integrity and power restore sequence during and after a power failure and restoration.
 4. Deliver all Record Drawings, wiring diagrams, equipment specifications, installation and Operation Manuals and other documentation as required to describe the system.
 5. Complete operator training in the use, programming, and operation of the system.
- F. Start-up of the System:
1. The start-up period starts when the following conditions are met:
 - a. The DDC/EMS system and all involved HVAC equipment have been installed, connected to the DDC/EMS system and are ready to operate.
 - b. A start-up meeting has been conducted with representative of the General Contractor, Architect/Engineer, maintenance staff, and the DDC/EMS Contractor.

- c. Consensus is reached, by the representatives at the above referenced meeting that it is appropriate for the start-up process to start.
 - 2. The alarm pagers called by the control system during the start-up period shall be the pagers carried by the Mechanical Contractor and/or DDC/EMS Contractor as appropriate. The Mechanical Contractor and DDC/EMS Contractor shall respond to all pages from the control system and work cooperatively to insure that the building environmental standards are maintained.
 - 3. The start-up process shall be completed and the warranty period shall start when the following conditions are met.
 - a. All training to be provided as part of the project has been completed.
 - b. No "alarm" or "condition reports" are being generated by the DDC/EMS system for seven (7) calendar days (168 hours) due to incomplete or inaccurate installation or programming.
 - c. All adjustments and "fine tuning" of the system have been completed.
 - G. Verification: A written testing and start-up report must be submitted for approval before acceptance. In addition to the DDC/EMS Contractor's testing and start-up report, the Owner may independently verify the test results. The report on test results shall include setpoints and operating ranges of all components.
- 3.02 SEQUENCE OF OPERATION: The below sequences of operation are to be used as a primary guideline for DDC/EMS control logic sequence development. Any/all variations must be approved by the District's DDC/EMS operator prior to implementation.

- A. Heating/Cooling Unit: (Heating setpoint 72°F, Cooling setpoint 75°F) The unit shall run per the system operation schedule through the DDC/EMS. Room temperature sensor shall be wall mounted. If the bypass button on the room temperature sensor is activated, the heating/cooling unit shall start for two hours (adj.). The unit setpoint shall be adjustable $\pm 2^\circ\text{F}$ (adj.) from a switch located on the temperature sensor. Unit fan shall run continuously on start by the DDC/EMS. DDC/EMS shall control the heating/cooling unit to maintain setpoints. On call for cooling, the DDC/EMS shall start the unit cooling at 2°F (adj.) above cooling setpoint and run to 2°F (adj.) below setpoint for cooling and then stop the unit cooling. On call for heating, the DDC/EMS shall start the unit heating at 2°F (adj.) below heating setpoint and run to 2°F (adj.) above setpoint for heating and then stop the unit heating. The unit shall be capable of economizer operation. The DDC/EMS shall monitor the unit status with a current sensor and the supply air temperature.
 - 1. CO2 Sensor Setpoints: The Control Contractor shall determine the base ambient CO2 concentration level after the air handler system has been balanced and the building is unoccupied. The upper and lower CO2 concentration setpoints shall be developed as follows:
 - The lower CO2 concentration setpoint shall be 200 ppm (adj.) above the base ambient CO2 concentration level.**
 - The upper CO2 concentration setpoint shall be 600 ppm (adj.) above the base ambient CO2 concentration level.**

2. Outside Air Damper Minimum Airflow Setpoints: The Control Contractor shall set the outside air damper position airflow setpoints for the upper and lower CO2 concentration setpoints as follows:

HC Unit	Lower CO2	Upper CO2
	Concentration OSA Damper Position	Concentration OSA Damper Position
	<u>Airflow Setpoint</u>	<u>Airflow Setpoint</u>
As Scheduled	As Scheduled	As Scheduled

3. Outside Air Damper Control: The DDC / EMS shall monitor the CO2 concentration every 5 minutes while the unit is on. On system startup after initial warmup, the outside air damper shall open to the lower damper position outside air (OSA) setpoint.

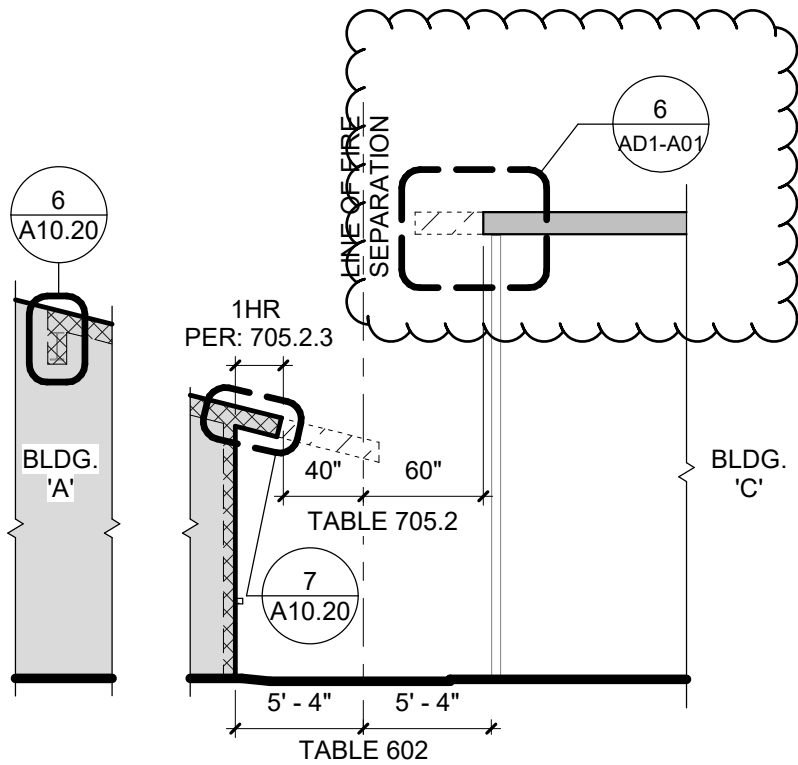
At the 5 minutes check of CO2 level, if the CO2 concentration is above the upper CO2 concentration setpoint, the damper shall open to increase the OSA airflow by 20% of the range between the upper and lower OSA airflows. At each check of CO2 level, the OSA shall increase by 20% until the CO2 concentration drops below the upper CO2 concentration setpoint and then stop increasing OSA. The damper shall not open more than the upper position setpoint if the unit is not in the Economizer mode.

At the 5 minutes check of CO2 level, if the CO2 concentration is below the lower CO2 concentration setpoint, the damper shall close to decrease the OSA airflow by 20% of the range between the upper and lower OSA airflows. At each check of CO2 level, the OSA shall decrease by 20% until the CO2 concentration rises above the lower CO2 concentration setpoint and then stop decreasing OSA. The damper shall not close more than the lower position setpoint.

- B. IDU-8,9/ODU-2,3: Units shall be controlled by integral factory controls.
- C. Exhaust Fan: See schedule for control. Units as scheduled shall be controlled by a static pressure sensor. Sensor shall be installed in the ceiling to control the exhaust fan to maintain a 0.05" W.C. (adj.) setpoint when respective HC unit is in economizer operation. Provide a co-axial cable switch plate cover for mounting the room pressure sensing port.
- D. Variable Refrigerant Volume (IDU/BC/ODU): Units shall be controlled by integral and field-mounted factory Mitsubishi CMCN controls to maintain 68°F (heating, adj.) or 78°F (cooling, adj.). Interface with BACnet controller for monitoring and start/stop scheduling.
- E. Energy Recovery Ventilator: Fan shall start/stop by signal from CU/FC Mitsubishi CMCN control system. ER wheel shall run when OSA is above 78°F (adj.) or below 56°F (adj.). Supply air and exhaust air fans shall run continuously during occupied hours.
- F. Web Based Mitsubishi CMCN Controls: All monitoring, scheduling, and controls alterations shall be accessible via an Internet Explorer compatible web page. I.P. address (and internet access at the controller) shall be provided by Owner. Up to (5) email notifications shall be configured at start-up. Coordinate with Owner.
- G. Domestic Hot Water Circulating Pump: Shall start/stop by DDC/EMS.

- H. Fan Status Sensors: If Fan Status Sensors are installed, they will not be interlocked to the cooling/heating call or heat/cool valve operation in the DDC/EMS control logic. These sensors are extremely prone to failure and often cause a no heat or no cool situation when the actual unit is fully functional.
- I. Economizers: On newly installed package units, the economizer will be controlled by the unit's DDC/EMS controller. The control logic will be consistent with the Outside Air Damper and heating and cooling sequences outlined in this specification. The first source of cooling as room temperature rises above cooling set point is the outside air. When the outside air is below 55°F (adj), the outside air and return air dampers shall modulate to maintain set point. When outside air temperature is between 55°F (adj) and the Room Cooling Set Point, the outside air damper shall open fully, the return damper shall close fully, and the unit's cooling will cycle to maintain set point. When the outside air is above Room Cooling Set Point, the outside air damper closes to minimum position, the return damper opens to minimum outside air operation position, and the unit's cooling will cycle to maintain set point.
- J. Outside Air Damper Minimum Airflow Set Points: The Control Contractor shall set the outside air damper position airflow set points per design and air balance.
- K. Outside Lighting: Outside lighting points shall be controlled by DDC/EMS. Coordinate with Owner.
- L. Optimum Start/Stop (Smart Start): Provide optimum start/stop of equipment as required by District. Coordinate with District to identify which equipment shall be provided with this feature.

END OF SECTION



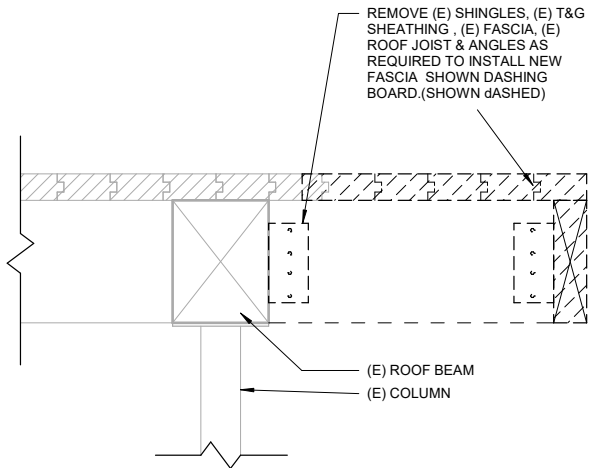
REMOVED PORTION OF (E) OVERHANG

1HR WALL AND ROOF ASSEMBLY

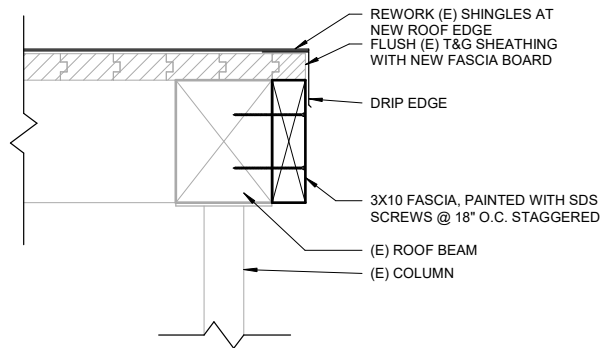
FIRE SEPARATION AT BLDG 'A'

2

1/8" = 1'-0"



DEMOLITION ROOF FASCIA



REMODELED ROOF FASCIA

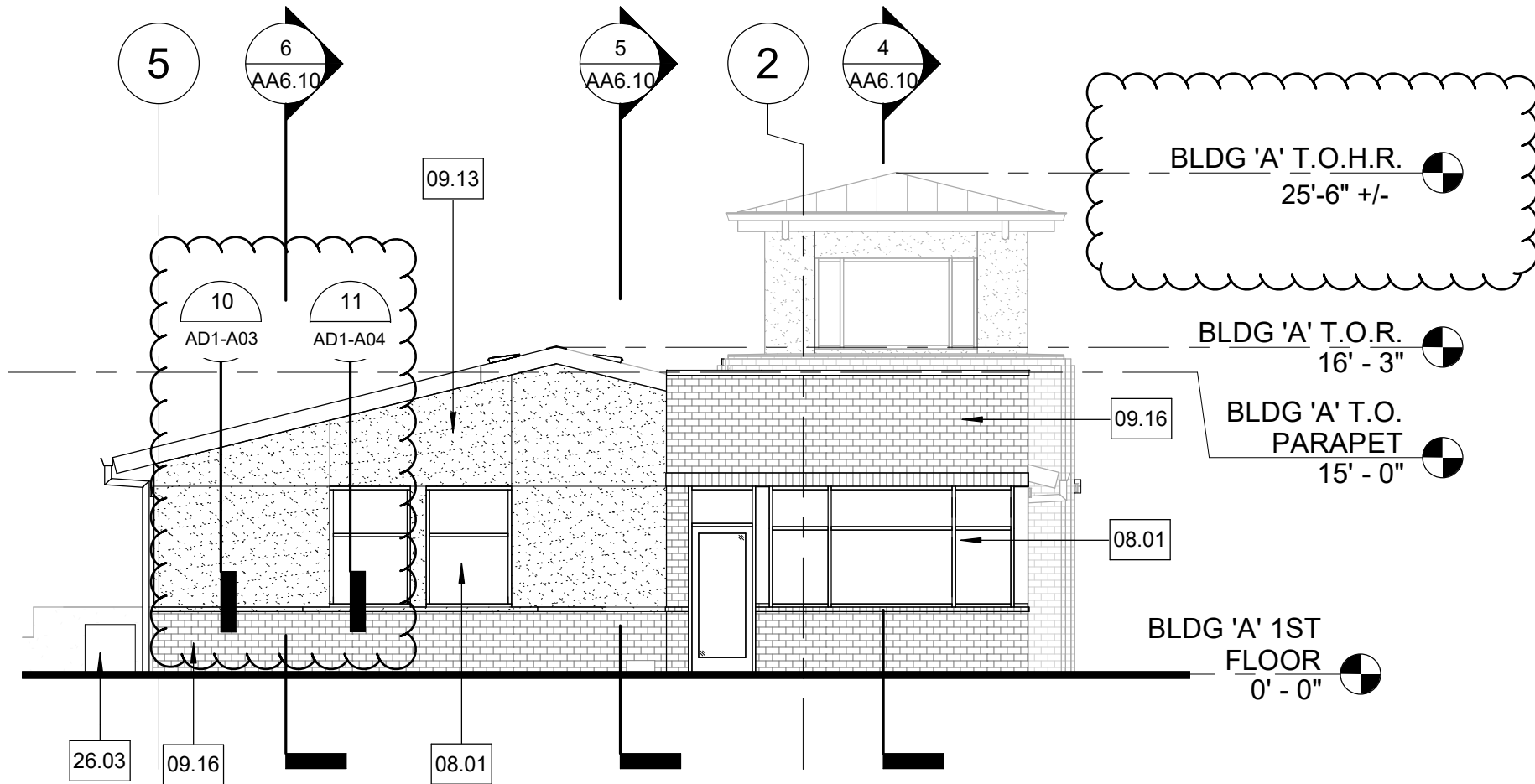
BLDG. 'C' - FASCIA DETAIL

6

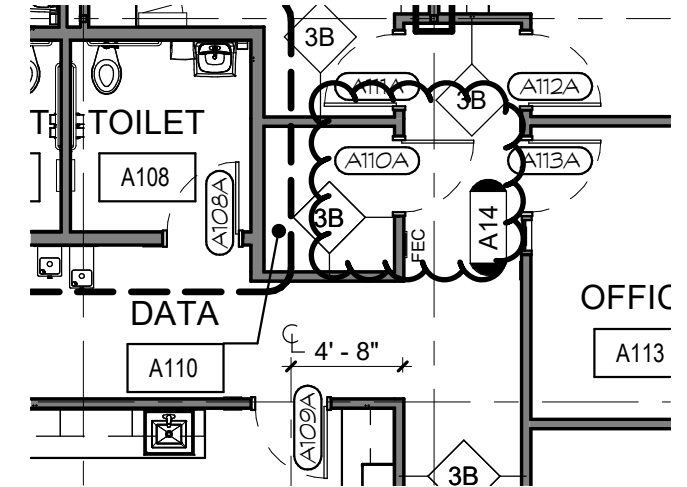
1 1/2" = 1'-0"

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SCHOOL DISTRICT		ADDENDUM SHEET NUMBER	
PROJECT NAME		PROJECT NUMBER	
SHEET NAME		SCALE	
DATE	DSA APP NUMBER		
		REFERENCE SHEET NUMBER	

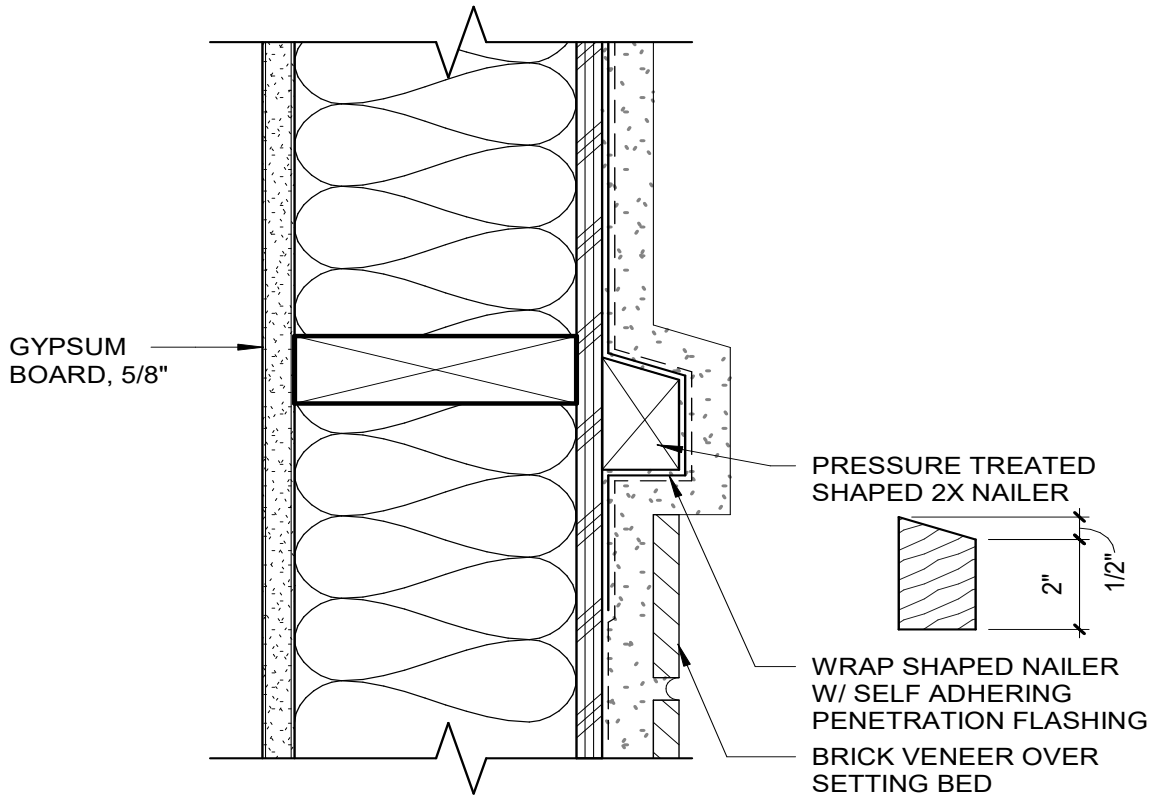


PROPOSED EXTERIOR ELEVATION - EAST | **3**
1/8" = 1'-0"



BUILDING A - PROPOSED FLOOR PARTIAL PLAN | **2**
1/8" = 1'-0"

CLIENT NAME	PROJECT NUMBER	ADDENDUM ITEM NUMBER
PROJECT NAME	SCALE	REFERENCE SHEET NUMBER
SHEET NAME	DATE	DATE
DATE	DATE	DATE
DATE	DATE	DATE



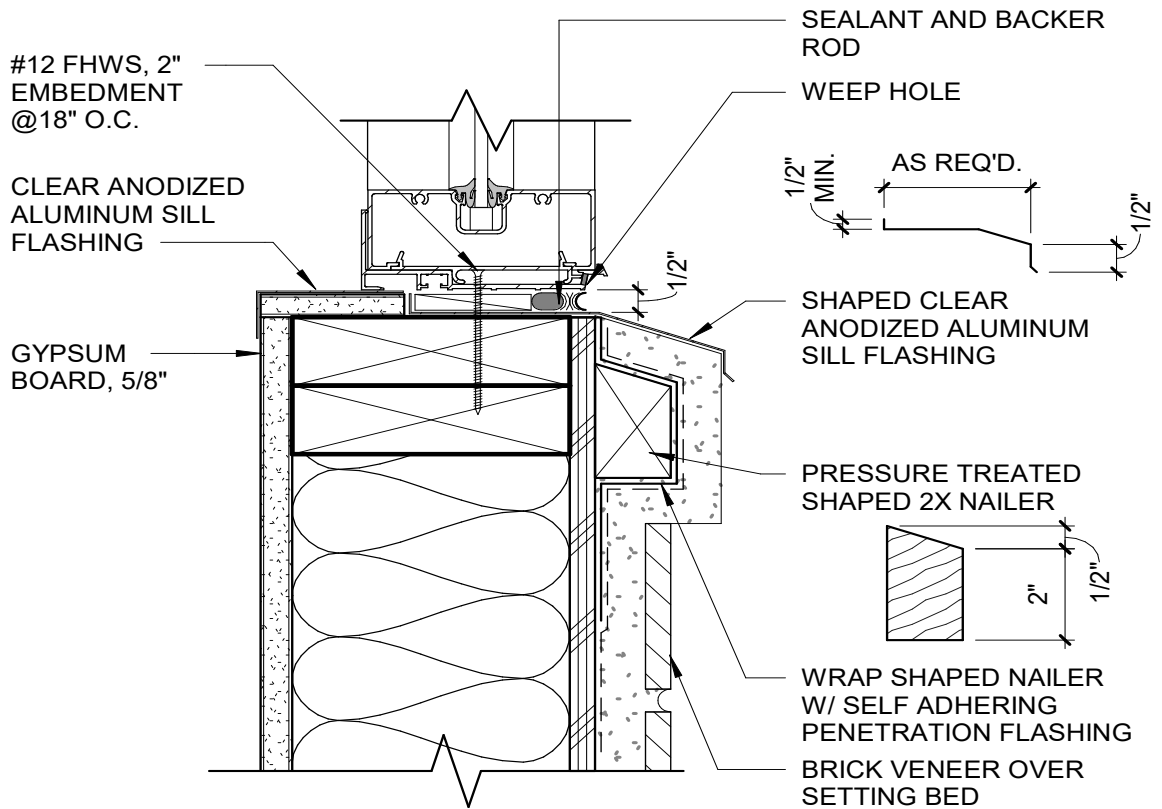
CEMENT PLASTER DETAIL

10

3" = 1'-0"

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SCHOOL DISTRICT		PROJECT NUMBER		ADDENDUM SHEET NUMBER
PROJECT NAME		SCALE		
SHEET NAME		DATE		REFERENCE SHEET NUMBER
DATE		DSA APP NUMBER		



WINDOW SILL

11

3" = 1'-0"

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SCHOOL DISTRICT		PROJECT NUMBER		ADDENDUM SHEET NUMBER
PROJECT NAME		SCALE		
SHEET NAME		REFERENCE SHEET NUMBER		
DATE	DSA APP NUMBER			

BUILDING 'A' DOOR SCHEDULE																			
DOOR NUMBER	DOOR SIZE		Fire Rating	DOOR			FRAME			HARDWARE GROUP	PANIC	PANEL GLASS	DETAILS (SHEET A10.80 U.N.O.)				SIGN DETAILS (SHEET A10.10)	Comments	
	PANEL	WIDTH		HEIGHT	MATERIAL	FINISH	PANEL TYPE	MATERIAL	FINISH				FRAME TYPE	HEAD	JAMB (STRIKE)	JAMB (HINGE)			THRESH
A101A	3'-2"	7'-0"	NR	AL	FF	05	AL	FF	SEE SCHED	01	Yes	CT	5	5	5	18	2, 3, 4, 11		
A101B	3'-2"	7'-0"	NR	AL	FF	05	AL	FF	SEE SCHED	01	Yes	CT	5	5	5	18	2, 3, 4, 11		
A102A	3'-0"	7'-0"	NR	HM	PT	05	HM	PT	A:S	20	No	CT	30	30	30	18	4, 5, 11		
A103A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	20	No	CT	30	30	30	18	4		
A103B	3'-0"	7'-0"	NR	HM	PT	05	HM	PT	SEE SCHED	01	No	CT	17	17	17	18	2, 3, 11		
A104A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	01	Yes	CT	17	17	17	18	2, 3		
A105A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	20	No	CT	30	30	30	18	4		
A106A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	22	No	CT	30	30	30	18	2, 4, 18		
A107A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	22	No	CT	30	30	30	18	2, 4, 18		
A108A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	22	No	CT	30	30	30	18	2, 4, 18		
A109A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	20	No	CT	30	30	30	18	4		
A109B	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	01	No	CT	17	17	17	18	2, 3		
A110A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	22	No	CT	30	30	30	18	4		
A111A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	22	No	CT	30	30	30	18	4		
A112A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	21	No	CT	30	30	30	18	4		
A112B	3'-0"	7'-4"	NR	AL	FF	05	AL	FF	SEE SCHED	01	No	CT	17	17	17	18	2,3,11		
A113A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	21	No	CT	30	30	30	18	4, 11		
A114A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	21	No	CT	30	30	30	18	4, 11		

BUILDING 'M' DOOR SCHEDULE																			
DOOR NUMBER	DOOR SIZE		Fire Rating	DOOR			FRAME			HARDWARE GROUP	PANIC	PANEL GLASS	DETAILS (SHEET A10.80 U.N.O.)				SIGN DETAILS (SHEET A10.10)	Comments	
	PANEL	WIDTH		HEIGHT	MATERIAL	FINISH	PANEL TYPE	MATERIAL	FINISH				FRAME TYPE	HEAD	JAMB (STRIKE)	JAMB (HINGE)			THRESH
M101A	3'-0"	7'-0"	NR	AL	FF	05	AL	FF	A:S	20	No	CT	5	5	5 SIM.	18	4, 5, 11		
M101B	3'-0"	8'-0"	NR	HM	PT	03	HM	PT	A:S	20	No	CT	17	17	17	18	3		
M102A	3'-0"	7'-0"	NR	AL	FF	05	AL	FF	A:S	20	No	CT	5	5	5 SIM.	18	4, 5, 11		
M102B	3'-0"	8'-0"	NR	HM	PT	03	HM	PT	A:S	20	No	CT	17	17	17	18	3		
M103A	3'-0"	8'-0"	NR	AL	FF	05	AL	FF	A:S	20	No	CT	5	5	5 SIM.	18	4, 5, 11		
M103B	3'-0"	8'-0"	NR	HM	PT	03	HM	PT	A:S	20	No	CT	17	17	17	18	3		
M104A	3'-0"	7'-0"	NR	AL	FF	05	AL	FF	A:S	20	No	CT	5	5	5 SIM.	18	4, 5, 11		
M104B	3'-0"	8'-0"	NR	HM	PT	03	HM	PT	A:S	20	No	CT	17	17	17	18	3		
M105A	3'-0"	7'-0"	NR	AL	FF	05	AL	FF	A:S	20	No	CT	5	5	5 SIM.	18	4, 5, 11		
M105B	3'-0"	8'-0"	NR	HM	PT	03	HM	PT	A:S	20	No	CT	17	17	17	18	3		
M106A	3'-0"	7'-0"	NR	AL	FF	05	AL	FF	A:S	20	No	CT	5	5	5 SIM.	18	4, 5, 11		
M106B	3'-0"	8'-0"	NR	HM	PT	03	HM	PT	A:S	20	No	CT	17	17	17	18	3		
M107A	3'-0"	7'-0"	NR	AL	FF	05	AL	FF	A:S	01	Yes	CT	5	5	5 SIM.	18	2, 3, 4, 5, 6, 11		
M107B	3'-0"	7'-0"	NR	AL	FF	05	AL	FF	A:S	01	Yes	CT	5	5	5 SIM.	18	2, 3, 4, 5, 6, 11		
M109A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	22	No	CT	17	17	17	18	-		
M110A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	22	No	CT	17	17	17	18	4		
M111A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	22	No	CT	17	17	17	18	4		
M112A	3'-0"	7'-0"	NR	HM	PT	01	HM	PT	A:S	22	No	CT	30	30	30	6	4		

GENERAL NOTES

- ALL EXIT DOORS SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
- "PH" INDICATES REQUIRED PANIC HARDWARE. CONTRACTOR TO COORDINATE WITH HARDWARE GROUP. IF NOT PROVIDED IN GROUP, CONTRACTOR SHALL COORDINATE "PH" WITH DOOR TYPE.
- NEW BUILDINGS OR EXISTING BUILDINGS RECEIVING INTERIOR MODERNIZATION, SERVING K-12, CONSTRUCTED WITH STATE FUNDS, ON NEW OR EXISTING CAMPUSES WITH INDIVIDUAL ROOMS WITH AN OCCUPANT LOAD OF 5 OR MORE AND BUILDING ENTRANCES SHALL BE EQUIPPED WITH INTERIOR LOCKING DOOR HARDWARE

DOOR SCHEDULE LEGEND

- CT CLEAR TEMPERED GLAZING
 - CT1 CLEAR TEMPERED GLAZING, CLASS I (GLASS PANEL < 9 SQ. FT.)
 - CT2 CLEAR TEMPERED GLAZING, CLASS II (GLASS PANEL > 9 SQ. FT.)
 - DG DUAL GLAZING
 - (E) EXISTING
 - PR PAIR OF DOOR AND HARDWARE
 - FF FACTORY FINISH
 - HM HOLLOW METAL
 - ILM INSULATED LAMINATED GLASS
 - LV LOUVERS, REFER TO MECHANICAL.
 - LM LAMINATED GLASS
 - NA NOT APPLICABLE
 - NR NOT RATED
 - PT PAINTED
 - SG SINGLE GLAZING
 - WD WOOD
- NOTE: ALL DOOR LITE GLAZING TO BE 1/4" CLEAR, UNO.

DRY CREEK ELEMENTARY - NEW
CLASSROOM BUILDING & ADMIN.
MODERNIZATION

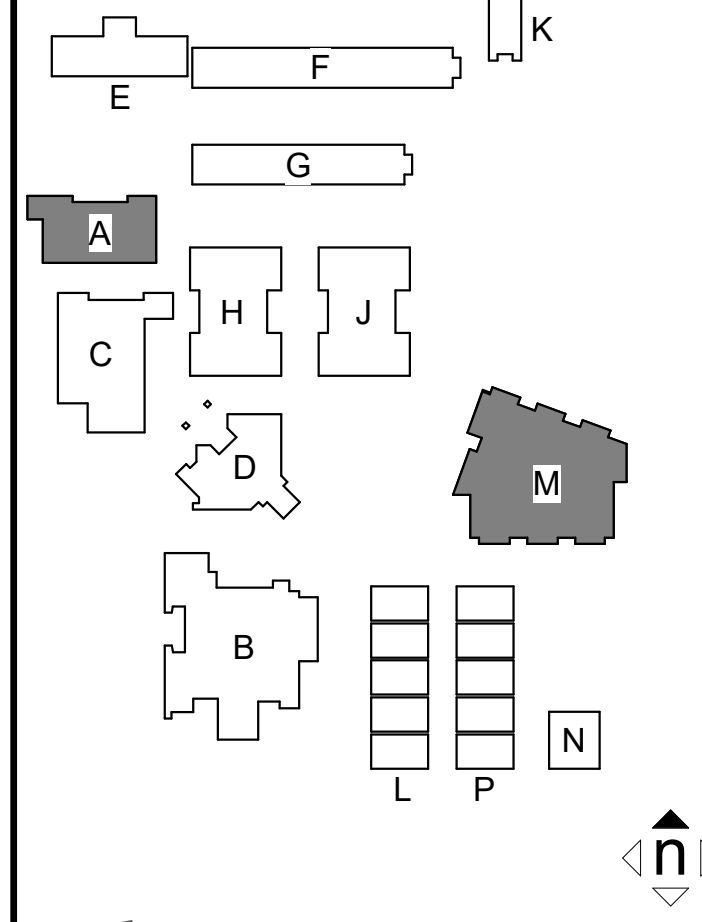
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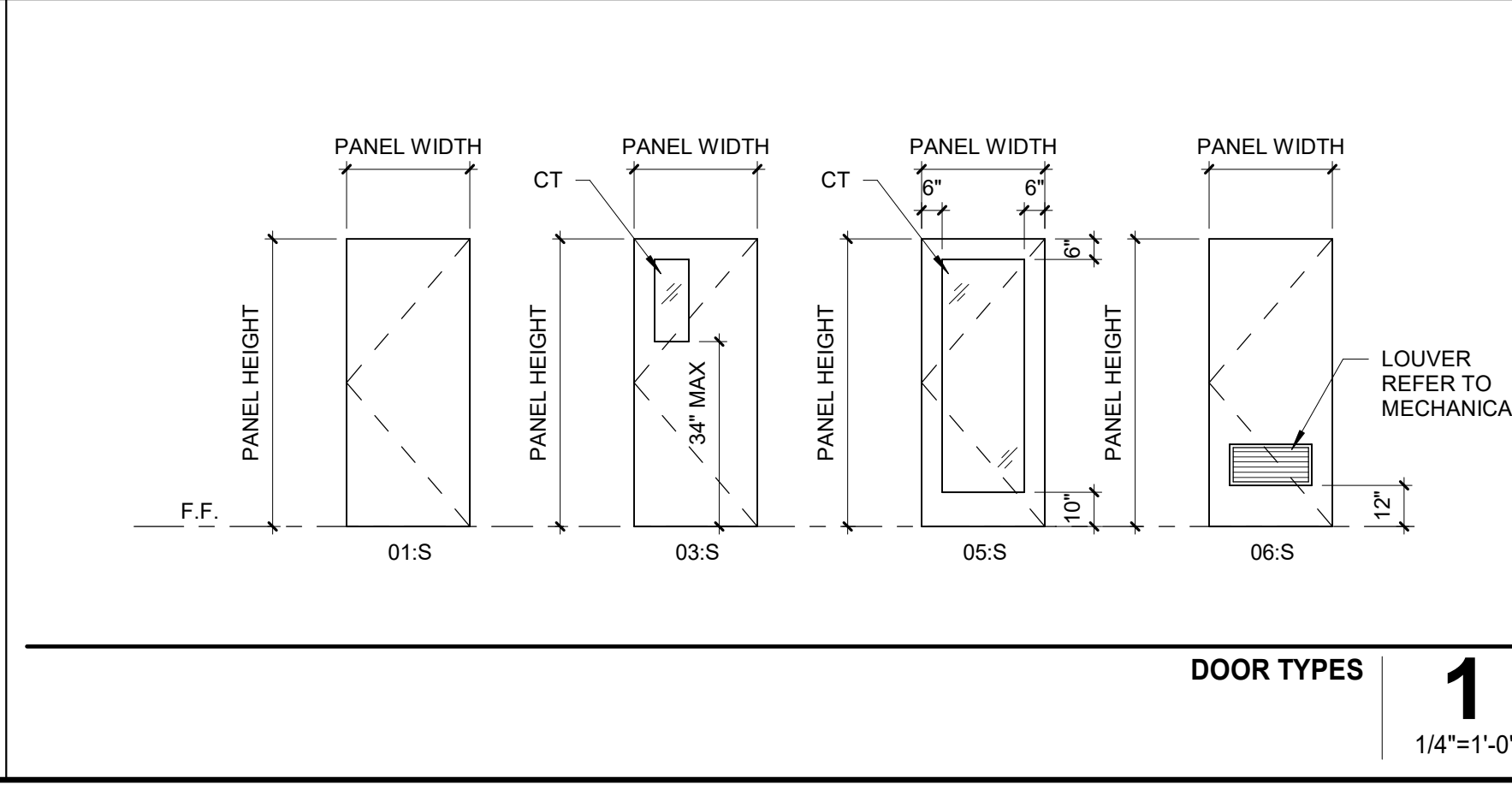
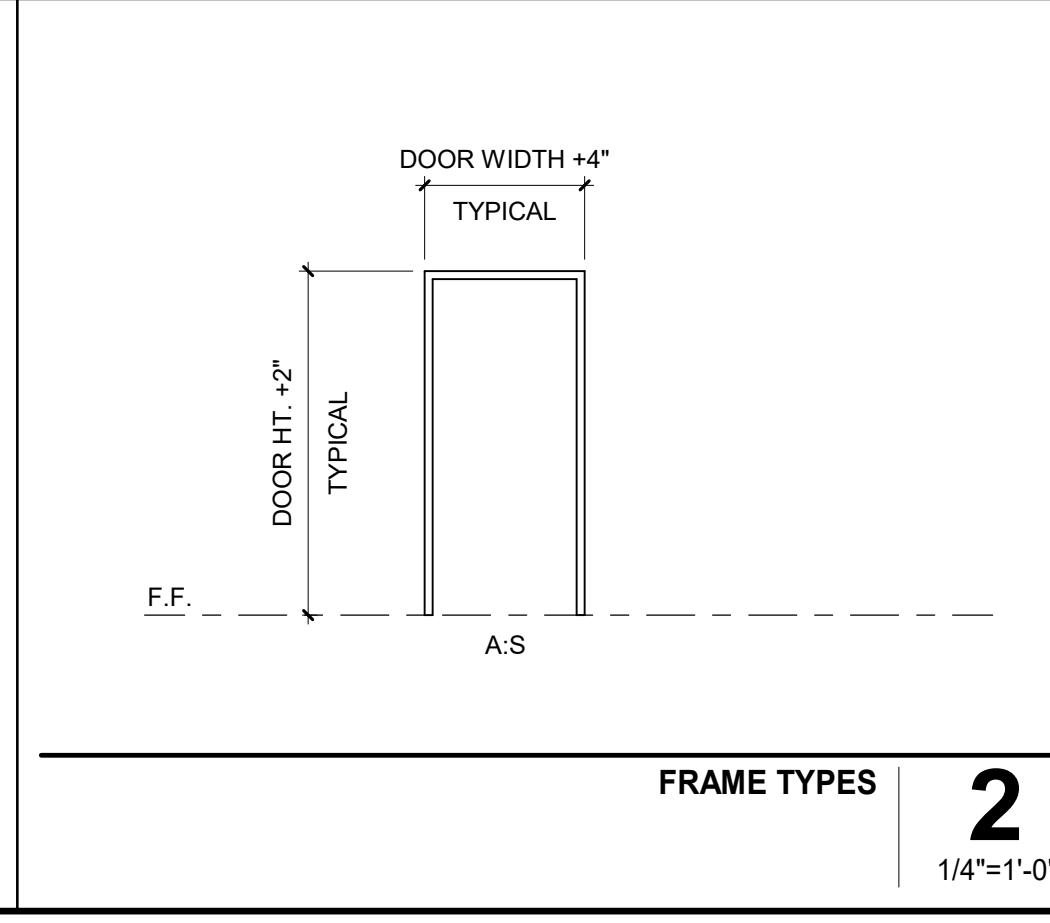
1725 NORTH ARDENSTON
CLOVIS, CALIFORNIA



NO.	DATE	DESCRIPTION
1	January 15, 2021	ADDENDUM #1



DOOR SCHEDULE 3
1/4"=1'-0"



SIMPRIK

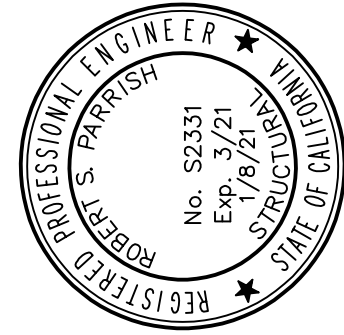
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PROJECT NUMBER: 172527
DATE: 12/16/2019
PROJECT ARCHITECT: JOHN BRYTH

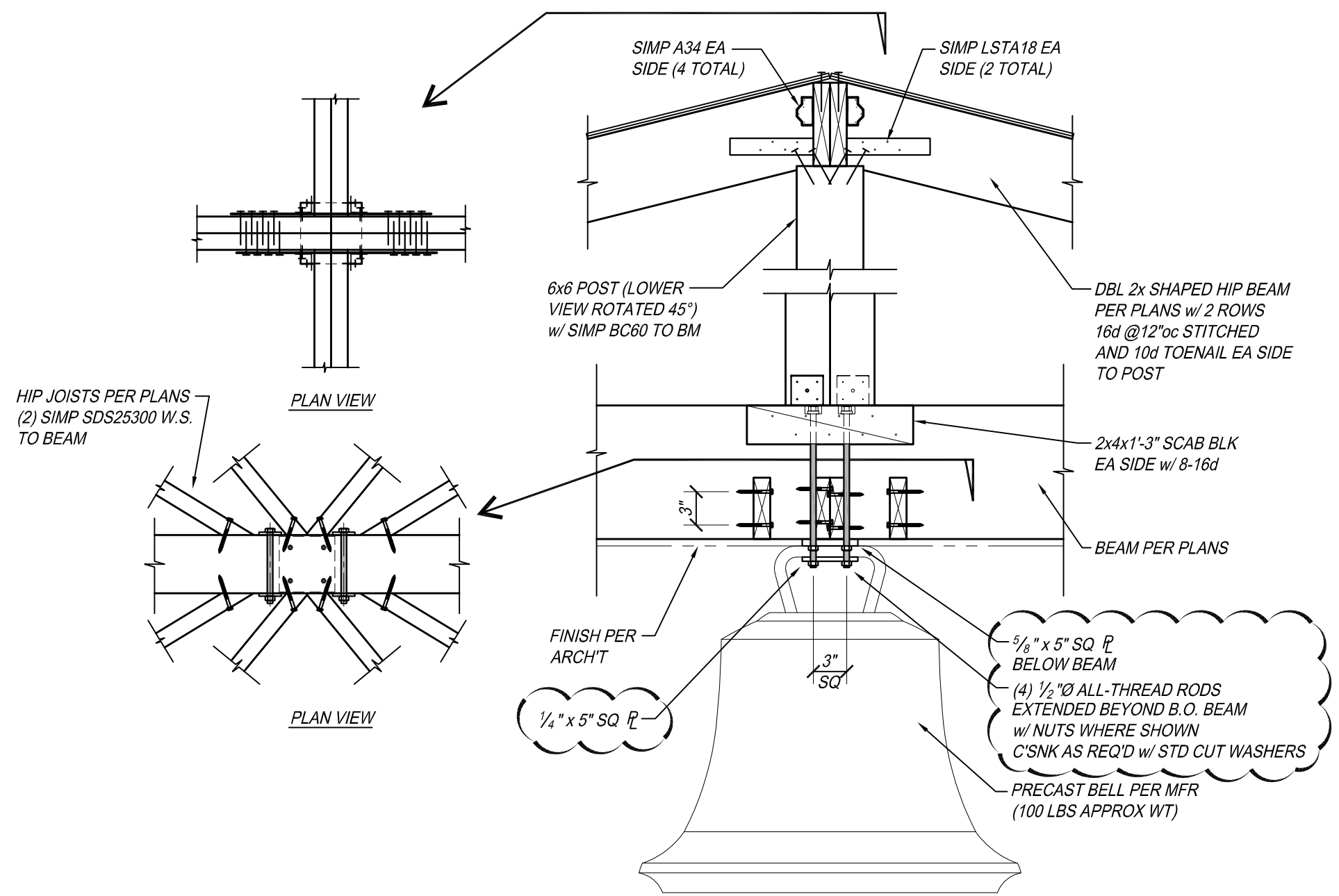
AD1-A05

DOOR TYPES AND SCHEDULE

A9.10



PARRISH HANSEN
 STRUCTURAL ENGINEERS
 A Division of Proctor & Pritchard Consulting Group
 418 CLOVIS AVE. CLOVIS, CA 93612
 PHONE 559.323.1023 FAX 559.323.8090
 WWW.PARRISHHANSEN.COM
 By: **GWC** Sheet: **SA-01**



DETAIL

SCALE: 1" = 1'-0"

12
 BM12 SA6.12

REF: BELL SUPPORT INFORMATION

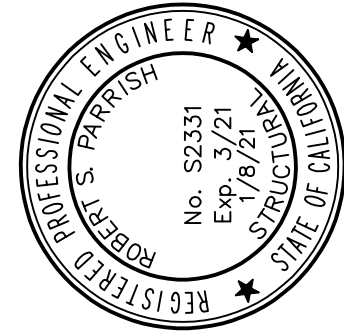
Engineer:
 Parrish Hansen Inc
 418 Clovis Avenue
 Clovis, CA 93612

Job No: 20002
 Date: 1-8-21

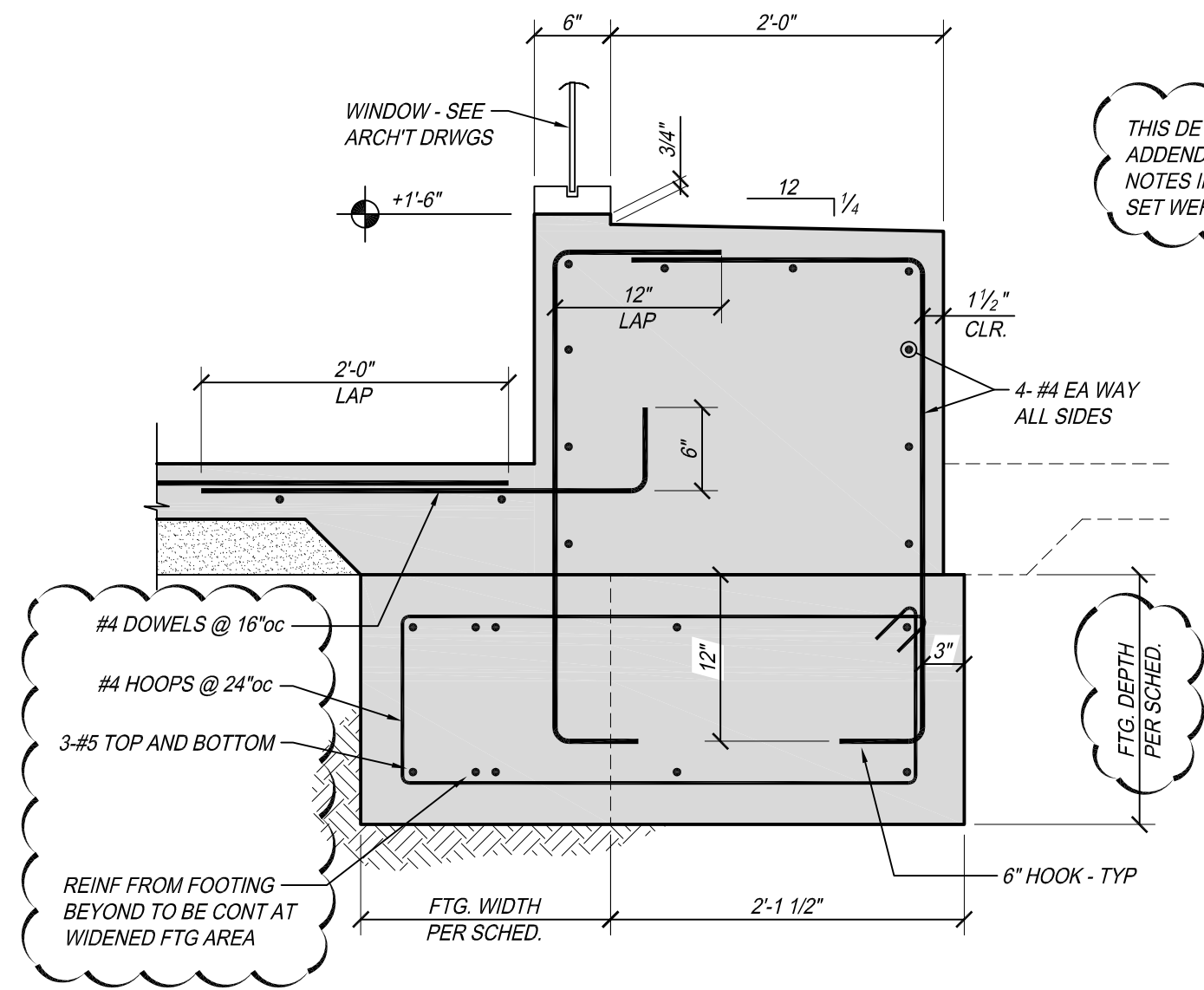
APP #
 02-118109

DRY CREEK
 ELEMENTARY
 MODERNIZATION
 CLOVIS UNIFIED SCHOOL DISTRICT
 CLOVIS, CA

AD1-S01



PARRISH HANSEN
 STRUCTURAL ENGINEERS
 A Division of Proctor & Pritchard Consulting Group
 418 CLOVIS AVE. CLOVIS, CA 93612
 PHONE 559.323.1023 FAX 559.323.8090
 WWW.PHPARRISH.COM
 BY: GWC Sheet SA-02



THIS DETAIL IS INCLUDED IN THE ADDENDUM BECAUSE SOME OF THE NOTES IN THE ORIGINAL APPROVED DSA SET WERE CUT-OFF

DETAIL

SCALE: 1" = 1'-0"

5
 FDN95 SM6.19

REF: DETAIL 5/SM6.10

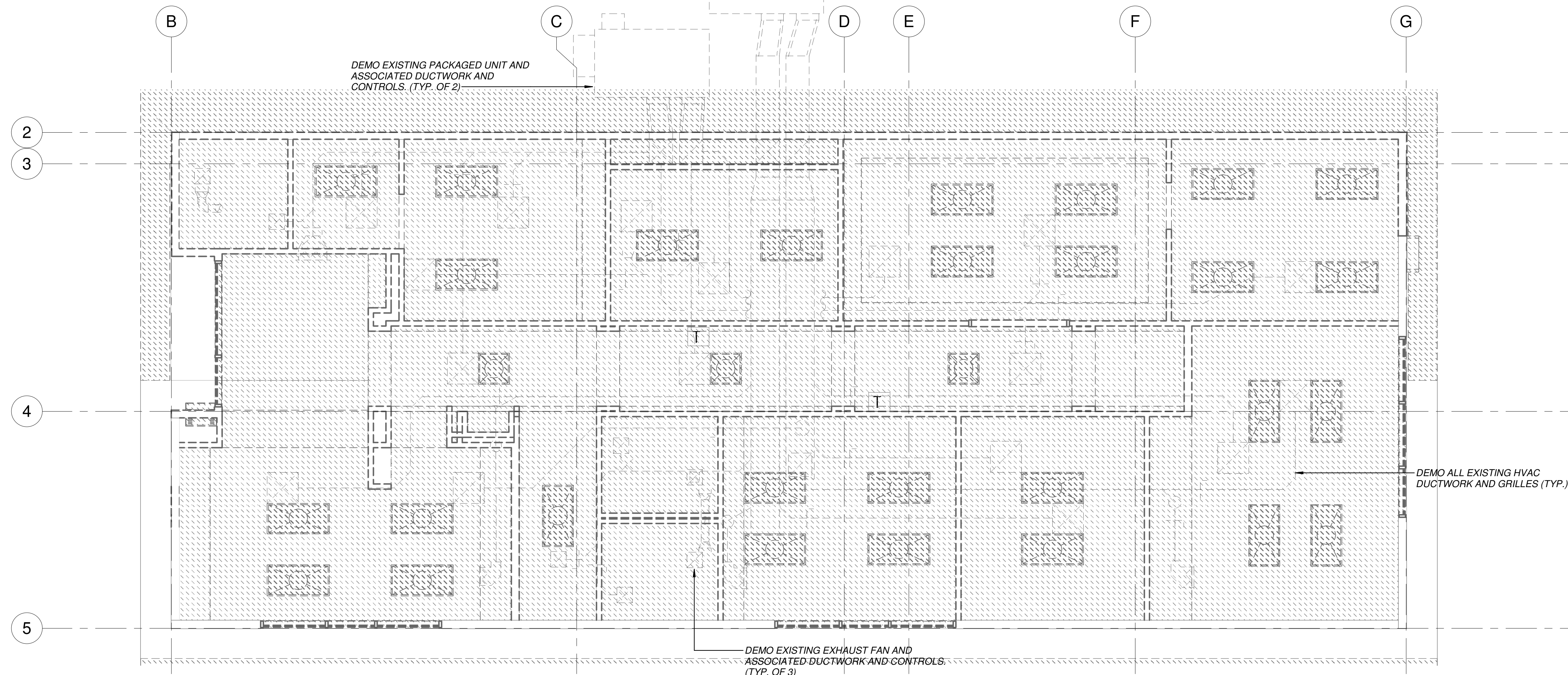
Engineer:
 Parrish Hansen Inc
 418 Clovis Avenue
 Clovis, CA 93612

Job No: 20002
 Date: 1-8-21

APP #
 02-118109

DRY CREEK
 ELEMENTARY
 MODERNIZATION
 CLOVIS UNIFIED SCHOOL DISTRICT
 CLOVIS, CA

AD1-S02

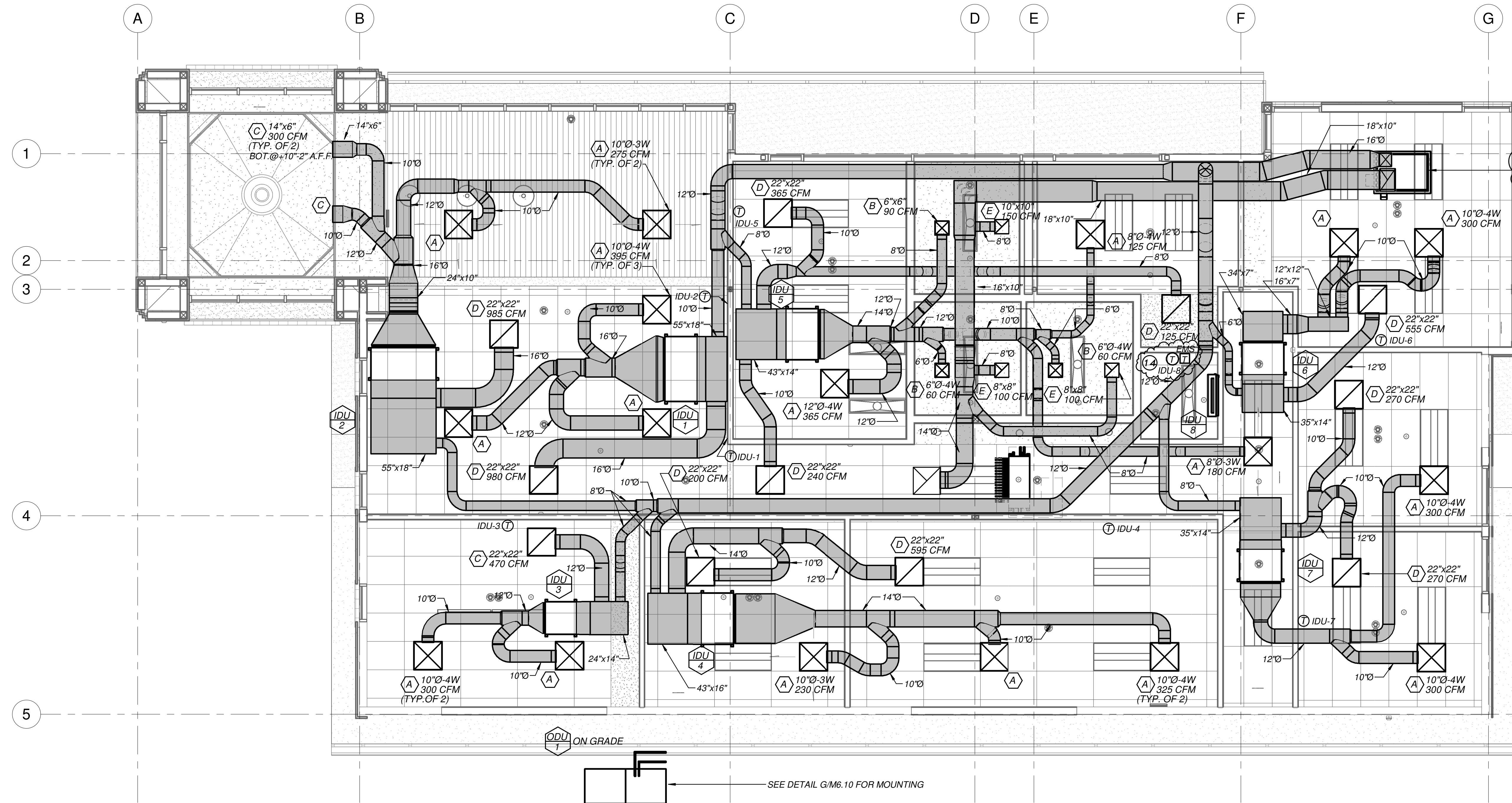


BUILDING A - OVERALL DEMOLITION HVAC PLAN

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

SHEET NOTES

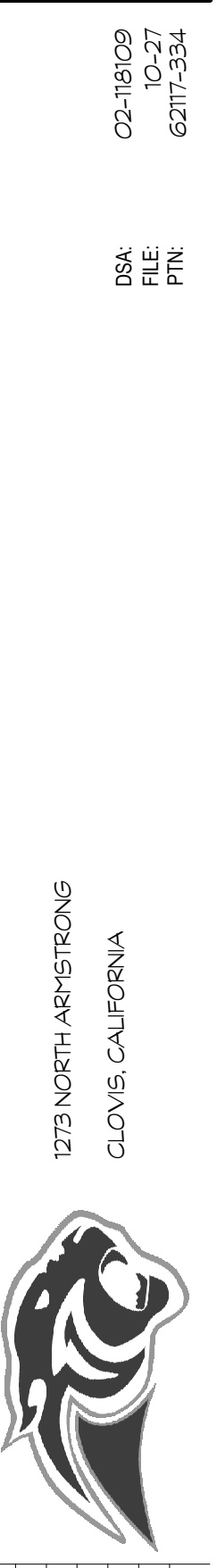
1. PROVIDE LOW LOSS TAP PER DM6.11 ON ALL RECTANGULAR BRANCH TAKEOFFS, (TYP.)
2. SEE DETAIL CM6.10 FOR SUPPLY AIR-BRANCH DUCT DETAIL (TYP. ALL S/A TERMINAL DUCT RUNS)
3. SEE DETAIL DM6.10 FOR RETURN/EXHAUST AIR GRILLE & BRANCH DUCT DETAILS. (TYP. ALL R/A & E/A TERMINAL DUCT RUNS)
4. PROVIDE T-BAR GRILLE RESTRAINT PER EM6.10 FOR ALL S/A, R/A, & E/A T-BAR GRILLE INSTALLATIONS, (TYP.)
5. PROVIDE REMOTE AIRFLOW REGULATOR PER DETAIL FM6.11 FOR ANY INACCESSIBLE VOLUME DAMPER, (TYP.)
6. PROVIDE DUCT HANGER ATTACHMENTS PER DETAILS G & HM6.11 OR SMACNA REQUIREMENTS, WHICHEVER IS MORE STRINGENT, (TYP.)
7. SEE DETAIL AM6.10 FOR HC UNIT MOUNTING (TYP.)
8. SEE DETAIL FM6.10 FOR EXHAUST FAN MOUNTING (TYP.)
9. MOUNT ALL DUCTED IDU'S PER DM6.11, (TYP.)
10. MOUNT ALL BRANCH CONTROLLERS (BC'S) PER HM6.10, (TYP.)
11. PROVIDE VOLUME DAMPER AT ALL VENTILATION AIR DUCT FROM ERV'S TO EACH IDU FOR VENTILATION AIR BALANCING, (TYP.)
12. SEE SHEET MS.11 FOR IDU/BC PIPING DIAGRAMS, WIRING PER MANUFACTURER INSTRUCTIONS.
13. FIRE ALARM SYSTEM RELAY TO BE USED FOR HVAC UNIT SHUTDOWN. DETECTION OF SMOKE IN ONE OF THE HVAC UNITS SHALL SHUT OFF THE POWER SOURCE TO ALL OF THE HVAC UNITS.
14. LOCATE VRF SYSTEM EMS INTERFACE. COORDINATE W/ ELECTRICAL FOR DATA AND POWER. EMS CONTRACTOR TO INTERFACE W/ (E) EMS FOR START/STOP OF VRF SYSTEM SCHEDULING.
15. EXISTING MSTP BACNET ROUTER IN ADMIN BUILDING CONTROLS NORTH CAMPUS BUILDINGS. DURING DEMOLITION AND CONSTRUCTION, EMS CONTROL OF UNAFFECTED CAMPUS AREAS SHALL BE MAINTAINED AND CONTROLS TO BE RELOCATED TO ANOTHER IDF ROOM AT DISCRETION OF DISTRICT. NEW CONTROLLERS SHALL CONNECT TO EXISTING JACE VIA BACNET OR MSTP CONNECTION. CONTROLS CONTRACTOR IS TO CHECK WITH DISTRICT IF ANY EQUIPMENT IS TO BE RETAINED BY THE DISTRICT. DELIVER ANY RETAINED EQUIPMENT TO LOCATION INDICATED BY DISTRICT.



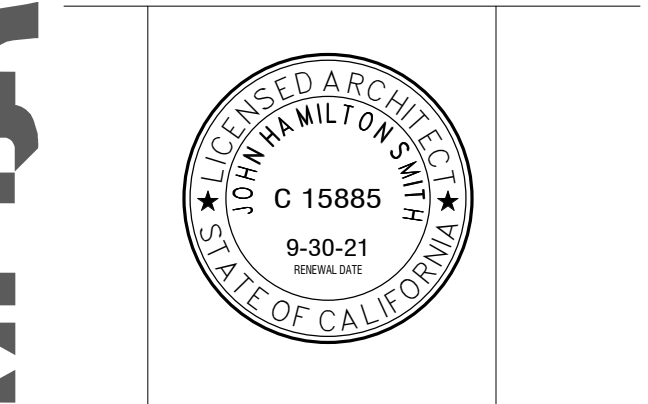
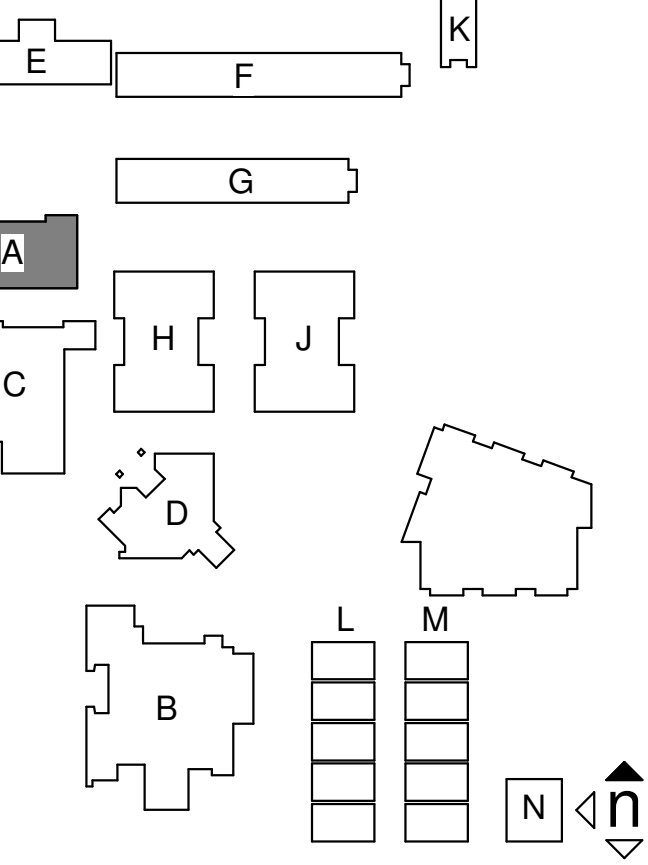
BLDG. A - OVERALL HVAC PLAN

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

DRY CREEK ELEMENTARY - NEW CLASSROOM BUILDING & ADMIN. MODERNIZATION



NO.	DATE	DESCRIPTION
1	12/15/2019	ISSUED FOR PERMIT
2	01/15/2020	REVISIONS

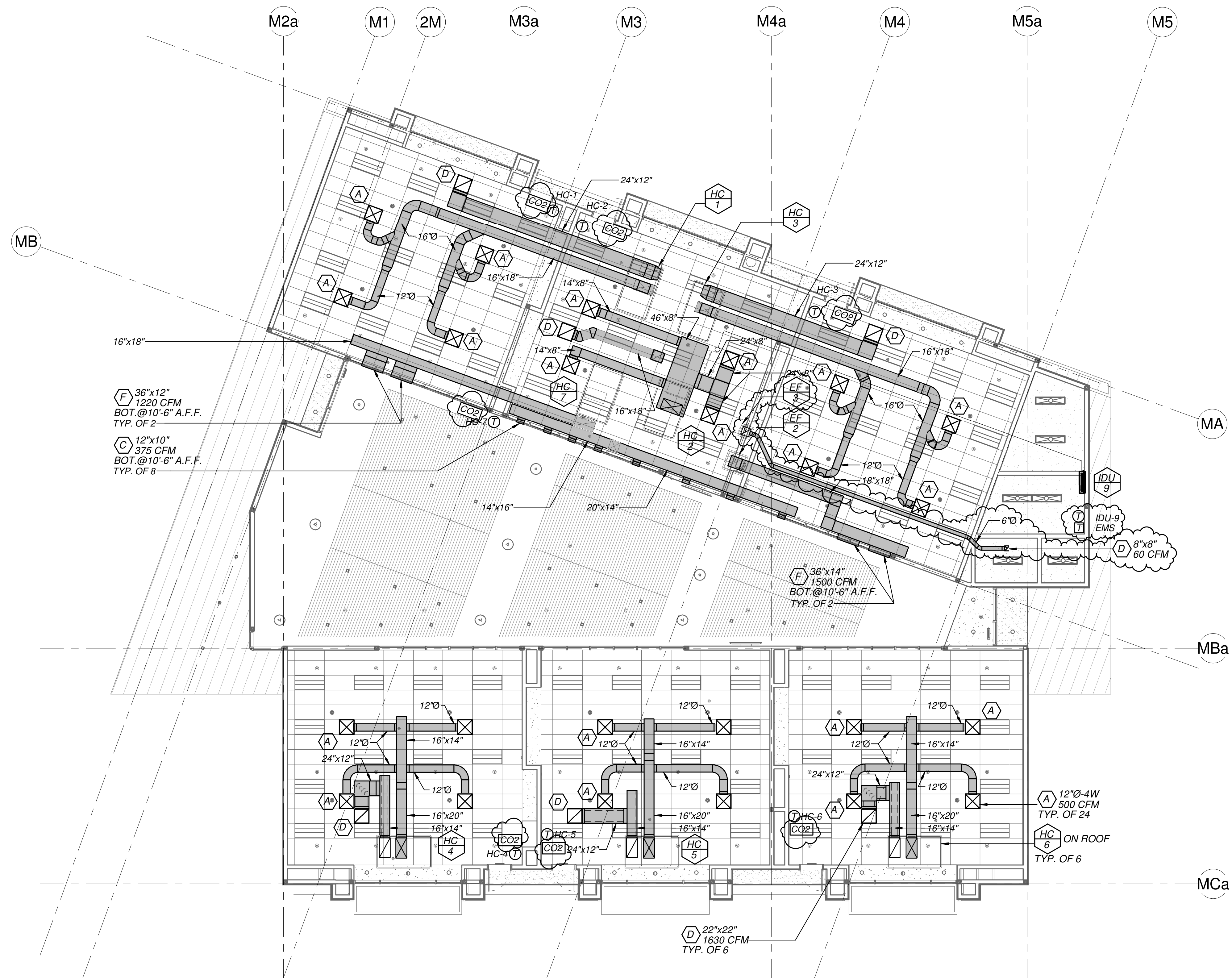


SIMPRK
 1750 NORTH PALM AVE | FRESNO, CALIFORNIA 93711
 P: 559-448-8400 | F: 559-448-8407 | www.simprk.com

PROJECT NUMBER: 172527
 DATE: 12/16/2019
 PROJECT ARCHITECT: JOHN SMYTH
 DRAWN BY: TFB
 CHECKED BY: RC
 AD1-M01



LAWRENCE ENGINEERING GROUP
 7084 N. MADISON AVE., SUITE 101
 FRESNO, CA 93720
 (559) 431-0161 19257 FAX (559) 431-1342



BLDG M OVERALL HVAC PLAN

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

SHEET NOTES

1. PROVIDE LOW LOSS TAP PER D/M6.11 ON ALL RECTANGULAR BRANCH TAKEOFFS, (TYP.)
2. SEE DETAIL C/M6.10 FOR SUPPLY AIR BRANCH DUCT DETAIL, (TYP. ALL S/A TERMINAL DUCT RUNS)
3. SEE DETAIL D/M6.10 FOR RETURN/EXHAUST AIR GRILLE & BRANCH DUCT DETAILS. (TYP. ALL R/A & E/A TERMINAL DUCT RUNS)
4. PROVIDE T-BAR GRILLE RESTRAINT PER E/M6.10 FOR ALL S/A, R/A, & E/A T-BAR GRILLE INSTALLATIONS, (TYP.)
5. PROVIDE REMOTE AIRFLOW REGULATOR PER DETAIL F/M6.11 FOR ANY INACCESSIBLE VOLUME DAMPER, (TYP.)
6. PROVIDE DUCT HANGER ATTACHMENTS PER DETAILS G & H/M6.11 OR SMACNA REQUIREMENTS, WHICHEVER IS MORE STRINGENT, (TYP.)
7. SEE DETAIL A/M6.10 FOR HC UNIT MOUNTING (TYP.)
8. SEE DETAIL F/M6.10 FOR EXHAUST FAN MOUNTING (TYP.)

DRY CREEK ELEMENTRY - NEW CLASSROOM BUILDING & ADMIN. MODERNIZATION

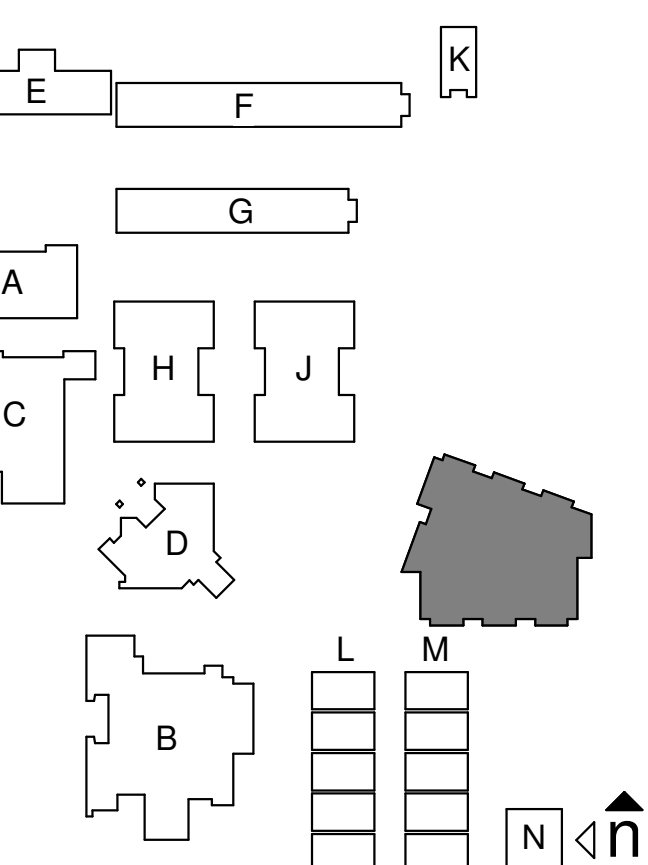
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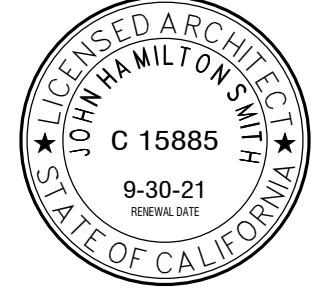
1725 NORTH ARDENSONG CLOVIS, CALIFORNIA



NO.	DATE	DESCRIPTION
1	01-13-2021	Issued for Review
2	01-13-2021	Revised
3	01-13-2021	Revised
4	01-13-2021	Revised
5	01-13-2021	Revised
6	01-13-2021	Revised
7	01-13-2021	Revised
8	01-13-2021	Revised
9	01-13-2021	Revised



SIMPRK



PROJECT NUMBER: 172527
DATE: 12/16/2019

PROJECT ARCHITECT: JORN SMYTH

AD1-M02

Building M - Overall HVAC Plan

MM2.10

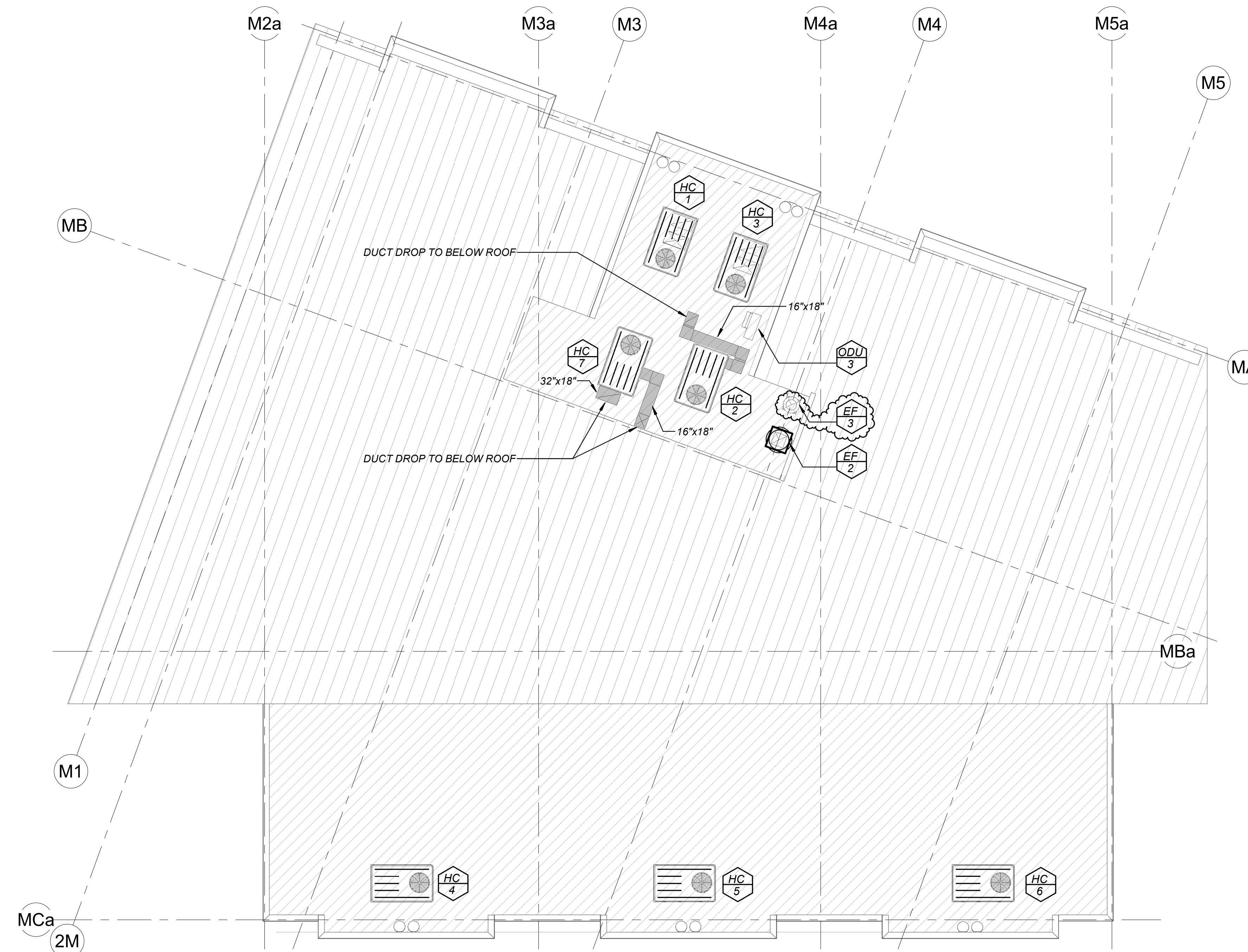
LAWRENCE ENGINEERING GROUP
7004 N. Middle Ave., Suite 101, Fresno, CA 93720
(509) 431-0161 19257 FAX (509) 431-1342

7750 NORTH PALM AVE | FRESNO, CALIFORNIA 93711
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C:\Users\jordan\Documents\2021\DRY CREEK\ADMIN\BLDG M\172527.dwg

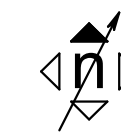
SHEET NOTES

1. SEE DETAIL AM6.10 FOR HC UNIT MOUNTING (TYP.)
2. SEE DETAIL FM6.10 FOR EXHAUST FAN MOUNTING (TYP.)



BLDG M HVAC Roof Plan

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



**DRY CREEK ELEMENTRY - NEW
CLASSROOM BUILDING & ADMIN.
MODERNIZATION**

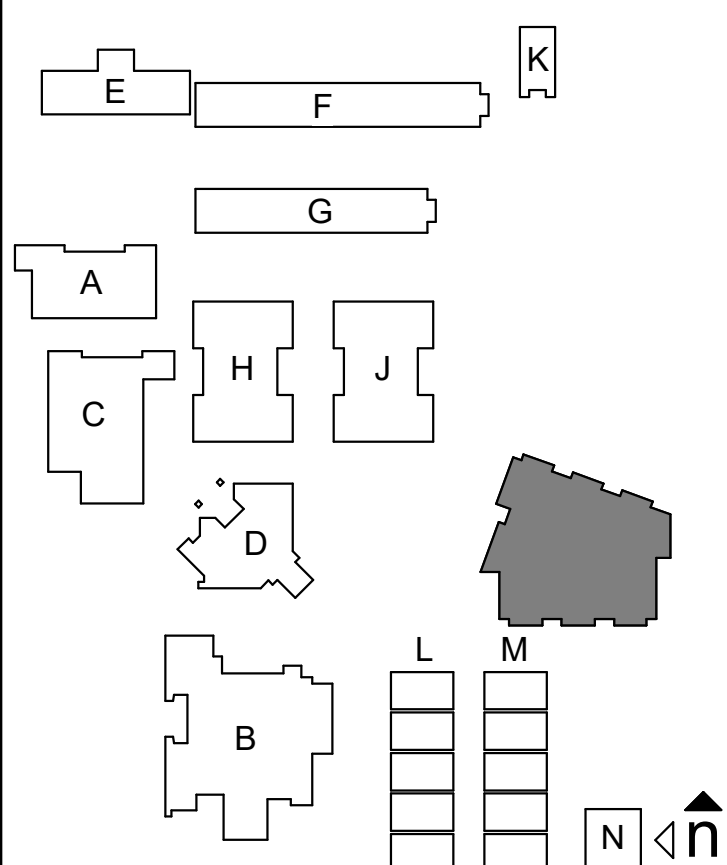
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62117334

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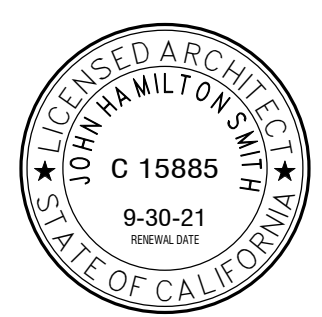
1273 NORTH ARMSTRONG
CLOVIS, CALIFORNIA



NO.	DATE	DESCRIPTION
1	01/13/2021	ADDENDUM #1 - January 13, 2021



SIMPBK



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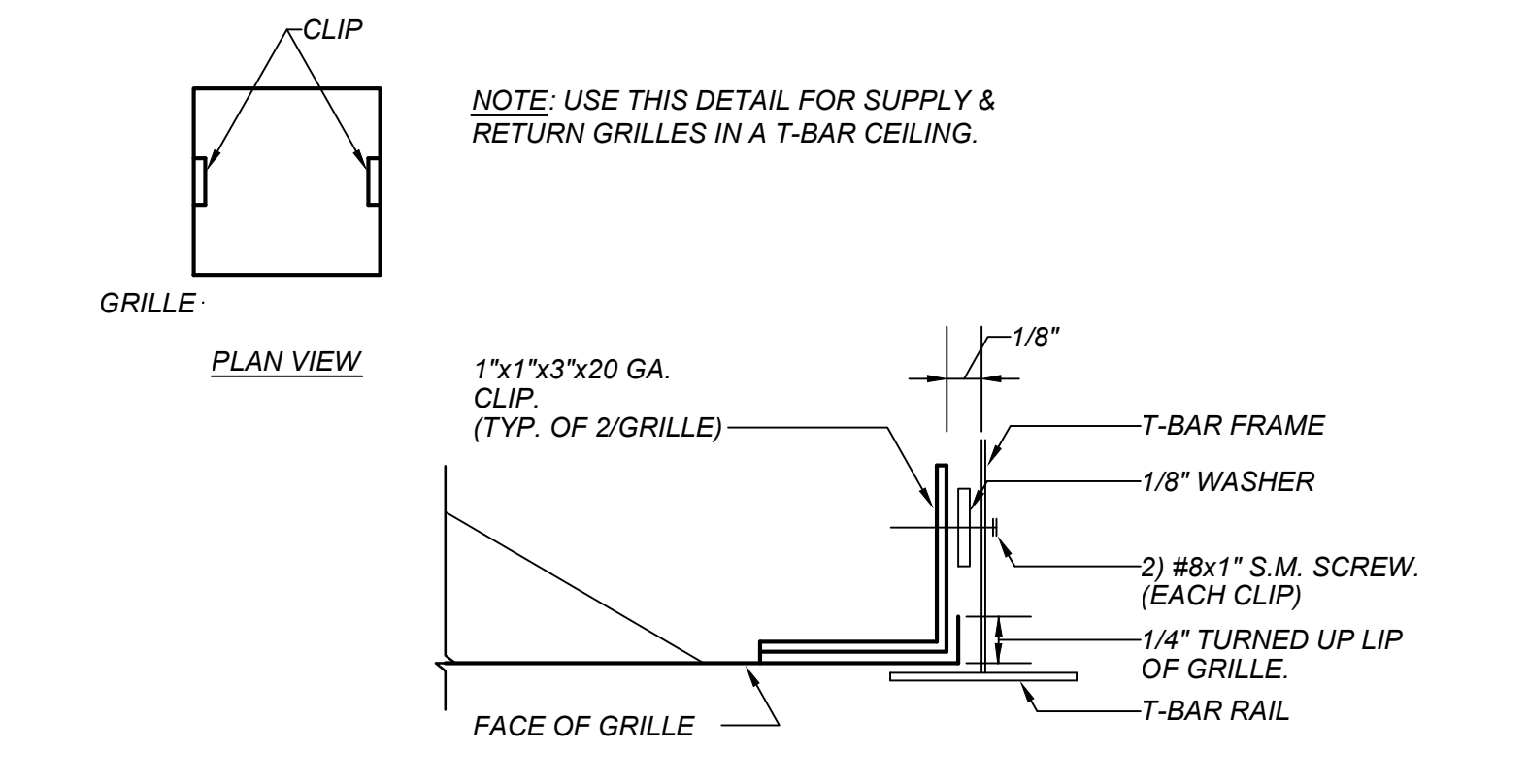
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7750 NORTH PALM AVE | FRESNO, CALIFORNIA 93711
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PROJECT NUMBER
172627
DATE
12/16/2019
PROJECT ARCHITECT
JOHN SMITH
AD1-M03

Building M - Roof Plan

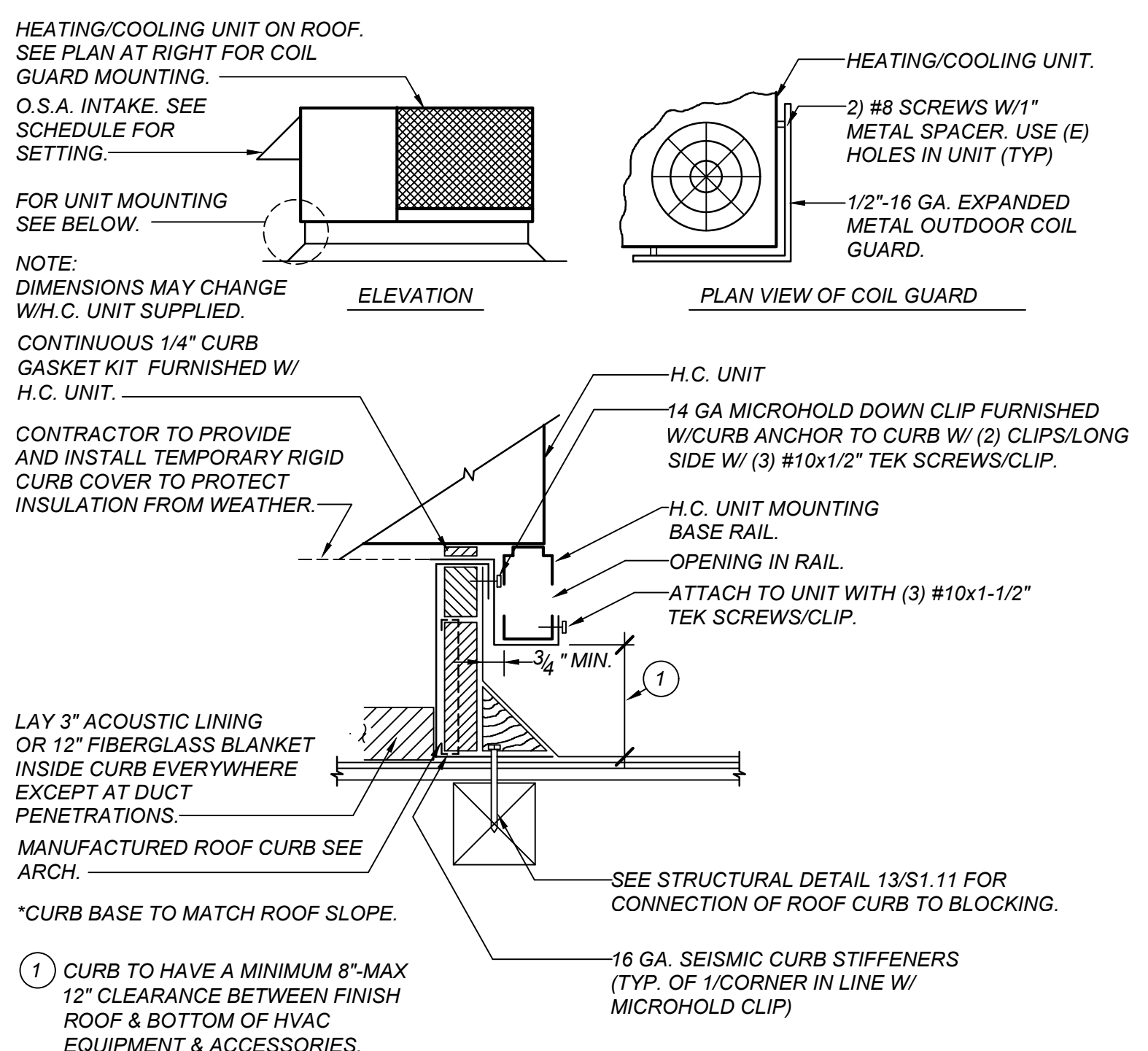
MM3.10



GRILLE RESTRAINT DETAIL

SCALE: NONE

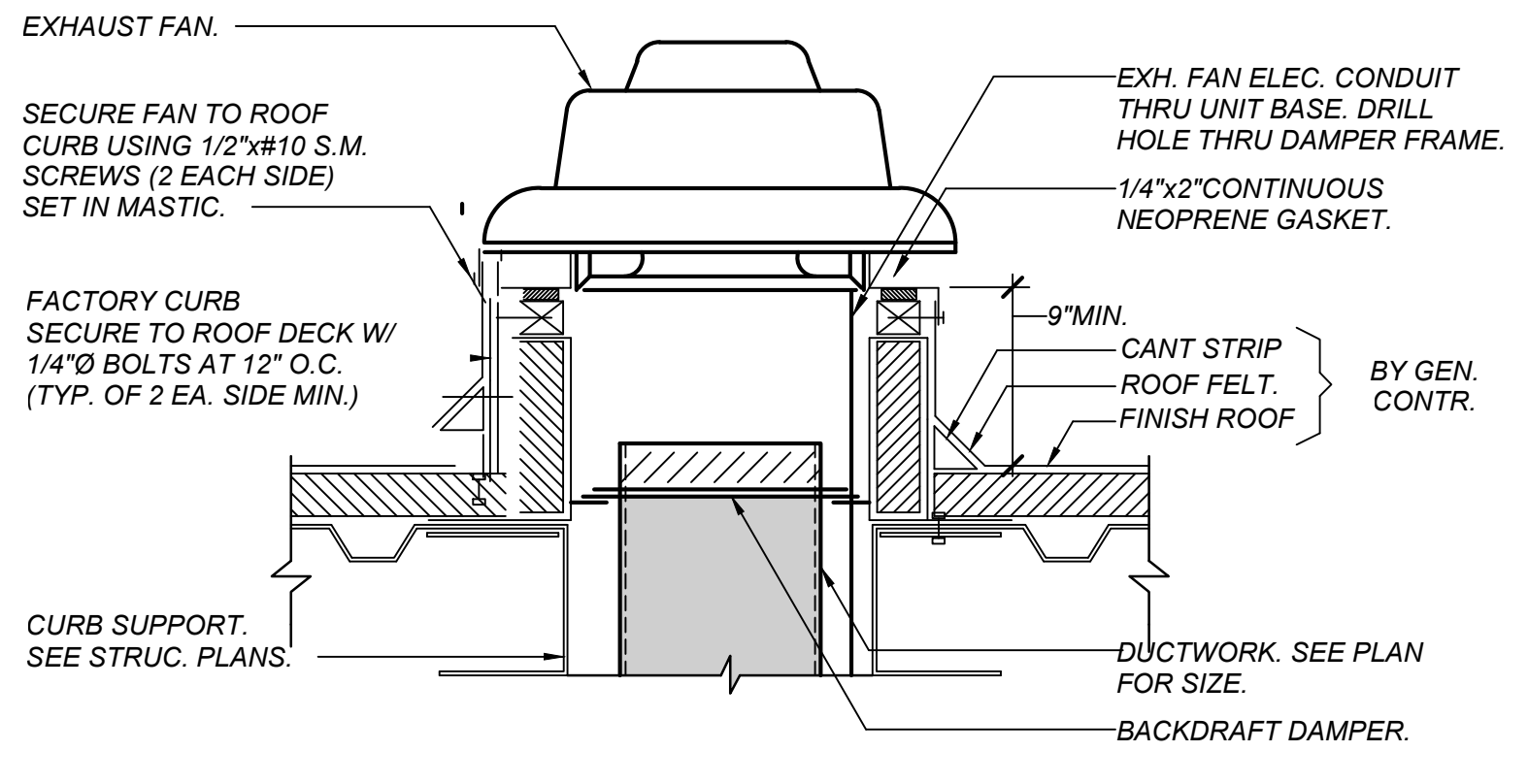
E M6.10



H.C. UNIT ROOF MOUNTING DETAIL

SCALE: NONE

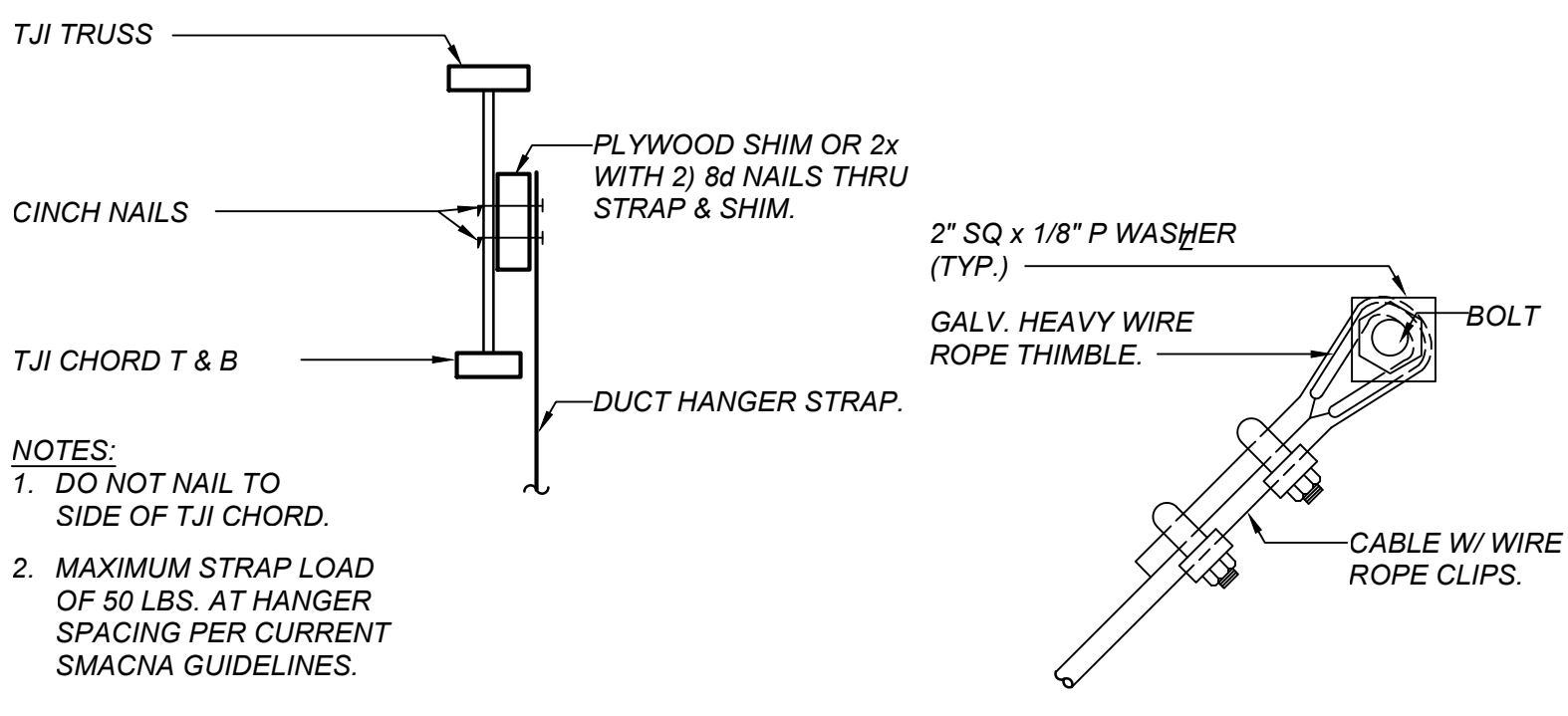
A M6.10



ROOF EXHAUST FAN MOUNTING DETAIL

SCALE: NONE

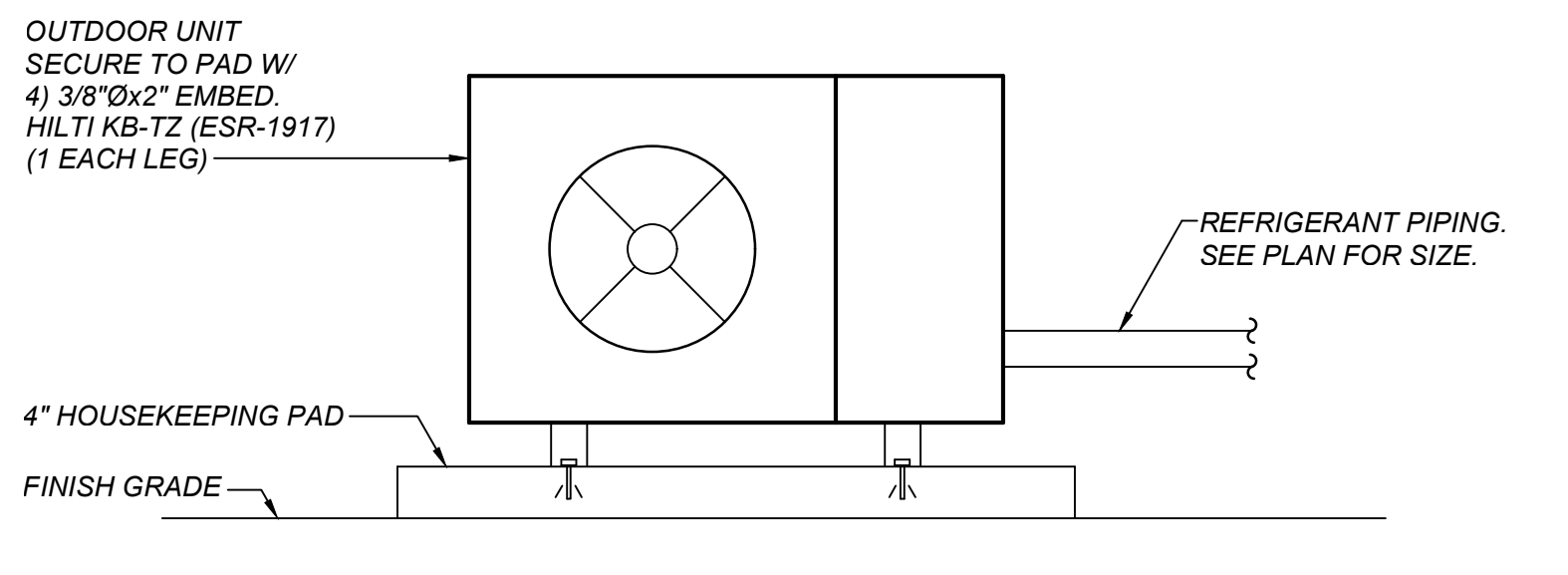
F M6.10



STRAP, CABLE UPPER ATTACHMENT DETAILS

SCALE: NONE

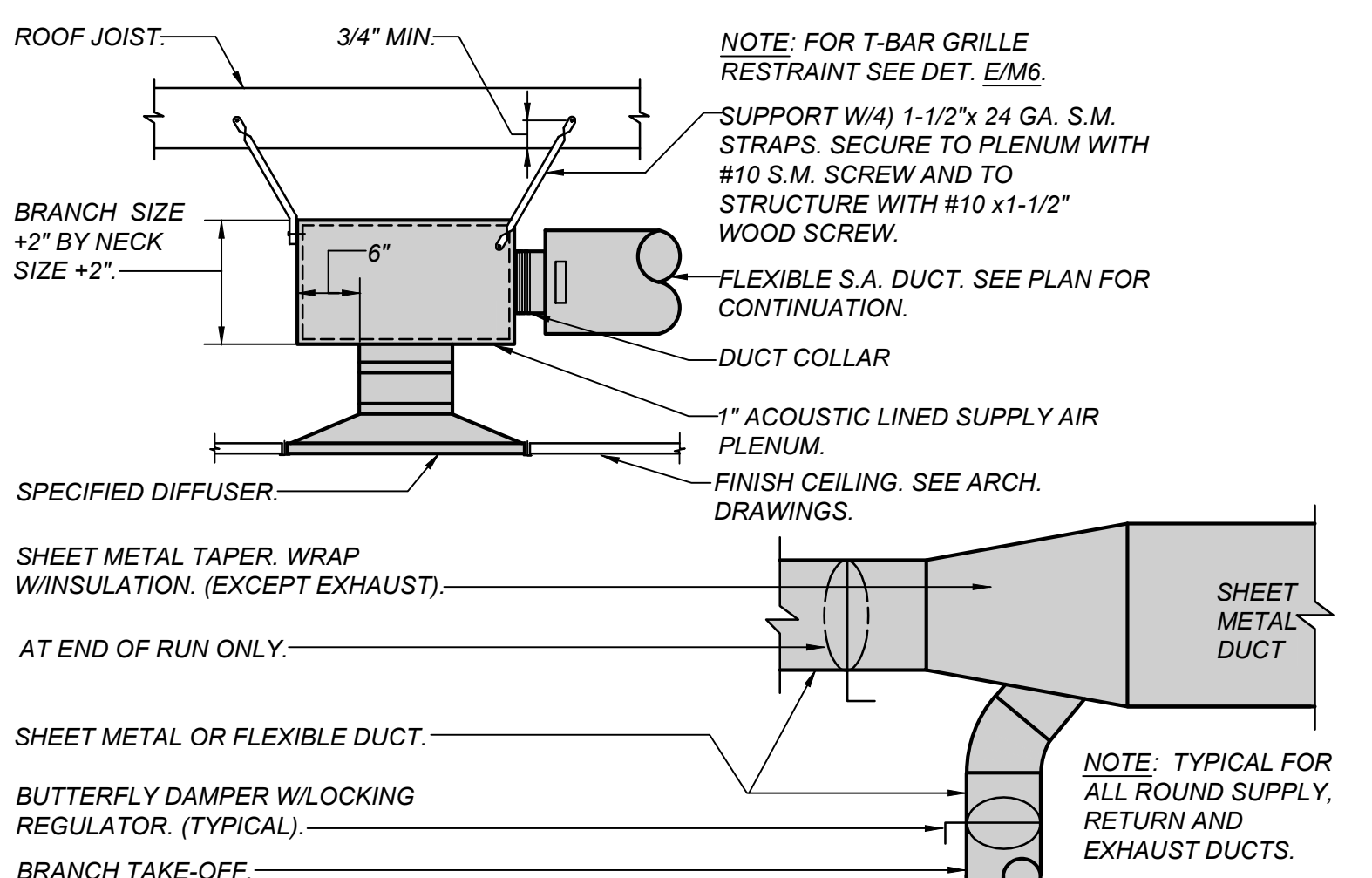
B M6.10



OUTDOOR UNIT MOUNTING DETAIL

SCALE: NONE

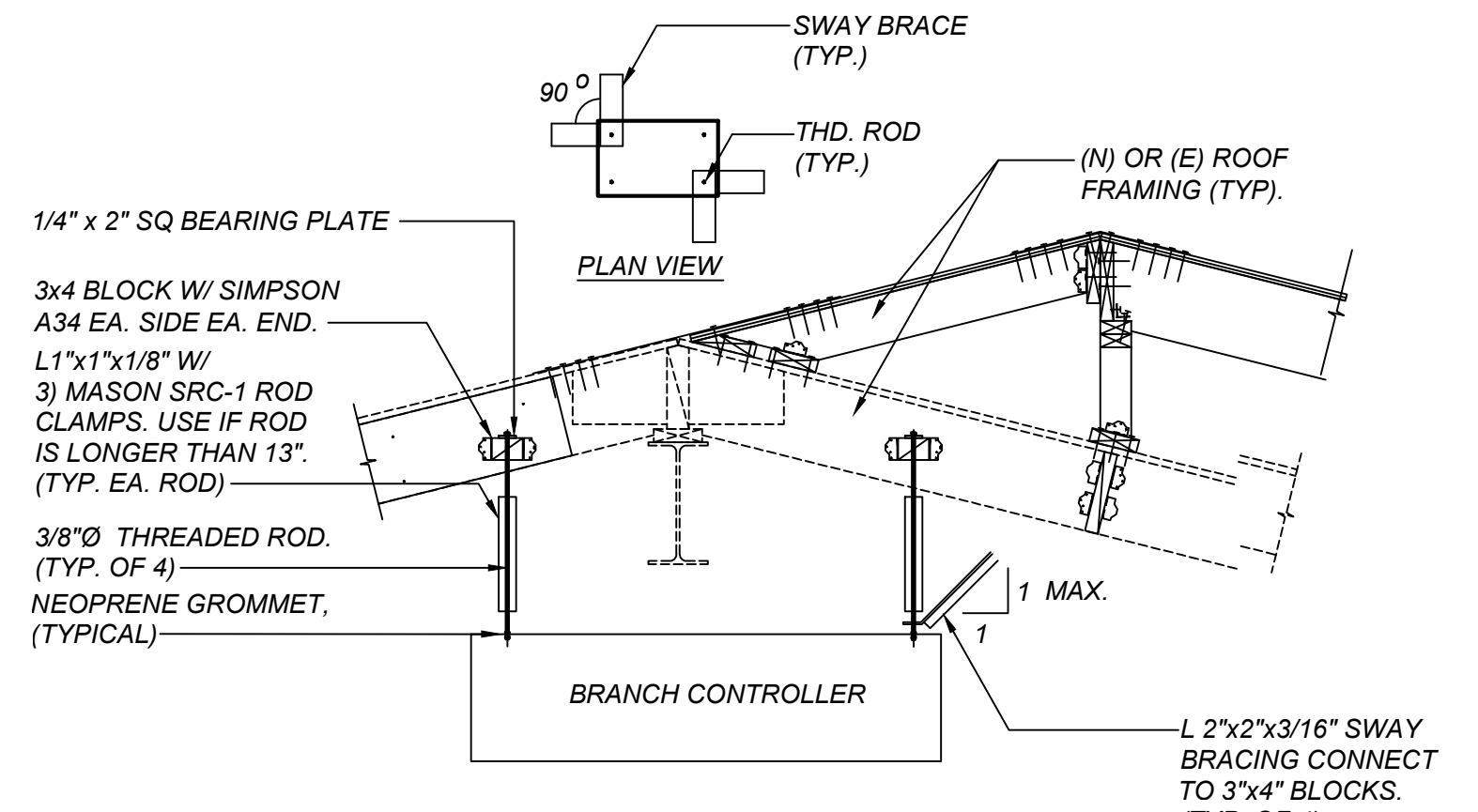
G M6.10



TYPICAL S.A. DEVICE-BRANCH DUCT DETAIL

SCALE: NONE

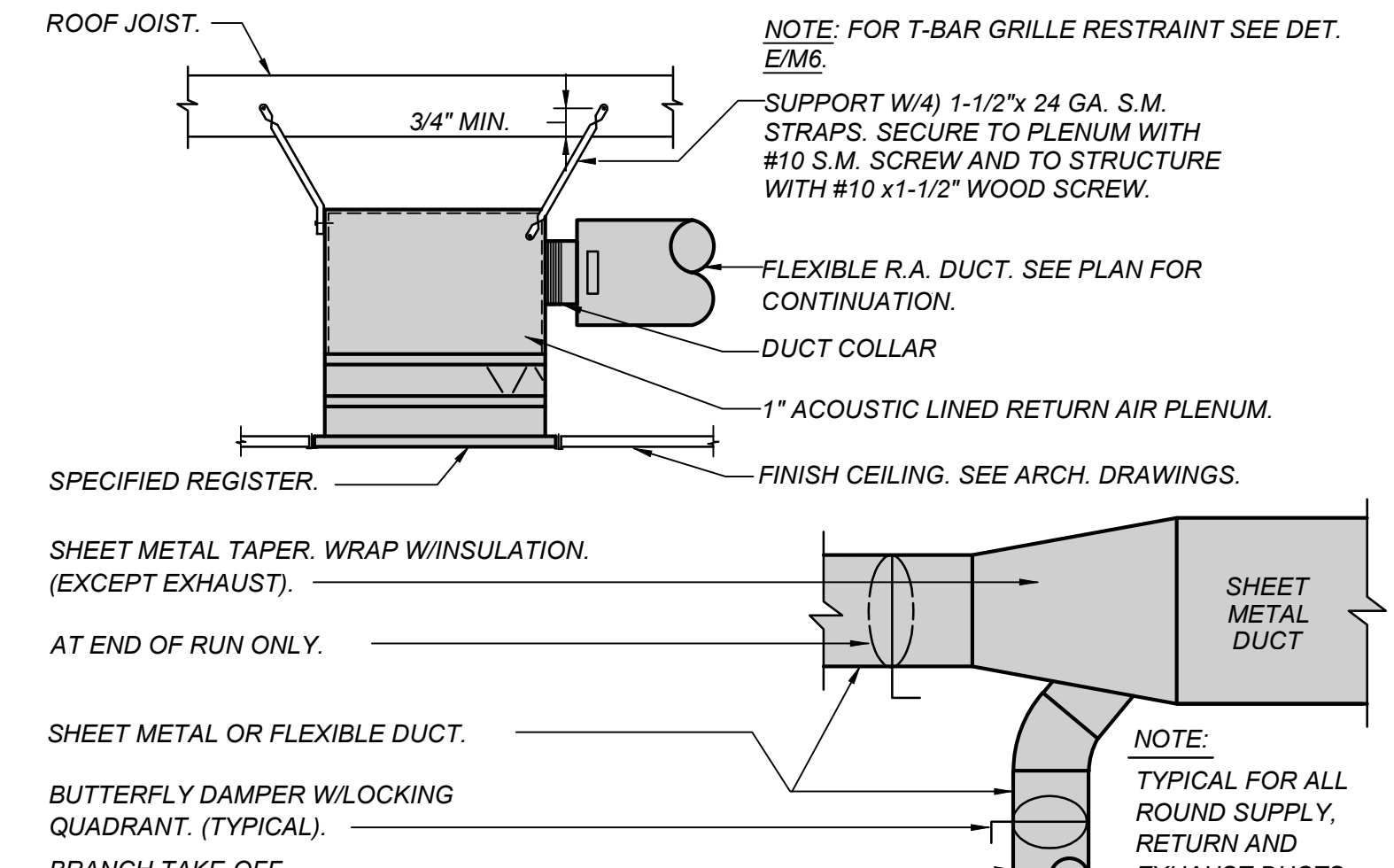
C M6.10



BRANCH CONTROLLER MOUNTING DETAIL

SCALE: NONE

H M6.10



TYPICAL R.A. DEVICE-BRANCH DUCT DETAIL

SCALE: NONE

D M6.10

INDOOR UNIT SCHEDULE									
DESIGNATION	IDU-1	IDU-2	IDU-3	IDU-4	IDU-5	IDU-6	IDU-7	IDU-8	IDU-9
BLOWER									
CFM	1,150	1,150	800	880	880	600	600	775	775
ESP (IN WC)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	N/A	N/A
MIN OSA	270	95	130	95	150	45	60	0	0
HP / AMPS	- / 3.32	- / 3.32	- / 1.56	- / 2.73	- / 2.73	- / 3.32	- / 3.32	PWR BY ODU	PWR BY ODU
VOLTS/PHASE	208-230 / 1	208-230 / 1	208-230 / 1	208-230 / 1	208-230 / 1	208-230 / 1	208-230 / 1	208-230 / 1	208-230 / 1
DRIVE	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT
COOLING									
SENSIBLE (MBH)	25.6	25.6	12.6	17.7	17.7	25.6	25.6	18.3	18.3
TOTAL (MBH)	29.9	29.9	14.9	19.9	19.9	29.9	29.9	23.3	23.3
EADB / EAWB (°F)	80 / 67	80 / 67	80 / 67	80 / 67	80 / 67	80 / 67	80 / 67	80 / 67	80 / 67
REFRIGERANT	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A
HEATING									
CAPACITY (MBH)	24.6	24.6	12.3	16.6	16.6	24.6	24.6	15.8	15.8
EADB	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0
FILTERS									
QUANTITY/SIZE	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
TYPE	PLEATED	PLEATED	PLEATED	PLEATED	PLEATED	PLEATED	PLEATED	FACTORY	FACTORY
PD (IN WC)	0.30	0.30	0.30	0.30	0.30	0.30	0.30	N/A	N/A
EFFICIENCY	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13	DUST STOP	DUST STOP
MANUFACTURER	MTSUBISHI	MTSUBISHI	MTSUBISHI	MTSUBISHI	MTSUBISHI	MTSUBISHI	MTSUBISHI	MTSUBISHI	MTSUBISHI
TYPE	DUCTED	DUCTED	DUCTED	DUCTED	DUCTED	DUCTED	DUCTED	WALL-MTD	WALL-MTD
MODEL NUMBER	PEFY-P38NMAU	PEFY-P38NMAU	PEFY-P18NMAU	PEFY-P24NMAU	PEFY-P24NMAU	PEFY-P18NMAU	PEFY-P18NMAU	PKA-A24KAT	PKA-A24KAT
SERVICE	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS
CONDENSING UNIT	ODU-1	ODU-1	ODU-1	ODU-1	ODU-1	ODU-1	ODU-1	ODU-2	3
OPER. WT. (LBS)	115	115	85	95	95	115	115	75	75
ACCESSORIES	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	2, 4	2, 4

- 1 SMART ME THERMOSTAT, FILTER BOX & INTEGRAL CONDENSATE PUMP WITH OVERFLOW CUTOFF. FIRE ALARM SYSTEM RELAY TO BE USED FOR UNIT SHUTDOWN.
- 2 CONTRACTOR PROVIDED AND MTD. GDBI II CONDENSATE PUMP, 230V, POWER FROM IDU WITH SEPARATE DISCONNECT
- 3 BI-POLAR IONIZATION KIT, PROVIDED BY MANUFACTURER, INSTALLED IN S/A DUCT BEFORE THE FIRST BRANCH & WIRED FROM UNIT POWER BY CONTRACTOR
- 4 SEE DETAIL C/M6.12 FOR EMS DIAGRAM

OUTDOOR UNIT SCHEDULE			
DESIGNATION	ODU-1	ODU-2	ODU-3
MCA	52	19	19
VOLTS/PHASE	208-230 / 3	208-230 / 1	208-230 / 1
EER / EER' COP (AT ARI)	24.3 / 14 / 3.72	- / - / -	- / - / -
SEER / HSPF (AT ARI)	- / -	21.4 / 11	21.4 / 11
COOLING CAP. (MBH)	144.3	23.3	23.3
HEATING CAP. (MBH)	119.2	15.8	15.8
AMBIENT (°F)	105	105	105
REFRIGERANT	R-410A	R-410A	R-410A
MANUFACTURER	MTSUBISHI	MTSUBISHI	MTSUBISHI
TYPE	R2	P	P
MODEL NUMBER	PURY-P144TLMLJA	PUZ-A24NHA7	PUZ-A24NHA7
SERVICE	BLDG A	BLDG A	BLDG M
OPER. WT. (LBS)	770	170	170
ACCESSORIES	1, 2, 3	1, 2, 3	1, 2, 3

- 1 ELECTRICAL TO PROVIDE POWER FEED W/ DISCONNECT.
- 2 PROVIDE PIPING AND ISOLATION VALVES PER MANUFACTURER REQUIREMENT.
- 3 PROVIDE ALL MODULES AND CONTROLS FOR BAGNET INTERFACE TO (E) EMS. EMS TO SCHEDULE STARTS/TOP

EXHAUST FAN SCHEDULE			
DESIGNATION	EF 1A-1F	EF-2	EF-3
CFM	2,000	3,000	60
ESP (IN WC)	0.600	0.375	0.375
HP / WATTS	1/2 / 1	1 / -	1/6 / -
VOLTS / PHASE	480/3	115 / 1	115 / 1
RPM	784	1,551	1,175
DBA / SONES	65 / -	- / 19.6	- / 4.8
DRIVE	DIRECT	DIRECT	DIRECT
MOUNTING	ROOF	ROOF	ROOF
MCA / MOCIP	1.9 / 3.4	-	-
MANUFACTURER	MICROMETL	COOK	COOK
TYPE	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL
MODEL NUMBER	4LH	ACE-D-VF	ACE-B
CONTROL	EMS	EMS	EMS
SERVICE	BUILDING M	BUILDING M	BUILDING M
OPER. WT. (LBS)	(4)	125	80
ACCESSORIES	1	1, 2, 3	1, 2

- 3 FAN AIRFLOW TO BE CONTROLLED BASED ON HC UNIT ECONOMIZER
- 4 INCLUDED IN HC UNIT OPERATING WT

BRANCH SELECTOR UNITS	
DESIGNATION	BC-1
MCA	1.45
VOLTS/PHASE	208-230 / 1
CONN. CLG. CAP. (MBH)	174.0
NO. OF PORTS	8
REFRIGERANT	R-410A
MANUFACTURER	MTSUBISHI/TRANE
TYPE	HEAT RECOVERY
MODEL NUMBER	CMB-P108NU
SERVICE	ADMIN
OPER. WT. (LBS)	125
ACCESSORIES	1

- 1 INCLUDE DIAMONDBACK BALL VALVES BV-SERIES, 700PSIG WORKING PRESSURE, FULL PORT, 410A RATED.

PACKAGE AIR CONDITIONING UNIT SCHEDULE			
DESIGNATION	HC-1 - HC-6	HC-7	
NAMEPLATE AMPS	13.1	20.0	
MCA	14 (4)	20.0	
MAX. FUSE SIZE	20	25	
VOLTS / PHASE	480 / 3	480 / 3	
EER / SEER AT ARI	12.8 / 15	12.6 / 15	
BLOWER			
CFM	2,000	3,000	
DUCT SP. (IN WC)	0.80	0.80	
MAX / MIN OSA (CFM)	370 / 150	580 / 360	
HP / SPEED	75 / -	97	
DRIVE	DIRECT	VARIABLE DIRECT	
COOLING			
SENSIBLE (MBH)	41.3	67.8	
TOTAL (MBH)	55.0	89.2	
EADB / EAWB (°F)	80 / 67	80 / 67	
AMB. AIR (°F)	105	105	
REFRIGERANT	R-410A	R-410A	
INPUT (MBH)	60.0	120.0	
OUTPUT (MBH)	49.0	96.0	
FUEL	NAT. GAS	NAT. GAS	
FILTER			
QUANTITY / SIZE	4 / 16x25x2	4 / 20x25x2	
TYPE	PLEATED	PLEATED	
FINAL P D (IN WC)	-	-	
MERV	13	13	
MANUFACTURER	TRANE	TRANE	
TYPE	GAS/ELECTRIC	GAS/ELECTRIC	
MODEL NUMBER	YHC080P4*LA	YH082F4RLA**07A	
SERVICE	SEE PLANS	SEE PLANS	
OPER. WT. (LBS)	1,850	1,800	
ACCESSORIES	1, 2, 4, 5, 6, 7	1, 2, 3, 5, 6, 7	

- 1 ROOF CURB, COIL GUARD, HINGED PANELS, CO2 SENSOR
- 2 ECONOMIZER
- 3 DUAL-CIRCUIT
- 4 POWERED EXHAUST WITH SEPARATE DISCONNECT. REFER TO EXHAUST FAN SCHEDULE
- 5 EBTRON OSA MONITORING STATION
- 6 BI-POLAR IONIZATION KIT (PROVIDED BY FACTORY, INSTALLED AND WIRED BY CONTRACTOR)
- 7 CO2 SENSORS FOR DEMAND CONTROL VENTILATION

GRILLE SCHEDULE		
MARK	DUTY	DESCRIPTION
A	CEILING SUPPLY	TITUS TDC (TYPE 3) FULL LOUVER FACE OR RECTANGULAR NECK DIFFUSER FOR STD. LAY-IN CEILING WITH NO. 26 WHITE FINISH. (18"x18" NECK, ADAPTER SIZE SHOWN)
B	CEILING SUPPLY	TITUS TDC (TYPE 1) LOUVER FACE SQUARE OR RECTANGULAR NECK DIFFUSER FOR SURFACE MOUNTING WITH NO. 26 WHITE FINISH.
C	WALL SUPPLY	TITUS MODEL 1707 REGISTER WITH REMOVABLE CORE, 5 DEGREE UPWARD DEFLECTION AND NO. 26 WHITE FINISH.
D	CEILING RETURN OR EXHAUST	TITUS CORE 50F (TYPE 3) ALUMINUM EGG GRATE REGISTER WITH 1/2"x1/2" GRID FOR STD. LAY-IN CEILING WITH NO. 26 WHITE FINISH.
E	CEILING RETURN OR EXHAUST	TITUS CORE 50F (TYPE 1) ALUMINUM EGG GRATE REGISTER WITH 1/2"x1/2" GRID FOR SURFACE MOUNTING WITH NO. 26 WHITE FINISH.
F	WALL RETURN	TITUS MODEL 350R, STEEL RETURN GRILLE WITH 35° DEFLECTION BLADES AT 3/4" SPACING AND NO. 26 WHITE FINISH.

ENERGY RECOVERY VENTILATOR SCHEDULE	
DESIGNATION	ERV-1
MCA	9.40
MOCIP	15.00
VOLTS / PHASE	208 / 3
OUTSIDE AIR	
AIRFLOW (CFM)	1000
ESP (°W.C.)	1.00
FAN BHP / HP	0.54 / 3/4
RPM	1427.00
COOLING EADB / EAWB (°F)	102 / 73.9
COOLING LADB / LAWB (°F)	81 / 65.3
HEATING EADB / EAWB (°F)	22 / 18.3
HEATING LADB / LAWB (°F)	59.2 / 47.8
FILTER QUANTITY / SIZE	-
FILTER TYPE	-
FILTER FINAL P D (IN WC)	-
FILTER EFFICIENCY (MERV)	MERV 13

EXHAUST AIR	
DESIGNATION	ERV-1
AIRFLOW (CFM)	1000
ESP (°W.C.)	1.00
FAN BHP / HP	0.57 / 3/4
RPM	1463.00
COOLING EADB / EAWB (°F)	75 / 62.5
COOLING LADB / LAWB (°F)	96 / 71.6
HEATING EADB / EAWB (°F)	70 / 54.3
HEATING LADB / LAWB (°F)	32.8 / 28.1
FILTER QUANTITY / SIZE	-
FILTER TYPE	-
FILTER FINAL P D (IN WC)	-
FILTER EFFICIENCY (MERV)	MERV 13
MANUFACTURER	SEMCO
TYPE	ENTHALPY WHEEL
MODEL NUMBER	FVTS-3000
SERVICE	ADMIN
OPER. WT. (LBS)	700.00
ACCESSORIES	1

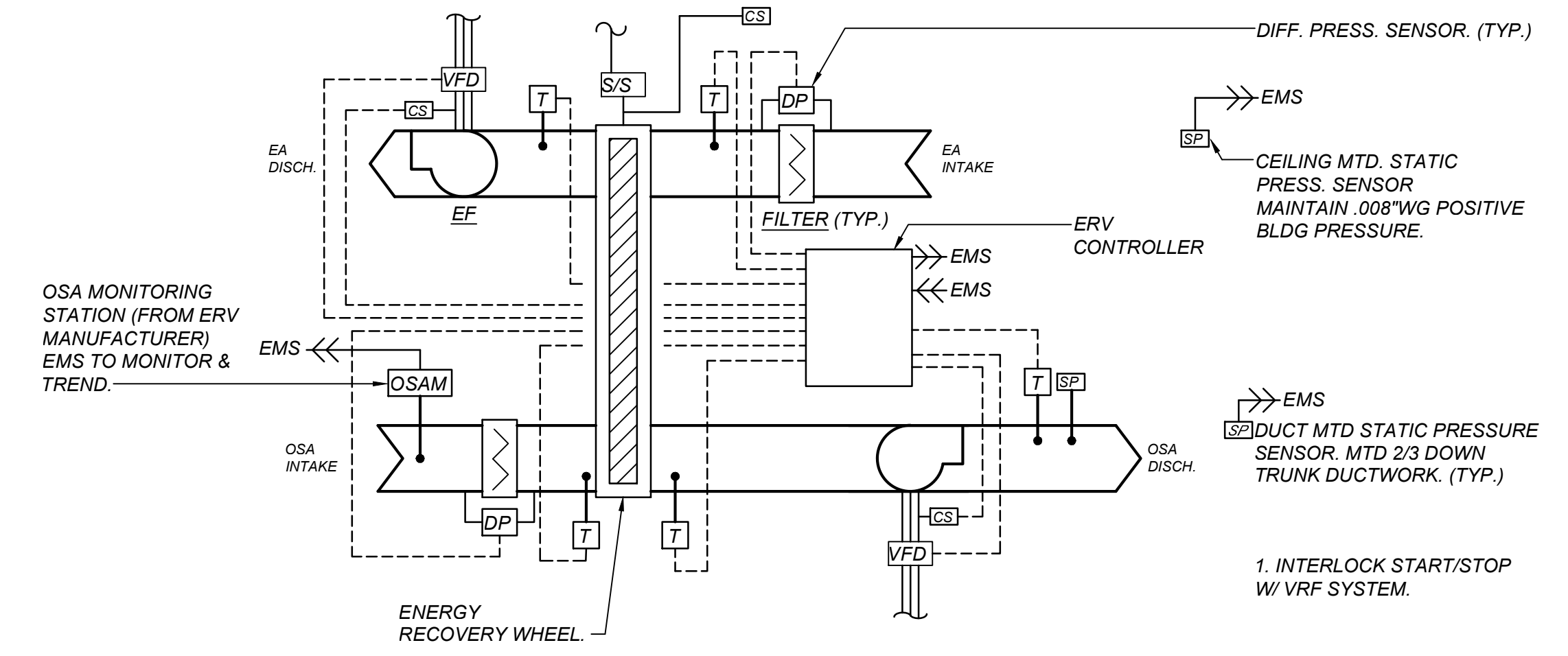
- 1 VIBRATION ISOLATION PADS
- 2 PROVIDE CONTROL PANEL TO INTERFACE WITH EMS AS SHOWN ON DETAIL A/M6.12
- 3 EBTRON OSA MONITORING STATION

DRY CREEK ELEMENTARY - NEW CLASSROOM BUILDING & ADMIN. MODERNIZATION

1723 NORTH ARMISTONG CLOVIS, CALIFORNIA

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P: 509.448.8400 | F: 509.448.8407 | www.simpbk.com

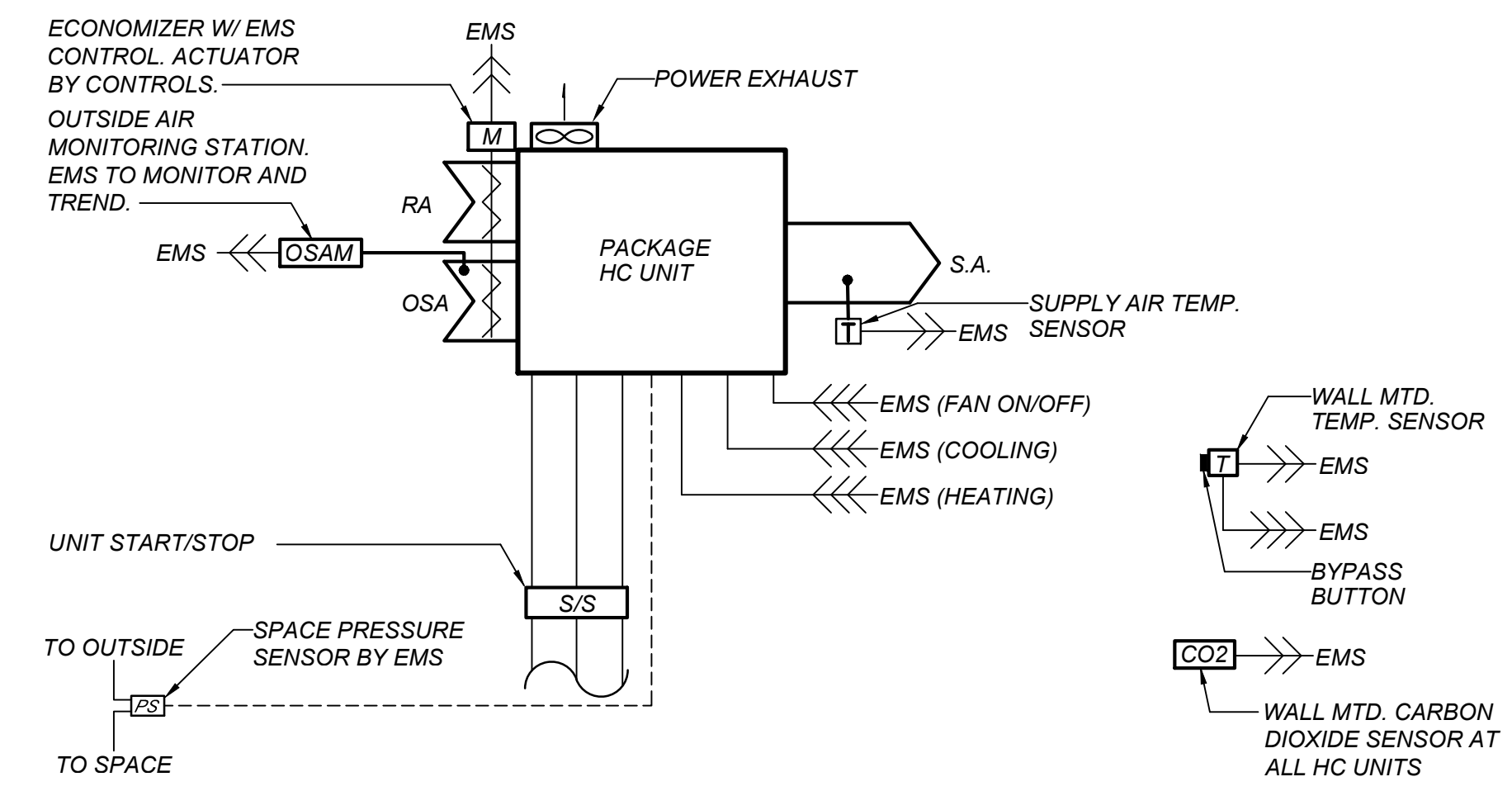
DESIGNED BY ARCHITECTS AT LARGE
C



ENERGY RECOVERY VENTILATOR EMS DIAGRAM

SCALE: NONE

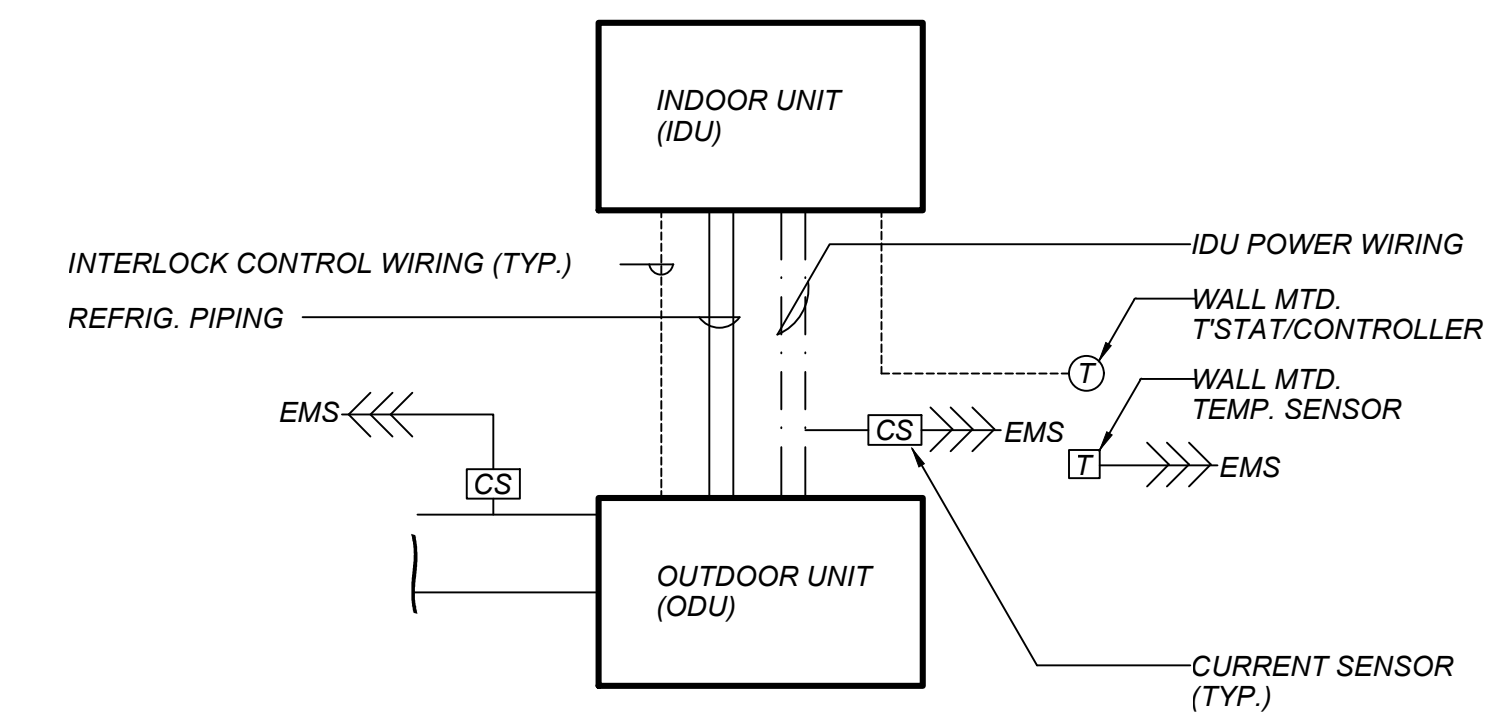
MC138
A
M6.12



PACKAGE HC UNIT DIAGRAM

SCALE: NONE

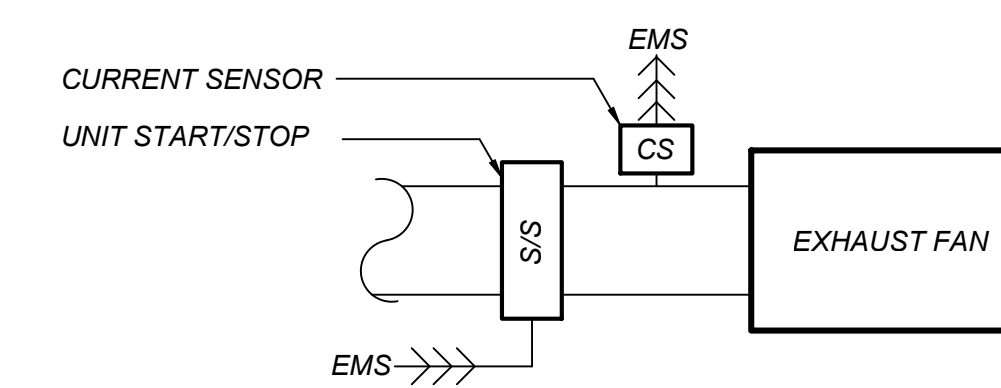
MC090
B
M6.12



SPLIT SYSTEM DIAGRAM

SCALE: NONE

MC033
C
M6.12



EXHAUST FAN DIAGRAM

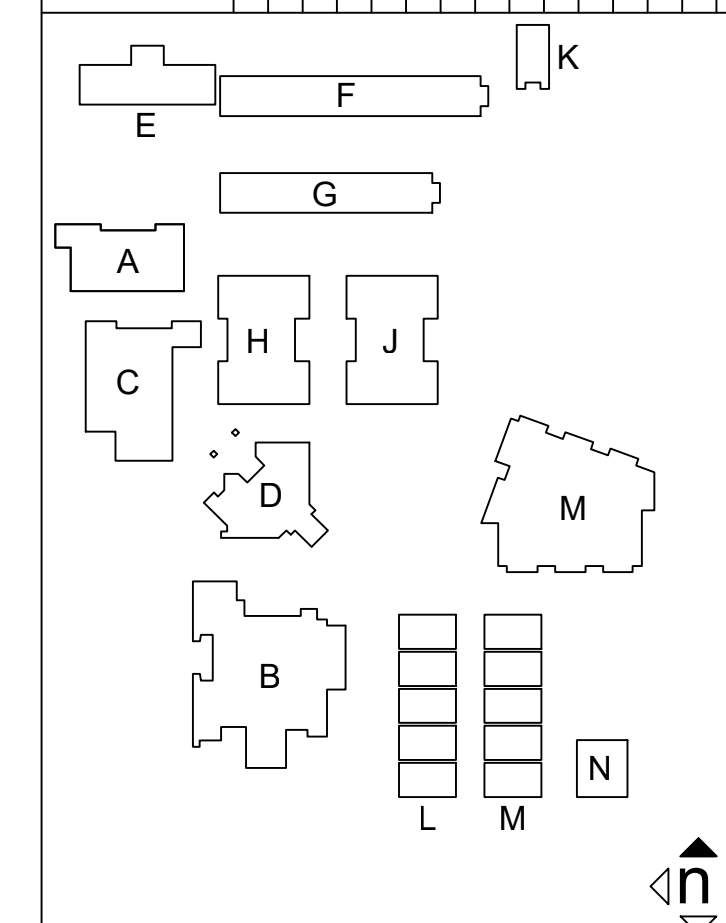
SCALE: NONE

MC125
D
M6.12

DRY CREEK ELEMENTRY - NEW CLASSROOM BUILDING & ADMIN. MODERNIZATION

1273 NORTH ARMSTRONG CLOVIS, CALIFORNIA

REV.	DATE	DESCRIPTION
1	01/13/2021	ADDENDUM #1 - JANUARY 13, 2021



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PROJECT NUMBER: 172627
DATE: 12/16/2020

DRAWN BY: MB
CHECKED BY: RC
PROJECT ARCHITECT: JOHN SMITH

AD1-M05

M6.12

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(559) 431-0101 19257 FAX (559) 431-1342

MECHANICAL EMS DETAILS